

CARS

PART 4 (41)
CLUTCH
120, 140,
1800

**SERVICE
MANUAL**

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SPECIFICATIONS

120 WITH B 16 ENGINE

Type	Single-plate, dry-disc
Size	8"
Clutch friction area, total	340 cm ² (52.7 sq.in.)
Thickness of clutch plate when installed	7.0–7.5 mm (0.28–0.30")

Rivets for clutch facings:

Number	16
Size	3.5×6.5 mm (0.14×0.25")
Distance between flywheel and contact surface of clutch levers against release bearing	46 mm (1.811")

Clutch springs:

B 16 A early prod., and B 16 B:

Colour marking	Neutral
Number	6
Length when loaded with 85.5–90.5 kg (188–199 lb.)	38 mm (1.496")

B 16 A, late prod.:

Colour marking	Light-yellow and light-green
Number	6
Length when loaded with 82–86 kg (180–189 lb.)	40 mm (1.575")

Adjustment of clutch levers:

- Alt. I 7.5 mm (0.295") lower than the hub in adjusting jig SVO 2065 within a limit of ± 1.5 mm (0.06") and within 0.25 mm (0.010") of each other.
- Alt. II Adjustment 40.5 in clutch fixture SVO 2322, packing blocks No. 0.

Clutch fork free travel	3–4 mm (0.12–0.16")
Clutch pedal stroke	140 mm (5.5")

120 WITH B 18 AND B 20 ENGINES, 1800, 140

Clutch, type	Single-plate, dry-disc
Size	215.9 mm (8.5")
Clutch friction area, total	440 cm ² (68.2 sq.in.)
Clutch fork free travel	3–4 mm (0.12–0.16")
Clutch pedal stroke, 120, 1800	140 mm (5.5")
140	125–130 mm (4.9–5.1")
Distance between flywheel and contact surface of clutch levers (thrust washer) against release bearing	46 mm (1.811")

1800 Type I

Thickness of clutch plate when installed	7.5–8.0 mm (0.30–0.31")
Clutch springs:	
Colour marking	Neutral
Number	3
Length when loaded with 85.5–90.5 kg (188–199 lb.)	38 mm (1.496")
Colour marking	Black

120, 140, 1800

Number 3
Length when loaded with 102–107 kg (224–235 lb.) 38 mm (1.496")

Adjustment of clutch levers:

Adjustment in clutch fixture SVO 2322 44
Packing blocks No. 0

120 Type I, 1800 Type II

Thickness of clutch plate when installed 7.0–7.5 mm (0.28–0.30")

Clutch springs:

Colour marking Neutral
Number 6
Length when loaded with 85.5–90.5 kg (188–199 lb.) 38 mm (1.496")

Adjustment of clutch levers:

Adjustment in clutch fixture SVO 2322 41.5
Packing blocks No. 0

120 Type II, 1800 Type III, 140

Clutch spring, type Diaphragm

There is no adjustment of clutch levers.

TOOLS

For work on the clutch, clutch fixture SVO 2322 (Fig. 1) is required, also the tools shown in Fig. 2.

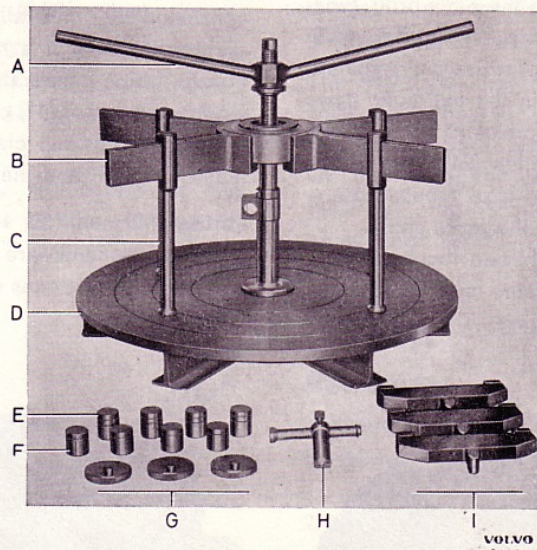


Fig. 1. Clutch fixture SVO 2322 with accessories

- A. Wrench handle
- B. Arm
- C. Thrust rod
- D. Bottom plate
- E. Packing blocks No. 2
- F. Packing blocks No. 1
- G. Packing blocks No. 0
- H. Measuring gauge with holder
- I. 3-point support

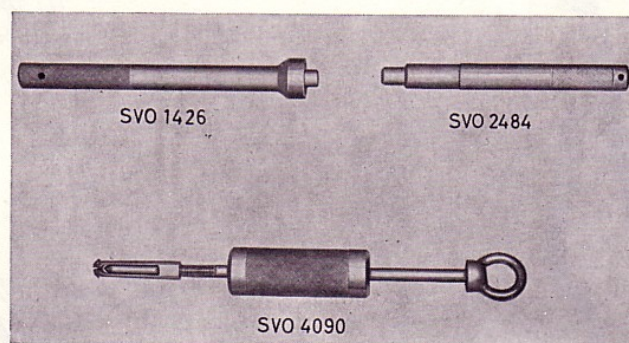


Fig. 2. Special tools

- SVO 1426 Drift for pilot bearing in flywheel
- SVO 2484 Drift for centering clutch plate
- SVO 4090 Puller for ball bearing in flywheel

DESCRIPTION

The clutch is of the single-plate, dry-disc type, and is available in various types. Two of these types are shown in Figs. 3 and 4. For the right combination of clutch and release bearing, see the spare parts catalogue. On the early prod. type clutch, see Illustration A, the pressure plate (22) is operated by three levers (31) which are actuated from the clutch pedal (18) via the hydraulic control system. The necessary pressure is obtained from six strong pressure springs (24). The clutch release bearing (25) is guided by a tubular extension on the bearing cover of the input shaft.

On the late prod. type clutch, see Illustrations B and C, the levers and pressure springs are replaced by a diaphragm spring. The diaphragm

spring has the combined function of the clutch levers when declutching and the pressure springs when engaging.

On the 120 and 1800 (early prod.) the clutch is controlled hydraulically. The hydraulic control system consists of a master cylinder (9, Illustration A), which is operated by the clutch pedal, and a control cylinder (41) on the flywheel housing (46), which operates the clutch through the clutch release fork (33) and the clutch release bearing.

On the 140 and 120, 1800 (late prod.), the clutch pedal movements are transmitted to the clutch release fork by means of a cable (19), see Illustration C.

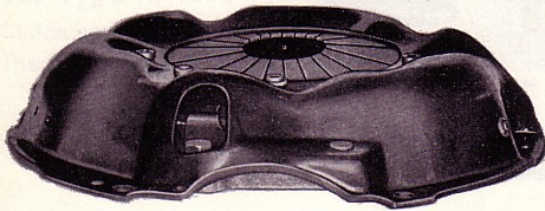


Fig. 3. Clutch, Borg & Beck

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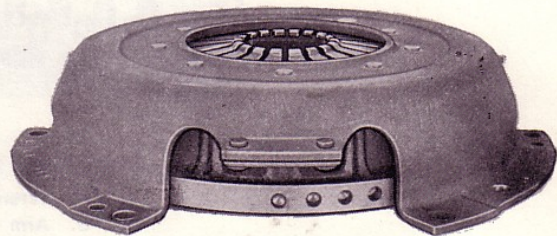


Fig. 4. Clutch, Fichtel & Sachs

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REPAIR INSTRUCTIONS

ADJUSTING THE CLUTCH FORK FREE TRAVEL

In order to avoid risk of the clutch slipping, the clutch fork travel must be checked and if necessary adjusted every 10 000 km (6 000 miles).

On early prod. 120 and 1800, adjustment is by means of the nuts (1, Fig. 5). These are adjusted so that the clutch fork free travel is 3–4 mm (0.12–0.16").

On late prod. 120 and 1800, and on the 140, the travel is adjusted by means of nuts (18, Illustration B, 8 Illustration C), which secure the cable to the clutch housing.

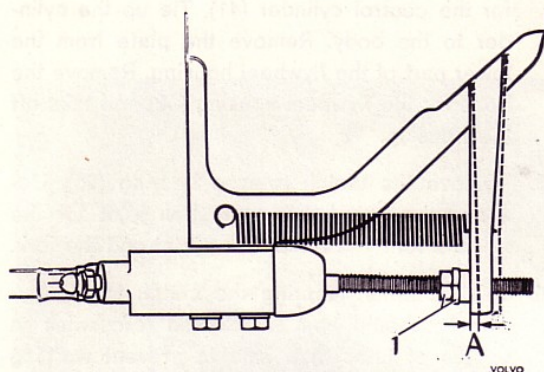


Fig. 5. Clutch fork free travel, 120, 1800 (early prod.)

1. Adjusting nuts
- A. 3–4 mm (0.12–0.16")

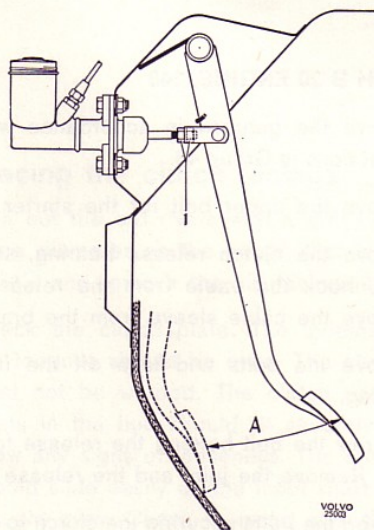


Fig. 6. Clutch pedal play, 120, 1800 (early prod.)

1. Adjusting nuts
- A. 140 mm (5.5")

Where complaints about poor disengagement arise, also check the clutch pedal travel (A, Figs. 6 and 7) on those vehicles where it is adjustable (early prod.).

The travel for the clutch pedal on the 120 and 1800 should be 140 mm (5.5"), and the early prod. type should be adjusted with the nuts (1, Fig. 6). On the 140 (early prod.) there is an adjustable bracket (1, Fig. 7) with which the pedal travel can be adjusted to 125–130 mm (4.9–5.1").

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CLUTCH

Removing

120 WITH B 16 ENGINE

1. Remove the gearbox. Follow the instructions given in Group 43.
2. Unhook the return spring (34, Illustration A) on the clutch release fork.
3. Remove the clutch release bearing (25).
4. Remove the sheet metal cover under the flywheel.
5. Remove the clutch release fork (33) by first slackening the ball joint on the inside a few turns with a 17 mm (21/32") box spanner and then holding it still while unscrewing the bolt on which the ball joint fits. Then turn the release fork 1/2 a turn and remove it to the rear, see Fig. 8.



Fig. 7. Clutch pedal play, 140, early prod.

1. Adjustable bracket
- A. 125–130 mm (4.9–5.1")

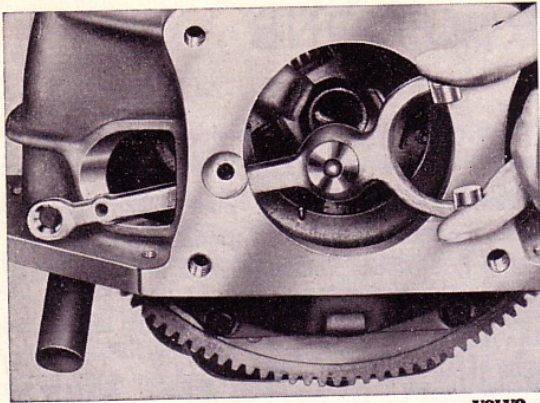


Fig. 8. Removing the clutch release fork

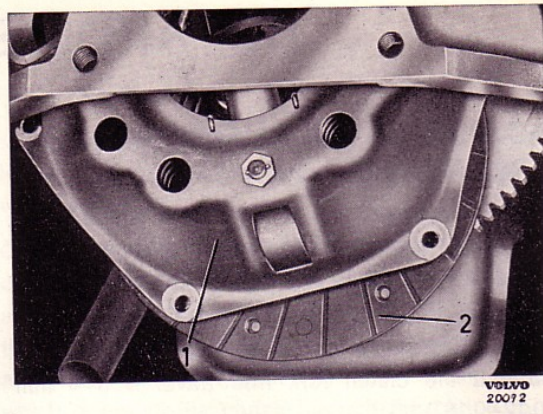


Fig. 10. Removing the clutch
1. Clutch 2. Clutch plate

6. Check that the clutch and flywheel are marked with paint as shown in Fig. 9. Otherwise, mark the clutch, flywheel and pressure plate with a centre punch. This must be done in order to ensure that the clutch is re-fitted in the same position as previously.
7. On removing the six bolts securing the clutch to the flywheel, they should be slackeden crosswise a couple of turns at a time prevent warping. Hold up the clutch so that it does not fall to the floor. The clutch and clutch plate can now be removed downwards, see Fig. 10.

120, 1800 WITH B 18 ENGINE

1. Remove the gearbox in accordance with the instructions in Group 43.
2. Unhook the return spring (34, Illustration A) on the clutch release fork (33). Remove the bolts

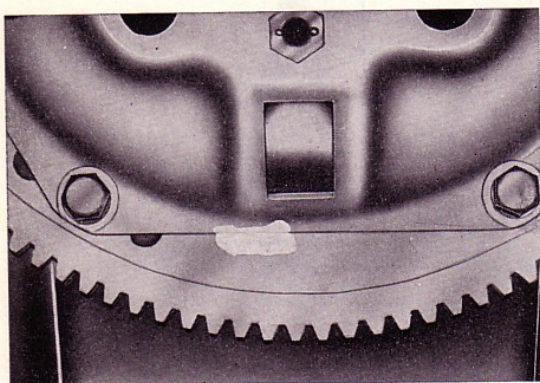


Fig. 9. Line-up marking of clutch and flywheel

3. Remove the clutch release bearing (25). Unscrew the bolt holding the ball joint for the release fork and remove the joint and the fork.
4. The six bolts securing the clutch to the flywheel should be slackeden crosswise a couple of turns at a time to prevent warping and then removed. Hold up the clutch to prevent it from falling to the floor. Lift off the clutch and clutch plate.

120 WITH B 20 ENGINE, 140

1. Remove the gearbox in accordance with the instructions in Group 43.
2. Remove the upper bolt for the starter motor.
3. Remove the clutch release bearing, see Fig. 11. Unhook the cable from the release fork. Remove the cable sleeve from the bracket.
4. Remove the bolts and take off the flywheel housing.
5. Unscrew the bolt holding the release fork ball joint. Remove the joint and the release fork.
6. Slacken the bolts securing the clutch to the flywheel crosswise a couple of turns at a time to prevent warping. Lift off the clutch (Fig. 12) and clutch plate.

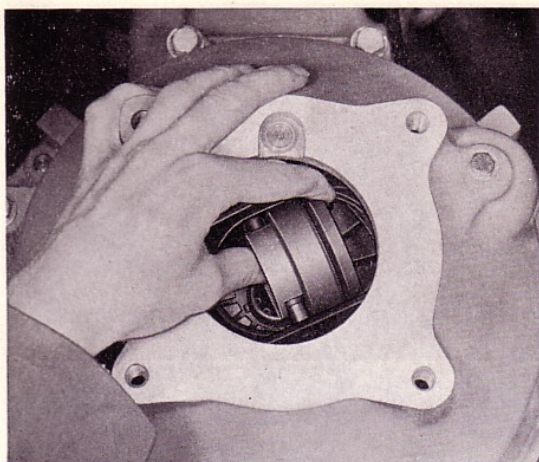
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Fig. 11. Removing the clutch release bearing

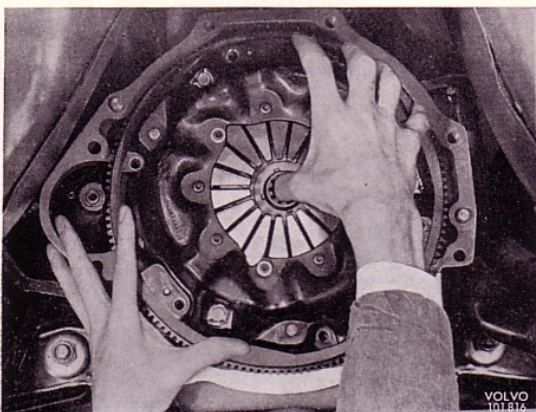
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Fig. 12. Removing the clutch

Replacing the clutch facings

1. Drill out the old rivets with a drill having the same diameter as the rivets, that is, 3.5 mm (9/64") and remove the old facings.
2. Check the clutch plate. The indentations on the tongues should be even. The clutch plate must not be warped. The clutch springs and rivets in the hub should fit securely and not show any signs of looseness. The clutch plate should slide easily on the input shaft but without any play. Check to make sure that there are no cracks. If any of these defects are found, the clutch plate should be replaced with a new one.

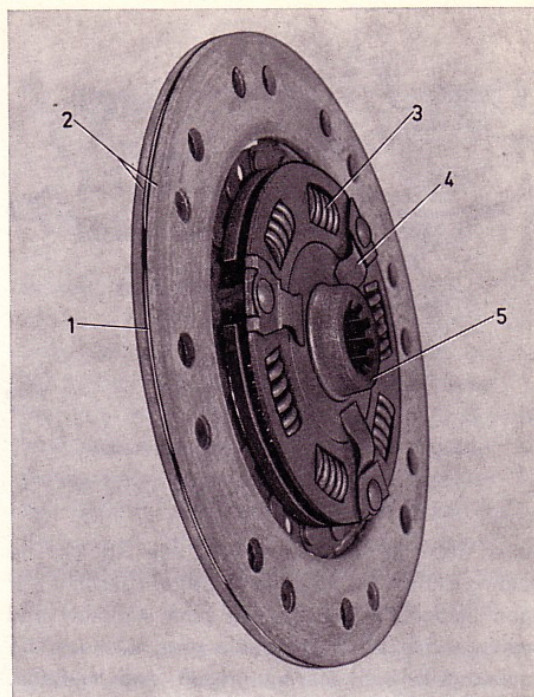
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Fig. 13. Clutch plate

1. Disc
2. Facings
3. Spring
4. Damper spring
5. Hub

3. Rivet on the new facings (preferably in a rivet press). N.B. The rivets should be inserted from the side on which the facing lies and riveted up from the opposite direction against the disc. Use every other hole in the lining. After riveting, space the linings from each other as determined by the indentations on the clutch disc. See Fig. 13. This is extremely important in order to achieve a smooth engagement when starting and driving.

The clutch facings must be absolutely free from oil. Oil on the facings can cause the clutch to grab.

Input shaft pilot bearing in the flywheel

If it is suspected that the bearing is dry, loose or noisy, it should be removed for examination. This is done by first removing the lock washer (B 16) or the circlip (B 18), after which the bearing is

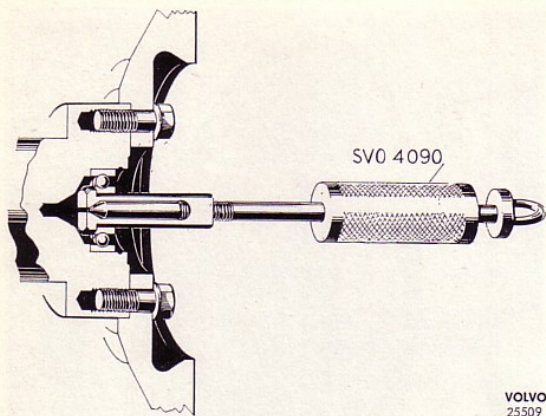


Fig. 14. Removing the pilot bearing

pulled out with puller SVO 4090, see Fig. 14. The bearing should be cleaned in petrol (gasoline). If upon inspection the bearing runs smoothly and evenly and has no noticeable play, it should be packed with ball bearing grease and re-fitted. N.B. Heat-resistant grease should be used. The bearing is pressed in with drift SVO 1426.

Dismantling

CLUTCH WITH COIL SPRINGS

1. Mark-up the clutch as shown in Fig. 15, if this has not been done previously.
2. Place the packing blocks No. 0 on fixture SVO 2322, see Fig. 16. Place on the clutch, the 3-point support, the arms and the three thrust rods, see Fig. 17. Place on the wrench handle and press down the clutch until the casing contacts the bottom plate.

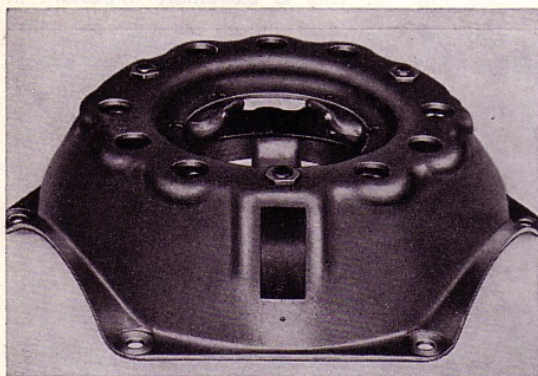


Fig. 15. Line-up marking the clutch casing and pressure plate



Fig. 16. Placing the clutch in the fixture, I
1. Packing blocks No. 0

3. Unscrew the three adjusting nuts for the clutch levers.
4. Screw back the wrench handle and remove the arms and thrust rods. Remove the clutch cover casing (21).
5. Remove the levers as shown in Fig. 18.

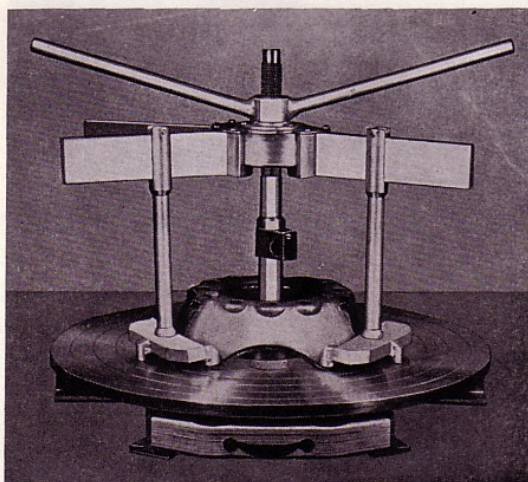


Fig. 17. Placing the clutch in the fixture, II



Fig. 18. Removing the levers

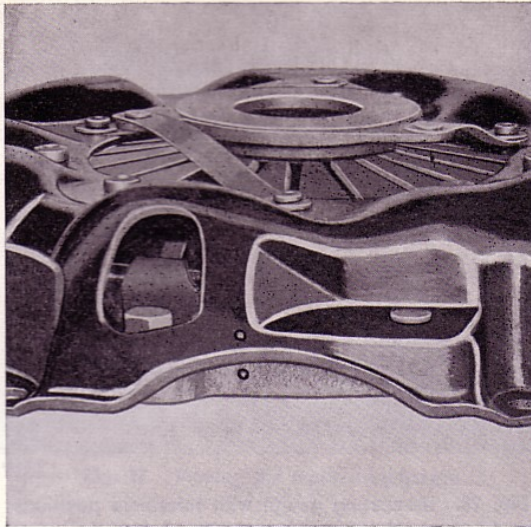


Fig. 19. Line-up marking the pressure plate and clutch casing

CLUTCH WITH DIAPHRAGM SPRING

The late prod. version of this clutch cannot be dismantled. The early prod. type is dismantled as follows:

1. Mark the pressure plate and clutch cover casing as shown in Fig. 19.
2. Remove the three bolts securing the pressure plate to the tensioning bands and retainers, see Fig. 20.
3. Lift off the clutch cover casing.

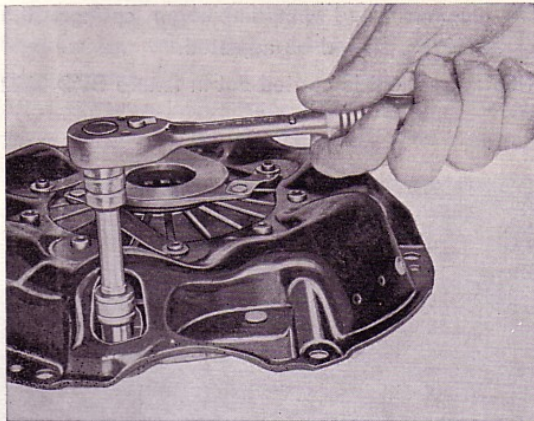


Fig. 20. Dismantling the clutch

Inspecting

The late prod. clutch with diaphragm spring cannot be dismantled but must be replaced entirely if faulty.

Check the clutch carefully. Examine the pressure plate for heat damage, cracks, scoring or other

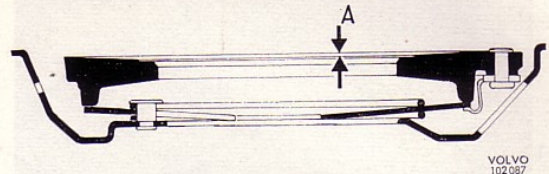


Fig. 21. Checking the pressure plate "dish"

damage to the friction surface. Check the "dish" of the pressure plate by placing a straight-edge about 240 mm (9 1/2") in length diagonally across the friction surface of the pressure plate. Then measure the distance between the straight-edge and inner diameter of the pressure plate. This measurement must not exceed a maximum 0.03 mm (0.001"), see Fig. 21. There must be no "crowning", that is, clearance between the straight-edge and outer diameter of the pressure plate. Carry out the check at several points.

Check the pressure springs (coil springs) in a spring tester. They must maintain the prescribed length and loading given in "Specifications".

In the case of a clutch with diaphragm spring, the spring must be checked with particular care. If it is cracked or damaged in any way, the clutch cover casing complete with spring must be replaced.

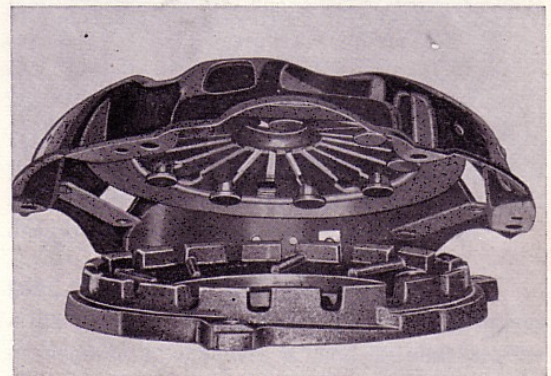


Fig. 22. Assembling the clutch

The release bearing is checked by turning it round a few times under light pressure so that the balls rotate against the races. The bearing should turn easily without binding at any point. It should also glide easily on the guide extension from the gear-box.

Assembling

CLUTCH WITH DIAPHRAGM SPRING

Place the clutch cover casing on the pressure plate in accordance with the line-up marks, see

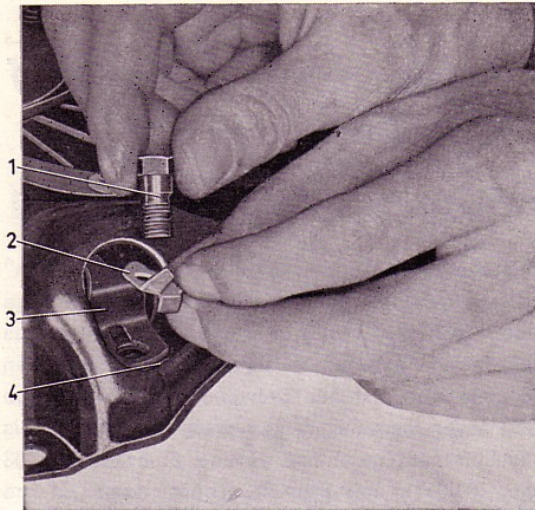


Fig. 23. Fitting the retainers and bolts

1. Bolt
2. Locking plate
3. Retainer
4. Tensioning band

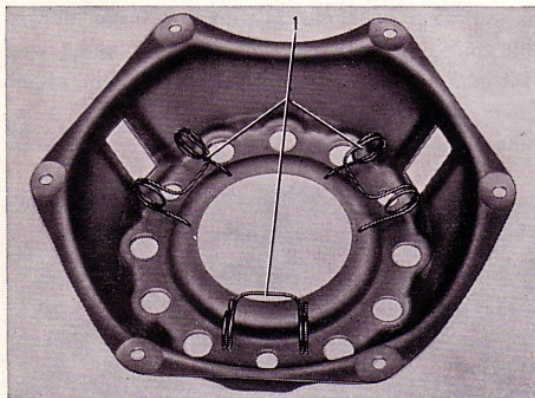


Fig. 24. Fitting the springs
1. Springs for clutch levers

Fig. 22. Place the retainers, locking plates and bolts in position, see Fig. 23. Tighten and lock the bolts.

CLUTCH WITH COIL SPRINGS

1. Place the pressure plate (22) on packing blocks No. 0 in fixture SVO 2322.
2. Lubricate the contact surfaces of the clutch levers with oil. Lubricate sparingly so that no oil can run down onto the clutch plate after fitting.
3. Fit the clutch levers as shown in Fig. 18.
4. Place the six pressure springs in position.

4-10

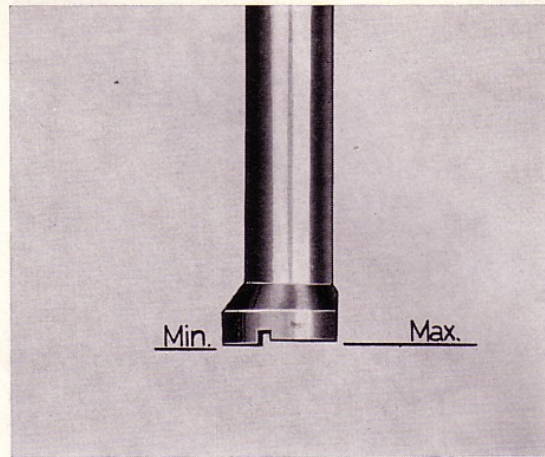


Fig. 25. Measuring gauge with tolerance positions

5. Make sure that the three springs (1, Fig. 24) for the clutch levers are in position and place the clutch cover casing over the six pressure springs in the position which has been already marked-up, see Fig. 15.
6. Place on the 3-point support, arms, thrust rods and wrench handle. Press down the clutch cover casing until it makes contact with the bottom plate all round. Place the adjusting nuts on the eyebolts (32) and screw them on to full nut width. The clutch is now ready for adjusting.

ADJUSTING THE CLUTCH LEVERS

On clutches fitted with diaphragm springs, the clutch levers should be adjusted.

This adjustment is carried out in fixture SVO 2322

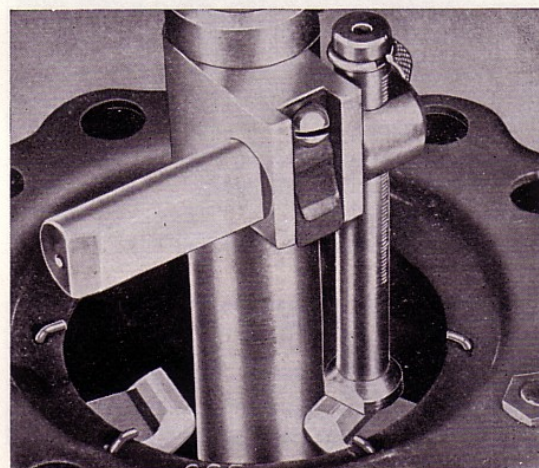


Fig. 26. Adjusting the clutch levers

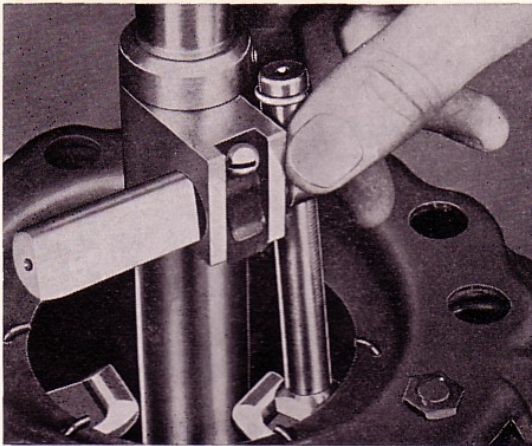


Fig. 27. Moving the measuring gauge

with the help of the measuring gauge kept in the compartment on the tool. Fit the gauge and arm in the attachment on the spindle and set the gauge to measurement 40.5 for cars with B 16 engine and 41.5 (P 1800, early prod.: 44) for cars with B 18 engine (adjusting surface at upper edge of arm). The foot of the measuring gauge is ground with tolerance positions corresponding to the mutual tolerance between the levers, see Fig. 25, and a side surface which is set parallel to the lever. Set the clutch lever to a height level with the maximum tolerance surface, see Fig. 26. The minimum tolerance surface must not then pass the edge of the clutch lever. Swing over the arm when moving the measuring gauge across the clutch levers, see Fig. 27. After adjusting, carry out a further check on all the levers.

Remove the measuring gauge and arm before releasing the clutch.

After all three levers have been adjusted, check them. Then lock the adjusting nut with a centre punch, see Fig. 28.

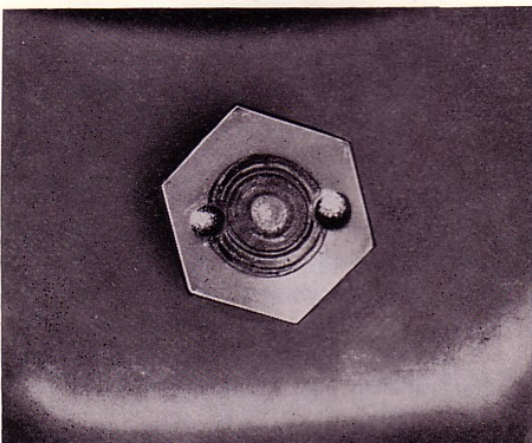


Fig. 28. Locking the adjusting nut

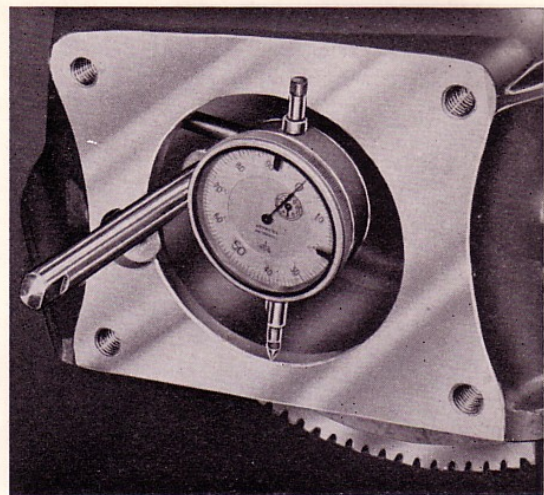


Fig. 29. Dial-indicating the flywheel housing

DIAL-INDICATING THE FLYWHEEL HOUSING

The flywheel housing is measured with a dial indicator gauge magnetically attached to the flywheel. Fig. 29 shows how the gauge is arranged when checking the hole. The hole in the casing should be concentric with the flywheel pilot bearing with a total permissible deviation of max. 0.15 mm (0.006").

Should the deviation exceed this, adjustment can be done by slackening the attaching bolts slightly and driving the housing over to the correct position.

Fig. 30 shows how the gauge is arranged for checking the face. If this is not at right angles to the crankshaft within a total gauge reading of 0.08 mm (0.003"), check to see whether this is due to dirt between the housing and cylinder block.

DIAL-INDICATING THE FLYWHEEL

A dial indicator gauge, which is attached by means of magnetic attachment, is used for checking the flywheel. On B 16 engines the magnetic attachment can be fixed to the sump, whereas on B 18 engines it is placed on the cylinder block, since with these engines the flywheel housing is removed. The gauge is fitted so that the measuring point is on the outer edge of the face, and the gauge set to 0. The crankshaft is rotated and the reading noted.

Maximum permissible warp is 0.20 mm (0.008").

Fitting

Lubricate the pilot bearing in the flywheel with ball bearing grease if this has not been done previously. Before fitting, check that the clutch

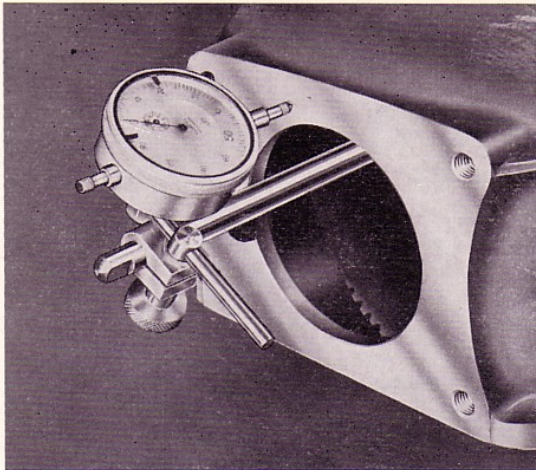


Fig. 30. Dial-indicating the flywheel housing

facings, flywheel and pressure plate are completely free from oil. Wash them with clean petrol (gasoline) and wipe off well with a clean piece of cloth.

120 WITH B 16 ENGINE

1. Turn the flywheel so that the paint marking or the mark made when removing becomes visible, see Fig. 9.
2. Set up the clutch plate (the longest side on the hub facing backwards) together with the clutch and insert the centering mandrel SVO 2484 so that the guide journal on this enters the pilot bearing in the flywheel.
3. Turn the clutch so that the mark on this coincides with the mark on the flywheel.
4. Fit the six bolts securing the clutch and tighten them crosswise a couple of turns at a time. Remove the centering mandrel.
5. Fit the clutch release fork by inserting it into the flywheel housing back to front and then turning it half a turn (Fig. 8) and secure the ball joint with a bolt.
6. Fit the clutch release bearing.
7. Fit the control cylinder and the return spring.
8. Fit the gearbox in accordance with the instructions given in Group 43.
9. Bolt on the sheet metal cover under the flywheel.

120 WITH B 18 ENGINE, 1800

1. Set up the clutch plate (23, Illustration A) (the longest side of the hub facing backwards) together with the clutch and insert the centering

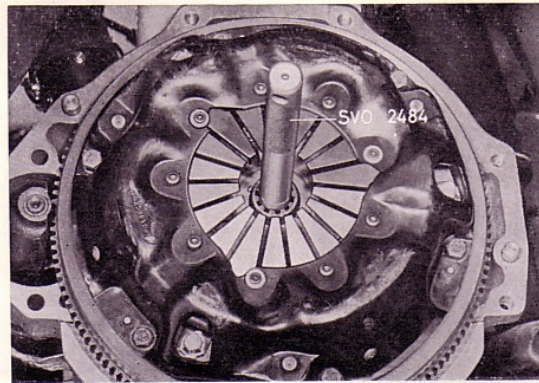


Fig. 31. Fitting the clutch

- mandrel SVO 2484 so that the guide journal on this enters the pilot bearing in the flywheel.
2. Fit the six bolts which retain the clutch and tighten them crosswise a couple of turns at a time. Remove the centering mandrel.
3. Fit the clutch release fork (33) into the flywheel housing and secure the ball joint with the bolt.
4. Fit the flywheel housing and release bearing (25).
5. Fit the control cylinder (41) and hook on the return spring.
6. Fit the gearbox in accordance with the instructions in Group 43.
7. Bolt the plate onto the lower front of the flywheel housing.

120 WITH B 20 ENGINE, 140

1. Set up the clutch plate (the longest side of the hub facing backwards) together with the clutch and insert the centering mandrel SVO 2484 so that the guide on this enters the pilot bearing in the flywheel, see Fig. 31.
2. Fit the six bolts which retain the clutch and tighten them crosswise a couple of turns at a time. Remove the centering mandrel.
3. Fit the clutch release fork into the flywheel housing.
4. Fit the upper bolt for the starter motor in the housing. Then fit the housing. The bolts are fitted in the following order: First the four upper (7/16"), then the lower bolt for the starter motor and finally the two lower bolts (3/8"). The nut for the starter motor upper bolt is fitted after installing the clutch cable.
5. Slide the clutch sleeve into the bracket and fit the rear nut. Hook the cable securely in the release bearing fork. Fit the release bearing.

6. Fit and tighten the nut for the starter motor upper bolt.
7. Fit the gearbox in accordance with the instructions given in Group 43.
8. Adjust the clutch pedal play.

CLUTCH CONTROLS 120, 1800, early prod.

Master cylinder REMOVING

Disconnect the pipe (10) from the master cylinder (9). Remove the bolt through the pedal. Unscrew the bolts and lift off the cylinder.

DISMANTLING

1. Remove the cap and empty out the brake fluid.
2. Take off the rubber cover (16) and remove the circlip (15). Take out the plunger (12) and the other parts from the cylinder.
3. Remove the retainer (3) for the check valve (8) from the plunger and separate the parts.

INSPECTING

Wash all the parts in clean spirit and then check them for wear and other damage.

The cylinder must be carefully examined internally. There must be no scoring or scratches on the polished surface. Soft scratches may be removed with very fine emery cloth.

Examine the plunger seals for cracks or scoring on the edges. Also check that they are not swollen up due to incorrect brake fluid or similar. The seals must be replaced if there is the slightest sign of any defect.

ASSEMBLING

Note that there are two types of plungers, seals and spring. The new type has only one plunger seal. In reconditioning the old type of cylinder, the following instructions must be observed.

- a. When changing the plunger, make sure that the plunger is fitted with the **new type** of seal and spring.
- b. Otherwise, where reconditioning work involving

the re-use of the plunger is concerned, the outer seal must **always** be removed and the new type of seal spring must **always** be fitted. Otherwise, follow the instructions given below:

1. Place the seal (11) on the plunger (12). Fit the check valve (8), retainers (3, 7), spring (5) and plunger (12).
2. Dip the plunger and check valve in brake fluid and fit them in the cylinder. Fit the thrust washer (17), washer (14) and circlip (15). Place on the rubber cover (16).

INSTALLING

Installing is in reverse order to removing. Fill up with brake fluid and bleed the system.

Control cylinder

REMOVING

Disconnect the pipe (10) from the hose (40). Remove the hose from the retainer. Unhook the return spring (34). Unscrew the bolts and lift off the control cylinder.

DISMANTLING

Remove the rubber dust cover (38) and the thrust rod (37). Remove the circlip (39) and take out the plunger (45) and spring (42).

INSPECTING

See the appropriate parts under "Inspecting the master cylinder".

ASSEMBLING

Dip the plunger (45) and seal (44) in brake fluid and fit the seal on the plunger. Fit the spring (42) and plunger in the cylinder (41). Fit the circlip (39), the thrust rod (37) and the rubber dust cover (38).

INSTALLING

Installing is in reverse order to removing. Bleed the system and adjust the clutch release fork travel.

Bleeding the hydraulic system

Check that the container is filled with brake fluid.

120, 140, 1800

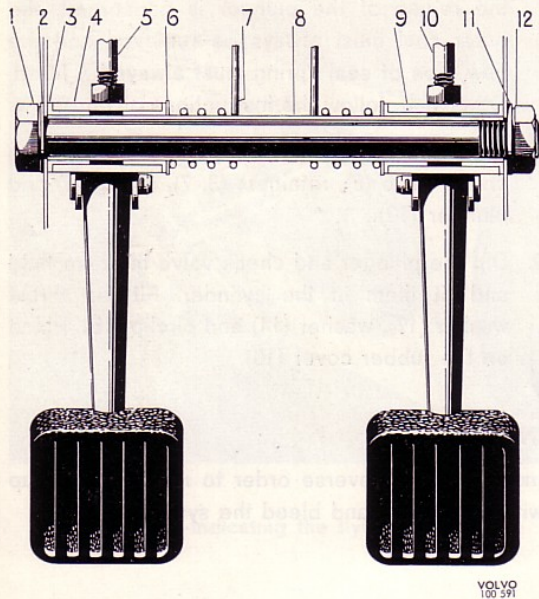


Fig. 32. Pedal carrier, 120, 1800, type II

- | | |
|-----------------|-----------------|
| 1. Bolt | 7. Spring |
| 2. Washer | 8. Pedal shaft |
| 3. Nylon bush | 9. Brake pedal |
| 4. Clutch pedal | 10. Thrust rod |
| 5. Thrust rod | 11. Lock washer |
| 6. Washer | 12. Nut |

Remove the rubber cap on the bleeder valve (43) on the control cylinder (41). Fix a bleeder hose to the nipple and immerse the other end of the hose in a container filled with brake fluid. Open the bleeder nipple and depress the clutch pedal. Close the bleeder nipple while the clutch is fully depressed. Then release the pedal. Repeat this procedure until brake fluid free from air bubbles runs out. Fill the container with brake fluid up to the level mark (fluid level). Only brake fluid which satisfies the requirements of SAE 70 R 3 should be used.

Reconditioning the pedal shaft

1. Remove the split pins and bolts in the pedals. Unhook the return springs. On late prod. type, slacken the bolt and nut for the pedal shaft (8, Fig. 32), type I has two bolts. Remove the pedals (4, 9) and shaft.
2. Tap out the bushes (3) with a suitable drift. Press in the new bushes.
3. Check the pedal shaft for wear. If excessively worn, the shaft should be changed.
4. Lubricate the bushes in the pedal with a thin coating of ball bearing grease. Fit the spring

4-14

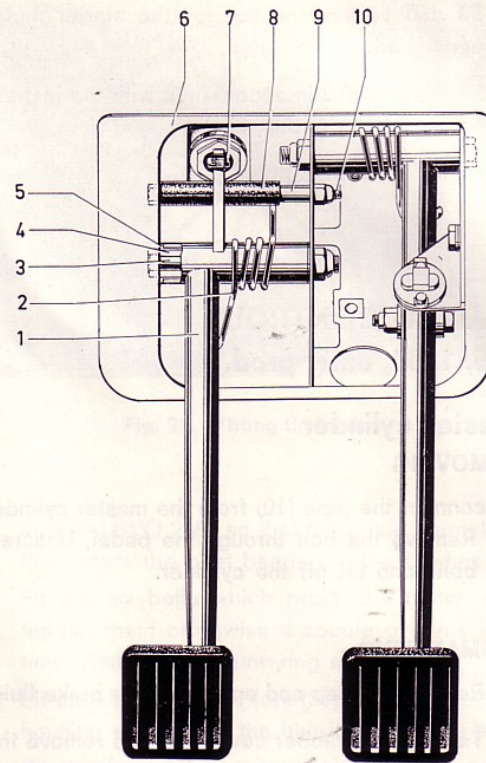


Fig. 33. Pedal carrier, 120, 1800, type III

- | | |
|------------------|------------------|
| 1. Clutch pedal | 6. Pedal cover |
| 2. Return spring | 7. Clutch cable |
| 3. Bolt | 8. Rubber sleeve |
| 4. Tubular shaft | 9. Pedal stop |
| 5. Bush | 10. Bolt |

and pedals on the pedal shaft and set them up in position. Fit on the bolt and nut for the pedal shaft. Place in the pedal bolts and hook on the return springs.

120, 1800 late prod., 140

REPLACING THE CLUTCH CABLE

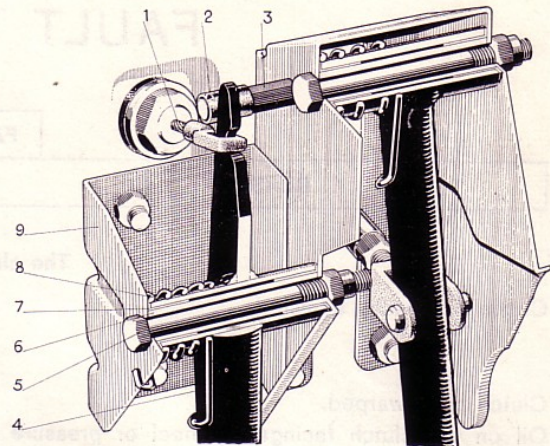
1. Unhook the return spring for the clutch release fork. Slacken the rear nut and possibly the front nut a couple of turns. Remove the cable from the release fork.
2. Slacken the clamp holding the cable to the reinforcing member of the wheel housing.
3. Remove the panel under the dashboard (140). Remove the bearing bolt for the pedal. Disconnect the cable from the pedal. Remove the bracket for the pedal stop (early prod.). Unscrew the nut for the cable sleeve. Remove the cable.

4. Fit the new cable in reverse order to removing. Adjust the pedal travel (140 early prod., see Fig. 7) and play.

REPLACING THE CLUTCH PEDAL OR BUSHES

The description given below applies where applicable depending upon whether the pedal or the bushes are to be replaced.

1. Unhook the return spring for the pedal. Slacken the nut and remove the bolt. Unhook the pedal from the cable and remove it.
2. Take out the tubular shaft. Drive out the bushes with a suitable drift.
3. Fit the new bushes. Lubricate them with grease. Re-fit the tubular shaft.
4. Place the return spring on the pedal bearing sleeve. Move the pedal up into position and hook it onto the cable. Fit the bolt which secures the pedal.
5. Hook on the return spring. Check and adjust if necessary the pedal play.



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Fig. 34. Pedal carrier, 140 late prod.

- | | |
|------------------|------------------|
| 1. Clutch cable | 6. Tubular shaft |
| 2. Rubber sleeve | 7. Bush |
| 3. Pedal stop | 8. Return spring |
| 4. Clutch pedal | 9. Bracket |
| 5. Bolt | |

FAULT TRACING

FAULT	
REASON	REMEDY

The clutch grabs

Clutch incorrectly adjusted.

Clutch plate warped.

Oil on the clutch facings, flywheel or pressure plate.

Clutch facings glazed on the surface.

Clutch plate binds on the clutch shaft.

Surface on pressure plate or flywheel scored, cracked or burnt.

Engine loose in mountings.

Follow the instructions under "Adjusting the clutch levers" and "Adjusting the clutch release fork travel and clutch pedal play".

Fit a new clutch plate.

Replace the facings. Clean the flywheel and pressure plate with clean petrol (gasoline).

Fit new clutch facings.

Clean and lubricate hub and shaft sparingly. File off any burr. (Replace the input shaft if necessary.)

Replace the pressure plate or flywheel. (Surfaces which are blued or only slightly scratched can be ground.)

Secure the engine. Replace damaged mountings.

The clutch slips

Clutch incorrectly adjusted.

Clutch facings worn out.

Clutch springs too weak or broken.

Follow the instructions under "Adjusting the clutch release fork travel and clutch pedal play".

Fit new facings.

Check all springs.

Replace faulty springs with new ones.

The clutch does not disengage

Clutch incorrectly adjusted.

Pressure plate cracked or warped.

Clutch plate warped.

Follow the instructions under "Adjusting the clutch release fork travel and clutch pedal play".

Replace the pressure plate.

Fit new clutch plate.

Noise in clutch

Springs in the clutch plate hub broken or loose.

Clutch release bearing dry or worn.

Bearing in flywheel worn or not lubricated.

Broken clutch springs.

Replace the clutch plate and facings.

Replace the bearing.

Replace or lubricate the bearing.

Replace the springs with new ones.

- 1 Pedal shaft
- 2 Spring
- 3 Retainer
- 4 Cap
- 5 Spring
- 6 Thrust rod
- 7 Retainer
- 8 Check valve
- 9 Master cylinder
- 10 Pipe
- 11 Plunger seal
- 12 Plunger
- 13 Plunger seal (early prod.)
- 14 Washer
- 15 Circlip
- 16 Rubber dust cover
- 17 Thrust rod
- 18 Clutch pedal
- 19 Return spring (early prod.)
- 20 Flywheel
- 21 Clutch cover casing
- 22 Pressure plate
- 23 Clutch plate
- 24 Clutch spring
- 25 Clutch release bearing
- 26 Input shaft
- 27 Cover
- 28 Spring
- 29 Pin
- 30 Lip
- 31 Clutch lever
- 32 Eyebolt
- 33 Clutch release fork
- 34 Return spring
- 35 Locknut
- 36 Adjusting nut
- 37 Thrust rod
- 38 Rubber dust cover (early prod.)
- 39 Circlip
- 40 Hose
- 41 Control cylinder
- 42 Spring
- 43 Bleeder nipple
- 44 Plunger seal
- 45 Plunger
- 46 Flywheel housing
- 47 Circlip
- 48 Pilot bearing in flywheel
- 49 Crankshaft

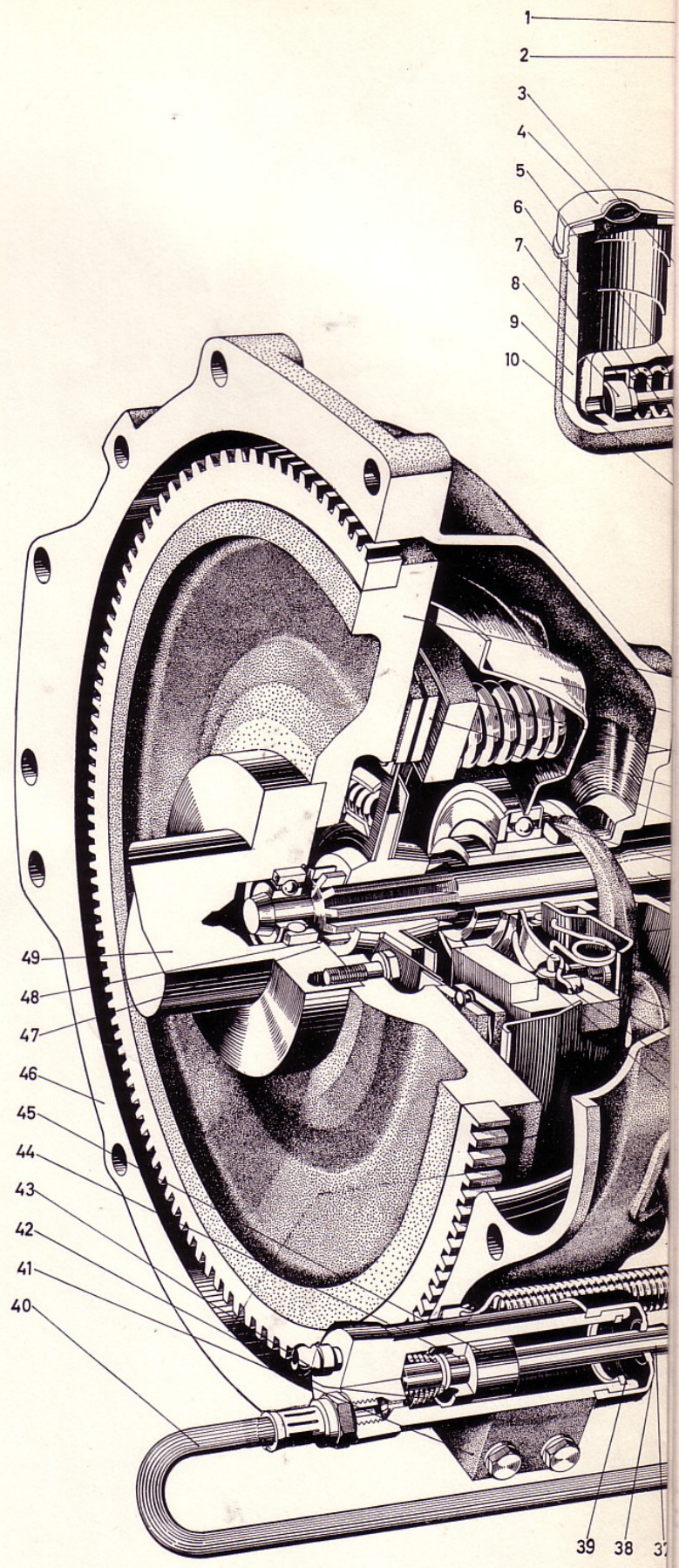
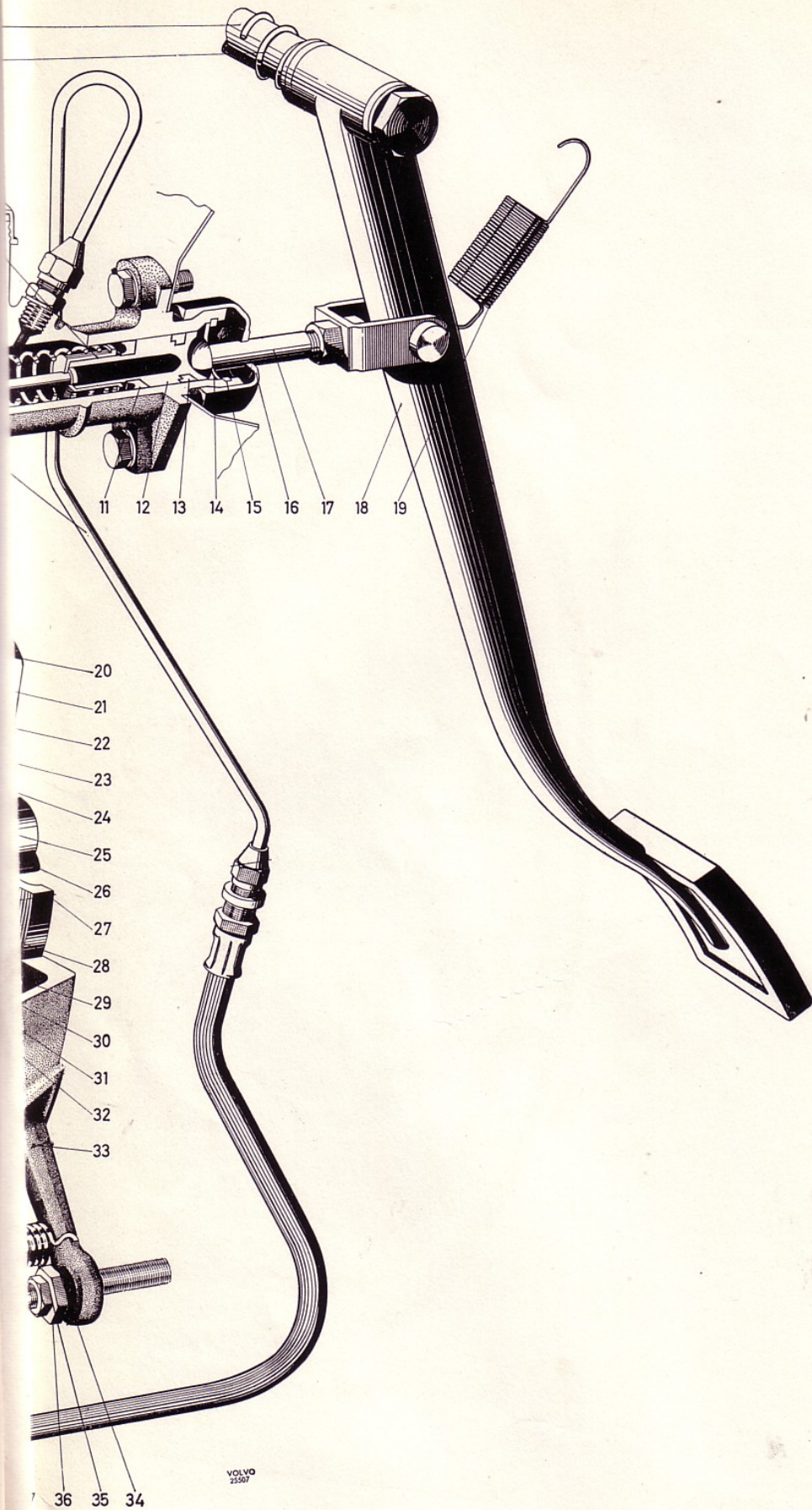


Illustration A. Clutch



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and clutch controls, early prod. 120, 1800

- 1 Clutch pedal
- 2 Return spring
- 3 Bolt
- 4 Pedal casing
- 5 Pedal stop
- 6 Rubber sleeve
- 7 Nut
- 8 Rubber bush
- 9 Washer
- 10 Clutch cable
- 11 Clutch cover casing
- 12 Clutch plate
- 13 Flywheel housing
- 14 Crankshaft
- 15 Pilot bearing in crankshaft
- 16 Circlip
- 17 Flywheel
- 18 Adjusting nuts
- 19 Release fork
- 20 Return spring
- 21 Dust cover
- 22 Release bearing
- 23 Thrust spring
- 24 Plate shaft (input shaft, gearbox)
- 25 Cover, gearbox
- 26 Support rings
- 27 Thrust plate
- 28 Retainer

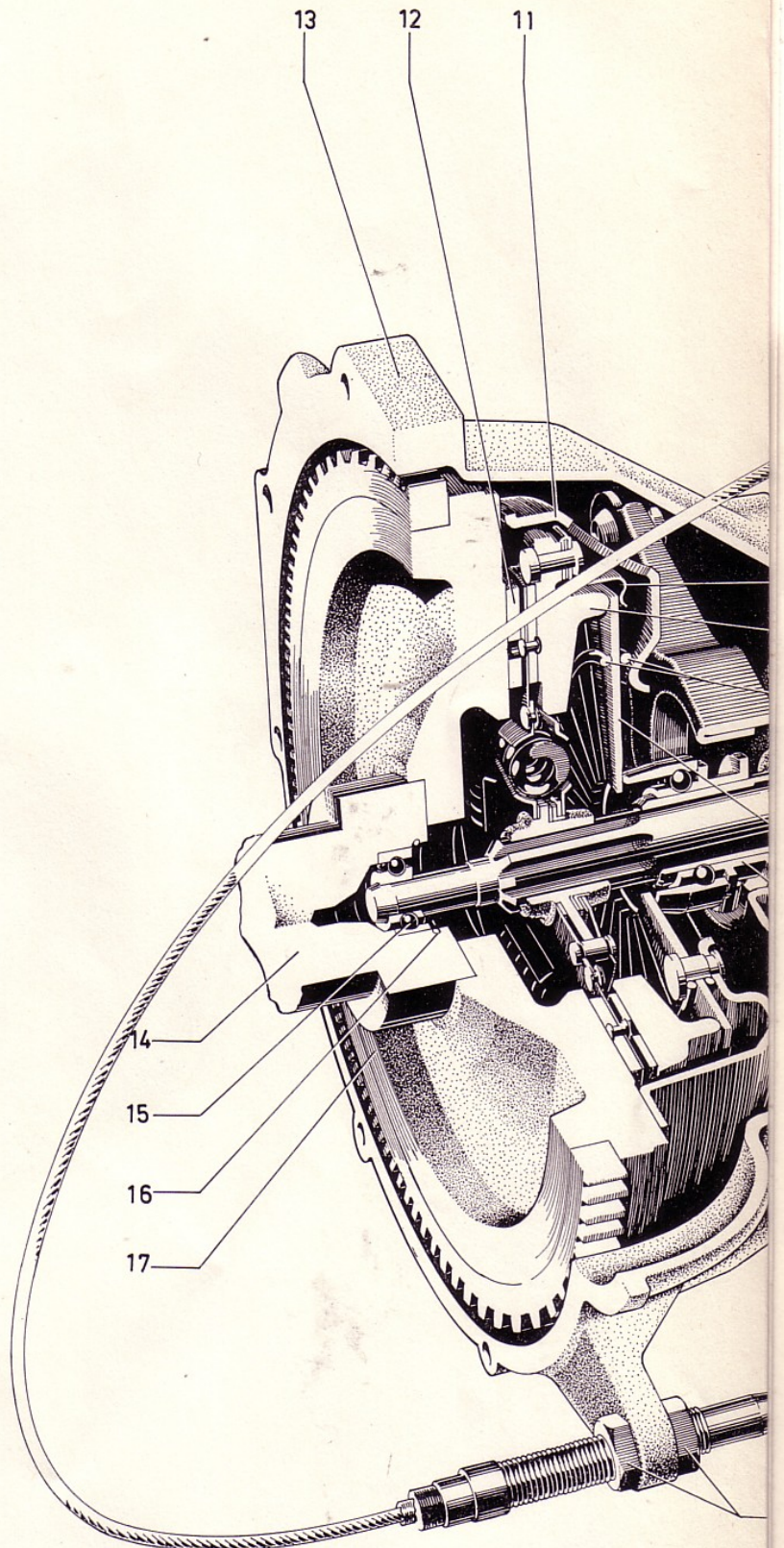
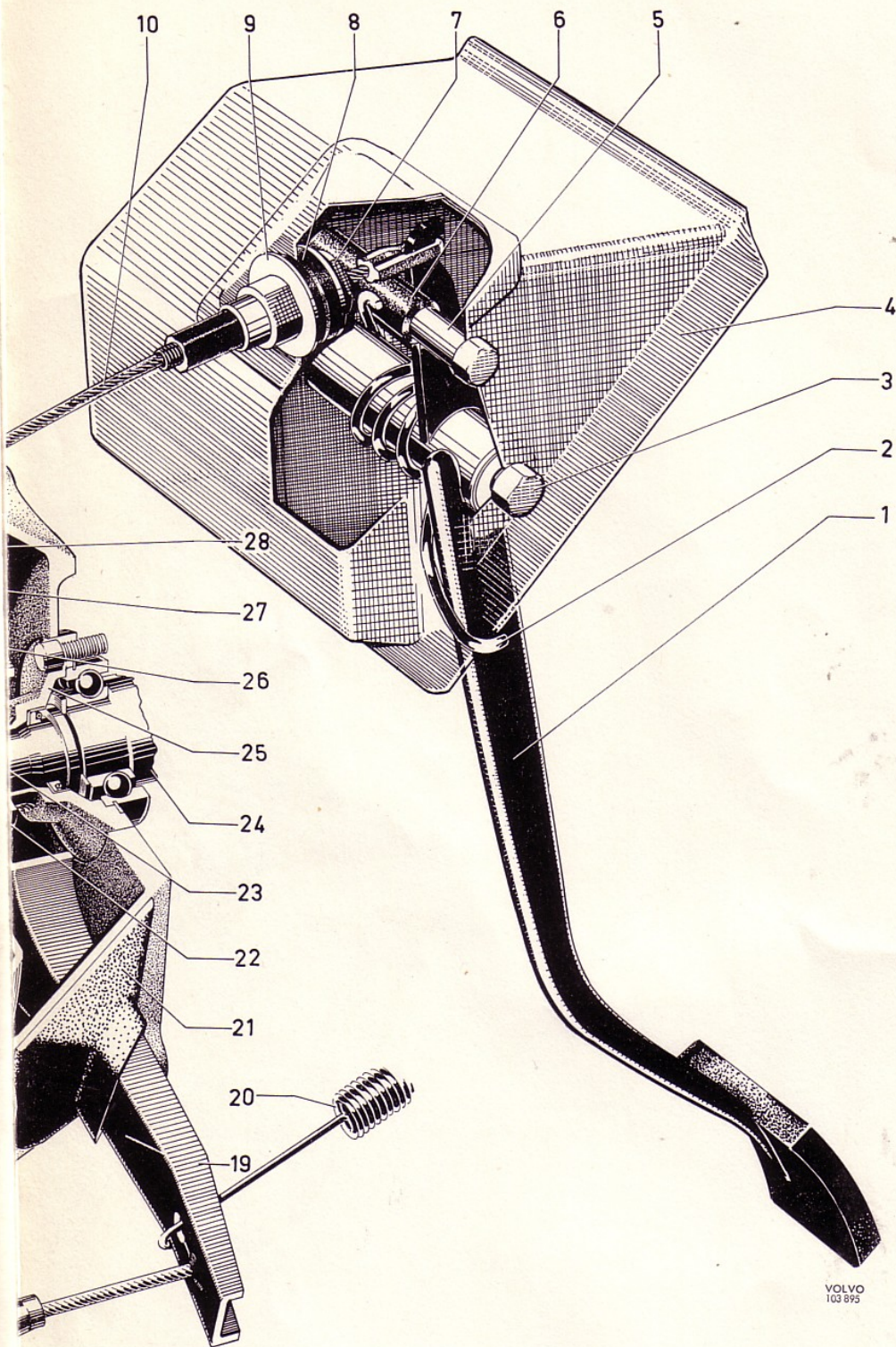


Illustration B. C



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Clutch and clutch controls, 120, 1800 late prod.

- 1 Flywheel housing
- 2 Clutch casing cover
- 3 Clutch plate
- 4 Flywheel
- 5 Crankcase
- 6 Pilot bearing in crankshaft
- 7 Circlip
- 8 Adjusting nuts
- 9 Return spring
- 10 Release fork
- 11 Dust cover
- 12 Release bearing
- 13 Plate shaft (input shaft, gearbox)
- 14 Cover, gearbox
- 15 Support rings
- 16 Thrust spring
- 17 Thrust plate
- 18 Retainer
- 19 Release cable
- 20 Washer
- 21 Rubber bush
- 22 Washer
- 23 Nut
- 24 Pedal stop
- 25 Rubber sleeve
- 26 Bracket
- 27 Bolt
- 28 Return spring
- 29 Clutch pedal

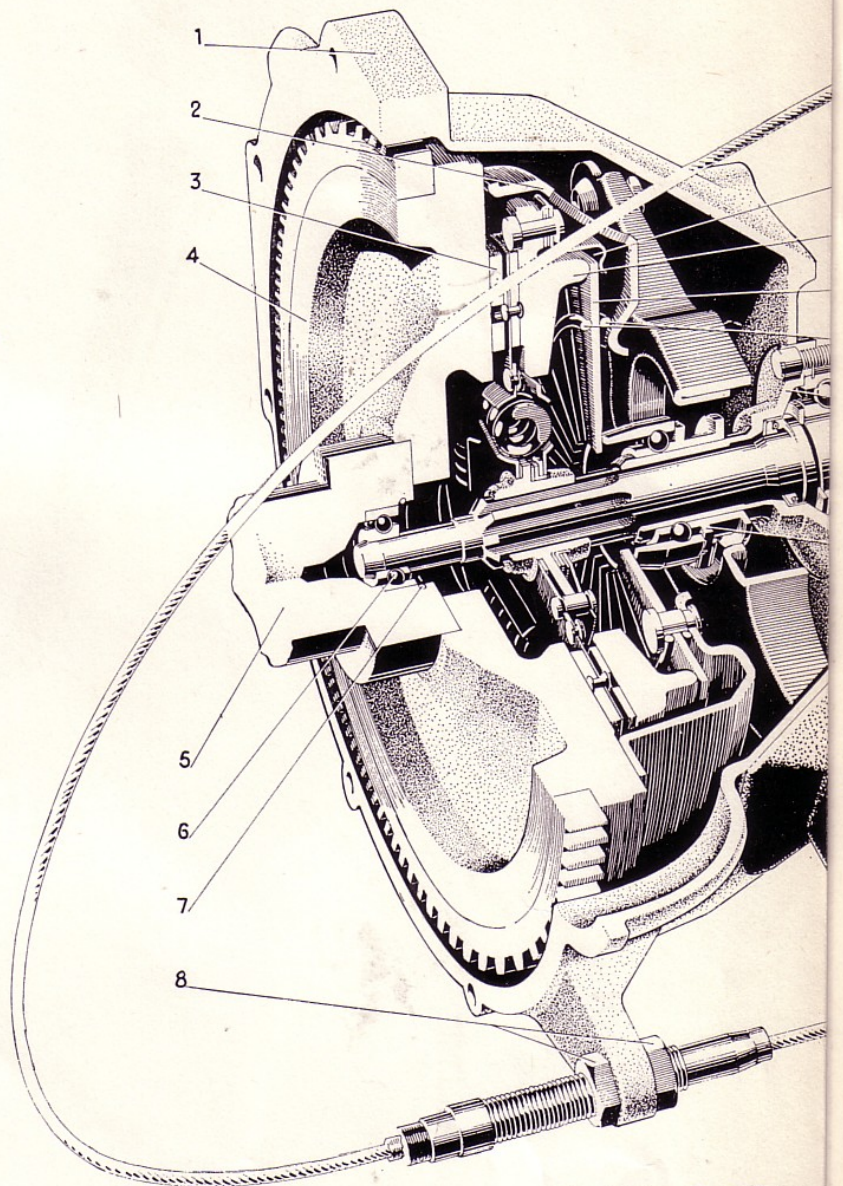
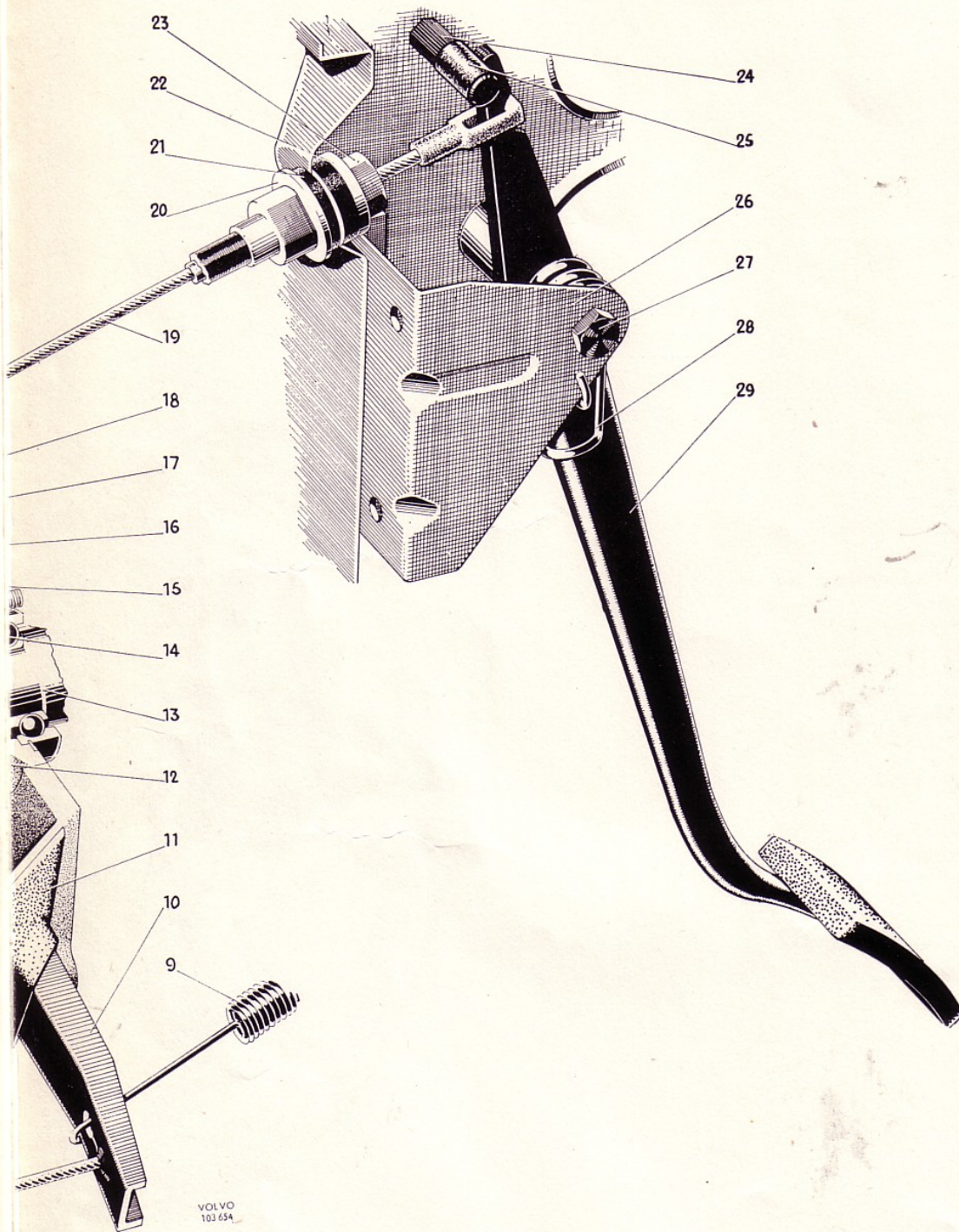


Illustration C. Clutch a



and clutch controls, late prod. 140

References to workshop bulletins

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