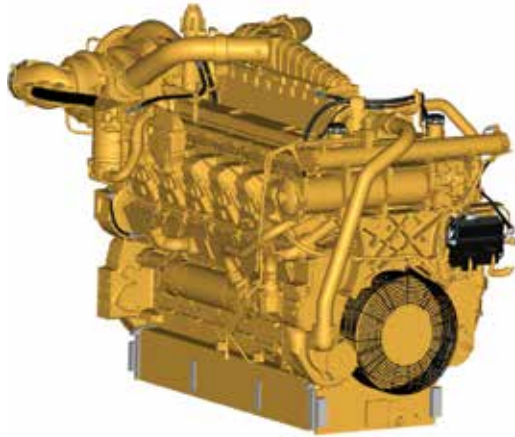


**3512E
Locomotive Engine**



**EU Stage IIIB Locomotive
1600 bkW/2146 bhp @ 1800 rpm
1800 bkW/2414 bhp @ 1800 rpm**

Image shown may not reflect actual configuration

Specifications

Cat® 3512E Locomotive Engine	Metric	Imperial (English)
Configuration	V-12, 4-Stroke-Cycle Diesel	
Bore	170 mm	6.7 in
Stroke	215 mm	8.5 in
Displacement	58.9 L	3596 in ³
Aspiration	Turbocharged-Aftercooled	
Compression Ratio	14.3	
Rotation (from flywheel end)	Counterclockwise	
Capacity for Liquids — Cooling System Lube Oil System (refill)	158 L 318 L	41.7 U.S. gal 84 U.S. gal
Weight, Net Dry (approx) Engine (including flywheel)* Aftertreatment Dosing Cabinet	7144 kg 940 kg 75 kg	15,750 lbs 2072.3 lbs 165.3 lbs
Cold Start Capability	0°C	32°F
Electronic Fuel Injection	Meets EU Stage IIIB Exhaust Emission Standards	

*Final weight is dependent upon configuration

Features

Engine Design

Proven reliability and durability
Robust diesel strength design prolongs life and lowers owning and operating costs
Broad operating speed range
Selective Catalyst Reduction (SCR) system to meet EU Stage IIIB emission standards

Advanced Digital Engine Management

ADEM™ A5 engine management system integrates speed control, air/fuel ratio control, and ignition/detonation controls into a complete engine management system with integrated digital ignition, engine protection, and monitoring.

Full Range of Attachments

Large variety of factory-installed engine attachments reduces packaging time.

Testing

Every engine is full-load tested to ensure proper engine performance.

Product Support Offered Through Global Cat Dealer Network

More than 2,200 dealer outlets

- Caterpillar factory-trained dealer technicians service every aspect of your locomotive engine
- Caterpillar parts and labor warranty
- Preventive maintenance agreements available for repair-before-failure options

S•O•SSM program matches your oil and coolant samples against Caterpillar set standards to determine:

- Internal engine component condition
- Presence of unwanted fluids
- Presence of combustion by-products
- Site-specific oil change interval

Over 80 Years of Engine Manufacturing Experience

Ownership of these manufacturing processes enables Caterpillar to produce high quality, dependable products.

- Cast engine blocks, heads, cylinder liners, front and flywheel housings
- Machine critical components
- Assemble complete engine

Web Site

For all your rail power requirements, visit www.cat.com/railway-power

Standard Equipment

Aftertreatment System

ADEM A4 control system, requires 40 Amps at 24VDC isolated power supply with heated lines, or 17 Amps at 24VDC isolated power supply without heated lines
Pump unit, requires 1.2 Amps at 230VAC, or 2.2 Amps at 110VAC

Air Inlet System

2-stage aftercooler core, material – copper
Two rear-mounted turbochargers with water-cooled bearing housing

Control System

Fuel-cooled ADEM A5 electronic engine control
Requires isolated 10 Amps at 24VDC for operation

Cooling System

Thermostats and housing jacket water
Jacket water and separate circuit pumps — gear-driven, centrifugal
Separate Circuit Aftercooler (SCAC) cooling circuit thermostatically controlled to maintain the aftercooler water temperature
Coolant connections:
Jacket water — single inlet
Separate circuit — flange-type with companion flange

Exhaust System

Exhaust manifold, dry, bellows connection
Exhaust flexible connection
Exhaust outlet, single 14-inch ANSI round flange as part of the aftertreatment

Flywheels and Flywheel Housing

Flywheel, SAE No. 0, 151 teeth
Flywheel housing, SAE No. 0
SAE standard rotation

Fuel System

Fuel filters, cartridge type, RH service
Fuel transfer pump
Electronically controlled unit injectors (MEUI™)

Lube System

Closed crankcase ventilation – valve cover mounted
Oil cooler
Oil filler — RH, with chained
Dipstick — RH service
Oil filter — RH service
Oil pump — gear-type
Shallow oil pan

Power Take-offs

Accessory drive — lower LH, used to drive SCAC pump

Protection System

ECM controlled warnings, derates, and shutdowns for coolant temperature, oil pressure, intake air restriction, crankcase pressure, and overspeed

Special Locomotive Equipment

Customer connection to ADEM control including: throttle; speed signal; General Alarm Relay (GAR), NC or NO contacts; Shut Down Notify Relay (SDNR), NC or NO contacts; Start Enable Relay (SER), NO contacts; Cat Data Link; CANbus SAE J1939; load feedback; torque limiting; remote emergency and normal shutdown switch connections; engine electrical power connections; J1939 broadcast of engine monitoring parameters
Product Link™ — shipped loose

General

Caterpillar Yellow paint
Vibration damper and guard
Lifting eyes

Optional Equipment

Aftertreatment System

Insulation for the aftertreatment module
Engine to dosing cabinet wiring — bulk
Dosing cabinet to CEM wiring — bulk

Air Inlet System

Air cleaners — dual element, remote-mounted
Air inlet adapters for air cleaners

Control System

Throttle position signal conversion module
(shipped loose) — provides PWM signal to
engine control
Instrument panel for remote mounting

Cooling System

Connections (shipped loose) — flexible hose and
mechanical connections for cooling water
Jacket water connections — hose stub or flange
type (with companion flange)
Single jacket water outlet — hose stub or flange
type (with companion flange)
Dual jacket water outlet — hose type (vertical or
45° forward)

Exhaust System

Exhaust port thermocouples
Rigid manifold and turbo heat shields

Fuel System

Fuel filters, cartridge-type, LH service
Fuel priming pump (manual) — LH or RH service,
mid- or top-mount
Flexible fuel lines (shipped loose)

Hard fuel return line includes flexible hose
connections
Primary fuel filter (shipped loose)
Water/fuel separator (shipped loose)
Fuel cooler (shipped loose)

Lube System

Oil pan accessories: oil pan capacities, oil pan
drain cover, filler, drain valve
Lubricating oil
Centrifugal oil filter
Deep sump oil pan
Oil filter — LH service
Dipstick — LH service

Mounting System

Rails (ledge-type)

Power Take-offs

Front accessory drives
Auxiliary drive shafts and pulleys
SAE B and C pump drives
Front crankshaft stub shafts

Protection System

Explosion relief valves
ECM provides diagnostic capability

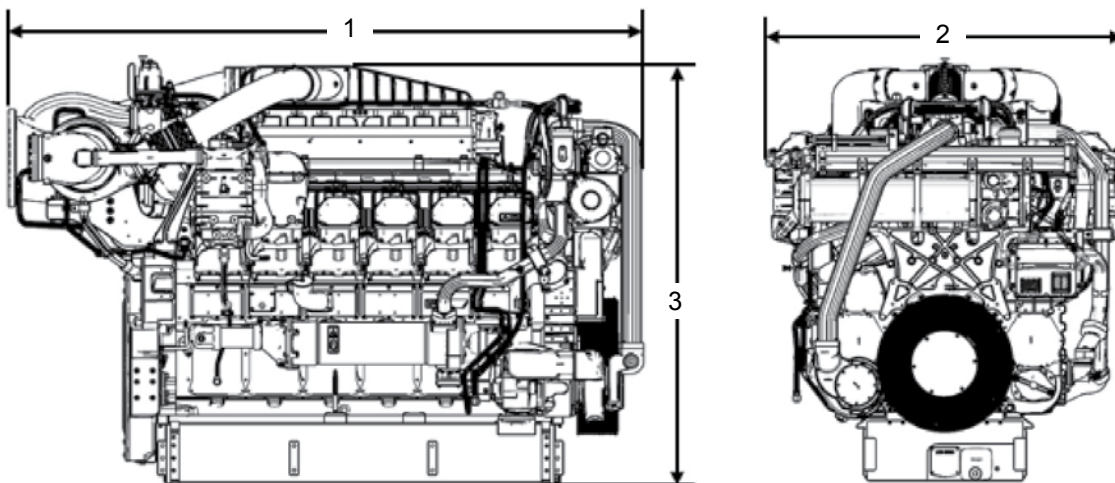
Special Locomotive Equipment

Power distribution box

Starting System

Electric starting motors (dual)
Dual 24V with integrated mag switches
32/64V electric starting motor magnetic switch
enclosure

Engine Dimensions

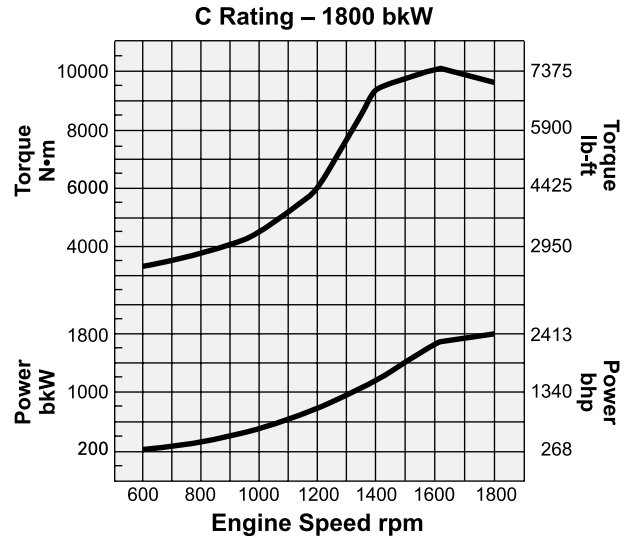
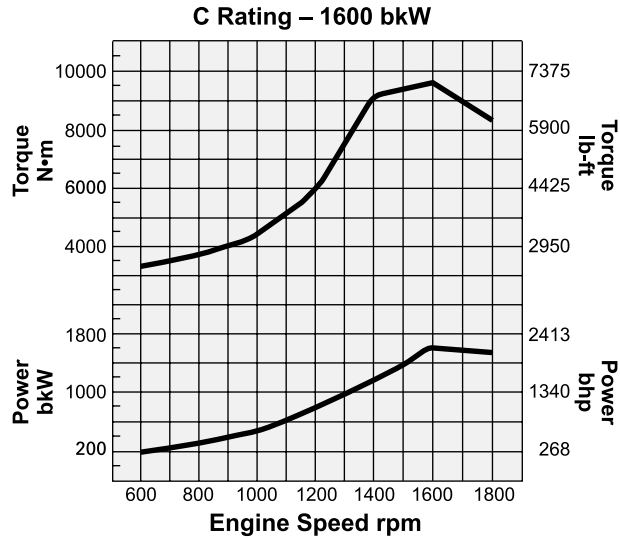


(1) Length — 2940 mm (115.7 in) (2) Width — 1707 mm (67.2 in) (3) Height — 1974 mm (77.7 in)

Note: Final dimensions dependent on selected options

Performance Data

Turbocharged-Aftercooled — 1800 rpm



Rating	Peak Power			Peak Torque		
	Speed rpm	Peak Power bkW	Peak Power bhp	Speed rpm	Peak Torque N·m	Peak Torque lb-ft
C	1800	1600	2146	1500	10 098	7448
C	1800	1800	2414	1500	10 112	7458

Ratings Definitions and Conditions

C Rating (Intermittent) service where maximum power and/or speed are cyclic (time at full load not to exceed 50% of the duty cycle).

Performance obtained and corrected in accordance with ISO3046/2 standard atmospheric conditions of 99 kPa (29.31 in Hg) and 25°C (77°F). These values correspond to the standard atmospheric pressure and temperature as shown on SAE J1995.

Performance and fuel consumption are based on 35 API 15°C (60°F) gravity fuel having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29°C (85°F) where the density is 839.9 g/liter (7.001 lb/U.S. gal). Tolerance is +/-3%.

Engine equipped with fuel, lube oil, and water pumps.

Clean Emissions Module (CEM) Remote-mounted Configuration



CEM DIMENSIONS

Approximate Size and Weight

- (1) Length — 1880 mm (74 in)
 - (2) Width — 1136 mm (44.7 in)
 - (3) Height — 960 mm (37.8 in)
- Weight — 940 kg (2072.3 lbs)



DOSING CABINET DIMENSIONS

Approximate Size and Weight

- (1) Length — 706 mm (27.8 in)
 - (2) Width — 391 mm (15.4 in)
 - (3) Height — 512 mm (20.2 in)
- Weight — 75 kg (165.3 lbs)

Standard Emissions Control Equipment

SCR: Selective Catalytic Reduction

CEM: Clean Emissions Module

Materials and specifications are subject to change without notice. CAT, CATERPILLAR, their respective logos, ADEM, ACERT, S•O•S, MEUI, "Caterpillar Yellow", the "Power Edge" trade dress as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.