

FEATURES AND BENEFITS

THE STATE-OF-THE ART IN MARINE EQUIPMENT

The growing demands of the marine marketplace demand a big, robust power producer. As the world's yachts grow more sophisticated, their power generation system must keep pace. Northern Lights generator sets are based on world-class components - including industrial strength base engines and generator ends. Our exclusive marinization process ensures reliable, clean power no matter what your vessel requires.

FLEXIBILITY

Northern Lights' revolutionary base frame design creates the most compact, best looking power generation set on the market. Our optional sound enclosures and compound mounts save even more space and virtually eliminate vibration noise. Northern Lights provides maximize power efficiency while using minimal engine room space.

ELECTRONIC CONTROL SYSTEM

For the ultimate in system management and monitoring, the M12812 series generator sets are equipped with an Electronic Control Unit (ECU). The ECU controls the electronic engine functions and provides a SAE J1939 data stream of engine information that can be displayed on an optional system monitor panel.

SUPERIOR PMG GENERATOR ENDS

Northern Lights generator ends achieve $\pm 0.5\%$ voltage regulation. All have low temperature rise ratings to meet or exceed marine requirements. All M12812's have Permanent Magnet Generators for 300% short circuit capability required for classed vessels.

COMPLETE UNIT TESTING

Northern Lights generator sets are thoroughly factory tested and go through a complete quality control program to ensure your satisfaction with the best built marine generator on the market today.

COMPONENT SPECIFIC FEATURES

ENGINE BLOCK

- Twelve in V cylinder, four cycle, in-line, liquid cooled, overhead valve, marine diesels based on heavy-duty industrial engine blocks
- Balanced alloy steel and induction hardened crankshaft
- Replaceable valve seats and guides
- Strong three ring steel pistons for long-life reliability
- Gear-driven seawater pump and freshwater pump
- Drive belt powers the alternator
- Replaceable, strength-optimized wet cylinder liners for long life and low rebuild costs

FUEL SYSTEM

- Electronically controlled high-pressure fuel injection system provides individual control in each cylinder for low exhaust emissions and superior fuel economy.
- High torque at low revolutions (1800 or 1500 rpm)
- Full flow spin-on duplex elements
- Gear driven fuel transfer pump with primer
- Flexible fuel lines routed to fuel manifold on base frame for easy installation of vessel's hard piping

LUBRICATION SYSTEM

- 600-hour oil change interval when fuel and oil requirements are met
- Force feed lubricating by gear oil pump
- Full flow, spin-on oil filter
- Oil cleaner is based on impactor technology to extend oil change intervals
- Freshwater, plate-type, full flow oil cooler reduces heat and thermal breakdown of lube oil
- Large capacity oil pan
- Floating, cast aluminum, rocker cover traps valve noise with a separate closed breather system
- Lube oil drain for easy changes

AC GENERATOR

- Direct coupled, single bearing, 12 lead, reconnectable AC generator. Maintenance free brushless design
- Generators meet or exceed class society standards. All have 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 gives fast response to electrical load changes. Voltage is regulated to $\pm 0.5\%$ (one half of one percent) over the entire range from no load to full load

- Isochronous electronic governor for 0% AC frequency droop
- PMG (permanent magnet generator) to power AVR for 300% short circuit capability for "classed" vessels

AIR SYSTEM-TURBO AND AFTERCOOLER

- Dry air filter silences intake noise
- Aftercooler with marine quality, cupro-nickel, single pass element
- Turbocharged for increased output

COOLING SYSTEM

- Freshwater cooling system with three thermostats for quicker warm-ups
- Heat exchanger cooling includes: Gear driven, flexible impeller seawater pump.
- Cast aluminum expansion tank with brass filler neck. Cast-iron exhaust manifold has single pass freshwater flow for even temperature control, fast warm-up and no hot spots
- Titanium plate heat exchanger – no zinc anode protection necessary

DC ELECTRICAL SYSTEM

- Engine supplies SAE J1939 data stream through a CAN bus plug for optional engine monitor
- Negative ground, 24-volt DC system with circuit breaker, starter motor and battery charging alternator with regulator. Isolated ground optional
- Standard digital controller displays engine hours, coolant temperature, oil pressure, DC voltage, and includes start-stop controls. Increased ease of paralleling through controller
- Engine and panel are pre-wired with terminal strips
- Low oil pressure and high coolant temperature safety shutdown system included in controller

SPECIAL EQUIPMENT

- Standard hydroelastic mounts isolate 98% of hull vibration
- Welded steel base pan. Easy to mount and keep clean
- Belt guard protects operator even on sets in sound enclosures
- Sparkling white IMRON® polyurethane paint for protection and visibility
- Operator's and parts manuals

WORLD-CLASS OPTIONS

- Make your power generator system as unique as your boat. Northern Lights offers a comprehensive list of optional equipment including high power PTO's, super attenuated sound enclosures, customizable panels, and much more

CLASSIFICATION STANDARDS

- IMO Tier 2 and Tier 3 compliant
- Available certification from CCS upon request

SPECIFICATIONS AND DIMENSIONS

AC* Output NL Model	M12812H13	M12812H23
60 Hz, 1800 RPM ¹ kW (50 Hz, 1500 RPM ¹ kW)	660 kW (570 kW)	760 kW (660 kW)
Voltage regulation and PMG	±0.5% (PMG std)	±0.5% (PMG std)
Frequency droop control	0-10%	0-10%
Phase and power factor	3 phase, 0.8	3 phase, 0.8
Generator full load temperature rise - C	Max. 90°	Max. 90°
Diesel Engine Data		
Inline cylinders/Aspiration/Operating cycle	I-12/Turbo & Aftercooled/4	I-12/Turbo & Aftercooled/4
Displacement - Cu In (liter)	1479(24.24)	1479 (24.24)
Bore/Stroke - inches (mm)	5.0/6.2 (128/157)	4.9/6.5 (126/166)
HP @1800 (1500 RPM) ¹	940 (805)	1074 (940)
Max. front power take off HP @60 Hz (50 Hz) % PTO	NA	NA
Oil capacity with filter - quarts (liter)	111 (105)	111 (105)
Cooling System		
Approx. heat exchanger coolant capacity - gal (liter)	22.6 (85.5)	22.6 (85.5)
Min. seawater inlet/discharge through hull dia. -in (mm)	CF	CF
Seawater pump inlet hose ID - in (mm)	2.95 (75)	2.95 (75)
Heat rejection to jacket water - 60 Hz BTU min (50 Hz BTU min)	CF	CF
Freshwater pump capacity - 60 Hz - gpm (lpm) [50 Hz - gpm (lpm)]	CF	CF
Seawater pump capacity - 60 Hz - gpm (lpm) [50 Hz - gpm (lpm)]	129 (490)	129 (490)
Max. seawater pump suction head - in (m)	CF	CF
Consult factory for keel and skin cooler sizing	CF	CF
DC Electrical		
DC starting voltage - standard	24	24
Min battery capacity - amp hr/24V CCA	CF	CF
Starter rolling amps @ 0° C - 24VDC	CF	CF
Air		
Generator cooling air flow - 60 Hz/cfm (50 Hz/cfm)	1220 (1220)	1150 (890)
Air consumption - 60 Hz - cfm (m3/m) [50 Hz - cfm (m3/m)]	2036 (58) [1589 (45)]	2137 (60.5) [1736 (49)]
Exhaust gas volume - 60 Hz - cfm (m3/m) [50 Hz - cfm (m3/m)]	CF	CF
Exhaust gas temp - 60 Hz - F° (C°) [50 Hz - F° (C°)]	CF	CF
Approx. heat radiated to air - 60Hz - BTU/min (50Hz - BTU/min)	1992 (1992)	1992 (1992)
Max. Exhaust Back Pressure - inch H2O (mm H2O)	32 (817)	32 (817)
Fuel		
Fuel injection pump type and control	HPCR Electronic	HPCR Electronic
Min suction & return line - in (mm)	.79 (20)	.47 (12)
Max fuel flow to transfer pump suction lift - in (mm)	59 (1500)	59 (1500)
Max fuel flow to transfer pump - gph 60 Hz (50 Hz)	11095	CF
Full load fuel returned to tank - gph 60 Hz (50 Hz)	199	202
Specific fuel consumption max load - 60 Hz/g.kw.hr. (50 Hz/g.kw.hr.)	195	199
Approx. fuel rate** @60 Hz full load - gph (lph) [50 Hz full load - gph (lph)3]	43.8 (166) [36.7 (139)]	50.7 (192) [43.8 (166)]
Maximum Engine Operating Angle		
Continuous (with separate expansion tank)	CF	CF
Intermittent (2 minutes)	CF	CF
Dimensions and Weight ²	CF	CF
Set length ³ - inch (mm)	CF	CF
Set width ³ - inch (mm)	CF	CF
Set height ³ - inch (mm)	CF	CF
Approx. dry weight ³ HE cooling lbs (kg)	CF	CF
Sound enclosure ³ L x W x H - inch (mm)	CF	CF

NOTES

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

CF = consult factory representative or www.northern-lights.com for current information

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

1 Net flywheel hp rating for fully equipped engine at rated speed under SAE J816b.

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

2 Data for units with heat exchanger cooling and 3 phase generator ends. Dimensions and weight are affected by optional equipment, AC output, phase, exhaust and cooling configuration.

3 Dimensions are subject to change without notice, they are not intended for installations. Contact a factory representative for the current installation data.

Northern Lights, Inc. is ISO 9001 certified through Lloyds Register Quality Assurance

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Information and dimensions subject to change without notice.

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