# W14 LOADER

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J I Case
A Tenneco Company

TENNECO

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# Section 1010

## GENERAL ENGINE SPECIFICATIONS W14 LOADER

THE MODEL AND ENGINE SERIAL NUMBER IS STAMPED ON A PLATE LOCATED ON THE SIDE OF THE ENGINE ABOVE THE CRANKING MOTOR.

## DIESEL ENGINES

### General

| | |
|---|---|
| Type | 4 Cylinder, 4 Stroke Cycle, Valve-in-Head |
| Firing Order | 1-3-4-2 |
| Bore | 4-5/8 Inches |
| Stroke | 5 Inches |
| Piston Displacement | 336 Cubic Inches |
| Compression Ratio | 16.5 to 1 |
| No Load Governed Speed | 2330 to 2370 RPM |
| Rated Engine Speed | 2200 RPM |
| Engine Idling Speed | 725 to 775 RPM |
| Exhaust Valve Rotators | Positive Type |
| *Valve Tappet Clearance (Exhaust) (Hot) | .020 Inch (Cold) .025 Inch |
| (Intake) | (Hot and Cold) .015 Inch |

*Hot Settings Are Made After the Engine Has Operated At Thermostat Controlled Temperature For At Least Fifteen Minutes.

| | |
|---|---|
| Cranking Motor | 24 Volt Negative Ground |
| Thermostat Operating Range | 175°F. to 202°F. |

### Piston and Connecting Rods

| | |
|---|---|
| Rings per Piston | 3 |
| Number of Compression Rings | 2 |
| Number of Oil Rings | 1 |
| Type Pins | Full Floating Type |
| Type Bearing | Replaceable Precision, Steel Back, Copper-Lead Alloy Liners |

### Main Bearings

| | |
|---|---|
| Number of Bearings | 5 |
| Type Bearings | Replaceable Precision Steel Back, Copper-Lead Alloy Liners |

### Engine Lubricating System

| | |
|---|---|
| Oil Pressure | 45 to 60 Pounds with Engine Warm and Operating at Rated Engine Speed |
| Type System | Pressure and Spray Circulation |
| Oil Pump | Gear Type |
| Oil Filter | Full Flow Spin on Type |
| Engine Oil Capacity (without filter change) | 10 U.S. Quarts |
| (with filter change) | 11 U.S. Quarts |

### Fuel System

| | |
|---|---|
| Fuel Injection Pump | Robert Bosch, Type PES Multiple Plunger |
| Pump Timing | 31 Degrees Before Top Dead Center (Port Closing) |
| Fuel Injectors | Pencil Type (Opening Pressure 3200 PSI) |
| Fuel Transfer Pump | Plunger Type, Integral Part of Injection Pump |
| Governor | Variable Speed, Fly-Weight Centrifugal Type, Integral Part of Injection Pump |
| 1st Stage Fuel Filter | Full Flow Spin on Type |
| 2nd Stage Fuel Filter | Full Flow Spin on Type |

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# RUN-IN INSTRUCTIONS

## Engine Lubrication

Fill the engine crankcase with CASE HDM oil and install new engine oil filters, after an engine has been rebuilt.

**NOTE:** *Use a SERIES 3 DS or CD SERVICE CLASSIFICATION oil that has the correct viscosity rating for ambient air temperature, if CASE HDM oil is not used.*

Change the engine oil while the engine is hot and replace the engine oil filters, after the first 20 hours of operation.

Change the engine oil and filters at the given intervals, after the 20 hours, as found in the Operator's Manual.

## Run-In Procedure For Rebuilt Engines (With A Dynamometer)

The following procedure must be followed when using a PTO dynamometer to run-in the engine. The dynamometer will make sure of the control of the engine load at each speed and will remove stress on new parts during run-in.

During the run-in, continue to check the oil pressure, coolant level and coolant temperature.

| STEP | TIME | ENGINE SPEED | DYNAMOMETER SCALE LOAD* |
|---|---|---|---|
| 1 | **10 Minutes | 1000 RPM | Not Any |
| 2 | **10 Minutes | 1800 RPM | Not Any |
| 3 | 20 Minutes | 1800 RPM | 1/3 |
| 4 | 20 Minutes | 1800 RPM | 1/2 |
| 5 | ***30 Minutes | 100 RPM below rated speed | 3/4 |
| 6 | Tighten the cylinder head bolts to the torque that is found in Section 2015 of the service manual. | | |

* According to normal dynamometer scale load at rated speed for the specific vehicle model. Decrease this scale load as shown.

** The best run-in procedure will constantly change the throttle between 750 to 1000 RPM, for the first 10 minutes and from 1000 to 1800 RPM, for the next 10 minutes. The purpose of this changing RPM is to change the lubrication and coolant flow.

*** 30 minutes at 3/4 load is a minimum amount of time the engine can be run. It is best that when possible, the engine (especially a turbocharged diesel) must be run for four (4) hours or more, at the above speed and load before checking the full engine horsepower or before using the engine for heavy field work.

## Run-In Procedure For Rebuilt Engines (Without A Dynamometer)

| STEP | TIME | ENGINE SPEED | LOAD |
|---|---|---|---|
| 1 | *10 Minutes | 1000 RPM | Not Any |
| 2 | *10 Minutes | 1800 RPM | Not Any |
| 3 | 30 Minutes | 2/3 Rated RPM | Light Load |
| 4 | 1 Hour | Full RPM (not over 2000 RPM) | 80 to 90% |
| 5 | Tighten the cylinder head bolts to the torque that is found in Section 2015 of the service manual. | | |

* If engine must then run at or near full load to operate the machine, remove the load for the first hour and run at high idle for several minutes at 15 minute intervals.

## Run-In Procedure

Keep in one gear lower than normal for the first 8 hours of field operation. DO NOT "lug" the engine for the next 12 hours. Prevent "lugging" by moving the shift lever to a lower gear. The engine must not be "lugged" below the Rated Engine RPM during the early hours of life.

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