

ENGINE BLOCK

- Six cylinder, four cycle, in-line, liquid cooled, overhead valve, marine diesels based on heavy-duty industrial engine blocks.
- Balanced, forged crankshaft with induction hardened journals and rolled fillets for long life.
- Replaceable, wet cylinder liners for long life and low rebuild costs.
- Bimetallic valves with chrome stems and rotators.
- Replaceable valve seats and guides.
- Three ring aluminum alloy pistons with Ni-Resist insert for the top ring. Keystone piston ring reduces carbon buildup under light loads.
- Torsional crankshaft dampers help ensure smooth operation.
- A single poly-vee drive belt powers the alternator and jacket-water pump.

FUEL SYSTEM

- High pressure common rail fuel injection for smooth, clean delivery.
- Direct fuel injection systems
- Ring clamp fuel filters with air bleed and drain.
- Electric fuel pump integrated into primary fuel filter. Computer controlled priming for ease of operation.

LUBRICATION SYSTEM

- Positive displacement gear-type oil pump.
- Full flow, spin-on oil filter.
- Jacket-water, plate-type, full flow oil cooler reduces heat and prevents lube oil breakdown.
- Large capacity oil pan.
- A closed loop crankcase vent traps oil vapor to keep the engine room clean.

AIR SYSTEM

- Dry air filter silences intake noise.
- Turbocharger with jacket water cooled turbine housings for safety.
- Jacket water aftercooler provides optimized combustion and output.

COOLING SYSTEM

- Oversized radiator with durable shroud.
- Cast iron expansion tank with brass filler neck.
- Two thermostats for quick warm-ups and safety.
- Cast-iron exhaust manifold for reliable temperature control.

ESP AND DC ELECTRICAL SYSTEM

- Negative ground, 12 volt DC system includes starter motor and alternator with regulator. Low oil pressure and high coolant temperature safety shutdown system.
- Optional relay board and senders for gauged panels
- Additional optional panels help you specify the amount and type of information delivered.

AC GENERATOR

- Direct coupled, single bearing, 12 lead, reconnectable AC generator. Maintenance free brushless design.
- All NL generators meet or exceed class society standards with Class "H" insulation, accessible diodes, oversized ball bearings, marine grade shafts and conservative 90°/50° heat rise ratings.
- Engines and generators are torsionally matched for long life.
- Automatic voltage regulator; ±0.5% regulation over the entire range from no load to full load.
- Configured for isochronous operation with integral electronic governor control supplied by ECU. Frequency droop available upon request.

SPECIAL EQUIPMENT

- IMO Tier 3 exempt
- US EPA Tier III compliant (60 Hz)
- IMO Tier 2 compliant (50 Hz)
- Welded steel base frame
- Belt guard
- Center bonded vibration isolation mounts
- Grey enamel paint
- Operator's and parts manuals

AC Output *

60 Hz, 1800 RPM	106 kW
Overload Capability	10%
Voltage regulation	+/- 0.5%
Frequency droop control	Isochronous, 0.5 Hz, 1.7 Hz, 3.0 Hz
Phase and power factor	Three phase 0.8 power factor std.
Generator full load temperature rise	90°C temperature rise at 50°C ambient

Lugger Diesel Engine Data

Inline cylinders/aspiration/operating cycle	I-6 / Turbo & Aftercooled / 4
Displacement - cid (liter)	414 (6.8)
Bore/stroke - inches (mm)	4.19/5 (106/127)
Fuel injection pump type and control	Electronic (HPCR)

Cooling System (Radiator cooled)

60 Hz
Heat rejection to jacket water - BTU min
Freshwater pump capacity - gpm (lpm)
Approximate engine coolant capacity - gal (ltr)
Radiator coolant capacity - gal (ltr)

DC Electrical (12V standard, 24V optional)

DC starting voltage - standard (optional)	12 (24)
Min battery capacity - 12V CCA (24V CCA)	925 (625)
Starter rolling amps @ 0°C - 12VDC (24VDC)	920 (600)
12 Volt battery cable size up to 10 ft (3m)	000

Air

60 Hz
Air consumption - cfm (m³/m)
Approx heat radiated to air - BTU/min (kW)
Generator cooling air flow 3 Ø - cfm (m³/m)
Estimated Radiator Airflow - cfm (m3/m)
Exhaust Gas Volume cfm (m3/m)
Exhaust gas temp - F° (C°)
Max. exhaust back pressure - inch H²O (mm H²O)
Dry exhaust elbow in (mm)

Fuel

Fuel injection pump type and control	High Pressure Common Rail
Min suction - in (mm)	0.31 (8)
Min return line - in (mm)	0.31 (8)
Max fuel transfer pump suction lift - ft (m)	7.9 (2.4)
Max fuel flow to transfer pump - gph	42.8
Specific fuel consumption max load 60 hz - lbs/hp-hr	0.411
Approx. fuel rate** at 60 Hz full load - gph (lph)	10.0 (38.0)

Max Engine Operating Angle

Continuous (with separate expansion tank)	25
Intermittent (2 minutes)	35

Dimensions and Weight^

Length - inches (mm)	99.79 (2535)
Width - inches (mm)	46.81 (1189)
Height - inches (mm)	62.88 (1597)
Weight - pounds (kilograms)	4010 (1819)

*. Prime kW ratings for 3 Ø at 0.8 power factor. Consult factory for deration factors.

**.. Based on prime kW rating at 1800 and 1500 RPM. Fuel rate may vary depending on operating conditions.

^ Dimensions provided for information only. Do not use for installation. Contact factory for installation drawings and info.

4420 14th Ave. NW., Seattle WA 98107

Tel: (206) 789-3880 • 1-800-762-0165 • Fax: (206) 782-5455

Information and dimensions subject to change without notice.

Northern Lights and Lugger are registered trademarks of Northern Lights, Inc.

© 2020 All rights reserved. Litho USA. S133 7/20