

## 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

- V-12 cylinder, four cycle, 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 hydrolastic mounts isolate 98% of hull vibration
- Welded steel base frame. Easy to mount and keep clean
- Belt guard protects operator even on sets in sound enclosures
- Sparkling white two-part 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

<b>SPECIFICATIONS AND DIMENSIONS</b>	<b>M12812H13 1800 RPM, 60 Hz</b>	<b>M12812H13 1500 RPM, 50 Hz</b>	<b>M12812H23 1800 RPM, 60 Hz</b>	<b>M12812H23 1500 RPM, 50 Hz</b>
AC Output - kW	660	570	760	660
Voltage Regulation	+/- 0.5%		+/- 0.5%	
PMG	Standard		Standard	
Frequency droop	0-10%		0-10%	
Phase/Power Factor	3/0.8		3/0.8	
Generator full load temp rise	Max 90°		Max 90°	
<b>Diesel Engine Data</b>				
No. of Cylinders	V-12		V-12	
Aspiration	Turbo & Aftercooled		Turbo & Aftercooled	
Operating cycle	4		4	
Displacement - in <sup>3</sup>	1479		1479	
Flywheel power - HP	940	805	1074	940
Max. front power take off	Consult Factory		Consult Factory	
Oil capacity w/ filter - gal	Consult Factory		Consult Factory	
<b>Cooling System</b>				
Approx. HE coolant capacity - gal	22.6		22.6	
Min. seawater inlet/discharge dia. thru hull - inch	Consult Factory		Consult Factory	
Seawater pump inlet hose ID - inch	2.95		2.95	
Heat rejection to jacket water - BTU/min	24,475	20,491	28,460	24,077
Freshwater pump capacity - gpm	243	214	264	230
Seawater pump capacity - gpm	129	111	129	111
Max. seawater pump suction head - inch	Consult Factory		Consult Factory	
<b>DC Electrical</b>				
DC starting voltage - standard	24		24	
Min. battery capacity - amp hr/24V CCA	Consult Factory		Consult Factory	
Starter rolling amps @ 32°F - 24VDC	Consult Factory		Consult Factory	
<b>Air</b>				
Generator cooling air flow - CFM	1220	1220	1150	890
Air consumption - CFM	1825	935	1707	1507
Exhaust gas volume - CFM	4073	1507	4503	3882
Exhaust gas temp °F	752	752	928	898
Approx. heat radiated to air - BTU/min	2220		2220	
Max. exhaust back pressure - inch H2O	32		32	
<b>Fuel</b>				
Fuel injection pump type & control	HPCR Electronic		HPCR Electronic	
Min. suction & return line - inch	0.79		0.79	
Max. fuel transfer pump suction lift - inch	59		59	
Fuel delivery rate - gph	185		185	
Specific fuel consumption max load - lb/HP*h	0.327	0.321	0.332	0.327
Approx. full load fuel rate - gph	43.8	36.7	50.7	43.8
Full load fuel returned to tank - gph	141.2	148.3	134.3	141.2
Max. engine operating angle - continuous	12.5°		12.5°	
Max. engine operating angle - intermittent	15°		15°	
<b>Dimensions and Weight</b>				
Length - inches	147.3		150.5	
Width - inches (w/SCR)	48.7 (56)		48.7 (56)	
Height - inches (w/SCR)	57.6 (87.8)		57.6 (87.8)	
Approx. dry weight - lbs (w/SCR)	10,827 (11,773)		10,827 (11,773)	
Sound enclosure LxWxH - inches	Consult Factory		Consult Factory	