

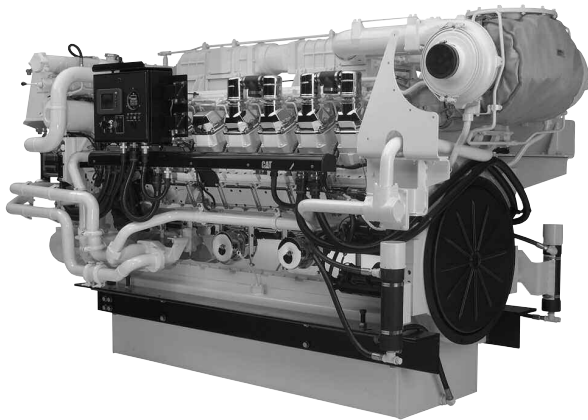


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reflect actual engine

SPECIFICATIONS

V-16, 4-Stroke-Cycle-Diesel

Emissions	IMO Compliant
Displacement	78.1 L (4,765.66 cu. in.)
Rated Engine Speed	1600
Bore	170.0 mm (6.69 in.)
Stroke	215.0 mm (8.46 in.)
Aspiration	Turbocharged-Aftercooled
Governor	Electronic
Cooling System	Heat Exchanger
Weight, Net Dry (approx)	8028 kg (17,699 lb)
Refill Capacity	
Cooling System	365.5 L (96.6 gal)
Lube Oil System	798.7 L (211.0 gal)
Oil Change Interval	1000 hr
Caterpillar Diesel Engine Oil 10W30 or 15W40	
Deep Sump Oil Pan	
Rotation (from flywheel end)	CCW or CW
Flywheel and Flywheel Housing	SAE No. 00
Flywheel Teeth	183

STANDARD ENGINE EQUIPMENT

Air Inlet System

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

Cooling System

Auxiliary fresh water pump (SCAC engines), centrifugal non-self-priming auxiliary sea water pump, gear driven centrifugal jacket water pump, expansion tank, engine oil cooler, thermostats and housing

Control System

Dual Caterpillar® A-III electronic engine control with Electronic Unit Injector fuel system, rigid wiring harness

Exhaust System

Dry gas tight manifolds with heat shields, dual turbochargers with watercooled bearings and heat shields, vertical exhaust outlet

Fuel System

Electronically controlled unit injectors, RH fuel filter with service indicators, fuel transfer pump

Instrumentation

Engine mounted instrument panel with four position engine control switch, alarm horn, overspeed shutdown notification light, emergency stop notification light, secondary ECU "Ready" light, secondary ECU "Active" light, graphical 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

Top-mounted dual crankcase breathers, RH oil filter with service indicators, RH oil level gauge, RH oil filler, gear type oil pump, deep sump oil pan

Mounting System

Ledge type engine 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

A-III electronic monitoring system with customer programmable engine deration strategies, emergency stop pushbutton, safety shutoff protection for oil pressure and water temperature, overspeed protection

General

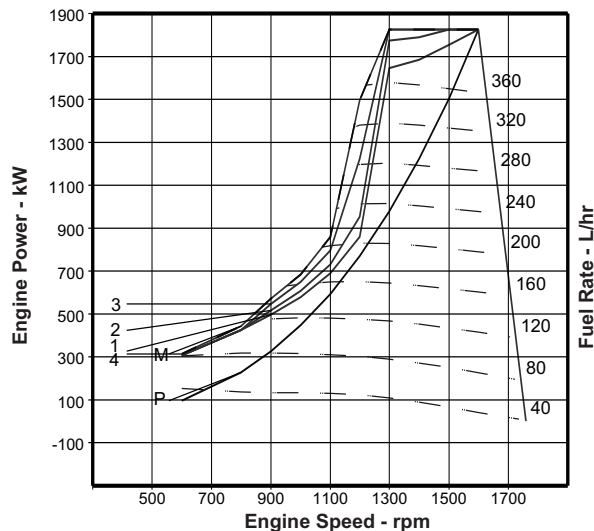
Vibration damper and guard, Caterpillar yellow paint, lifting eyes (engines for heat exchanger cooling do not include heat exchanger)

MARINE ENGINE PERFORMANCE

3516B DITA

A Rating (Unrestricted Continuous) — DM6991-00

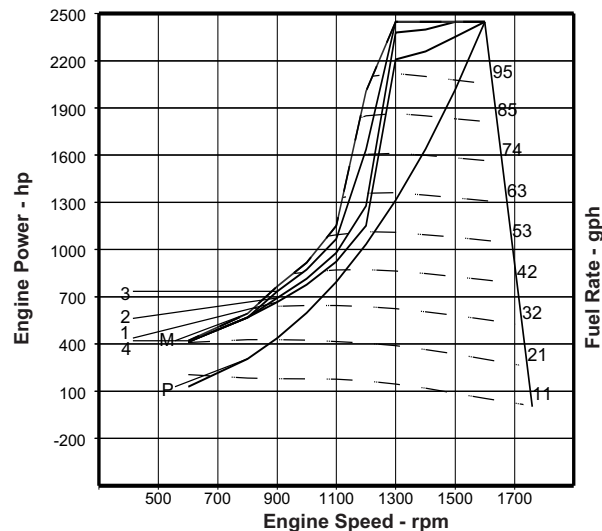
IMO Compliant — Aftercooler Temperature 60°C (140°F)



Performance Data

	Engine Speed rpm	Engine Power kW	BSFC g/kW-h	Fuel Rate L/hr	Boost Press kPa Gauge	Intake Air Flow m³/min	Exh Manif Temp °C	Exh Gas Flow m³/min
Zone Limit Curve: 1	1600	1825	196	426.9	231.9	157.5	556	383.2
	1400	1685	192	385.5	199.1	125.5	584	330.0
	1200	859	199	203.9	52.2	55.4	626	167.1
	1000	579	209	144.1	21.8	35.9	623	111.0
	800	424	214	108.3	11.4	25.5	612	78.1
	600	307	220	80.5	6.4	17.7	581	54.3
Zone Limit Curve: 2	1600	1825	196	426.9	231.9	157.5	556	383.2
	1400	1789	191	407.5	217.1	133.0	586	348.0
	1200	953	198	225.0	63.0	59.6	645	181.6
	1000	608	209	151.5	24.0	36.6	645	115.4
	800	424	215	108.5	11.4	25.5	612	78.1
	600	307	220	80.5	6.4	17.7	581	54.3
Zone Limit Curve: 3	1600	1825	196	426.9	231.9	157.5	556	383.2
	1400	1825	191	415.0	223.4	135.6	587	354.2
	1200	1222	196	285.7	100.0	73.8	675	225.5
	1000	650	210	162.4	27.3	37.6	676	121.8
	800	424	216	108.9	11.4	25.5	612	78.1
	600	307	220	80.5	6.4	17.7	581	54.3
Zone Limit Curve: 4	1600	1825	196	426.9	231.9	157.5	556	383.2
	1400	1825	191	414.9	223.4	135.6	587	354.2
	1200	1496	195	347.4	146.2	90.7	681	272.8
	1000	684	210	171.3	30.2	38.5	700	126.9
	800	443	217	114.5	12.4	25.7	637	80.9
	600	313	222	82.7	6.8	17.8	596	55.1
Max Power Curve: M	1600	1825	196	426.9	231.9	157.5	556	383.2
	1400	1825	191	414.9	223.4	135.6	587	354.2
	1200	1496	195	347.4	146.2	90.7	681	272.8
	1000	684	210	171.3	30.2	38.5	700	126.9
	800	443	217	114.5	12.4	25.7	637	80.9
	600	313	222	82.7	6.8	17.8	596	55.1
Prop Demand Curve: P	1600	1825	196	426.9	231.9	157.5	556	383.2
	1400	1223	197	286.4	119.0	92.7	573	250.1
	1200	770	203	186.1	43.0	51.8	601	153.5
	1000	446	209	110.9	13.3	33.3	519	91.3
	800	228	217	58.9	3.3	24.1	371	53.6
	600	96	241	27.6	.1	17.4	242	30.9

Brake Mean Effective Pressure 1753 kPa
Heat Rejection to Coolant (total) 611 kW
Heat Rejection to Aftercooler 373 kW
Heat Rejection to Exhaust (total) 1588 kW
Heat Rejection to Atmosphere from Engine 123 kW



Performance Data

	Engine Speed rpm	Engine Power hp	BSFC lb/hp-h	Fuel Rate gph	Boost Press in-hg Gauge	Intake Air Flow cfm	Exh Manif Temp °F	Exh Gas Flow cfm
Zone Limit Curve: 1	1600	2447	.322	112.8	68.7	5562	1033	13533
	1400	2260	.316	101.8	59.0	4432	1083	11654
	1200	1152	.327	53.9	15.5	1956	1159	5901
	1000	776	.344	38.1	6.5	1268	1153	3920
	800	569	.352	28.6	3.4	901	1134	2758
	600	412	.362	21.3	1.9	625	1078	1918
Zone Limit Curve: 2	1600	2447	.322	112.8	68.7	5562	1033	13533
	1400	2399	.314	107.7	64.3	4697	1087	12290
	1200	1278	.326	59.4	18.7	2105	1193	6413
	1000	815	.344	40.0	7.1	1293	1193	4075
	800	569	.353	28.7	3.4	901	1134	2758
	600	412	.362	21.3	1.9	625	1078	1918
Zone Limit Curve: 3	1600	2447	.322	112.8	68.7	5562	1033	13533
	1400	2447	.314	109.6	66.2	4789	1089	12508
	1200	1639	.322	75.5	29.6	2606	1247	7963
	1000	872	.345	42.9	8.1	1328	1249	4301
	800	569	.355	28.8	3.4	901	1134	2758
	600	412	.362	21.3	1.9	625	1078	1918
Zone Limit Curve: 4	1600	2447	.322	112.8	68.7	5562	1033	13533
	1400	2447	.314	109.6	66.2	4789	1089	12508
	1200	2006	.321	91.8	43.3	3203	1258	9634
	1000	917	.345	45.3	8.9	1360	1292	4481
	800	594	.357	30.2	3.7	908	1179	2857
	600	420	.365	21.8	2.0	629	1105	1946
Max Power Curve: M	1600	2447	.322	112.8	68.7	5562	1033	13533
	1400	2447	.314	109.6	66.2	4789	1089	12508
	1200	2006	.321	91.8	43.3	3203	1258	9634
	1000	917	.345	45.3	8.9	1360	1292	4481
	800	594	.357	30.2	3.7	908	1179	2857
	600	420	.365	21.8	2.0	629	1105	1946
Prop Demand Curve: P	1600	2447	.322	112.8	68.7	5562	1033	13533
	1400	1640	.324	75.7	35.2	3274	1063	8832
	1200	1033	.334	49.2	12.7	1829	1114	5421
	1000	598	.344	29.3	3.9	1176	966	3224
	800	306	.357	15.6	1.0	851	700	1893
	600	129	.396	7.3	.0	614	468	1091

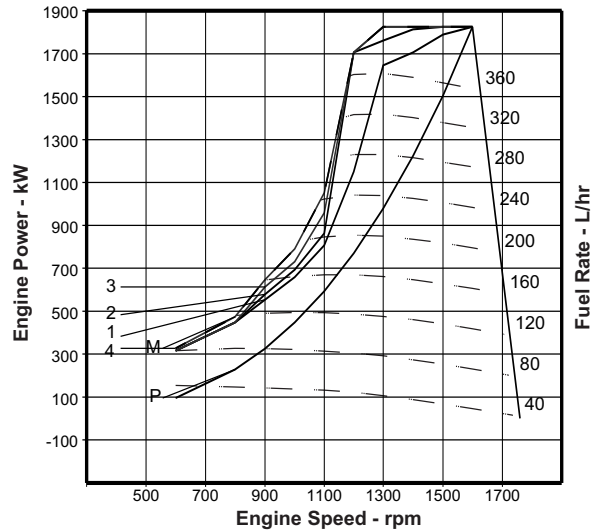
Brake Mean Effective Pressure 254 psi
Heat Rejection to Coolant (total) 34747 btu/min
Heat Rejection to Aftercooler 21212 btu/min
Heat Rejection to Exhaust (total) 90309 btu/min
Heat Rejection to Atmosphere from Engine 6995 btu/min

MARINE ENGINE PERFORMANCE

3516B DITA

A Rating (Unrestricted Continuous) — DM6990-00

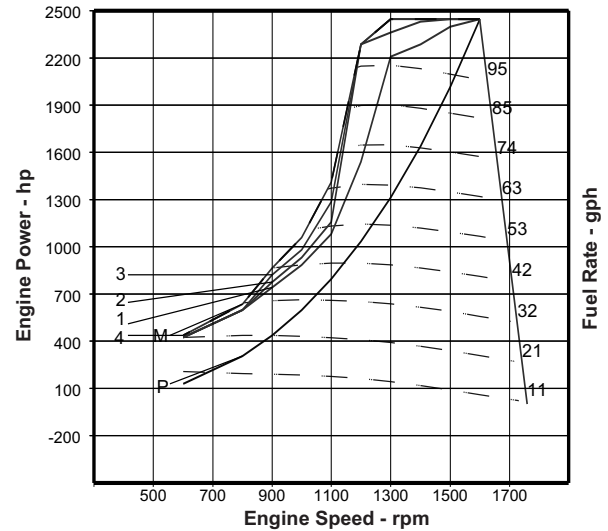
IMO Compliant — Aftercooler Temperature 30°C (86°F)



Performance Data

	Engine Speed rpm	Engine Power kW	BSFC g/kW-h	Fuel Rate L/hr	Boost Press kPa Gauge	Intake Air Flow m³/min	Exh Manif Temp °C	Exh Gas Flow m³/min
Zone Limit	1600	1825	196	425.4	215.5	157.5	540	374.9
Curve: 1	1400	1706	189	383.8	192.3	133.4	554	327.0
	1200	1149	192	263.4	84.7	71.8	625	207.3
	1000	659	203	159.1	26.7	39.5	626	119.2
	800	447	209	111.1	13.5	27.7	597	79.8
	600	316	212	79.7	6.6	18.6	558	49.1
Zone Limit	1600	1825	196	425.4	215.5	157.5	540	374.9
Curve: 2	1400	1813	188	406.7	209.0	140.8	560	344.4
	1200	1706	190	387.0	177.5	107.8	642	301.9
	1000	694	203	167.6	29.5	40.4	646	124.2
	800	447	209	111.3	13.5	27.7	597	79.8
	600	316	212	79.7	6.6	18.6	558	49.1
Zone Limit	1600	1825	196	425.4	215.5	157.5	540	374.9
Curve: 3	1400	1825	188	409.4	210.9	141.6	560	346.4
	1200	1706	190	385.7	177.5	107.8	642	301.9
	1000	731	203	176.6	32.5	41.4	666	129.4
	800	447	210	111.7	13.5	27.7	597	79.8
	600	316	212	79.7	6.6	18.6	558	49.1
Zone Limit	1600	1825	196	425.4	215.5	157.5	540	374.9
Curve: 4	1400	1825	188	409.4	210.9	141.6	560	346.4
	1200	1706	189	384.9	177.5	107.8	642	301.9
	1000	790	203	190.7	37.6	43.0	699	137.5
	800	475	211	119.7	15.3	28.1	636	83.8
	600	326	214	83.0	7.1	18.7	580	50.2
Max Power	1600	1825	196	425.4	215.5	157.5	540	374.9
Curve: M	1400	1825	188	409.4	210.9	141.6	560	346.4
	1200	1706	189	384.9	177.5	107.8	642	301.9
	1000	790	203	190.7	37.6	43.0	699	137.5
	800	475	211	119.7	15.3	28.1	636	83.8
	600	326	214	83.0	7.1	18.7	580	50.2
Prop Demand	1600	1825	196	425.4	215.5	157.5	540	374.9
Curve: P	1400	1223	193	281.7	115.3	98.9	532	246.3
	1200	770	198	182.0	41.1	54.4	557	150.4
	1000	446	204	108.4	13.0	35.3	476	89.4
	800	228	213	57.9	3.8	25.6	339	52.4
	600	96	237	27.2	.4	18.2	223	27.9

Brake Mean Effective Pressure 1753 kPa
 Heat Rejection to Coolant (total) 565 kW
 Heat Rejection to Aftercooler 461 kW
 Heat Rejection to Exhaust (total) 1531 kW
 Heat Rejection to Atmosphere from Engine 119 kW

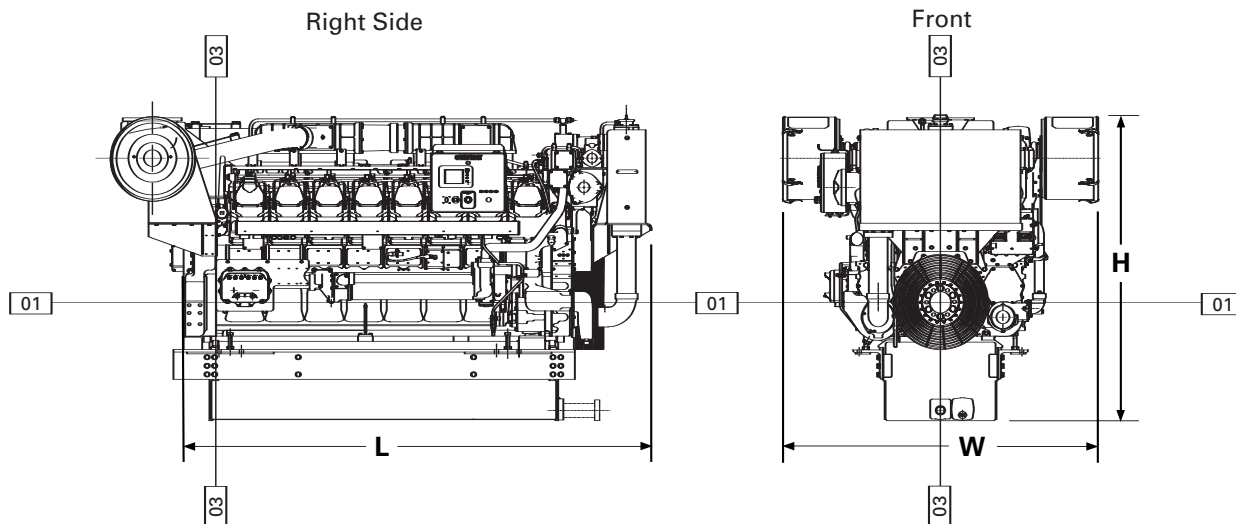


Performance Data

	Engine Speed rpm	Engine Power hp	BSFC lb/hp-h	Fuel Rate gph	Boost Press in.-hg Gauge	Intake Air Flow cfm	Exh Manif Temp °F	Exh Gas Flow cfm
Zone Limit	1600	2447	.322	112.4	63.8	5562	1004	13239
Curve: 1	1400	2288	.311	101.4	56.9	4711	1029	11548
	1200	1541	.316	69.6	25.1	2536	1157	7321
	1000	884	.334	42.0	7.9	1395	1159	4210
	800	599	.344	29.3	4.0	978	1107	2818
	600	424	.349	21.1	2.0	657	1036	1734
Zone Limit	1600	2447	.322	112.4	63.8	5562	1004	13239
Curve: 2	1400	2431	.309	107.4	61.9	4972	1040	12162
	1200	2288	.312	102.2	52.6	3807	1188	10662
	1000	931	.334	44.3	8.7	1427	1195	4386
	800	599	.344	29.4	4.0	978	1107	2818
	600	424	.349	21.1	2.0	657	1036	1734
Zone Limit	1600	2447	.322	112.4	63.8	5562	1004	13239
Curve: 3	1400	2447	.309	108.2	62.5	5001	1040	12233
	1200	2288	.312	101.9	52.6	3807	1188	10662
	1000	980	.334	46.7	9.6	1462	1231	4570
	800	599	.345	29.5	4.0	978	1107	2818
	600	424	.349	21.1	2.0	657	1036	1734
Zone Limit	1600	2447	.322	112.4	63.8	5562	1004	13239
Curve: 4	1400	2447	.309	108.2	62.5	5001	1040	12233
	1200	2288	.311	101.7	52.6	3807	1188	10662
	1000	1059	.334	50.4	11.1	1519	1290	4856
	800	637	.347	31.6	4.5	992	1177	2959
	600	437	.352	21.9	2.1	660	1076	1773
Max Power	1600	2447	.322	112.4	63.8	5562	1004	13239
Curve: M	1400	2447	.309	108.2	62.5	5001	1040	12233
	1200	2288	.311	101.7	52.6	3807	1188	10662
	1000	1059	.334	50.4	11.1	1519	1290	4856
	800	637	.347	31.6	4.5	992	1177	2959
	600	437	.352	21.9	2.1	660	1076	1773
Prop Demand	1600	2447	.322	112.4	63.8	5562	1004	13239
Curve: P	1400	1640	.317	74.4	34.1	3493	990	8698
	1200	1033	.326	48.1	12.2	1921	1035	5311
	1000	598	.335	28.6	3.8	1247	889	3157
	800	306	.350	15.3	1.1	904	642	1850
	600	129	.390	7.2	.1	643	433	985

Brake Mean Effective Pressure 254 psi
 Heat Rejection to Coolant (total) 32131 btu/min
 Heat Rejection to Aftercooler 26217 btu/min
 Heat Rejection to Exhaust (total) 87068 btu/min
 Heat Rejection to Atmosphere from Engine 6768 btu/min

DIMENSIONS



Engine Dimensions		
Length (flywheel housing)	3186.1 mm	125.4 in
Width	1703.0 mm	67.05 in
Height	2091.0 mm	82.32 in
Weight, Net Dry (approx)	8028 kg	17,699 lb

Note: Do not use for installation design.

RATING DEFINITIONS AND CONDITIONS

A Rating (Unrestricted Continuous)

% Load Factor: 80 to 100

% Time at Rated RPM: up to 100

Typical Time at Full Load: No Limit

Typical Hour/Year: 5,000 to 8,000

Typical Applications: For vessels operating at rated load and rated speed up to 100% of the time without interruption or load cycling (80% to 100% load factor). Typical applications could include but are not limited to vessels such as freighters, tugboats, bottom drag trawlers, or deep river tugboats. Typical operation ranges from 5000 to 8000 hours per year.

Power at declared engine speed is in accordance with ISO8665. Caterpillar maintains ISO9000 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.

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 manufacturers' 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.

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