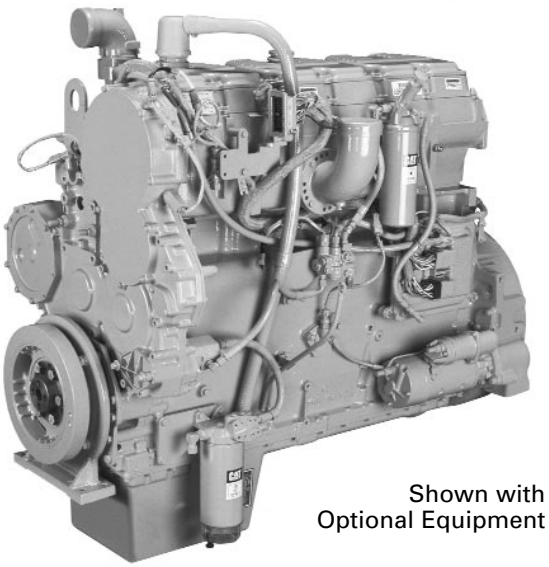
CATERPILLAR®

Industrial Engine 3456

515-660 bhp/384-492 bkW
1800-2100 rpm

1996 EPA and Carb Non-Road Emissions Certified



Shown with Optional Equipment

CATERPILLAR® ENGINE SPECIFICATIONS

In-Line, 6 Cylinder, 4-Stroke-Cycle Diesel
Bore — in (mm) 5.5 (140)
Stroke — in (mm) 6.75 (171)
Displacement — cu in (L) 964 (15.8)
Aspiration..... Turbocharged for ATAAC[1]
Compression Ratio..... 15.9 to 1
Rotation (from flywheel end) . Counterclockwise
Capacity for Liquids — U.S. Gal (L)
  Cooling System[2]..... 5.5 (20.8)
  Lube Oil System (refill)..... 9.0 (34.0)
Weight, Net Dry (approx) — lb (kg)
  with standard equipment 2897 (1317)

[1]Air-to-Air Aftercooling
[2]Engine only. Capacity will vary with radiator size and use of cab heater.

FEATURES

■ **FUEL ECONOMY**
Consistent performance, variable-timed fuel injection, broad rpm turbocharger match, excellent fuel economy over entire operating range.

■ **WORLDWIDE PRODUCT SUPPORT AND PARTS AVAILABILITY**

■ **FLEXIBLE APPLICATION RANGE**
High torque rise, big displacement, convenient installation, more performance for your money.

■ **RELIABILITY AND DIESEL DURABILITY**
Diesel tough components, precise balance, and conservative speed for smooth operation and long engine life.

■ **ELECTRONIC FEATURES**
- **Electronic self-diagnostics**
- **Electronically tabulated total fuel consumption, hours, and idle time**
- **User-selectable, reprogrammable operating parameters:** high idle, low idle, intermediate speed, top engine limit, PTO ramp rate, auxiliary pressure and temperature high warning set point

STANDARD EQUIPMENT

Crankcase breather, block mounted
Electronic control module (ECM)
Electronic data link, ATA/SAE
Electronically controlled unit injector fuel system (EUI)
Flywheel and SAE No. 1 housing
Front support
Fuel: primary and secondary filter, priming and transfer pumps
Gear driven jacket water pump
Governor: full-range electronically controlled
Lifting eyes
Lubricating: oil cooler, oil filter, gear-driven pump, front sump pan
Turbocharger
Vibration damper (14 inch)

OPTIONAL EQUIPMENT

Air compressor, gear driven
Air inlet elbow
Alternator (12-Volt or 24-Volt)
Auxiliary pulleys and drives
Exhaust flexible fittings, elbows, flanges
Fan drive
Flywheel and flywheel housing SAE "O"
High capacity cooling system
Primary fuel filter
Protection devices
  air shutoff
Starter
  air, electric
  jacket water heater
  power takeoffs
Transmission oil cooler

CATERPILLAR FACILITIES ISO 9001 CERTIFIED

CE

PERFORMANCE DATA

Turbocharged-Aftercooled

Rating Level	E			D			C		
Rated rpm	2100			2100			2100		
Engine Power@rpm	660 bhp (492 bkW)			630 bhp (470 bkW)			600 bhp (448 bkW)		
rpm	2100	1800	1500	2100	1800	1500	2100	1800	1500
bhp	660	654	618	630	620	586	600	607	572
lb/bhp-hr	.334	.316	.314	.334	.319	.315	.336	.322	.319
gal/hr	31.4	29.5	27.7	30.1	28.2	26.4	28.8	27.9	26.0
bkW	492	488	461	470	463	437	448	453	427
g/bkW-hr	204	193	191	204	195	192	205	196	195
L/hr	118.8	111.6	104.8	113.9	106.7	99.9	109.0	105.6	98.4

Rating Level	C			B			A		
Rated rpm	1800			2000			1800		
Engine Power@rpm	550 bhp (410 bkW)			550 bhp (410 bkW)			515 bhp (384 bkW)		
rpm	1800	1600	1400	2000	1600	1400	1800	1600	1400
bhp	550	587	590	550	557	529	515	548	550
lb/bhp-hr	.320	.325	.327	.332	.321	.317	.318	.320	.322
gal/hr	25.1	27.2	27.6	26.1	25.5	24.0	23.4	25.1	25.3
bkW	410	438	440	410	416	395	384	409	410
g/bkW-hr	195	198	199	202	196	193	194	195	196
L/hr	95.0	102.9	104.5	98.8	96.5	90.8	88.6	95.0	95.8

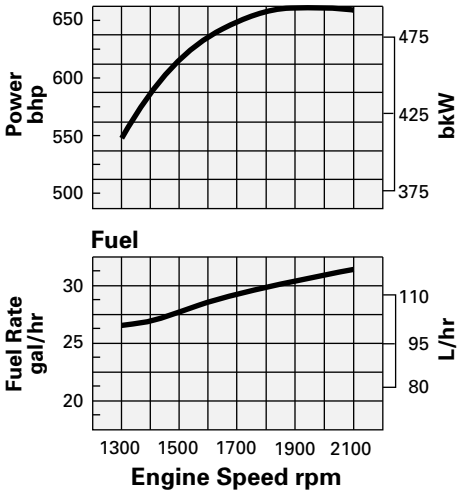
PERFORMANCE DATA — High Altitude Ratings

Turbocharged-Aftercooled

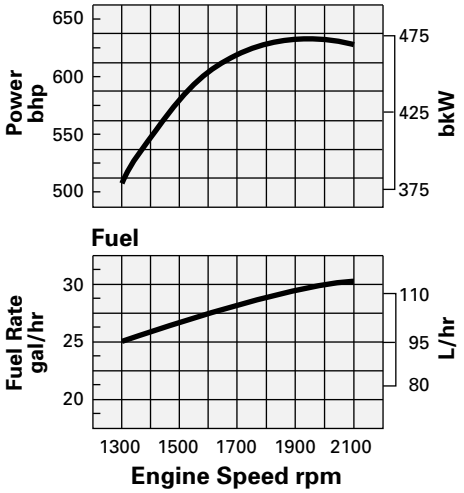
Rating Level	C			C		
Rated rpm	2100			2100		
Engine Power@rpm	600 bhp (448 bkW)			515 bhp (384 bkW)		
rpm	2100	1800	1500	2100	1800	1500
bhp	600	592	555	515	502	478
lb/bhp-hr	.330	.323	.315	.327	.323	.316
gal/hr	28.3	27.2	24.9	24.1	23.2	21.5
bkW	448	442	414	384	375	357
g/bkW-hr	201	196	192	199	196	193
L/hr	107.0	102.8	94.2	91.1	87.7	81.2

PERFORMANCE CURVES

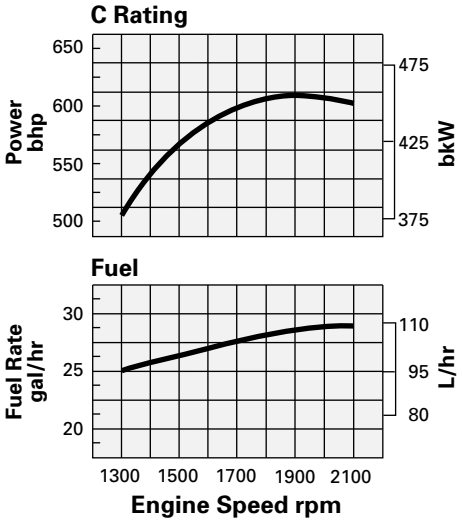
E Rating



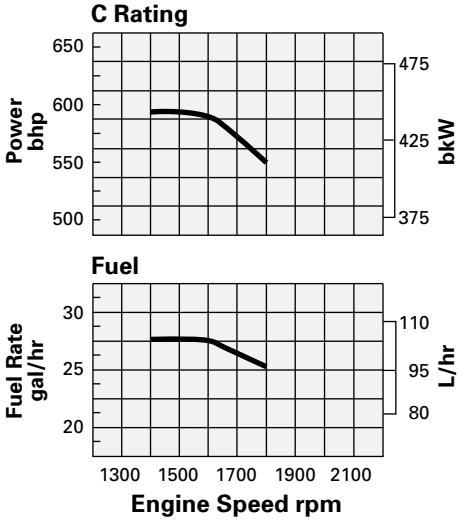
D Rating



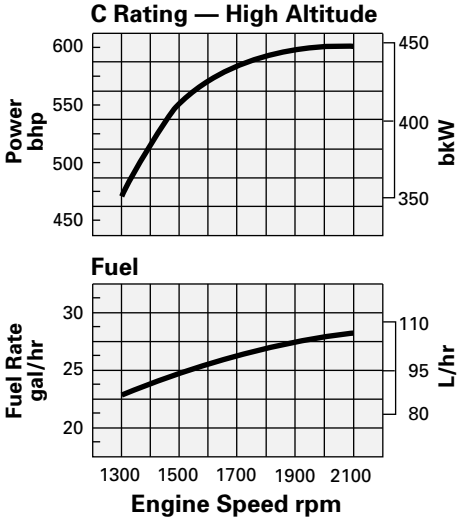
C Rating



C Rating



C Rating — High Altitude



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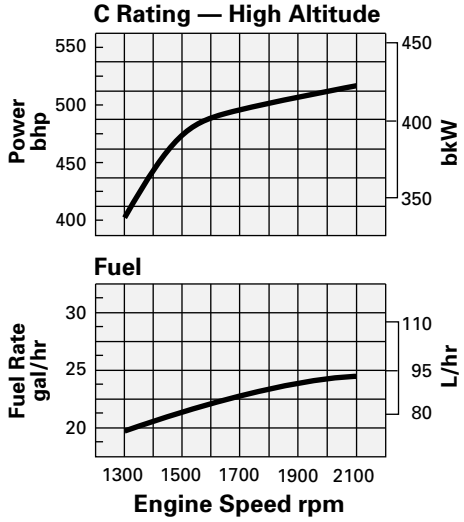

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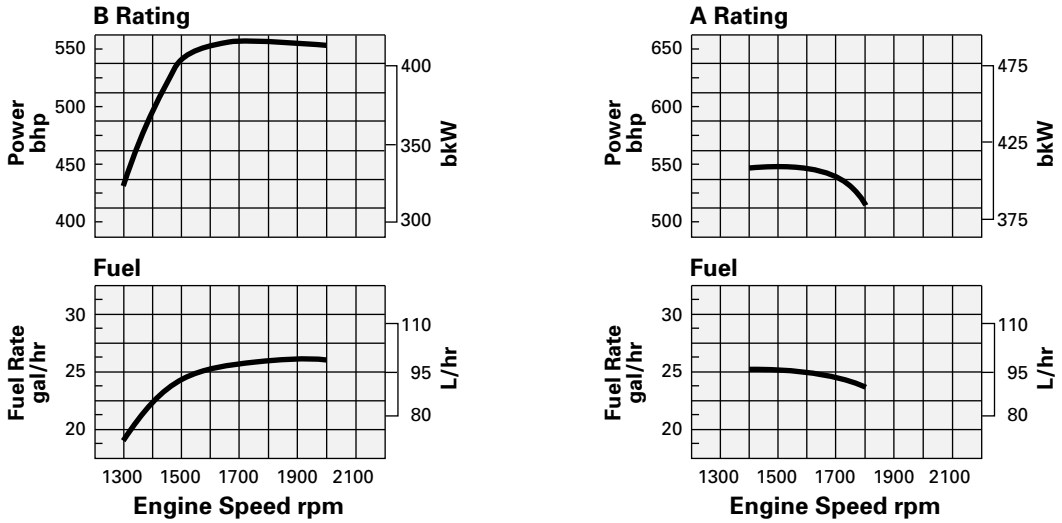
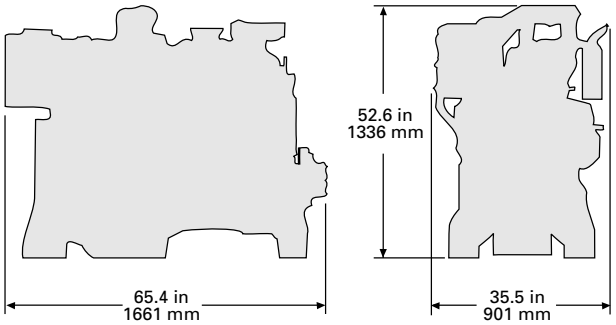


DIMENSIONS



INDUSTRIAL RATINGS

IND-E
IND-E ratings are for service where speed and power are required for a short time for initial starting or sudden overload. For emergency service where standard power is unavailable. The maximum horsepower and speed capability of the engine can be utilized for a maximum of 15 uninterrupted minutes followed by one hour at intermittent or duration of the emergency. Operating limits are:

1. Time at full load not to exceed 5% of the duty cycle or 15 minutes max.
2. Load factor limited to 35%.
3. The maximum horsepower and speed capability of the engine can be utilized for a maximum of 15 minutes followed by one hour at intermittent or duration of the emergency.
4. Typical operating hours per year is 500.

Examples of an IND-E industrial application are:

1. Standby centrifugal water pumps
2. Oil field well servicing
3. Crash trucks
4. Gas turbine starters

IND-D
IND-D ratings are for service where rated power is required by period overloads. The maximum horsepower and speed capability of the engine can be utilized for a maximum of 30 uninterrupted minutes followed by one hour at intermittent. Operating limits are:

1. Time at full load not to exceed 10% of the duty cycle or 30 min max.
2. Load factor limited to 50%.
3. Full load operation to a maximum of 30 minutes followed by one hour at intermittent.
4. Typical operating hours per year is 1500.

Examples of an IND-D industrial application are:

1. Offshore cranes
2. Runway snowblowers
3. Water well drills
4. Portable air compressors
5. Fire pump certification power (advertised power)

IND-C (INTERMITTENT)
IND-C ratings are for service where power and/or speed are cyclic. The horsepower and speed of the engine which can be utilized for one uninterrupted hour followed by one hour of operation at or below the continuous rating. Operating limits are:

1. Time at full load not to exceed 50% of the duty cycle or one hour max.
2. Load factor limited to 70%.
3. Full load operation limited to one uninterrupted hour followed by one hour of operation at or below the continuous rating.
4. Typical operating hours per year is 3000 hours.

Examples of an IND-C industrial application are:

1. Agricultural tractors, harvesters, and combines
2. Truck – off highway
3. Fire pump application power (90% of certified power)
4. Blast hole drills
5. Rock crushers and wood chippers with high torque rise
6. Oil field hoisting

IND-B
IND-B ratings are for moderate-duty service where power and/or speed are cyclic. Operating limits are:

1. Time at full load not to exceed 80% of the duty cycle.
2. Load factor limited to 85%.
3. Typical operating hours per year is 4000 hours.

Examples of an IND-B industrial application are:

1. Irrigation where normal pump demand is 85% of engine rating
2. Oil field mechanical pumping/drilling
3. Stationary/plant air compressors

IND-A (CONTINUOUS)
IND-A ratings are for heavy-duty service when the engine is operated at rated load and speed up to 100% of the time without interruption or load cycling. Operating limits are:

1. No hour or load factor limitation.
2. Continuous operation at full load.
3. Average load factor to approach 100%.
4. Typical operating hours per year is over 4000 hrs.

Examples of an IND-A industrial application are:

1. Pipeline pumping
2. Ventilation
3. Customer specs

RATING DEFINITIONS AND CONDITIONS

Ratings are based on SAE J1995 standard conditions. These ratings also apply at ISO3046/1, DIN6271, and BS5514 standard conditions.

Additional ratings are available for specific customer requirements. Consult your Caterpillar dealer.

Fuel rates are based on ISO3046 and on fuel oil of 35° API (60° F or 16° C) gravity having an LHV of 18 390 Btu/lb (42 780 kJ/kg) when used at 85° F (29° C) and weighing 7.001 lbs/U.S. gal. (838.9 g/liter).

Materials and specifications are subject to change without notice.

The International System of Units (SI) is used in this publication.

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