

Shown with  
Optional Equipment

### CATERPILLAR® ENGINE SPECIFICATIONS

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

Bore — in (mm) .....	5.12 (130)
Stroke — in (mm) .....	6.18 (157)
Displacement — cu in (L) .....	763 (12.5)
Combustion/Aspiration...	Series Turbocharged
Compression Ratio .....	17.1:1
Rotation (from flywheel end) ..	Counterclockwise
Cooling System <sup>1</sup> — gal (L).....	5.76 (21.8)
Lube Oil System (refill) — gal (L) .....	10 (38)
Weight, Net Dry (approx) — lb (kg)	
with standard equipment.....	2610 (1184)

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

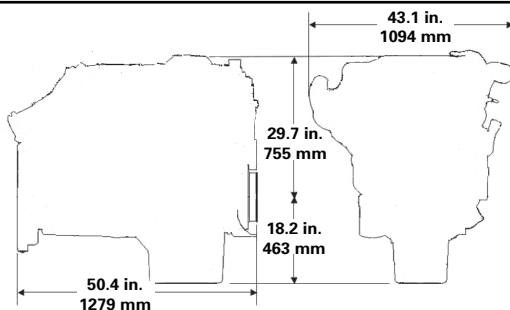
### STANDARD EQUIPMENT

- Caterpillar® Regeneration System
- Cooling: gear-driven water pump, oil cooler
- Diesel particulate filter
- Electronic Control Module (ECM)
- Electronic Data Link, SAE/ATA, SAE/J1939
- Electronically Controlled Unit Injection Fuel System
- Fuel: spin-on secondary filter, transfer pump
- Gear-driven water pump
- Governor: full-range, electronically controlled
- Hydraulic steering pump drive, SAE A
- Lifting eyes
- Lubrication: gear-driven pump, front or rear sump pan, full flow spin-on filter, oil filler, oil level gauge (dipstick)
- Open crankcase ventilation
- Pad mount air conditioner compressor
- Pad mount alternator
- SAE No. 1 Flywheel Housing
- Series-turbochargers
- Vibration damper

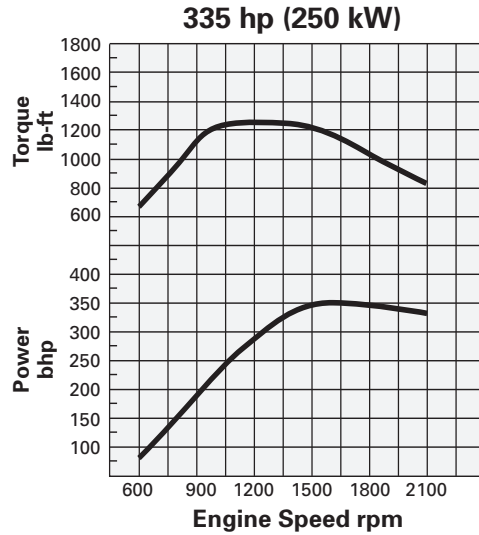
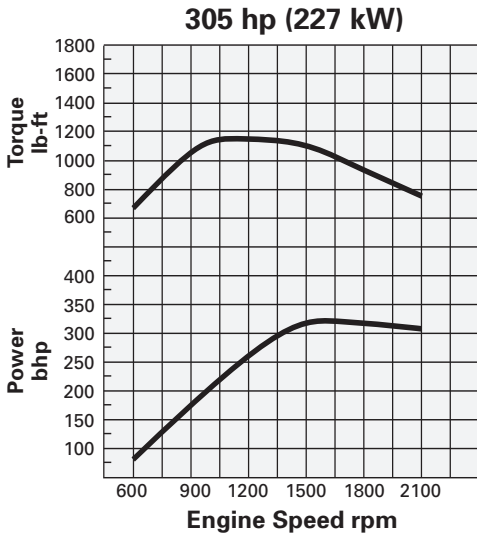
### ACCESSORY EQUIPMENT

- Air compressor: 16.1 cfm (0.46 m<sup>3</sup>/min) or 31.6 cfm (0.9 m<sup>3</sup>/min)
- Air inlet elbow
- Air inlet shut off
- Alternator (12 Volt-115 Amp)
- ATAAC inlet elbow
- Automatic transmission adapter
- Cat compression brake
- Exhaust couplings
- Fan drive mounting bracket
- Flywheel
- Front engine support
- Front PTO adapter
- Fuel priming pump
- Lubricating oil filter, bypass spin on
- Optional secondary auxiliary oil filter
- Optional turbocharger mounting locations
- Primary fuel filter (10 micron)
- Rear PTO (RPTO)
- Starting motor: 12V or 24V

### DIMENSIONS



**PERFORMANCE CURVES**

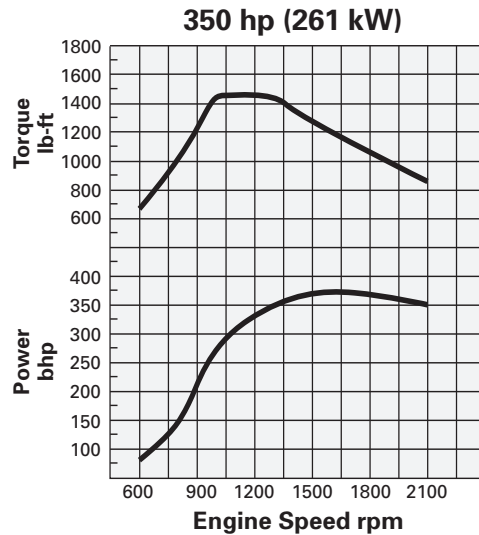
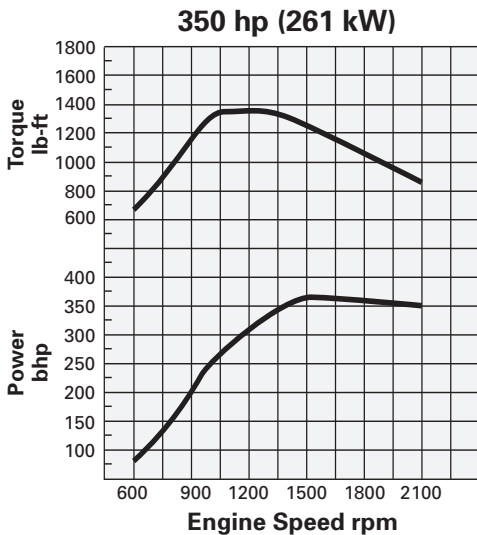


**PERFORMANCE DATA**

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 305 (227)  
 Max hp (kW) ..... 320 (239)  
**Peak Torque — lb-ft (N·m)** ..... **1150 (1559)**  
 Peak Torque — rpm..... 1200  
 Torque rise (%) ..... 51  
 Altitude Capability — ft (m)..... 10,000 (3048)

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 335 (250)  
 Max hp (kW) ..... 350 (261)  
**Peak Torque — lb-ft (N·m)** ..... **1250 (1695)**  
 Peak Torque — rpm..... 1200  
 Torque rise (%) ..... 49  
 Altitude Capability — ft (m)..... 10,000 (3048)

**PERFORMANCE CURVES**

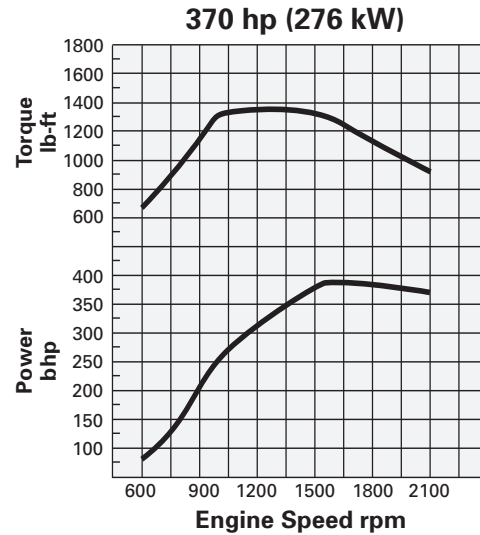
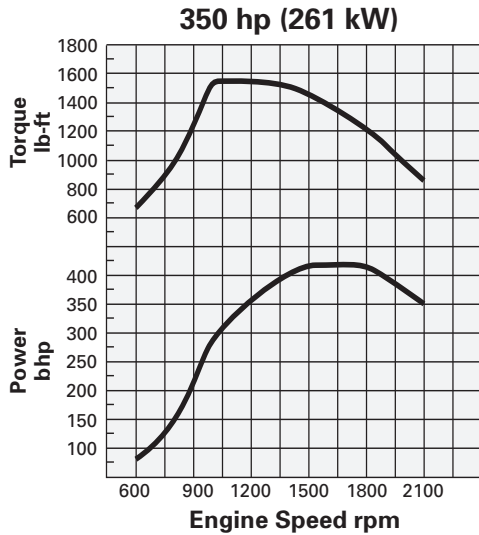


**PERFORMANCE DATA**

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 350 (261)  
 Max hp (kW) ..... 365 (272)  
**Peak Torque — lb-ft (N·m)** ..... **1350 (1830)**  
 Peak Torque — rpm..... 1200  
 Torque rise (%)..... 54  
 Altitude Capability — ft (m)..... 10,000 (3048)

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 350 (261)  
 Max hp (kW) ..... 365 (272)  
**Peak Torque — lb-ft (N·m)** ..... **1450 (1966)**  
 Peak Torque — rpm..... 1200  
 Torque rise (%)..... 66  
 Altitude Capability — ft (m)..... 10,000 (3048)

**PERFORMANCE CURVES**

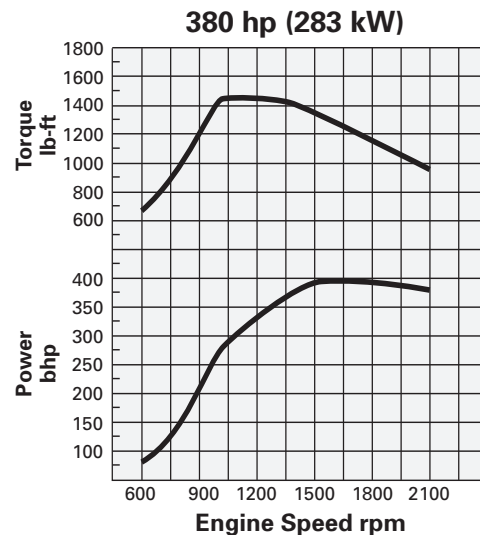
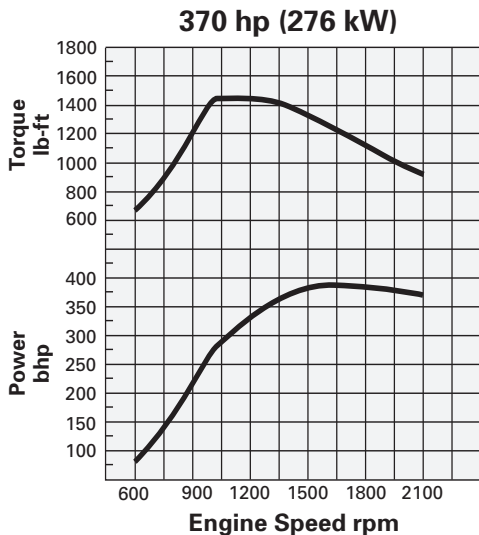


**PERFORMANCE DATA**

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 350 (261)  
 Max hp (kW) ..... 420 (313)  
**Peak Torque — lb-ft (N·m)** ..... **1550 (2101)**  
 Peak Torque — rpm ..... 1200  
 Torque rise (%) ..... 77  
 Altitude Capability — ft (m) ..... 10,000 (3048)

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 370 (276)  
 Max hp (kW) ..... 385 (287)  
**Peak Torque — lb-ft (N·m)** ..... **1350 (1830)**  
 Peak Torque — rpm ..... 1200  
 Torque rise (%) ..... 46  
 Altitude Capability — ft (m) ..... 10,000 (3048)

**PERFORMANCE CURVES**

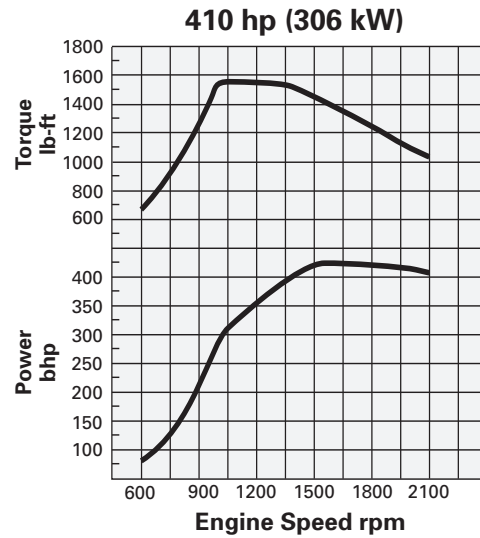
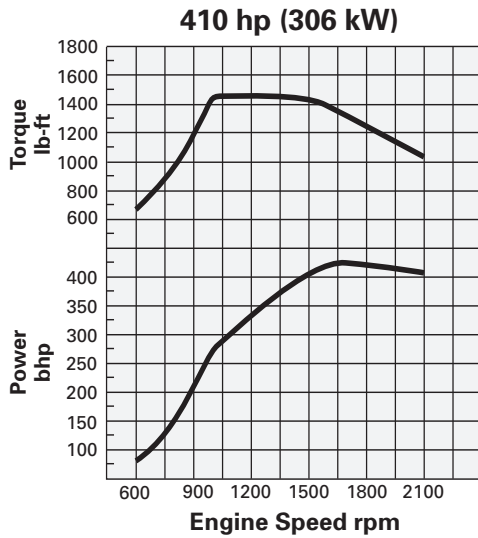


**PERFORMANCE DATA**

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 370 (276)  
 Max hp (kW) ..... 385 (287)  
**Peak Torque — lb-ft (N·m)** ..... **1450 (1966)**  
 Peak Torque — rpm ..... 1200  
 Torque rise (%) ..... 57  
 Altitude Capability — ft (m) ..... 10,000 (3048)

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 380 (283)  
 Max hp (kW) ..... 395 (293)  
**Peak Torque — lb-ft (N·m)** ..... **1450 (1966)**  
 Peak Torque — rpm ..... 1200  
 Torque rise (%) ..... 53  
 Altitude Capability — ft (m) ..... 10,000 (3048)

**PERFORMANCE CURVES**

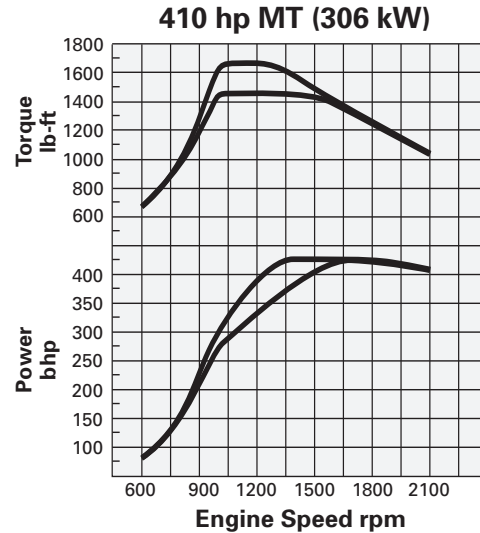
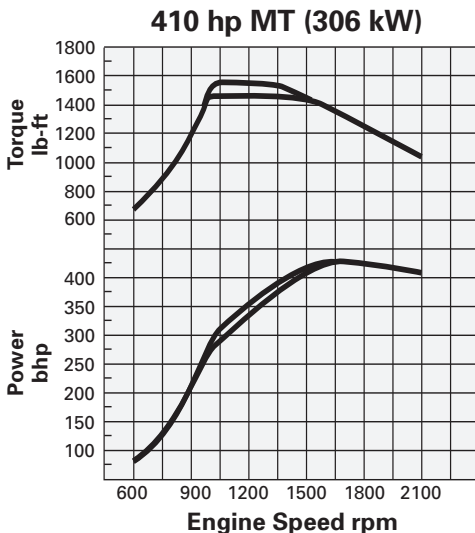


**PERFORMANCE DATA**

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 410 (306)  
 Max hp (kW) ..... 425 (315)  
**Peak Torque — lb-ft (N·m)** ..... **1450 (1966)**  
 Peak Torque — rpm ..... 1200  
 Torque rise (%) ..... 41  
 Altitude Capability — ft (m) ..... 10,000 (3048)

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 410 (306)  
 Max hp (kW) ..... 425 (317)  
**Peak Torque — lb-ft (N·m)** ..... **1550 (2102)**  
 Peak Torque — rpm ..... 1200  
 Torque rise (%) ..... 51  
 Altitude Capability — ft (m) ..... 10,000 (3048)

**PERFORMANCE CURVES**

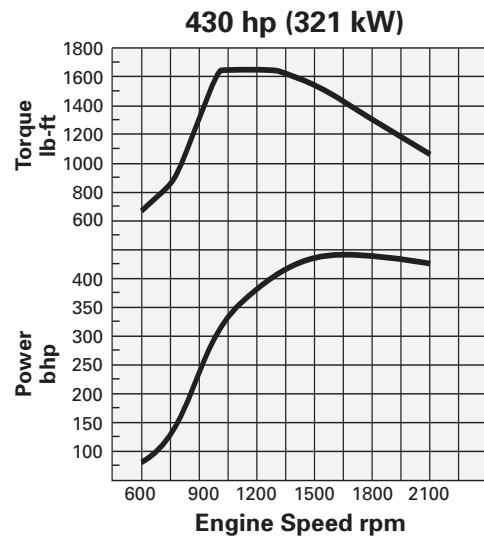
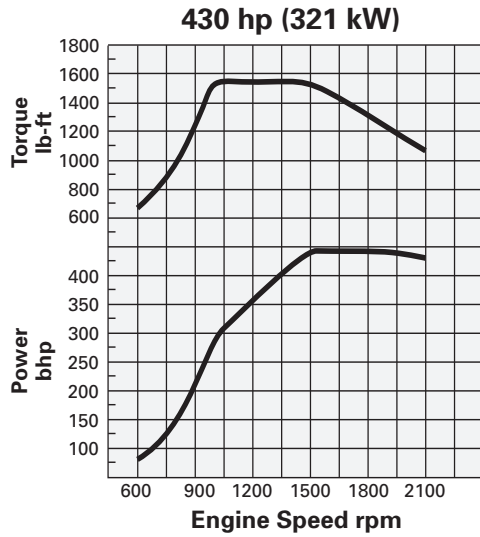


**PERFORMANCE DATA**

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 410 (306)  
 Max hp (kW) ..... 425 (315)  
**Peak Torque — lb-ft (N·m)** .. **1450/1550 (1966/2102)**  
 Peak Torque — rpm ..... 1200  
 Torque rise (%) ..... 41/51  
 Altitude Capability — ft (m) ..... 10,000 (3048)

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 410 (306)  
 Max hp (kW) ..... 425 (315)  
**Peak Torque — lb-ft (N·m)** .. **1450/1650 (1966/2237)**  
 Peak Torque — rpm ..... 1200  
 Torque rise (%) ..... 41/61  
 Altitude Capability — ft (m) ..... 10,000 (3048)

**PERFORMANCE CURVES**

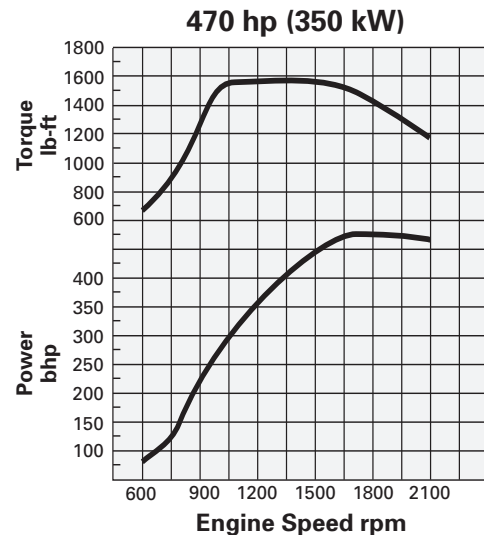
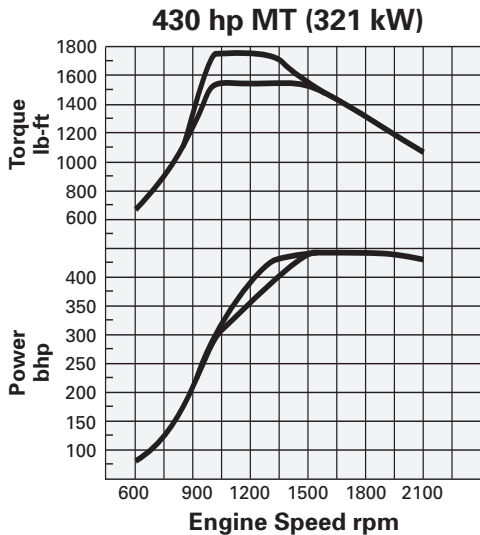


**PERFORMANCE DATA**

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 430 (321)  
 Max hp (kW) ..... 445 (332)  
**Peak Torque — lb-ft (N·m)** ..... **1550 (2102)**  
 Peak Torque — rpm ..... 1200  
 Torque rise (%) ..... 44  
 Altitude Capability — ft (m) ..... 10,000 (3048)

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 430 (321)  
 Max hp (kW) ..... 445 (332)  
**Peak Torque — lb-ft (N·m)** ..... **1650 (2237)**  
 Peak Torque — rpm ..... 1200  
 Torque rise (%) ..... 54  
 Altitude Capability — ft (m) ..... 10,000 (3048)

**PERFORMANCE CURVES**

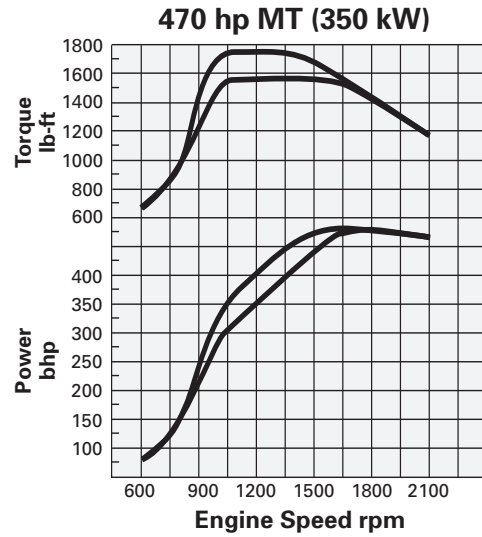
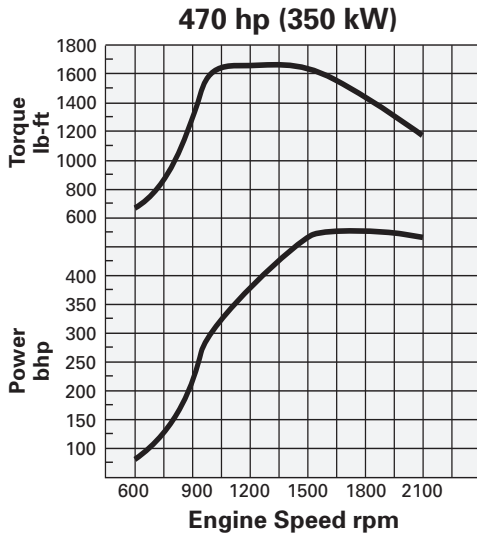


**PERFORMANCE DATA**

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 430 (321)  
 Max hp (kW) ..... 445 (332)  
**Peak Torque — lb-ft (N·m)** .. **1550/1750 (2102/2373)**  
 Peak Torque — rpm ..... 1200  
 Torque rise (%) ..... 44/63  
 Altitude Capability — ft (m) ..... 10,000 (3048)

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 470 (350)  
 Max hp (kW) ..... 485 (362)  
**Peak Torque — lb-ft (N·m)** ..... **1550 (2101)**  
 Peak Torque — rpm ..... 1200  
 Torque rise (%) ..... 32  
 Altitude Capability — ft (m) ..... 10,000 (3048)

**PERFORMANCE CURVES**



**PERFORMANCE DATA**

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 470 (350)  
 Max hp (kW) ..... 485 (362)  
**Peak Torque — lb-ft (N·m)** ..... **1650 (2237)**  
 Peak Torque — rpm ..... 1200  
 Torque rise (%) ..... 40  
 Altitude Capability — ft (m) ..... 10,000 (3048)

Operating Range (rpm) ..... 1200–2100  
**Governed Speed — rpm** ..... **2100**  
 Advertised hp (kW) ..... 470 (350)  
 Max hp (kW) ..... 485 (362)  
**Peak Torque — lb-ft (N·m)** .. **1550/1750 (2102/2373)**  
 Peak Torque — rpm ..... 1200  
 Torque rise (%) ..... 32/49  
 Altitude Capability — ft (m) ..... 10,000 (3048)

## **GEARING CONSIDERATIONS**

The C13 On-Highway Diesel Engine offers a wide operating range and high torque rise, which promotes the use of transmissions with fewer gears. Even with this built-in feature, heavy/specialty haulers must remember their trucks should be geared to achieve the appropriate compromise between startability and desired road speed. The general principal drivers should follow is that of the "gear fast, run slow" strategy to achieve optimal performance.

For the best balance of performance and fuel economy, spec axle ratios and tire sizes according to the following:

- **80,000 lb GCW or less**  
430 hp, 1650 lb-ft:  
1400 rpm @ 65 mph (105 km/h)

Multi-Torque:

- **80,000 lb GCW or less**  
430 hp, 1550/1750 lb-ft:  
1325 rpm @ 65 mph (105 km/h)
- **60,000 lb GCW or less**  
430 hp, 1450/1650 lb-ft:  
1325 rpm @ 65mph (105 km/h)

Maximum recommended engine speed at cruise is **1500 rpm**.

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**

### **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**

- Real time clock with date and time stamping of critical events
- Electronic self-diagnostics
- Electronically tabulated total fuel consumption, hours, idle time, and miles
- Customer selectable, re-programmable operational parameters:
  - Adjustable low idle rpm
  - Automated transmission compatibility
  - 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
  - Vehicle speed [mph (km/h)] limiting and protection
- 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
  - Kick-out vehicle speed limit
  - Limit engine torque to driven equipment
  - Multi-speed PTO set speed capability
  - Selectable PTO configuration for “in cab” or station of remote operation
- Battery backup
- Quick stop recorder
- 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

**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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