

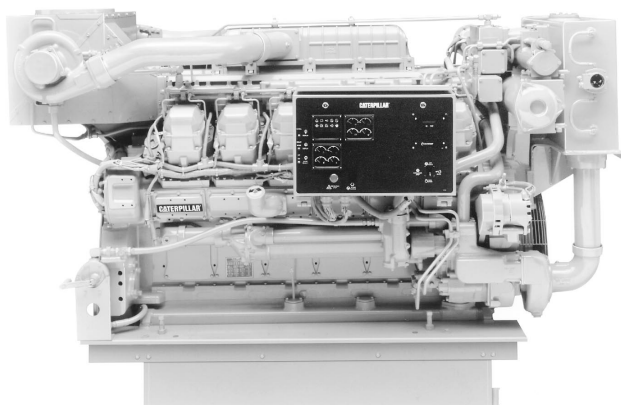
CATERPILLAR®

Marine Engine

3512B

970-1100 bkW
1300-1475 bhp

1200 rpm



Shown with
Accessory Equipment

CATERPILLAR® ENGINE SPECIFICATIONS

V-12, 4-Stroke-Cycle-Diesel

Emissions	IMO compliant
Bore—mm (in)	170 (6.7)
Stroke—mm (in)	190 (7.5)
Displacement—L (cu in)	51.8 (3158)
Rotation (from flywheel end)	ccw or cw
Compression Ratio	14.0:1
Capacity for Liquids—L (U.S. gal)	
Cooling System	289.3 (76.4)
Lube Oil System (refill)	613 (162)
Oil Change Interval—hrs.	1000
Minimum Lube Oil Grade (required)	CF-4
Engine Weight, Net Dry	
(approx) — kg (lb)	5554 (12 244)

STANDARD ENGINE EQUIPMENT

Air Inlet System

air cleaners, regular duty; dual turbochargers, 152 mm (6 in) OD straight connection; separate circuit aftercooler core, corrosion resistant coating (air side)

Control System

dual Advanced Diesel Engine Management (ADEM II) modules with electronically controlled unit injectors

Cooling System

auxiliary fresh water pump (on SCAC engines); auxiliary sea water pump, non-self priming, centrifugal (heat exchanger engines only); expansion tank; jacket water pump, gear driven, centrifugal; oil cooler; keel cooling connections (keel cooled engines only); thermostats and housing, full open temperature 92° C (198° F)

Exhaust System

dry gas-tight manifolds with thermo-laminated heat shields; dual turbochargers with watercooled bearing and thermo-laminated heat shields; exhaust outlet, vertical, 305 mm (12 in) ID round flanged outlet

Flywheels and Flywheel Housings

flywheel, SAE No. 00, 183 teeth; flywheel housing, SAE No. 00

Fuel System

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

Instrumentation

electronic instrument panel, RH with analog gauges and digital display of data for: oil and fuel pressure, oil and fuel filter differential, system DC voltage, exhaust and water temperature, fuel pressure, air inlet restriction; digital display only for: tachometer, service meters, fuel consumption (total and instantaneous)

Lube System

crankcase breather, top mounted; deep sump oil pan; oil filler and dipstick, RH; oil filter, RH; oil pump, gear type

Mounting System

rails, engine length, ledge type, 203 x 203 mm (8 x 8 in)

Power Take-Offs

accessory drive, front housing standard rotation: lower RH, lower LH; opposite rotation: upper and lower RH and upper and lower LH; front housing, two-sided

Protection System

ADEM II Electronic Monitoring System with customer programmable alarm, shutdown, and deration strategies; emergency stop pushbutton

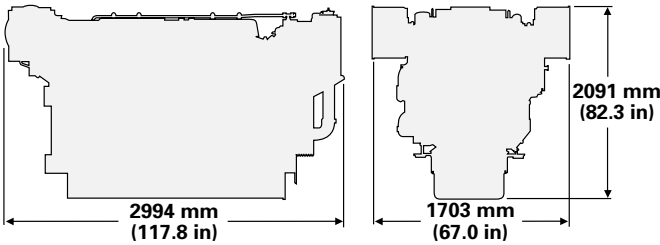
General

lifting eyes, front and rear; paint, Caterpillar yellow; vibration damper and guard

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.



DIMENSIONS



RATING DEFINITIONS AND CONDITIONS

Ratings are based on SAE J1228/ISO8665 standard conditions of 100 kPa (29.61 in Hg), 25° C (77° F), and 30% relative humidity. These ratings also apply at ISO3046/1, DIN6271/3, and BS5514 conditions of 100 kPa (29.61 in Hg), 27° C (81° F), and 60% relative humidity. Ratings are valid for air cleaner inlet temperatures up to and including 50° C (122° F) and for sea water temperatures up to and including 42° C (108° F) at sea level.

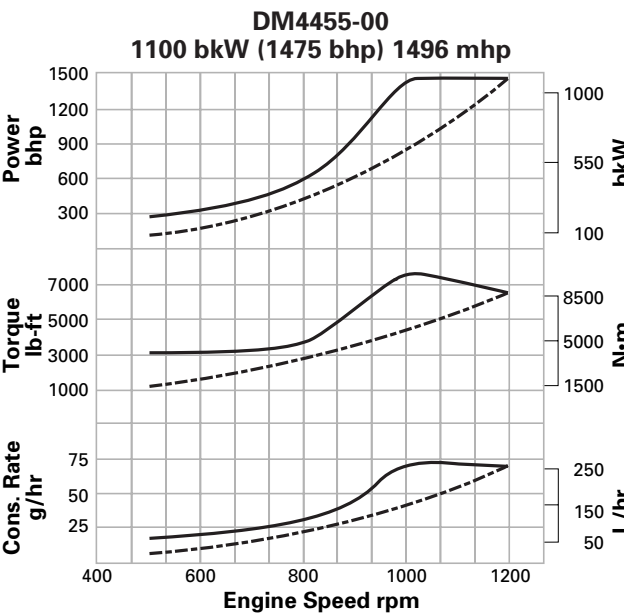
Fuel rates are based on fuel oil of 35° API [16° C (60° F)] gravity having an LHV of 42 780 kJ/kg (18 390 Btu/lb) when used at 29° C (85° F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal). Fuel consumption shown with all oil, fuel, and water pumps, engine driven. For a “without pumps” condition, deduct approximately 0.5% for each pump not engine driven.

Additional ratings may be available for specific customer requirements. Consult your Caterpillar representative for additional information.

PERFORMANCE CURVES

Aftercooler Temperature 60° C (140° F)

C Rating – 1200 rpm



Cubic Prop Demand Curve Data
(for displacement hulls only)

Speed rpm	Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
1200	1100	8754	207	271.7
1100	847	7355	210	212.4
1000	637	6079	211	159.9
900	464	4924	215	119.1
800	326	3890	227	88.2
700	218	2979	237	61.7
600	138	2188	246	40.3
500	80	1520	269	25.5

Max Power Curve Data

Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
1100	8754	207	271.7
1100	9549	210	275.0
1100	10504	211	276.3
705	7480	213	178.8
410	4894	224	109.3
315	4297	239	89.6
262	4170	253	79.1
214	4087	264	67.4

Speed rpm	Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
1200	1475	6457	.341	71.8
1100	1136	5425	.346	56.1
1000	854	4484	.346	42.2
900	622	3632	.354	31.5
800	437	2869	.373	23.3
700	293	2197	.390	16.3
600	184	1614	.404	10.6
500	107	1121	.442	6.7

Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
1475	6457	.341	71.8
1475	7043	.345	72.6
1475	7747	.346	73.0
945	5517	.350	47.2
550	3610	.367	28.9
422	3169	.392	23.7
351	3076	.417	20.9
287	3014	.434	17.8

C RATING – Vessels such as ferries, harbor tugs, fishing boats moving at higher speeds out and back (e.g. lobster, crayfish, and tuna), offshore service boats, and also displacement hull yachts and short trip coastal freighters where engine load and speed are cyclical.

Prop Demand ----- 3.0 Exponent
(for displacement hulls only)

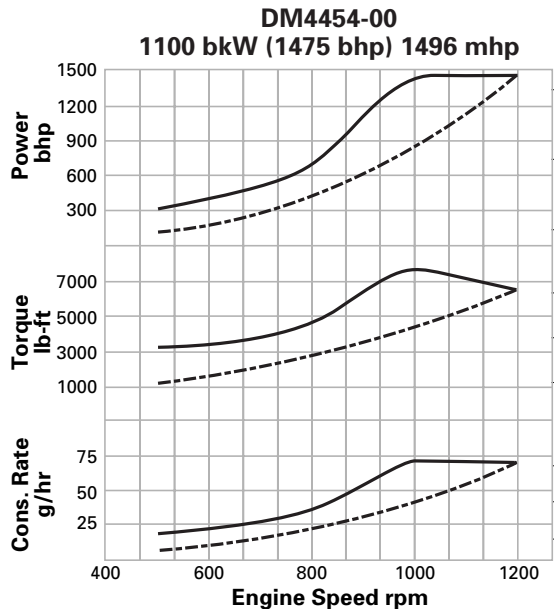
Engine Performance Parameters:

Power	± 3%
Specific Fuel Consumption	± 3%
Fuel Rate	± 5%

PERFORMANCE CURVES

Aftercooler Temperature 30° C (86° F)

C Rating – 1200 rpm



Prop Demand ----- 3.0 Exponent
(for displacement hulls only)
Engine Performance Parameters:
Power ± 3%
Specific Fuel Consumption ± 3%
Fuel Rate ± 5%

Cubic Prop Demand Curve Data
(for displacement hulls only)

Speed rpm	Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
1200	1100	8754	206	270.0
1100	847	7355	207	209.3
1000	637	6079	205	155.7
900	464	4924	209	115.5
800	326	3890	220	85.3
700	218	2979	230	59.8
600	138	2188	241	39.5
500	80	1520	267	25.3

Speed rpm	Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
1200	1475	6457	.338	71.3
1100	1136	5425	.341	55.3
1000	854	4484	.337	41.1
900	622	3632	.343	30.5
800	437	2869	.361	22.5
700	293	2197	.378	15.8
600	184	1614	.397	10.4
500	107	1121	.438	6.7

Max Power Curve Data

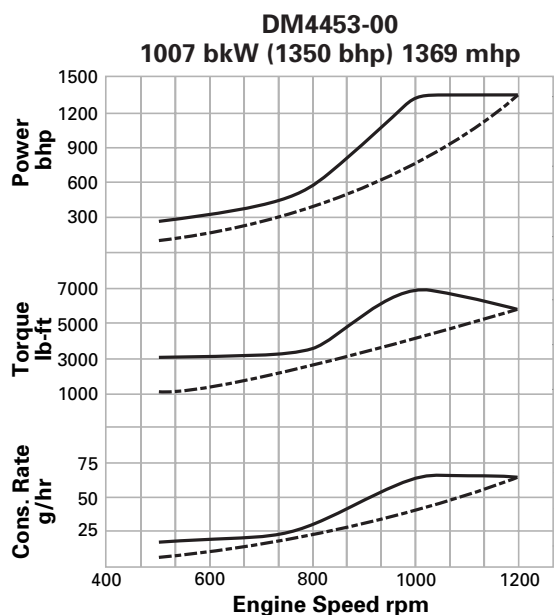
Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
1100	8754	206	270.0
1100	9549	208	272.3
1100	10504	207	271.2
818	8679	207	202.0
507	6052	217	130.9
367	5007	231	101.1
294	4679	246	86.3
234	4469	262	73.0

Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
1475	6457	.338	71.3
1475	7043	.341	71.9
1475	7747	.340	71.6
1097	6401	.341	53.4
680	4464	.356	34.6
492	3693	.380	26.7
394	3451	.405	22.8
314	3296	.430	19.3

C RATING – Vessels such as ferries, harbor tugs, fishing boats moving at higher speeds out and back (e.g. lobster, crayfish, and tuna), offshore service boats, and also displacement hull yachts and short trip coastal freighters where engine load and speed are cyclical.

Aftercooler Temperature 60° C (140° F)

B Rating – 1200 rpm



Prop Demand ----- 3.0 Exponent
(for displacement hulls only)
Engine Performance Parameters:
Power ± 3%
Specific Fuel Consumption ± 3%
Fuel Rate ± 5%

Cubic Prop Demand Curve Data
(for displacement hulls only)

Speed rpm	Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
1200	1007	8013	205	245.9
1100	776	6734	211	194.7
1000	583	5565	212	147.0
900	425	4508	216	109.6
800	298	3562	227	80.8
700	200	2727	237	56.4
600	126	2003	248	37.1
500	73	1391	275	23.8

Speed rpm	Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
1200	1350	5910	.337	65.0
1100	1040	4967	.346	51.4
1000	782	4105	.348	38.8
900	570	3325	.356	29.0
800	400	2627	.373	21.3
700	268	2011	.389	14.9
600	169	1477	.407	9.8
500	98	1026	.451	6.3

Max Power Curve Data

Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
1007	8013	205	245.9
1007	8742	208	249.9
1007	9616	210	251.9
705	7480	212	178.5
410	4894	224	109.2
315	4297	239	89.6
262	4170	253	79.1
214	4087	264	67.4

Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
1350	5910	.337	65.0
1350	6448	.342	66.0
1350	7092	.345	66.5
945	5517	.349	47.2
550	3610	.367	28.8
422	3169	.392	23.7
351	3076	.417	20.9
287	3014	.434	17.8

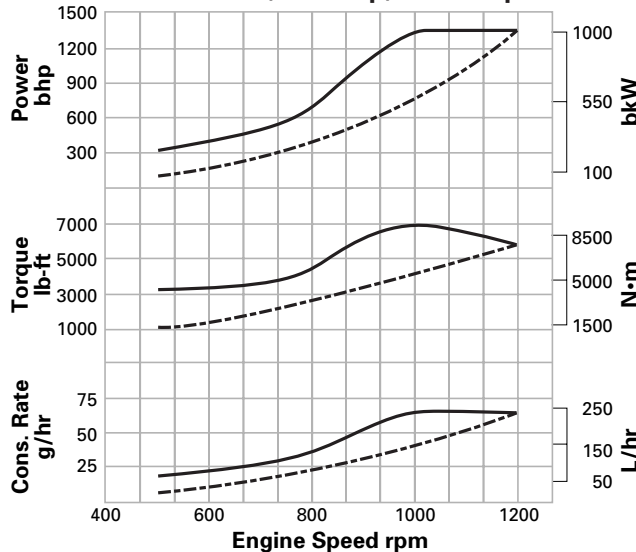
B RATING – Vessels such as midwater trawlers, purse seiners, crew and supply boats, ferries, and towboats where locks, sandbars, and curves dictate frequent slowing, and engine load and speed are constant with some cycling.

PERFORMANCE CURVES

Aftercooler Temperature 30° C (86° F)

B Rating – 1200 rpm

DM4452-00
1007 bkW (1350 bhp) 1369 mhp



Prop Demand ——— 3.0 Exponent
(for displacement hulls only)

Engine Performance Parameters:

Power ±3%
Specific Fuel Consumption ±3%
Fuel Rate ±5%

Cubic Prop Demand Curve Data
(for displacement hulls only)

Speed rpm	Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
1200	1007	8013	204	244.4
1100	776	6734	207	191.6
1000	583	5565	206	143.0
900	425	4508	210	106.4
800	298	3562	220	78.4
700	200	2727	230	54.9
600	126	2003	244	36.6
500	73	1391	274	23.8

Speed rpm	Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
1200	1350	5910	.335	64.6
1100	1040	4967	.341	50.6
1000	782	4105	.338	37.8
900	570	3325	.345	28.1
800	400	2627	.362	20.7
700	268	2011	.379	14.5
600	169	1477	.401	9.7
500	98	1026	.450	6.3

Max Power Curve Data

Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
1007	8013	204	244.4
1007	8742	206	247.0
1007	9616	206	246.8
818	8679	207	201.6
507	6052	217	130.9
367	5007	231	101.1
294	4679	246	86.3
234	4469	262	73.0

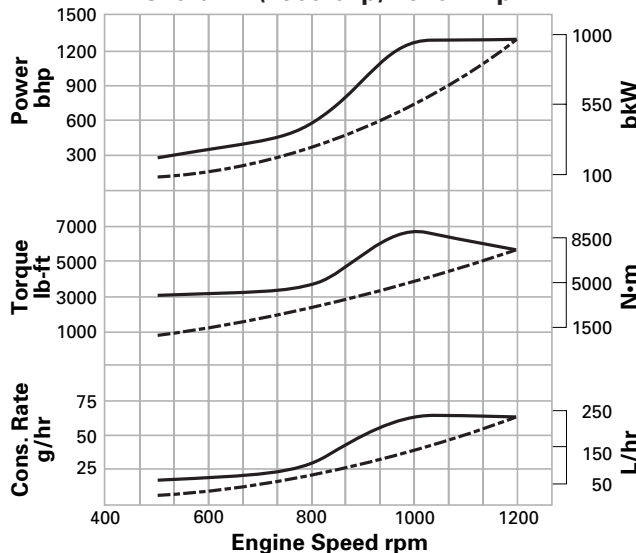
Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
1350	5910	.335	64.6
1350	6448	.338	65.3
1350	7092	.338	65.2
1097	6401	.340	53.3
680	4464	.356	34.6
492	3693	.380	26.7
394	3451	.405	22.8
314	3296	.430	19.3

B RATING – Vessels such as midwater trawlers, purse seiners, crew and supply boats, ferries, and towboats where locks, sandbars, and curves dictate frequent slowing, and engine load and speed are constant with some cycling.

Aftercooler Temperature 60° C (140° F)

A Rating – 1200 rpm

DM4451-00
970 bkW (1300 bhp) 1318 mhp



Prop Demand ——— 3.0 Exponent
(for displacement hulls only)

Engine Performance Parameters:

Power ±3%
Specific Fuel Consumption ±3%
Fuel Rate ±5%

Cubic Prop Demand Curve Data
(for displacement hulls only)

Speed rpm	Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
1200	970	7715	205	237.0
1100	747	6483	211	187.7
1000	561	5358	212	141.7
900	409	4340	217	105.7
800	287	3429	227	77.8
700	192	2625	236	54.2
600	121	1929	249	35.9
500	70	1339	277	23.2

Speed rpm	Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
1200	1300	5690	.337	62.6
1100	1001	4782	.347	49.6
1000	752	3952	.348	37.4
900	548	3201	.356	27.9
800	385	2529	.374	20.6
700	258	1936	.389	14.3
600	163	1423	.409	9.5
500	94	988	.456	6.1

Max Power Curve Data

Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
970	7715	205	237.0
970	8416	208	240.4
970	9258	210	242.3
705	7480	212	178.5
410	4894	224	109.2
315	4297	239	89.6
262	4170	253	79.1
214	4087	264	67.4

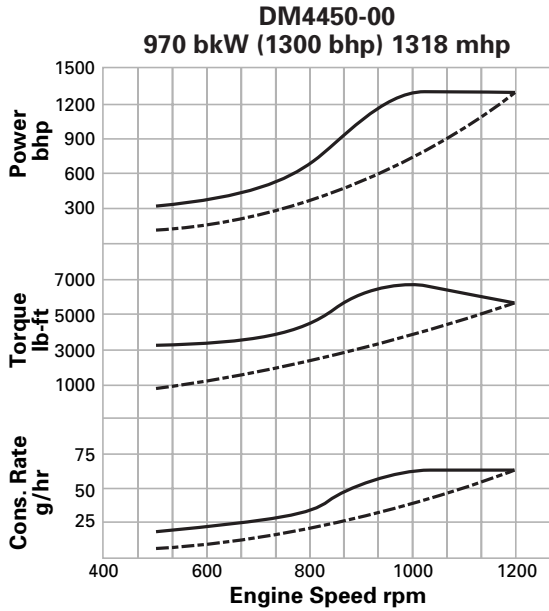
Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
1300	5690	.337	62.6
1300	6207	.342	63.5
1300	6828	.345	64.0
945	5517	.349	47.2
550	3610	.367	28.8
422	3169	.392	23.7
351	3076	.417	20.9
287	3014	.434	17.8

A RATING – For heavy-duty service in vessels such as freighters, tugboats, bottom drag trawlers, and deep river towboats where the engine is operated at rated load and speed up to 100% of the time without interruption or load cycling.

PERFORMANCE CURVES

Aftercooler Temperature 30° C (86° F)

A Rating – 1200 rpm



Prop Demand - - - - - 3.0 Exponent
(for displacement hulls only)

Engine Performance Parameters:

Power ± 3%
Specific Fuel Consumption ± 3%
Fuel Rate ± 5%

Cubic Prop Demand Curve Data
(for displacement hulls only)

Speed rpm	Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
1200	970	7715	204	235.5
1100	747	6483	207	184.5
1000	561	5358	206	137.9
900	409	4340	211	102.7
800	287	3429	221	75.6
700	192	2625	231	53.0
600	121	1929	245	35.4
500	70	1339	277	23.2

Speed rpm	Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
1200	1300	5690	.335	62.2
1100	1001	4782	.341	48.7
1000	752	3952	.339	36.4
900	548	3201	.346	27.1
800	385	2529	.363	20.0
700	258	1936	.379	14.0
600	163	1423	.403	9.4
500	94	988	.455	6.1

Max Power Curve Data

Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
970	7715	204	235.5
970	8416	206	237.6
970	9258	205	237.4
818	8679	207	201.5
507	6052	217	130.9
367	5007	231	101.1
294	4679	246	86.3
234	4469	262	73.0

Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
1300	5690	.335	62.2
1300	6207	.338	62.8
1300	6828	.338	62.7
1097	6401	.340	53.2
680	4464	.356	34.6
492	3693	.380	26.7
394	3451	.405	22.8
314	3296	.430	19.3

A RATING – For heavy-duty service in vessels such as freighters, tugboats, bottom drag trawlers, and deep river towboats where the engine is operated at rated load and speed up to 100% of the time without interruption or load cycling.



3512B MARINE ENGINE — 970-1100 bkW