



Caterpillar

Service Manual

5-3/4 Bore

4 Cylinder

Diesel Engine

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Service Manual

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CT-S-ENG53/4x4

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SPECIFICATIONS

DIESEL ENGINE.

Bore—5 $\frac{3}{4}$ in.; Stroke—8 in.
Firing Order—1-3-4-2.

Camshaft

Bearing, journal diameter	2.619	- 2.620	-in.
Bearing clearance	.003	- .006	-in.
Maximum permissible clearance		.010	-in.
End clearance	.005	- .009	-in.
Max. end clearance (thrust plate and washer)		.025	-in.

Crankshaft

Main journal, diameter	3.749	- 3.750	-in.
Main bearing clearance (babbitt bearings)	.004	- .006	-in.
Main bearing clearance (aluminum bearings)	.006	- .0085	-in.
Maximum permissible clearance		.015	-in.
End clearance (thrust plate and washer)	.016	- .020	-in.
Maximum permissible end clearance		.035	-in.
Main bearing stud nuts, torque wrench	$\frac{5}{8}$ in. nuts—	700 lb. in.	
	$\frac{7}{8}$ in. nuts—	4500 lb. in.	
Connecting rod, journal diameter	3.624	- 3.625	-in.
Maximum permissible journal wear		.009	-in.
Maximum permissible out-of-roundness (journal)		.007	-in.

Connecting Rod

Connecting rod bearing, clearance (babbitt bearings)	.0045	- .006	-in.
Connecting rod bearing, clearance (aluminum bearings)	.006	- .0085	-in.
Maximum permissible clearance		.015	-in.
Connecting rod bolt nuts, torque wrench		1500 lb. in.	
Center-to-center distance	14.999	-15.001	-in.

Cylinder Liner

Maximum permissible liner wear (at top of ring travel)		.020	-in.
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Piston Pins

Clearance in rod bushing	.001	- .0018	-in.
Maximum permissible clearance in rod		.006	-in.
Maximum permissible clearance in piston		.006	-in.

Piston Rings

Piston Ring Side Clearance			
Top ring	.003	- .0045	-in.
2nd and 3rd ring	.0025	- .004	-in.
Oil control ring	.0015	- .0035	-in.
Maximum permissible clearance (top compression ring)		.012	-in.
Ring gap, top	.012	- .017	-in.
Ring gap, all others	.020	- .030	-in.

Where shims are used, be sure to remove them all. Tie the shims together and identify them as to their location. Then keep them clean and flat until they are reinstalled.

Whenever fuel injection lines are disconnected, the ends of the lines should be capped with the fittings supplied in the tool kit. Also cap the pumps and valves. This will prevent dirt and other foreign matter from entering the fuel injection system.

CLEANING AND INSPECTION

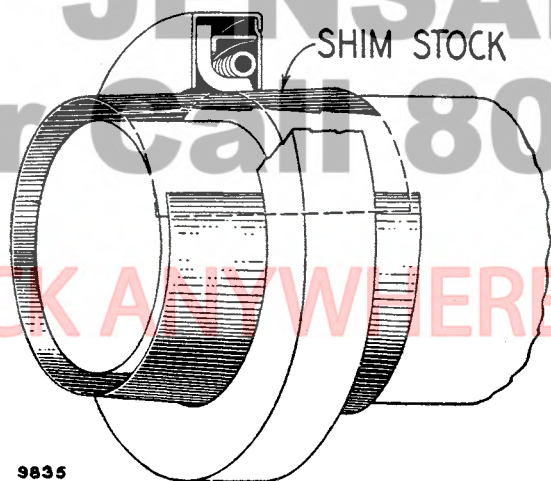
Clean all parts thoroughly after they are removed and inspect them. Be sure all lubricant passages and oil holes are open. Badly worn or damaged parts should not be put back in the machine. Cover all parts to keep them clean until they are installed.

Anti-friction bearings should receive special handling. As soon as a bearing is removed, cover it to keep out dirt and abrasives. Wash bearings in non-inflammable cleaning solution and inspect the races and balls or rollers. Discard the bearings if they are pitted, scored, or burned. If the bearing is serviceable, coat it with light oil and wrap it in clean paper. Do not unwrap new bearings until ready to install them.

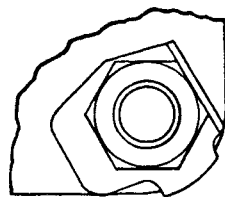
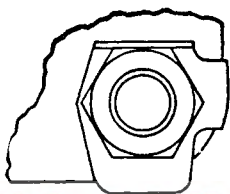
ASSEMBLY

Clean the rust preventive compound from all machined surfaces of new parts before installing them. Be sure to install parts in the proper location and position.

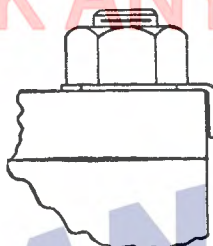
When one part is pressed into another, use white lead or a suitable prepared compound to lubricate the mating surfaces. Tapered parts, however, should be assembled dry. Before assembling parts with tapered splines, be sure the splines are clean, dry and free from burrs. Then press the parts together tightly.



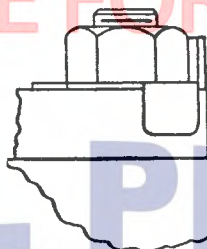
PROTECTING SEAL DURING
INSTALLATION



METHOD FOR LOCK
POSITIONING AND
BENDING



RIGHT



WRONG

Install gaskets where required and use new ones if necessary. Never use cork or felt gaskets or seals a second time. 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 and be sure to cut sufficient holes in the right places. Blank gaskets can cause serious damage.

Use capscrews of the correct length. A capscrew which is too long may "bottom" before the head is tight against the part it is to hold, and in addition the threads may be damaged when the capscrew is removed.

If a capscrew is too short, there will not be enough threads to hold the part securely.

Lockwashers, cotter pins, or flat metal locks should be used to lock each nut and capscrew. Flat metal locks must be installed properly to be effective. Bend one end of the lock sharply around the edge of the part. Bend the other end sharply against one flat surface of the nut or capscrew head. Do not bend the lock against more than one side of the nut.

When assembling a machine complete each step in turn. Do not leave one part partially assembled and start assembling some other part. Make all adjustments as recommended. Always check the job after it is completed to see that nothing has been overlooked.

PREPARATION FOR STARTING

After assembling a machine, lubricate it thoroughly. Fill the various compartments with the type and grade of lubricant recommended in the Operator's Instruction Book. Fill the crankcases of both the Diesel engine and starting engine with the grade of oil recommended for the prevailing temperature. Fill the cooling system with water or anti-freeze solution.