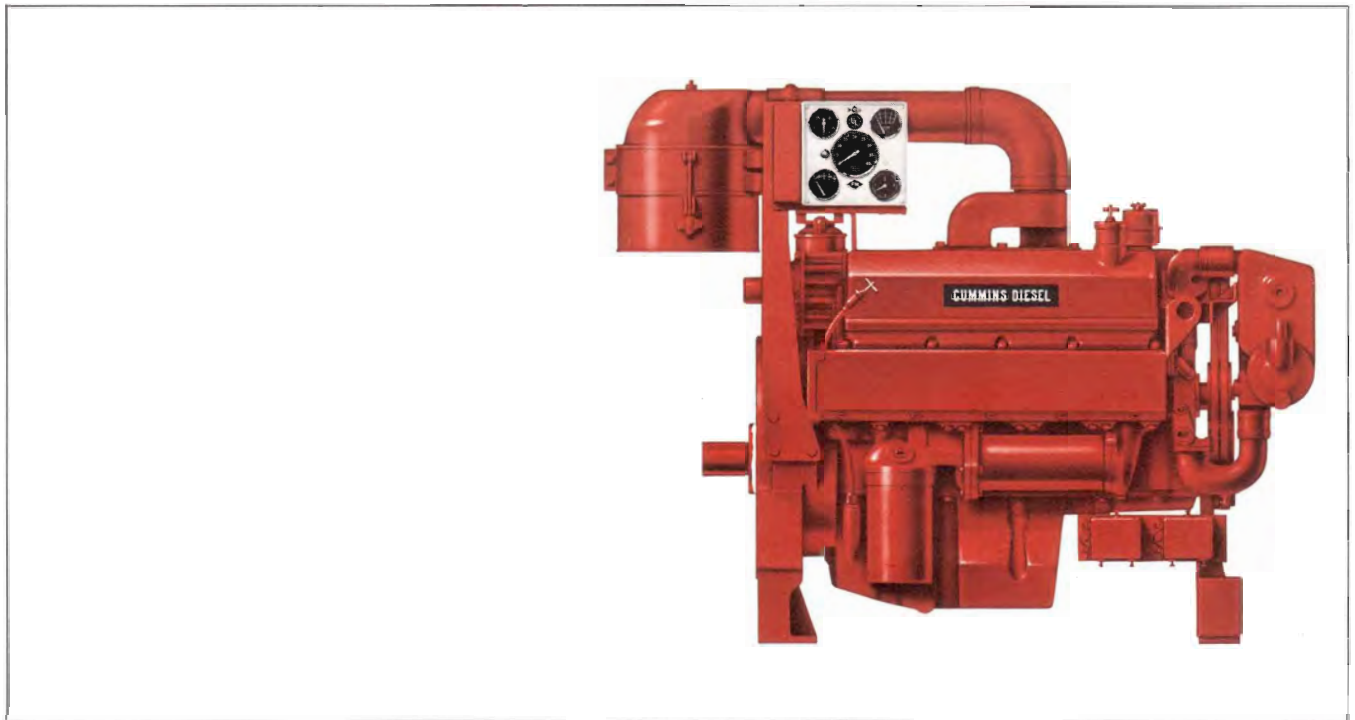


# Cummins Diesel

# V8-168-IF & V8-210-IF



## Specifications

|  |   |
|--|---|
| Number of Cylinders .....                    | 8   |
| Bore and Stroke—in. ....                     | 4 <sup>5</sup> / <sub>8</sub> x 3 <sup>3</sup> / <sub>4</sub> |
| Piston Displacement—cu. in. ....             | 504   |
| Operating Cycles .....                       | 4   |
| Crankcase Oil Capacity—gals. ....            | 6   |
| Engine Coolant Capacity—gals. ....           | 8 <sup>1</sup> / <sub>2</sub>                                 |
| Net Weight with Standard Accessories (lbs.). | 1838  |

Specific ratings are shown on rear page.

## Design Features

**Bearings:** Precision type, steel backed inserts. 5 main bearings, 3<sup>1</sup>/<sub>2</sub>" diameter. Connecting Rod — 2<sup>1</sup>/<sub>2</sub>" 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" 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, fly-ball 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.

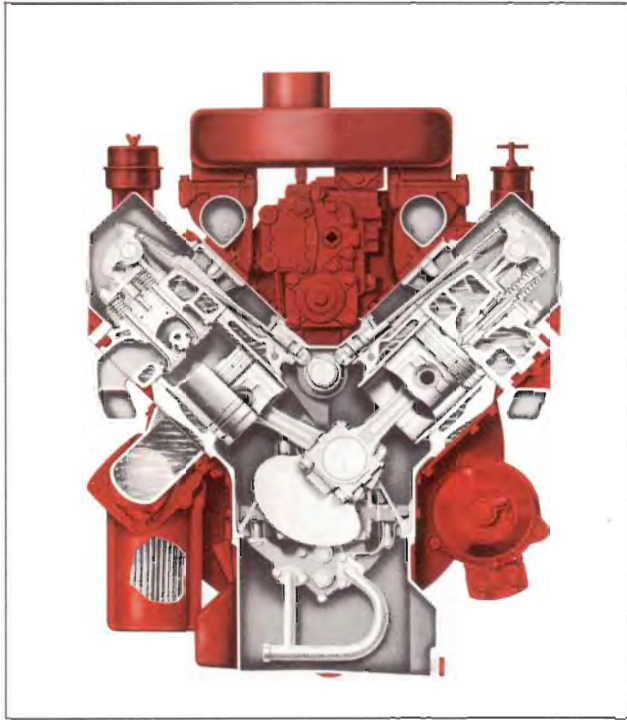
**Piston Pins:** 1<sup>3</sup>/<sub>8</sub>" diameter, full floating.

**Valves:** Dual intake and exhaust each cylinder. Each valve 1<sup>5</sup>/<sub>8</sub>" diameter.



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

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



### 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 specification 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 Crankshafts:** Precision machined from high tensile strength steel forgings. Bearing journals are induction hardened for long life.

Engines for fire pump service should only be applied at the listed ratings of any one of the following: Underwriters' Laboratories, Inc., Factory Mutual Fire Insurance Companies. These ratings are as follows:

| HP        | UL  | FM  | @ RPM  |
|-----------|-----|-----|--------|
| V8-168-IF | 121 | 121 | @ 1750 |
|           | 141 | 141 | @ 2000 |
|           | 145 | 145 | @ 2200 |
| V8-210-IF | 157 | 157 | @ 2400 |
|           | 168 | 168 | @ 2600 |
|           | 174 | 174 | @ 2800 |
|           | 182 | 182 | @ 3000 |
|           | 185 | 185 | @ 3300 |

### Performance

The horsepower ratings listed above represent the usable horsepower for Fire Pump service at sea level altitude (29.92 inches of mercury) and 80°F. intake air temperature. Ratings represent performance of the engine with all standardly fitted parasitic losses deducted, including fuel system, lubricating oil pump, water pump, air cleaner and battery charging alternator.

The listed horsepower represents performance on No. 2 diesel or furnace oil. The usable horsepower must be reduced 5% for each 1000 feet above sea level, in accordance with National Fire Protection Association Standard No. 20.

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

## Standard Equipment

**Breather, Crankcase:** Sealed type element.

**Cleaner, Air:** 10" diameter, dry type, mounted. (U.L. approved).

**Electrical Equipment:** 12 volt negative ground system. 12 volt starting motor; 12 volt, 20 ampere alternator; voltage regulator; contactors for automatic starting.

**Exchanger, Heat:** Tubular type, mounted.

**Filters:** Cummins. Lubricating oil, full flow replaceable paper element type, mounted. Fuel, paper element throw-away type (primary) and wire screen/magnetic (secondary).

**Flywheel:** Machined to fit drive flange.

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

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

**Manifold, Air Intake:** Two, with crossover and common inlet.

**Manifold, Exhaust:** Dual, water cooled with outlet horizontal to rear.

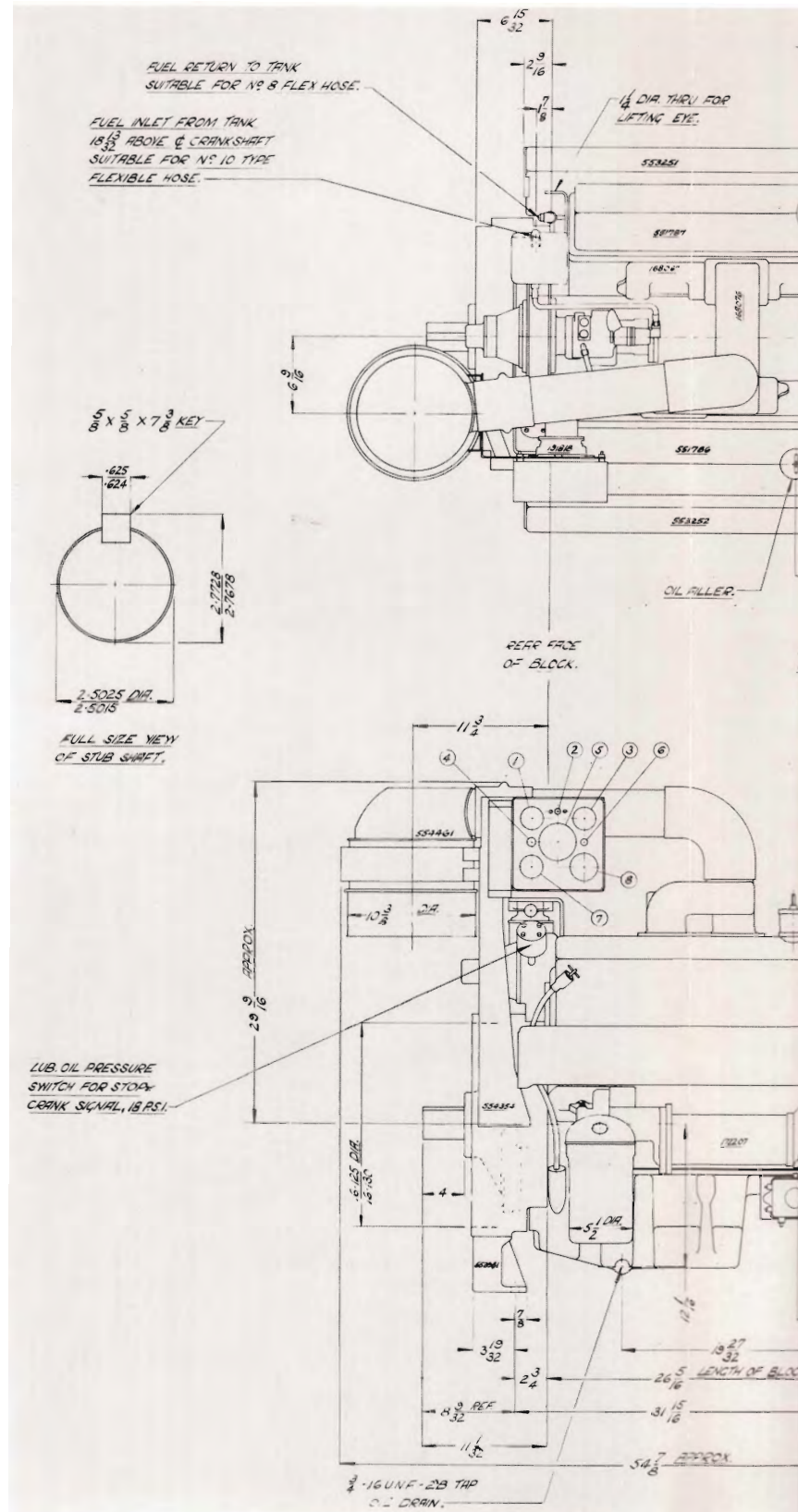
**Pan, Oil:** Cast aluminum, rear sump type, 5 U. S. gallon capacity.

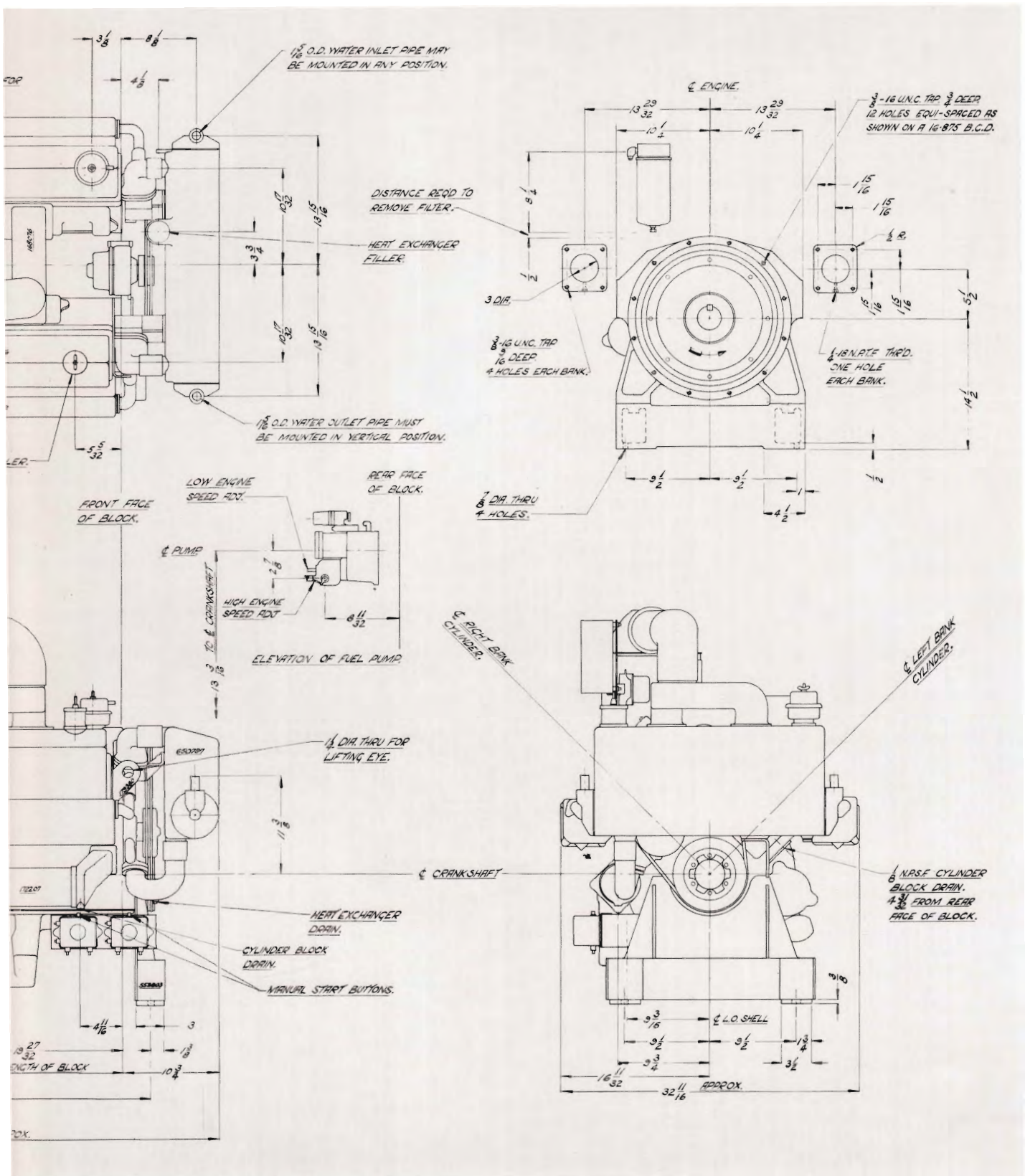
**Panel, Instrument:** Mounted. Includes ammeter, tachometer, hourmeter, water temperature gauge, lubricating oil pressure gauge, engine run warning lamp.

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

**Stubshaft:** Mounted to drive flange on flywheel.

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





V8-168-IF & V8-210-IF Engine Installation Diagram 553830