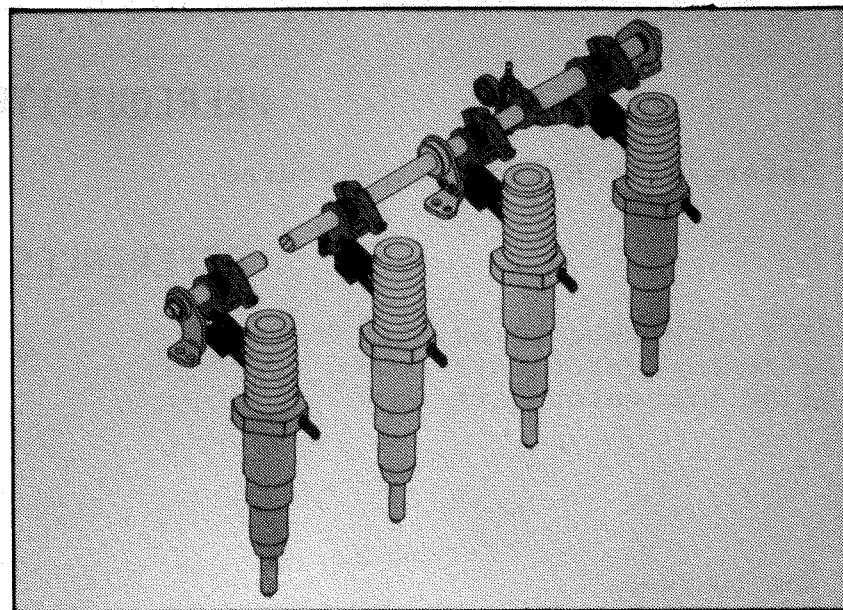
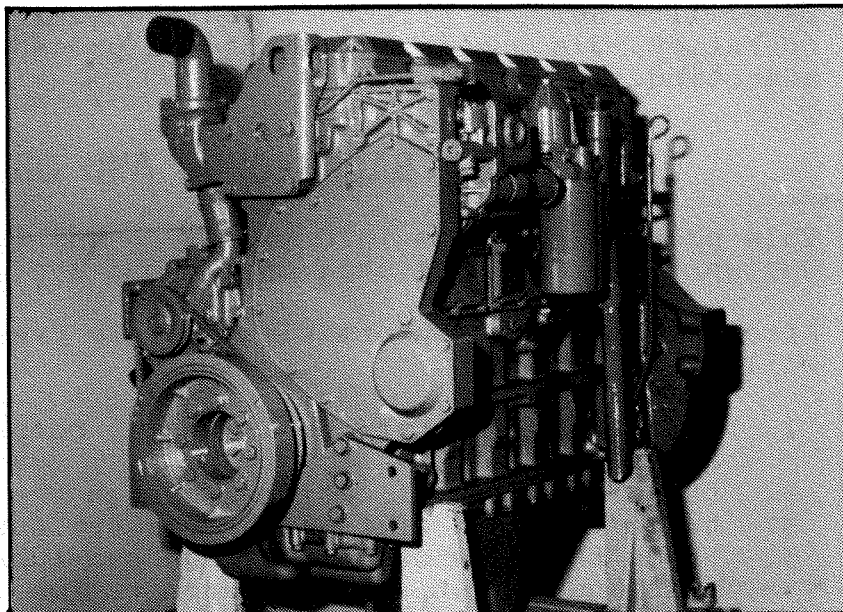




meeting guide



1.1 LITER ENGINE

STMG 545

slides and script

1.1 LITER ENGINE

STMG 545

SLIDES AND SCRIPT

AUDIENCE

Level II - Service personnel who are familiar with diesel engine operation, diagnostic equipment and procedures for testing and adjusting.

BACKGROUND AND OBJECTIVES

This package contains information on the 1.1 Liter Engine line. Basic design features and system operations are covered.

After learning the information in this presentation, the serviceman will be able to:

1. locate and identify basic engine components, all fills, drains and filters;
2. trace the flow of coolant through the cooling system;
3. trace the flow of fuel through the fuel system;
4. trace the flow of oil through the lubrication system;
5. test and adjust rack synchronization, fuel setting, injector timing and valve clearance and adjust low idle; and
6. remove and install unit injectors.

PREREQUISITES

Caterpillar Basic Engine Course

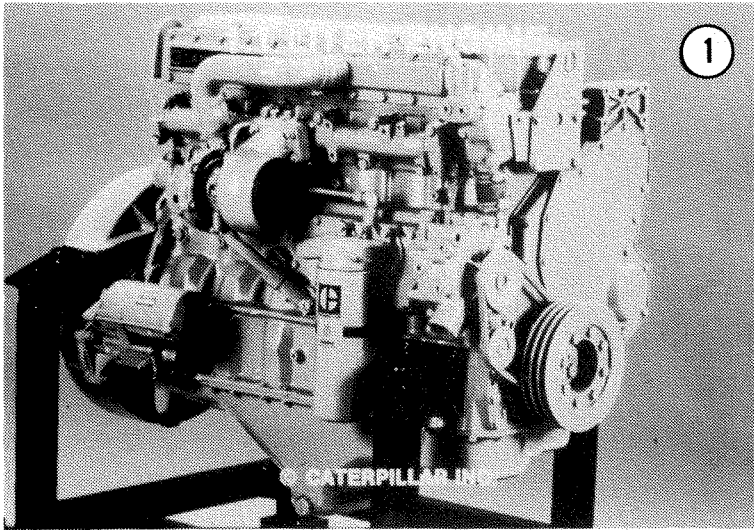
SEGV2513

REFERENCES

1.1 Liter Engine Service Manual
213B Excavator Part Book
214B Excavator Part Book

SENR3611
HEBP1743
HEBP1719

Estimated Time: 45 minutes
Visuals: 72 (2 x 2) slides
Form SESV1545
Date: 11/87

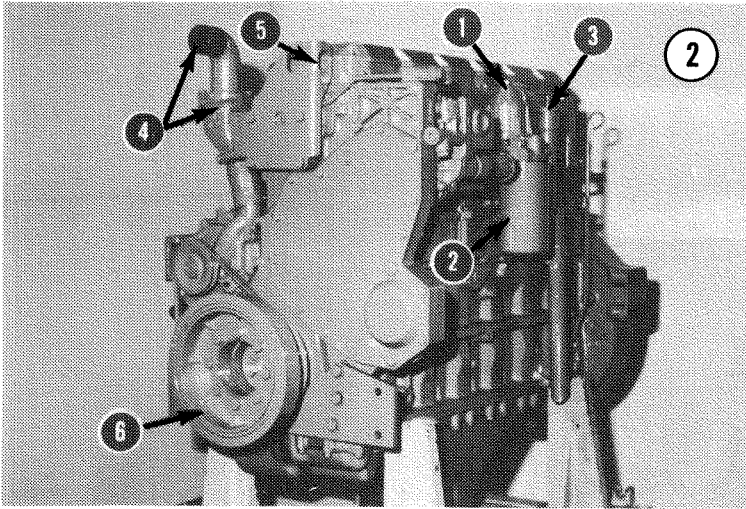


INTRODUCTION

The overall objective of the 1.1 liter engine family is to provide a cost effective 40-190 kw engine family responsive to competitive needs of captive and commercial applications. Consisting of inline 4 and 6 cylinder configurations, a 105 mm bore and 127 mm stroke result in 4.4 and 6.6 liter displacements.

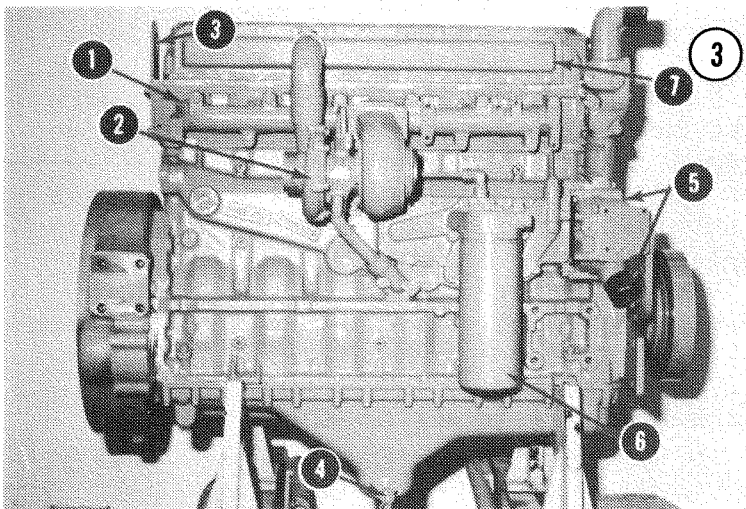
Basic engine features include integral bore block, Caterpillar designed unit injection fuel system, two valves per cylinder, and turbocharged configurations. Crankshafts, connecting rods and camshafts are made of forged steel. Aluminum die castings are used for the front housing, intake manifold and valve cover to achieve target weight goals of 400 and 493 kg (4 and 6 cylinder). Efficient breathing, high fuel injection pressure and high cylinder pressure capability have been provided to meet fuel economy and performance objectives. Key design features include: high mounted engine camshaft and oscillating roller followers; high-contact ratio spur gears; quiescent (zero swirl) intake ports; right side intake and exhaust; three-ring pistons; cylinder bore integral with cylinder block; hardened crank journals and fillets; 3114 balance shafts; gear-type oil pump; internal plate-type oil cooler; and rigid block structure.

Worldwide component sourcing is being developed to assure a financially competitive engine in anticipated captive and commercial applications.

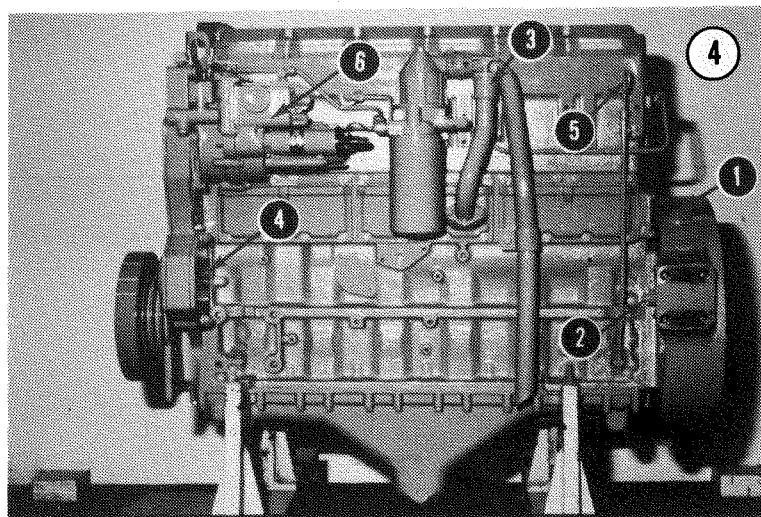


ORIENTATION

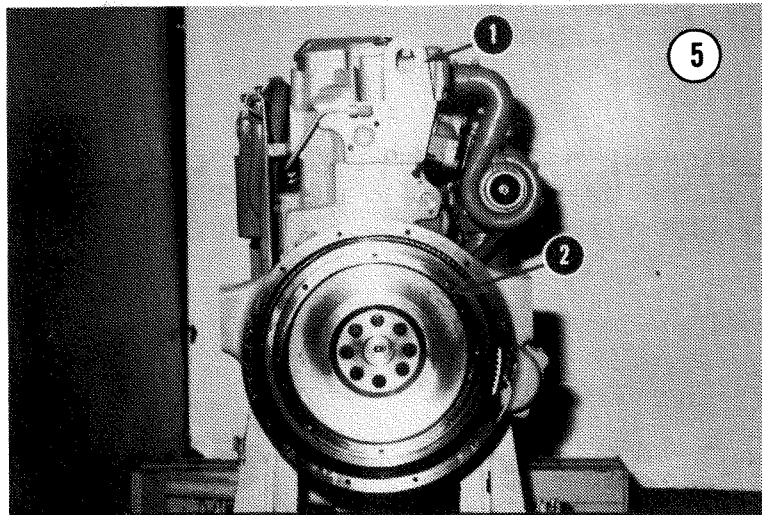
From the front of the engine these components are visible: the crankcase breather (1), the fuel filter (2), the oil filler tube (3); the water temperature regulator (thermostat) housing and coolant outlet (4), the front lifting bracket (5), and the crankshaft pulley and vibration dampener (6).



Located on the right side of the engine are: the exhaust manifold (1), the turbocharger (2), the rear lifting bracket (3), oil drain plug (4), the water pump and coolant inlet (5), the oil filter (6), the intake manifold (7), and the oil cooler (the oil filter is mounted to the oil cooler).



Visible on the left side of the engine are: the location for the magnetic pickup for an electronic tachometer (1), the access plug in the flywheel housing for locating top center for the No. 1 cylinder (2), the oil filler pipe (3), the accessory drive mounting (4), the crankcase oil gauge (dipstick) (5) and the governor (6).



The rear view shows the rear lifting bracket (1) and the flywheel (2).

The engine information plate is on the top of the valve cover toward the center of the engine and readable from the left side.