



Caterpillar

Service Manual

D8 Crawler

S/n 35A1 & Up,

36A1 to 36A4468,

46A1 to 46A10724

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Service Manual

CT-S-D8 35A1+

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SERVICE MANUAL

for

CATERPILLAR

D8 TRACTOR

SERIAL NUMBERS 35A1-UP, 36A1-36A4468

AND 46A1-46A10724

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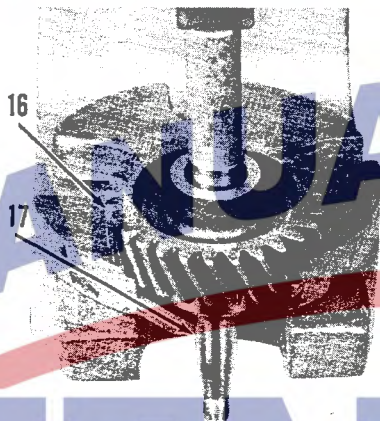
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ENGINE WATER PUMP

shaft. The bearing is a slip fit in the plate and can be removed for inspection.

12. Press the pump shaft (17) out of the gear (16) and remove the key.



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GEAR REMOVAL
16-Gear. 17-Shaft.

13. Press the pump shaft out of the bearing.



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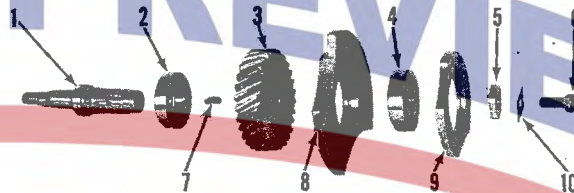
BEARING REMOVAL

WATER PUMP ASSEMBLY

On earlier machines a key and keyway are used to position the impeller and shaft to each other. On later machines the key and keyway are not used. Earlier and later parts may be used in combination. If either the impeller or shaft has a keyway, use the original type of sealing, either a seal, or a gasket and a seal. If neither part has a keyway, no gaskets or seals are required.

1. Press the bearing (2) on the shaft (1).
2. Install the key (7).

3. Align the slot in the gear (3) with the key and press it on the shaft.
4. Place the bearing (4) in the plate (8) and press the assembly on the shaft.
5. Install the retainer (5), lock (10) and capscrew (6) on the shaft.
6. Assemble the plates (8) and (9).

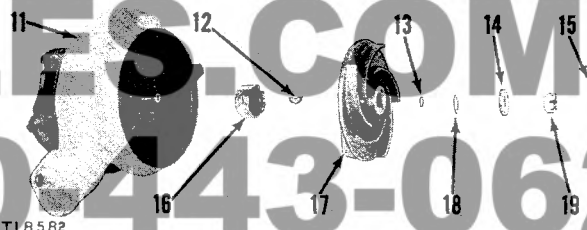


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WATER PUMP ASSEMBLY (EXPLODED VIEW)

1-Shaft. 2-Bearing. 3-Gear. 4-Bearing. 5-Retainer.
6-Capscrew. 7-Key. 8-Plate. 9-Plate. 10-Lock.

7. Install the oil seal, with the lip facing the bearing.
8. Install the gear and shaft assembly in the pump housing (11).
9. Install the water seal assembly (16).
10. Place the key (12) in the shaft (1).
11. Install the impeller (17) over the key.
12. Place the O-ring seal (13), cork (18), flat washer (14), and nut (19) on the shaft. Tighten the nut to 55 lbs. ft. and lock the nut with the cotter pin (15).
13. Fasten the water pump cover to the pump housing.



T18582

WATER PUMP ASSEMBLY (EXPLODED VIEW)

11-Housing. 12-Key. 13-O-ring seal. 14-Washer. 15-Cotter pin. 16-Seal. 17-Impeller. 18-Gasket. 19-Nut.

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STARTING ENGINE SPECIFICATIONS

Oil pressure, minimum PSI at
high idle 25

Pinion Mechanism (Earlier)

Latch spring adjustment with latches
closed (front face of locknut to
rear face of gear) 5/16 - 3/8 in.
Distance from rear face of collar
to front of external pinion shaft 2 3/8 in.
Pinion shaft nut torque 290 - 310 lb. ft.

Pinion Mechanism (Later)

Pinion shaft assembly lock-
nut torque 290 - 310 lb. ft.
Pinion latch adjustment
(Dimension C) 3/16 in.
Pinion return spring:
Pounds force 58.2 - 68.4
When compressed to 7.75 in.
Plunger spring:
Pounds force 27.9 - 32.7
When compressed to 1.25 in.

Pistons (Earlier)

Bore in piston 1.0939 - 1.0943 in.
Skirt clearance of new piston006 - .008 in.
Bore in piston (for .007" oversize
pin) 1.1016 - 1.1021 in.

Piston Pins

Clearance in rod bearing:
Earlier0008 - .0013 in.
Later0005 - .0011 in.
Permissible clearance between
bearing and pin:
Earlier003 in.
Later0025 in.
Clearance in piston0005 - .0010 in.
Permissible clearance between
piston and pin0025 in.

Piston Rings

Compression ring gap (measured
in standard cylinder bore):
Earlier013 - .032 in.
Later009 - .023 in.
Oil ring gap (measured in standard
cylinder bore):
Earlier013 - .030 in.
Later009 - .022 in.
Compression ring groove
clearance:
Earlier0015 - .0030 in.
Later0020 - .0036 in.
Oil ring groove clearance0010 - .0025 in.
Permissible groove clearance (new ring)
compression and oil rings009 in.

Spark Plug

Gap (Earlier)040 in.
Gap (Later)030 in.
Torque 30 lb. ft.

Starting Motor (12V — Delco Remy 1107213 and 1107741)

Brush spring tension (minimum) 35 oz.
Rotation (viewing drive end) Counterclockwise
No load test:
Volts 10.3
Maximum Amps 75
Approximate RPM 6900
Lock test:
Volts 5.8
Maximum Amps 435
Minimum torque 10.5 lb. ft.

Valves (Inlet and Exhaust)

Clearance:
Hot008 in.
Cold009 in.
Stem clearance in guide002 - .004 in.
Permissible valve clearance with new
valve007 in.
Valve face angle 44 1/4°
Valve seat angle 45°

Valve Lifters

Lifter diameter6845 - .6850 in.
Bore diameter6865 - .6875 in.
Clearance0015 - .0030 in.
Permissible clearance0075 in.

Valve Spring

Free length 1.969 in.
Pounds force 32.5 - 37.5
When compressed to 1.594 in.

Valve Timing

With valve clearances set .009"
cold, dial indicator mounted above
valve head, reading taken with
valve .075" off its seat:
Earlier:
Exhaust opening
(before bottom center) 14° 44'
Exhaust closing
(before top center) 12° 33'
Inlet opening
(after top center) 11° 16'
Inlet closing
(after bottom center) 13° 27'
Later:
Exhaust opening
(before bottom center) 27° 21'
Exhaust closing
(before top center) 12° 10'
Inlet opening
(after top center) 10° 39'
Inlet closing
(after bottom center) 25° 50'

STARTING ENGINE

CYLINDER HEAD AND VALVES

Valve Lifter Removal and Installation

The lifters can be removed as shown, after the camshaft has been removed. See the topic, CAM-SHAFT REMOVAL AT TIME OF RECONDITIONING.

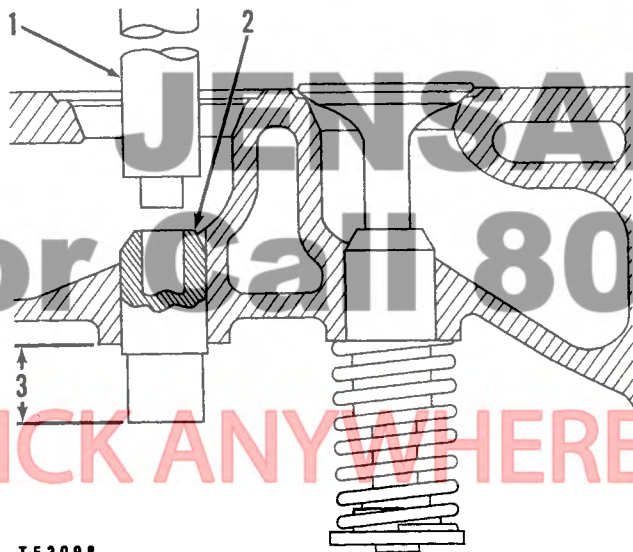
Make sure the lifters travel freely in the guide bore of the cylinder block. For adjustment see the topic, VALVE CLEARANCE ADJUSTMENT.



LIFTER REMOVAL

Replacing Valve Guides

New replacement guides (2) are finished to the proper bore dimension and require no reaming after installation. When installing new guides, press them down into the cylinder block with the inserting tool (1) until the bottom of each guide extends $11/16$ " below the bottom of the guide bore in the block or the distance (3).



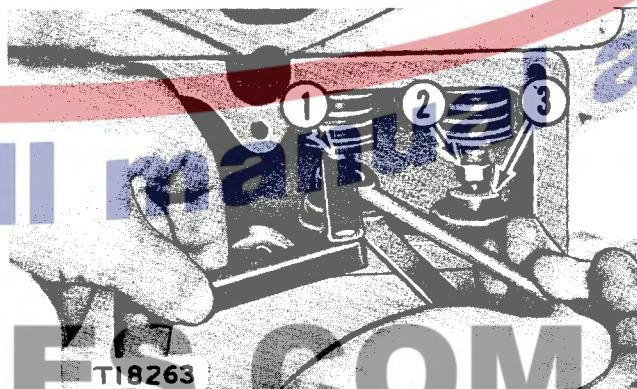
INSTALLING VALVE GUIDE
1-Inserting tool. 2-Guide. 3- $11/16$ ".

Carefully clean the parts of the valve mechanism before they are reassembled. When reassembling the valve mechanism, see that the locks are correctly installed in the lock retainer. Installation can be facilitated by coating the inside of the locks with heavy grease.

Valve Clearance Adjustment

A correct valve clearance adjustment can be made only while the engine is hot. However, if the valve mechanism has been removed, or changed in any way, the clearance should be adjusted in the following manner before operating the engine.

1. Crank the engine until the valve closes and the valve lifter is at its lowest point.
2. Hold the flat section (3) of the valve lifter to prevent it from turning, while a second wrench is used to turn the adjusting screw (2) until the correct clearance is obtained between the end of the valve (1) and the head of the adjusting screw. See the topic, SPECIFICATIONS.
3. Tighten the locknut and check the adjustment.
4. This adjustment should be rechecked while the engine is hot. The clearance should be as specified in the topic, SPECIFICATIONS.



VALVE CLEARANCE ADJUSTMENT
1-Valve. 2-Adjusting screw. 3-Valve lifter.

T53098

POWER TRANSMISSION UNITS

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POWER TRANSMISSION UNITS

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