A commercial heritage.

Initially designed for Alaskan fisherman, Luggers are well known by commercial and pleasure craft operators for their long life and smooth, quiet operation. This legacy continues with the US EPA Tier II compliant Lugger L1064 line.

Natural or turbo-aftercooled.

The L1064D is a time tested diesel with natural aspiration and a proven mechanical fuel injection system. Producing 0.24 to 0.29 FWHP per cubic inch, it is built for the vessel owner who wants an engine that operates under the lowest stress possible. This makes it the ultimate main or wing engine for long range, full displacement vessels.

The L1064A has a liquid cooled turbocharger, aftercooler and electronic fuel injection. Together they increase the power up to 140 HP at a low 2400 RPM. More power, but still it has a conservative 0.42-0.51 FWHP to CID ratio. This makes it the right engine for semi-displacement trawlers and small work boats. Its in-line design makes it the perfect repower engine for older in-line six cylinder engines.

Ironclad marinization.

The Lugger 1064 (106 mm bore-4 cylinder), 4.5 liter, diesels have heavy-duty tractor blocks. This high torque design provides a strong foundation; but a marine engine is only as good as its marinization. A Lugger's marinization is cast iron tough. The expansion tank and liquid-cooled exhaust manifold are cast iron. Some engines only use bypass water to cool their manifolds. Lugger integrates the two pass manifold into the cooling system main stream to assure even temperature control and to eliminate hot spots that can stress metal components.

Low rpm horses vs. Paper ponies.

Light-duty, small-displacement diesels operate at speeds up to 4200 rpm. This means high piston speed and short life. Lugger power comes from cubic inch displacement and long stroke design. With a maximum rpm of only 2400 or 2500 and a recommended cruise of 200 rpm less, a higher percentage of the available horsepower is usable. Lower rpm also means less noise and wear, more complete fuel combustion and longer life.

Wet liners protect your investment.

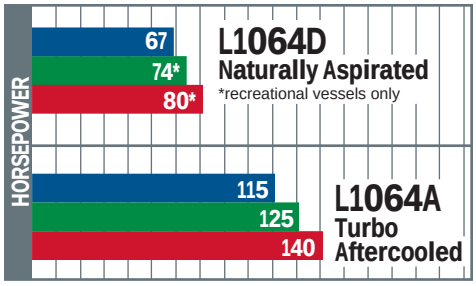
Lugger cylinder liners are surrounded by coolant for better heat dissipation. The liners are replaceable to reduce overhaul costs. Unlike "linerless" throwaways, a Lugger can be rebuilt in the boat.

Easy to live with.

Low RPM Luggers are naturally quiet. No high RPM whine. Just a steady rhythm. A special silencer-filter reduces air intake noise. The cast rocker arm cover reduces valve noise and traps crankcase oil vapors to keep your engine room clean. 1064s have two counter-rotating balancing shafts to provide smooth operation.

Lower operating costs.

Direct injection, long stroke and precise fuel metering all add up to excellent fuel economy.



If it isn't there, it can't break.

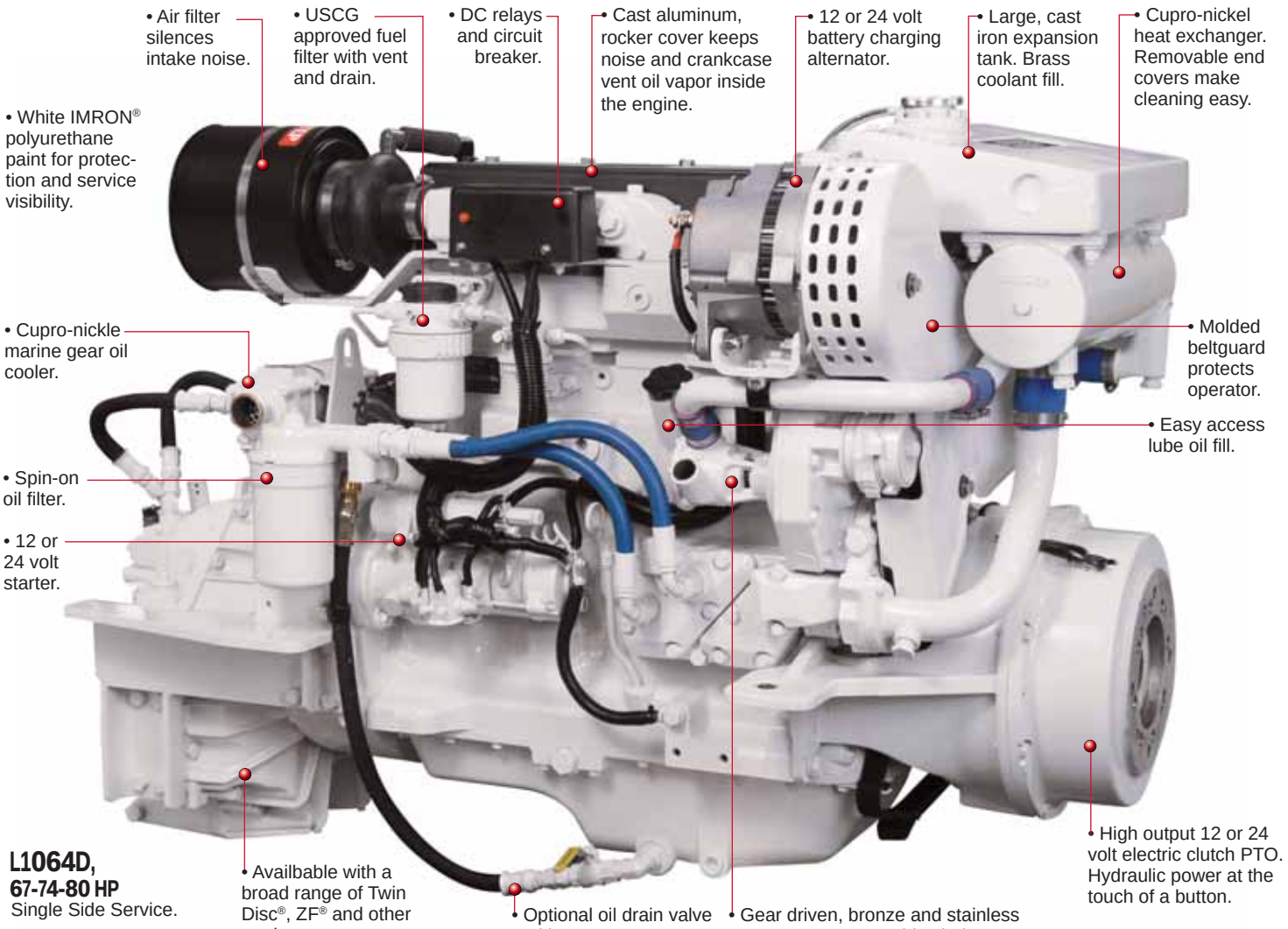
That's why the pipes, hoses, belts and gaskets that cause problems on other engines have been engineered away. This makes Luggers easy to maintain too. Service points are on one side for easy access and the in-line design gives you elbow room in the engine room.

Take power from both ends.

The full line of options and accessories lets you design an engine that is custom built to match your vessel's needs. With an optional front power-take-off your Lugger can power your vessel's hydraulic auxiliary systems. It's more than an engine, your L1064 is a total marine power system.

Thorough testing.

Every Lugger engine is thoroughly tested and quality controlled before it leaves our factory, to ensure the reliability, durability and quality Luggers are known for.



L1064D,
67-74-80 HP
Single Side Service.

These are the features that make a good engine block into a grea

Engine Block

- Four cylinder, four cycle, in-line, liquid cooled, overhead valve, marine diesels with heavy-duty industrial engine blocks.
- Replaceable, wet cylinder liners for long life, lower rebuild costs.

- Bimetallic valves have chrome plated stems and rotators. Replaceable valve seats and guides.
- Balanced crankshaft with induction hardened journals and rolled fillets.

- Two gear-driven, counter-rotating, balancing shafts for smooth operation.
- Three ring aluminum alloy pistons with Ni-Resist insert for the top ring. Keystone piston ring reduces carbon buildup under light loads.
- Self adjusting, poly-vee drive belt powers the alternator and jacket water coolant pump.

Direct Fuel Injection System

- **L1064D:** Mechanical rotary fuel injection pump. Automatic timing advance for cleaner exhaust during start up and under light loads.
- **L1064A:** Engine control unit (1) electronically controls rotary fuel injection pump (2) for higher injection pressures, variable injection timing and precise fuel metering for higher power output with lower emissions.

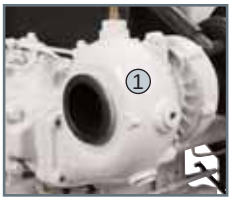
- Ring clamp fuel filter with air bleed and drain.
- Diaphragm-type, mechanically driven fuel transfer pump with manual priming lever.

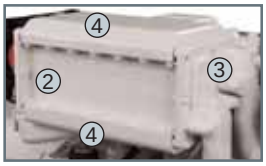
Lubrication System

- 500 hour oil change with specified oil and fuel.
- Positive displacement gear-type oil pump.
- Oil spray cooling reduces piston crown temperature for longer life.
- Plate-type, full jacket-water flow oil cooler reduces heat and thermal breakdown of oil.
- Full flow, spin-on oil filter.
- Cast aluminum, rocker cover traps valve noise. It's also a closed loop crankcase vent to keep oil mist inside the engine.

Air System

- Dry air filter silences air intake noise.
- **L1064D** is naturally aspirated.
- **L1064A** is turbocharged and aftercooled to increase output. Turbocharger (1) turbine housing is jacket water cooled for safety. Aftercooler has aircraft quality, 70/30 cupronickel, two pass element (2). Oval water tubes are easy to clean and stronger than round tubes. Corrugated air cooling fin design supports tubes better than plate fin type. Seawater piping (3) is cast bronze and stainless steel; water never touches the cast aluminum air ducts (4). No gaskets; all components are machined and have o-ring seals. Seawater direct from the gear driven pump (5), for maximum cooling.



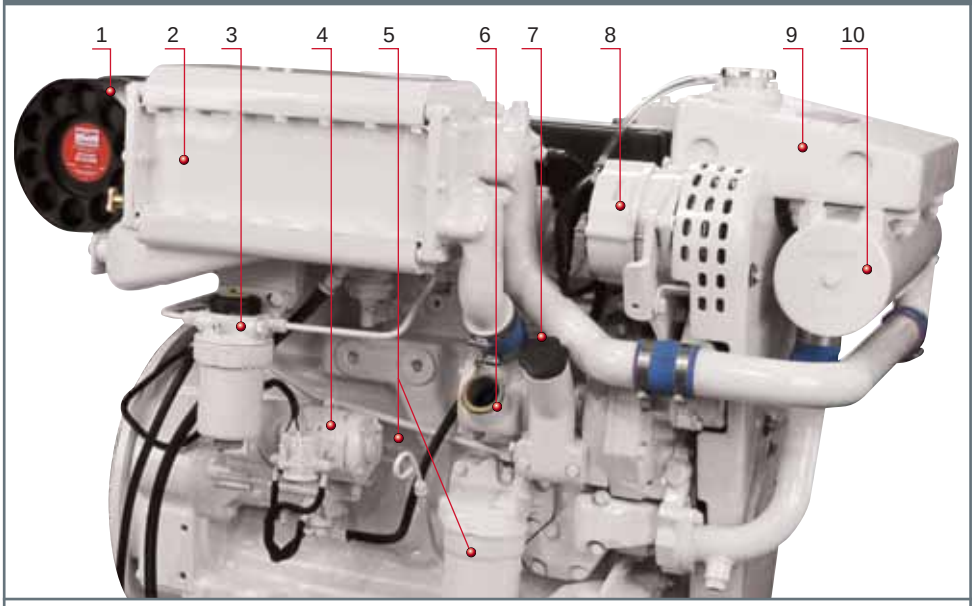


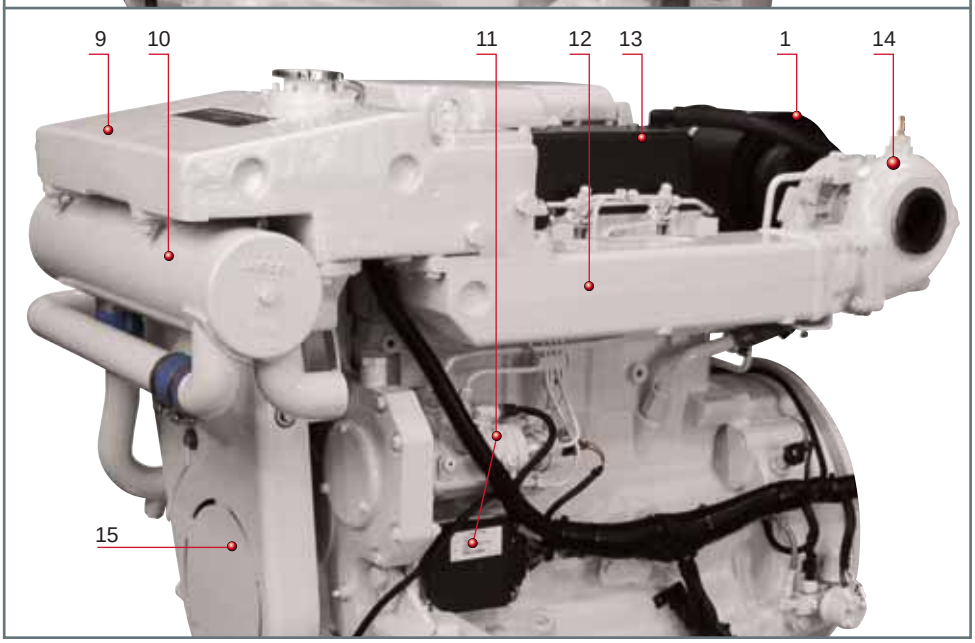
Cooling System

- Jacket-water cooling has two thermostats for safety and quicker engine warm-ups.

- Cast iron expansion tank has no welds to break. Large brass filler neck for easy filling.
- Cast-iron exhaust manifold has double pass jacket water flow for even temperature control, fast warm-up and no hot spots.
- Heat exchanger cooling has: Gear driven, flexible impeller seawater pump. Easy to clean, tube-type, cupro-nickel heat exchanger. Zinc anode electrolysis protection.
- **L1064D** available in keel cooled version.

L1064A: Turbocharged, aftercooled, electronic fuel injection and ESP.





L1064A Long Life Features

1. Air filter/intake silencer.
2. Cupro-nickel jacket water aftercooler.
3. Fuel filter with drain and vent.
4. 12 volt starter placed high to stay dry (24V opt.)
5. Lube oil dipstick and spin-on oil filter.
6. Gear-driven, seawater pump. No drive belt.
7. Side oil fill for easy access.
8. 12V battery charging alternator (24V opt.).
9. Cast iron expansion tank. No weak welds.
10. Cupro-nickel heat exchanger with removable end covers for easy cleaning.
11. Engine control unit: Water resistant module protects ECU for electronic fuel injection and ESP engine system profiler. Electronically controlled rotary fuel injection pump.
12. Jacket-water cooled, cast iron exhaust manifold. Two pass coolant flow for even temperature control.
13. Cast rocker arm cover is also a closed loop crankcase vent to keep engine room clean.
14. Turbocharger is liquid cooled for safety.
15. Molded belt guard protects the operator.

t marine engine.

Specifications & Installation Data

ESP and DC Electrical System

- Standard 12 volt, negative ground, DC system has circuit breaker, starter motor and battery charging alternator with regulator.
- **L1064A:** The Electronic System Profiler (ESP) supplies an SAE J1939 engine information data stream through a CANbus plug for optional monitor.
- Instrument panel has tachometer, DC volt meter, hour meter, coolant temperature gauge, oil pressure gauge, stop button, key switch and gauge light rheostat. Warning lights and audible alarm for low oil pressure and high water temperature. Installation of main and optional panels is plug-in simple.

- Engine and panel are prewired. 20-foot wire harness with plug-ins is standard.

Special Equipment

- Cast iron, centerline mounting brackets.
- Belt guard protects operator.
- Sparkling, white IMRON® polyurethane paint.
- Operator's and parts manuals are supplied.

L1064 Series Accessories and Options

- **L1064A:** Electronic System Profile (ESP) monitor keeps you in touch with your engine's operating condition.

- DC systems: 12 volt isolated ground. 24 volt standard and isolated ground.
- Flybridge and auxilliary panels. Plug-in installation.

- Coolant level sensor/alarm.
- Alternators: 12 volt/90 amps, 12 volt/140amps, 24 volt/75amps as a second alternator or in place of the original.

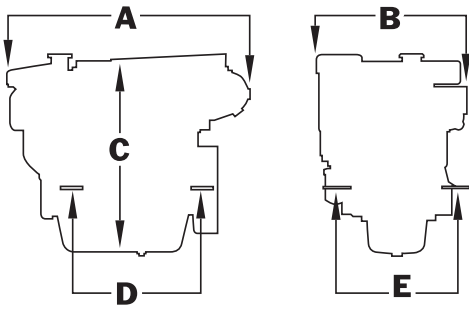
- Wet and dry exhaust elbows. Dry exhaust flex. Fiberglass water lift exhaust muffler.
- "A" pad accessory drive on keel cooled L1064D.

- Crankshaft pulleys: 3-A/B or 4-A grooves.
- Twin Disc® or ZF® marine gears. Trolling valves. Shaft couplings.
- Vibration isolating engine mounts.
- Spare parts kits.
- Racor® fuel filters.
- High capacity front PTO (power take off) with a 12 volt or 24 volt electric clutch and an SAE B or C splined hydraulic pump mount pad. At the touch of a button you have power to power your vessel's hydraulic auxiliary systems. Maximum torque: L1064D 168 ft lbs, L1064A 306 ft lbs.

Data below based on High Output rated engines at maximum RPM. rv=recreational vessels only.

Model Number	L1064D	L1064A
High Output Rating - fwhp (kW) @ rpm	80 hp (59) 2500 rv only	140 hp (104) 2400
Medium Duty Rating - fwhp (kW) @ rpm	74 hp (55) 2500 rv only	125 hp (93) 2200
Continuous Duty Rating - fwhp (kW) @ rpm	67 hp (50) 2500	115 hp (85) 2000
Cylinders	4 Inline	4 Inline
Displacement - CID (ltr)	276 (4.5)	276 (4.5)
Operating Cycle / Aspiration	4 / Natural	4 / Turbo-Aftercooled
Bore x Stroke - in (mm)	4.19 x 5 (106 x 127)	4.19 x 5 (106 x 127)
Cooling (General)		
Jacket-water circ pump flow - gpm (lpm) / rpm	54 (204) / 2500	51 (192) / 2400
Heat rejection to jacket water - BTU/min	3415	6147
Cooling (Heat Exchanger) available on both models, all ratings.		
Raw water intake and discharge dia. - inch (mm)	1.25 (32)	2 (51)
Raw water pump flow - gpm (lpm) / rpm	31 (117) / 2500	53(200) / 2400
Raw water pump max. suction head - in (m)	39 (1)	39 (1)
Maximum raw water temp. at inlet -°F (°C)	86° (30°)	86° (30°)
Freshwater system capacity - US gal (ltr)	5.5 (21)	5.5 (21)
Cooling (Keel Cooled) available on L1064D only.*		
*Based on 70° F seawater and minimum full boat speed of 8 kts. Return water from keel cooler 70-130° F.		
Water hose inside diameter - in (mm)	2-3/8 (60)	HE cooling only
Head diameter - in NPT	1-1/2	HE cooling only
Turbo tube length - ft (m)	12 (4)	HE cooling only
One inch plain round tube length - ft (m)	28 (8.5)	HE cooling only
Skin cooler aluminum / steel - sq ft (m^2)	12 (1.1) / 40 (3.7)	HE cooling only
Electrical		
Min. 12V battery capacity - amp hrs/CCA	180 / 640	180 / 640
Battery cable size up to 10 ft run	"00"	"00"
Standard panel harness length - ft (m)	20 (6)	20 (6)
Air and Exhaust		
Engine air consumption - cfm (m^3/min)/rpm	166 (4.7) / 2500	360 (10.2) / 2400
Minimum engine room vent area - sq in (m^2)	48 (0.03)	105 (0.06)
Exhaust gas flow at - cfm (m^3/min)/rpm	587 (13.8) / 2500	858 (24.3) / 2400
Exhaust gas temperature -°F (°C)/rpm	1184 (640) / 2500	887 (475) / 2400
Maximum exhaust back pressure - in (mm) H_20	48 (1219)	30 (762)
Suggested dry/wet exhaust I.D. - in (mm)	3 (75) / 4 (100)	3 (75) / 5 (127)
Fuel and Oil		
Minimum fuel suction and return line - in (mm)	3/8 (10)	3/8 (10)
Maximum fuel pump head - in (m)	39 (1)	39 (1)
Crankcase oil capacity - US qts (ltr)	15.5 (14.7)	21.7 (20.5)
Other Data		
Engine rotation (facing flywheel)	Counter-Clockwise	Counter-Clockwise
Flywheel housing size - SAE #	SAE 4	SAE 4
Optional front PTO size - SAE #/ Max Torque	SAE 5 / 168 ft lbs	SAE 5 / 306 ft lbs
Max. operating down angle front/rear	0° / 12°	0° / 12°
Approximate Weight		
Heat exchanger cooled dry weight w/o gear - lbs (kg)	1100 (499)	1250 (567)

Dimensional Data: Do NOT use for installation. Contact factory for installation drawings.



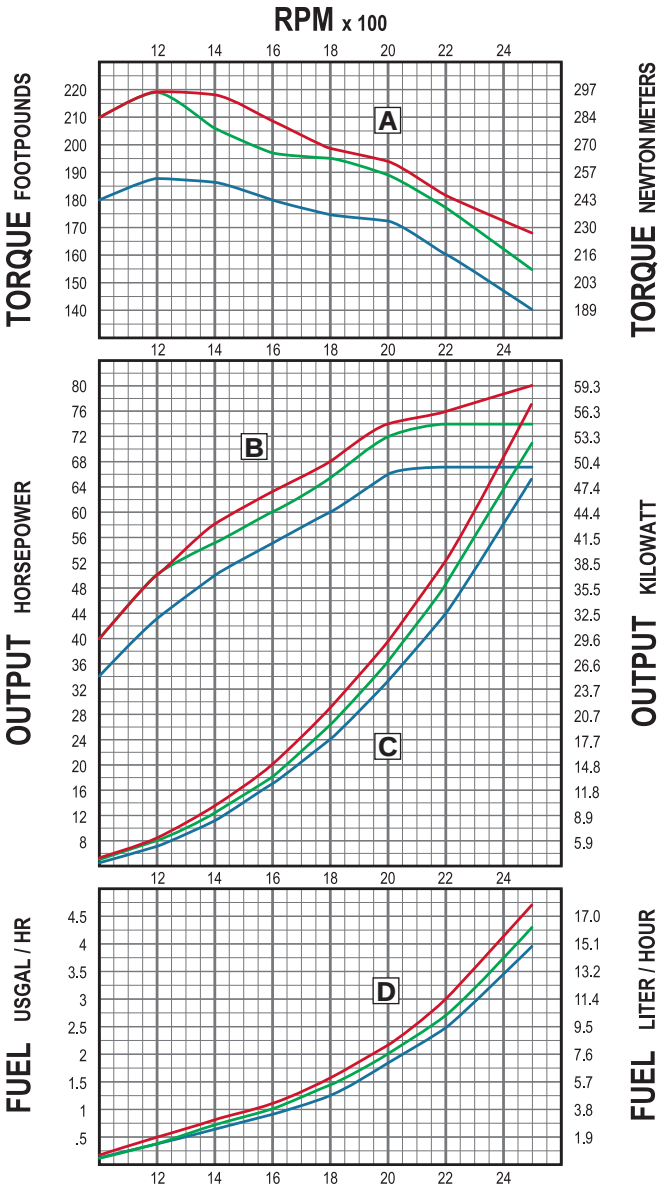
Dimensions: L1064D	inch (mm)
A length	43.03 (1093)
B width	27.71 (703.8)
C height	35.93 (912.6)
D mounts	24.2 (614.7)
E mounts	24.0 (609.6)
Dimensions: L1066A	**inch (mm)**
A length	45.05 (1144.3)
B width	29.42 (747.3)
C height	35.93 (912.6)
D mounts	24.2 (614.7)
E mounts	24.0 (609.6)

Dimensions subject to change without notice.

LUGGER® by NORTHERN LIGHTS — L1064 Performance

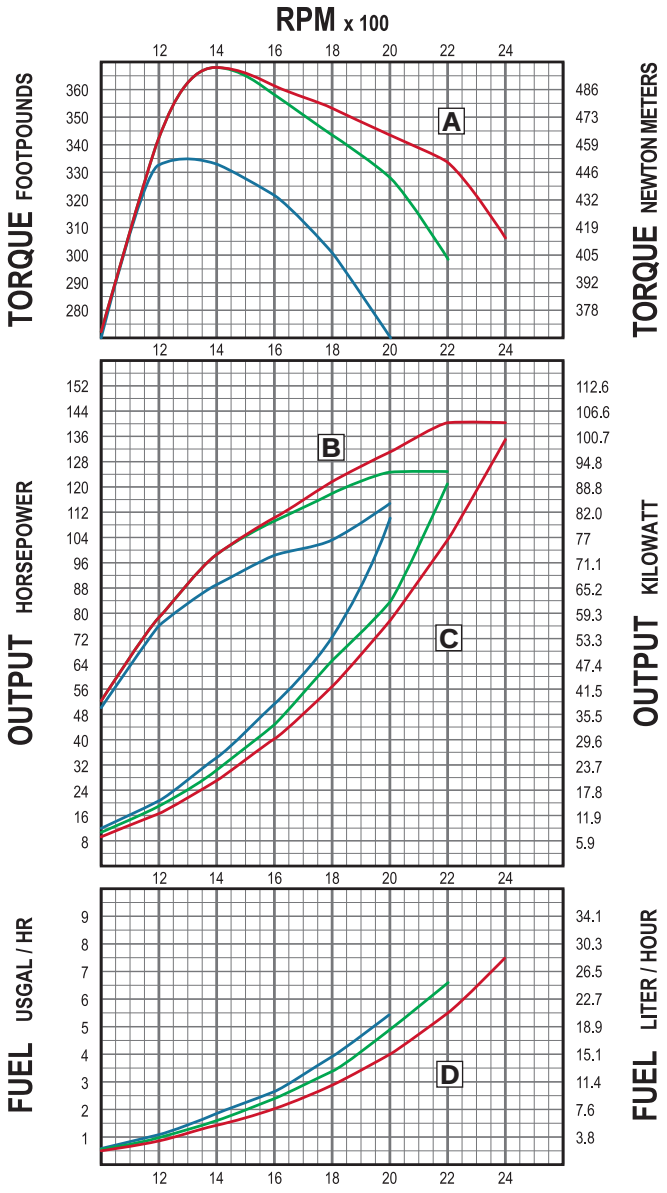
Model Number	L1064D
High Output Rating[1,2] FWHP / kW / rpm	80 / 59 / 2500
Medium Duty Rating[1,2] FWHP / kW / rpm	74 / 55 / 2500
Continuous Duty Rating FWHP / kW / rpm	67 / 50 / 2500

[2]L1064D High Output and Medium Duty ratings for recreational vessels only.



RATING	CONTINUOUS				MEDIUM DUTY[1,2] Recreational Vessels				HIGH OUTPUT[1,2] Recreational Vessels			
Curve	A	B	C	D	A	B	C	D	A	B	C	D
RPM	ft/lbs	fwhp	pdhp	gph	ft/lbs	fwhp	pdhp	gph	ft/lbs	fwhp	pdhp	gph
1000	180	40	4.1	0.2	210	40	4.5	0.2	210	40	4.9	0.3
1200	188	43	7	0.4	219	50	8	0.4	219	50	8.5	0.5
1400	187	50	11.4	0.6	206	55	12.5	0.7	218	58	13.5	0.7
1600	180	55	17	0.9	197	60	18.7	1	207	63	20	1.1
1800	175	60	24	1.3	195	67	26.6	1.4	198	68	29	1.6
2000	173	66	33	1.8	189	72	36.6	2	194	74	39.6	2.2
2200	160	67	44	2.5	177	74	48.6	2.7	181	76	52.6	3
2500	140	67	65	3.9	155	74	71	4.3	168	80	77	4.7

Model Number	L1064A
High Output Rating[1] FWHP / kW / rpm	140 / 104 / 2400
Medium Duty Rating[1] FWHP / kW / rpm	125 / 93 / 2200
Continuous Duty Rating FWHP / kW / rpm	115 / 85 / 2000



RATING	CONTINUOUS				MEDIUM DUTY[1]				HIGH OUTPUT[1]			
Curve	A	B	C	D	A	B	C	D	A	B	C	D
RPM	ft/lbs	fwhp	pdhp	gph	ft/lbs	fwhp	pdhp	gph	ft/lbs	fwhp	pdhp	gph
1000	263	50	12.4	0.7	273	52	11.3	0.6	273	52	9.7	0.5
1200	333	76	21.4	1.1	341	78	19.6	1.0	341	78	16.9	0.8
1400	334	89	34	1.8	368	98	31	1.6	368	98	26.8	1.4
1600	322	98	51	2.7	358	109	44.5	2.4	361	110	40	2
1800	301	103	72.5	3.9	344	118	66	3.4	353	121	57	2.9
2000	270	115	99.4	5.4	328	125	91.5	4.8	344	131	78	4.0
2200	--	--	--	--	298	125	121	6.6	334	140	104	5.5
2400	--	--	--	--	--	--	--	--	306	140	135	7.5

Notes: 1. Max. cruise rpm for High Output and Medium Duty ratings is 200 rpm below highest attainable rpm. **2.** USA EPA Tier II compliant for recreational vessels only.
Curves: A. Maximum torque at flywheel. **B.** Flywheel power. Prop shaft power is 3-3.5% lower due to marine gear power loss. **C.** Theoretical prop draw HP (3.0 exponent). **D.** Fuel consumption based on theoretical propeller power draw. Your fuel consumption will vary higher or lower depending on your vessel and operating conditions.

Dealer

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