**Marine Propulsion Engine 3304B**

**SPECIFICATIONS**

**I-4, 4-Stroke-Cycle-Diesel**

- Emissions: Non-IMO
- Displacement: 7 L (425 cu. in.)
- Bore: 121 mm (4.8 in.)
- Stroke: 152 mm (6.0 in.)
- Aspiration: Naturally Aspirated
- Governor: Hydra-mechanical
- Engine Weight, Net Dry (approx): Heat Exchanger Cooled 775 kg (1710 lb), Keel Cooled 755 kg (1665 lb)
- Capacity for Liquids: Cooling System 12.9 L (3.4 U.S. gal), Lube Oil System (refill) 19.0 L (5.0 U.S. gal)
- Oil Change Interval: 500 hr
- Rotation (from flywheel end): Counterclockwise

**STANDARD EQUIPMENT**

- **Air Inlet System**
  - Regular duty single stage dry air cleaner
- **Cooling System**
  - Gear driven self-priming auxiliary sea water pump with rubber impeller (heat exchanger engines only), gear driven centrifugal jacket water pump, engine oil cooler, expansion tank, engine-mounted heat exchanger with removable tube bundle (heat exchanger engines only), thermostat and housing, transmission oil cooler
- **Exhaust System**
  - Dry flange, 76 mm (3 in.)
- **Flywheel and Flywheel Housing**
  - SAE No. 2 (156 teeth)
- **Fuel System**
  - Fuel priming pump, fuel transfer pump, fuel filter, flexible fuel lines
- **Instruments**
  - Fuel pressure gauge, service meter, heavy-duty tachometer drive
- **Lube System**
  - Top-mounted crankcase breather, LH oil filter and oil level gauge
- **Mounting System**
  - Front support
- **General**
  - Caterpillar yellow paint, lifting eyes

**ACCESSORY EQUIPMENT**

- **Air Starting Motor**
- **Alarm Contactor (Oil Pressure, Water Temperature)**
- **12V 51 Amp, 24V 35 Amp, 24V 60 Amp Alternator**
- **Auxiliary Drive Pulley**
- **Digital Tachometer**
- **Double Wall Fuel Lines**
- **Duplex Fuel Filters**
- **Electric Overspeed Shutoff**
- **Electric Starting Motor**
- **Ether Starting Aid**
- **Exhaust Elbows, Pipes, Rain Caps, Flexible Fittings**
- **Front Enclosed Clutch**
- **Hydraulic Pump Drive**
- **Magnetic Pickup**
- **Manual Shutoff**
- **Pilot House Instrument Panel**
- **Primary Fuel Filter/Water Separator**
- **Remote-Mounted Pilot House Controls**
- **Remote Positive Locking Governor Control**
- **Solenoid Shutoffs**
- **Spare Parts Kit**
### C Rating — TM1535-02

#### Performance Data

<table>
<thead>
<tr>
<th>Engine Speed (rpm)</th>
<th>Engine Power (kW)</th>
<th>Engine Torque (Nm)</th>
<th>BSFC (g/kW-hr)</th>
<th>Fuel Rate (L/hr)</th>
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</tr>
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</table>

**Metric**

Cubic prop demand curve with 3.0 exponent for displacement hulls only.

#### Performance Data

<table>
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<tr>
<th>Engine Speed (rpm)</th>
<th>Engine Power (hp)</th>
<th>Engine Torque (lb ft)</th>
<th>BSFC (lb/hp-hr)</th>
<th>Fuel Rate (gph)</th>
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**English**

Power produced at the flywheel will be within standard tolerances up to 50°C (122°F) combustion air temperature measured at the air cleaner inlet, and fuel temperature up to 52°C (125°F) measured at the fuel filter base. Power rated in accordance with NMMA procedure as crankshaft power. Reduce crankshaft power by 3% for propeller shaft power.

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**DIMENSIONS**

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<th>Dimension Description</th>
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<th>in.</th>
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<tr>
<td><strong>Overall Length</strong></td>
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</tr>
<tr>
<td>Length from front to rear face of block</td>
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<td>Length from rear face of block to back of flywheel housing</td>
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<tr>
<td><strong>Overall Height</strong></td>
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<tr>
<td>Height from crankshaft centerline to top of engine</td>
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<td>Height from crankshaft centerline to bottom of oil pan</td>
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<td><strong>Overall Width</strong></td>
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<td>Width from crankshaft centerline to port side (left side)</td>
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<td>Width from crankshaft centerline to starboard side (right side)</td>
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<td><strong>Front</strong></td>
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<td>Customer mounting hole diameter</td>
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<td>Width from crankshaft centerline to mounting holes</td>
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<td>Length from rear face of block to mounting holes</td>
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<tr>
<td></td>
<td>697.5</td>
<td>27.5</td>
</tr>
</tbody>
</table>

*Illustrations and dimensions from drawing: 118-7824*

**RATING DEFINITIONS AND CONDITIONS**

**C Rating**

Typical Application . . . Vessels such as ferries, harbor tugs, fishing boats moving at higher speeds out and back (e.g. lobster, crayfish, and tuna), offshore service boats, and also displacement hull yachts and short trip coastal freighters where engine load and speed are cyclical.

Typical Hours Per Year . . . . 2000 to 4000
Time at Rated Speed . . . . . . . Up to 50%
Load Factor . . . . . . . . 20 to 80%
Typical Time at Full Load . . . . 6 out of 12 hours
Rated Speed . . . . . . . . 2200 rpm
Maximum Cruise Speed. . . . . . . 2100 rpm
Maximum Continuous Cruise Speed . . . . . . . 2000 rpm

**Engine Performance Parameters**

- Power: +3%
- Specific Fuel Consumption: +3%
- Fuel Rate: +5%

**Ratings** are based on SAE J1228/ISO8665 standard conditions of 100 kPa (29.61 in. Hg), 25°C (77°F), and 30% relative humidity. These ratings also apply at ISO3046/1, DIN6271/3, and BS5514 conditions of 100 kPa (29.61 in. Hg), 27°C (81°F), and 60% relative humidity.

**Fuel rates** are based on fuel oil of 35° API [16°C (60°F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29°C (85°F) and weighing 838.9 g/L (7.001 lb/U.S. gal).

Additional ratings may be available for specific customer requirements. Consult your Caterpillar representative for additional information.
Performance data is calculated in accordance with tolerances and conditions stated in this specification sheet and is only intended for purposes of comparison with other manufacturers’ engines. Actual engine performance may vary according to the particular application of the engine and operating conditions beyond Caterpillar’s control.

TM Reference No.: TM1535-02 (6-19-01)
Materials and specifications are subject to change without notice. The International System of Units (SI) is used in this publication.

LEHM1231-00 (6-01)
Supersedes LEHM7458

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Marine Propulsion Engine 3304B

63 bkW (85 bhp) 86 mhp @ 2000 rpm

SPECIFICATIONS

I-4, 4-Stroke-Cycle-Diesel

Emissions ................................ Non-IMO
Displacement .............................. 7 L (425 cu. in.)
Bore ..................................... 121 mm (4.8 in.)
Stroke .................................... 152 mm (6.0 in.)
Aspiration ................................. Naturally Aspirated
Governor ................................. Hydra-mechanical

Engine Weight, Net Dry (approx)
Heat Exchanger Cooled ............... 775 kg (1710 lb)
Keel Cooled .............................. 755 kg (1665 lb)

Capacity for Liquids
Cooling System ......................... 12.9 L (3.4 U.S. gal)
Lube Oil System (refill) ............... 19.0 L (5.0 U.S. gal)
Oil Change Interval ...................... 500 hr
Caterpillar DEO 10W30 or 15W40
Rotation (from flywheel end) ........ Counterclockwise

STANDARD EQUIPMENT

Air Inlet System
Regular duty single stage dry air cleaner

Cooling System
Gear driven self-priming auxiliary sea water pump with rubber impeller (heat exchanger engines only), gear driven centrifugal jacket water pump, engine oil cooler, expansion tank, engine-mounted heat exchanger with removable tube bundle (heat exchanger engines only), thermostat and housing, transmission oil cooler

Exhaust System
Dry flange, 76 mm (3 in.)

Flywheel and Flywheel Housing
SAE No. 2 (156 teeth)

Fuel System
Fuel priming pump, fuel transfer pump, fuel filter, flexible fuel lines

Instrument
Fuel pressure gauge, service meter, heavy-duty tachometer drive

Lube System
Top-mounted crankcase breather, LH oil filter and oil level gauge

Mounting System
Front support

General
Caterpillar yellow paint, lifting eyes

ACCESSORY EQUIPMENT

Air Starting Motor
Alarm Contactor (Oil Pressure, Water Temperature)
12V 51 Amp, 24V 35 Amp, 24V 60 Amp Alternator
Auxiliary Drive Pulley
Digital Tachometer
Double Wall Fuel Lines
Duplex Fuel Filters
Electric Overspeed Shutoff
Electric Starting Motor
Ether Starting Aid
Exhaust Elbows, Pipes, Rain Caps, Flexible Fittings
Front Enclosed Clutch
Hydraulic Pump Drive
Magnetic Pickup
Manual Shutoff
Pilot House Instrument Panel
Primary Fuel Filter/Water Separator
Remote-Mounted Pilot House Controls
Remote Positive Locking Governor Control
Solenoid Shutoffs
Spare Parts Kit
PERFORMANCE CURVES

A Rating — TM1536-02

<table>
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<tr>
<th>Engine Speed - rpm</th>
<th>Engine Power kW</th>
<th>Engine Torque N·m</th>
<th>BSFC g/kW-hr</th>
<th>Fuel Rate L/hr</th>
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<tbody>
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<td>1200</td>
<td>14</td>
<td>109</td>
<td>298.0</td>
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<tr>
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<tr>
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<td>246</td>
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<td>2000</td>
<td>64</td>
<td>303</td>
<td>245.0</td>
<td>18.6</td>
</tr>
</tbody>
</table>

Cubic prop demand curve with 3.0 exponent for displacement hulls only.

Power produced at the flywheel will be within standard tolerances up to 50°C (122°F) combustion air temperature measured at the air cleaner inlet, and fuel temperature up to 52°C (125°F) measured at the fuel filter base.

Power rated in accordance with NMMA procedure as crankshaft power. Reduce crankshaft power by 3% for propeller shaft power.
Typical Application — For heavy-duty service in vessels such as freighters, tugboats, bottom drag trawlers, and deep river towboats where the engine is operated at rated load and speed up to 100% of the time without interruption or load cycling.

Typical Hours Per Year ........... 5000 to 8000
Time at Rated Speed .......... Up to 100%
Load Factor ..................... 80 to 100%
Typical Time at Full Load ........ No limit

Ratings are based on SAE J1228/ISO8665 standard conditions of 100 kPa (29.61 in. Hg), 25°C (77°F), and 30% relative humidity. These ratings also apply at ISO3046/1, DIN6271/3, and BS5514 conditions of 100 kPa (29.61 in. Hg), 27°C (81°F), and 60% relative humidity.

Fuel rates are based on fuel oil of 35° API [16°C (60°F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29°C (85°F) and weighing 838.9 g/L (7.001 lb/U.S. gal).

Additional ratings may be available for specific customer requirements. Consult your Caterpillar representative for additional information.