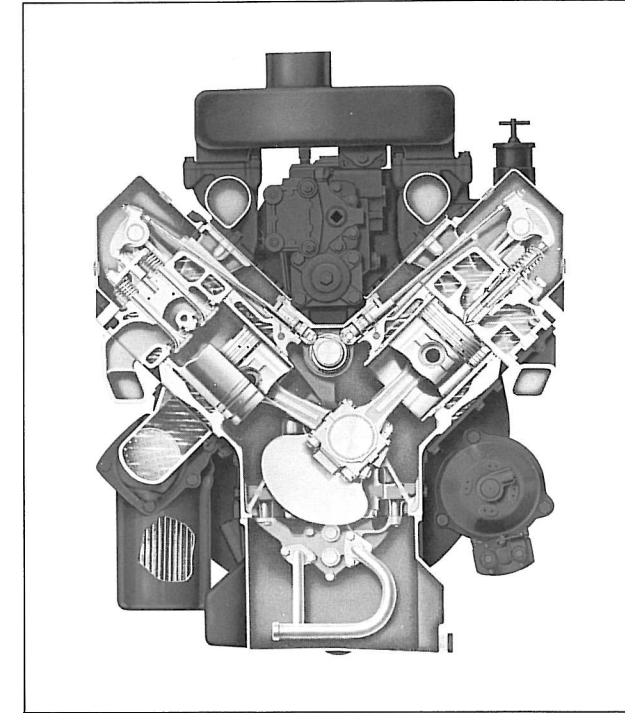
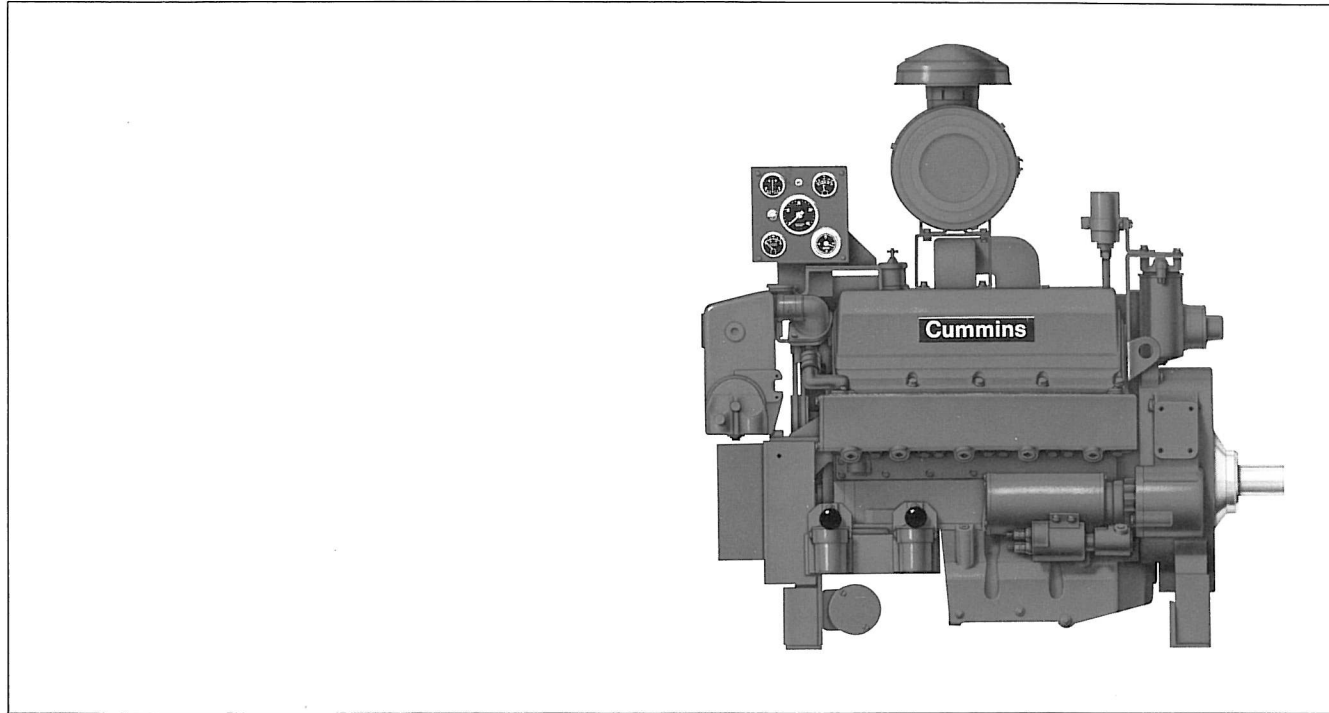


# Cummins Diesels

# V-504-F2



## Specifications

	<u>Metric</u>
Number of Cylinders . . . . .	8
Bore and Stroke . . . 4 1/8 in. x 3 3/4 in.	117 x 95mm
Piston Displacement . . . . .	8.3 l
Operating Cycles . . . . .	4
Crankcase Oil Cap. . . . .	22 l
Engine Coolant Cap. . . . .	32 l
Net Weight with Std. Accessories, Dry . . . . .	874 kg

Specific ratings are shown on rear page.

## Design Features

**Bearings:** Precision type, steel backed inserts. 5 main bearings, 3.5 in. (89mm) diameter. Connecting Rod – 2.5 in. (64mm) diameter.

**Camshaft:** Single camshaft controls all valve and injector movement. Induction hardened alloy steel with gear drive.

**Camshaft Followers:** Roller type for long cam and follower life.

**Connecting Rods:** Drop forged, 6.020 in. (153mm) center to center length. Rifle drilled for pressure lubrication of piston pin. Taper piston pin end reduces unit pressures.

**Cooler, Lubricating Oil:** Tubular type, jacket water cooled.

**Crankshaft:** High tensile strength steel forging. Bearing journals are induction hardened. Fully counterweighted.

**Cylinder Block:** Alloy cast iron with removable, wet liners.

**Cylinder Heads:** Two, one each bank. All fuel lines are drilled passages. Individual intake and exhaust porting for each cylinder.

**Fuel System:** Cummins PTR Fuel system with integral, flyball type, mechanical variable speed governor. Camshaft actuated injectors.

**Gear Train:** Heavy duty, located at rear of cylinder block.

**Lubrication:** Force feed to all bearings. Gear type pump.

**Pistons:** Aluminum, cam ground, with two compression and one oil ring.

**Piston Pins:** 1.375 in. (35mm) diameter, full floating.

**Valves:** Dual intake and exhaust each cylinder. Each valve 1.625 in. (41mm) diameter.

## Big Displacement Design Features

- 1 **Internal Fuel Lines:** Drilled passages in cylinder heads eliminate threaded fuel line connectors and external lines.
- 2 **Large Intake and Exhaust Passages:** Minimize restriction of air and exhaust flow. Allows maximum air charge for clean burning, top economy.
- 3 **Overhead Valves:** Precision machined from high strength steel. Intake and exhaust valves are of stainless steel for high temperature strength and corrosion resistance.
- 4 **Open Type Combustion Chamber:** Gives most efficient combustion . . . most power from each gallon of fuel.
- 5 **Replaceable Wet-type Cylinder Liners:** Dissipate heat faster. Liners are easily replaced without reboring block.
- 6 **Conventional Push Rod and Rocker Lever Arrangement:** Activates valves and injectors from a single camshaft. Roller type camshaft followers are used for long life.
- 7 **Cam-ground Pistons:** Assure perfect fit at operating temperatures.
- 8 **Alloy Cast Iron Cylinder Block:** Follows proven design and material specifications to achieve maximum durability.
- 9 **Large Volume Water Passages:** Give even flow of coolant around cylinder liners, valves, and injectors to draw excess heat from combustion chamber. Centrifugal pump circulates large volumes of water.
- 10 **Connecting Rods:** Forged from high tensile strength alloy steel. I-beam section gives maximum strength. Large diameter piston pins are full-floating. Tapered piston pin end used for superior load distribution and maximum piston crown material.
- 11 **Counterweighted Crankshaft:** Precision machined from high tensile strength steel forgings. Bearing journals are induction hardened for long life.

## LISTED AGENCY RATINGS

- Underwriters' Laboratories:**  
 157 HP @ 2400 RPM  
 168 HP @ 2600 RPM  
 174 HP @ 2800 RPM  
 182 HP @ 3000 RPM  
 185 HP @ 3300 RPM
- Factory Mutual:**  
 157 HP @ 2400 RPM  
 168 HP @ 2600 RPM  
 174 HP @ 2800 RPM  
 182 HP @ 3000 RPM  
 185 HP @ 3300 RPM
- Underwriters' Laboratories of Canada:**  
 157 HP @ 2400 RPM  
 168 HP @ 2600 RPM  
 174 HP @ 2800 RPM  
 182 HP @ 3000 RPM  
 185 HP @ 3300 RPM

The agency-approved horsepower ratings shown are already derated for fire pump service and available for driving the fire pump at sea level altitude (29.92 in. Hg) and 60°F. intake air temperature. The only additional deration necessary is for higher ambient temperatures and elevations as follows: 3% for each 1000 feet above sea level and 1% for each 10 degrees above 60°F. in accordance with National Fire Protection Association Pamphlet No. 20.

## Installation Considerations

Maximum raw water pressure must not exceed 50.PSI. Minimum acceptable raw water flow at 90°F. raw water temperature and 100°F. ambient air temperature should be at least 32 G.P.M. at the 3300 RPM listed rating.

Ventilation air required for engine combustion is 405 CFM at 3300 RPM rating. This is for engine air combustion only and does not take into consideration additional air required for normal room cooling.



Listed under Underwriters' Laboratories, Inc., reexamination service for fire protection applications.

Listed by Associated Factory Mutual Fire Insurance Companies for fire protection applications.

Listed under Underwriters' Laboratories of Canada reexamination service for fire protection applications.

**Cummins Engine Company, Inc.,** Columbus, Indiana 47201  
**Cummins Americas, Inc.,** Columbus, Indiana, U.S.A.  
**Cummins Diesel Australia,** Ringwood, Australia  
**Cummins Diesel International Ltd.**  
**Cummins Engine Company Ltd.,** London, England

### Standard Equipment

**Cleaner, Air:** 10 in. (254mm) diameter, dry type, mounted.

**Cooler, Lubricating Oil:** Tubular type, jacket water cooled.

**Corrosion Resistor:** Fleetguard, mounted, checks rust and corrosion, controls acidity, and removes impurities from coolant.

**Damper, Vibration:** Rubber type.

**Electrical Equipment:** 24 volt negative ground system. 24 volt starting motor; 24 volt, 18 ampere alternator; voltage regulator; manually operable contactors; junction box with enclosed terminal strip.

**Exchanger, Heat:** Tubular type, aluminum bronze.

**Filters:** Lubricating oil, full flow replaceable paper element, mounted. Fuel, paper element throwaway type, mounted.

**Flywheel:** Machined for stub shaft mounting.

**Governor:** Mechanical flyball, mechanical variable speed type.

**Guard, Belt and Damper Shield:** Protection from alternator, accessory drive, and water pump belts and vibration damper.

**Housing, Flywheel:** SAE No. 2 with industrial supports.

**Manifold, Exhaust:** Water cooled.

**Oil Pressure Switch:** Provides signal to activate alarm (not included) for low oil pressure.

**Overspeed Switch:** Mounted, overspeed shutdown with manual reset, stop crank contacts.

**Pan, Oil:** Cast aluminum rear sump type, 4.75 U.S. gallon (18 liter) capacity. Provision for oil heater.

**Panel, Instrument:** Mounted. Includes ammeter, circuit breaker, water temperature gauge, tachometer, lub oil pressure gauge, hourmeter.

**Pump, Coolant:** Belt driven, centrifugal type.

**Stubshaft:** Mounted on flywheel.

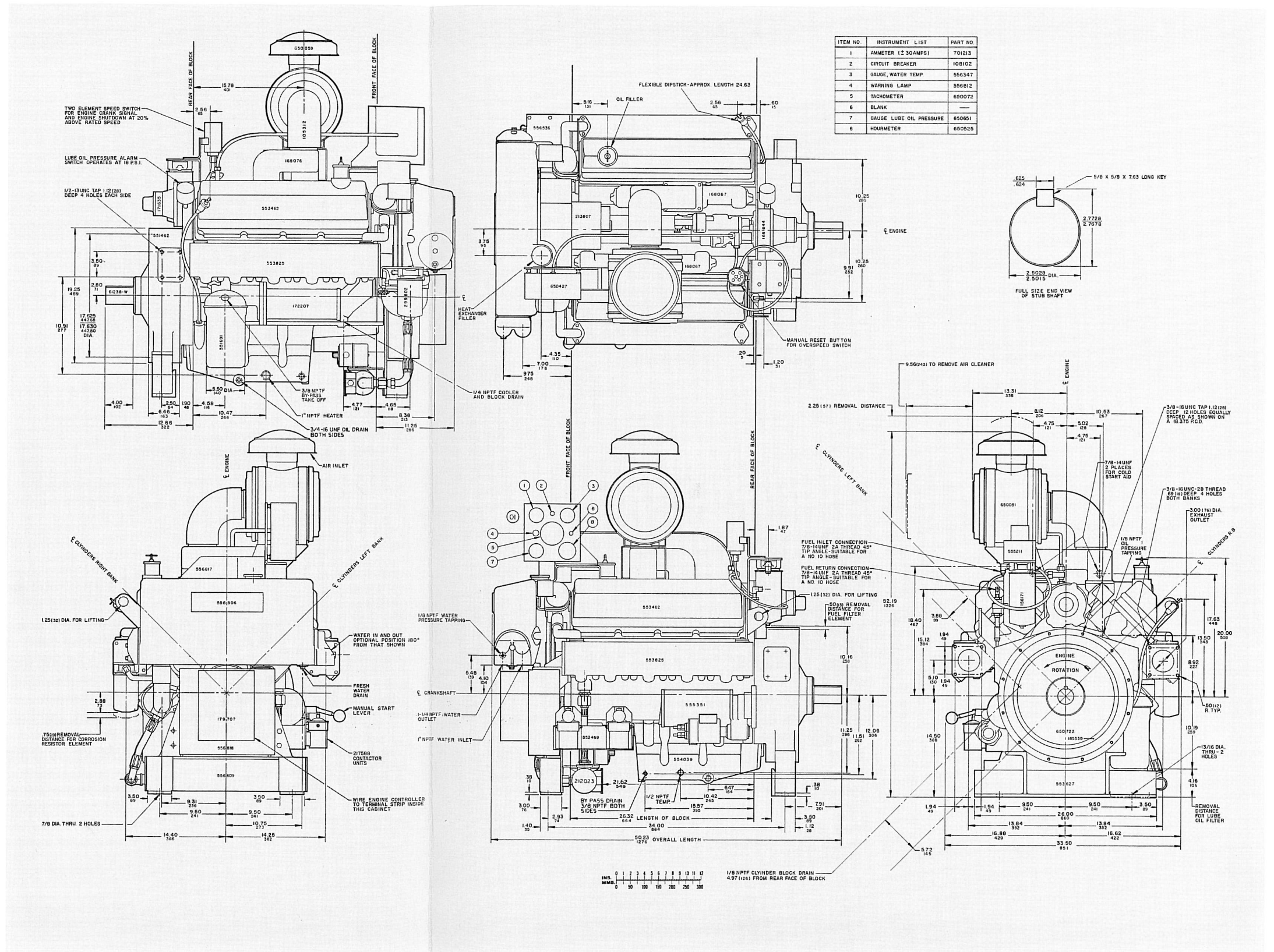
**Support, Engine:** Pedestal type, front and rear.

**Water Jacket Heater:** Mounts under oil pan. 115 volt, 2500 watt.

**Water Temperature Switch:** Provides signal to activate alarm (not included) for high water temperature.

### Optional Equipment

**Oil Heater:** Mounted in pan.



V-504-F2 Engine Installation Drawing 556880