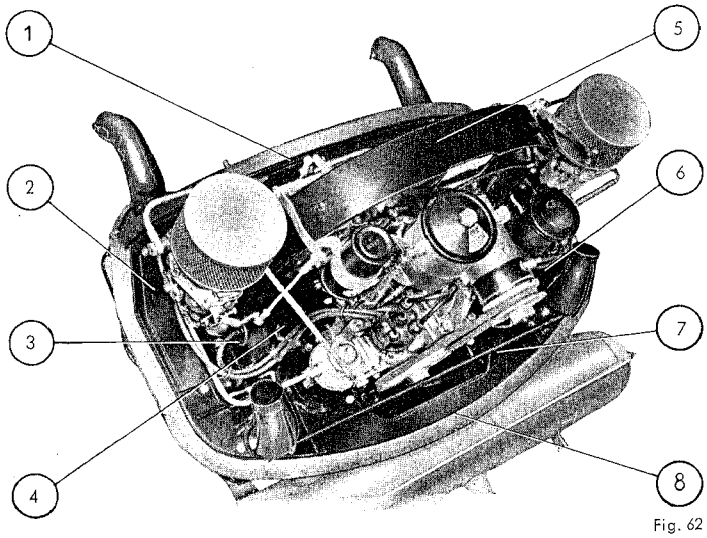

Fig. 62

① Front cover plate
② Side cover plate bottom
③ Side cover plate
④ Cylinder cover plate
⑤ Fan housing
⑥ Side horizontal cover plate
⑦ Rear cover plate
⑧ Weather strip

Removing and Installing Duct Plates

3 EN

(Engine removed from car)

The duct system of the engine insures that sufficient air reaches the cooling surfaces. It is therefore important that it is properly installed. The parts must be so fitted that cooling air can not escape though the joints, thereby improperly cooling the engine.

Removal

1. Remove rear cover plate before removing the engine.
2. Remove front cover plate.

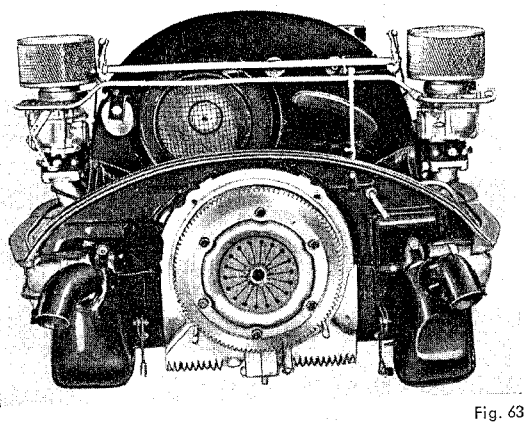

Fig. 63

3. Remove side cover plate.
4. Remove exhaust system.

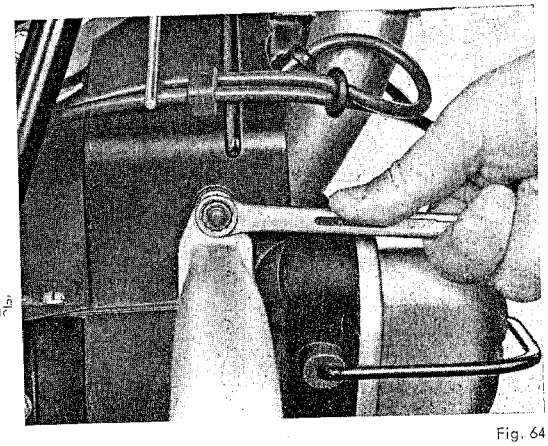

Fig. 64

5. Remove lower air channel.

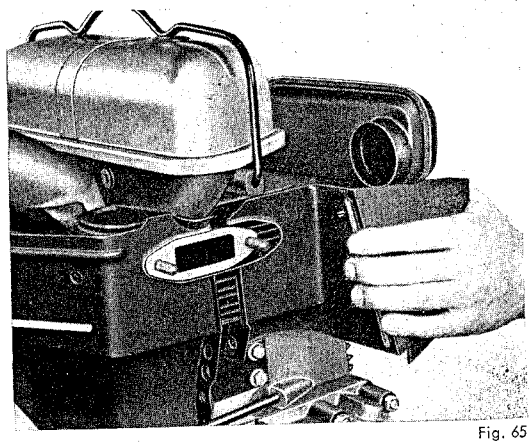

Fig. 65

6. Remove cylinder cover plates.

7. Disconnect lines from oil filter.

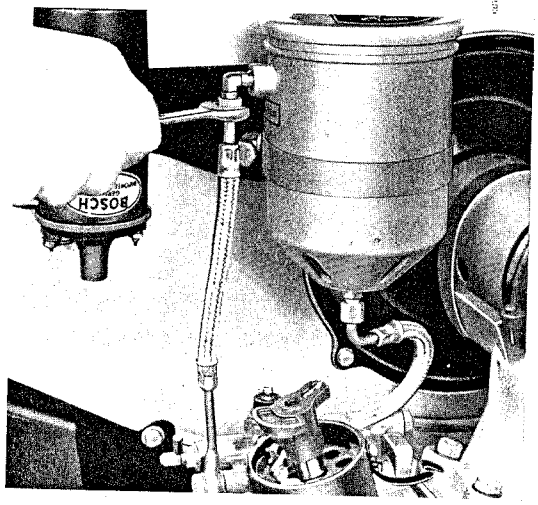

Fig. 66

8. Remove generator holding strap.

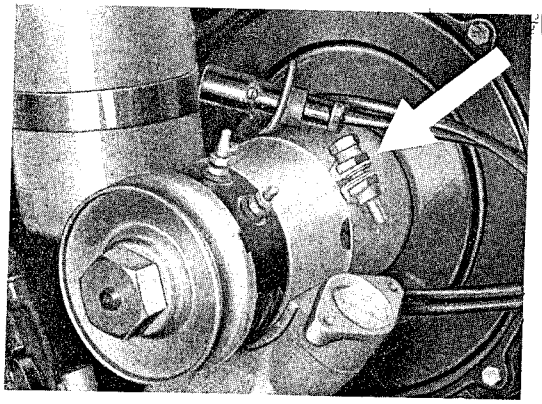

Fig. 67

9. Remove oil breather pipe.

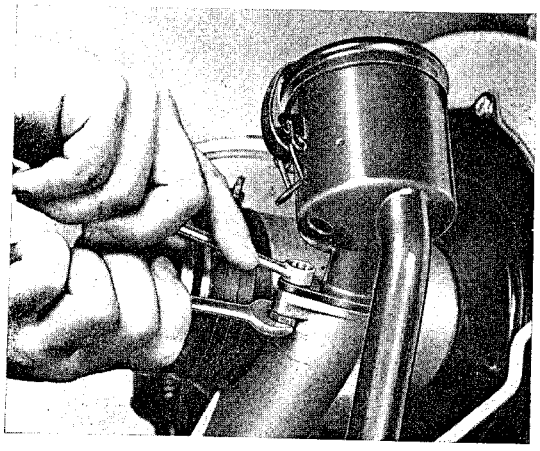

Fig. 68

10. Remove ignition wire from coil and distributor cap and remove distributor cap.

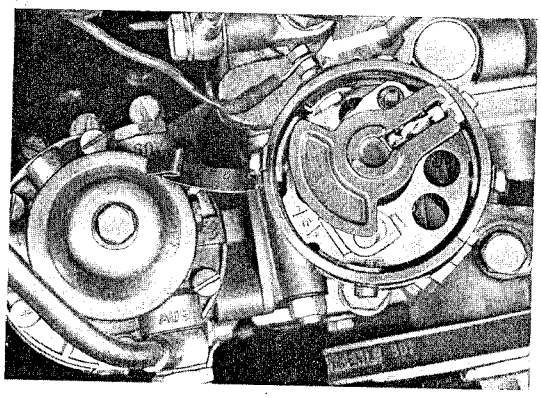

Fig. 69

11. Remove air filters, throttle linkage, and fuel lines.
12. Remove carburetors.
13. Remove fan housing and generator unit.

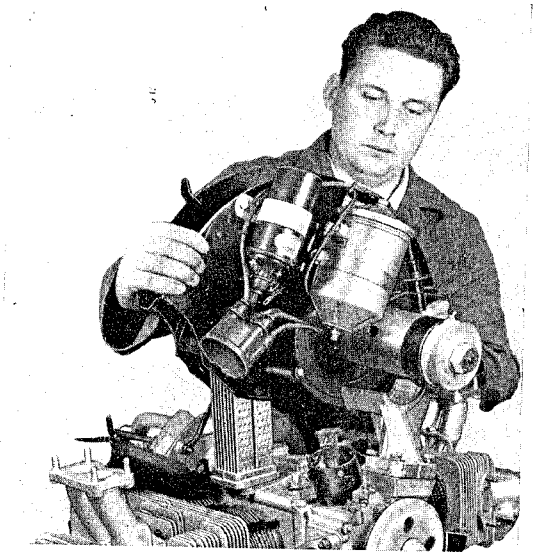

Fig. 70

14. Remove intake manifolds and cylinder heads. Remove deflector plates complete with spring clips.

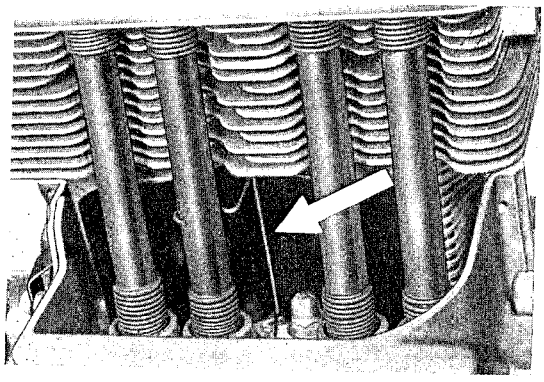

Fig. 71

15. Remove V-belt pulley using puller P 43 and remove cover plate.

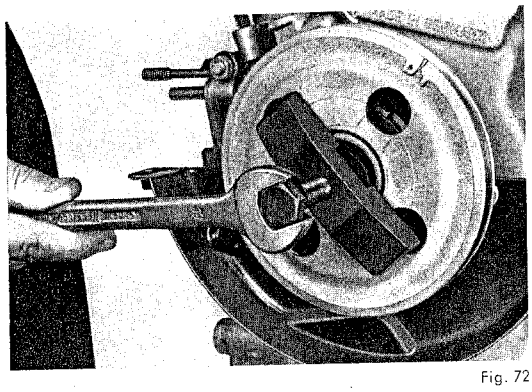

Fig. 72

The installation is carried out in the reverse order making sure that sheet metal joints fit properly and the rubber spark plug caps are correctly installed.

If the rubber weather strip for the front or rear cover plate is unserviceable it must be replaced. Care must be taken to keep all rubber parts free from oil and grease. The correct positions for the deflector plates are:

Deflector plate Cyl. III + IV

Deflector plate Cyl. I + II

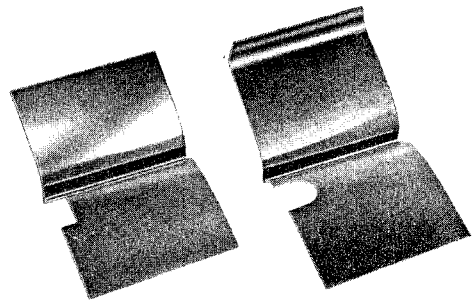

Fig. 73

Removing and Installing Fan Housing

4 EN

Removal

1. Disconnect throttle linkage from carburetors.

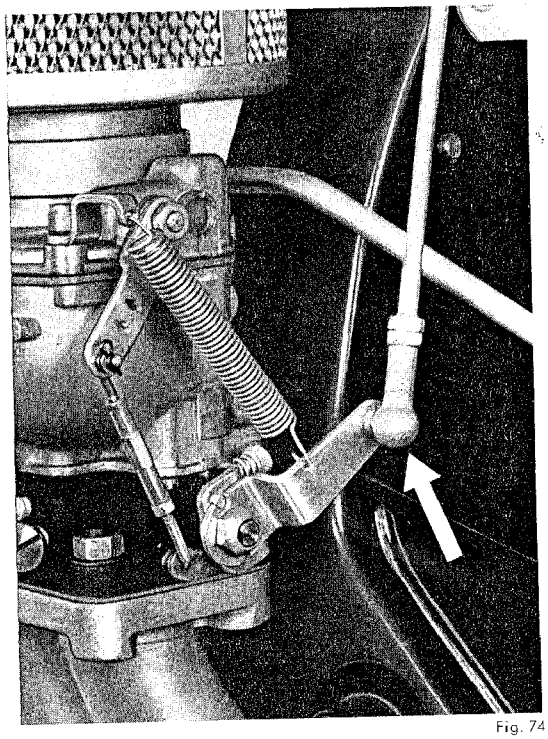

Fig. 74

2. Remove fuel lines and carburetors.
3. Remove oil breather pipe.

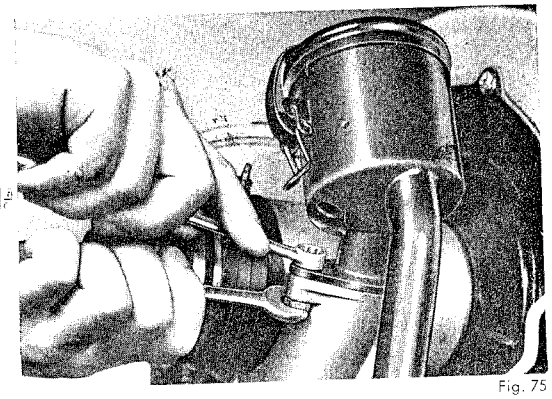

Fig. 75

4. Remove generator clamp.

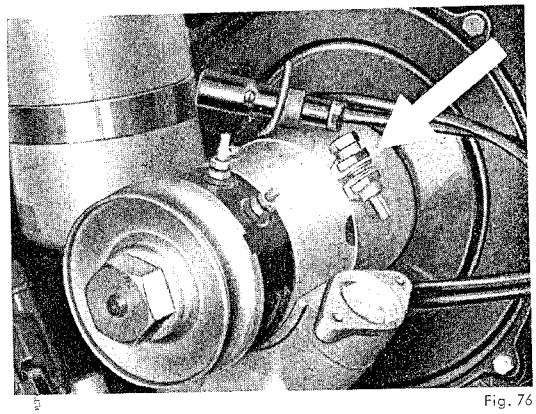

Fig. 76

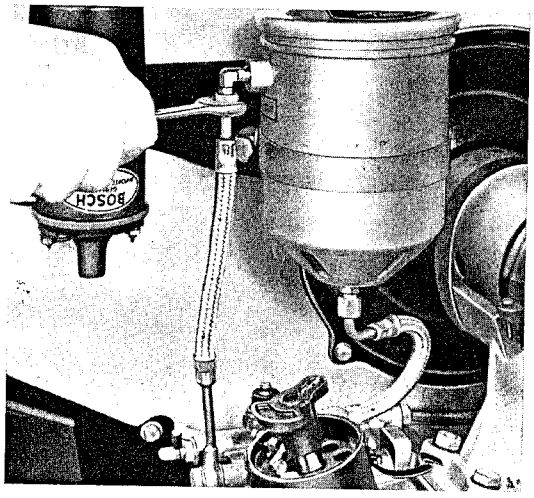

Fig. 77

5. Disconnect oil filter lines.
6. Disconnect ignition wires from spark plugs and ignition coil and remove distributor cap.
7. Remove all screws securing fan housing.
8. Lift fan housing from engine (Fig. 78).

Installation

The installation is accomplished in the reverse order of removal observing the following points:

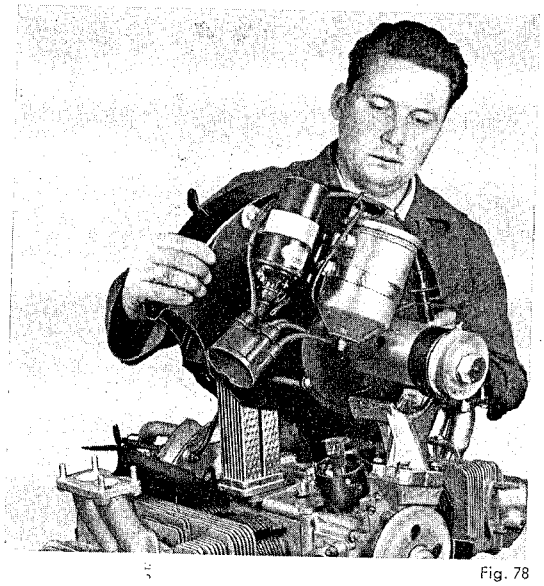

Fig. 78

1. A tight fit of duct plates to the fan housing is necessary to prevent cooling failure.
2. Note correct generator connections:
   thick yellow-white lead to terminal D−, thin black lead to terminal DF, thick red lead to terminal D+.
3. Adjust throttle linkage.
4. Inspect oil breather pipe gasket and replace if necessary.

5 EN

Removing and Installing Blower Assembly

General

The removable generator bracket makes it possible to remove the blower assembly without disturbing the fan housing. This is accomplished in the following sequence:

Removal

1. Disconnect generator leads and remove V-belt.
2. Remove generator clamp.
3. Remove oil breather pipe.
4. Remove oil filter.
5. Remove four mounting screws on fan housing.

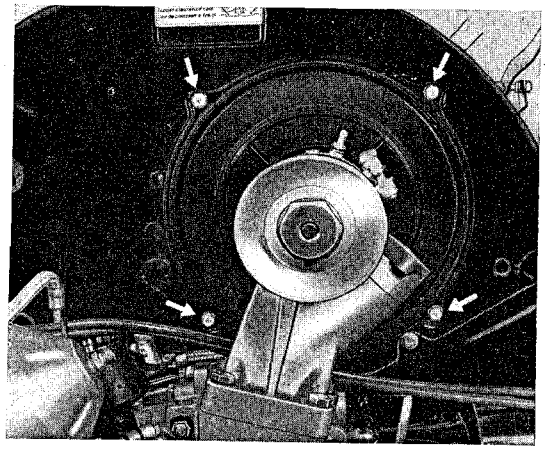

Fig. 79

6. Remove generator bracket, carefully covering crankcase opening to prevent entry of foreign matter.

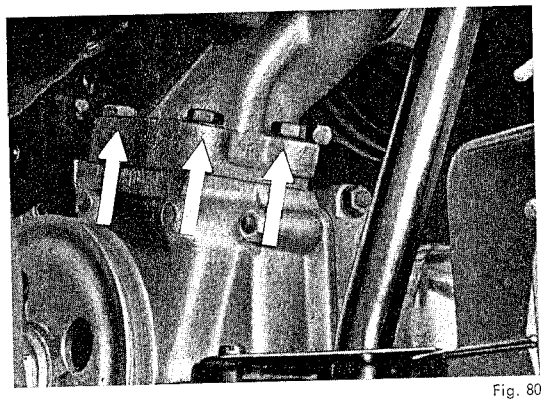

Fig. 80

7. Remove generator and blower assembly from fan housing.

Installation

The installation is accomplished in the reverse order of removal observing the following points:

1. Note correct generator connections: thick yellow-white lead to terminal D−, thin black lead to terminal DF, thick red lead to terminal D+.

2. Install a new gasket between timing case cover and generator bracket.

3. Check alignment of V-belt pulleys and adjust if necessary by shifting the generator. Be careful, however, not to stress the joint between blower impeller and fan housing.

Removing and Installing Blower Impeller

6 EN

Special Tools:		
	P 42	Torque wrench, or
	VW 118	Torque wrench
	P 44	Socket 36 mm for P 42, or
	VW 163a	Socket 36 mm for VW 118

Removal

1. Remove blower assembly from fan housing (5 EN).

2. Secure pulley end of generator shaft in vise (use fiber or alloy jaws).

3. Unscrew impeller nut and remove impeller and washer.

Installation

The installation is accomplished in the reverse order of removal observing the following points:

1. Note that the spacer washers are installed in the correct sequence (Fig. 82).

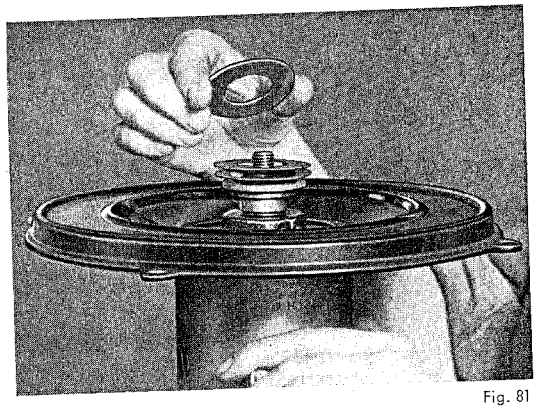

Fig. 81

2. Install cover plate.

3. Tighten impeller nut to 10 mkg (72.5 ft. lb.) torque.
4. The clearance between the blower casing and the impeller should be approx. 3 mm ($^1/_8$ in.).
5. The impeller must rotate freely without touching the casing.

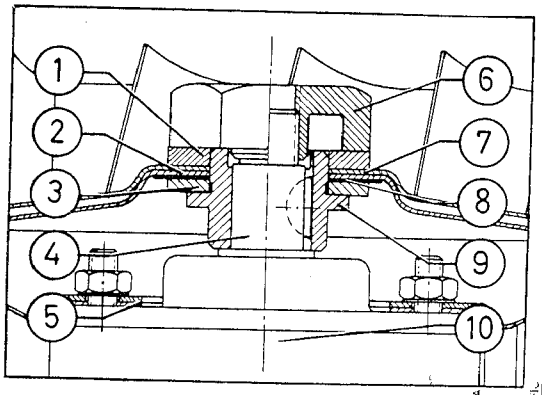

Fig. 82

① Thick washer
② Cover plate
③ Thick washer
④ Generator shaft
⑤ Impeller cover plate
⑥ Impeller nut
⑦ Impeller
⑧ Spacer washer 2 to 5 as required
⑨ Hub
⑩ Generator

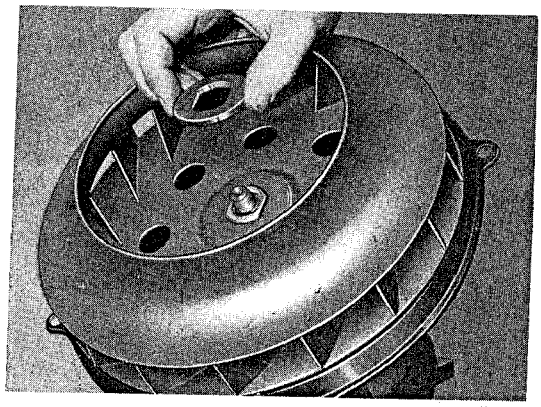

Fig. 83

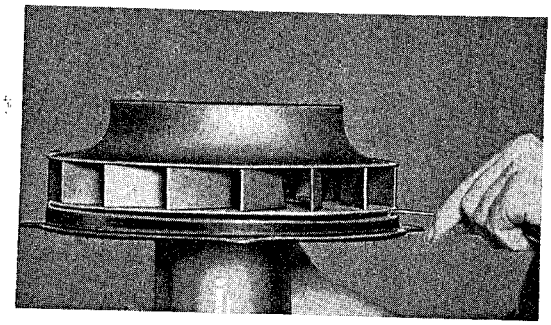

Fig. 84

7 EN

Installing Lower Air Guide

The following points should be observed when installing the lower air guide:

The flaps in the lower air guide must be adjusted so that they open and close alternately. The large flap should be approx. 10 mm ($^3/_8$ in.) clear of the bottom of the lower air guide when the small flap is fully closed. The flaps should be checked again after the lower air guide is installed to insure proper functioning and adjustment.

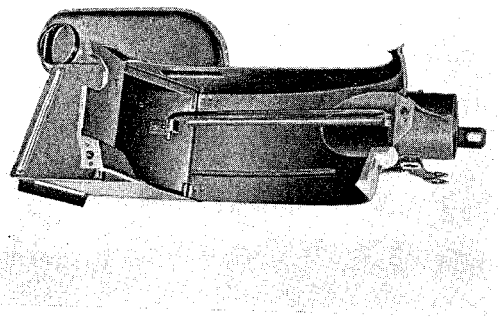

Fig. 85

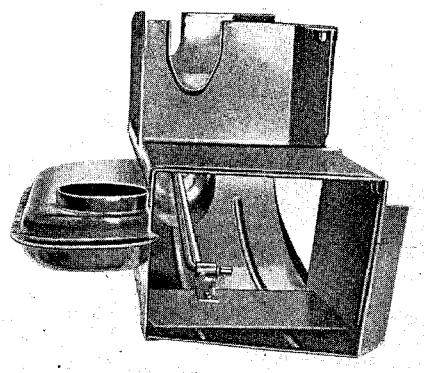

Fig. 86

Checking V-Belt Tension

8 EN

General

The generator and blower are driven by a V-belt. The power absorbed by these two units imposes a considerable load on the belt, especially at high engine speeds or when shifting down.

The tension of the V-belt should therefore be checked frequently, and adjusted as required.

Low tension causes the belt to slip and often an overheated engine.

Excess tension causes undue wear of the fan belt, belt failure, and possible damage to the generator bearings.

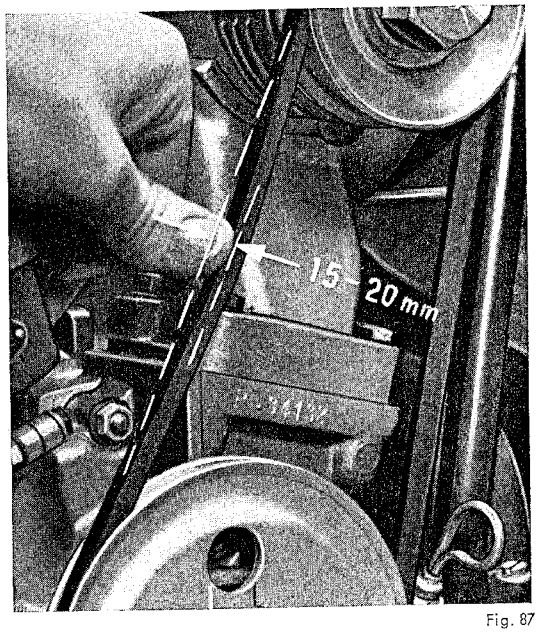

Fig. 87

Checking

When servicing the engine, care should be taken to keep the V-belt free of oil and grease. Oil may be removed from the V-belt by first using solvent, then removing the solvent with soapy water.

V-belts which have become oil-soaked in use generally cannot be cleaned or saved.

Under correct tension the V-belt can be deflected 15 to 20 mm ($^5/_8$ to $^3/_4$ in.) at its center by light thumb pressure. If the belt shows any sign of undue wear such as frayed edges or split sides, it must be replaced.

Adjusting Fan Belt Tension

9 EN

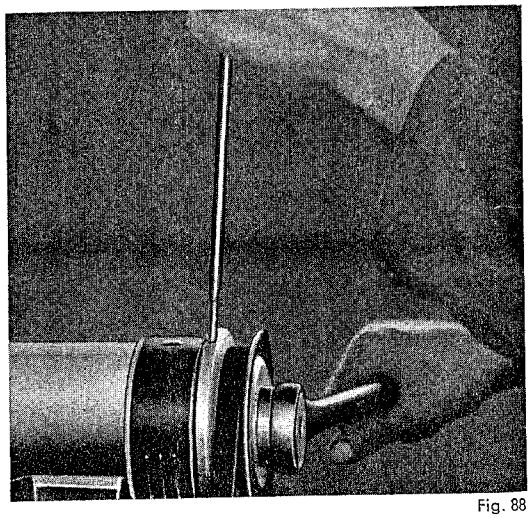
Fig. 88

1. Loosen generator pulley retaining nut (use 36 mm wrench). For loosening and fastening the nut, insert a screwdriver into the recess at the inner edge of the pulley and brace against the top housing bolt of the generator (Fig. 88).

2. Remove outer pulley half.

3. Install pulley spacers in the following manner: Tension of belt is correct, if, at light thumb pressure, belt can be deflected 15 to 25 mm ($^5/_8$ to $^3/_4$ in.). Removal of spacers between pulley halves will

increase tension, adding spacers will decrease tension. If only one spacer remains between the pulley halves after adjustment to proper tension,

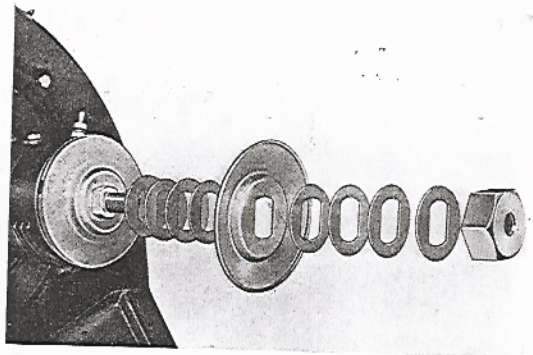

Fig. 89

the belt has stretched beyond usefulness and must be replaced. A slipping belt results in insufficient cooling. Care must be taken that the belt does not ride at root of pulley, i. e. on spacers.

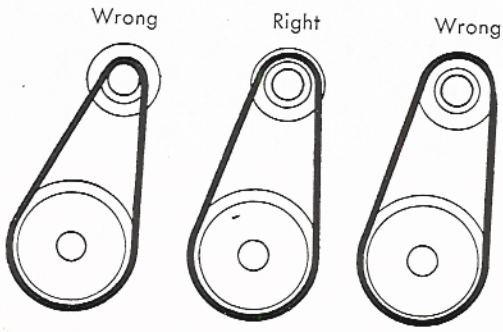

Fig. 90

4. Mount outer pulley half.

5. Spacers not used between pulley halves are to be placed on the shaft between the outer pulley half and the nut.

6. Tighten nut.

Important

New fan belts tend to stretch after a short period of use and lose their effective tension after 30 to 60 miles. They should be checked for proper tension within that period and, if necessary, re-adjusted.

Removal of the fan belt by means of a screwdriver without removing the outer pulley half will damage the belt and the pulley.