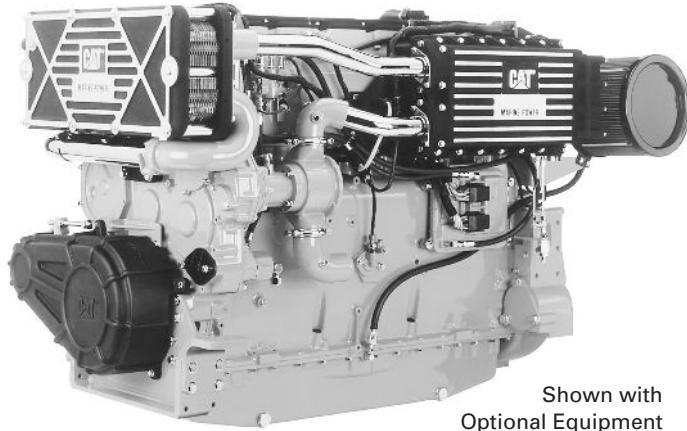




# Marine Engine

# 3406E

336-597 bkW/450-800 bhp  
1800-2300 rpm



Shown with  
Optional Equipment

## CATERPILLAR® ENGINE SPECIFICATIONS

In-Line, 6-Cylinder, 4-Stroke-Cycle Diesel

Bore—mm (in)..... 137.2 (5.4)

Stroke—mm (in) ..... 165.1 (6.5)

Displacement—L (cu in)..... 14.6 (893)

Low Idle (rpm)..... 600-750 (default 700)

Rotation (from flywheel end).. Counterclockwise

Capacity for Liquids — L (U.S. Gal)

Cooling System (heat exchanger)..... 43.7 (11.4)

Lube Oil System (refill)

standard sump..... 49 (13)

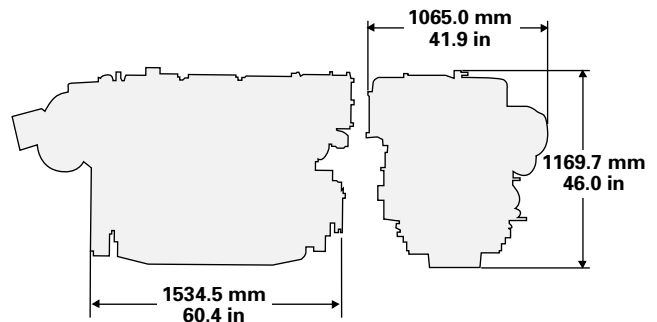
deep sump ..... 87 (23)

Weight, Net Dry (approx)—lb (kg)

Heat Exchanger ..... 1590 (3497)

Keel Cooled ..... 1512 (3326)

## DIMENSIONS

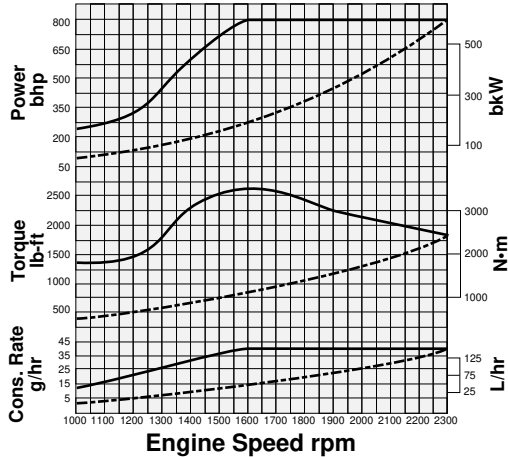


Power produced at the flywheel will be within standard tolerances up to 50° C (122° F) combustion air temperature measured at the air cleaner inlet, and fuel temperature up to 52° C (125° F) measured at the fuel filter base. Power rated in accordance with NMMA procedure as crankshaft power. Reduce crankshaft power by 3% for propeller shaft power.



## PERFORMANCE CURVES

### E Rating – 2300 rpm 597 bkW (800 bhp) 811 mhp



#### Prop Demand Curve Data

Speed rpm	Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
2300	597	2478	216	153.6
2200	522	2267	207	129.1
2000	392	1874	201	94.1
1800	286	1518	204	69.5
1600	201	1199	211	50.6
1400	135	918	218	35.0
1200	85	674	224	22.6
1000	49	468	235	13.7

#### Max Power Curve Data

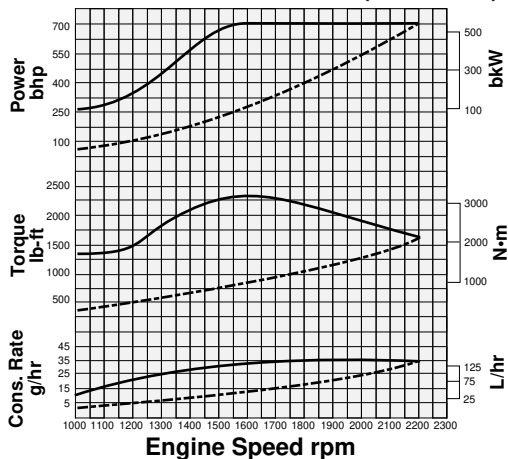
Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
597	2478	216	153.6
597	2590	215	153.1
597	2848	215	152.7
597	3165	216	153.3
597	3562	217	154.2
452	3085	215	115.7
245	1951	221	64.5
190	1817	226	51.2

Speed rpm	Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
2300	800	1828	.355	40.6
2200	700	1672	.341	34.1
2000	526	1382	.331	24.9
1800	384	1120	.335	18.4
1600	269	884	.347	13.4
1400	180	677	.359	9.2
1200	114	497	.367	6.0
1000	66	345	.386	3.6

Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
800	1828	.355	40.6
800	1910	.354	40.4
800	2101	.353	40.3
800	2334	.354	40.5
800	2627	.356	40.7
607	2275	.353	30.6
329	1439	.363	17.0
255	1340	.371	13.5

**E RATING** – Planing hull vessels such as pleasure craft, harbor patrol, harbor master, and some fishing and pilot boats.

### D Rating – 2200 rpm 522 bkW (700 bhp) 710 mhp



#### Prop Demand Curve Data

Speed rpm	Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
2200	522	2267	216	134.5
2000	392	1873	202	94.5
1900	336	1691	202	80.9
1800	286	1517	204	69.5
1600	201	1199	211	50.6
1400	135	918	218	35.0
1200	85	674	224	22.6
1000	49	468	235	13.7

#### Max Power Curve Data

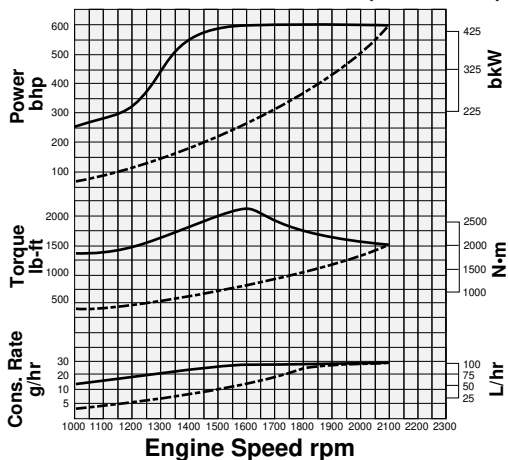
Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
522	2267	216	134.5
522	2493	211	131.6
522	2623	210	130.5
522	2769	209	129.8
522	3115	208	129.3
430	2935	210	107.8
245	1951	221	64.5
190	1817	226	51.2

Speed rpm	Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
2200	700	1672	.355	35.5
2000	526	1381	.332	25.0
1900	451	1247	.332	21.4
1800	384	1119	.335	18.4
1600	269	884	.347	13.4
1400	180	677	.359	9.2
1200	114	497	.367	6.0
1000	66	345	.386	3.6

Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
700	1672	.355	35.5
700	1839	.348	34.8
700	1935	.345	34.5
700	2042	.343	34.3
700	2297	.341	34.2
577	2165	.345	28.5
329	1439	.363	17.0
255	1340	.371	13.5

**D RATING** – Planing hull vessels such as off-shore patrol boats, customs, police, and some fire and fishing boats. Also used for bow and stern thrusters.

### C Rating – 2100 rpm 448 bkW (600 bhp) 608 mhp



#### Prop Demand Curve Data

Speed rpm	Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
2100	448	2035	208	111.1
2000	387	1846	204	94.1
1800	282	1495	204	68.6
1700	237	1333	208	58.8
1600	198	1181	212	49.9
1400	133	904	219	34.5
1200	84	664	224	22.3
1000	48	461	235	13.5

#### Max Power Curve Data

Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
448	2035	208	111.1
447	2136	208	110.6
448	2374	204	108.8
448	2514	203	108.2
448	2671	203	108.3
415	2832	209	103.2
245	1951	221	64.6
190	1817	226	51.2

Speed rpm	Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
2100	600	1501	.342	29.3
2000	518	1362	.336	24.9
1800	378	1103	.336	18.1
1700	318	983	.341	15.5
1600	265	871	.348	13.2
1400	178	667	.359	9.1
1200	112	490	.368	5.9
1000	65	340	.387	3.6

Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
600	1501	.342	29.3
600	1575	.341	29.2
600	1751	.335	28.7
600	1854	.334	28.6
600	1970	.334	28.6
557	2089	.343	27.3
329	1439	.363	17.1
255	1340	.371	13.5

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

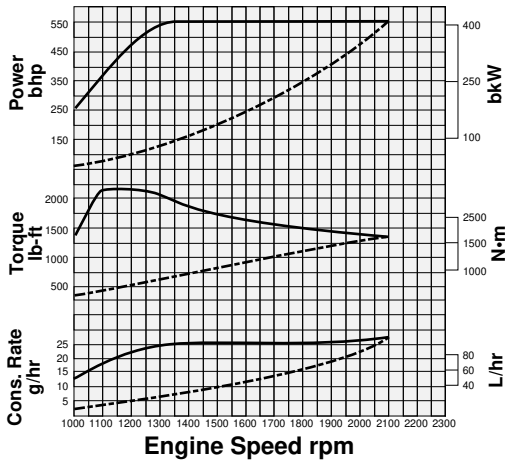
- Prop Demand ----- 3.0 Exponent
- Engine Performance Parameters: Power +/- 3%; Specific Fuel Consumption +/- 3%; Fuel Rate +/- 5%.

# 3406E MARINE ENGINE – 336-597 bkW



## PERFORMANCE CURVES

### B Rating – 2100 rpm 410 bkW (550 bhp) 558 mhp



#### Prop Demand Curve Data

Speed rpm	Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
2100	410	1866	211	102.9
2000	355	1692	206	86.9
1800	259	1371	206	63.3
1700	218	1223	209	54.1
1600	182	1083	213	46.0
1400	122	829	221	32.0
1200	77	609	229	20.9
1000	44	423	246	13.0

#### Max Power Curve Data

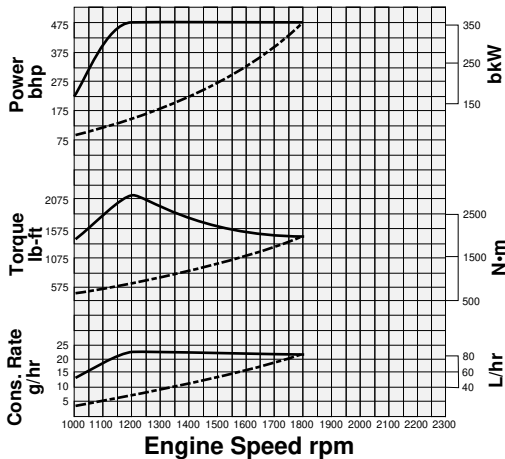
Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
410	1866	211	102.9
410	1959	207	101.1
410	2176	200	97.5
410	2304	198	96.7
410	2449	198	96.9
410	2798	201	98.4
360	2867	206	88.3
190	1817	224	50.9

Speed rpm	Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
2100	550	1376	.346	27.2
2000	475	1248	.338	23.0
1800	347	1011	.338	16.7
1700	292	902	.343	14.3
1600	243	799	.350	12.2
1400	163	611	.363	8.5
1200	103	449	.377	5.5
1000	59	312	.404	3.4

Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
550	1376	.346	27.2
550	1445	.340	26.7
550	1605	.328	25.8
550	1699	.325	25.5
550	1806	.326	25.6
550	2064	.331	26.0
483	2115	.338	23.3
255	1340	.369	13.4

**B RATING** – Vessels such as mid-water 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.

### B Rating – 1800 rpm 354 bkW (475 bhp) 482 mhp



#### Prop Demand Curve Data

Speed rpm	Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
1800	354	1879	199	84.1
1700	298	1676	202	71.7
1600	249	1484	205	60.8
1500	205	1305	209	51.0
1400	167	1136	213	42.3
1300	133	980	217	34.5
1200	105	835	221	27.7
1000	61	580	231	16.7

#### Max Power Curve Data

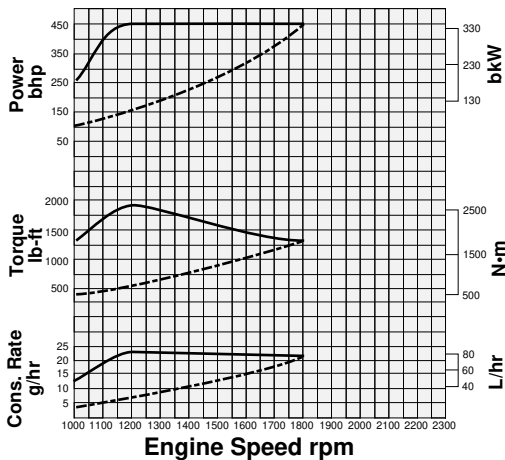
Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
354	1879	199	84.1
354	1989	199	83.8
354	2114	199	83.9
354	2255	200	84.4
354	2416	202	85.2
354	2602	204	86.3
354	2819	208	87.7
190	1817	224	50.8

Speed rpm	Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
1800	475	1386	.327	22.2
1700	400	1236	.332	18.9
1600	334	1095	.337	16.1
1500	275	963	.343	13.5
1400	223	838	.350	11.2
1300	179	723	.357	9.1
1200	141	616	.364	7.3
1000	81	428	.380	4.4

Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
475	1386	.327	22.2
475	1467	.326	22.1
475	1559	.326	22.2
475	1663	.329	22.3
475	1782	.332	22.5
475	1919	.336	22.8
475	2079	.341	23.2
255	1340	.369	13.4

**B RATING** – Vessels such as mid-water 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.

### A Rating – 1800 rpm 336 bkW (450 bhp) 456 mhp



#### Prop Demand Curve Data

Speed rpm	Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
1800	336	1781	200	79.9
1700	283	1588	203	68.3
1600	236	1407	206	57.9
1500	194	1237	210	48.6
1400	158	1077	214	40.3
1300	127	929	218	32.9
1200	100	791	223	26.4
1000	57	550	233	16.0

#### Max Power Curve Data

Power bkW	Torque N-m	Fuel Cons g/bkW-hr	Fuel Rate L/hr
336	1781	200	79.9
336	1886	199	79.7
336	2003	199	79.7
336	2137	200	80.0
336	2290	202	81.0
336	2466	206	82.6
336	2671	211	84.5
190	1816	224	50.8

Speed rpm	Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
1800	450	1314	.328	21.1
1700	379	1171	.333	18.0
1600	316	1038	.339	15.3
1500	261	912	.345	12.8
1400	212	794	.352	10.6
1300	170	685	.359	8.7
1200	133	583	.366	7.0
1000	77	406	.384	4.2

Power bhp	Torque lb-ft	Fuel Cons lb/bhp-hr	Fuel Rate g/hr
450	1314	.328	21.1
450	1391	.327	21.1
450	1477	.327	21.1
450	1576	.329	21.1
450	1689	.333	21.4
450	1819	.339	21.8
450	1970	.347	22.3
255	1339	.369	13.4

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

- Prop Demand ----- 3.0 Exponent
- Engine Performance Parameters: Power +/- 3%; Specific Fuel Consumption +/- 3%; Fuel Rate +/- 5%.

## **RATING DEFINITIONS AND CONDITIONS**

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**Ratings** are based on SAE J1228/ISO8665 standard conditions of 100 kPa (29.61 in Hg) and 25° C (77° F). These ratings also apply at ISO3046/1, DIN6271, and BS5514 conditions of 100 kPa (29.61 in Hg), 27° C (81° F) and 60% relative humidity.

**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).

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