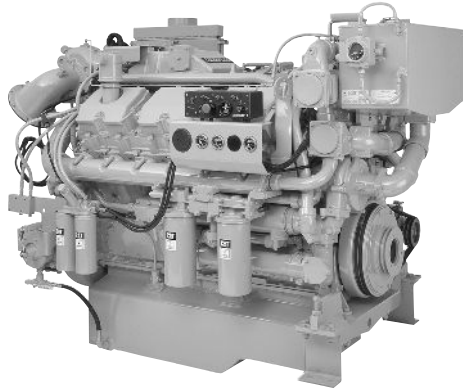


# Marine Propulsion 3412E Engine

474 bkW (635 bhp) 644 mhp @ 1800 rpm



Keel Cooled Arrangement  
Shown with Accessory Equipment

## STANDARD EQUIPMENT

### Air Inlet System

Corrosion resistant aftercooler core, regular duty panel type air cleaner, air cleaner inlet adapter 178 mm (7 in.)

### Cooling System

Gear driven, non-self-priming auxiliary sea water pump with bronze impeller (heat exchanger engines); gear driven, centrifugal jacket water pump, expansion tank (keel engines only); heat exchanger and coolant recovery system (heat exchanger engines); transmission oil cooler; engine oil cooler; thermostats and housing with 92°C (198°F) full open temperature

### Exhaust System

Watercooled manifold and turbocharger; dry elbow and flange, 203 mm (8 in.)

### Flywheel and Flywheel Housing

SAE No. 0 (136 teeth)

### Fuel System

Fuel priming pump; fuel transfer pump; fuel filter — RH service on port, LH service on starboard; Hydraulically actuated Electronically Controlled Unit Injector (HEUI) fuel system; flexible fuel lines

### Instruments

Instrument panel with start/stop switch; emergency stop button; maintenance lamp; diagnostic lamp; electric service meter; warning lamp; 15A breakers; starter motor magnetic switch; 5-hole panel with oil pressure, water temperature, and fuel pressure gauges

### Lube System

Oil level gauge and oil filter — RH service on port, LH service on starboard; crankcase breather; oil filler in valve cover; deep sump oil pan; manual sump pump

### Mounting System

Front support

### Protection System

Electronic — 24 volt only

### General

Vibration damper and guard, Caterpillar yellow paint, lifting eyes, customer wiring connector, service tool connector

## SPECIFICATIONS

### V-12, 4-Stroke-Cycle-Diesel

Emissions	IMO compliant
Displacement	27 L (1649 cu in.)
Bore	137.2 mm (5.4 in.)
Stroke	152.4 mm (6.0 in.)
Aspiration	Turbocharged-Aftercooled
Governor	Electronic
Engine Weight, Net Dry (approx)	
Heat Exchanger Cooled	2840.7 kg (6257 lb)
Keel Cooled	2769 kg (6105 lb)
Capacity for Liquids	
Cooling System (engine and expansion tank)	72.5 L (19.1 U.S. gal)
Lube Oil System (refill)	138.1 L (36.5 U.S. gal)
Oil Change Interval	400 hr
Caterpillar DEO 10W30 or 15W40	
Rotation (from flywheel end)	Counterclockwise

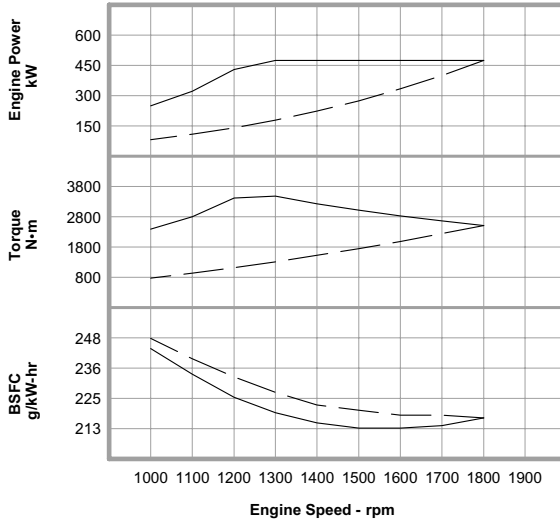
## ACCESSORY EQUIPMENT

- Air Starting Motor
- 24V 35 Amp, 24V 60 Amp Alternator
- Auxiliary Drive Pulley
- Auxiliary Sea Water Pump
- Coolant Level Switch (Keel Cooled Engines)
- Double Wall Oil Line
- Dry Charge Coolant Conditioner
- Duplex Fuel Lines
- Duplex Oil Filters
- 24V Electric Starting Motor
- Engine Monitoring System
- Engine-to-Engine Wiring Harness
- Engine Vision Display System
- Exhaust Elbow, Pipe, Flexible Fittings
- Front Enclosed Clutch
- GPS Interface Module
- Hydraulic Pump Drive
- 8-Hole Instrument Panel
- Marine Power Display
- OEM Wiring Harness
- Pilot House Instrument Panel
- Primary Fuel Filter/Water Separator
- Remote Positive Locking Governor Control
- SAE No. 0 Flywheel
- Sea Water Inlet Connection
- Spare Parts Kit
- Throttle Position Sensor
- Vibration Isolation Mounting

**PERFORMANCE CURVES**

**A Rating — DM6393-00**

**IMO Compliant**

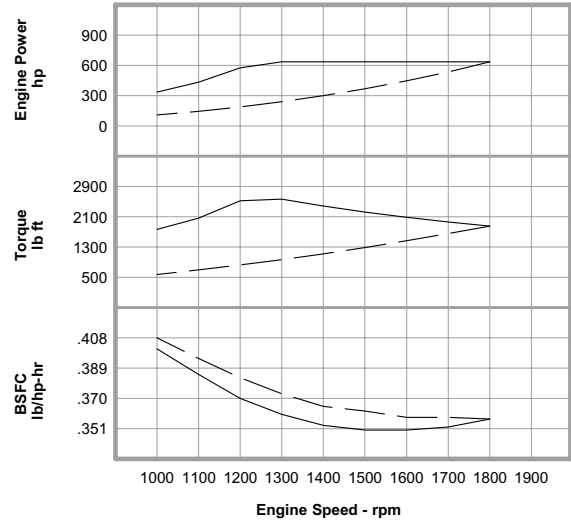


**Metric**      **Maximum Power**      **474 kW**  
**Prop Demand**

**Performance Data**

	Engine Speed rpm	Engine Power kW	Engine Torque N·m	BSFC g/kW-hr	Fuel Rate L/hr
<b>Maximum Power Data</b>	1800	474	2512	217.0	122.5
	1700	474	2660	214.0	121.0
	1600	474	2826	213.0	120.1
	1500	474	3014	213.0	120.1
	1400	474	3230	215.0	121.3
	1300	474	3478	219.0	123.7
	1200	429	3416	225.0	115.3
	1100	322	2797	234.0	89.7
	1000	250	2389	244.0	72.7
	<b>Prop Demand Data</b>	1800	474	2512	217.0
1700		399	2241	218.0	103.4
1600		333	1985	218.0	86.6
1500		274	1744	220.0	71.8
1400		223	1520	222.0	59.1
1300		178	1310	227.0	48.2
1200		140	1116	233.0	38.9
1100		108	938	240.0	30.9
1000		81	775	248.0	24.0

Cubic prop demand curve with 3.0 exponent for displacement hulls only.

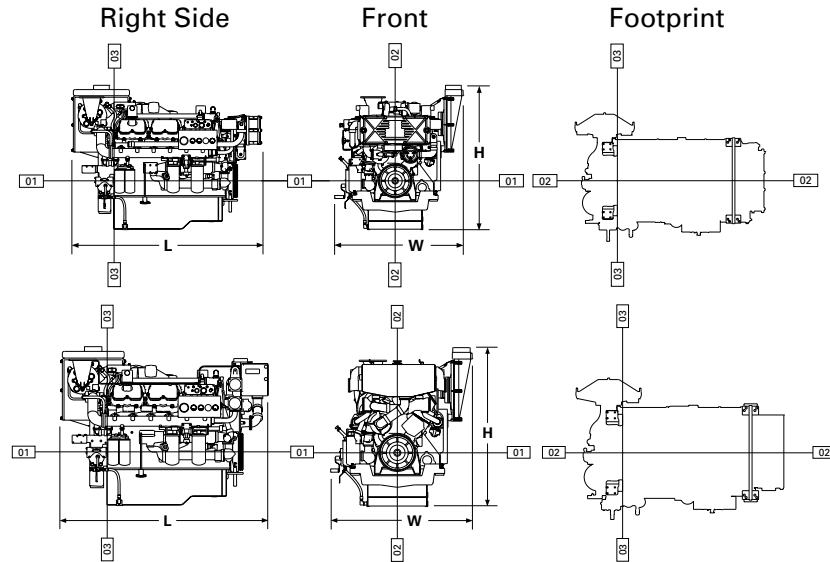


**English**      **Maximum Power**      **635 hp**  
**Prop Demand**

**Performance Data**

	Engine Speed rpm	Engine Power hp	Engine Torque lb ft	BSFC lb/hp-hr	Fuel Rate gph
<b>Maximum Power Data</b>	1800	635	1853	.357	32.4
	1700	635	1962	.352	32.0
	1600	635	2084	.350	31.7
	1500	635	2223	.350	31.7
	1400	635	2382	.353	32.0
	1300	635	2565	.360	32.7
	1200	576	2519	.370	30.5
	1100	432	2063	.385	23.7
	1000	335	1762	.401	19.2
	<b>Prop Demand Data</b>	1800	635	1853	.357
1700		535	1653	.358	27.3
1600		446	1464	.358	22.9
1500		367	1286	.362	19.0
1400		299	1121	.365	15.6
1300		239	966	.373	12.7
1200		188	823	.383	10.3
1100		145	692	.395	8.2
1000		109	572	.408	6.3

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\***

	Heat Exchanger Cooled		Keel Cooled	
	mm	in.	mm	in.
<b>Overall Length</b>	2137.2	84.1	2119.7	83.5
Length from front to rear face of block	1660.7	65.4	1643.2	64.7
<b>Overall Height</b>	1621.4	63.8	1621.4	63.8
Height from crankshaft centerline to top of engine	1072.9	42.2	1072.9	42.2
Height from crankshaft centerline to bottom of oil pan	548.5	21.6	548.5	21.6
<b>Overall Width</b>	1444.3	56.9	1444.3	56.9
Width from crankshaft centerline to port side (left side)	764.0	30.1	764.0	30.1
Width from crankshaft centerline to starboard side (right side)	680.3	26.8	680.3	26.8
<b>(Heat Exchanger and Keel Cooled arrangements)</b>	<b>Front</b>		<b>Rear</b>	
	mm	in.	mm	in.
Customer mounting hole diameter	20.5	0.8		5/8
Width from crankshaft centerline to side	431.8	17.0	352.7	13.9
	457.2	18.0	413.0	16.3
Length from rear face of block to front	1242.5	48.9	78.3	3.1
	1261.5	49.7	154.6	6.1
	1350.5	53.2		
	1369.5	53.9		

\*Illustrations and dimensions from drawings: 183-1405 Heat Exchanger Cooled, 183-2012 Keel Cooled.

**RATING DEFINITIONS AND CONDITIONS**

**A Rating –**

Typical Application. . . . 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.

Typical Hours Per Year . . . . . 5000 to 8000  
 Time at Rated Speed . . . . . Up to 100%  
 Load Factor . . . . . 80 to 100%  
 Typical Time at Full Load . . . . . No limit

**Engine Performance Parameters**

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

**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.

**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.



## 3412E MARINE PROPULSION — 474 bkW (635 bhp)

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.

TMI Reference No.: DM6393-00 (6-19-01)

Materials and specifications are subject to change without notice.

The International System of Units (SI) is used in this publication.

LEHM1050-02 (5-02)

Printed in U.S.A.

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