



3516C

2130 mhp (2100 bhp) 1566 bkW

MARINE PROPULSION

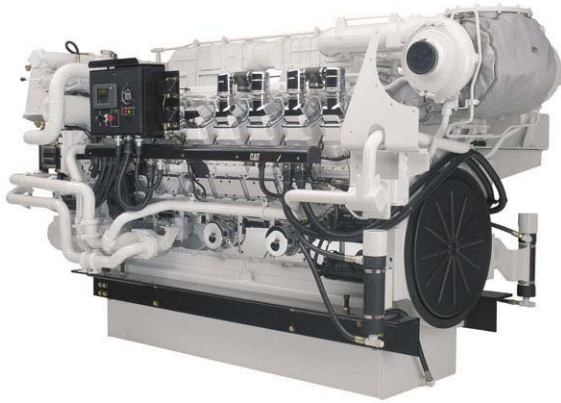


Image shown may not reflect actual Engine

SPECIFICATIONS

V-16, 4-Stroke-Cycle-Diesel

Emissions.....	IMO Compliant
Displacement.....	69.0 L (4,210.64 in <sup>3</sup> )
Rated Engine Speed.....	1600
Bore.....	170.0 mm (6.69 in)
Stroke.....	190.0 mm (7.48 in)
Aspiration.....	Turbocharged-Aftercooled
Governor.....	ADEM3
Cooling System.....	Heat Exchanger
Weight, Net Dry (approx.).....	9,033 kg (19,914 lb)
Refill Capacity	
Caterpillar Diesel Engine Oil 10W30 or 15W40	
Rotation (from flywheel end).....	Counterclockwise
Flywheel and Flywheel Housing.....	SAE NO. 00
Flywheel Teeth.....	183

Keel Cooler Configured

STANDARD ENGINE EQUIPMENT

Air Inlet System

Corrosion-resistant separate circuit aftercooler core, power-core air cleaners with service indicator, dual turbochargers

Control System

Dual A3 engine control modules provide engine control and monitoring, rigid wiring harness with plug and run connectors on port and starboard sides

Cooling System

Both combined and separate circuit options--auxiliary fresh water pump, centrifugal non-self-priming auxiliary sea water pump, gear driven centrifugal jacket water pump, expansion tank, engine oil cooler, thermostats and housing

Exhaust System

Dry gas-tight exhaust manifolds with SOLAS compliant heat shields, dual turbochargers with water-cooled bearings and heat shields, wastegate, modular pulse exhaust manifold, single exhaust outlet

Fuel System

Electronically controlled unit injectors, fuel filter with service indicators, fuel transfer pump, SOLAS compliant fuel connections with spill shield

Instrumentation

Engine-mounted instrument panel with Marine Power Display (MPD), four-position engine control switch, alarm horn, overspeed shutdown notification light, emergency stop notification light, secondary ECM "Ready" light, secondary ECM "Active" light, graphic display unit for analog or digital display of oil and fuel pressure, oil and fuel filter differential, system DC voltage, exhaust and water temperature, air inlet restriction, service meter, engine speed, fuel consumption (total and instantaneous)

Lube System

Pre-lube strategy, top-mounted dual crankcase breathers, oil filter with service indicators, oil level gauge, oil filler, gear-type oil pump

Mounting System

Three point trunnion mounts or mounting rails

Power Take-Offs

Accessory drives--lower RH and lower LH for standard rotation; upper and lower RH, upper and lower LH for opposite rotation; two-sided front housing

Protection System

A3 electronic control module with customer programmable engine derate strategies, engine alarms and diagnostics displayed on local and remote MPDs, emergency stop pushbutton, safety shutoff protection for oil pressure and water temperature, overspeed protection

General

Vibration damper and guard, Caterpillar yellow paint, lifting eyes

ISO Certification

Factory-designed systems built at Caterpillar ISO 9001:2000 certified facilities



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PERFORMANCE CURVES

B-RATING - DM9248-02

Aftercooler Temperature 45° C (113° F)

English

Engine Power hp

Fuel Rate gph

					Engine Speed rpm				
Engine Speed rpm	Engine Power hp	Engine Torque lb ft	BSFC lb/hp-hr	Fuel Rate gph	Engine Speed rpm	Engine Power hp	Engine Torque lb ft	BSFC lb/hp-hr	Fuel Rate gph
<b>Zone 1 Curve 1</b>					<b>Max Limit Curve 4</b>				
1600	2000	6566	.333	95.2	1600	2100	6893	.332	99.5
1400	1900	7129	.335	91.0	1400	2100	7879	.335	100.4
1200	1678	7345	.311	74.5	1200	2020	8842	.308	88.8
1000	1482	7783	.319	67.6	1000	1881	9878	.313	83.9
800	551	3618	.357	28.1	800	675	4428	.359	34.6
600	278	2430	.373	14.8	600	304	2659	.376	16.3
<b>Zone 2 Curve 2</b>					<b>Prop Demand Curve P</b>				
1600	2100	6893	.332	99.5	1600	2100	6893	.332	99.5
1400	2008	7533	.335	96.1	1400	1407	5278	.337	67.6
1200	1765	7724	.310	78.1	1200	886	3877	.341	43.1
1000	1582	8307	.318	71.7	1000	513	2693	.360	26.4
800	551	3618	.357	28.1	800	263	1724	.378	14.2
600	278	2430	.373	14.8	600	111	969	.444	7.0
<b>Zone 3 Curve 3</b>									
1600	2100	6893	.332	99.5	1600	2100	6893	.332	99.5
1400	2100	7879	.335	100.4	1400	2100	7879	.335	100.4
1200	1843	8064	.309	81.3	1200	2020	8842	.308	88.8
1000	1674	8793	.316	75.6	1000	1881	9878	.313	83.9
800	551	3618	.357	28.1	800	675	4428	.359	34.6
600	278	2430	.373	14.8	600	304	2659	.376	16.3

NOTE: Curve P is a cubic prop demand curve with 3.0 exponent for displacement hulls only.



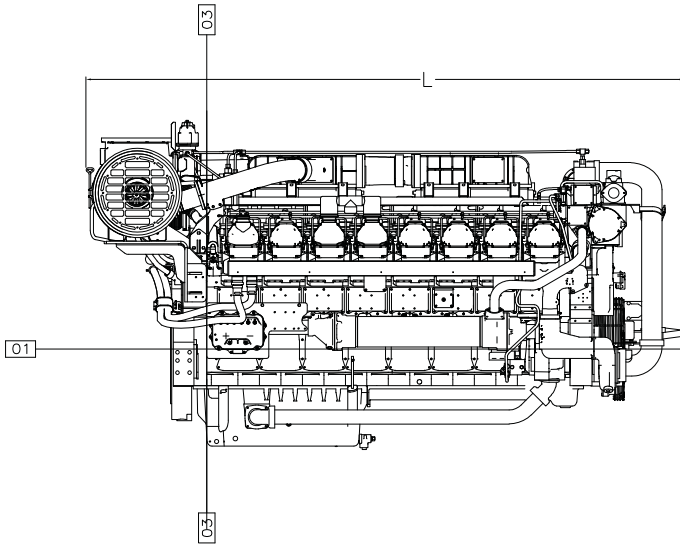
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MARINE PROPULSION

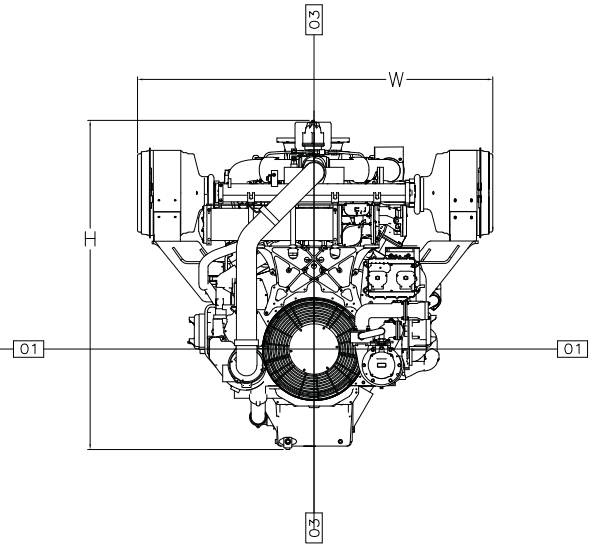
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DIMENSIONS

Right Side



Front



Engine Dimensions		
(1) Length to Flywheel Housing	3679.0 mm	144.84 in
(2) Width	2036.9 mm	80.19 in
(3) Height	2122.2 mm	83.55 in
Weight, Net Dry (approx)	9033 kg	19,914 lb

Note: Do not use for installation design. See general dimension drawings for detail (Drawing # LA4743 ).



## RATING DEFINITIONS AND CONDITIONS

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### B Rating (Heavy Duty)

% Load Factor: 40 to 80 % Time at Rated RPM: up to 40 Typical Time at Full Load: 10 hours out of 12 Typical Hour/Year: 3000 to 5000 Typical Applications: For vessels operating at rated load and rated speed up to 80% of the time with some load cycling (40% to 80% load factor). Typical applications could include but are not limited to vessels such as mid-water trawlers, purse seiner, crew and supply boats, ferries, or towboats. Typical operation ranges from 3000 to 5000 hours per year.

### Power

at declared engine speed is in accordance with ISO3046-1:2002E. Caterpillar maintains ISO9001:1994/QS-9000 approved engine test facilities to assure accurate calibration of test equipment. Electronically controlled engines are set at the factory at the advertised power corrected to standard ambient conditions. The published fuel consumption rates are in accordance with ISO3046-1:2002E.

### Fuel rates

are based on fuel oil of 35° API [16°C (60°F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29°C (85°F) and weighing 838.9 g/L (7.001 lb/U.S. gal). Additional ratings may be available for specific customer requirements. Consult your Caterpillar representative for additional information.

Performance data is calculated in accordance with tolerances and conditions stated in this specification sheet and is only intended for purposes of comparison with other manufacturer's engines. Actual engine performance may vary according to the particular application of the engine and operating conditions beyond Caterpillar's control.

Power produced at the flywheel will be within standard tolerances up to 49° C (120° F) combustion air temperature measured at the air cleaner inlet, and fuel temperature up to 52° C (125°F) measured at the fuel filter base. Power rated in accordance with NMMA procedure as crankshaft power. Reduce crankshaft power by 3% for propeller shaft power.

Performance No.: DM9248-02

Feature Code: 516DM44

U.S. Sourced

20794511

2 October 2012

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Performance Data

B-RATING - DM9248-02

Aftercooler Temperature 45.0 °C (113.0 °F)

	Metric								
	Engine Speed rpm	Engine Power kW	BSFC g/kW-hr	Fuel Rate L/hr	Intake Manf Press kPa	Intake Air Flow m3/min	Exh Manif Temp °C	Exh Gas Flow m3/min	Engine Torque N-m
<b>Zone Limit Curve:1</b>	1600	1,491.5	202.8	360.5	226.2	147.6	529.7	314.8	8,902
	1400	1,417	203.8	344.3	233.9	142.2	499.8	308.5	9,665
	1200	1,251.5	189	282.0	207.4	113.6	496.2	240.3	9,959
	1000	1,105	194.3	255.9	165.6	82.3	591.7	199.3	10,552
	800	411	217.4	106.5	29.9	30.4	568.6	77.7	4,906
	600	207	226.8	56.0	7.9	17.3	446.9	37.5	3,295
<b>Zone Limit Curve:2</b>	1600	1,566	201.8	376.8	0.0	149.1	542.7	323.4	9,346
	1400	1,497.5	203.7	363.7	0.0	144.5	513.8	320.2	10,214
	1200	1,316	188.3	295.5	0.0	117.7	502.3	249.2	10,472
	1000	1,179.5	193.2	271.6	0.0	87.3	594.7	209.9	11,263
	800	411	217.4	106.5	0.0	30.4	568.6	77.7	4,906
	600	207	226.8	56.0	0.0	17.3	446.9	37.5	3,295
<b>Zone Limit Curve:3</b>	1600	1,566	201.8	376.8	230.3	149.1	542.7	323.4	9,346
	1400	1,566	203.7	380.2	248.1	146.3	526.5	330.8	10,682
	1200	1,374	187.9	307.7	229.1	121.3	508.2	257.4	10,934
	1000	1,248.5	192.2	286.0	197.3	92.1	596.1	219.6	11,922
	800	411	217.4	106.5	29.9	30.4	568.6	77.7	4,906
	600	207	226.8	56.0	7.9	17.3	446.9	37.5	3,295
<b>Zone Limit Curve:4</b>	1600	1,566	201.8	376.8	230.3	149.1	542.7	323.4	9,346
	1400	1,566	203.7	380.2	248.1	146.3	526.5	330.8	10,682
	1200	1,506.5	187.3	336.3	252.6	129.3	522.9	276.1	11,988
	1000	1,402.5	190.1	317.7	233.1	103.1	594.2	240.8	13,393
	800	503	218.4	130.9	43.0	34.2	642.5	92.7	6,004
	600	226.5	228.5	61.7	9.1	17.6	485.6	40.1	3,605
<b>Prop Demand Data:</b>	1600	1,566	201.8	376.8	230.3	149.1	542.7	323.4	9,346
	1400	1,049.1	204.7	256.0	192.4	126.4	447.5	249.7	7,156
	1200	660.7	207.2	163.2	97.5	73.2	447.1	158.1	5,257
	1000	382.3	219.2	99.9	36.1	40.8	441	92.5	3,651
	800	195.8	230.2	53.7	10.5	24.2	343.4	48.1	2,337
	600	82.6	270	26.6	2.6	17.2	232.6	26.8	1,314
<b>Max Power Data:</b>	1600	1,566	201.8	376.8	230.3	149.1	542.7	323.4	9,346
	1400	1,566	203.7	380.2	248.1	146.3	526.5	330.8	10,682
	1200	1,506.5	187.3	336.3	252.6	129.3	522.9	276.1	11,988
	1000	1,402.5	190.1	317.7	233.1	103.1	594.2	240.8	13,393
	800	503	218.4	130.9	43.0	34.2	642.5	92.7	6,004
	600	226.5	228.5	61.7	9.1	17.6	485.6	40.1	3,605

**Break Mean Effective Pressure.....1702 kPa**  
**Heat Rejection to Coolant (total)..... 0 kW**  
**Heat Rejection to Aftercooler.....0 kW**  
**Heat Rejection to Exhaust (total).....0 kW**  
**Heat Rejection to Atmosphere from Engine.....0 kW**

NOTE: Prop demand data is a cubic prop demand curve with 3.0 exponent for displacement hulls only.



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Performance Data

B-RATING - DM9248-02

Aftercooler Temperature 45.0 °C (113.0 °F)

English

	Engine Speed rpm	Engine Power hp	BSFC lb/hp-h	Fuel Rate gph	Intake Manf Press in-hg	Intake Air Flow cfm	Exh Manif Temp °F	Exh Gas Flow cfm	Engine Torque lb ft
<b>Zone Limit Curve:1</b>	1600	2,000	0.333	95.2	67.0	5,212.4	985	11,117.1	6,566
	1400	1,900	0.335	91.0	69.3	5,021.8	932	10,894.6	7,129
	1200	1,678	0.311	74.5	61.4	4,011.7	925	8,486.1	7,345
	1000	1,482	0.319	67.6	49.0	2,906.4	1,097	7,038.2	7,783
	800	551	0.357	28.1	8.9	1,073.6	1,055	2,744	3,618
	600	278	0.373	14.8	2.3	610.9	836	1,324.3	2,430
<b>Zone Limit Curve:2</b>	1600	2,100	0.332	99.5	0.0	5,265.4	1,009	11,420.8	6,893
	1400	2,008	0.335	96.1	0.0	5,103	957	11,307.8	7,533
	1200	1,765	0.31	78.1	0.0	4,156.5	936	8,800.4	7,724
	1000	1,582	0.318	71.7	0.0	3,083	1,102	7,412.6	8,307
	800	551	0.357	28.1	0.0	1,073.6	1,055	2,744	3,618
	600	278	0.373	14.8	0.0	610.9	836	1,324.3	2,430
<b>Zone Limit Curve:3</b>	1600	2,100	0.332	99.5	68.2	5,265.4	1,009	11,420.8	6,893
	1400	2,100	0.335	100.4	73.5	5,166.5	980	11,682.1	7,879
	1200	1,843	0.309	81.3	67.8	4,283.7	947	9,090	8,065
	1000	1,674	0.316	75.6	58.4	3,252.5	1,105	7,755.1	8,793
	800	551	0.357	28.1	8.9	1,073.6	1,055	2,744	3,618
	600	278	0.373	14.8	2.3	610.9	836	1,324.3	2,430
<b>Zone Limit Curve:4</b>	1600	2,100	0.332	99.5	68.2	5,265.4	1,009	11,420.8	6,893
	1400	2,100	0.335	100.4	73.5	5,166.5	980	11,682.1	7,879
	1200	2,020	0.308	88.8	74.8	4,566.2	973	9,750.4	8,842
	1000	1,881	0.313	83.9	69.0	3,640.9	1,102	8,503.8	9,878
	800	675	0.359	34.6	12.7	1,207.8	1,189	3,273.7	4,428
	600	304	0.376	16.3	2.7	621.5	906	1,416.1	2,659
<b>Prop Demand Data:</b>	1600	2,100	0.332	99.5	68.2	5,265.4	1,009	11,420.8	6,893
	1400	1,407	0.337	67.6	57.0	4,463.8	838	8,818.1	5,278
	1200	886	0.341	43.1	28.9	2,585	837	5,583.3	3,877
	1000	513	0.36	26.4	10.7	1,440.8	826	3,266.6	2,693
	800	263	0.378	14.2	3.1	854.6	650	1,698.6	1,724
	600	111	0.444	7.0	0.8	607.4	451	946.4	969
<b>Max Power Data:</b>	1600	2,100	0.332	99.5	68.2	5,265.4	1,009	11,420.8	6,893
	1400	2,100	0.335	100.4	73.5	5,166.5	980	11,682.1	7,879
	1200	2,020	0.308	88.8	74.8	4,566.2	973	9,750.4	8,842
	1000	1,881	0.313	83.9	69.0	3,640.9	1,102	8,503.8	9,878
	800	675	0.359	34.6	12.7	1,207.8	1,189	3,273.7	4,428
	600	304	0.376	16.3	2.7	621.5	906	1,416.1	2,659

Break Mean Effective Pressure.....247 psi  
Heat Rejection to Coolant (total)..... 0 Btu/min  
Heat Rejection to Aftercooler.....0 Btu/min  
Heat Rejection to Exhaust (total).....0 Btu/min  
Heat Rejection to Atmosphere from Engine..... 0 Btu/min