

### Long life for any marine use.

Whatever your marine use; workboat, fishboat or yacht, an investment in Luggier diesel technology pays high dividends of performance, reliability, long life and lower operating costs.

We begin with a specially prepared Komatsu engine block built for large construction equipment with heavy-duty features you won't find in ordinary truck diesels. Features that pay off in big savings over the engine's lifetime. On this strong foundation, we build a marine diesel that has proven itself in rugged commercial service and world cruising yachts.

### More goes in, so you can take more out.

The 6140AL2 produces 700 Horsepower at only 2100 rpm and a maximum torque of 2187 foot pounds. It takes thorough engineering and the best components to attain this level of performance without sacrificing life cycle, onboard comfort or operational economy. A complete list of features start on the next page.

Take special note of the: Individual 4 valve cylinder heads. High pressure fuel injection system. Jacket-water cooling system that thermostatically controls the temperature of oil, intake air, turbocharger, exhaust manifold and internal components yet is clean and simple with no belts and few hoses. Component materials; bronze, stainless steel, cast iron, cupro-nickel

and marine aluminum castings. Each chosen, not for its price, but on its ability to do the job and survive under continuous duty.

### High power, low weight, more boat speed.

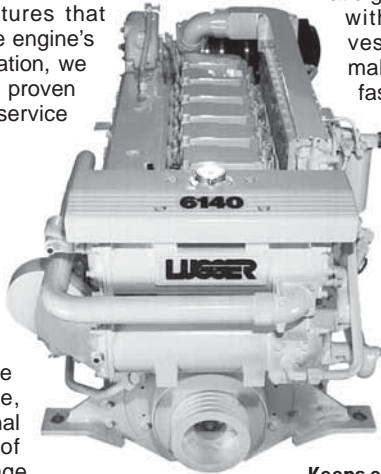
Always important to sport fishermen, boat speed has now become critical to most commercial operators. The 6140's higher power-to-weight ratio gives you the power you need without dragging down your vessel with excessive weight, making your vessel lighter and faster.

### Get specific about fuel.

Since fuel is your largest operational expense, it makes sense to reduce it as much as possible. Brake specific fuel consumption (BSFC) is a measurement of fuel an engine burns to produce one horsepower for one hour. The 6140's BSFC goes as low as 0.331 lbs/hp/hr! Compare its BSFC with any engine in its class.

### Keeps engine room in-line.

Extremely compact for its displacement and power, the 6140 fits in tight engine rooms. Unlike wall-to-wall V-8s, its in-line design with single exhaust and unit mounted expansion tank, make installation simple. Twin engine vessels are twice blessed.



HORSEPOWER	500 / 1800 rpm Continuous
	600 / 2100 rpm Medium Duty
	700 / 2100 rpm High Output

### A mechanic's dream.

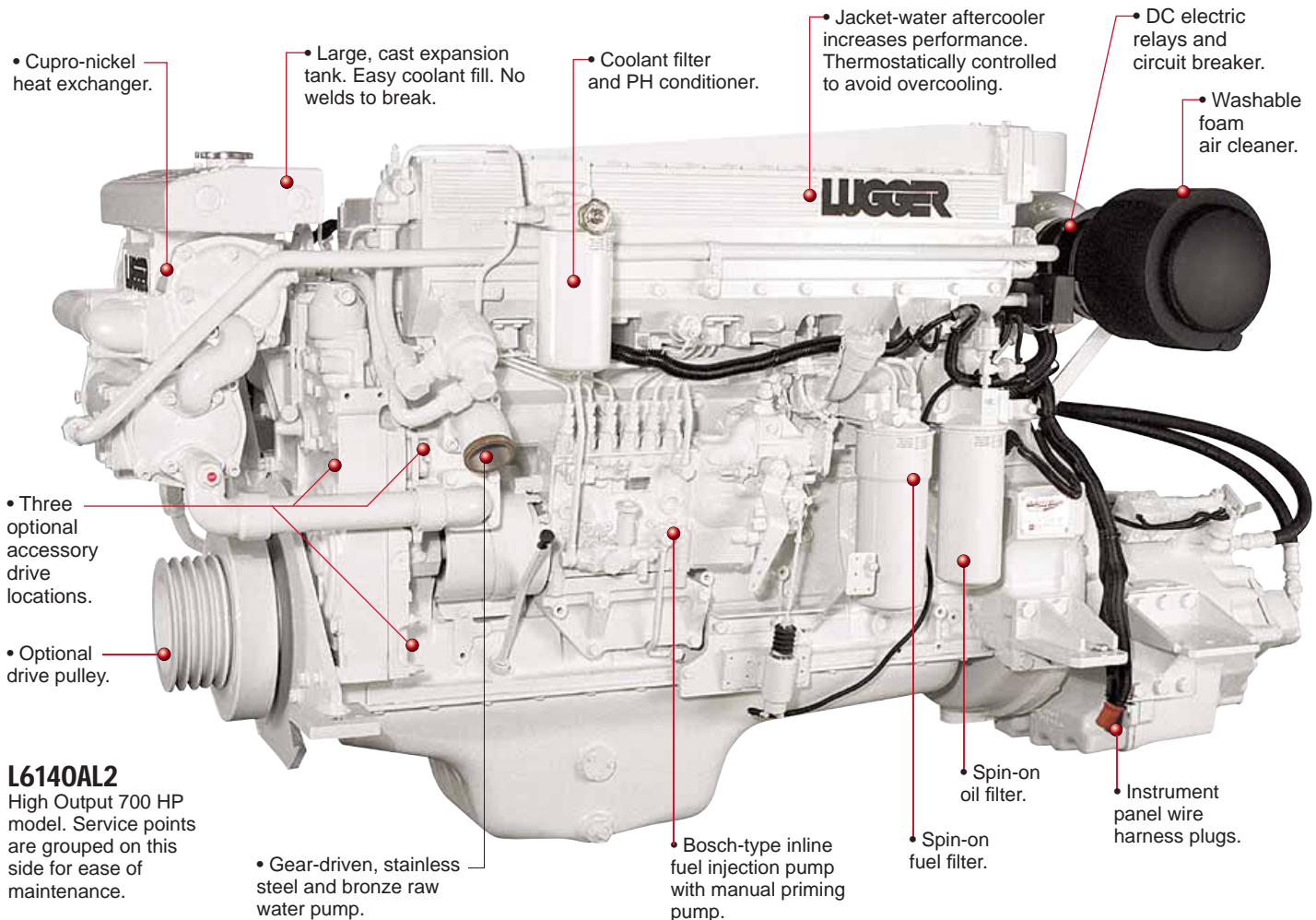
The 6140 is easy to service. All service points are on one side within easy reach. The in-line design leaves room to move around the engine. Individual heads, replaceable wet-cylinder liners, fewer hoses and belts, and clean design simplify service. Since the engine only has six cylinders, instead of eight or ten, it has fewer parts to wear out and replace. All this means less time and money spent on repairs.

### Electric clutch PTO for power out both ends.

You can take up to 1000 ft-lbs of power off the front of the 6140 with an electric clutch PTO (power take off). There is also a 20 hp hydraulic pump mount pad and another accessory drive. Use them to run hydraulics, power steering pumps, alternators, water pumps or other hydraulic auxiliary systems.

### Tested, tested, tested.

After the engine is built to your specification, it is dyno tested. Then the gear is installed and it's run again. This is just part of Luggier's quality control program. When the engine is delivered it is ready to go to work.



### L6140AL2

High Output 700 HP model. Service points are grouped on this side for ease of maintenance.

## Engine Block

- Komatsu six cylinder, heavy duty, industrial diesel engine block.
- Four cycle design for quiet, fuel efficient operation.
- Replaceable wet cylinder liners for heat dissipation, longer life and lower rebuild costs. Liner and piston surface is Tuftride treated to prevent scuffing and to lower oil consumption. Crevice seal prevents cavitation and leakage.
- Internal ribbing for smaller, lighter, stronger cylinder block.
- One-piece, forged steel crankshaft with induction hardened journals. Seven bearings for rigid crankshaft support.
- Large forged steel connecting rods.
- Pistons are nodular cast-iron rather than aluminum. See feature box on next page.
- Roller cam followers reduce friction and extend life of valve train.
- Six individual cylinder heads simplify service. One cylinder can be rebuilt without disturbing the rest. Two intake ports produce optimum swirl for



Chrome option shown.

clean combustion. Short exhaust ports provide maximum energy to turbocharger.

- Four valves per cylinder for superior breathing and centered fuel injector. Chrome plated exhaust valve stems. Valve stem oiling system. Double valve springs. Replaceable valve seats and guides. Intake valve rotators for even wear.

## Cooling System

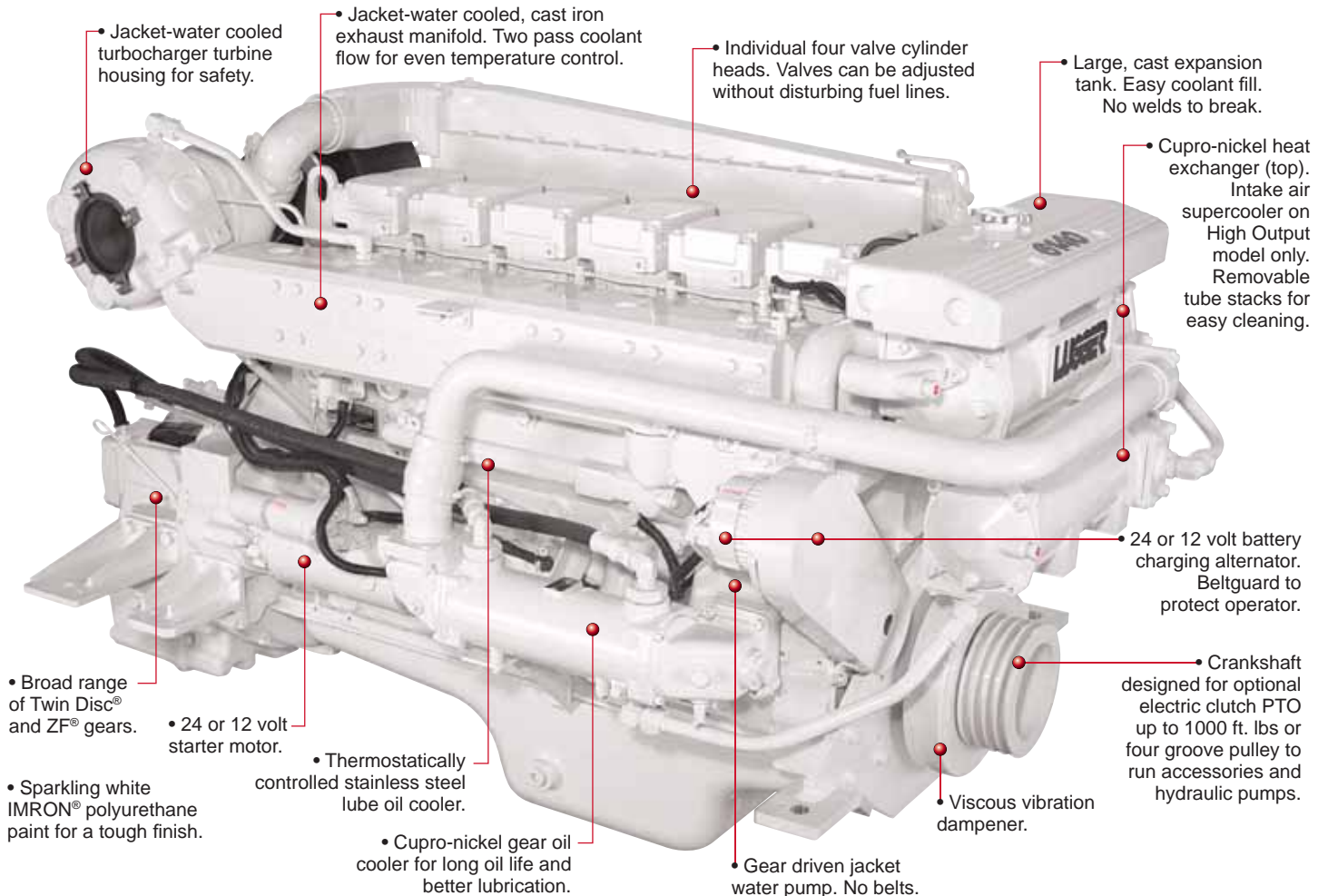
- Jacket-water heat exchanger or keel cooling configurations available.
- Centrifugal jacket water pump is gear driven. No pump drive belt to fail.
- Heat exchanger cooling has gear driven, stainless steel and bronze, flexible impeller, seawater pump. No drive belt. Heat exchanger housing has removable end caps. Cupro-nickel tube bundle can be removed for cleaning without disturbing other cooling system components. Zinc anodes help prevent electrolysis.
- Heat exchanger cooled, High Output 700 HP rated engines have a cupro-nickel "supercooler" to lower the temperature of the jacket water going to the aftercooler.



- Keel cooled High Output 700 HP engine has a centrifugal pump dedicated to the aftercooler circuit.
- One piece, cast iron exhaust manifold is jacket-water cooled. No welds to fail. No gasketed connections between water and exhaust passages which reduces the possibility of water entering the cylinders.
- Coolant conditioner and filter with spin-on element controls acidity and removes particulates from the jacket-water system.



- Gear oil cooler in jacketwater circuit normalizes gear oil temperature. This reduces condensation and extends oil life. Cooler mounts on the engine without vulnerable water hoses.
- Coolant connections are pipe with o-ring seals to eliminate hoses.
- Two thermostats for safety, quick warm ups and even temperature control.
- Keel cooled engines have remote expansion tank shown above with optional water level sensor. Heat exchanger engines have unit mounted tank.



- Jacket-water cooled turbocharger turbine housing for safety.
- Jacket-water cooled, cast iron exhaust manifold. Two pass coolant flow for even temperature control.
- Individual four valve cylinder heads. Valves can be adjusted without disturbing fuel lines.
- Large, cast expansion tank. Easy coolant fill. No welds to break.
- Cupro-nickel heat exchanger (top). Intake air supercooler on High Output model only. Removable tube stacks for easy cleaning.
- 24 or 12 volt battery charging alternator. Beltguard to protect operator.
- Crankshaft designed for optional electric clutch PTO up to 1000 ft. lbs or four groove pulley to run accessories and hydraulic pumps.
- Viscous vibration dampener.
- Gear driven jacket water pump. No belts.
- Cupro-nickel gear oil cooler for long oil life and better lubrication.
- Thermostatically controlled stainless steel lube oil cooler.
- 24 or 12 volt starter motor.
- Broad range of Twin Disc<sup>®</sup> and ZF<sup>®</sup> gears.
- Sparkling white IMRON<sup>®</sup> polyurethane paint for a tough finish.

# Make a good engine block into a great marine engine.

## Air System

- Large capacity, plate-type aftercooler uses jacket-water, not corrosive sea-water, to cool the intake air compressed by the turbocharger. This dense, cool air gives more efficient combustion and increases horsepower.
- Turbocharger is liquid cooled for safety. No need for heat blankets that can become oil soaked and combustible.
- Washable foam air filter.



## Fuel System

- High pressure direct injection for better fuel economy and fast starts.
- Mechanically controlled inline Bosch-type injection pump is gear driven and force lubricated.
- Bosch-type rebuildable injectors with 12 hole nozzles. Injectors are placed in the center of the cylinder for the most efficient fuel spray pattern and increased fuel economy.
- Laminated steel, high pressure fuel lines.
- Fuel system design is self-venting and minimizes lube oil dilution.
- Large spin-on fuel filter element.
- Positive displacement mechanical fuel transfer pump is cam driven.



## Lubrication System

- Gear type high capacity oil pump.
- Internal oil passages eliminate oil leaks.
- Stainless steel, plate-type, freshwater oil cooler with thermostat, controls oil temperature to reduce parasitic power losses and piston temperature. Cooler is built into block to eliminate hoses.
- Full flow, spin-on oil filter.

## Electrical System

- 24-volt, negative ground, marine grade electrical system includes starter and 24-volt/40-amp battery charging alternator. See options for other alternators.
- Panels have square bezel instruments:



**Main panel:** tachometer, engine hour meter, coolant temperature gauge, oil pressure gauge, DC volt meter, stop button, key switch with preheat function and gauge light rheostat. It also has warning lights and audible alarm for low oil pressure and high water temperature. **Auxiliary panel:** pyrometer, gear oil pressure and manifold pressure gauges.

- Engine and panel are prewired and connected by a 20-foot wiring harness with water-resistant plugs. Harness extensions are available.
  - Cold start preheat system for cold weather.
- ### Special Features
- White IMRON® polyurethane paint.
  - Operator's and parts manuals.

## L6140AL2 Accessories and Options

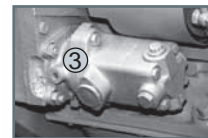
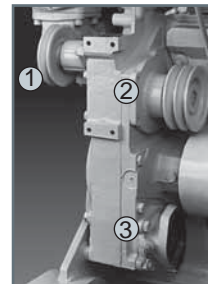
Use these components to make your Luger into an integrated power system that fits your vessel's special requirements.

- Flybridge instrument panels with wire harness plug-ins are easy to install.
- Engine mounted stop-start panel.
- 10, 20 and 40 foot harness extensions.
- High output alternators 12V: 65A, 90A, 140A. 24V: 35A, 70A, 100A, 175A. Second alternator in addition to primary. Several sizes are available.
- DC systems. 24V isolated ground. 12V isolated or standard ground.
- Wet 8" stainless steel elbows rotate 0-15° or 15-75° from vertical.
- Dry exhaust: 6" elbow. 6" x 24" stainless steel exhaust compensators. 6" x 18" stainless exhaust flex. Turbo outlet weld flange.
- Oil change pump for engine and gear.
- No. 1 standard flywheel housing. No. 0 optional.
- Racor® fuel filters.
- Spare parts kits.
- Coolant level sensor.
- Vibration isolating flexible mounts.
- Twin Disc® and ZF® marine gears.



## Accessory drives

- Crankshaft pulleys: 8" 4-A/B or A groove.
- Drive 1: up to 3.7 hp with 110 or 120 mm one groove pulley.
- Drive 2: up to 20 hp. Keel cooled only.
- Drive 3: Live pump mount pad for SAE "A", 9 tooth, hydraulic pumps to 20 hp.
- Front PTO with 12 or 24 volt electric clutch and SAE C splined, 2 or 4 bolt pump mount pad. Provides up to 1000 ft. lbs. of torque to power a hydraulic pump.



## A Luger Exclusive: Nodular Iron Pistons

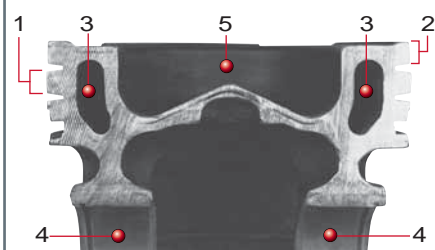
- L6140AL2 is the only engine its size class with cast nodular iron pistons for longer life, efficiency and performance.
- Equal thermal expansion of the piston and liner allows a closer fit between them. Power loss past rings is reduced.
- Keystone shaped compression ring (1) reduces carbon buildup during light load operation.
- Iron is stronger than aluminum. This allows the top compression ring to be closer to the piston crown minimizing the combustion dead zone (2) and increasing efficiency. Ring inserts are not needed.
- Iron transfers heat evenly for long life.
- Tuftride treated; holds oil, prevents scuffing.
- Oil cooling gallery (3) in piston allows higher



combustion temperatures for more power output per cubic inch, less exhaust smoke and more efficient use of fuel.

- Massive wrist pins and bearing surfaces. (4)
- Strong but not heavy.
- One piece design. It can't come apart.
- Contoured combustion chamber (5) promotes air/fuel mixture to increase efficiency.

### Cross section of Luger cast iron piston.



## L6140AL2 Specifications and Installation Data

Output rating	Continuous	Medium	High Output
FWHP (kW)	500 (370)	600 (444)	700 (519)
Maximum RPM	1800	2100	2100
Cylinders / Configuration / Cycle	All: 6 / Inline / 4		
Displacement CID (ltr)	All: 930 (15.24)		
Aspiration	All: Turbocharged - Aftercooled		
Bore x Stroke in (mm)	All: 5.51 X 6.49 (140 X 165)		

### Cooling (General)

Coolant circ pump flow - US gpm (lpm)	106 (400)	119 (450)	158 (600)
Heat rejection to jacket water - BTU-min	11,180	13,776	16,066

### Cooling (Heat Exchanger)

Jacket-water system capacity - US gal (ltr)	All: 10 (38)		
Raw water intake and discharge dia. - in (mm)	All: 3 (76)		
Raw water pump flow - gpm (lpm)	69 (265)	82 (310)	82 (310)
Raw water pump max. suction head - in (m)	All: 39 (1)		
Max. raw water temp. at inlet -°F (°C)	All: 86° (30°)		

### Cooling (Keel Cooled)

Based on 70° F seawater and minimum full boat speed of 8 knots.

Return water from keelcooler	70°-130° F.		
Water hose inside diameter - in (mm)	All: 2 7/8 (73)		
Head diameter - in	All: 2.5" NPT or 3" hose barb		
Turbo tube length - ft (m)	70 (22)	84 (26)	110 (34)
Skin cooler aluminum - sq ft (m <sup>2</sup> )	80 (7.4)	90 (8.4)	120 (11.2)
Skin cooler steel - sq ft (m <sup>2</sup> )	250 (23.2)	300 (27.9)	360 (33.5)

### Electrical

Voltage	All: 24V standard ground (see options)		
Min. battery capacity	All: 2 X 225 amp hours - 1150 CCA		
Battery cable size up to 10 ft run	All: "00"		
Standard panel harness length - ft (m)	All: 20 ft (6m) std. (10, 20, 40 ft opt.)		

### Air and Exhaust

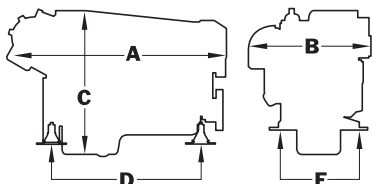
Engine air consumption - cfm (m <sup>3</sup> /min)	1045 (29.6)	1250 (35.4)	1500 (42.5)
Min. engine room vent area - sq in (m <sup>2</sup> )	280 (0.18)	335 (0.22)	400 (0.26)
Exhaust gas flow at - cfm (m <sup>3</sup> /min)..	2740 (77.6)	2900 (82.1)	3380 (95.7)
Exhaust gas temperature -°F (°C)	750° (402°)	800° (430°)	875° (472°)
Max. exhaust back pressure - in (mm) H <sub>2</sub> O	All: 30 (762)		
Suggested dry exhaust I.D. - in (mm)	6 (152)	6 (152)	8 (203)
Suggested wet exhaust I.D. - in (mm)	8 (203)	8 (203)	10 (254)

### Fuel and Oil

Minimum fuel suction line - in (mm)	All: 0.5 (12)		
Minimum fuel return line - in (mm)	All: 0.375 or 3/8" (10)		
Maximum fuel pump head - in (m)	All: 39 (1)		
Crankcase oil capacity - US gal (ltr)	10 (38)		

### Other Data

Engine rotation (facing flywheel)	All: Counter-Clockwise		
Flywheel housing size	All: Std. SAE 1, 14" (Opt. SAE 0, 18")		
Optional front PTO size SAE # - inch	All: 4 -10" or 3 -11.5"		
Maximum operating angle any direction	All: 35° for less then 2 minutes		
Maximum installed operating angle	All: 10° rear down - 0° front down		
Keel Cooled Weight - without gear	3362 lbs (1526 kg)		
Heat Exchanger Weight - without gear	3505 lbs (1591 kg)		

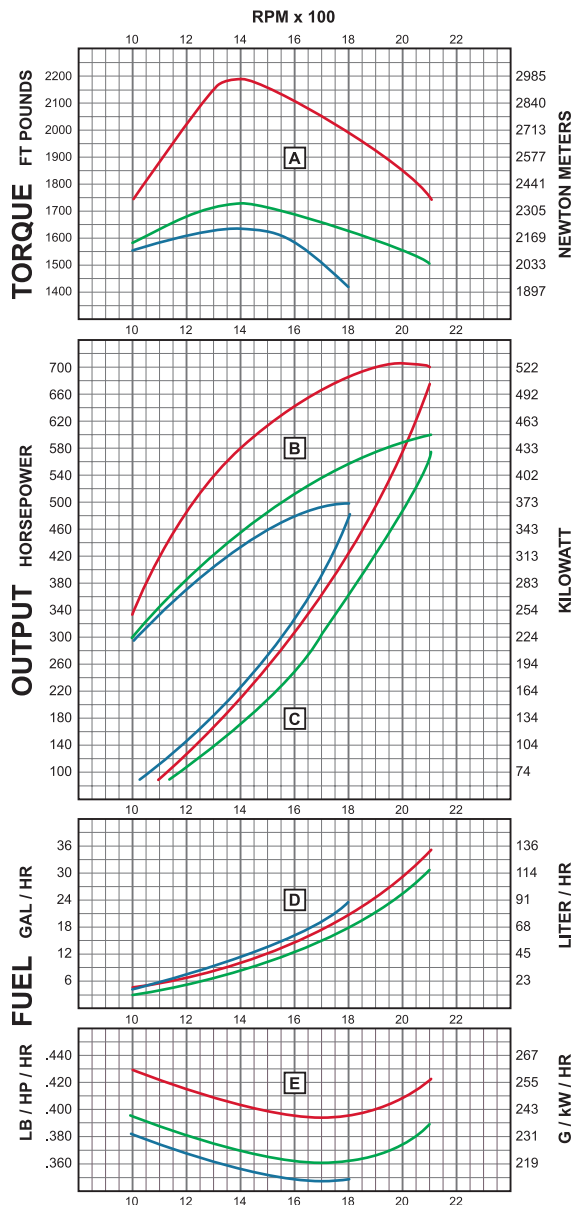


Dimensions	inch (mm)
A length	76.9 (1955)
B width	40.4 (1021)
C height	46.5 (1181)
D mounts	50.7 (1288)
E mounts	34.0 (864)

\*Do NOT use for installation. Contact factory for current installation drawings.

## L6140AL2 Performance Data

High Output Rating <sup>1</sup> FWHP / kW / @ rpm	700 / 519 / 2100
Medium Duty Rating <sup>1</sup> FWHP / kW / @ rpm	600 / 444 / 2100
Continuous Duty Rating FWHP / kW / @ rpm	500 / 370 / 1800



RATING	CONTINUOUS				MEDIUM DUTY <sup>1</sup>				HIGH OUTPUT <sup>1</sup>				
	Curve	A	B	C	D	A	B	C	D	A	B	C	D
RPM													
1000		f/lbs	fwhp	pdhp	gph	f/lbs	fwhp	pdhp	gph	f/lbs	fwhp	pdhp	gph
1200		1554	296	82	4.4	1586	302	62	3.3	1750	333	73	3.7
1400		1593	364	143	7.3	1693	386	108	5.5	2038	488	126	6.4
1600		1632	435	227	11.3	1730	461	171	8.5	2187	583	200	9.9
1800		1572	479	338	16.5	1686	513	256	12.5	2100	640	298	14.5
2000		1459	500	482	23.4	1615	553	364	17.7	1998	685	425	20.6
2100		--	--	--	--	1590	572	428	21.2	1932	699	499	24.7
		--	--	--	--	1550	590	500	25.4	1851	705	583	29.5
		--	--	--	--	1500	600	579	30.4	1750	700	675	35.4

Notes: 1. Ratings based on SAE J-816B. Maximum cruise rpm for Medium Duty and High Output is 1900 or 200 rpm below highest attainable rpm-whichever is lower. Continuous max cruise is 1800 rpm.  
 Curves: A. Maximum torque at flywheel. B. Flywheel power. Prop shaft power is 3-3.5% lower due to marine reduction gear power loss. C. Theoretical prop power draw (3.0 exponent). D. Calculated fuel consumption based on theoretical propeller power draw. Your fuel consumption will vary higher or lower depending on your vessel and operating conditions. E. Specific fuel consumption.

## Dealer

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