

Shown with  
Optional Equipment

## CATERPILLAR® ENGINE SPECIFICATIONS

In-line 6-Cylinder, 4-Stroke-Cycle Diesel

Bore — in (mm) .....	4.33 (110)
Stroke — in (mm) .....	5.0 (127)
Displacement — cu in (L) .....	441 (7.2)
Aspiration .....	Turbocharged
Compression Ratio .....	16.5:1
Rotation (from flywheel end) ..	Counterclockwise
Cooling System <sup>1</sup> — gal (L) .....	3.99 (15.1)
Lube Oil System (refill) — gal (L) .....	4.75 (18) <sup>2</sup>
Weight, Net Dry (approx) — lb (kg) including flywheel .....	1425 (647)

<sup>1</sup> Engine only. Capacity will vary with radiator size and use of cab heater.

<sup>2</sup> Optional 6.75 gal (25L) oil pan also available in some OEM chassis.

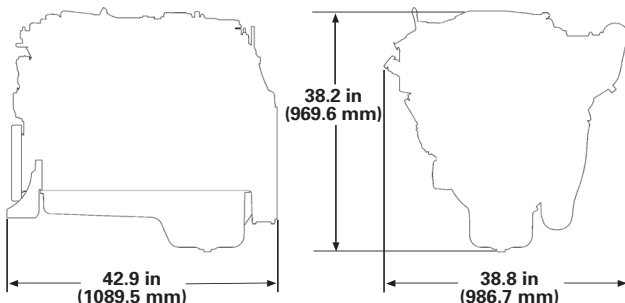
## STANDARD EQUIPMENT

- Air inlet manifold heater
- Cat® common rail fuel system
- Caterpillar® Regeneration System
- Closed crankcase breather
- Cooling: belt-driven water pump, oil cooler
- Diesel particulate filter
- Electronic Control Module (ECM)
- Electronic Data Link, SAE/ATA, SAE/J1939
- Fuel: spin-on secondary filter, transfer pump
- Governor: full-range, electronically controlled
- Lifting eyes
- Lubrication: gear-driven pump, front or rear sump pan, full flow spin-on filter, oil filler, oil level gauge (dipstick)
- SAE No. 1 or SAE No. 2 flywheel housing
- Variable nozzle turbocharger
- Vibration damper

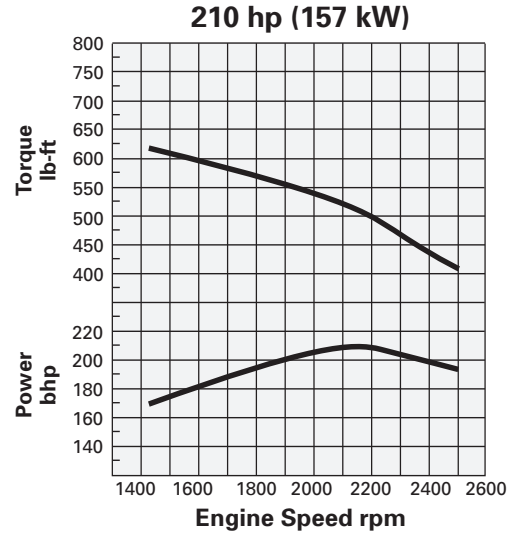
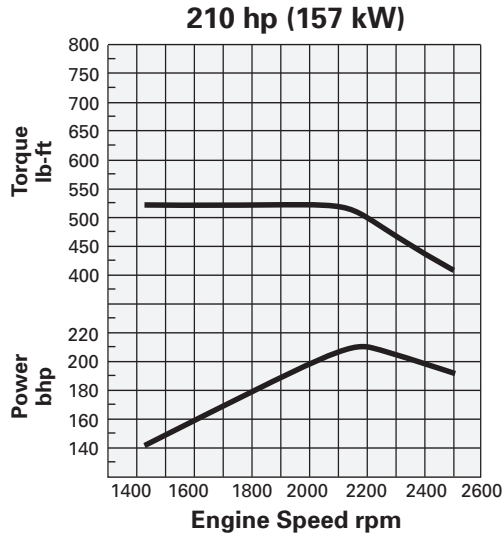
## ACCESSORY EQUIPMENT

- Air compressor: 16.1 cfm (0.46 m<sup>3</sup>/min) with drive through capability
- Air conditioner compressor mounting
- Air inlet elbow
- ATAAC inlet elbow
- Automatic transmission adapter
- Cat engine brake available
- Fan drive
- Fan drive mounting bracket
- Flywheel
- Front engine support
- Front PTO adapter
- Fuel priming pump
- Hydraulic pump drive, SAE A
- Jacket water heater
- Primary fuel filter (10 micron)
- Rear PTO (RPTO)
- Starting motor: 12V or 24V

## DIMENSIONS



**PERFORMANCE CURVES**

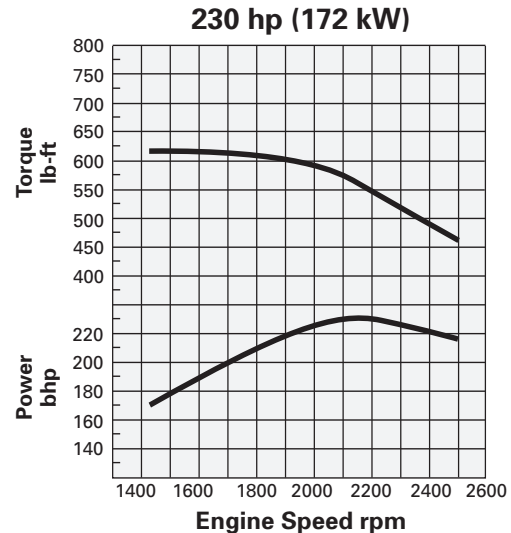
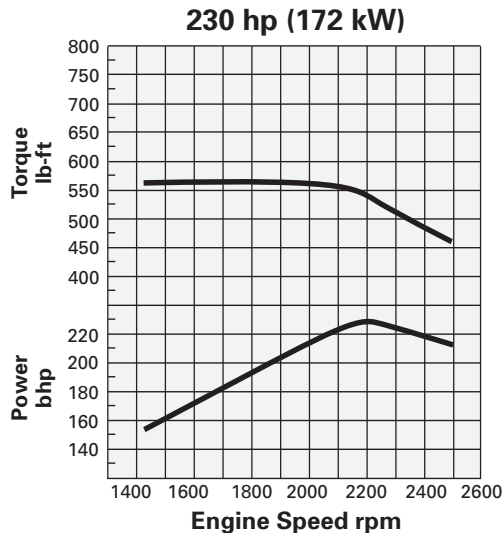


**PERFORMANCE DATA**

Operating Range (rpm) ..... 1440–2500  
**Governed Speed — rpm** ..... **2500**  
 Advertised hp (kW) ..... 210 (157)  
 Max hp (kW) ..... 210 (157)  
**Peak Torque — lb-ft (N·m)**..... **520 (705)**  
 Peak Torque — rpm..... 1440  
 Torque rise (%)..... 28  
 Altitude Capability — ft (m)..... 10,000 (3048)

Operating Range (rpm) ..... 1440–2500  
**Governed Speed — rpm** ..... **2500**  
 Advertised hp (kW) ..... 210 (157)  
 Max hp (kW) ..... 210 (157)  
**Peak Torque — lb-ft (N·m)**..... **620 (841)**  
 Peak Torque — rpm..... 1440  
 Torque rise (%)..... 43  
 Altitude Capability — ft (m)..... 10,000 (3048)

**PERFORMANCE CURVES**

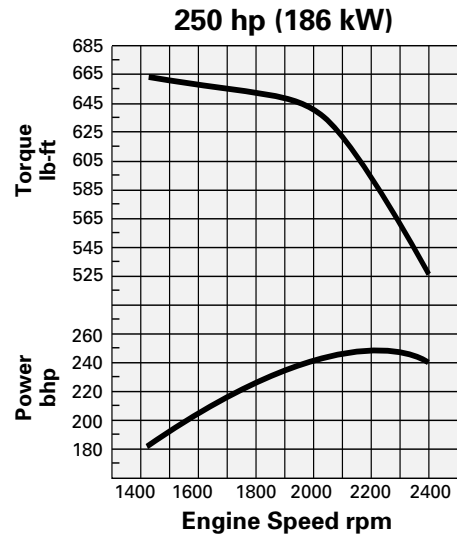
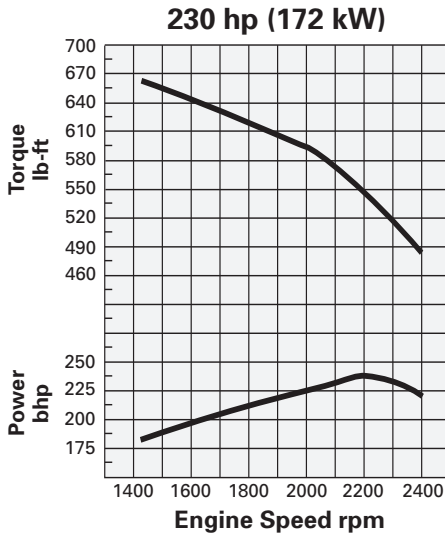


**PERFORMANCE DATA**

Operating Range (rpm) ..... 1440–2500  
**Governed Speed — rpm** ..... **2500**  
 Advertised hp (kW) ..... 230 (172)  
 Max hp (kW) ..... 230 (172)  
**Peak Torque — lb-ft (N·m)**..... **560 (759)**  
 Peak Torque — rpm..... 1440  
 Torque rise (%)..... 16  
 Altitude Capability — ft (m) ..... 10,000 (3048)

Operating Range (rpm) ..... 1440–2500  
**Governed Speed — rpm** ..... **2500**  
 Advertised hp (kW) ..... 230 (172)  
 Max hp (kW) ..... 230 (172)  
**Peak Torque — lb-ft (N·m)**..... **620 (841)**  
 Peak Torque — rpm..... 1440  
 Torque rise (%)..... 28  
 Altitude Capability — ft (m) ..... 10,000 (3048)

**PERFORMANCE CURVES**

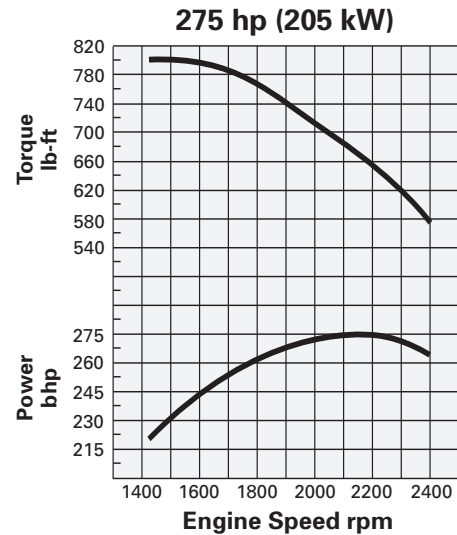
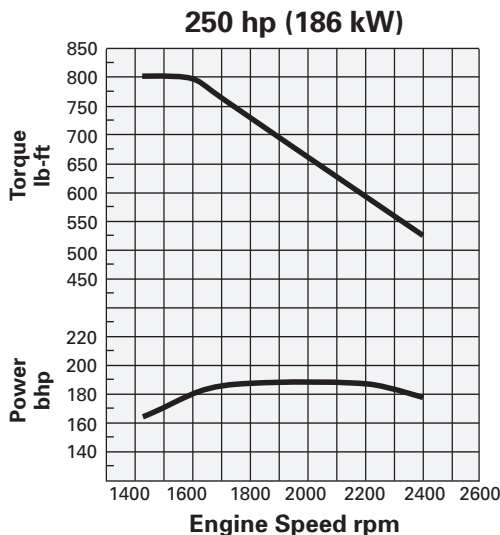


**PERFORMANCE DATA**

Operating Range (rpm) ..... 1440-2400  
**Governed Speed — rpm** ..... **2400**  
 Advertised hp (kW) ..... 230 (172)  
 Max hp (kW) ..... 230 (172)  
**Peak Torque — lb-ft (N·m)**..... **660 (895)**  
 Peak Torque — rpm ..... 1440  
 Torque rise (%) ..... 37  
 Altitude Capability — ft (m)..... 10,000 (3048)

Operating Range (rpm) ..... 1440-2400  
**Governed Speed — rpm** ..... **2400**  
 Advertised hp (kW) ..... 250 (186)  
 Max hp (kW) ..... 250 (186)  
**Peak Torque — lb-ft (N·m)**..... **660 (895)**  
 Peak Torque — rpm..... 1440  
 Torque rise (%) ..... 26  
 Altitude Capability — ft (m)..... 10,000 (3048)

**PERFORMANCE CURVES**

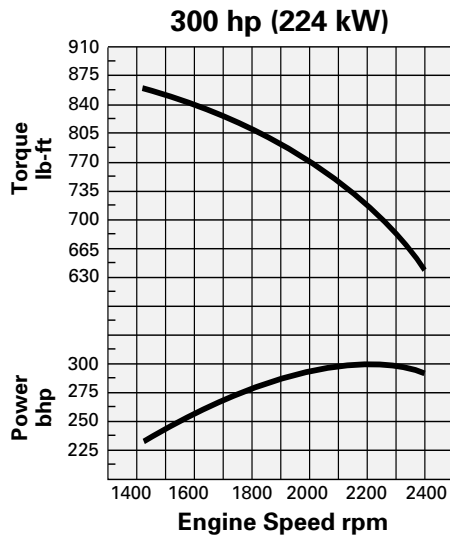


**PERFORMANCE DATA**

Operating Range (rpm) ..... 1440-2400  
**Governed Speed — rpm** ..... **2400**  
 Advertised hp (kW) ..... 250 (186)  
 Max hp (kW) ..... 250 (186)  
**Peak Torque — lb-ft (N·m)** ..... **800 (1085)**  
 Peak Torque — rpm..... 1440  
 Torque rise (%) ..... 52  
 Altitude Capability — ft (m)..... 10,000 (3048)

Operating Range (rpm) ..... 1440-2400  
**Governed Speed — rpm** ..... **2400**  
 Advertised hp (kW) ..... 275 (205)  
 Max hp (kW) ..... 275 (205)  
**Peak Torque — lb-ft (N·m)**..... **800 (1085)**  
 Peak Torque — rpm ..... 1440  
 Torque rise (%) ..... 39  
 Altitude Capability — ft (m)..... 10,000 (3048)

**PERFORMANCE CURVES**



**PERFORMANCE DATA**

Operating Range (rpm) ..... 1440-2400  
**Governed Speed — rpm ..... 2400**  
 Advertised hp (kW) ..... 300 (224)  
 Max hp @ 1600 rpm (kW) ..... 300 (224)  
**Peak Torque — lb-ft (N•m) ..... 860 (1166)**  
 Peak Torque — rpm..... 1440  
 Torque rise (%) ..... 38  
 Altitude Capability — ft (m)..... 10,000 (3048)

## **GEARING CONSIDERATIONS**

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The C7 is designed and built to take full advantage of a “gear fast, run slow” strategy. The fully electronic C7 does not need to be gearbound to limit maximum vehicle speed — this should be done using Vehicle Speed Limiting (VSL) and VSL Protection parameters. (It is recommended that VSL be set to prevent excessive mph).

For the best balance of performance and fuel economy, spec axle ratios and tire sizes to obtain: **2000 rpm @ 60 mph** (97 km/h). Maximum recommended cruise speed is **65 mph** (105 km/h).

Minimum recommended engine speed is **1800 rpm**, typically with a cruise speed of 55 mph (89 km/hr).

If GCW is 50,000 lb or higher, spec. your truck to cruise at **2200 rpm @ 60 mph**.

The minimum startability requirements are 10% for pick-up and delivery, 14% for linehaul, 20% for on/off highway, and 25% for off-highway. At peak torque rpm in top gear, the recommended gradeability is 1.8% (1.5% minimum). At cruise speed in top gear, 1.0% is the ideal gradeability.

To optimize your truck’s performance characteristics, a computerized spec’ing tool called Design Pro is offered by your Caterpillar dealer. It calculates effects of various driveline variables on engine operation such as transmissions, axles, and tires. This analysis allows you to verify that your truck’s driveline specifications are best suited to your application.

## **FUEL AND LUBE OIL REQUIREMENTS**

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### **FUEL**

Model year 2007 and newer Caterpillar on-highway diesel engines require the use of ULSD fuel in order to meet the United States (U.S.) Environmental Protection Agency (EPA) 2007 emissions regulations for on-highway diesel engines. Failure to use ULSD in these engines is punishable with civil penalties.

Ultra Low Sulfur Diesel (ULSD) fuel will have  $\leq 15$  ppm (0.0015%) sulfur using the ASTM D5453, ASTM D2622, or DIN 51400 test methods.

### **CRANKCASE LUBE OIL**

Diesel engine oils meeting the Cat ECF-3 (Engine Crankcase Fluid-3) specification are strongly **recommended** for use in 2007 model year and newer Caterpillar on-highway diesel engines. The Cat ECF-3 specification was developed in order to protect emissions control systems, help comply with the emissions standards, reduce engine wear, and control piston deposits and oil consumption in 2007 model year and newer on-highway diesel engines that are designed to use fuels with  $\leq 15$  ppm (0.0015%) sulfur.

The combination of ULSD fuel **and** API CJ-4 compliant diesel engine oil is strongly recommended for optimum engine system performance.

**Note:** Oils that meet the API CJ-4 oil category requirements are Cat ECF-3 compliant.

## ELECTRONIC FEATURES

- Customer selectable, re-programmable operational parameters:
  - 2-speed fast idle capabilities
  - Adjustable low idle rpm
  - Automated transmission compatibility
  - Cat engine brake operational modes
  - Cooling fan control
  - Cruise control with exclusive Soft Cruise
  - Customer password protection
  - Engine Monitoring System — warning, derate, or shutdown
  - Enhanced theft deterrent and secure idle (Cat Messenger or Pocket Tec required)
  - Fleet Information Software capability
  - Idle shutdown timer & override
  - Maintenance monitor [miles (km) or hours]
  - OEM parameter lockout
  - Progressive shifting and gear-down protection
  - Selectable AT/MT/HT shift points for automatic transmission
  - Vehicle speed [mph (km/h)] limiting and protection
- Real time clock with date and time stamping of critical events
- Electronic self-diagnostics
- Compatible with Caterpillar Electronic Technician (ET)
- Cold weather startup strategy and electronic idle control functions
- ECM storage of operational, maintenance, diagnostic codes and diagnostic data
- J1939 compatible
- Programmable Power Take-Off (PTO) functions:
  - Adjustable maximum engine rpm speed
  - Adjustable minimum engine rpm speed
  - Adjustable ramp rate up or down between PTO set speed(s)
  - Adjustable rpm “bump” intervals
  - Adjustable speed control [mph (km/h)] of vehicle while in PTO mode
  - Limit engine torque to driven equipment
  - Multi-speed PTO set speed capability
  - Selectable PTO configuration for “in cab” or station of remote operation

## RATING DEFINITIONS AND CONDITIONS

**Performance** is based on SAE J1995 standard conditions of 29.61 in. Hg (100 kPa) and 77° F (25° C).

The curves shown are for a standard engine without fan, but equipped with air compressor and fuel, lubricating oil, and water pumps.

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