



Caterpillar

Service Manual

D330 Engine

S/n 56B1, 57B1 & Up

Service Manual

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CT-S-ENG D330

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SERVICE MANUAL

for

CATERPILLAR

D330 ENGINE

SERIAL NUMBERS 56B1-UP AND 57B1-UP

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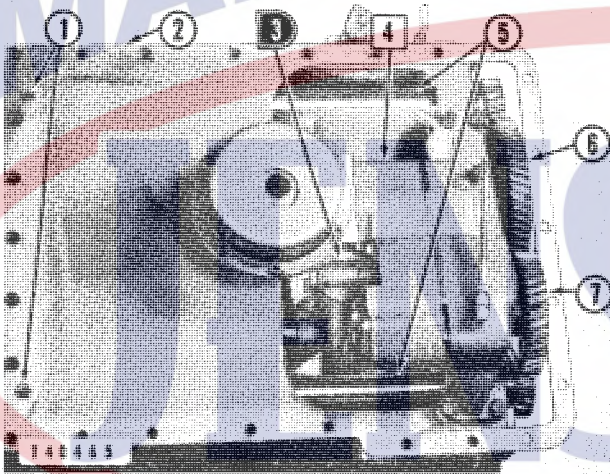
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ENGINE OIL PUMP

1

2. Turn the diesel engine flywheel to TC 1 and 4 with No. 1 cylinder on compression stroke.
3. Install two locating bolts in the threaded holes (1) in the oil pan plate (2) and lock the balancers (5) in place.
4. When removing the oil pump, be sure to keep the same shims under each of the mounting brackets on the body assembly. When installing the oil pump, shim if necessary to obtain backlash as indicated in the topic, SPECIFICATIONS, at points located by timing marks D-D and H-H.



PREPARING TO REMOVE THE OIL PUMP

☐ Remove ☒ Disconnect

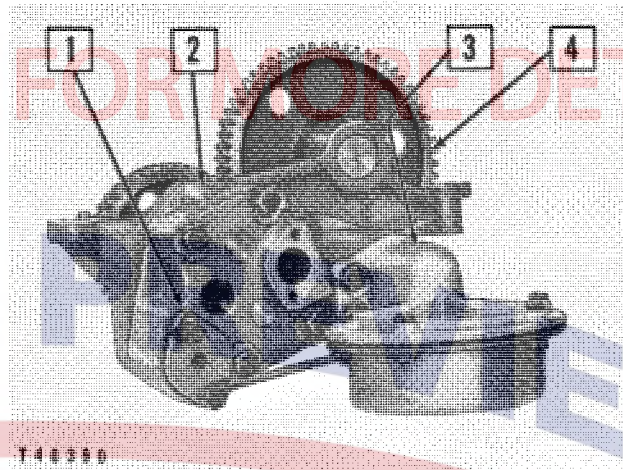
1-Balancer lock bolt holes. 2-Oil pan plate. 3-Elbow. 4-Oil pump. 5-Balancer shafts. 6-Idler gear. 7-Oil pump drive gear.

5. Inspect the scavenge inlet elbow O-ring seal and replace it if it shows any sign of damage.
6. When installing the oil pump, make sure the idler gear (6) is timed to drive gear (7), and that each of these gears is timed to the balancer shafts as described in the previous topic.

DISASSEMBLY

See the topic, BY-PASS VALVE, for an alternate removal of the flange (1), spring (5), and plunger (6).

1. Before the pump drive shaft can be removed from the pump body, it is necessary to remove the key.
2. Inspect the bearings in the pump body assembly for excessive wear and replace if necessary. See the topic, SPECIFICATIONS.
3. Ordinarily, oil pump gears should not have to be replaced unless they have worn sufficiently to cause a considerable drop in oil pressure or unless they have been damaged. The gear (14)

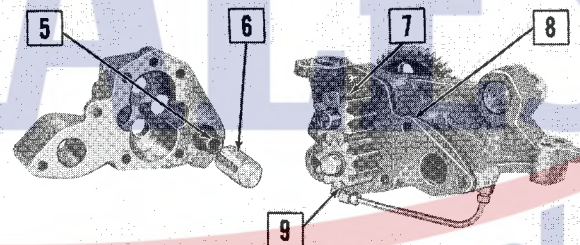


PREPARING TO DISASSEMBLE OIL PUMP

☐ Remove

1-Flange over by-pass plunger and spring. 2-Scavenger pump body. 3-Suction bell. 4-Idler gear.

and its key are removable from the shaft by removing the spring pin (13) or (C).

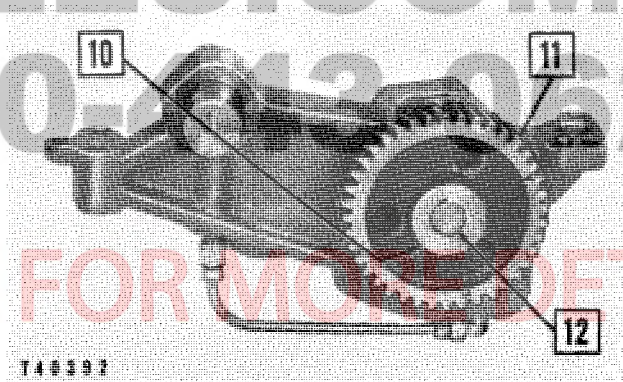


DISASSEMBLING SCAVENGER OIL PUMP

☐ Remove

5-Spring. 6-Plunger. 7-Drive gear. 8-Spacer. 9-Driven gear.

4. Using a 1/8" drill, clean the hole (B) that has been peened to retain the pin (C). Drill the gear at point (A) to gain access to the pin (C).



DISASSEMBLING OIL PUMP

☐ Remove

10-Pin. 11-Gear. 12-Shaft assembly.

If either the main bearings or the camshaft bearings are badly worn, they should be replaced with new ones.

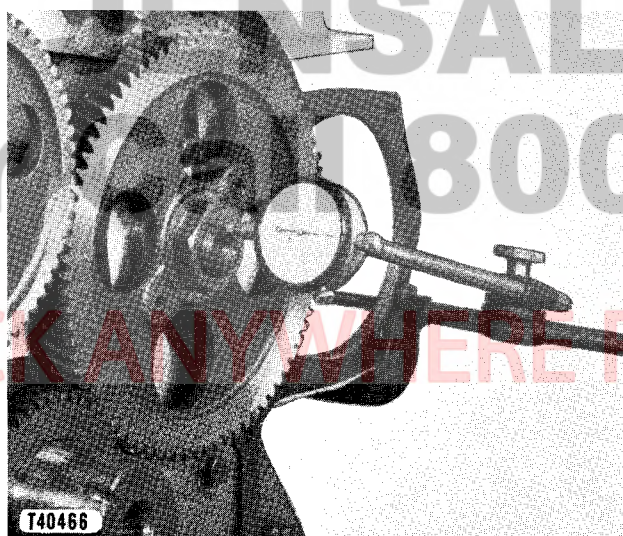


CHECKING CAMSHAFT GEAR BACKLASH

If a reading of less than the minimum backlash is shown, it is an indication of incorrect assembly, or a burr or rough spot on one of the gears. In this case, take readings every 90° around the camshaft gear to determine the cause. A burr can be removed from a gear tooth, by using a gear file or fine stone, without removing the gear from the camshaft. When removing a burr, cover the remaining exposed parts to keep them clean.

Camshaft End Clearance

The end thrust of the camshaft is taken by the thrust plate.



CHECKING CAMSHAFT END CLEARANCE

The correct end clearance is shown in the topic, SPECIFICATIONS. The thrust plate should be replaced if the end clearance exceeds the permissible end clearance.

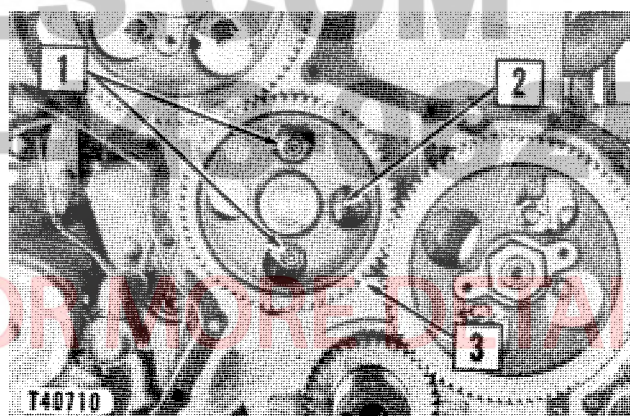
The end clearance can be checked by installing a dial indicator as illustrated. After checking the end clearance, if it is necessary to replace the thrust plate, it can be removed as described in the topic, CAMSHAFT REMOVAL AND INSTALLATION.

If the camshaft and camshaft gear were removed as a unit, the thrust plate should be inspected for wear. The end clearance can be checked in the following manner. Push the thrust plate against the gear. Using a thickness gauge, measure the clearance between the thrust plate and the end of the camshaft bearing journal.

Camshaft Bearing Removal and Installation

1. Place the engine on an engine stand.
2. Remove the camshaft, oil pan, oil pump, oil pan plate, and flywheel housing. See the covering topics.
3. Press the bearings out of the cylinder block.
4. When installing the camshaft front bearing, be sure that the oil hole in the bearing is aligned with the oil hole in the cylinder block.
5. Install the camshaft front and rear bearings so there is 1/8" clearance from the face of the cylinder block to the bearing edge.

ACCESSORY DRIVE IDLER GEAR REMOVAL AND INSTALLATION



ACCESSORY DRIVE IDLER GEAR REMOVAL

☐ Remove

1-Bolts. 2-Thrust plate. 3-Gear.

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ATTACHMENTS

AIR STARTING SYSTEM

Loosen the adjusting bolt (3) to relieve the spring force.

Inspect and replace all worn or damaged parts.

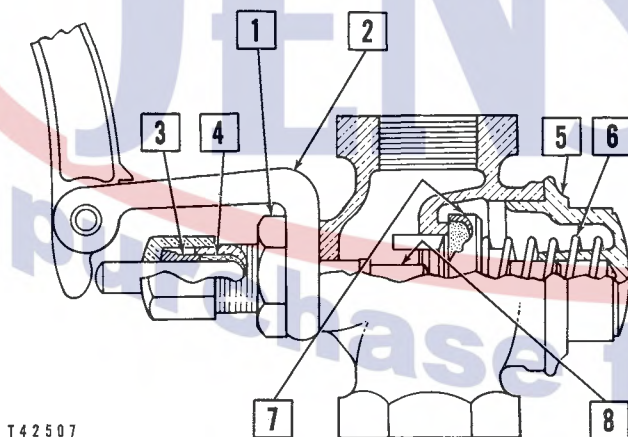
Assemble in the reverse order of disassembly.

NOTE

The regulator can be adjusted by turning the adjusting screw located on top of the chamber. With the regulator disconnected from the control valve, and connected from the air supply line, connect a gauge reading in PSI to the outlet side of the regulator and check the PSI. In cold weather it may be necessary to raise the PSI delivered by the regulator. The pressure should not exceed 90-110 PSI. After the pressure has been set, install the regulator.

BALANCED WHISTLE VALVE

Disassembly and Assembly



PREPARING TO DISASSEMBLE BALANCED WHISTLE VALVE

☐ Remove

1-Nut, 2-Fulcrum, 3-Gland, 4-Packing, 5-Cap, 6-Spring, 7-Holder, 8-Stem.

Inspect and replace all worn or damaged parts.

OILER

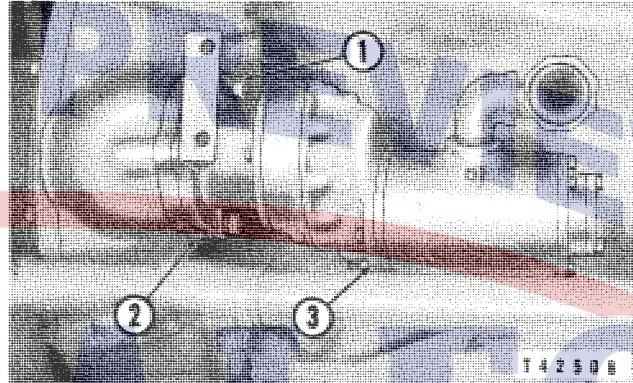
The air starting motor is lubricated by the oiler which automatically meters oil into the air stream in the form of a fine fog when the balanced whistle valve is opened. An air director tube in the air passage through the body delivers pressure above the oil in the bowl. Oil flows from the bowl through a tube and drilled passage to a chamber under the top plug on the body. From the chamber, oil flows through the oil drip gland which meters the flow of oil to about four drops per minute.

AIR STARTING MOTOR

Removal and Installation

Remove the whistle valve and the oiler.

Remove the nuts (1) which secure the air starting motor (3) to the flywheel housing.



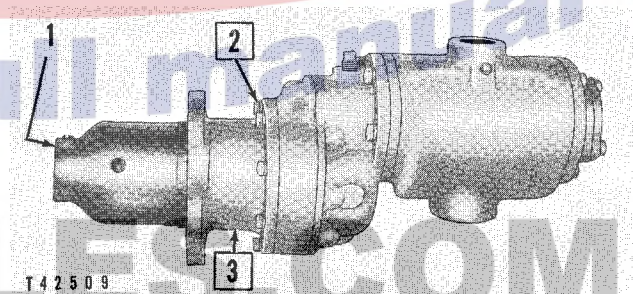
PREPARING TO REMOVE AIR STARTING MOTOR

1-Nuts, 2-Adapter, 3-Air starting motor.

Prior to installation, inspect the gaskets on either side of the adapter (2) and replace if damaged.

Disassembly and Assembly

1. Prior to disassembly, mark all mating surfaces in such a manner that they will be installed in correct relationship to each other.



PREPARING TO DISASSEMBLE AIR STARTING MOTOR

☐ Remove

1-Bearing, 2-Bolts, 3-Starter drive housing.

2. Inspect the bearing (1) and replace if excessively worn or damaged.
3. Lift the starter drive assembly out of the gear case cover.
4. The gear (7) can be removed from the shaft by using an 8H663 Bearing Pulling Attachment and an 8B7548 Push Puller with two 8B7550 Legs and a suitable spacer.
5. Inspect and replace all worn or damaged parts.