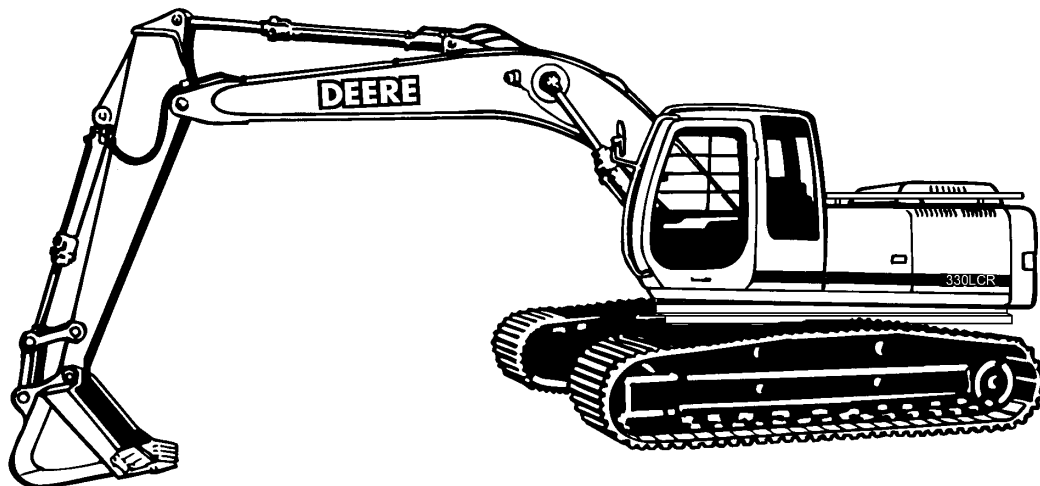


TECHNICAL MANUAL

**UNIT, DIRECT SUPPORT
AND GENERAL SUPPORT MAINTENANCE MANUAL**

**HYDRAULIC EXCAVATOR
JOHN DEERE
MODEL 330LCR
NSN 3805-01-463-0805**



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HEADQUARTERS, DEPARTMENT OF THE ARMY

15 FEBRUARY 2000

UNIT, DIRECT SUPPORT
AND GENERAL SUPPORT
MAINTENANCE MANUAL

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CHAPTER 11
SECTION 04
ENGINE REPAIR

**Group 0400
Removal and Installation**

ESSENTIAL TOOLS

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company.

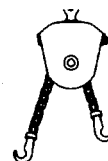
CED,OUOE003,1129 -19-07JUL98-1/5

Load Positioning Sling D01043AA

T8015AG -UN-01JUN93

To remove engine.

T8015AG (CV)



CED,OUOE003,1129 -19-07JUL98-2/5

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Flywheel Turning Tool JDE81-1

To rotate crankshaft to position number one piston at "TDC" on compression stroke.

CED,OUOE003,1129 -19-07JUL98-3/5

Flywheel Turning Tool JDG820

T6585NO -UN-18OCT88

To rotate crankshaft to position number one piston at "TDC" on compression stroke.



CED,OUOE003,1129 -19-07JUL98-4/5

Timing Pin JDE-81-4

T6585NP -UN-18OCT88

To lock engine at TDC.



CED,OUOE003,1129 -19-07JUL98-5/5

Removal and Installation

SERVICE EQUIPMENT AND TOOLS

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company.

CED,OUOE003,1130 -19-07JUL98-1/8

M12 x 1.75 Metric Lifting Eyebolt JT05550

To support main hydraulic pump and splitter drive.

CED,OUOE003,1130 -19-07JUL98-2/8

Pump Support DFT1119¹

To support hydraulic pump and gearbox.

¹Fabricated tool, dealer made. (See Section 99 for instructions to make tool.)

CED,OUOE003,1130 -19-07JUL98-3/8

Crowsfoot Wrench. JDF22

To remove and install fuel injection lines and to tighten line nuts at delivery valves.

Continued on next page

CED,OUOE003,1130 -19-07JUL98-4/8

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Removal and Installation

3/4 in. Line Wrench

To remove and install fuel injection lines and to tighten line nuts at delivery valves.

CED,OUOE003,1130 -19-07JUL98-5/8

Serrated Wrench. JDE90

To remove and install fuel injection lines and to tighten line nuts at delivery valves.

CED,OUOE003,1130 -19-07JUL98-6/8

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Nozzle Wrench. JDE92

To remove and install nozzles from cylinder head.

CED,OUOE003,1130 -19-07JUL98-7/8

24 mm (15/16 in.) Deep Socket

Used to remove nozzles.

CED,OUOE003,1130 -19-07JUL98-8/8

*Removal and Installation***OTHER MATERIAL**

Number	Name	Use
TY6299 (U.S.)	PERMATEX Aviation (Form-A-Gasket No. 3)	Apply to timing gear cover-to-cylinder block and rear oil seal housing-to-cylinder block mating surfaces.
PT569 (U.S.) TY6332 (Canadian)	NEVER-SEEZ® Anti-Seize Lubricant	Apply to fuel injection gland nut threads and nozzle barrel and to inside bore of gland nut.

NEVER-SEEZ is a trademark of Emhart Chemical Group.

CED,OUOE003,1131 -19-07JUL98-1/1

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Removal and Installation

SPECIFICATIONS

Item	Measurement	Specification
Engine:		
Hydraulic Pump	Weight	111 kg (245 lb) approximate
Engine	Weight	816 kg (1800 lb) approximate
Front Engine Mount Bracket-to-Frame Cap Screw	Torque	390 N•m (290 lb-ft)
Rear Engine Mount Bracket-to-Frame Cap Screw	Torque	300 N•m (225 lb-ft)
Front Engine Mount Bracket-to-Engine Cap Screw	Torque	300 N•m (225 lb-ft)
Rear Engine Mount Bracket-to-Engine Cap Screw	Torque	300 N•m (225 lb-ft)
Main Hydraulic Pump and Splitter Drive-to-Flywheel Housing Cap Screw	Torque	88 N•m (65 lb-ft)
Alternator (B+, WHT) Wire Nut	Torque	4 N•m (32 lb-in.)
Alternator (D+, BLU/YEL) Wire Nut	Torque	2 N•m (20 lb-in.)
Alternator (Ground, BLK) Wire Nut	Torque	2 N•m (20 lb-in.)
Engine Oil Pan:		
Oil Pan-to-Cylinder Block Cap Screw (1/2 in.)	Torque	156 N•m (117 lb-ft)
Oil Pan-to-Cylinder Block Cap Screw (3/8 in.)	Torque	68 N•m (50 lb-ft)
Water Pump:		
Water Pump Cap Screw (3/8-in.)	Torque	47 N•m (35 lb-ft)
Water Pump Cap Screw (5/16-in.)	Torque	27 N•m (20 lb-ft)

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Removal and Installation

Item	Measurement	Specification
Thermostat:		
Thermostat	Opening Temperature	89—100°C (192—212°F)
Thermostat Cover Cap Screw	Torque	47 N•m (35 lb-ft)
Fuel Injection Pump:		
Fuel Supply Pump Mounting Stud Nut	Torque	5—7 N•m (4—5 lb-ft) (45—60 lb-in.)
Fuel Injection Nozzle Gland Nut	Torque	88 N•m (65 lb-ft)
Fuel Injection Nozzle Line Nut	Torque	27 N•m (20 lb-ft)
Engine Valve:		
Intake Valve	Clearance	0.331—0.431 mm (0.013—0.017 in.)
Exhaust Valve	Clearance	0.661—0.761 mm (0.026—0.030 in.)
Valve Adjusting Screw Locknut	Torque	27 N•m (20 lb-ft)
Starter:		
Starter	Weight	23 kg (50 lb) approximate
Starter Cap Screw	Torque	47 N•m (35 lb-ft)

CED,OUOE003,1128 -19-07JUL98-2/2

Removal and Installation

REMOVE ENGINE



CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.



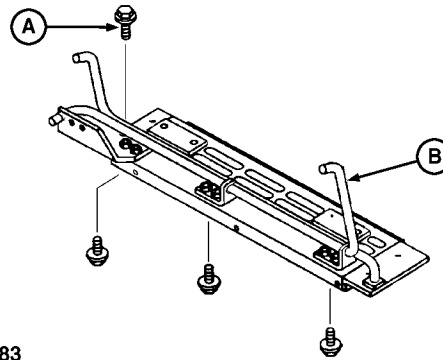
TS281 -UN-23AUG88

1. Disconnect negative (-) battery cable.
2. Drain coolant. Cooling capacity is approximately 30 L (8 gal).

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TX,0400,DH5392 -19-15FEB97-1/8

3. Remove cap screws (A). Remove spring assembly (B).



T115283

A—Cap Screw (7 used)
B—Spring Assembly

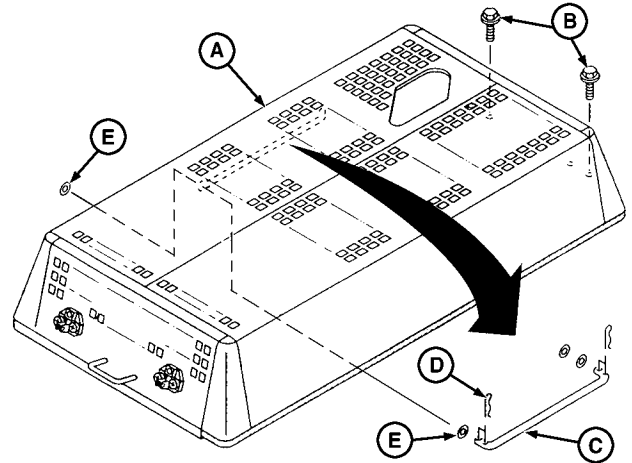
T115283 -UN-17JUN98

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TX,0400,DH5392 -19-15FEB97-2/8

Removal and Installation

4. Remove cotter pin (D) and washer (E).
5. Remove support (C).
6. Remove cap screws (B). Remove engine cover (A).



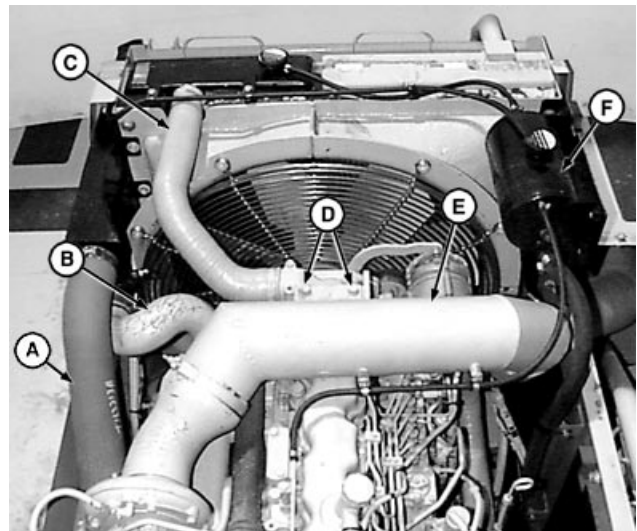
T115284

- A—Engine Cover
- B—Cap Screw (4 used)
- C—Support
- D—Cotter Pin
- E—Washer (2 used)

T115284 -UN-17JUN98

TX,0400,DH5392 -19-15FEB97-3/8

7. Remove clamps. Remove hoses (A—C).
8. Remove clamps. Remove cap screws (D). Remove air intake tube (E).
9. Remove coolant expansion tank (F). (See procedure in Group 0510.)



- A—Charge Air Cooler-to-Turbocharger Hose
- B—Charge Air Cooler-to-Intake Manifold Hose
- C—Upper Radiator Hose
- D—Cap Screw (2 used)
- E—Air Intake Tube
- F—Coolant Expansion Tank

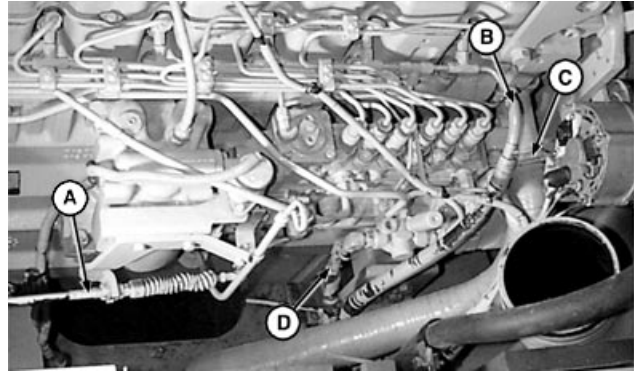
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TX,0400,DH5392 -19-15FEB97-4/8

Removal and Installation

10. Remove speed control cable (A). (See procedure in Group 0515.)
11. Remove clamp. Remove lower radiator hose (C).
12. Remove water pump heater hose and engine block heater hose.
13. Remove clamps. Remove fuel supply line (D) and fuel return line (B).
14. Remove muffler. (See procedure in Group 0530.)
15. Remove air conditioning compressor belt. (See procedure in Group 0510.)
16. Remove air conditioning compressor. (See procedure in Group 1830.)



A—Speed Control Cable
 B—Fuel Return Line
 C—Lower Radiator Hose
 D—Fuel Supply Line

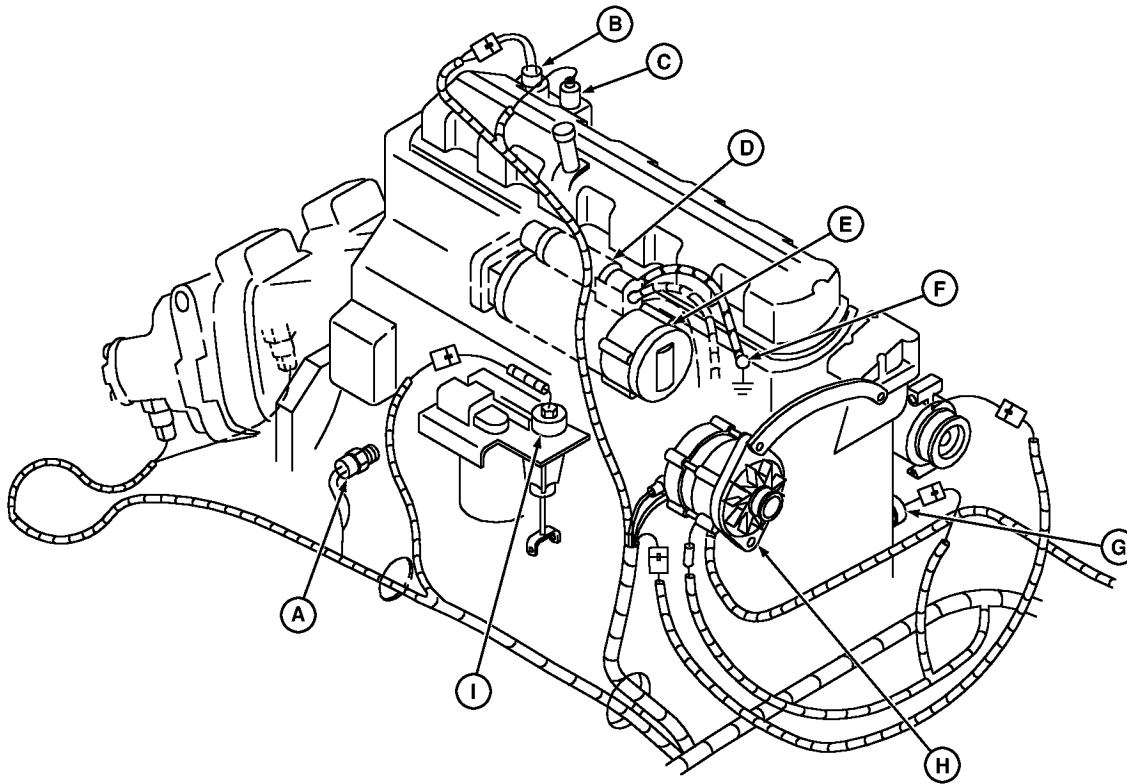
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Removal and Installation



T115653

- | | | | |
|---------------------------------------|---------------------------------------|--|-----------------------------------|
| A—Oil Pressure Switch Connector | D—Start Solenoid Connector | G—Oil Level Switch Connector | I—Fuel Shutoff Solenoid Connector |
| B—Engine Temperature Switch Connector | E—Starter Motor (RED + Battery Cable) | H—Alternator (B+, WHT) (D+, BLU/YEL) (Ground, BLK) | |
| C—Engine Coolant Temperature Sender | F—Starter-to-Frame Ground Strap | | |

- | | |
|--|---|
| 17. Disconnect connectors (A, B, D, G, and I). | 20. Remove nut. Remove starter-to-frame ground strap (F). |
| 18. Remove nut. Remove engine coolant temperature sender (C). | 21. Remove nuts. Remove alternator wires (H). |
| 19. Remove nut. Remove starter motor RED positive battery cable (E). | |

T115653 -UN-17JUN98

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Removal and Installation

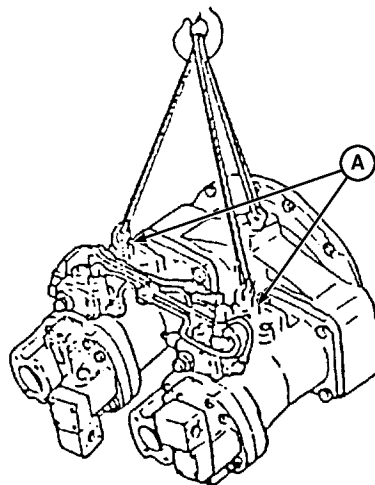


CAUTION: Hydraulic pump weighs approximately 111 kg (245 lb).

Hydraulic Pump—Specification

Weight..... 111 kg (245 lb) approximate

- 22. Install JT05550 Metric Lifting Eyebolts (A) into pump controller top plugs.
- 23. Support main hydraulic pump and splitter drive as shown using DFT1119 Pump Support and a small winch hoist.



T115287

A—Metric Eyebolts (2 used)

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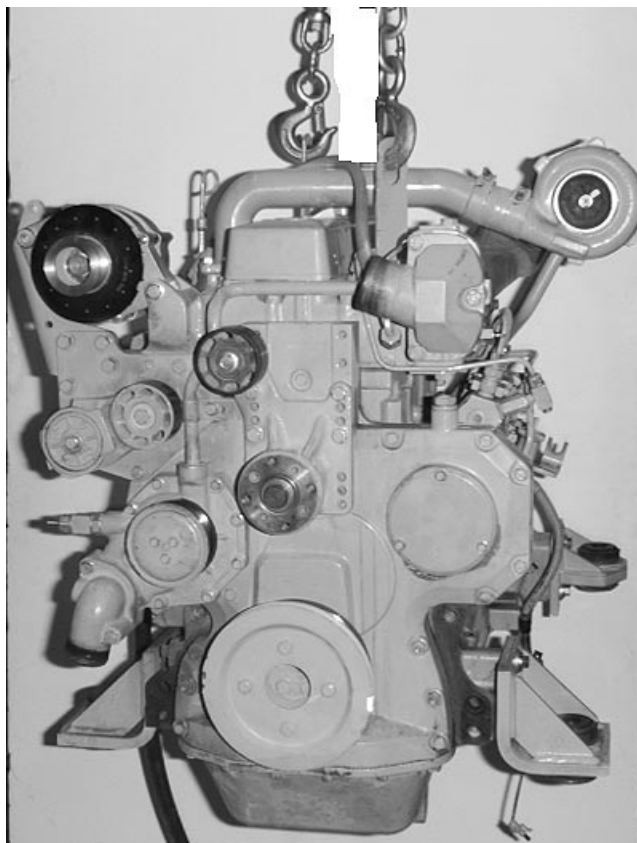


CAUTION: The approximate weight of engine is 816 kg (1800 lb).

Engine—Specification

Weight..... 816 kg (1800 lb) approximate

- 24. Attach D01043AA Load Positioning Sling to engine as shown.
- 25. Remove main hydraulic pump and splitter drive-to-flywheel housing cap screws.
- 26. Remove engine mount cap screws and nuts.
- 27. Raise engine slightly and push engine away from hydraulic pump. Lift engine when engine is disengaged from pump drive coupling.

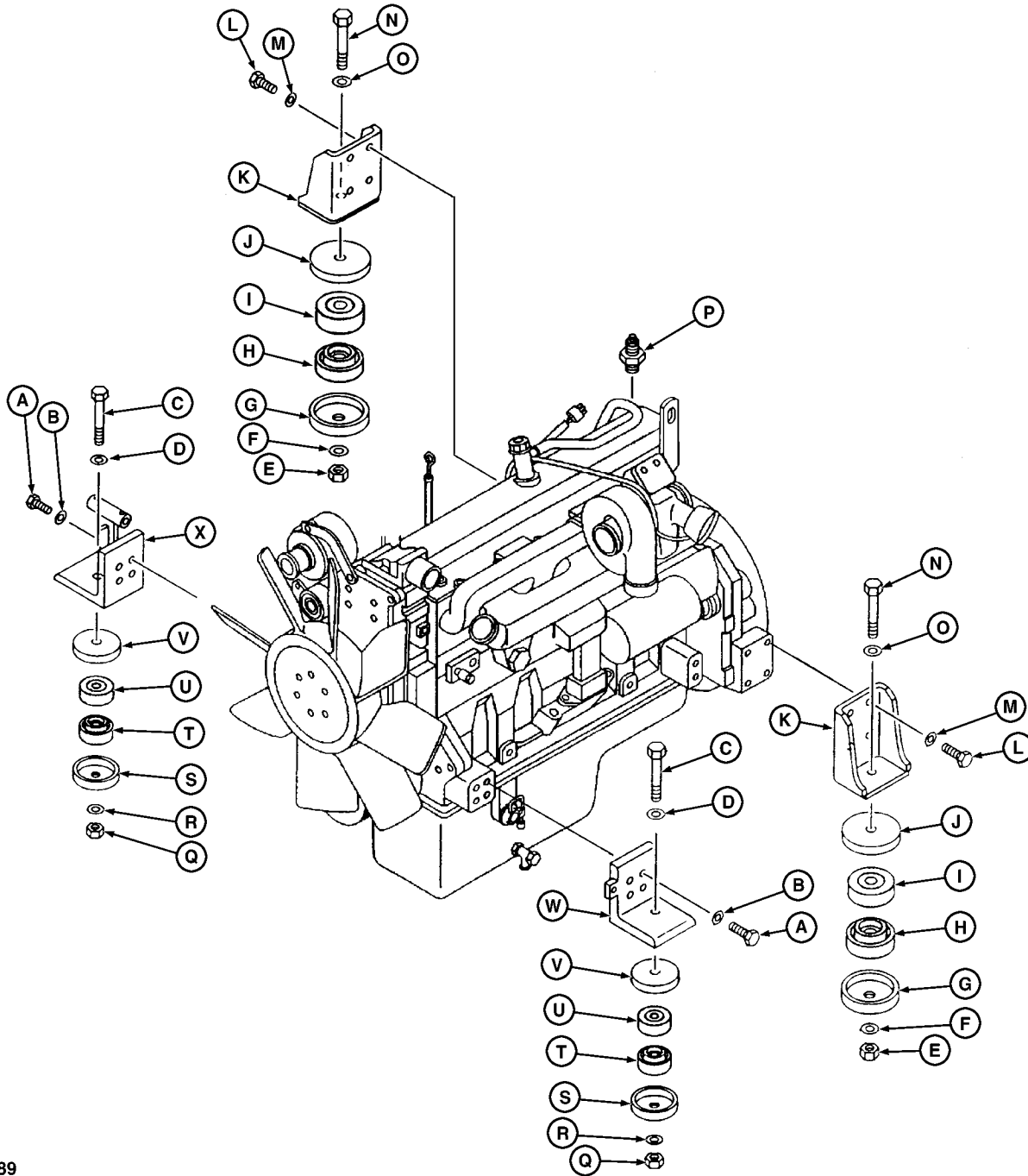


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TX.0400,DH5392 -19-15FEB97-8/8

Removal and Installation

INSTALL ENGINE



T115289

- | | | | |
|----------------------|----------------------|----------------------|--------------------|
| A—Cap Screw (8 used) | G—Stopper (2 used) | M—Washer (8 used) | S—Stopper (2 used) |
| B—Washer (8 used) | H—Rubber (2 used) | N—Cap Screw (2 used) | T—Rubber (2 used) |
| C—Cap Screw (2 used) | I—Rubber (2 used) | O—Washer (2 used) | U—Rubber (2 used) |
| D—Washer (2 used) | J—Stopper (2 used) | P—Unit | V—Stopper (2 used) |
| E—Nut (2 used) | K—Bracket | Q—Nut (2 used) | W—Bracket |
| F—Washer (2 used) | L—Cap Screw (8 used) | R—Washer (2 used) | X—Bracket |

1. Lower engine into excavator.

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TX,0400,DH5397 -19-11NOV96-1/7

T115289 -JUN-17JUN98

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