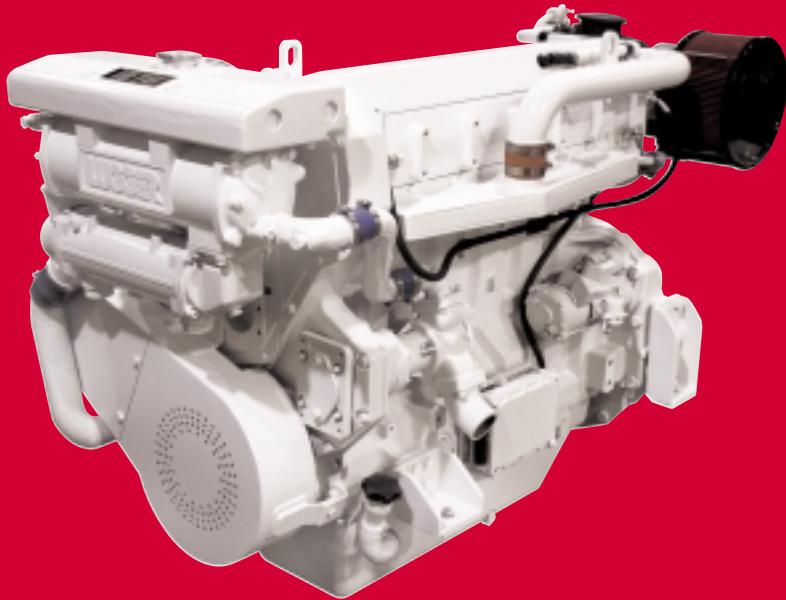


LUGGER by **NORTHERN LIGHTS**



L1276A Marine Diesel Engine

As the first in a line of electronically-controlled Marine Propulsion units, the L1276A represents an exciting new step in Lugger evolution. The L1276A is the perfect blend of technology and craftsmanship and features all the durability and simplicity that has made Lugger the quality benchmark in marine diesel propulsion.

The L1276A produces 340 to 400 horse power between 1800 and 2100 RPM. It has an impressive power-to-weight ratio, highly efficient fuel consumption and a solid displacement of 766 cid (12.5 ltr).

The L1276A is uniquely designed for today's most demanding applications and the workload of tomorrow. The electronic control unit on the L1276A provides for protection by self-diagnosis, excellent fuel economy and outstanding throttle response.

Engineered to meet EPA Tier II Emission Regulations, the L1276A features four valves per cylinder, for increased air flow. The injector is placed in the center of the combustion chamber for more efficient combustion. The electronic unit injector offers pilot injection which warms the combustion chamber on cold start to reduce smoke and noise. The two-pass, cast-iron exhaust manifold is jacket-water cooled. These innovations not only promote safety and fast warm-ups, but also eliminate hot spots. The aftercooler is also jacket-water cooled to reduce smoke during cold start-up.

Lugger's design philosophy has been its strength from the beginning and the L1276A follows in this high-quality tradition. Most hoses and leak points have been engineered away. Most service points are grouped on one side of the engine and are easily accessible. Fresh and raw water pumps are gear-driven to eliminate belts. And the jacket-water cooled turbocharger has been placed low and at the rear of the engine for ease of installation and service.

Customization has long been a strength of Lugger engines, and the L1276A is no exception. Power take-offs, second alternators and other options are easily accommodated.

Lugger has long been known for providing power without compromise to a wide array of marine applications. From trawlers to tugs; passenger vessels to sportsfishers, the L1276A is the clean, efficient and reliable power producing solution.

HIGH OUTPUT:

400 HP

MEDIUM DUTY:

375 HP

CONTINUOUS DUTY:

340 HP

SPECIAL FEATURES

Lugger engines by Northern Lights feature many components for outstanding performance and cost efficiency. Recognized world wide as the most reliable and durable marine engines, Northern Lights delivers the highest quality engines on the water.

- Two-pass jacket water cooled exhaust manifold facilitates cooler, more efficient engine room.
- Replaceable wet-type cylinder liners enable economical rebuilds and improved durability.
- Gear driven overhead camshaft with oversized bearings.
- Engine mounted electronic control unit (ECU) provide state of the art in user interface.
- CAN Bus interface allows minimal wires from engine to wheelhouse or bridge.
- Gear driven jacket water and raw water pumps.
- Freshwater cooled gear oil cooler.
- Turbo is rear mounted to back of wet manifold, to provide optimal access while keeping engine profile as low as possible.
- Two thermostats for safety and fast warm-ups.
- Keel cooled unit has pads for both SAE-A and SAE-B pumps.
- Customizable with a full-line of options and accessories, including second alternators and power take-offs.
- Modern 4 valves-per-cylinder design places electronic unit injector in the center of the combustions chamber for maximum efficiency.

NORTHERN LIGHTS

L1276A STANDARD FEATURES

When it comes to unforgiving jobs, few marine diesel engines compare to the Luger L1276A by Northern Lights. Equipped with a comprehensive list of features to increase performance and keep your operating and maintenance costs low, no detail has been overlooked. It's no wonder Luger engines by Northern Lights are recognized industry-wide as the most reliable marine propulsion available.



BASE ENGINE

The L1276A utilizes Northern Lights engineering to create a propulsion system that is capable of handling relentless loads for the long-haul. This heavy-duty, articulated engine features an exceptional horsepower-to-weight ratio that exceeds industry standards. Four valve cylinders crank in an overhead shaft for increased airflow. The replaceable wet-type cylinder liners provide enhanced durability by

directing coolant to the upper end of the lines. This innovation can decrease unit temperature 130 degrees, substantially adding to the engine's life. As with all Luggers engines, the L1276A is designed with simplicity in service and maintenance in mind.



ELECTRICAL SYSTEM

The electronically controlled system of the L1276A helps make this the most integrated Luger yet. The L1276A comes in a standard 12 volt, isolated ground system, with 24 volt available. The battery charging alternator and starter are standard equipment. Standard panel features include tachometer, hour meter, coolant temperature meter, DC voltage meter, oil pressure gauge and key switch. For

added safety, the panel features shutdown lights and alarms. The L1276A comes standard with a 20 foot wiring harness, and harness extensions are available.



LUBRICATION SYSTEM

Luger's lubrication system has proven its durability over the test of time. The L1276A uses a gear-type, high capacity oil pump with a lube oil cooler. The lube system is geared for clean, efficient fuel use with a full flow and oil bypass filtration system. This technology filters both large and small particles from the oil flow in a single unit. Because customization and simplicity of maintenance are two of Northern Lights' core values the engine comes available with left or right-handed orientated dipsticks.



COOLING SYSTEM

Whether customized for keel-cooled or heat-exchanged configuration, the L1276A provides reliable cooling in a single-piece, cast-iron exhaust manifold. Twin thermostats control temperature and ensure quick warm ups. As with all its engine systems, Northern Lights has engineered away potential problem clamps, hoses and gaskets. The gasket-less connections between the coolant and exhaust passages reduce the potential for water entering the cylinders.



FUEL SYSTEM

Like all its components, the L1276A's fuel system is electronically controlled for maximum efficiency. This streamlined approach allows for larger horsepower in a smaller package, making for significant gains in fuel economy. Throttle response is made more seamless and efficient. And the ECU provides an increased capacity to protect and diagnose engine functions.



AIR SYSTEM

Horsepower is further maximized on the L1276A thanks to Luger's superefficient aftercooler. Utilizing a liquid-cooled turbo, the L1276A features a replaceable dry air filter to allow the engine to "breathe" and increase its service-life. The optional air-sep further enhances the engine's capabilities.



ELECTRONIC CONTROL UNIT

The L1276A is uniquely designed for today's most demanding applications and the workload of tomorrow. The electronic control unit on the L1276A provides for protection by self-diagnosis, excellent fuel economy and outstanding throttle response.

OPTIONS & ACCESSORIES

PTO's, accessory drives, or multiple alternators, Northern Lights has the solutions. As the industry leader in modification and custom design capabilities, Northern Lights evaluates and customizes power systems for all types of vessels. Whether it's a ferry, tug, trawler, or high performance yacht, Northern Lights offers a variety of options so your Lugger fits your requirements. Below is a partial list of optional customization equipment. Your friendly Northern Lights professional will be glad to assist you with choices and details on your L1276A.



ACCESSORY DRIVES

Run alternators, pumps, hydraulics, or power steering off your main engine.



LUBE OIL CHANGE PUMP

High capacity manual pump with selector valve for engine and transmission.



CRANKSHAFT PULLEY

Drives accessories off of belt. Four A/B groove.



DC ELECTRICAL SYSTEMS

12-volt option and additional alternators for dual voltage.



FRONT POWER TAKE-OFFS

Depending on the RPM, take 200 HP or more off the front end.



EXHAUST SYSTEMS

Weld adapters and wet and dry exhaust elbows.



INSTRUMENT PANELS

Monitor your Lugger from any station.



FLEXIBLE MOUNTS

Set of four or six for maximum vibration dampening.



AIRSEP® CRANKCASE VENT

Keeps both your engine room and the environment clean.



ALTERNATE OIL DIPSTICK

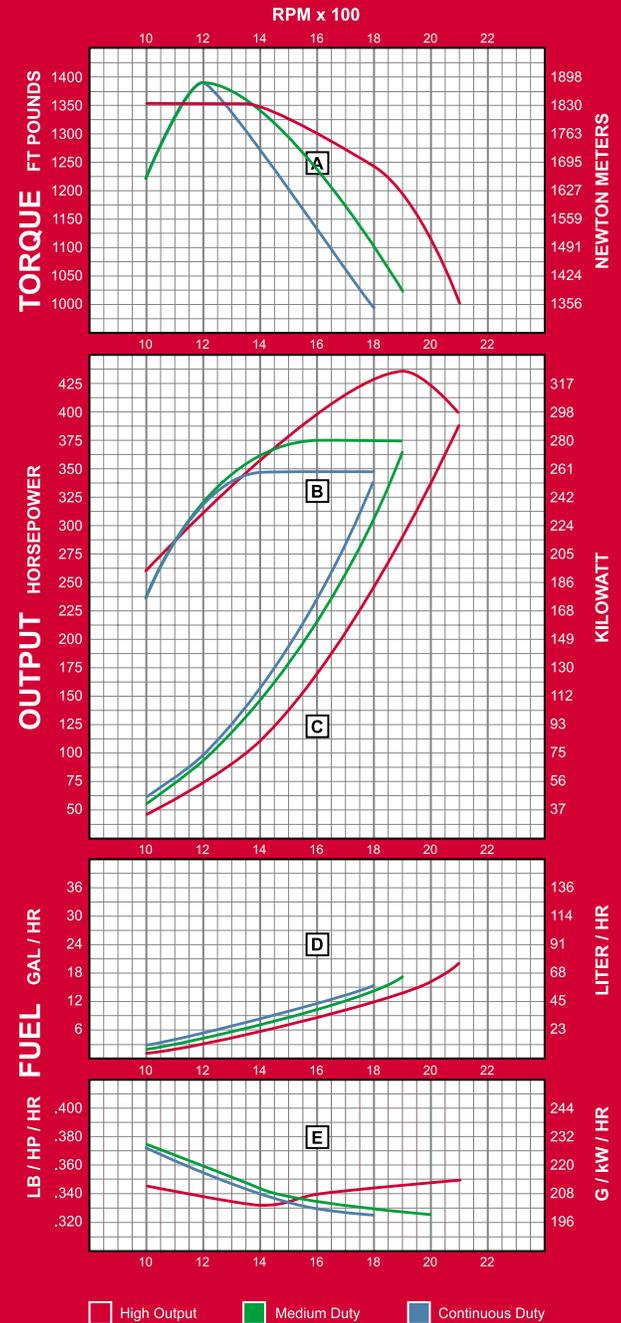
For added convenience and easy maintenance, choose the location.



MARINE GEARS

Your hull can obtain optimal sea speed with application matching.

ENGINE PERFORMANCE DATA



- Maximum torque at flywheel.
- Flywheel power.
(Prop shaft power loses 3-3.5% horsepower as it goes through the transmission/reduction gear).
- Theoretical prop power draw (3.5 exponent).
- Calculated fuel consumption based on theoretical prop shaft horsepower draw.
Your fuel consumption will vary higher or lower based on your vessel and operating conditions.
- Specific fuel consumption.

Duty Rating ¹	High Output ²	Medium Duty ²	Continuous Duty
Rated Output	400 HP (296 kW) @ 2100 rpm	375 HP (278 kW) @ 1900 rpm	340 HP (352 kW) @ 1800 rpm
Shaft Output	386 HP (286 kW) @ 2100 rpm	361 HP (268 kW) @ 1900 rpm	328 HP (243 kW) @ 1800 rpm
Maximum Torque	1353 ft lbs @ 1400 rpm	1385 ft lbs @ 1200 rpm	1385 ft lbs @ 1200 rpm

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NOTES: 1. Ratings based on SAE J-816B standards. 2. Maximum cruise RPM for High Output and Medium Duty is 1900, or 200 RPM below maximum attainable RPM – whichever is lower.

L1276A Marine Diesel Engine



HIGH OUTPUT:

400 HP

MEDIUM DUTY:

375 HP

CONTINUOUS DUTY:

340 HP



**IMO
COMPLIANT**

SAFE & CLEAN

The Luger L1276A is among the safest and cleanest engines on the water today. Approved by the International Maritime

Organization, it is a clean-burning engine that meets or exceeds rigorous IMO emissions regulations. Rest assured that your diesel engine is safe and environmentally friendly.

WARRANTY & SUPPORT

You can enjoy peace of mind knowing this marine engine is backed by an unmatched, transferable global warranty. With Northern Lights' reliable dealer network, you will receive support, parts, accessories, and service in over 40 countries. Visit our web site at www.northern-lights.com to locate the dealer nearest you.

RATINGS

High Output	400 HP @ 2100 rpm
Medium Duty	375 HP @ 1900 rpm
Continuous Duty	340 HP @ 1800 rpm

SPECIFICATIONS

Cylinders	6
Bore	5.00 in (127 mm)
Stroke	6.50 in (165 mm)
Displacement	766 cid (12.5 ltr)
Aspiration	Turbo & Aftercooled
Operating Cycle	4

FUEL CONSUMPTION

High Output	
@ 1400 RPM	6.6 gph (24.9 lph)
@ 1600 RPM	9.6 gph (36.2 lph)
@ 1800 RPM	13.3 gph (50.2 lph)
@ 2100 RPM	21.2 gph (80.4 lph)
Medium Duty	
@ 1400 RPM	7.3 gph (27.6 lph)
@ 1600 RPM	10.6 gph (40.0 lph)
@ 1800 RPM	14.8 gph (55.8 lph)
@ 1900 RPM	17.3 gph (65.4 lph)
Continuous Duty	
@ 1200 RPM	4.9 gph (18.5 lph)
@ 1400 RPM	7.4 gph (27.8 lph)
@ 1600 RPM	10.7 gph (40.5 lph)
@ 1800 RPM	14.9 gph (56.4 lph)

COOLING (General)

Fresh Water Circulating Pump Flow	
High Output	85 gpm (277 lpm)
Medium Duty	77 gpm (244 lpm)
Continuous Duty	73 gpm (232 lpm)
Heat Rejection to Jacket Water	
High Output	17,122 BTU/min
Medium Duty	13,550 BTU/min
Continuous Duty	11,940 BTU/min

COOLING (Heat Exchanger)

Raw Water Intake	3 in (75 mm)
Raw Water Discharge Diameter	3 in (75 mm)
Raw Water Pump Flow	
High Output	99.0 gpm (374 lpm)
Medium Duty	95.0 gpm (359 lpm)
Continuous Duty	92.0 gpm (348 lpm)
Raw Water Pump Max. Suction Head	39 in (1 m)
Max. Raw Water Temperature at Inlet	86° F (30° C)
Fresh Water System Capacity	

COOLING (Keel Cooled)

Water Hose Inside Diameter	3 in (75 mm)
Keel Cooler Head Diameter	2 in NPT or 3 in hose barb
Skin Cooler / Aluminum	
High Output	68 ft² (6.4 m²)
Medium Duty	57 ft² (5.4 m²)
Continuous Duty	49 ft² (4.6 m²)
Skin Cooler / Steel	
High Output	225 ft² (21.3 m²)
Medium Duty	187 ft² (17.7 m²)
Continuous Duty	162 ft² (15.3 m²)

ELECTRICAL

Voltage	24V std. (12V opt.)
Min. Battery Capacity	2 x 225 amp hrs/1150 cca
Battery Cable Size	00 up to 10 ft run
Std. Instrument Harness Length	20 ft (6 m)

AIR

Engine Air Consumption	
High Output	1025 f³/min (29.0 m³/min)
Medium Duty	800 f³/min (23.0 m³/min)
Continuous Duty	725 f³/min (20.4 m³/min)
Exhaust Gas Flow	
High Output	2525 f³/min (71.4 m³/min)
Medium Duty	2000 f³/min (56.6 m³/min)
Continuous Duty	1775 f³/min (50.5 m³/min)
Max. Exhaust Gas Temp.	
High Output	826° F (461° C)
Medium Duty	869° F (465° C)
Continuous Duty	878° F (470° C)
Max. Exhaust Back Pressure	30 in (760 mm) H₂O
Suggested Dry Exhaust I.D.	
High Output	5 in (127 mm)
Medium Duty	5 in (127 mm)
Continuous Duty	5 in (127 mm)
Suggested Wet Exhaust I.D.	
High Output	6 in (152.4 mm)
Medium Duty	6 in (152.4 mm)
Continuous Duty	6 in (152.4 mm)

FUEL & OIL

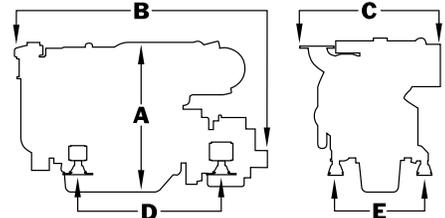
Min. Fuel Suction Line	0.5 in (12 mm)
Min. Fuel Return Line	0.375 in (10 mm)
Max. Fuel Pump Head	39 in (1 m)
Crankcase Oil Capacity	44 qts (42 ltr)

GEAR, PTO, ENGINE ANGLE

Engine Rotation (facing flywheel)	Counter-Clockwise
Std. Flywheel Housing Size (Opt. Size)	SAE 1, 14" (SAE 0, 18")
Std. Front PTO Size (Opt. Size)	SAE 4, 10" (SAE 3, 11.5")
Max. Installed Operating Angle	12° front up only

DIMENSIONAL DATA

A - Height	46.02 in (1169 mm)
B - Length	69.94 in (1776 mm)
C - Width	36.48 in (927 mm)
D - Mounting Length	43.56 in (1107 mm)
E - Mounting Width	26.00 in (635 mm)
Keel Cooled Weight - without gear	3138 lbs (1424 kg)
Heat Exchanger Weight - without gear	3255 lbs (1477 kg)



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