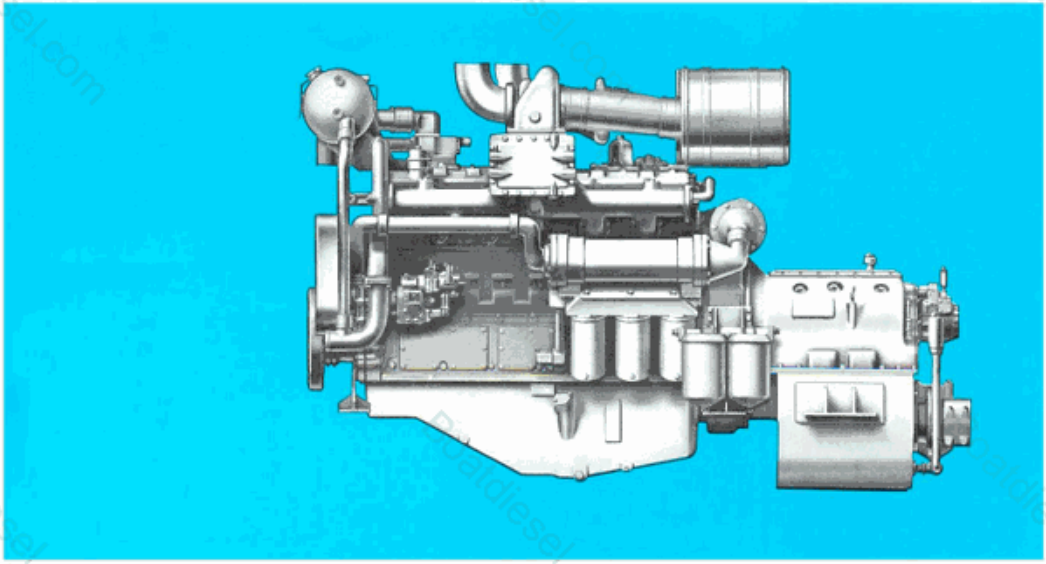
Cummins Marine Diesel VT-1710-M



Specifications

		Metric
Power Ratings	635 bhp	474 kW
Governed RPM	2100	2100
Number of Cylinders	12	12
Bore and Stroke	5½" x 6"	140 x 152mm
Piston Displacement	1710 cu. in.	28 l
Operating Cycles	4	4
Lube System Oil Cap.	18 U.S. gals.	68 l
Coolant Capacity	30 U.S. gals.	114 l
Net Weight with Std. Accessories, Dry	7860 lbs.	3 568 kg

Design Features

Bearings: Precision type, steel backed inserts. 7 main bearings, 5¾" (146mm) diameter. Connecting Rod – 3¾" (95mm) diameter.

Camshaft: Dual camshafts control all valve and injector movement. Induction hardened alloy steel with helical gear drive.

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

Connecting Rods: Drop forged, 12" (305mm) 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: Each head serves three cylinders. Drilled fuel supply and return lines. Corrosion resistant inserts on intake and exhaust valve seats.

Damper, Vibration: Compressed rubber type.

Fuel System: Cummins PT™ wear-compensating system with integral, flyball type, mechanical variable speed governor. Camshaft actuated injectors.

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

Lubrication: Force feed to all bearings, gear type pump.

Pistons: Aluminum, cam ground, with four compression and one oil ring. Oil cooled.

Piston Pins: 2" (51mm) diameter, full floating.

Thermostats: Two, individual unit modulating by-pass type.

Turbochargers: Two, Cummins, top mounted.

Valves: Dual intake and exhaust each cylinder. Each valve 1⅞" (48mm) diameter. Heat and corrosion resistant face on intake and exhaust valves.

Standard Equipment

Cleaner, Air: Two, 15" (381mm) diameter, dry type, mounted.

Cooling System: Mounted expansion tank for keel cooling.

Corrosion Resistor: Mounted, spin-on type, checks rust and corrosion, controls acidity, and removes impurities from coolant.

Dipstick, Oil: Starboard side when viewing engine from drive end.

Electrical Equipment: 24 volt, 30 ampere negative ground system. Includes starting motor, alternator, regulator, and starting switch.

Filters: Lubricating oil, full flow replaceable paper element type, mounted and by-pass type, not mounted. Fuel, twin heavy duty replaceable paper element type, mounted.

Flywheel: For reverse and reduction gear.

Gear, Marine: Twin Disc MG-521, 4.09:1 reverse and reduction gear with unbored propeller shaft companion flange.

Governor: Mechanical variable speed type.

Housing, Flywheel: S.A.E. No. 0 with marine mounting pads.

Manifold, Air Intake: Two, each connected to a turbocharger.

Manifold, Exhaust: Two, water cooled. Each connected to a turbocharger.

Pan, Oil: Aluminum, rear sump type, 18 U.S. gallon (68 litre) capacity.

Pump, Coolant: Belt driven, centrifugal type, 220 U.S. gpm (833 l/min.) @ 2100 rpm.

Shield, Belt: Fabricated steel.

Starting Aid: Air manifold preheater assembly.

Support, Engine: Marine type, front and rear.

Optional Equipment

Dipstick, Oil: Port side when viewing engine from drive end.

Electrical Equipment: 24 volt, 60 ampere system; 32 volt, 60 ampere system.

Exchanger, Heat: Tubular type, not mounted.

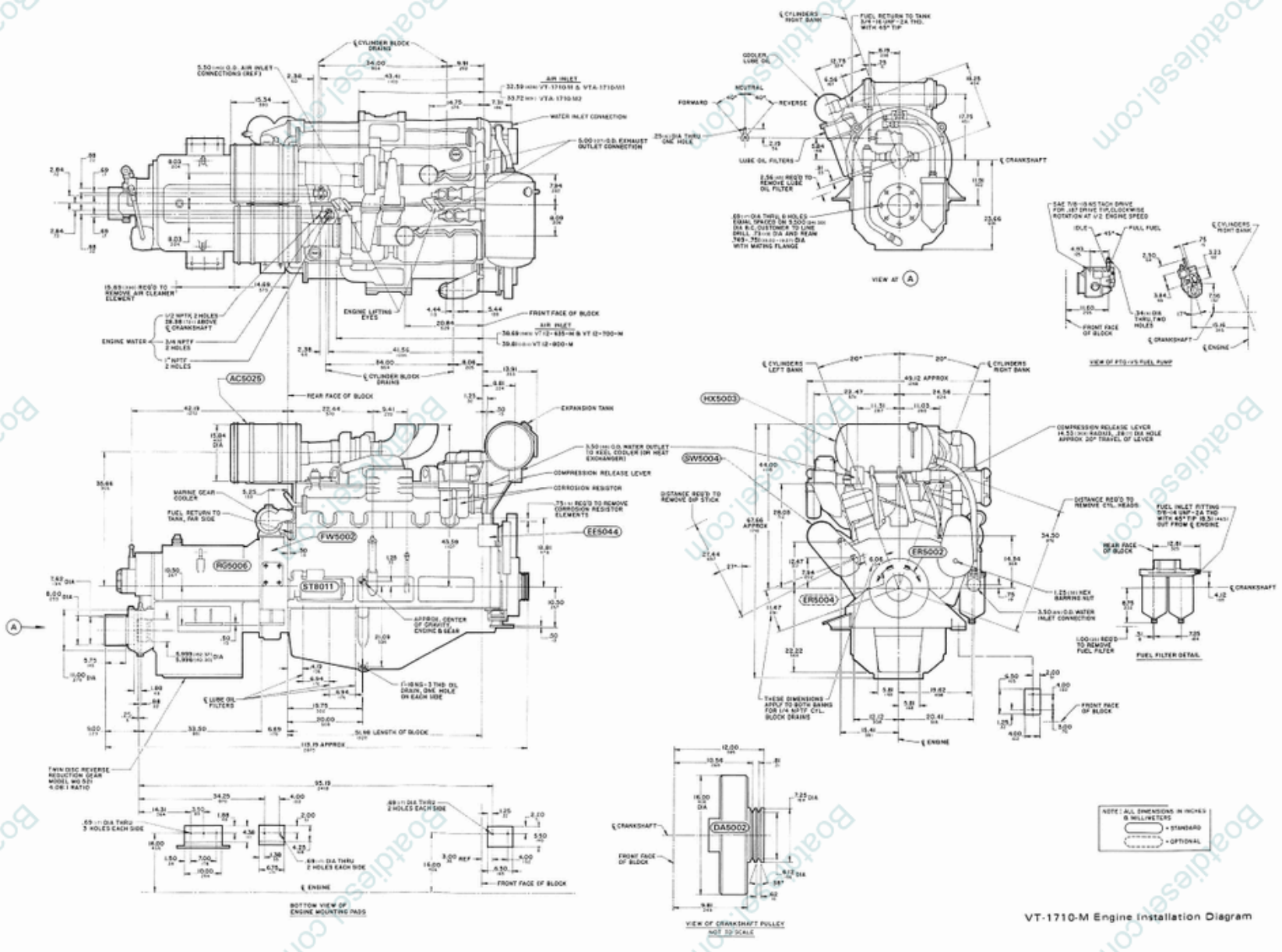
Gear, Marine: Twin Disc MG-521, 2.19:1 or 3.03:1 ratio; Twin Disc MG-527, 5.17:1 ratio; Capitol HPC-10500, 4.00:1, 4.967:1 or 6.115:1 ratio; Capitol HPVD-200V, 1:1 ratio.

Panel, Instrument: Side mounted. Includes ammeter, tachometer, hourmeter, engine water temperature gauge, engine oil pressure gauge and engine oil temperature gauge.

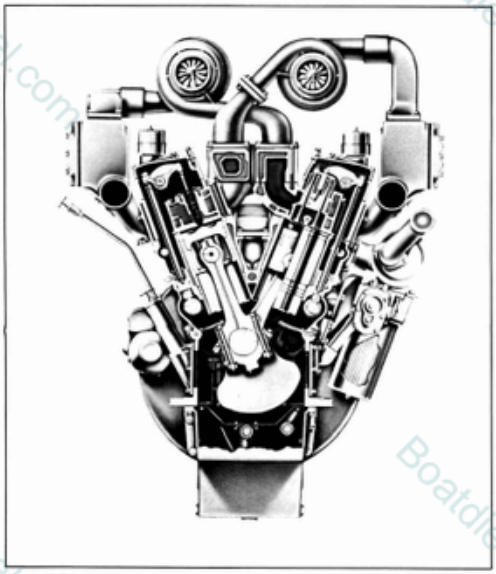
Power Take-Off: Front mounted. Twin Disc clutch model SP-114 for up to 150 h.p., SL-214 for up to 200 h.p. (149 kW).

Pump, Raw Water: 125 U.S. gpm (473 l/min.) @ 2100 rpm.

Switches, Marine: Low oil pressure and high water temperature.



VT-1710-M Engine Installation Diagram



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 alloy steel. Intake and exhaust valves of big displacement models are nitrogen steel for high temperature strength and are faced with corrosion resistant material.

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 dual camshafts. 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.

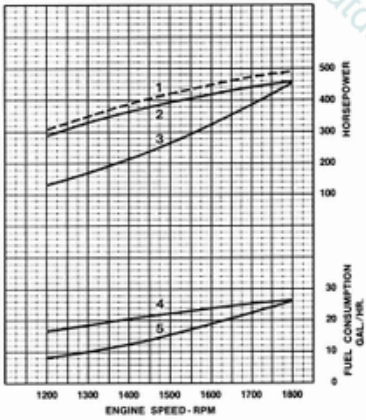
9 **Large Volume Water Passages:** Give even flow of coolant around cylinder liners, valves, and injectors to draw excess heat from combustion chamber. Centrifugal pump circulates large volumes of water.

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 crown material on the piston.

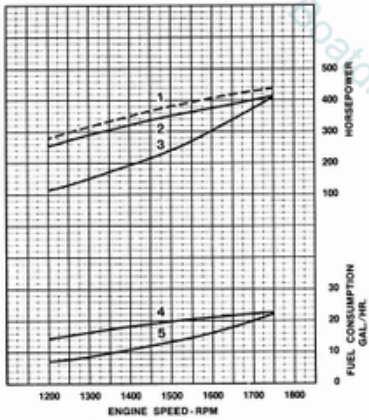
11 **Counterweighted Crankshaft:** Precision machined from high tensile strength steel forgings. Bearing journals are induction hardened for long life.

Bulletin No. 3380011 Litho in USA 7-74

Medium Duty Commercial Performance



Continuous Duty Performance



These performance curves represent the performance available for the specified ratings at 500 feet (150m) altitude (29.00 in. (737mm) Hg dry barometer), 85°F. (29°C.) intake air temperature, and 0.38 in. (9.7mm) Hg water vapor pressure (S.A.E. J816b test conditions).

Fuel consumption curves based on fuel weight of 7.0 lbs./U.S. gallon (0.84 kg/*l*).

1. Gross Brake Horsepower.
2. Net horsepower with reverse reduction gear, alternator and raw water pump.
3. Hypothetical propeller power curve (3.0 exponent).
4. Fuel consumption for net shaft horsepower.
5. Fuel consumption for hypothetical propeller.

Medium Duty Commercial Rating — This rating is intended for use in applications where the average load factor does not exceed the continuous rating and where full throttle does not exceed fifteen hours total in any 24-hour period.

Continuous Duty Rating — This is a 24-hour continuous rating and is intended for use in applications requiring uninterrupted service at full throttle operation.

DEFINITION: Load factor is defined as the arithmetic mean of the load profile at the normal duty cycle, not including prolonged periods at idle operation.

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