

B. Repair of Oil Pump

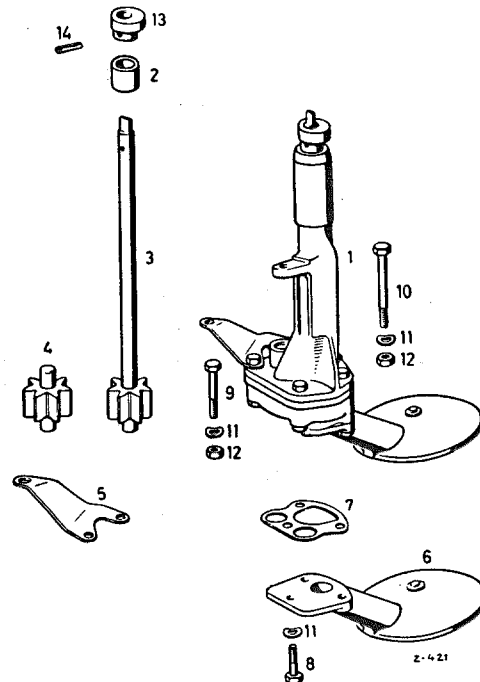


Fig. 18—5/2

- 1 Oil pump
- 2 Upper bearing bushing
- 3 Drive shaft with gear
- 4 Oil pump shaft with gear
- 5 Bracket
- 6 Suction strainer
- 7 Gasket
- 8 Hexagon screw M 6×22 DIN 931-8 G
- 9 Hexagon screw M 6×35 DIN 931-8 G
- 10 Hexagon screw M 6×55 DIN 931-8 G
- 11 Lock washer
- 12 Hexagon nut
- 13 Cam
- 14 Dowel pin

Disassembly:

1. Unscrew the suction strainer (6).
2. Unscrew the oil pump housing base and take out oil pump shaft with gear (4).
3. Tap out the dowel pin (14), pull off the cam (13) and pull out the drive shaft with gear (3).

Checking Parts:

4. Clean all parts and check for wear.
The bearing bushing (2) should be pressed out if it is worn and a new bushing pressed in. If the cast bushings in the housing base and top are worn, the whole housing must be replaced.
Worn shafts must be replaced together with the fitted gear. If the cam (13) is worn, it must also be replaced.
The separating surfaces should be checked

for evenness, using dye for this purpose. If necessary, they should be lightly machined.

Bearing Surfaces of the Oil Pump Shafts

Measurements in mm

	Diameter	Bore in oil pump housing
Drive shaft	$\frac{11.984}{11.973}$	$\frac{12.000}{12.018}$
Oil pump secondary shaft	$\frac{11.973}{11.964}$	$\frac{12.000}{12.018}$

Reassembly:

5. Before the oil pump is reassembled, the radial and end play of the gears should be carefully checked (Figs. 18—5/3 and 18—5/4).

Gear Play

Measurements in mm

Radial play	0.025-0.057
End play	0.020-0.062
Backlash	0.05 -0.10

The radial play is the clearance between the top of the teeth and the housing (Fig. 18 — 5/3).

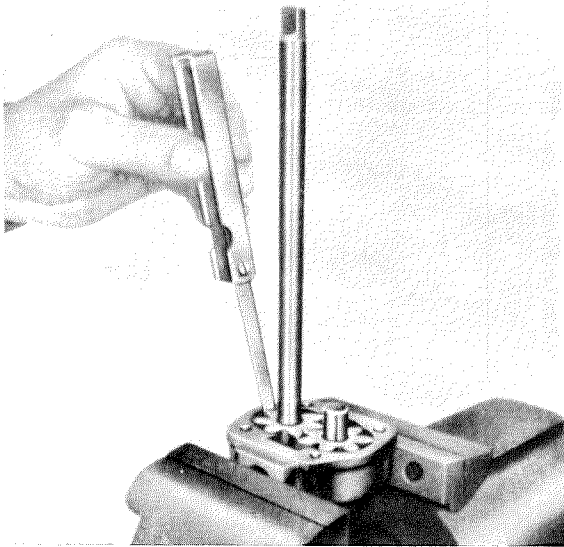


Fig. 18 — 5/3

The end play is the clearance between the face of the gear and the separating surface of the housing base (Fig. 18 — 5/4).

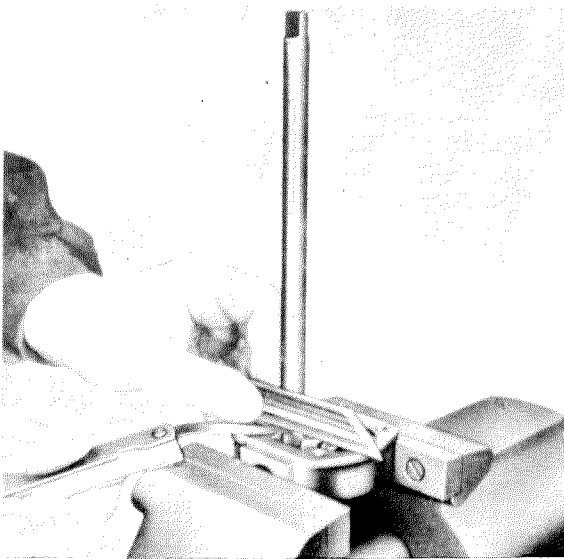


Fig. 18 — 5/4

When checking the radial and the end play, measurements should always be carried out on both gears.

6. If a new drive (3) was installed, a 4.000 to 4.075 mm diameter hole must be bored in the shaft for the dowel pin (14) after pressing on the cam (13). When doing this, a clearance of at least 0.2 mm must be maintained between the cam and the housing (Fig. 18 — 5/5).

Then drive in the dowel pin (14).

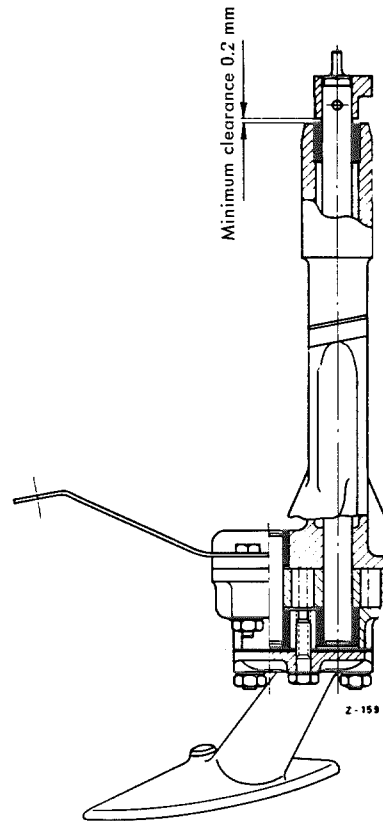


Fig. 18 — 5/5

7. Screw the housing base onto the housing top. Do not add a gasket.

When screwing on the housing base, the bracket (5) must be screwed on at the same time. Then check whether the gears can be easily turned.

8. Screw up the suction strainer (8), using a new gasket (7).

Checking of Output:

9. After assembly, the oil pump should be checked for leaks and delivery.

An oil pump is still serviceable if the minimum delivery is 80% of the specified delivery.

Pumps with a lower delivery must under all circumstances be replaced or repaired.

Delivery

Engine speed r.p.m.	Delivery kg/min.	Vacuum suction side mm Hg	Pressure delivery side atm.	Oil temperature °C.	Type of oil
5000	24.5	400	5	100°	Engine oil SAE 10

C. Cleaning and Checking of Oil Relief Valve

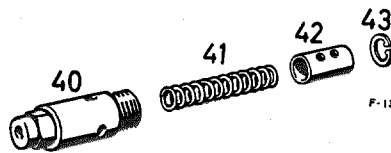


Fig. 18—5/6

40 Oil relief valve 6 atm.
41 Spring

42 Piston
43 Retainer ring

1. Disassemble the oil relief valve, removing the retainer ring (43), the piston (42) and the spring (41) from the valve housing.
2. Clean and check all parts, and check in particular the contact surfaces of the piston and cylinder. Test the spring on a spring tester.

The opening pressure is 6 ± 0.5 kg/cm².

Test Values for the Springs of the Oil Relief Valve

Length L and Pressure P					Gage of wire d mm	External diameter D mm
free length L mm	valve closed		valve open			
	L ₁ mm	P ₁ kg	L ₂ mm	P ₂ kg		
43.6	39	2.4	25	9.6	1.4	9.1—9.4

3. Reassemble the oil relief valve.