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I. DESCRIPTION

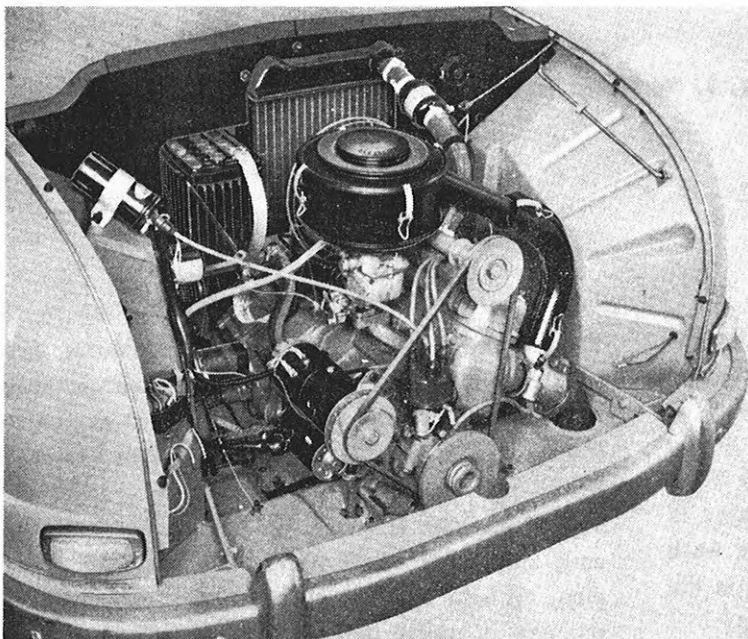
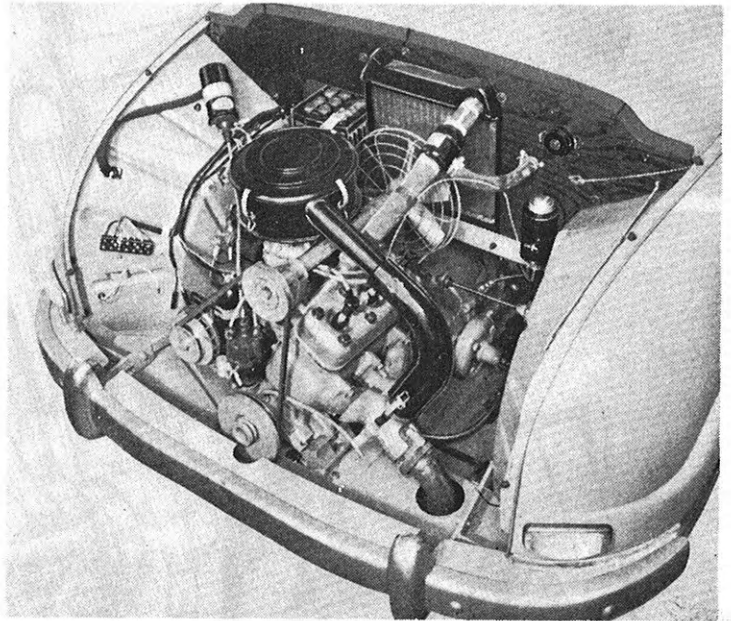


Fig. 1. Engine in the car

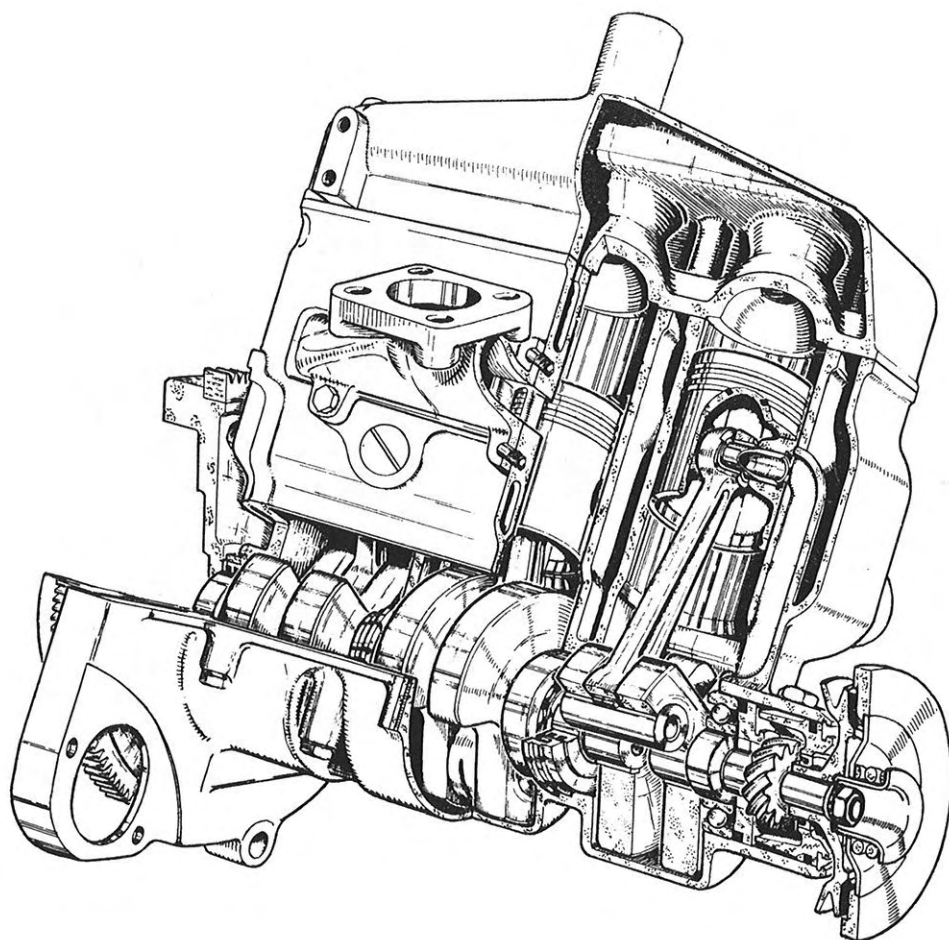


Fig. 2. Sectioned engine

1.1. General

The Saab 93 is powered by a three-cylinder two-cycle engine with crankcase scavenging. The engine uses a single carburetor and has piston-operated ports with cylinder scavenging according to the Schnürle principle. It is liquid cooled and fitted with coolant pump and cooling fan. Lubrication is achieved by adding 4 % of oil to the gasoline when refueling. Fig. 1 shows the engine mounted in the car.

As can be seen from the diagrams, Fig. 3, the engine develops a max. output of 33 b.h.p. at 4200 r.p.m. according to the DIN standard, or 38 b.h.p. at 5000 r.p.m. SAE.

1.2. Construction of the engine

The engine, transmission and differential are built-up into a unit which is suspended on three rubber cushions in the car. A sectioned engine is shown in Fig. 2, and Fig. 22 shows an exploded view of the engine.

The crankshaft is an extremely sturdy fabricated unit, built-up from six crank discs and seven crank pins, all held together by press fit. This permits the use of single ball bearings and double roller bearings for main and connecting rod bearings respectively. The crankshaft is carried in four main bearings and is fitted with a torsional vibration damper.

Seals of piston ring type are used between the three crankcase compartments and in the flywheel end of the crankcase. Each seal consists of two piston rings and operates in principle as a labyrinth seal. The crankcase seal at the front end consists of rubber seals on the two covers forming the distributor gear case, see Fig. 7.

It is of the utmost importance that the crankshaft is correctly built-up, and thus it should always be returned to the makers for reconditioning.

The connecting rods are drop forged and hardened. The piston pin is carried in a needle bearing in the piston end of the rod, and the crank end is designed so that its internally ground surface forms an outer race for the connecting rod bearing.

The pistons are made of light alloy and are fitted with three rings.

The cylinder block and the lower crankcase half are cast in special alloy and machined in pairs. In order to keep these parts together a crankcase number is stamped on both sides of the joint plane on the rear, right-hand side of the engine.

The cylinder head, combined with the water jacket neck, is made of light alloy.

The cooling fan is driven by a V-belt from a pulley on the crankshaft. The fan shaft with belt pulley and fan is carried in a bearing stand which is screwed to the cylinder block. Also generator and coolant pump are driven by the V-belt.

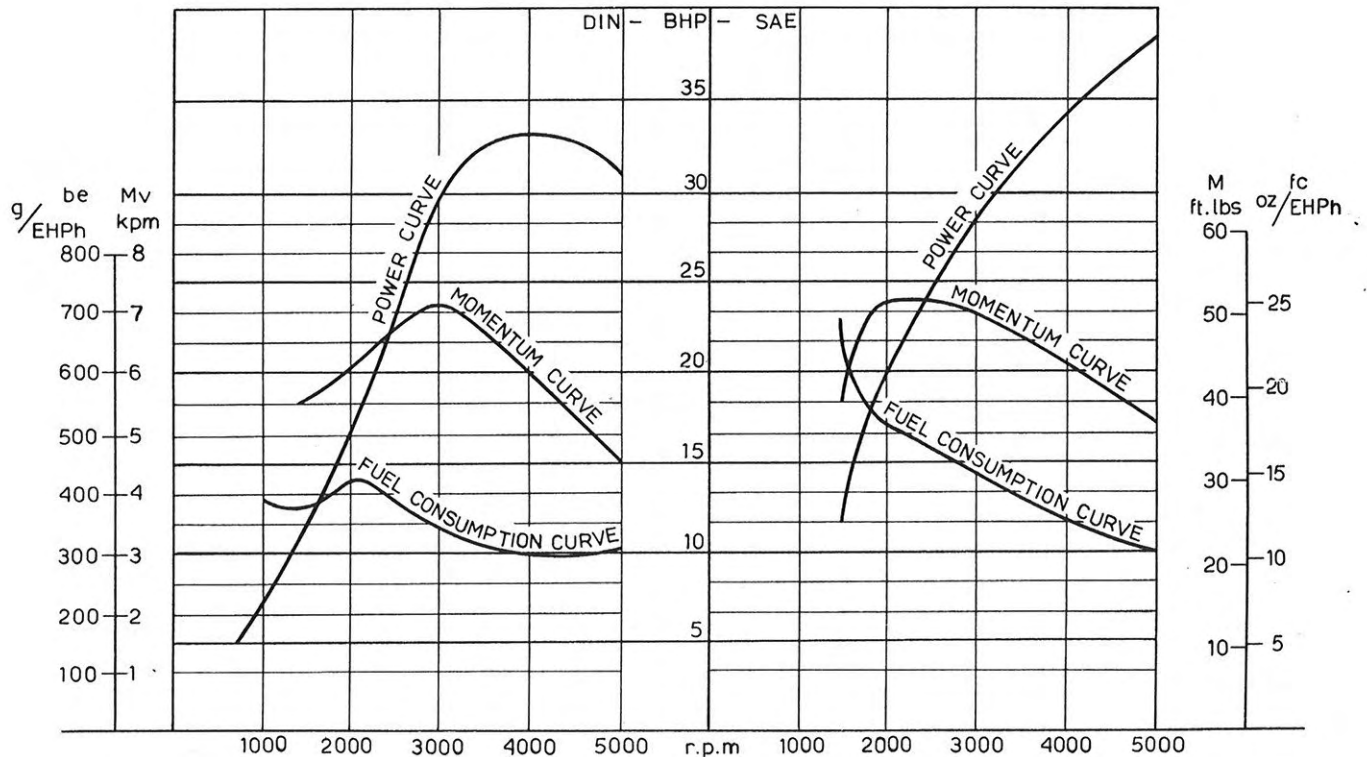


Fig. 3. Power diagrams

2. TECHNICAL DATA

2.1. General data

Type	two-cycle
Number of cylinders	3
B.h.p. SAE (at 5000 r.p.m.)	38
B.h.p. DIN (at 4200 r.p.m.)	33
Cylinder volume	c.c. 748 (cu. in. 45.6)
Bore	mm 66 (in. 2.6)
Stroke	mm 73 (in. 2.9)
Compression ratio, nominal	7.3
Max. torque SAE (at abt. 2000 r.p.m.)	kgm 7.2 (lb.-ft. 52)
Max. torque DIN (at abt. 3000 r.p.m.)	kgm 7.0 (lb.-ft. 50)

2.2. Dimensions and tolerances in mm

Cylinder bore, standard:

Class A	65.980-65.995
Class B	65.995-66.010
Class C	66.030-66.045

Cylinder bore, oversizes:

1st	66.250-66.265
2nd	66.500-66.515

Piston diameter, standard. Lower skirt, 90° to piston pin:

Class A	65.92-65.93
Class B	65.94-65.95
Class C	65.97-65.98

Piston diameter, oversizes:

1st	66.125-66.205
2nd	66.435-66.455

Piston clearance, lower part of skirt, 90° to piston pin	mm 0.045-0.070 0.0018-0.0028 in
Piston pin diameter	mm 18 0.72 in
Number of piston rings	3
Piston ring width	mm 2.5 0.1 in
Piston ring gap	mm 0.25-0.40 0.010-0.016 in
Piston ring clearance in groove	mm 0.060-0.087 0.0024-0.0035 in
Connecting-rod lateral clearance	mm 0.08-0.12 0.0032-0.0048 in
Crankshaft lateral throw max.	mm 0.03 0.0012 in
Max. permissible clearance between piston and cylinder approx.	mm 0.15 0.006 in
Compression pressure, new engine	kg/sq. cm 7.3±0.5 104±7 lbs/sq. in

The compression test is made at an engine temperature of about 80°C (175°F) with throttle fully open and full starter r. p. m.

2.3. Engine electric system

Spark plugs

Type:

Normal driving

Bosch M 175 T 1
Champion 5 MJ

Hard driving

Bosch M 225 T 1
or equivalent

Thread

mm 18

Electrode gap

mm 0.7
0.028 in

Distributor:

Point gap

mm 0.3-0.4
0.012-0.016 in

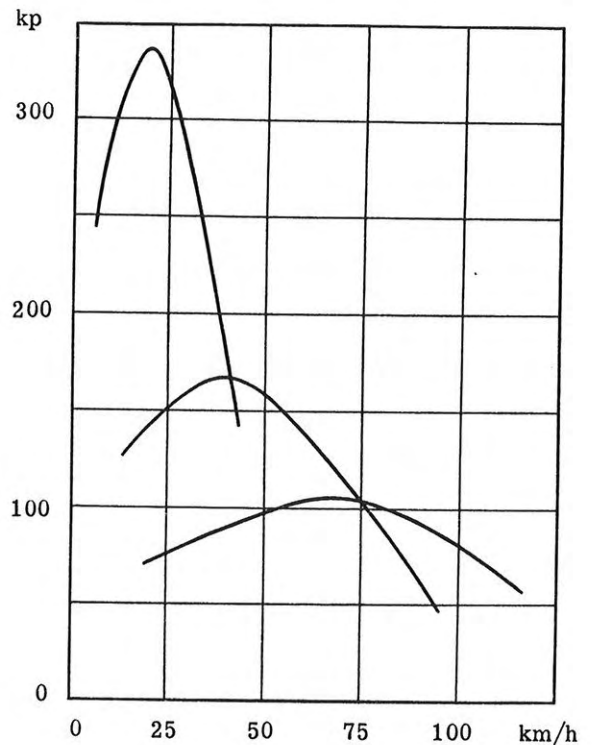
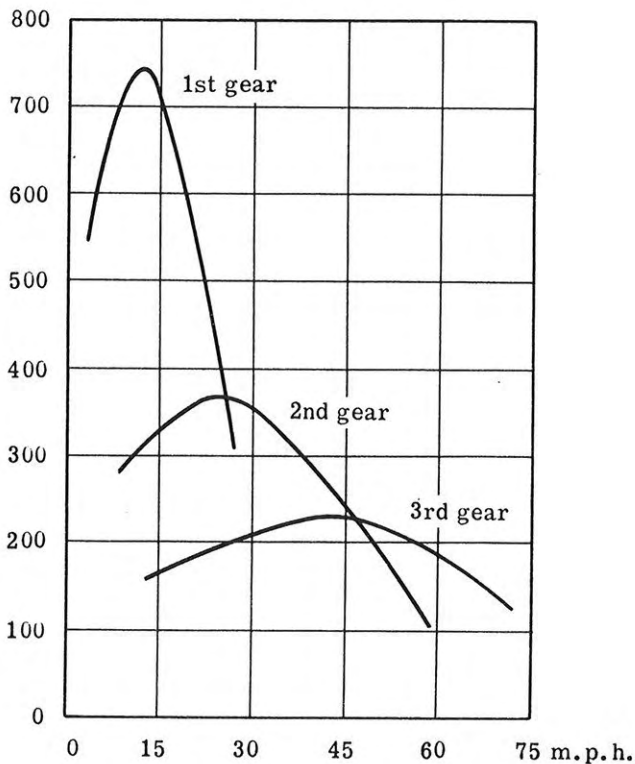
Ignition, basic timing

8° before T. D. C.

See also Chapter 12, "Electric system and instruments".

TRACTION DIAGRAM

lbs



3. WORK ON THE CAR

A considerable amount of adjustment and repair work on the engine can be done without removing the engine from the car. The engine is sufficiently accessible for simple inspection and adjustment if the engine hood is opened. For more extensive work it may be necessary to remove the engine hood.

3.1. Cylinder head

3.1.1. Removal

1. Drain off coolant.
2. Remove intake muffler with filter and preheater.
3. Loosen generator attachment and adjusting screws, then lift off V-belt.
4. Remove fan shaft stand from cylinder head.
5. Disconnect cooling water hose from the neck on the cylinder head.

6. Disconnect cables from spark plugs.
7. Screw out thermometer bulb.
8. Screw out spark plugs.
9. Loosen the eight cylinder head screws and remove cylinder head, bending the stay for the engine side support to one side.
10. Remove cylinder head gasket.
11. Cover cylinder bores with a clean rag.

3.1.2. Installation

1. Clean the mating surfaces of block and head, then coat with sealing compound, "Permatex 3", and fit a new cylinder head gasket.

NOTE. Never use an old gasket.

2. Fit the engine stay. Screw down the cylinder head. Tighten the screws in stages, following the sequence shown in Fig. 4. A torque wrench should be used for the final tightening. Torque = 6.5 kgm (47 lb.-ft.).

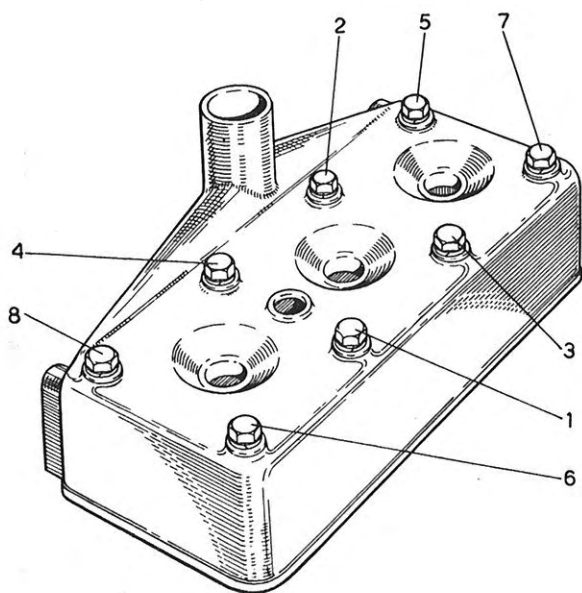
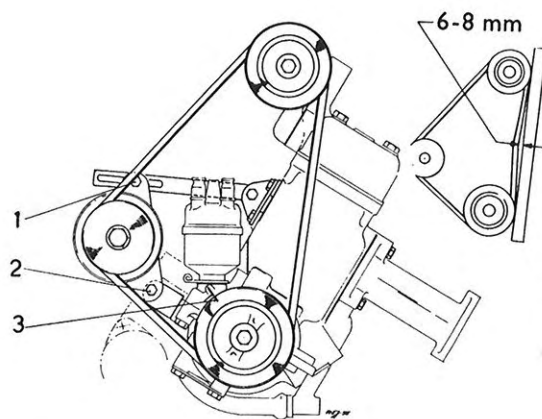


Fig. 4. Sequence for tightening cylinder head bolts

3. Screw in the spark plugs.
4. Fit the thermometer bulb.
5. Connect ignition cables to spark plugs.
6. Screw fan shaft stand onto cylinder head.
7. Fit V-belt, adjust its tension, see Fig. 5, and tighten the generator screws.
8. Connect cooling water hose to cylinder head.
9. Fill cooling system.
10. Fit intake muffler with filter and preheater.
11. Start and warm up the engine. Let it cool down and re-tighten cylinder head bolts with a torque wrench. Torque = 6.5 kgm (47 lb.-ft.).



1. Adjusting screw
2. Generator attachment screws
3. Marks for ignition timing

Fig. 5. Adjustment of V-belt tension

3.2. Fan shaft bearing stand

3.2.1. Removal and dismantling

The fan shaft bearing stand is shown exploded in Fig. 6.

1. Remove intake muffler with filter and preheater.
2. Loosen generator adjusting and fixing screws, then lift off V-belt.
3. Remove fan shaft stand from cylinder head.
4. Loosen nuts at fan and belt pulley.
5. Pull off pulley and fan and remove woodruff keys.

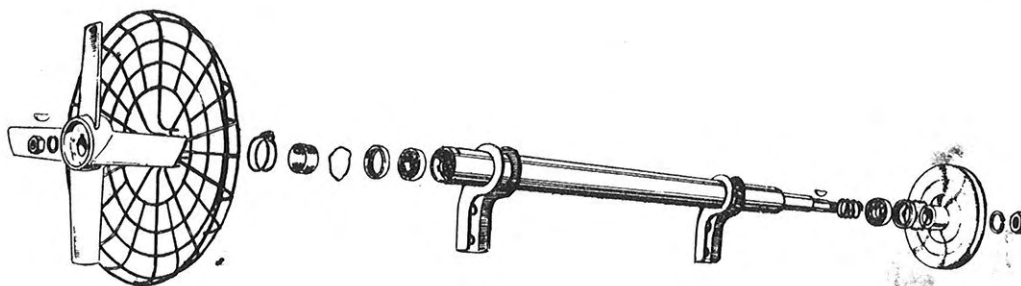


Fig. 6. Fan shaft bearing stand

6. Remove the lock rings in both ends of the tube.
7. Drive the shaft out of the tube towards the pulley end.
8. Remove seal ring, ball bearing and spring from shaft.
9. Remove seal ring and ball bearing from the tube.

3.2.2. Assembly and installation

Before assembling the fan shaft stand, clean and inspect all parts. Replace defective parts.

1. Insert a generous amount of grease into the spaces inside the ball bearings, and pack the ball bearings with grease. See Lubrication table in Chapter 15.
2. Press appropriate ball bearing onto the pulley end of shaft.
3. Place spring on shaft.
4. Insert shaft with ball bearing and spring into the tube.
5. Place seal ring outside ball bearing and secure it with the lock ring.
6. Press the other ball bearing onto the shaft and insert seal and lock rings.
7. Fit woodruff keys and press on pulley and fan, tightening them down with the nuts. Don't forget the spring washers under the nuts.
8. Screw fan shaft stand onto cylinder head.
9. Fit V-belt and tighten it by means of the generator, then tighten generator attachment screws, see Fig. 5.
10. Fit intake muffler with filter and preheater.

3.3. Seals of distributor gear case

The distributor gear case is an extension at the front end of the crankcase. It is a completely enclosed space, bounded by double seal rings at the rear, towards the crankcase, and a single seal ring at the front towards the pulley, see Fig. 7.

3.3.1. Removal

1. Remove engine hood after disconnecting electric cables and hood stoppers.
2. Remove the guard plate behind the bumper.
3. Loosen generator screws and remove V-belt.

4. Loosen nut on crankshaft which holds vibration damper.
5. Remove spring and vibration damper.
6. Remove pulley. Use puller 93-105 if necessary.
7. Remove the retainer in front of the distributor gear case cover and collect spacers, if fitted.
8. Remove outer cover with seal ring and O-ring. Use pulley 93-104 if necessary, see Fig. 8.
9. Loosen clamp screw under distributor, then lift up distributor and put it in a suitable place in the engine compartment.
10. Remove distributor pinion from crankshaft, using puller 93-102.
11. Remove inner cover with seal rings. Use pulley 93-103. Collect the O-ring inside the cover.
12. Clean all parts and pay special attention to seals and O-rings, which must be replaced if faulty.

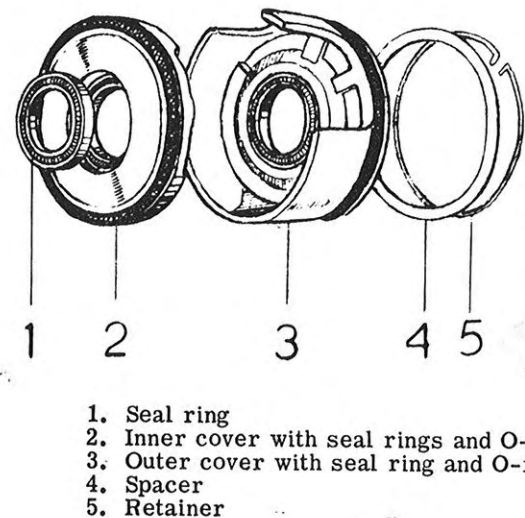


Fig. 7. Seals of distributor gear case

3.3.2. Installation

1. After replacing defective parts with new ones, grease the parts and place assembly tool 93-106 on the shaft with the thick end of the tool inwards. Then fit inner cover with seal rings and O-ring. If the assembly tool is not used for this operation there is great danger of damaging the seal rings. For installation of outer cover, see Fig. 17.

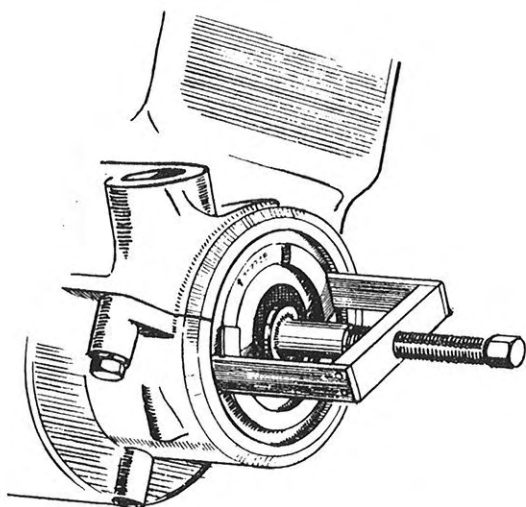


Fig. 8. Removal of outer cover from distributor gear case by means of tool Saab 93-104

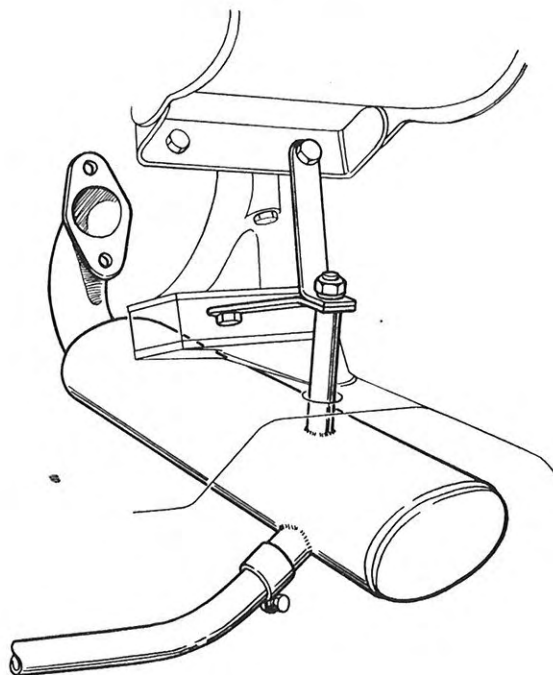


Fig. 9. Muffler suspension

2. Remove the assembly tool.
3. Press distributor gear pinion onto shaft with the bevelled side inwards. Don't forget to fit the woodruff key first.
4. Fit outer cover with seal ring and O-ring, see Fig. 17.
5. Screw tool 93-107 onto shaft and press in outer cover.
6. Insert spacers between retainer groove and cover.
7. Fit the retainer. Make sure that the retainer is properly seated into its groove.
8. Loosen the tool 1/4 turn and check that the spacers stop against the retainer. If not, retainer must be removed and thicker spacers fitted.
9. Remove tool from shaft.
10. Press on belt pulley.
11. Fit vibration damper. Don't forget the spring washer under the nut.
12. Fit V-belt, adjust its tension with the generator and tighten the three screws, see Fig. 5.
13. Remove spark plugs.
14. Set piston in No. 2 cylinder to top dead

centre, which occurs when the marks on pulley and engine block coincide, see Fig. 5.

15. Remove distributor cover.
16. Put distributor in place so that the mark on the rotor is approximately opposite the mark on the distributor body which is located immediately to the left of the clamp spring attachment. This attachment also acts as a guide lug for the distributor cover.
17. Turn belt pulley to the left, seen from in front, so that the mark on the pulley comes 10 mm (0.4 in.) from the mark on the engine block, measured on the periphery of the pulley.
18. Connect a test lamp between distributor primary cable terminal and ground and switch on ignition current.
19. Turn distributor until test lamp goes out or lights up. At the same time, check that the weights in the automatic ignition regulator are retracted by holding the rotor turned to the left (counter-clockwise). Note that rotor rotation is clockwise.
20. Lock distributor by tightening the clamp screw in the exact position where the test lamp either goes out or lights up.

21. Turn belt pulley and check that the timing has not changed while tightening the screw.
22. Clean distributor cover and fit it.
23. Screw in spark plugs and connect ignition cables.
24. Fit guard plate behind the bumper.
25. Mount the engine hood.

3.4. Distributor gear

3.4.1. Removal

1. Remove distributor pinion as described in 3.3.1., points 1 - 10.
2. Disconnect primary cable and ignition cables from distributor. Loosen the clamp screw and lift out the distributor.

3. File off and drive out the slotted pin which locks the gear on distributor shaft. Remove gear and be careful not to damage the distributor shaft. If shims are fitted, collect these.

3.4.2. Installation

1. Replace damaged parts, and fit the gear on distributor shaft. Adjust the end float of the gear to 0.1 - 0.2 mm (0.004 - 0.008 in.) by shims.
2. Lock the gear with a new slotted pin, peening it thoroughly at both ends. Height of peened head must not exceed 0.5 mm (0.02 in.). Be careful not to bend the shaft during the peening operation.

3. Fit distributor pinion and distributor, see 3.2.2., points 3 - 25.

Note that the marks on the rotor and distributor body should point forward when the piston in cylinder No. 2 is at t.d.c.

4. INSPECTION WORK

4.1. Removal of engine

1. Disconnect battery ground cable at engine and battery.
2. Remove engine hood as follows:
 - a. Disconnect the electric cables.
 - b. Disconnect the hood stoppers.
 - c. Move hood backwards and upwards until it slides off the hinge pins.
3. Drain off the coolant.
4. Disconnect generator cables, distributor primary cable and cable between ignition coil and distributor.
5. Remove intake muffler with filter and preheater.
6. Disconnect fuel line and cold start control at carburetor. Disconnect rubber bellows of the throttle linkage from the plate on throttle shaft.
7. Loosen and remove the two fixing screws for the starter and the return spring for starter con-

trol. Then free the starter and place it on the engine compartment floor.

NOTE. Controls and cables need not be detached from the starter.

8. Loosen the muffler suspension, see Fig. 9.
9. Disconnect muffler from exhaust manifold.
10. Loosen clamp to exhaust pipe and remove muffler.
11. Loosen the two front engine supports from the body.
12. Disconnect clutch cable by releasing its tension and unhooking it from under the engine.
13. Disconnect engine side stay.
14. Screw out thermometer bulb.
15. Disconnect upper cooling water hose from cylinder head.
16. Disconnect lower hose at water pump.
17. Fit lifting hook 93-111 to the fan shaft brackets. Lift engine and block up under trans-

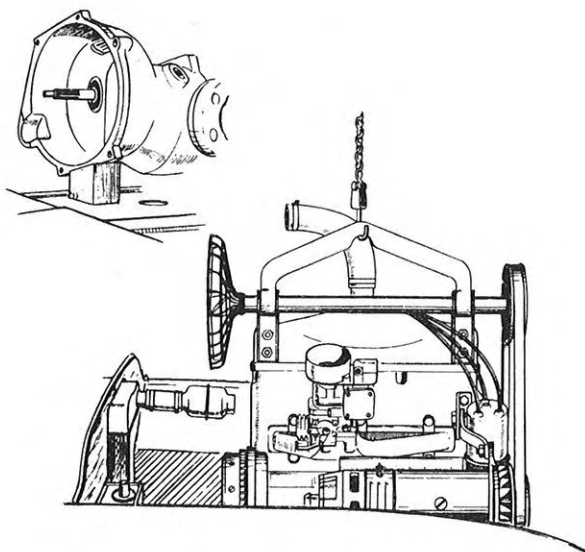


Fig. 10. Lifting out engine. Note the block under transmission

mission with a 90 mm (3 1/2 in.) high block of wood, see Fig. 10.

18. Separate engine from the transmission and lift out the engine from the car.

4.2. Dismantling of engine

1. Remove cooling pipe connection from engine block.
2. Remove V-belt and generator with water pump.
3. Remove inlet manifold with carburetor attached.
4. Remove exhaust manifold.
5. Disconnect ignition cables, loosen cylinder head bolts, remove head and fan shaft stand. Remove gasket.
6. Loosen clamp screw and lift out distributor.
7. Turn engine upside down so that it stands on the cylinder block surface, and make sure that the work bench is clean and flat.
8. Remove clutch unit. Insert the three spacers, Saab 93-122, under the clutch levers and loosen clutch retaining screws in stages.
9. Loosen nut for crankshaft belt pulley and remove vibration damper and belt pulley. Use puller, Saab 93-105, if necessary.

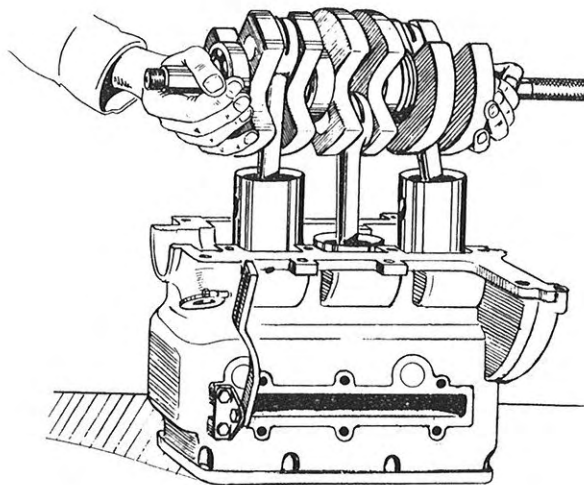


Fig. 11. Lifting out or fitting of crankshaft

10. Remove locking wire or unfold lock washer. Loosen flywheel retaining bolts and remove flywheel.

11. Remove the engine supports from the lower crankcase half.

12. Loosen screws and lift off lower crankcase half.

13. Remove retainer, spacers, if fitted, and cover of distributor gear case with seal and O-ring.

14. Remove distributor gear pinion with puller, Saab 93-102.

15. Remove inner cover and collect the O-ring.

16. Lift out crankshaft and pistons. To facilitate lifting out the crankshaft, insert clutch disk centering tool, Saab 93-121, in the rear end of the crankshaft. It may also be helpful to screw tool 93-107 onto the other end of the crankshaft, see Fig. 11.

17. Remove snap rings and drive out piston pins with the tool 93-113. Be careful not to bend the connecting rods or damage the pistons. Collect the needle bearings.

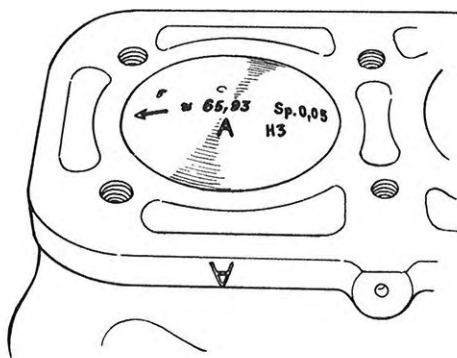


Fig. 12. Markings of block and pistons

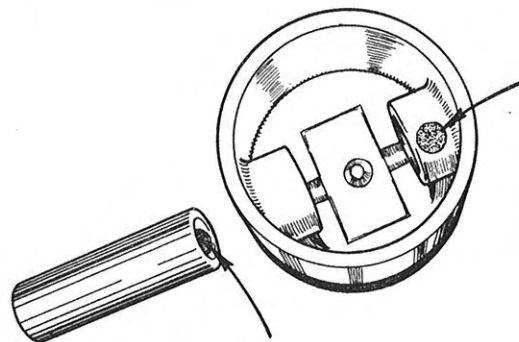


Fig. 13. Colour markings of piston and piston pin

4.3. Fitting of piston pin bearing

When the piston pin bearing is fitted, piston pin and needle bearing should first be paired.

When fitting the bearing, note that:

1. White-marked piston must be fitted with white or red piston pin, and black-marked piston with black or blue piston pin. The black or blue piston pins are of equal and smaller diameter than white or red ones. See Fig. 13.
2. The needle bearings are divided into five classes: 1, 3, 5, 7 and 9, see Fig. 14, and number 9 has the smallest needle diameter.
3. The piston pin must be paired with a needle bearing to correct fit in the connecting rod. This is obtained when the bearing is practically free from play, without the piston pin being forced into the needle bearing when this is fitted in the connecting rod, see Fig. 15.

Moderate thumb push is the absolutely maximum pressure allowed in this connection.

4.4. Assembly of engine

Clean and inspect all parts of the engine. Replace damaged parts and, preferably, all gaskets. The cylinder head gasket must on no account be used again. For wrench torques, see the table in Chapter 1.

1. Select piston pins and needle bearings so that the pin agrees with the colour marking of the piston and can be pushed into the needle bearing without using force when the bearing is fitted in the connecting rod. See 4.3. and Fig. 15. When

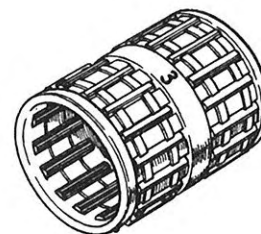


Fig. 14. Marking of needle bearing

two or three bearings are being fitted at the same time, make sure that the right pair of piston pin and needle bearing is fitted in the respective connecting rod.

2. Oil pistons, piston pins and needle bearings, and fit pistons to connecting rods. Use guide pin, tool 93-113, Fig. 16, for guiding the needle bearing when inserting piston pin. Check that pistons of the correct class are fitted and that the arrow on piston head points forward, see Fig. 12. Don't forget to fit the snap rings for the piston pins.

3. Fit tool 93-107 in front end of crankshaft and insert centring tool 93-121 into crankshaft bushing. Oil pistons and cylinder walls and lower crankshaft and pistons into engine block, see Fig. 11. Be careful not to damage the piston rings.

4. Remove the two tools, fit lower crankcase half and tighten the bolts in stages with a torque wrench.

5. Fit engine supports to lower crankcase half.

6. Screw on the flywheel and lock the screws with wire or lock washer.

2 ENGINE

7. Insert clutch disk and fit the clutch unit. Make sure that the spacers 93-122 are in position and centre the disk with tool 93-121 while tightening the screws.

8. Fit inner cover of the distributor gear case with O-ring and shaft seals using the assembly tool 93-106 so as not to damage shaft seals.

9. Insert the woodruff key and press on distributor gear pinion with bevelled side inwards.

10. Remove the tool and fit outer cover with O-ring and shaft seal. Screw on the tool 93-107 to crankshaft and press in cover. Note that arrow on cover must point towards ignition timing mark on engine block. See Fig. 17.

11. Insert spacers in front of cover and fit retainer. Make sure that retainer is correctly seated down in its groove.

12. Loosen the tool 1/4 turn and check that the spacers are stopped by the retainer. If not, the retainer must be removed and more spacers inserted.

13. Remove tool when the fit is satisfactory.

14. Fit belt pulley and vibration damper. Don't forget the spring washer under the nut.

15. Adjust distributor points and fit distributor. See point 4.6. or Chapter 12.

16. Fit cylinder head and fan shaft stand. See point 3.1.2.

17. Fit inlet manifold and carburetor.

18. Fit generator and connect lower water hose to pump.

19. Fit V-belt and adjust its tension. See Fig. 5.

20. Fit water pipe connection to engine block.

21. Fit exhaust manifold.

22. Lubricate distributor gear until grease comes out through the hose.

4.5. Installation of engine

1. Lift engine into car using the lifting hook 93-111, see Fig. 10.

2. Screw engine and transmission together and connect ground cable to engine.

3. Fit clutch cable and adjust clutch pedal play.

4. Fit starter and return spring for starter control.

5. Remove the block from below transmission and lower the unit.

6. Connect front engine supports to body.

7. Fit muffler by attaching it to exhaust pipe and support bracket.

NOTE. Do not tighten the suspension nut.

8. Connect muffler to exhaust manifold flange and then tighten its suspension nut.

9. Connect engine side stay.

10. Fit thermometer bulb.

Before T.D.C.

mm in.

5 .197

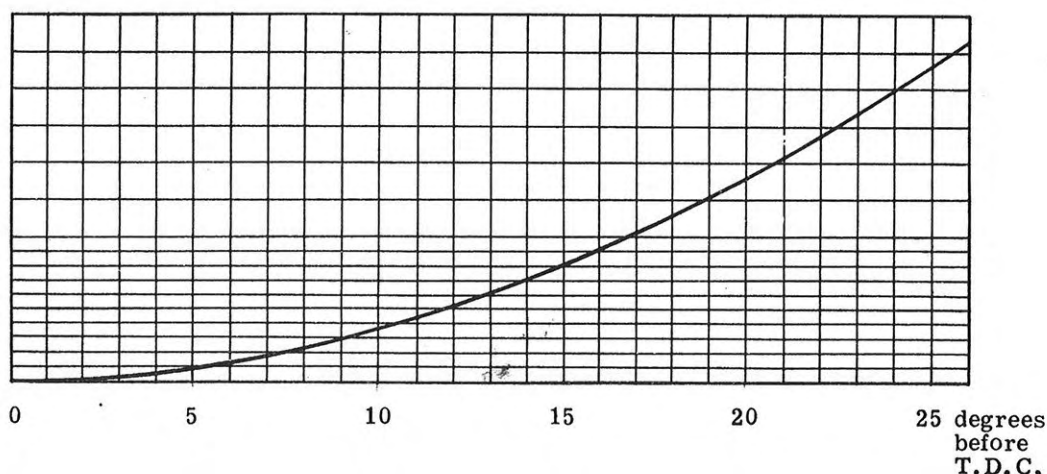
4 .157

3 .118

2 .079

1 .039

0 0



Curve for ignition timing showing piston position in relation to degrees before top dead centre.

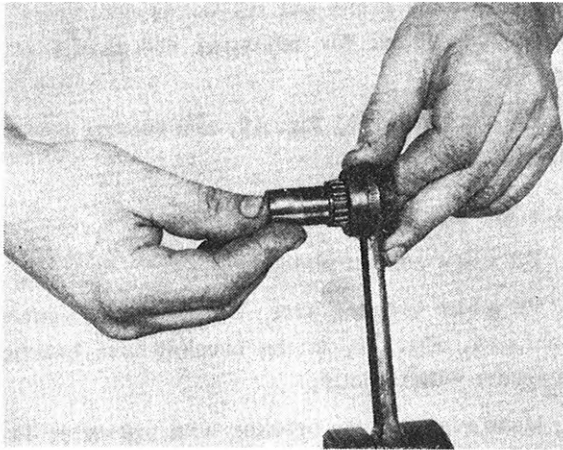
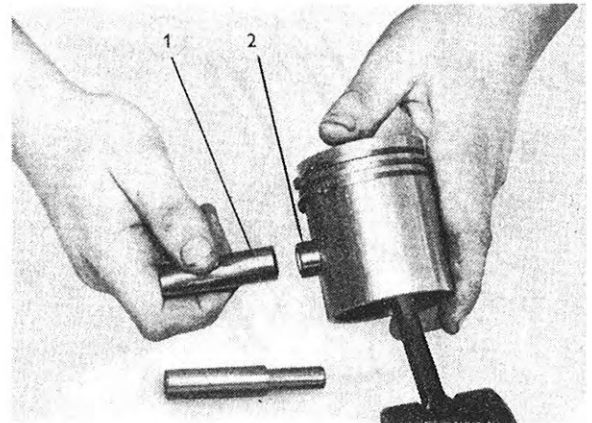


Fig. 15. Pairing of needle bearing and piston pin



1. Guide pin

Fig. 16. Fitting of piston

11. Connect electric cables to generator and distributor.
12. Fit throttle and cold-start controls.
13. Connect cooling water hoses.
14. Connect fuel hose to carburetor.
15. Fit intake muffler with air filter and preheater.
16. Adjust ignition timing as described in point 4.6.2. or Chapter 12, "Electric system and instruments".
17. Fit engine hood and connect the electric cables and stoppers.
18. Fill the cooling system.
19. Connect ground cable to battery.
20. Start and warm up engine and re-tighten cylinder head bolts.

4.6. Engine electric system

The electric equipment of the car is described in Chapter 12, "Electric system and instruments". Only the work on the ignition system which is normally done in connection with engine adjustments is described here.

4.6.1. Replacement of contact breaker points

4.6.1.1. Removal and dismantling

When the breaker points are to be replaced, the distributor should preferably be removed from

the car, even if it is possible to do the necessary work with the distributor in place.

1. Unclamp the distributor cover.
2. To remove the distributor, loosen the clamp screw and primary cable.
3. Remove the rotor 6, Fig. 18, which is secured by a stop screw.
4. Lift up protective cover 7.
5. Loosen nuts on screw 2, Fig. 20, for condenser and primary cable.

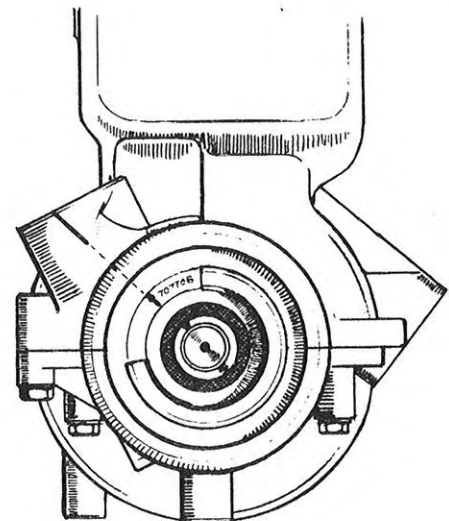


Fig. 17. Marking of outer cover, distributor gear case

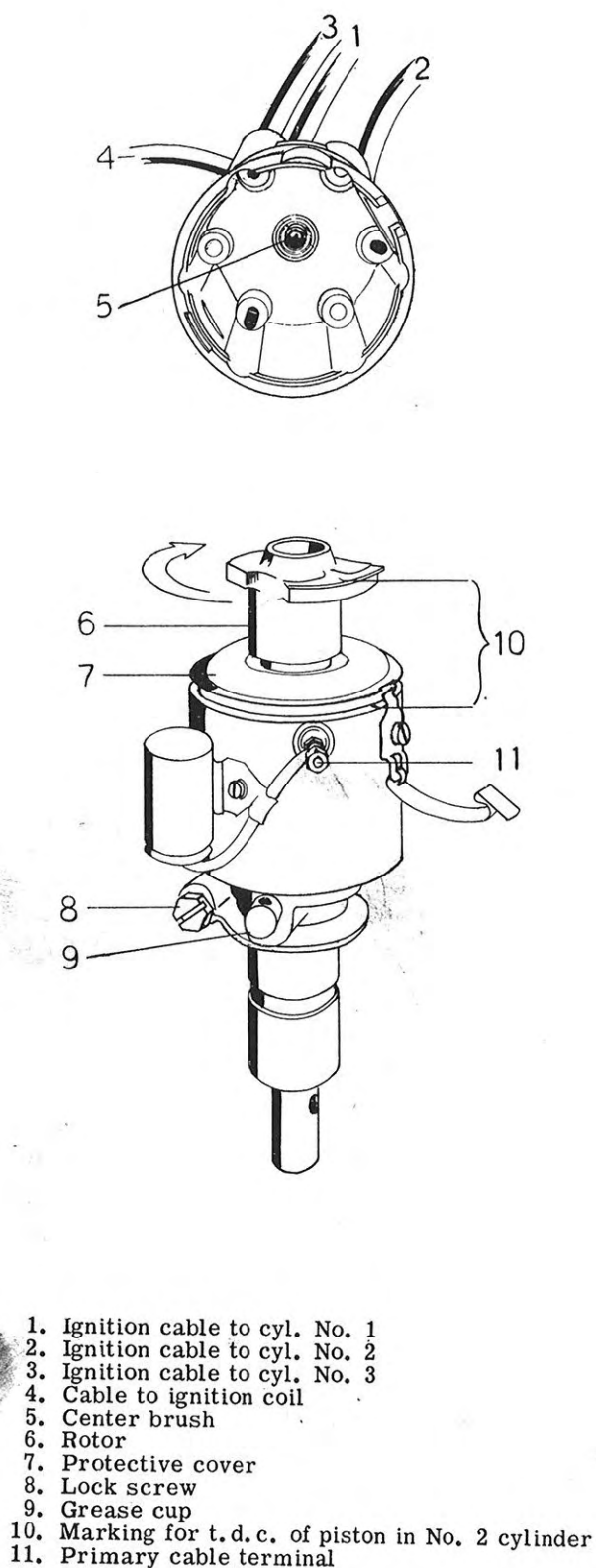


Fig. 18. Distributor

6. Remove the clip 6 and lift out breaker arm 1. Collect the shims for adjusting end float of the arm.

7. Loosen screw 11, Fig. 19, and remove contact plate 10.

4.6.1.2. Assembly and installation

1. Fit a new contact plate.

2. Fit a new breaker arm, the requisite number of shims 4, Fig. 20, at the breaker arm bearing and secure with the clip.

3. Make sure that the breaker arm spring is fitted correctly, see Fig. 20, and tighten the nut for condenser cable.

4. Adjust gap between points by means of eccentric screw 9, Fig. 19. The gap should be 0.3 - 0.4 mm (0.012 - 0.016 in.). For lubrication of the distributor, see Chapter 15, "Lubrication".

5. Place the protective cover over breaker mechanism with the notch in the cover at the guide lug formed by the spring attachment, which also guides the distributor cover.

6. Fit the rotor.

NOTE. The spring washer under the stop screw must always be replaced by a new one.

7. Clean and inspect distributor cover, ignition cables, spark plugs and the rubber nipples on cable connections at distributor and ignition coil.

8. Set piston in No. 2 cylinder at top dead centre, which position is obtained when marks on belt pulley and engine block coincide, see Fig. 21.

9. Fit distributor so that the mark on the rotor is approx. at the mark 10 on edge of the distributor body, see Fig. 18.

10. Connect the primary cable and adjust ignition timing as described below.

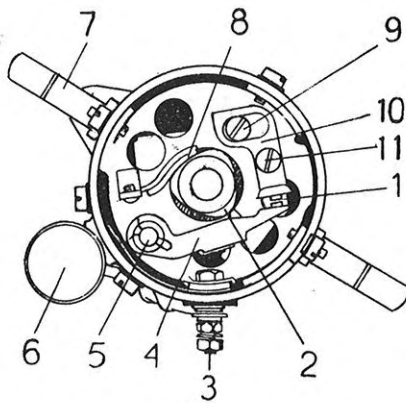
4.6.2. Ignition timing

Remove spark plugs and commence at point 11, if distributor has been removed and the gap between the points adjusted as per above.

1. Remove distributor cover.

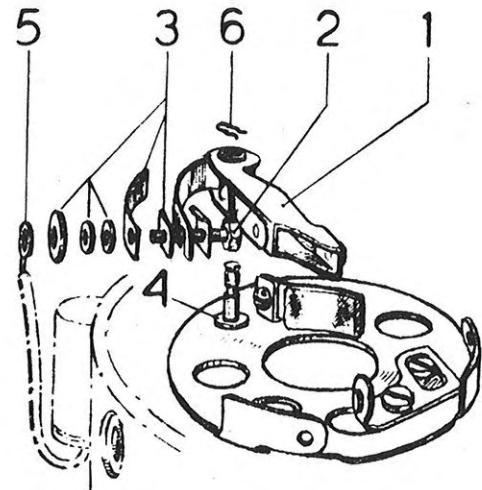
2. Remove the rotor, which is retained by a stop screw.

3. Lift up protective cover over breaker mechanism.



1. Breaker points
2. Camshaft
3. Primary cable terminal
4. Breaker arm
5. Breaker arm shaft
6. Condenser
7. Clamp spring
8. Lubricating felt
9. Eccentric screw
10. Contact plate
11. Locking screw for contact plate

Fig. 19. Contact breaker points in distributor



1. Breaker arm
2. Screw with contact washer
3. Insulating washers
4. Shims
5. Condenser cable
6. Clip

Fig. 20. Distributor breaker arm

4. Inspect breaker points. If they need to be replaced, proceed as described in 4.6.1.2.

5. Loosen screw 11, Fig. 19, and adjust the gap between the points with eccentric screw 9. The gap should be 0.3 - 0.4 mm (0.012 - 0.016 in.). Tighten the screw 11 after adjustment.

6. If necessary, lubricate the distributor, see Chapter 15, "Lubrication". Then fit protective cover with notch at the spring attachment, which forms a guide lug, and fit the rotor.

NOTE. The spring washer under the rotor stop screw must always be replaced by a new one.

7. Remove the spark plugs.

8. Set the piston in No. 2 cylinder at top dead centre, which position is obtained when marks on belt pulley and engine block coincide, see Fig. 21.

9. Check that the mark on the rotor is approx. at the mark 10, Fig. 18, on edge of the distributor body.

10. Loosen clamp screw 8, Fig. 18, under distributor.

11. Turn the crankshaft pulley to the left, seen

from the front, so that the mark on the belt pulley comes 10 mm (0.4 in.) to the left of engine block mark, see Fig. 21. The piston in cylinder No. 2 is then 8° before top dead centre.

12. Connect a test lamp between distributor primary cable terminal and ground, see Fig. 22. Switch on ignition current.

13. Turn distributor body to and fro until the position is found where test lamp either goes out or lights up. At the same time, check that the weights in the centrifugal advance unit are retracted by holding the rotor turned to the left (counter-clockwise). Note that the rotor rotates clockwise.

14. Check that marks 10, Fig. 18, coincide and lock the distributor with clamp screw 8 in the exact position where the test lamp either goes out or lights up.

15. Turn belt pulley clockwise and check that the timing has not changed while securing the distributor.

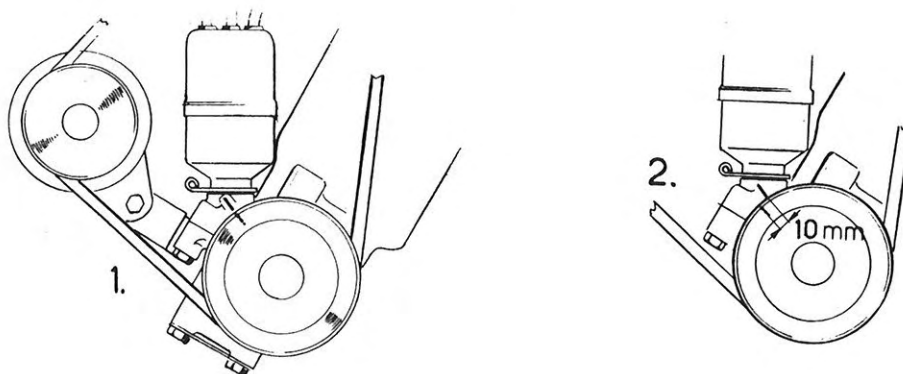
16. Turn off ignition current and remove test lamp.

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17. Clean and inspect distributor cover, ignition cables, spark plugs and the rubber nipples on cable connections at distributor and ignition coil. Replace defective parts.

18. Fit distributor cover.

19. Screw in spark plugs and connect ignition cables. Note the location of the cables in the distributor cover, see Fig. 18.



- 1. Piston in No. 2 cylinder at t.d.c.
- 2. Piston in No. 2 cylinder 8° before t.d.c.

Fig. 21. Marking for ignition timing

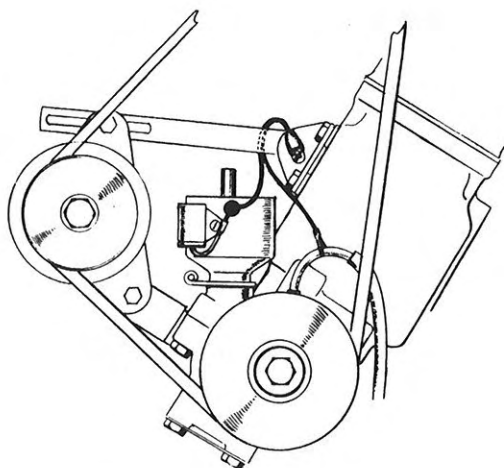


Fig. 22. Connecting test lamp

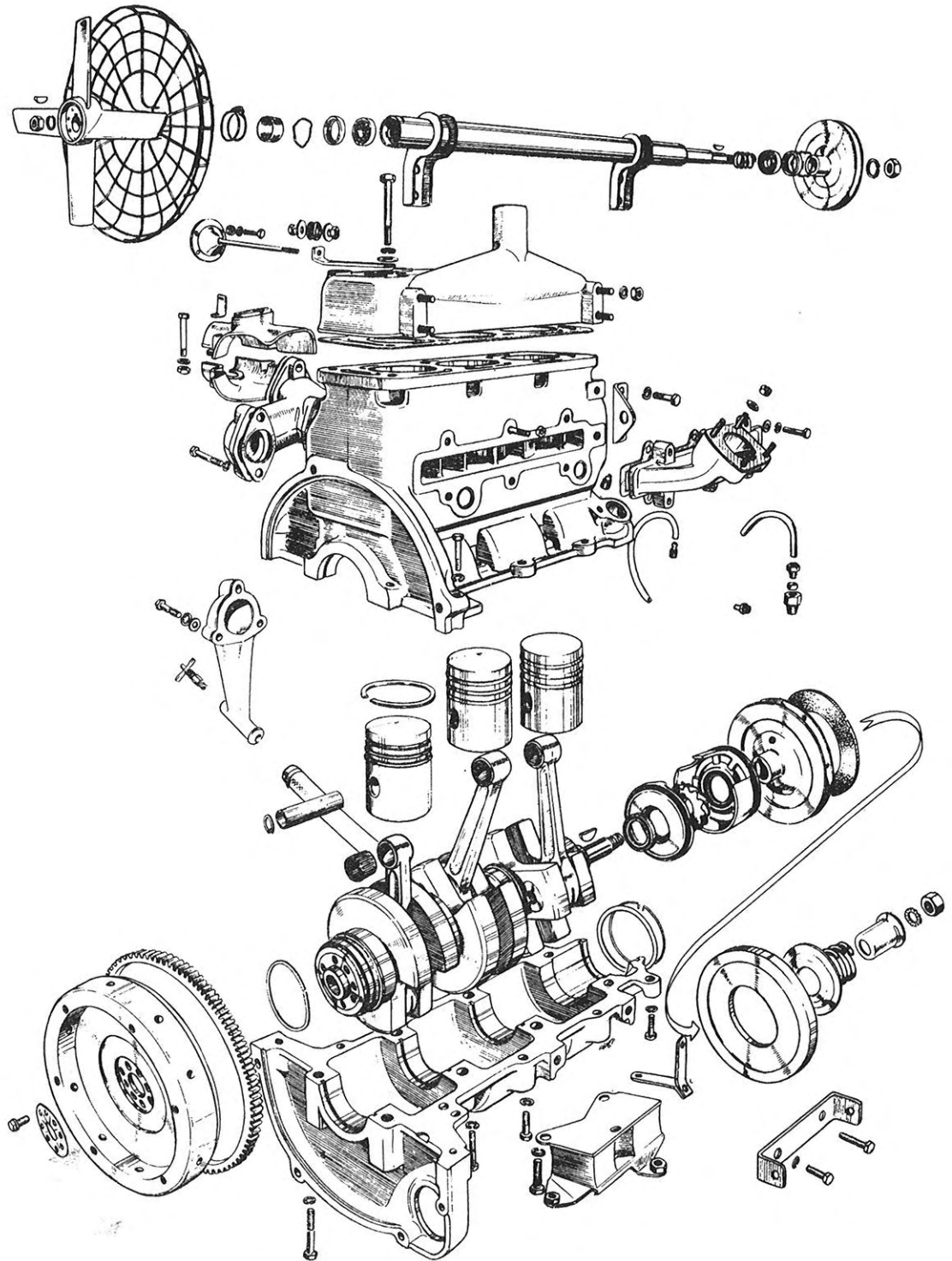


Fig. 22. Engine, exploded view