



Caterpillar

Service Manual

D339 Engine S/N 34B1 & Up



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Service Manual

CT-S-ENG D339

ENGINE

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**ENGINE
SPECIFICATIONS**

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Cylinder Liner

Inside diameter	5.750 - 5.751 in.
Permissible liner wear (increase in diameter at top of ring travel)	.020 in.

Fan Belt Tension

Slack at point midway between pulleys	$\frac{3}{4}$ - 1 in.
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Flywheel

Retaining bolt torque	230 lb. ft.
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Flywheel Housing

Bolt and nut torque	150 lb. ft.
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Fuel Injection Equipment

Fuel injection pump timing	13° BTC
Fuel injection pump lifter setting (with piston at top center)	$1.733 \pm .004$ in.
Injection pump lifter setting (off engine—see text)	$1.781 \pm .001$ in.
Fuel pump plunger length	2.6575 - 2.6577 in.
Permissible wear (decrease in length of plunger)	.005 in.
Injection nozzle orifice	.028 in.
Fuel injection camshaft bearing bore	1.436 - 1.437 in.
Clearance between fuel injection camshaft and bearings	.002 - .004 in.
Permissible clearance	.010 in.
Nozzle retaining nut torque	105 lb. ft.
Precombustion chamber torque	200 lb. ft.

Fuel Transfer Pump

Clearance between gear and covers, total	.001 - .002 in.
Bearing bore	.4950 - .4955 in.
Bearing clearance	.001 - .002 in.
Permissible bearing clearance	.005 in.

Governor

Drive gear backlash	.002 - .006 in.
Permissible upper retainer bearing clearance	.005 in.

Oil Pump

Clearance between gears and end covers	.002 - .004 in.
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Piston Pins

Clearance in piston pin bearing	.001 - .002 in.
Permissible clearance in piston pin bearing	.006 in.
Clearance in piston	.0004 - .001 in.
Permissible clearance in piston	.006 in.

Piston Rings

Piston ring side clearance	
Top ring	.005 - .006 in.
2nd and 3rd ring	.003 - .0046 in.
Oil control ring	.0015 - .0035 in.
Permissible clearance (top compression ring)	.012 in.
Ring gap, top	.017 - .022 in.
Ring gap, 2nd and 3rd	.017 - .027 in.
Ring gap, oil	.015 - .025 in.

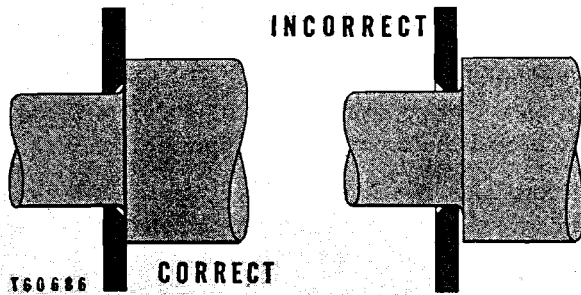
Rocker Arm Bearings

Clearance between shaft and bearings	.0020 - .0035 in.
Permissible clearance	.010 in.

Service Meter

Permissible bearing clearance	.012 in.
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or washer against a shoulder on a shaft, be sure the chamfered side is toward the shoulder.



Correct and incorrect installation of spacer.

When pressing bearings into a retainer or bore, apply pressure to the outer race. If the bearing is pressed on the shaft, apply pressure on the inner race.

Preload

Preload is an initial load placed on the bearing at the time of assembly. Whether a taper roller bearing should have preload could depend on any of several conditions: rigidity of the housings and shaft, bearing spread, speed of operation, etc.

The only certain way to determine what a bearing requires, preload or end clearance, is to consult the disassembly and assembly topic pertaining to that bearing.

Care should be exercised in applying preload. Misapplication of preload to bearings requiring end clearance can result in bearing failure.

Sleeve Bearings

Do not install sleeve bearings with a hammer. Use a press if possible and be sure to apply the pressure directly in line with the bore. If it is necessary to drive on a bearing use a bearing driver or a bar with a smooth flat end. If a sleeve bearing has an oil hole, align it with the oil hole in the mating part.

GASKETS

Be sure the holes in the gaskets correspond with the lubricant passages in the mating parts. If it is necessary to make gaskets, select stock of the proper type and thickness. Be sure to cut holes in the right places. Blank gaskets can cause serious damage.

When removed, always install new cylinder head and manifold gaskets using recommended gasket compound on head gaskets to allow uniform sealing.

BRAKE LININGS

Replace brake linings before they have worn enough to permit the rivet heads to contact and score the brake drums.

BATTERIES

Clean batteries by scrubbing with a solution of baking soda and water. Rinse with clear water. After cleaning, dry thoroughly and coat terminals and connections with an anti-corrosion compound or grease.

If a machine is to be stored or not used for a long period of time, the batteries should be removed. Store them in a warm, dry place, preferably on wooden shelves. Never store on concrete. A small charge should be introduced periodically to keep the specific gravity rating at recommended level.

SEALS

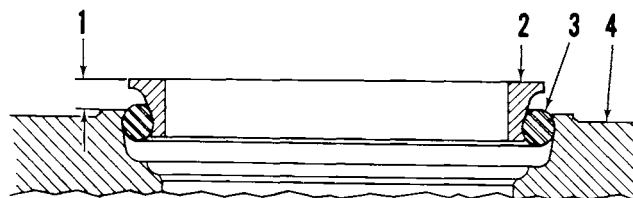
Duo-Cone Floating Seals

Floating ring seals have highly finished surfaces and are held together by toric sealing rings. The flexibility of the toric sealing rings makes the floating ring seals self aligning and compensates for wear on the metal faces.

During disassembly, tape the metal floating ring seals together so they will be kept in matched sets. Always install the metal floating ring seals in pairs; that is, two new seals together or two seals that have previously run together. Never reinstall a used toric sealing ring.

Handle all parts with care to avoid nicks. File smooth any parts, other than the sealing faces, that have nicks that may make assembly difficult or questionable. Wash off all dirt accumulation from used parts. Use a wire brush to clean dirt or rust from the bore of the seal retainers to assure they are clean and smooth. Remove all oil or the protective coating from floating ring seals and retainers with a nonflammable cleaning solvent. Be sure the ramp on the retainers and on the floating ring seals are dry.

Check the ramps for tool marks and nicks. On used parts, remove dirt or rust deposits from the ramps. Smooth the surface with emery cloth.



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An example of a correct installation of a metal floating ring seal and toric sealing ring. The illustration shows the dimension (1) to be checked, the metal floating ring seal (2), the rubber toric sealing ring (3) and the toric sealing ring retainer (4). The dimension must be uniform around the entire circumference of the floating ring seal. Check the dimension at 90° intervals.