2974 770 M1

WORKSHOP MANUAL

Engine D900 - series

KOMATSU

PREFACE and EXPLANATIONS

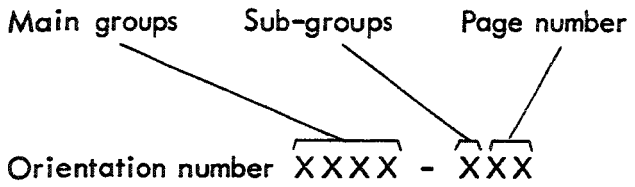
This hand book should assist the skilled construction machine mechanic when carrying out repairs and adjustments on MF construction machines. The work operations are written in such a style that the dismantling and assembling of the components can be carried out successfully and without difficulty.

To assist in the locating of specific test-repair operations, working descriptions etc. this hand book is divided into main and sub-groups. This also applies to all types of repair hand book publications.

At the top right hand corner of every page next to the section heading a series of numbers (orientation number) are to be found. These numbers follow in numerical sequence throughout the book.

The section heading applies either to the construction machine type, assembly or component for which the text and illustrations are valid.

Orientation number:



The main group numbers refer to either main assemblies, groups of main assemblies, sub-assemblies or components.

Example: Group 1700 - Steering (mechanical steering, assisted steering, hydro-steering, steering unit)

The sub-group numbers classify the descriptions and details as follows:

0 - General

1 - Functional descriptions

2 - Fault finding and possible preventive measures

3 - Test and adjustments

4 - Repairs

5 - Technical details

The instructions for dismantling and assembling of components have been coordinated with the picture tables, sectional views and parts lists so that all numbers in brackets refer to the identical part, i. e. (24).

CONTENTS

Page 5000 - 500 shows from which engine number important amendments have taken place to the repair values.

CONTENTS

✱ Please note the repair value amendments on page 5000 - 500

CONTENTS

CONTENTS

✱ Please note the repair value amendments on page 5000 - 500

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Machine type	Engine type
44 C	D 943 B
55 C	D 962 B
66 C	D 963 B
77 C	D 963 A2
C 44 C	D 943 B
C 55 C	D 962 B
C 66 C	D 963 A1
D 66 C	D 963 A1
600 C	D 962 K
D 600 C	D 962 K
D 600 D	D 962 K
700 C	D 963 K
700 D	D 963 A1
D 700 C	D 963 K
D 700 D	D 963 A1

ENGINE DESCRIPTION

The crankcase is manufactured from cast iron and with the below centre crankshaft and re-inforced side walls produces a distortion free construction.

The renewable wet cylinder liners are manufactured from a centrifugally cast alloy and are sealed with a silicon sealing compound and two "O" ring seals.

Water tubes in the cylinder block guarantee an exceptional cooling of the cylinder liners.

The cylinder head is of a high quality cast iron and fitted to the crankcase with safety collar headed bolts.

The cylinder head gasket is a steel sheet coated on both sides with asbestos. The gasket bore hole rims are re-inforced with steel sheeting. When fitting the cylinder head gasket, on no account use sealing compound.

The valves operate in cast iron guides pressed into the cylinder head. In engines D 943, D 963, D 963 A 1, and D 963 A 2 the exhaust valve seat facings are stellite plated. In these engines a high heat resisting material is used for the inlet and exhaust valve seat inserts. (In the D 962 engine for the exhaust valve only).

The valve springs are of a special spring steel and are secured by spring caps and two piece split cones.

The induction hardened valve rocker shafts are mounted in light metal support brackets bolted onto the top face of the cylinder head. The inlet and exhaust valve rocker arms are manufactured from heat treated steel and are lubricated via an external oil pipe tapped into a camshaft bearing bush. They are operated by case hardened tappets and push rods.

The valve rocker gear is covered with a light metal cover.

The crankshaft is mounted in seven main bearings (the D 943 engine in five bearings) and is of cast chrome steel and hardened. The main and connecting rod journals are induction hardened, thereby guaranteeing a long life.

The precision finished bearing shells are white bearing metal lined. The bearing caps are of cast iron and secured with hexagon headed set screws.

At the front and rear of the crankshaft dust protected radial oil seals are fitted.

ENGINE DESCRIPTION (continued)

The seven journal camshaft (D 943 engine, five journals) is of cast and hardened steel. The cams and bearing surfaces are induction hardened. The camshaft is mounted in renewable precision finished bearings.

The light metal pistons have an eccentric positioned combustion chamber in the piston crowns, three compression rings and one oil control ring. The upper compression ring is chromed. In engines D 963 A 1, and D 963 A 2 the upper compression ring is fitted into a ring carrier cast in the piston.

The floating piston pins are secured with circlips.

The cast chrome alloy steel connecting rods have oblique fitting bearings caps and are located by serrations on the big end faces at right angles to the rod axis.

The piston pin bushes and connecting rod bearings are renewable. The piston complete with connecting rod can be removed from above.

The double geared oil pump guarantees all lubricating requirements of the engine even by extreme working angles of the machine.

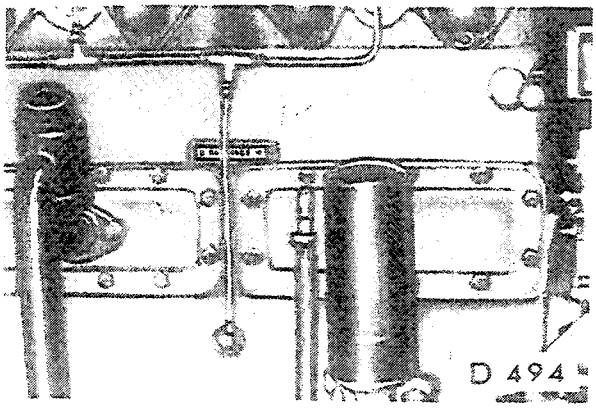
The helical timing gears are of bath nitrated cast steel. The camshaft and injection pump timing gears are interchangeable.

The oil sump and timing gear housings are of thick walled cast iron and have the effect of dampening the engine gear mechanism noise.

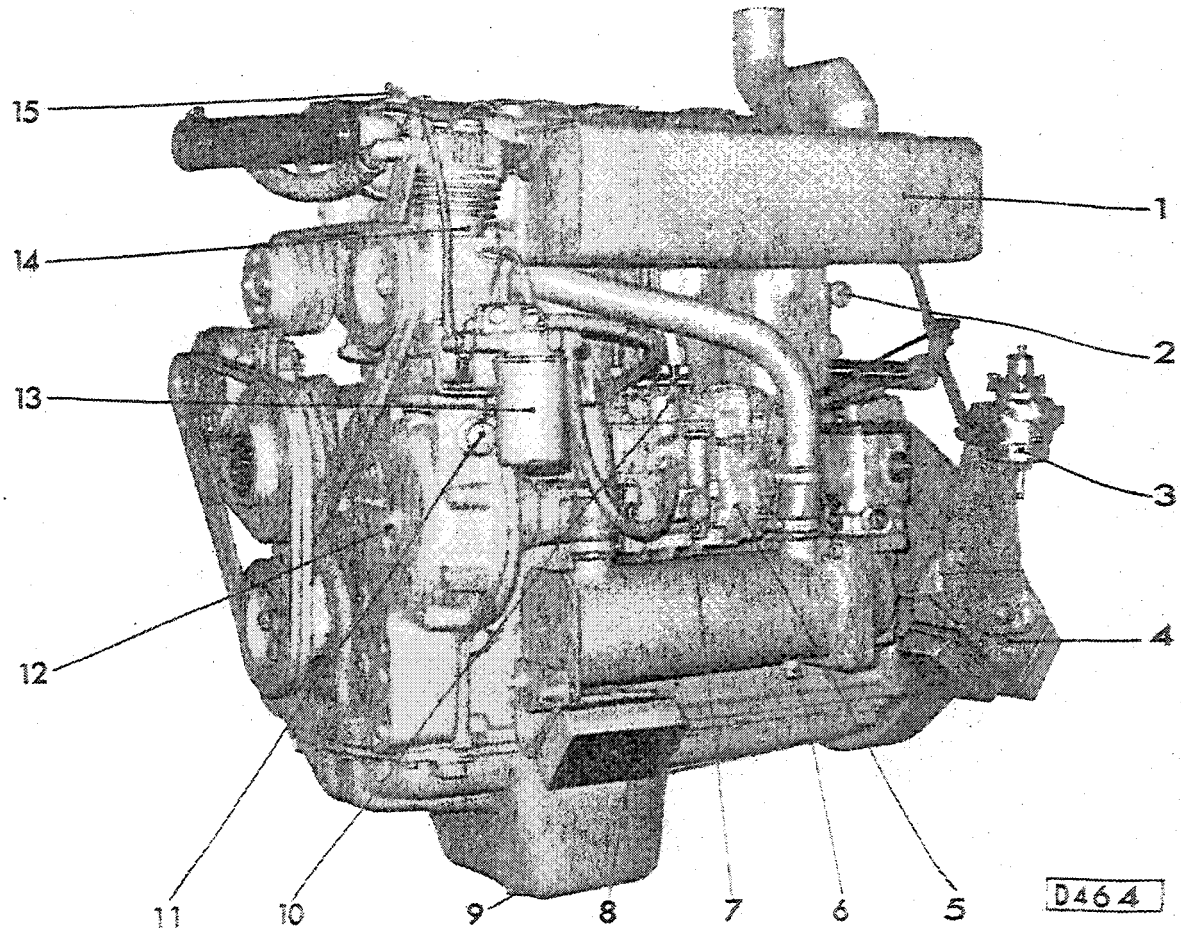
The BOSCH injection pump is mechanical and variable speed regulated. It is lubricated independent from the engine. The overflow of leak-off fuel is directed into the pump crankcase.

The BOSCH injectors with multi-holed nozzles are fitted into the cylinder head with union type retaining nuts.

On the D 900 series engines the engine number is located on the camshaft side of the engine near the engine oil filter. (Fig. D 494)

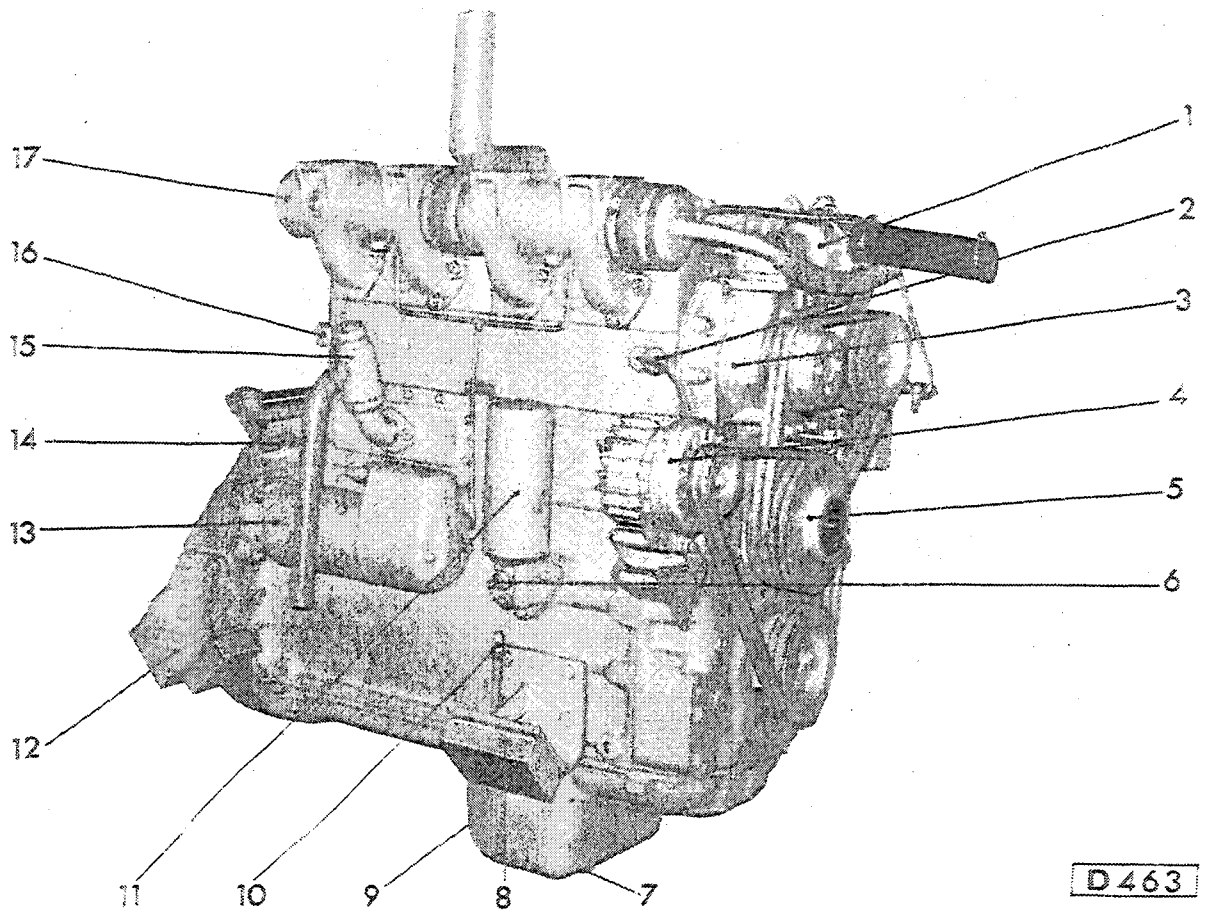


INJECTION PUMP SIDE (Fig. D 464)



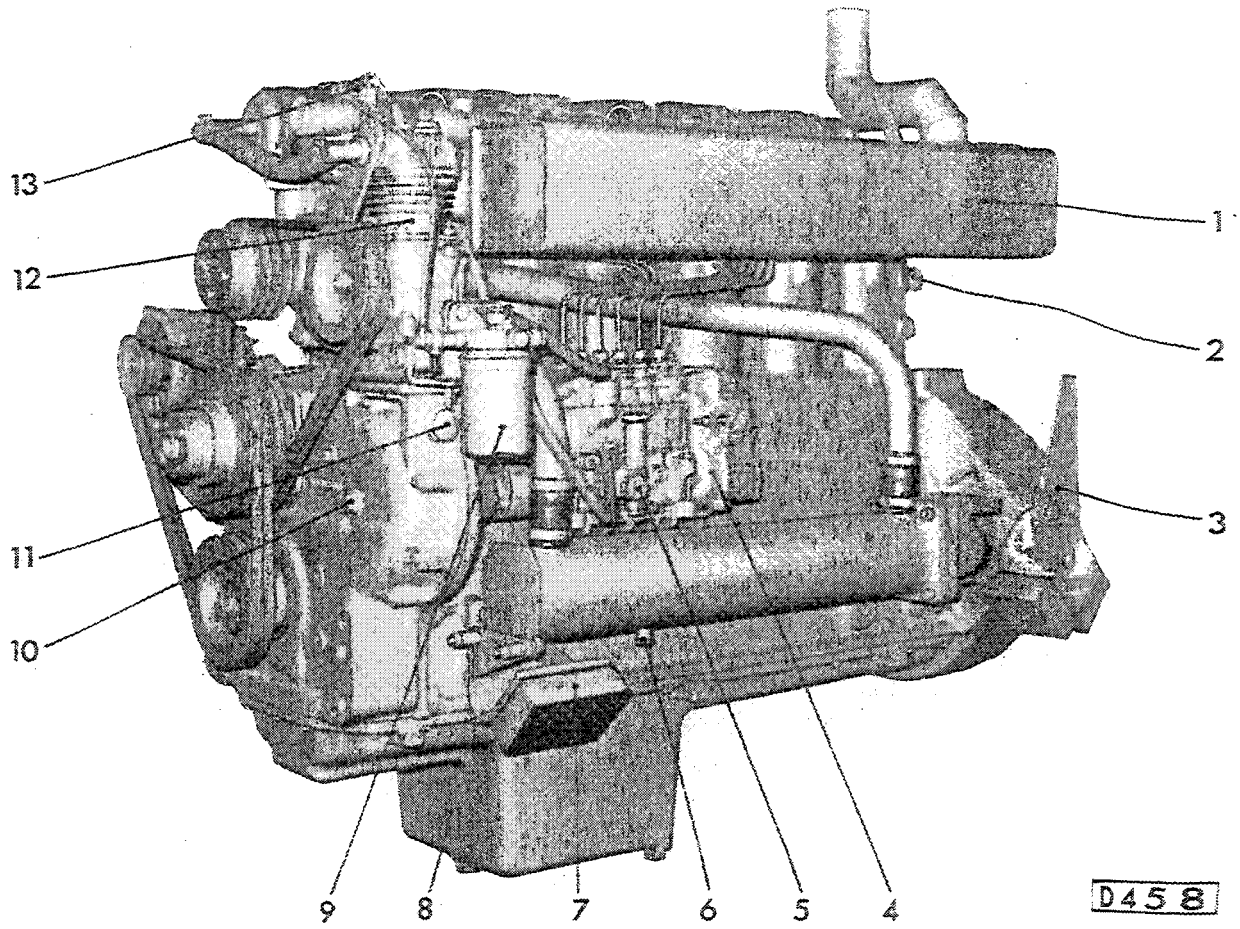
1 Silencer
2 Engine suspending point
3 Pressure regulator with tyre inflator bottle (brake system)
4 Engine bearer, rear
5 Injection pump
6 Coolant drain plug
7 Fuel feed pump
8 Engine bearer, front
9 Engine oil drain plug
10 Injection pump oil filler opening and breather filter
11 Engine suspending point
12 Attachment point for angle drive for measuring engine speed
13 Fuel filter
14 Air compressor
15 Transmitter for coolant temperature gauge

CAMSHAFT SIDE (Fig. D 463)



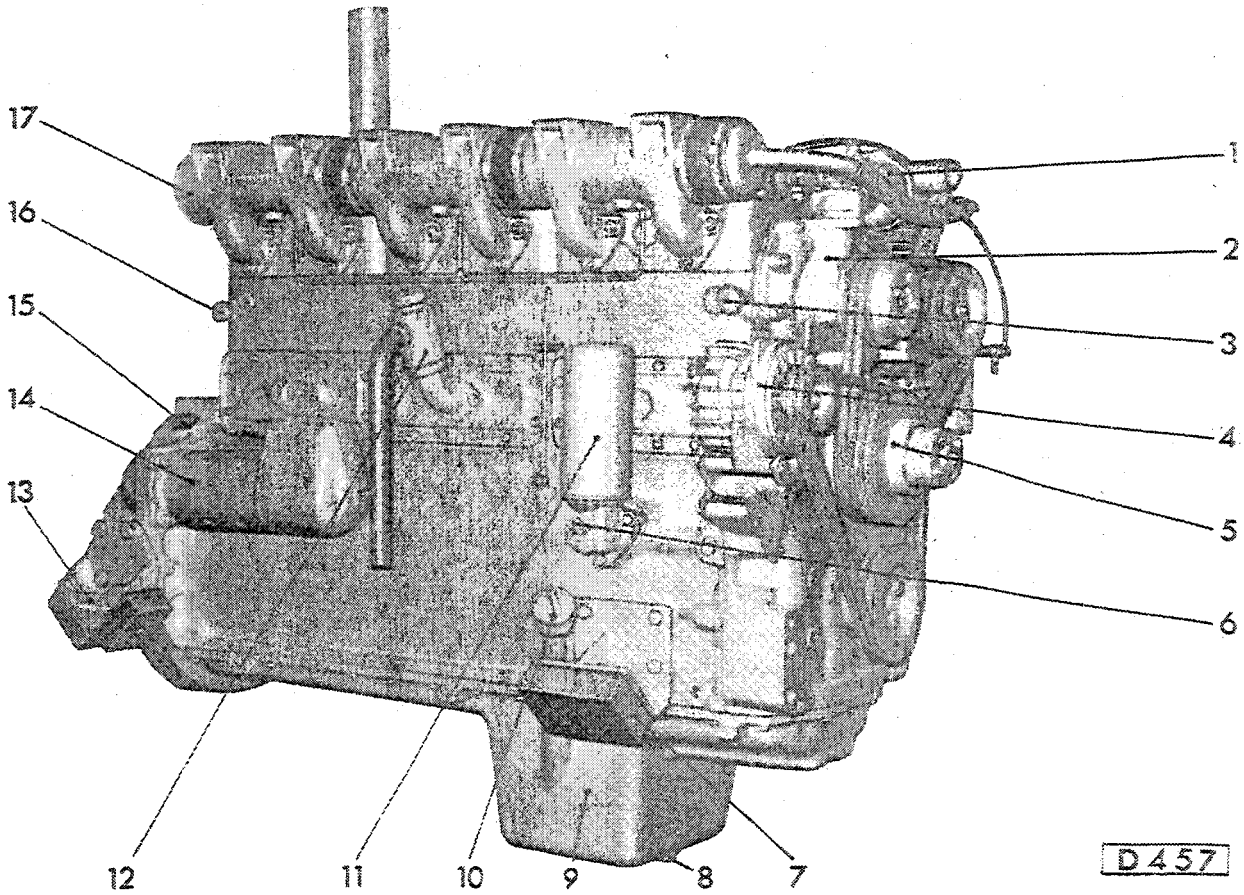
1 Thermostat
2 Engine suspending point
3 Water pump
4 Alternator
5 Fan intermediate drive
6 Oil pressure transmitter
7 Engine oil drain plug
8 Engine bearer, front
9 Oil sump
10 Oil level dip stick
11 Oil filter
12 Engine bearer, rear
13 Starter
14 Access plug for injection timing marks
15 Breather filter and oil filler neck
16 Engine suspending point
17 Inlet manifold

INJECTION PUMP SIDE (Fig. D 458)



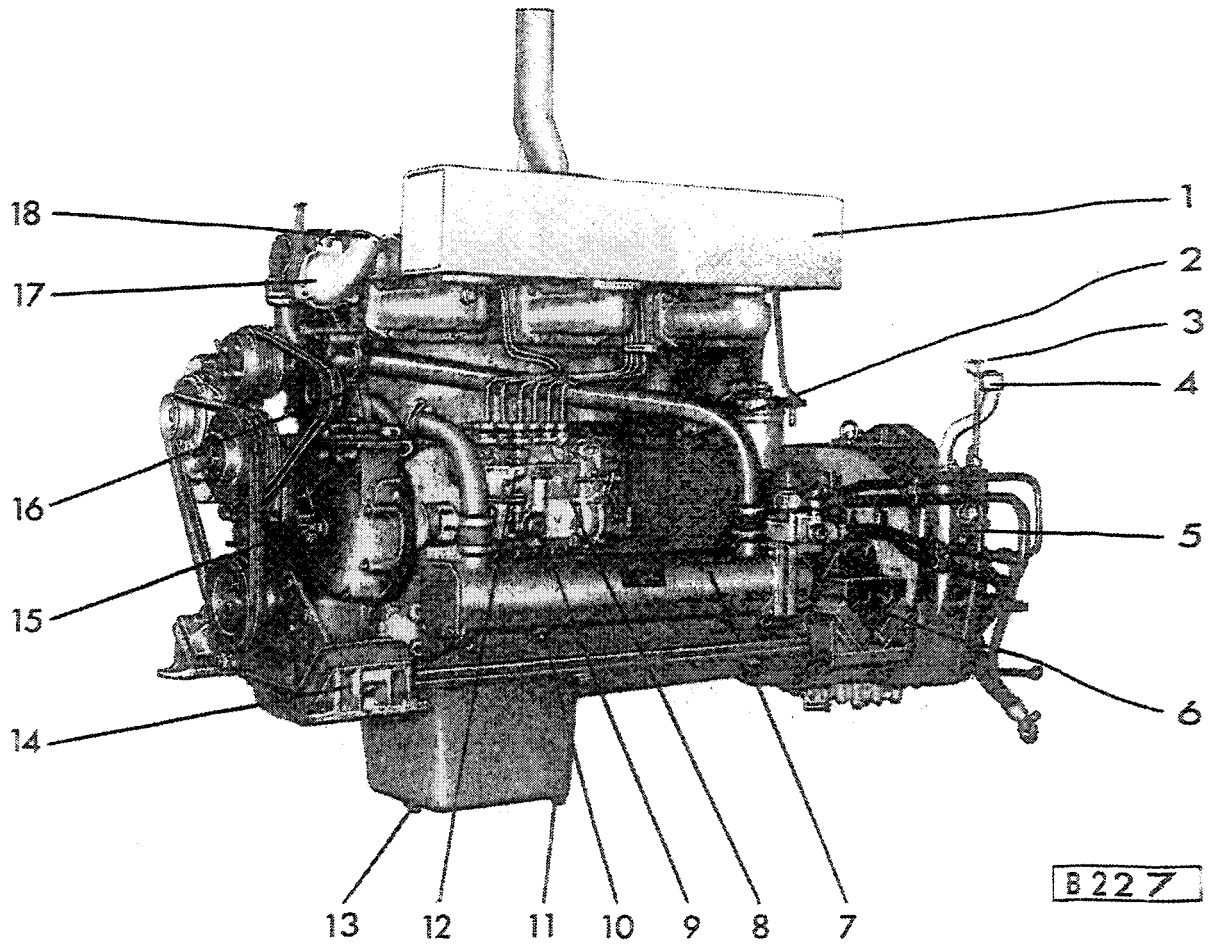
1 Silencer
2 Engine suspending point
3 Engine bearer, rear
4 Injection pump
5 Fuel feed pump
6 Coolant drain plug
7 Engine bearer, front
8 Oil sump
9 Fuel filter
10 Attachment point for angle drive for measuring engine speed
11 Engine suspending point
12 Air compressor
13 Transmitter for coolant temperature gauge

CAMSHAFT SIDE (Fig. D 457)



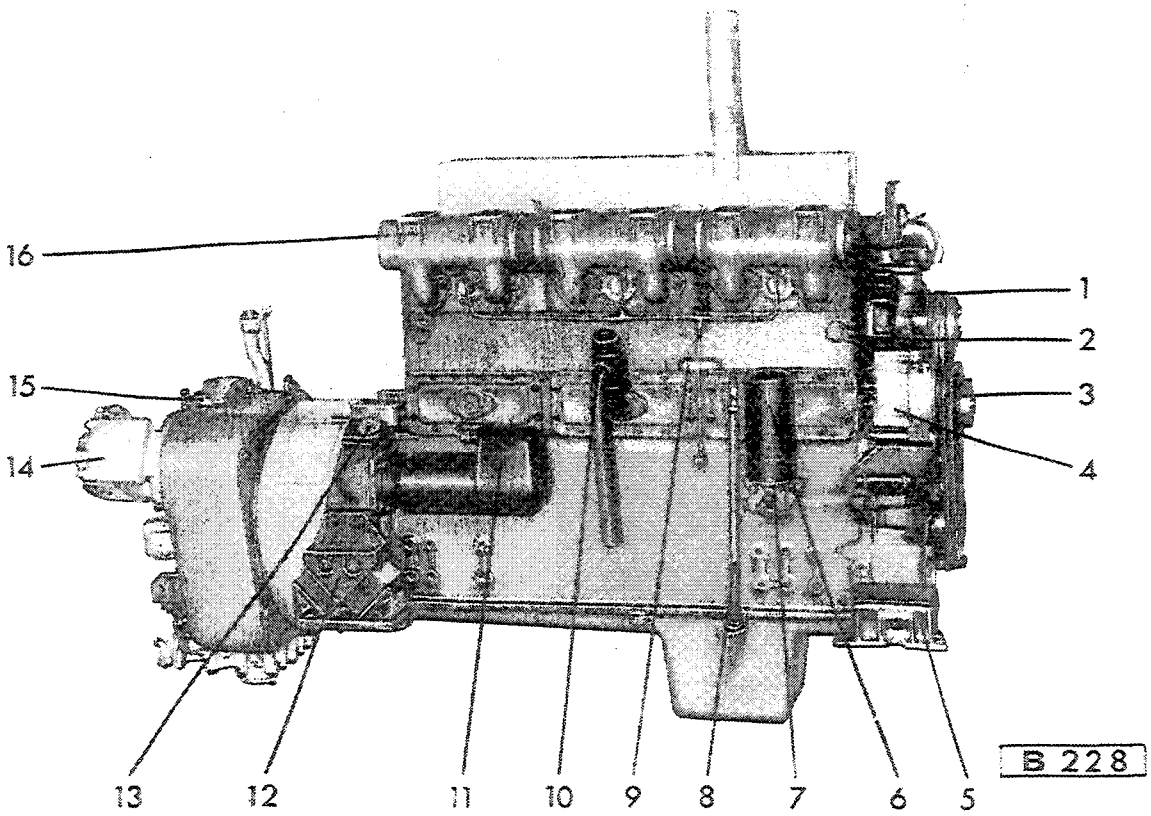
1 Thermostat
2 Water pump
3 Engine suspending point
4 Alternator
5 Fan intermediate drive
6 Oil pressure transmitter
7 Engine bearer, front
8 Engine oil drain plug
9 Oil sump
10 Oil filler neck and dip stick
11 Oil filter
12 Breather filter
13 Engine bearer, rear
14 Starter
15 Access plug for injection timing marks
16 Engine suspending point
17 Inlet manifold

INJECTION PUMP SIDE (Fig. B 227)



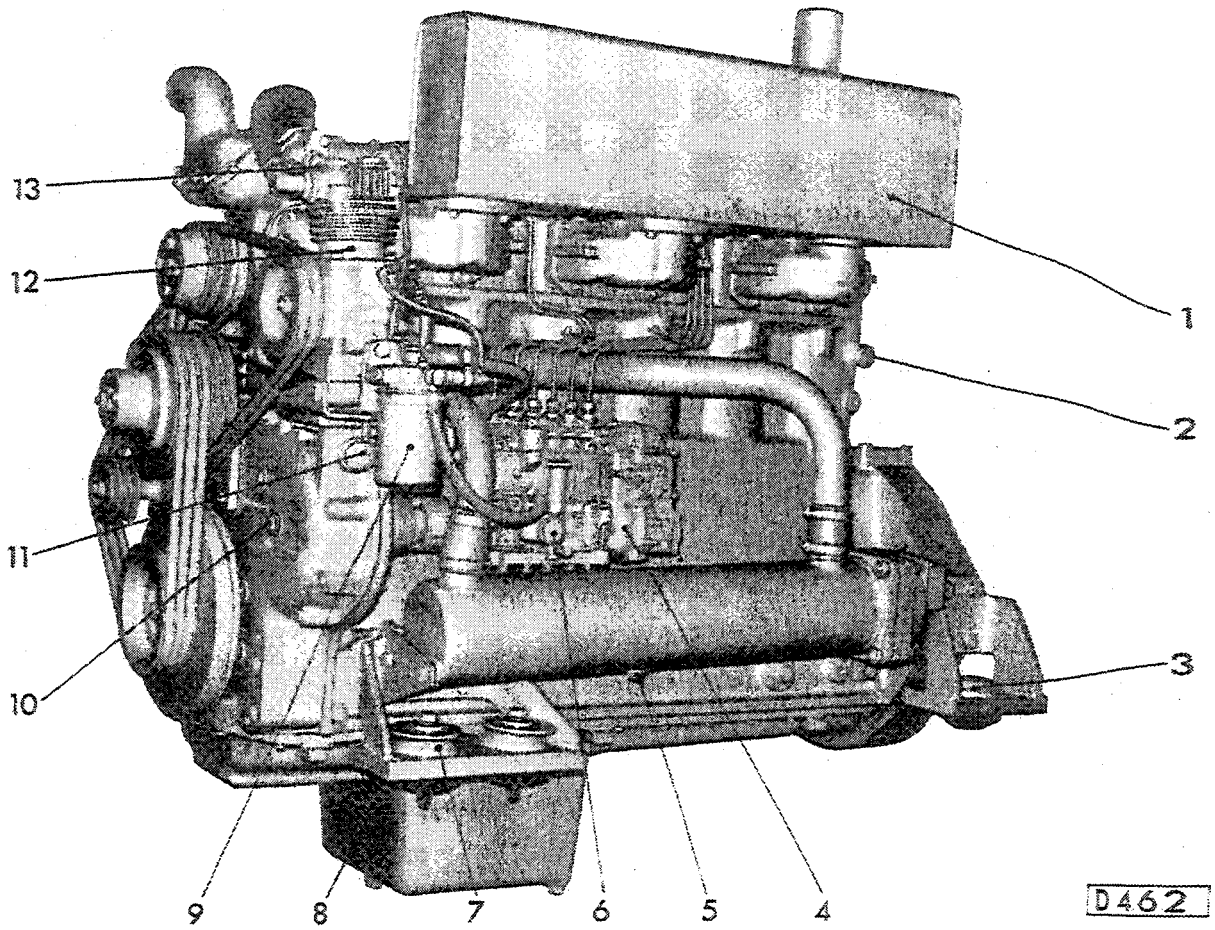
1 Silencer
2 Fuel filter
3 Dip stick for converter transmission
4 Oil filler neck
5 Converter transmission
6 Engine bearer, rear
7 Heat exchanger
8 Injection pump
9 Fuel feed pump
10 Coolant drain plug
11 Engine oil drain plug, rear
12 Injection pump oil filler neck and breather filter
13 Engine oil drain plug front
14 Engine bearer, front
15 Attachment point for angle drive for measuring engine speed
16 Tensioner pulley for water pump V-belts
17 Thermostat
18 Transmitter for coolant temperature gauge

CAMSHAFT SIDE (Fig. B 228)



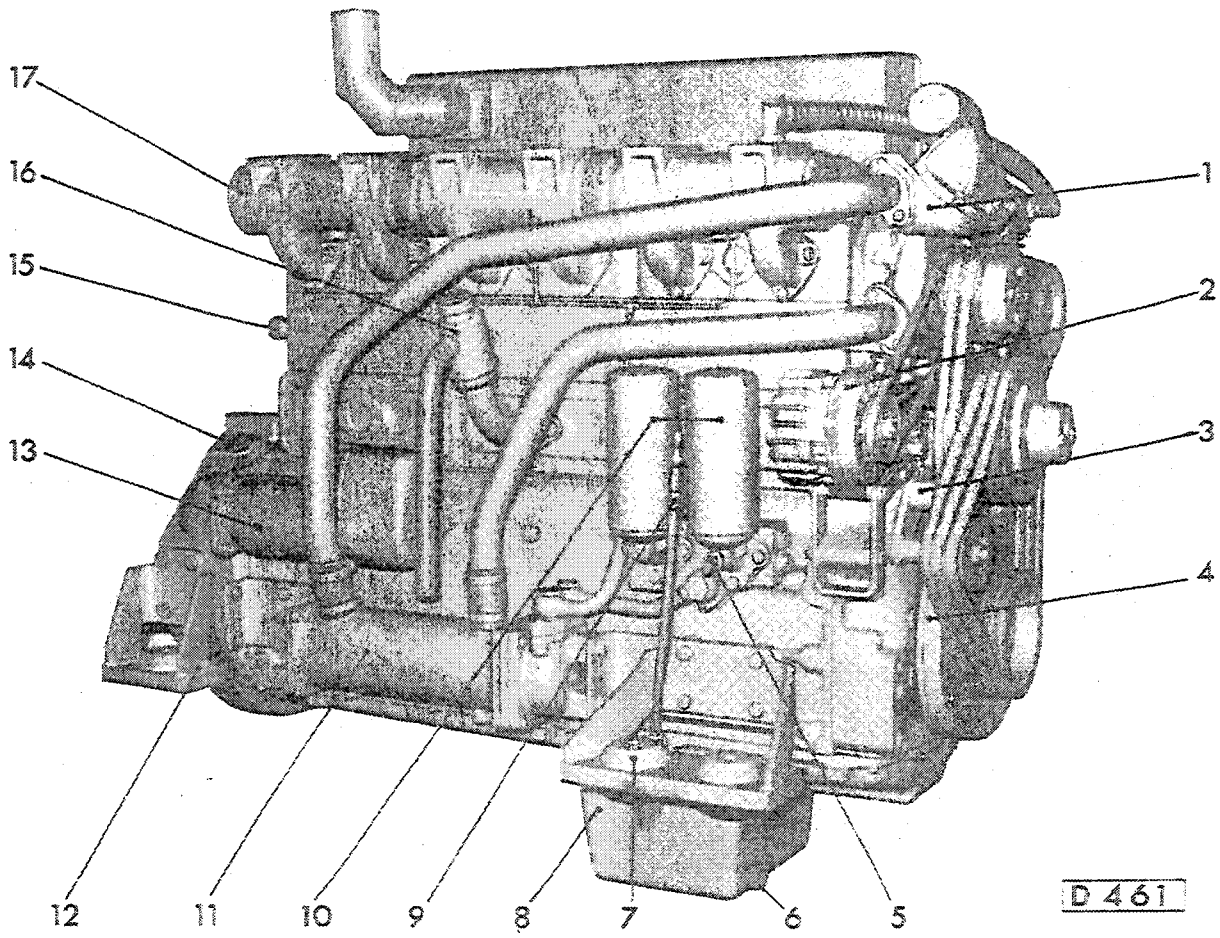
1 Water pump
2 Engine suspending point
3 Fan intermediate drive
4 Alternator
5 Engine bearer, front
6 Oil filter
7 Oil pressure transmitter
8 Oil dip stick
9 Engine number
10 Oil filler neck and breather
11 Starter
12 Engine bearer, rear
13 Access plug for injection timing marks
14 Working hydraulics pump
15 Breather valve for converter
16 Inlet manifold

INJECTION PUMP SIDE (Fig. D 462)



1 Silencer
2 Engine suspending point
3 Engine bearer, rear
4 Injection pump
5 Coolant drain plug
6 Fuel feed pump
7 Engine bearer, front
8 Oil sump
9 Fuel filter
10 Attachment point for angle drive for measuring engine speed
11 Engine suspending point
12 Air compressor
13 Transmitter for coolant temperature gauge

CAMSHAFT SIDE (Fig. D 461)



1 Water pump
2 Alternator
3 Tensioner pulley for fan belt
4 Vibration damper
5 Oil pressure transmitter
6 Engine oil drain plug
7 Engine bearer, front
8 Oil sump
9 Oil level dip stick
10 Oil filter
11 Engine oil heat exchanger
12 Engine bearer, rear
13 Starter
14 Access plug for injection timing marks
15 Engine suspending point
16 Breather filter and oil filler neck
17 Inlet manifold