

SPECIFICATIONS

V-16, 4-Stroke-Cycle-Diesel

Emissions	EPA Tier 2 compliant*, IMO compliant EU Stage 3A Inland Waterway accepted as equivalent CCNR Stage II
Displacement	69 L (4211 cu. in.)
Rated Engine Speed	1200
Bore	170.0 mm (6.7 in.)
Stroke	190.0 mm (7.48 in.)
Aspiration	Turbocharged-Aftercooled Governor ADEM™ A3
Cooling System	Heat Exchanger
Weight, Net Dry (approx)	7961-8629 kg (17,550-19,025 lb)
Refill Capacity Cooling System (approx)	233 L (61.6 gal)
Lube Oil System	810.1 L (214 gal)
Oil Change Interval	1000 hr Caterpillar Diesel Engine Oil 10W30 or 15W40 Deep Sump Oil Pan
Rotation (from flywheel end)	Counterclockwise
Flywheel and Flywheel Housing	SAE No. 00
Flywheel Teeth	183
3516C Propulsion	516DM52 (standard) 516DM53 (reverse)

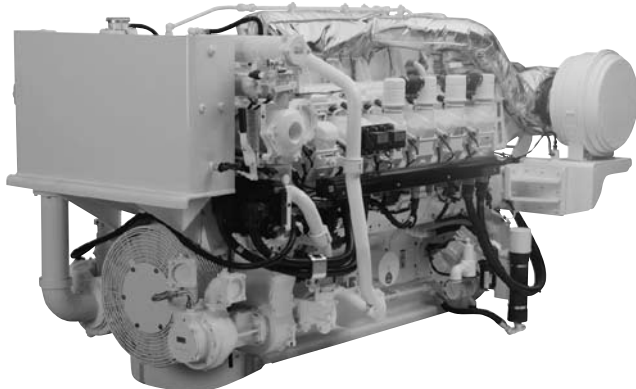


Image shown may not reflect actual engine

A rating

1673 mhp (1650 bhp) 1230 kW @ 1200 rpm (DM8473)

B rating

1775 mhp (1750 bhp) 1305 kW @ 1200 rpm (DM8474)

C rating

1876 mhp (1850 bhp) 1379 kW @ 1200 rpm (DM8475)

*EPA Tier 2 certification in process at time of print

STANDARD ENGINE EQUIPMENT

Air Inlet System

Corrosion resistant separate circuit freshwater aftercooled, powercore air cleaner

Control System

Dual Caterpillar® A3 Electronic Control Unit (ECU) LH with electronic unit injector fuel system rigid wiring harness (10 amp DC power required to drive ECU)

Cooling System

Gear-driven centrifugal auxiliary sea water pump, gear-driven centrifugal jacket water pump, expansion tank for commercial engines, coolant shunt tank on lightweight engines, engine oil cooler, thermostats and housing.

ECU Functions

Programmable low idle, SAEJ1939 data link, Cat® data link, engine diagnostics, general alarm relay, programmable parameters (system application and tattletales), Caterpillar ET service tool interface, remote shutdown, shutdown notify, load feedback, overspeed shutdown, overspeed verify

Exhaust System

Dry gas-tight exhaust manifolds with heat shields, dual turbochargers with watercooled bearings and heat shield. Wastegate on select ratings.

Fuel System

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

Instrumentation

Marine Power Display of: Engine oil pressure, engine water temperature, fuel pressure, engine speed, fuel consumption, overspeed shutdown notification light, prelube and shutdown override

Lube System

Gear-driven pump, top-mounted dual crankcase breather groups, simplex oil filter, oil filler and dipstick.

Power Take-Offs

Accessory drive, two-sided front housing

Protection System

Emergency stop pushbutton, safety shutoff, oil pressure, and water temperature

General

Two lifting eyes mounted to cylinder heads, Caterpillar yellow paint, parts books and maintenance manuals, shrink-wrap.

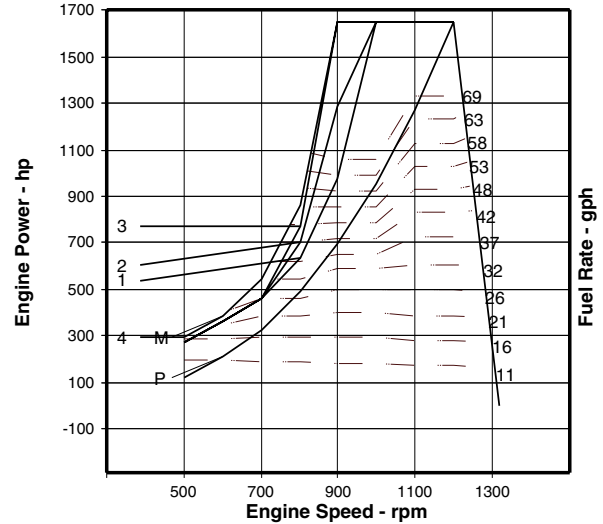
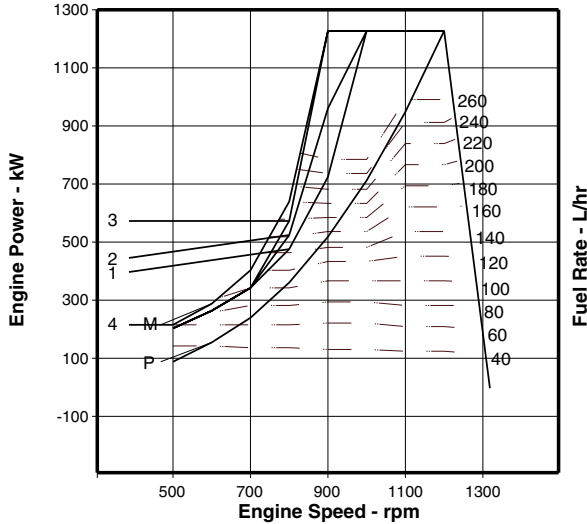
ISO Certification

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

MARINE ENGINE PERFORMANCE

3516C DITA
1673 mhp (1650 bhp) 1230 bkW @ 1200 rpm
A Rating — DM8473-01

Aftercooler Temperature 48°C (118°F)



Performance Data

Performance Data

	Engine Speed rpm	Engine Power kW	BSFC g/kW-hr	Fuel Rate L/hr	Boost Press kPa Gauge	Intake Air Flow m³/min	Exh Manif Temp °C	Exh Gas Flow m³/min
Zone Limit	1200	1231	204	298.6	242.4	120.3	532	258.3
Curve: 1	1000	1231	198	290.2	228.2	95.8	597	232.3
	900	728	209	181.6	103.1	54.0	625	142.4
	800	476	221	125.4	47.2	33.9	625	92.2
	600	269	234	74.8	14.3	19.8	555	49.5
	500	204	232	56.3	8.0	15.6	508	36.3
Zone Limit	1200	1231	204	298.6	0.0	120.3	532	258.3
Curve: 2	1000	1231	198	290.2	0.0	95.8	597	232.3
	900	962	203	232.5	0.0	66.5	650	177.8
	800	524	219	136.4	0.0	35.6	650	98.6
	600	269	234	74.8	0.0	19.8	555	49.5
	500	204	232	56.3	0.0	15.6	508	36.3
Zone Limit	1200	1231	204	298.6	242.4	120.3	532	258.3
Curve: 3	1000	1231	198	290.2	228.2	95.8	597	232.3
	900	1231	199	291.8	215.1	83.9	664	221.2
	800	577	217	149.2	61.8	37.5	675	106.1
	600	269	234	74.8	14.3	19.8	555	49.5
	500	204	232	56.3	8.0	15.6	508	36.3
Zone Limit	1200	1231	204	298.6	242.4	120.3	532	258.3
Curve: 4	1000	1231	198	290.2	228.2	95.8	597	232.3
	900	1231	199	291.8	215.1	83.9	664	221.2
	800	641	216	165.3	73.0	39.8	700	116.0
	600	288	236	80.9	16.0	20.0	594	51.8
	500	218	237	61.5	9.0	15.8	546	38.1
Max Power Curve: M	1200	1231	204	298.6	242.4	120.3	532	258.3
	1000	1231	198	290.2	228.2	95.8	597	232.3
	900	1231	199	291.8	215.1	83.9	664	221.2
	800	641	216	165.3	73.0	39.8	700	116.0
	600	288	236	80.9	16.0	20.0	594	51.8
	500	218	237	61.5	9.0	15.8	546	38.1
Prop Demand Curve: P	1200	1231	204	298.6	242.4	120.3	532	258.3
	1000	712	212	179.6	114.3	61.9	560	151.0
	900	519	219	135.5	64.2	43.6	570	110.7
	800	365	228	99.0	33.4	31.0	548	77.8
	600	154	235	43.2	6.8	18.8	347	36.1
	500	89	260	27.5	2.8	15.0	269	26.3

	Engine Speed rpm	Engine Power hp	BSFC lb/hp-hr	Fuel Rate gph	Boost Press in-hg Gauge	Intake Air Flow cfm	Exh Manif Temp °F	Exh Gas Flow cfm
Zone Limit	1200	1651	.335	78.9	71.8	4248	990	9122
Curve: 1	1000	1651	.326	76.7	67.6	3383	1107	8204
	900	976	.344	48.0	30.5	1907	1157	5029
	800	638	.363	33.1	14.0	1197	1157	3256
	600	361	.385	19.8	4.2	699	1031	1748
	500	274	.381	14.9	2.4	551	946	1282
Zone Limit	1200	1651	.335	78.9	0.0	4248	990	9122
Curve: 2	1000	1651	.326	76.7	0.0	3383	1107	8204
	900	1290	.334	61.4	0.0	2348	1202	6279
	800	703	.360	36.0	0.0	1257	1202	3482
	600	361	.385	19.8	0.0	699	1031	1748
	500	274	.381	14.9	0.0	551	946	1282
Zone Limit	1200	1651	.335	78.9	71.8	4248	990	9122
Curve: 3	1000	1651	.326	76.7	67.6	3383	1107	8204
	900	1651	.327	77.1	63.7	2963	1227	7812
	800	774	.357	39.4	18.3	1324	1247	3747
	600	361	.385	19.8	4.2	699	1031	1748
	500	274	.381	14.9	2.4	551	946	1282
Zone Limit	1200	1651	.335	78.9	71.8	4248	990	9122
Curve: 4	1000	1651	.326	76.7	67.6	3383	1107	8204
	900	1651	.327	77.1	63.7	2963	1227	7812
	800	860	.355	43.7	21.6	1406	1292	4097
	600	386	.388	21.4	4.7	706	1101	1829
	500	292	.390	16.2	2.7	558	1015	1345
Max Power Curve: M	1200	1651	.335	78.9	71.8	4248	990	9122
	1000	1651	.326	76.7	67.6	3383	1107	8204
	900	1651	.327	77.1	63.7	2963	1227	7812
	800	860	.355	43.7	21.6	1406	1292	4097
	600	386	.388	21.4	4.7	706	1101	1829
	500	292	.390	16.2	2.7	558	1015	1345
Prop Demand Curve: P	1200	1651	.335	78.9	71.8	4248	990	9122
	1000	955	.349	47.4	33.8	2186	1040	5333
	900	696	.360	35.8	19.0	1540	1058	3909
	800	489	.375	26.2	9.9	1095	1018	2747
	600	207	.386	11.4	2.0	664	657	1275
	500	119	.427	7.3	0.8	530	516	929

Brake Mean Effective Pressure 1783 kPa
Heat Rejection to Coolant (total) 480 kW
Heat Rejection to Aftercooler 349 kW
Heat Rejection to Exhaust (total) 996 kW
Heat Rejection to Atmosphere from Engine 116 kW

Brake Mean Effective Pressure 259 psi
Heat Rejection to Coolant (total) 27298 btu/min
Heat Rejection to Aftercooler 19848 btu/min
Heat Rejection to Exhaust (total) 56642 btu/min
Heat Rejection to Atmosphere from Engine 6597 btu/min



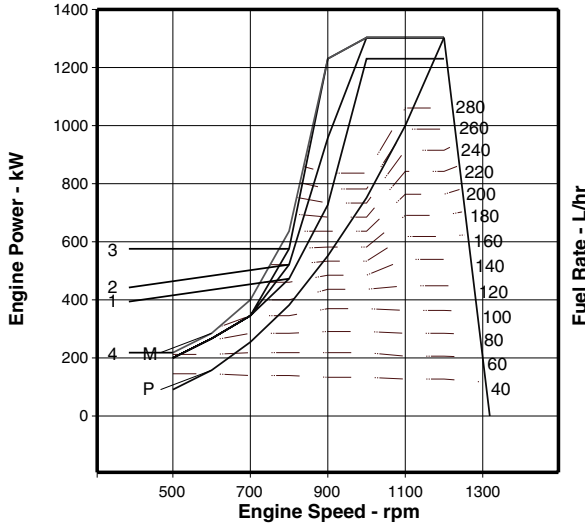
3516C – SS MARINE PROPULSION

1673, 1775, 1876 mhp (1650, 1750, 1850 bhp)
1230, 1305, 1379 bkW

MARINE ENGINE PERFORMANCE

3516C DITA
1775 mhp (1750 bhp) 1305 bkW @ 1200 rpm
B Rating — DM8474-01

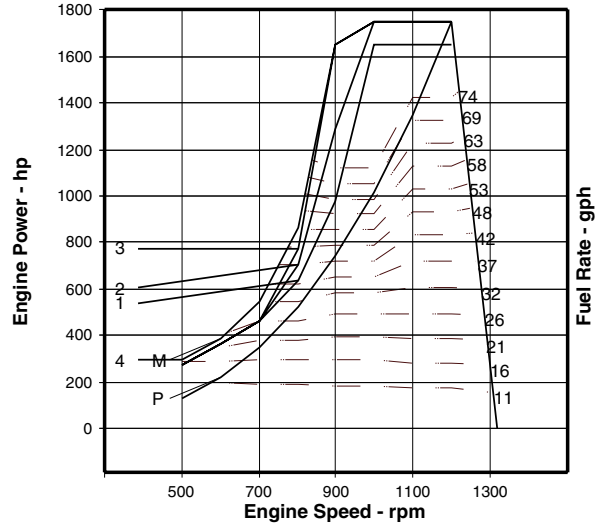
Aftercooler Temperature 48°C (118°F)



Performance Data

	Engine Speed rpm	Engine Power kW	BSFC g/kW-hr	Fuel Rate L/hr	Boost Press kPa Gauge	Intake Air Flow m³/min	Exh Manif Temp °C	Exh Gas Flow m³/min
Zone Limit	1200	1231	204	298.6	242.4	120.3	532	258.3
Curve: 1	1000	1231	198	290.2	228.2	95.8	597	232.3
	900	728	209	181.6	103.1	54.0	625	142.4
	800	476	221	125.4	47.2	33.9	625	92.2
	600	269	234	74.8	14.3	19.8	555	49.5
	500	204	232	56.3	8.0	15.6	508	36.3
Zone Limit	1200	1305	205	318.8	0.0	123.4	551	272.7
Curve: 2	1000	1305	198	307.5	0.0	100.9	603	245.4
	900	962	203	232.5	0.0	66.5	650	177.8
	800	524	219	136.4	0.0	35.6	650	98.6
	600	269	234	74.8	0.0	19.8	555	49.5
	500	204	232	56.3	0.0	15.6	508	36.3
Zone Limit	1200	1305	205	318.8	254.8	123.4	551	272.7
Curve: 3	1000	1305	198	307.5	245.0	100.9	603	245.4
	900	1231	199	291.8	215.1	83.9	664	221.2
	800	577	217	149.2	61.8	37.5	675	106.1
	600	269	234	74.8	14.3	19.8	555	49.5
	500	204	232	56.3	8.0	15.6	508	36.3
Zone Limit	1200	1305	205	318.8	254.8	123.4	551	272.7
Curve: 4	1000	1305	198	307.5	245.0	100.9	603	245.4
	900	1231	199	291.8	215.1	83.9	664	221.2
	800	641	216	165.3	73.0	39.8	700	116.0
	600	288	236	80.9	16.0	20.0	594	51.8
	500	218	237	61.5	9.0	15.8	546	38.1
Max Power	1200	1305	205	318.8	254.8	123.4	551	272.7
Curve: M	1000	1305	198	307.5	245.0	100.9	603	245.4
	900	1231	199	291.8	215.1	83.9	664	221.2
	800	641	216	165.3	73.0	39.8	700	116.0
	600	288	236	80.9	16.0	20.0	594	51.8
	500	218	237	61.5	9.0	15.8	546	38.1
Prop Demand	1200	1305	205	318.8	254.8	123.4	551	272.7
Curve: P	1000	755	210	189.2	124.5	65.2	564	158.5
	900	551	217	142.5	69.9	45.1	583	115.3
	800	387	226	104.3	36.0	31.5	565	80.6
	600	163	234	45.4	7.2	18.8	361	37.1
	500	94	256	28.8	3.0	15.0	280	26.9

Brake Mean Effective Pressure 1891 kPa
Heat Rejection to Coolant (total) 501 kW
Heat Rejection to Aftercooler 382 kW
Heat Rejection to Exhaust (total) 1076 kW
Heat Rejection to Atmosphere from Engine 121 kW



Performance Data

	Engine Speed rpm	Engine Power hp	BSFC lb/hp-hr	Fuel Rate gph	Boost Press in-hg Gauge	Intake Air Flow cfm	Exh Manif Temp °F	Exh Gas Flow cfm
Zone Limit	1200	1651	.335	78.9	71.8	4248	990	9122
Curve: 1	1000	1651	.326	76.7	67.6	3383	1107	8204
	900	976	.344	48.0	30.5	1907	1157	5029
	800	638	.363	33.1	14.0	1197	1157	3256
	600	361	.385	19.8	4.2	699	1031	1748
	500	274	.381	14.9	2.4	551	946	1282
Zone Limit	1200	1750	.337	84.2	0.0	4358	1024	9630
Curve: 2	1000	1750	.326	81.2	0.0	3563	1117	8666
	900	1290	.334	61.4	0.0	2348	1202	6279
	800	703	.360	36.0	0.0	1257	1202	3482
	600	361	.385	19.8	0.0	699	1031	1748
	500	274	.381	14.9	0.0	551	946	1282
Zone Limit	1200	1750	.337	84.2	75.5	4358	1024	9630
Curve: 3	1000	1750	.326	81.2	72.6	3563	1117	8666
	900	1651	.327	77.1	63.7	2963	1227	7812
	800	774	.357	39.4	18.3	1324	1247	3747
	600	361	.385	19.8	4.2	699	1031	1748
	500	274	.381	14.9	2.4	551	946	1282
Zone Limit	1200	1750	.337	84.2	75.5	4358	1024	9630
Curve: 4	1000	1750	.326	81.2	72.6	3563	1117	8666
	900	1651	.327	77.1	63.7	2963	1227	7812
	800	860	.355	43.7	21.6	1406	1292	4097
	600	386	.388	21.4	4.7	706	1101	1829
	500	292	.390	16.2	2.7	558	1015	1345
Max Power	1200	1750	.337	84.2	75.5	4358	1024	9630
Curve: M	1000	1750	.326	81.2	72.6	3563	1117	8666
	900	1651	.327	77.1	63.7	2963	1227	7812
	800	860	.355	43.7	21.6	1406	1292	4097
	600	386	.388	21.4	4.7	706	1101	1829
	500	292	.390	16.2	2.7	558	1015	1345
Prop Demand	1200	1750	.337	84.2	75.5	4358	1024	9630
Curve: P	1000	1012	.345	50.0	36.9	2303	1047	5597
	900	739	.357	37.6	20.7	1593	1081	4072
	800	519	.372	27.6	10.7	1112	1049	2846
	600	219	.385	12.0	2.1	664	682	1310
	500	126	.421	7.6	0.9	530	536	950

Brake Mean Effective Pressure 274 psi
Heat Rejection to Coolant (total) 28492 btu/min
Heat Rejection to Aftercooler 21724 btu/min
Heat Rejection to Exhaust (total) 61192 btu/min
Heat Rejection to Atmosphere from Engine 6881 btu/min



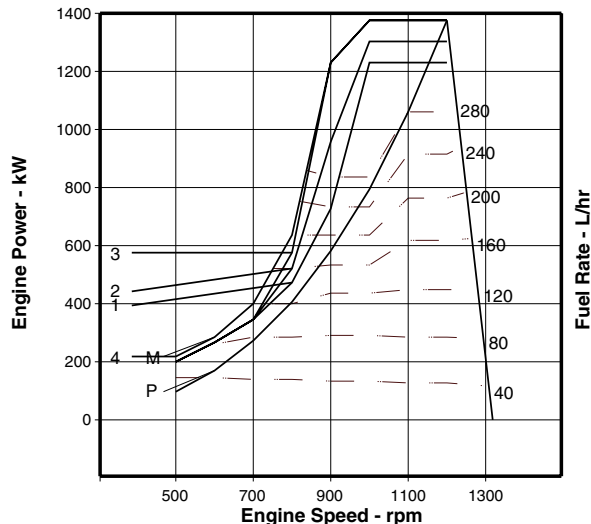
3516C – SS MARINE PROPULSION

1673, 1775, 1876 mhp (1650, 1750, 1850 bhp)
1230, 1305, 1379 kW

MARINE ENGINE PERFORMANCE

3516C DITA

1876 mhp (1850 bhp) 1379 kW @ 1200 rpm
C Rating — DM8475-01

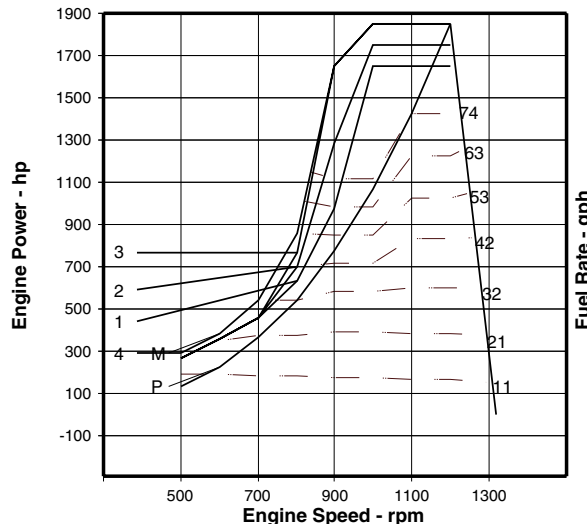


Performance Data

	Engine Speed rpm	Engine Power kW	BSFC g/kW-hr	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	1200	1231	204	298.6	242.4	120.3	532	258.3
	1000	1231	198	290.2	228.2	95.8	597	232.3
	900	728	209	181.6	103.1	54.0	625	142.4
	800	476	221	125.4	47.2	33.9	625	92.2
	600	269	234	74.8	14.3	19.8	555	49.5
	500	204	232	56.3	8.0	15.6	508	36.3
Zone Limit Curve: 2	1200	1305	205	318.8	0.0	123.4	551	272.7
	1000	1305	198	307.5	0.0	100.9	603	245.4
	900	962	203	232.5	0.0	66.5	650	177.8
	800	524	219	136.4	0.0	35.6	650	98.6
	600	269	234	74.8	0.0	19.8	555	49.5
	500	204	232	56.3	0.0	15.6	508	36.3
Zone Limit Curve: 3	1200	1380	207	340.5	266.4	126.2	575	288.1
	1000	1380	198	325.6	261.7	106.1	609	259.1
	900	1231	199	291.8	215.1	83.9	664	221.2
	800	577	217	149.2	61.8	37.5	675	106.1
	600	269	234	74.8	14.3	19.8	555	49.5
	500	204	232	56.3	8.0	15.6	508	36.3
Zone Limit Curve: 4	1200	1380	207	340.5	266.4	126.2	575	288.1
	1000	1380	198	325.6	261.7	106.1	609	259.1
	900	1231	199	291.8	215.1	83.9	664	221.2
	800	641	216	165.3	73.0	39.8	700	116.0
	600	288	236	80.9	16.0	20.0	594	51.8
	500	218	237	61.5	9.0	15.8	546	38.1
Max Power Curve: M	1200	1380	207	340.5	266.4	126.2	575	288.1
	1000	1380	198	325.6	261.7	106.1	609	259.1
	900	1231	199	291.8	215.1	83.9	664	221.2
	800	641	216	165.3	73.0	39.8	700	116.0
	600	288	236	80.9	16.0	20.0	594	51.8
	500	218	237	61.5	9.0	15.8	546	38.1
Prop Demand Curve: P	1200	1380	207	340.5	266.4	126.2	575	288.1
	1000	798	209	198.7	134.7	68.4	568	166.0
	900	582	215	149.4	75.7	46.7	594	119.9
	800	409	225	109.5	38.6	32.1	581	83.5
	600	172	232	47.7	7.7	18.9	376	38.1
	500	100	253	30.1	3.2	15.1	290	27.5

Brake Mean Effective Pressure 1891 kPa
Heat Rejection to Coolant (total) 524 kW
Heat Rejection to Aftercooler 418 kW
Heat Rejection to Exhaust (total) 1168 kW
Heat Rejection to Atmosphere from Engine 127 kW

Aftercooler Temperature 48°C (118°F)

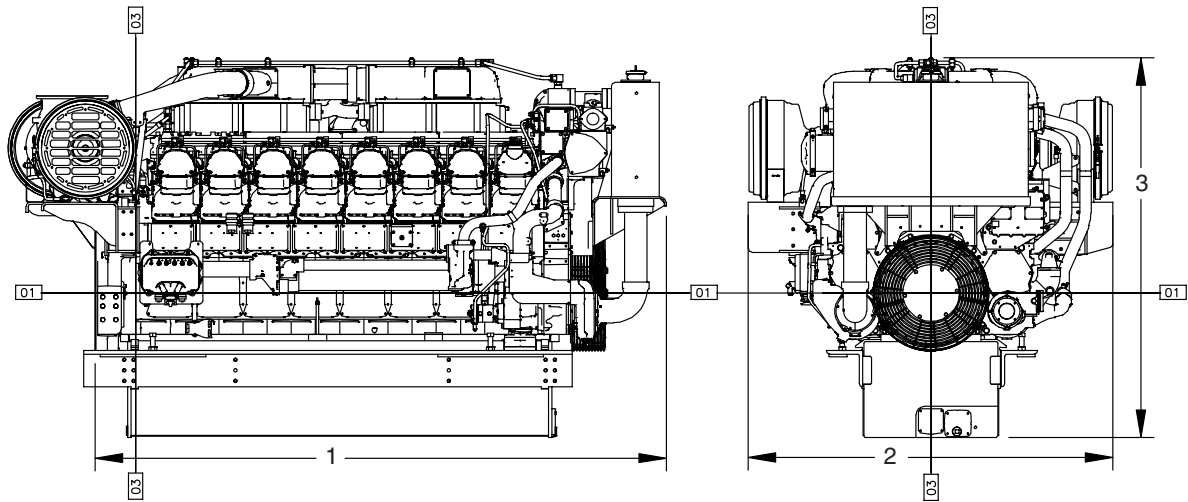


Performance Data

	Engine Speed rpm	Engine Power hp	BSFC lb/hp-hr	Fuel Rate gph	Boost Press in-hg Gauge	Intake Air Flow cfm	Exh Manif Temp °F	Exh Gas Flow cfm
Zone Limit Curve: 1	1200	1651	.335	78.9	71.8	4248	990	9122
	1000	1651	.326	76.7	67.6	3383	1107	8204
	900	976	.344	48.0	30.5	1907	1157	5029
	800	638	.363	33.1	14.0	1197	1157	3256
	600	361	.385	19.8	4.2	699	1031	1748
	500	274	.381	14.9	2.4	551	946	1282
Zone Limit Curve: 2	1200	1750	.337	84.2	0.0	4358	1024	9630
	1000	1750	.326	81.2	0.0	3563	1117	8666
	900	1290	.334	61.4	0.0	2348	1202	6279
	800	703	.360	36.0	0.0	1257	1202	3482
	600	361	.385	19.8	0.0	699	1031	1748
	500	274	.381	14.9	0.0	551	946	1282
Zone Limit Curve: 3	1200	1851	.340	90.0	78.9	4457	1067	10174
	1000	1851	.326	86.0	77.5	3747	1128	9150
	900	1651	.327	77.1	63.7	2963	1227	7812
	800	774	.357	39.4	18.3	1324	1247	3747
	600	361	.385	19.8	4.2	699	1031	1748
	500	274	.381	14.9	2.4	551	946	1282
Zone Limit Curve: 4	1200	1851	.340	90.0	78.9	4457	1067	10174
	1000	1851	.326	86.0	77.5	3747	1128	9150
	900	1651	.327	77.1	63.7	2963	1227	7812
	800	860	.355	43.7	21.6	1406	1292	4097
	600	386	.388	21.4	4.7	706	1101	1829
	500	292	.390	16.2	2.7	558	1015	1345
Max Power Curve: M	1200	1851	.340	90.0	78.9	4457	1067	10174
	1000	1851	.326	86.0	77.5	3747	1128	9150
	900	1651	.327	77.1	63.7	2963	1227	7812
	800	860	.355	43.7	21.6	1406	1292	4097
	600	386	.388	21.4	4.7	706	1101	1829
	500	292	.390	16.2	2.7	558	1015	1345
Prop Demand Curve: P	1200	1851	.340	90.0	78.9	4457	1067	10174
	1000	1070	.344	52.5	39.9	2416	1054	5862
	900	780	.353	39.5	22.4	1649	1101	4234
	800	548	.370	28.9	11.4	1134	1078	2949
	600	231	.381	12.6	2.3	667	709	1345
	500	134	.416	8.0	0.9	533	554	971

Brake Mean Effective Pressure 274 psi
Heat Rejection to Coolant (total) 2980 btu/min
Heat Rejection to Aftercooler 2372 btu/min
Heat Rejection to Exhaust (total) 6642 btu/min
Heat Rejection to Atmosphere from Engine 722 btu/min

DIMENSIONS



Engine Dimensions		
(1) Length to Flywheel Housing	3185.4 mm	125.4 in.
(2) Width	2036.9 mm	80.19 in.
(3) Height	2123.8 mm	83.6 in.
Weight, Net Dry (approx)	7961-8629 kg	17,550-19,025 lb

Note: Do not use for installation design. See general dimension drawings for detail (#345-7964, #345-7965).

For most current installation drawings, please visit <http://tmi.cat.com>

RATING DEFINITIONS AND CONDITIONS

A Rating (Unrestricted Continuous)

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 trawlers, or deep river tugboats. Typical operation ranges from 5000 to 8000 hours per year.

B Rating (Heavy Duty)

Typical applications: For vessels operating at rated load and rated speed up to 80% of the time, or 10 hours out of 12, 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.

C Rating (Maximum Continuous)

Typical applications: For vessels operating at rated load and rated speed up to 50% of the time, or 6 hours out of 12, with cyclical load and speed (20% to 80% load

factor). Typical applications could include but are not limited to vessels such as ferries, harbor tugs, fishing boats, offshore service boats, displacement hull yachts, or short trip coastal freighters. Typical operation ranges from 2000 to 4000 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.

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 50°C (122°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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