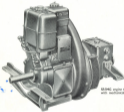


LISTER

**air cooled
marine
diesel engines**

LB

The Lister 5200/R range propulsion engines are a direct development from the popular 52 range and designed to meet the demand for a small diesel engine with a good power/weight ratio. They are four stroke, vertical, compression ignition units built as single, twin and three cylinder engines developing 6.2 h.p. per cylinder at 3000 rev/min.



5200C engine 6.2 hp, 3000 rev/min, with mechanical governor

SPECIFICATION

Castings

A casted for a part of the flywheel assembly and supporting structure working at the rated temperature, up to 150 °F (72 °C) which is used in accordance with BS20 884. The lower cylinder block, in single-cylinder, is made of high grade cast iron. An important design aspect maximum cooling area for this space is kept.

Lubrication

Oil is supplied under pressure to all crankshaft bearings, big end bearings and valve rockers from a storage tank supplied by an injection on the cylinder. These dry sump diesel engines designed lubricating oil used by user. For engine operation, run up to 80° (30°C) or 100° (200°F) oil should be used and 100° (30°C) above this temperature.

Fuel Injection Equipment :

Individual C.I.V. fuel pumps operated by the camshaft through fuel injectors. Multi-hole fuel injectors, and Fuel filter. The system is self-venting. An engine mounted fuel tank is supplied as standard on the single and twin cylinder engines only.

Motoring :

All engines can hand starting. The single cylinder engine is started down on the half speed shaft. The two and three cylinder engines have remote hand starting gear. 12 volt electric motoring equipment is also available as an optional extra on all sizes.

Reverse :

Clutchless backing forward. The half speed shaft rotates clockwise when backing aft.

Reverse Gear :

(a) Manually operated Lister cylinder reverse gear incorporating a valve type ahead/astern and reverse brake band. Cast clutch and brake band are fitted

with friction linings. 2:1 ratio reduction gear when required is fitted directly onto the Reverse Gear.

(b) Hydraulic reverse is available. The ahead/astern and reverse gears are similar to the standard gearbox. A pump supplies oil to two cross cylinders, one to unlatch the ahead clutch and the other to engage the reverse brake band. Oil pressure is used only in the "ahead" and "reverse" positions. Backing "ahead" working the oil pressure is released and power flow in the gearbox is zero.

In the unlikely event of a leak occurring in the hydraulic system, the gear "falls into" and the clutch remains engaged in the "ahead" position, enabling the craft to make good way. The normal dimensions of the standard and hydraulic operated gearboxes are the same.

Propeller :

Right hand propeller for ahead drive; left hand propeller for engines with reduction gear.



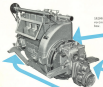
Piston



Cylinder block



OPTIONAL EQUIPMENT



1800cc engine, 75.5 h.p., 200
rev/min, with hydraulic pump gear-
box.



Continual throttle gear and control lever for
gear with electric starting comprising—light
control gear, engine control, starter button,
engine speed and stop control levers with 1/2
inch.



Fuel lift pump—supplied when gravity feed to the
fuel pump is not practicable, operated directly
from the control and mounted on the throttle
gear.

A selection of the optional equipment listed in our price list is shown on these pages. A wide selection is available which allows an installation suitable for all needs.

The illustrations are typical and subject to alteration without notice.



12 volt electric starting equipment with battery-
less design from 1000 (small boats), 10000 (motor
cruiser boats), 15000 (powering tugboats) and
20000 (Maximum charging rate 50 amps).



Hydraulic work pumps from
10000psi to 30000psi with air
independently operated gears.

Standard propellers manufactured from
aluminium bronze comprising 2 1/2" dia,
3" dia, 3 1/2" diameter (standard) lengths and
3 diam propellers. Alternatively the 200
series only can be supplied.



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STANDARD EQUIPMENT

Cooling air intake duct (1 and 2 cylinder engines).
 Engine mounted fuel tank (1000, 1) gal. capacity.
 Oil tank (1 gal. capacity).
 Flexible exhaust pipe (length 84" - length).
 Fuel filter.
 Instruction Book and Parts List.
 Oil pressure gauge (optional).
 Mount front steering (1 and 2 cylinder engines).

Fuel warning fuel system.
 Set of Scales.
 Trawl winches.
 Towing blocks.
 Trawl stop.
 Trawl coupling.
 Winch (with General Code optional).
 Winch stop (optional system).

OPTIONAL FITTINGS

(which must be specified on original engine order)

Cooling air intake duct on engine (single cylinder engines only).
 Coupled Manometer (1 and 2 cylinder engines).
 Coupled Manometer, with control lever and 1/2 in. flexible tube (1 and 2 cylinder engines).
 Gauge (1) with 1/2 in. oil capillary only.
 Electric starting equipment (12 volt) complete... see below.
 Flexible coupling only.
 Flexible mounting including flexible coupling fuel line pump.

Gauge, Manometer, with Direct Drive (1) reduction.
 Gauge, Manometer, Direct Drive or (1) reduction.
 Gear box on flywheel only.
 Lub. oil pressure gauge (single cylinder).
 Lub. oil pressure arrangement on flywheel only or 1" hose required for 1 and 2 cyl. engines.
 Mount front steering (single cylinder engine).
 Single lever control (hydraulic lever position only).

OPTIONAL ACCESSORIES

Adapters for flexible hose (single cylinder engine only).
 Anemometer, supplied loose.
 Battery, 12 volt, 12 amp/hr. (at least one).
 Combined anemometer gauge (also pressure) and control lever for use with electric starting.
 Cooling air intake duct with wing only assembly.
 Electric starting (12v type).
 Exhaust air fitting.

Flexible hose for air intake duct, per ft. (maximum 1/2 in. length, single cylinder engine only).
 Fuel pipe with capillary, 1/2 in. length.
 Fuel control system (optional items).
 Fuel tank, 10 gal. (optional items).
 Lock-off pipe.
 Lub. oil warning drain pump (optional item).
 Oil tank on flywheel.
 Single lever control and stop control (optional item) with 1/2 in. length standard.

TECHNICAL DATA

Engine Type	MINOR	MIDDLE	MAJOR
No. of Cylinders	1	2	3
Maximum H.P. at 2000 rev/min.	4.8	18	19.8
Maximum gross H.P. at 2000 rev/min.	5.1	18.2	20.2
B.M.E.P. at 1000 rev/min.	104 lb./sq. in. (7.1 kg./sq. cm.)		
Bore x Stroke	5 1/2 x 5 1/2 in. 140 x 140 mm.		
Full Consumption at full load 5.0 h.p./hr.	0-0		
kg./hr. (1/2 hr.)	0.004		
Manifold (approx.)	2	1	1
Substanting oil consumption	Less than 1% of the full load fuel consumption		

*Full run in engine.

PRINCIPAL DIMENSIONS



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	
14.5000 in	315	275	205	285	55	225	55	55	55	55	55	225	225	55	55
mm	812	701	521	729	140	571	140	140	140	140	140	571	571	140	140
16.5000 in	375	325	255	335	65	285	65	65	65	65	65	325	325	65	65
mm	954	831	651	854	165	729	165	165	165	165	165	831	831	165	165
18.5000 in	435	385	315	395	75	345	75	75	75	75	75	385	385	75	75
mm	1104	981	801	1004	191	883	191	191	191	191	191	981	981	191	191

Mounting Dimensions:

14.5000	—	7"	203
16.5000	—	7 1/2"	191
18.5000	—	8 1/2"	216

Minimum Flange for Cooling Water:

14.5000	—	5 1/2"	140
16.5000	—	6 1/2"	165
18.5000	—	7 1/2"	191

Flange for Mount Water:

14.5000	—	7 1/2"	191
16.5000	—	8 1/2"	216
18.5000	—	9 1/2"	241

Mounting Gear Flange: 7" dia. (178 mm.)

APPROXIMATE SHIPPING SPECIFICATION

Engine	Net Weight		Gross Weight		Volume	
	kg.	lb.	kg.	lb.	cu.ft.	cu.in.
14.5000	—	285	325	715	15	425
16.5000	—	385	445	975	21	575
18.5000	—	485	545	1205	26	725
14.5000	—	325	365	805	18	495
16.5000	—	425	485	1065	23	635
18.5000	—	525	585	1285	28	775

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INSTALLATION



■ Cooling air inlet ■ Cooling air outlet

An cooled engine allows troublesome water pumps.

Even an cooled engine are designed to run with air inlet temperatures up to 120°F (50°C) when used in accordance with SOLAS. It is essential that adequate ventilation be provided both for combustion air and for cooling.

Air is circulated around the cylinder and heads by a fan on the flywheel, and the discharge is directed to an outlet duct on the port side of the engine to which flexible working can be readily attached.

It is essential that:

- (1) There is no restriction to the free passage of air to and from the engine. For this reason, control air pressure

- (2) Cooling air flow not restricted.

The information given in this catalogue is intended for the assistance of users and is based upon models obtained from the design and test data of manufacturers. The catalogue does not guarantee that the information can be obtained through direct operation. Always read the operating manual and specifications are subject to change without notice and of course, variations of these models.

In open boats where a dip hose is fitted over the engine it is necessary to have openings as indicated in sketch "B". Where the engine is installed below decks, it is necessary to provide working air supply as well as the discharge. A typical arrangement is shown in sketch "A". There may be variations in size different units.

These detailed information and advice on cooling and installation is available on request.



LISTER BLACKSTONE MARINE LIMITED

GURULET

Telephone: Bentley 240

GLOUCESTERSHIRE

Telex: 4364

ENGLAND

Telephone and Cable: From Dorset



Great Marine Lister Engines
Available at Marine Centers
throughout the
United States
Call for a Catalog
No. 101 0001-0010

LISTER



The auxiliary type engine can also be started by hand in an emergency.

Many alternative starting systems are described. Hydraulic starting can also be used in certain cases. Other starting is available on the two and three cylinder only.

Ready operation in the vicinity of all industrial engines, by law, is water injected exhaust systems, and as provision is made for a water pump to be driven and mounted on the engine, to circulate the water through a water cooled exhaust manifold and then led to the exhaust pipe for discharge overboard.

All Lister engines readily reach efficient operating temperatures, irrespective of load conditions, and the Lister engine will operate in ambient temperatures as high as 125°F, when in 50°C range.

All Lister engines do require a large volume of air, and must be properly installed. This quantity of air passing through the engine compartment presents efficient ventilation, so long as the heated cooling air is not allowed to recirculate. Our auxiliary engines are readily available to give advice on installation, and a technical department is able to fit the best propeller and reduction gear ratio to fit a particular craft. It also a part of the Lister service.

These power engines are renowned for their reliability and economy, and are in service throughout the world in all types of craft. Motor Boats, Pilot launches,

Fishing Boats and Yachts.

Approved by Coast, British Yachts, Florida Yachts, R.I.N.A., and other Classification Societies. These High/Nil torque can be found in the Motors of many of the world's largest boats.

Circle 10 on Reader Service

LISTER

AIR-COOLED PROPULSION ENGINES HBM TWO CYLINDER 34 H.P. - THREE CYLINDER 36 H.P. AT 2000 REV/MIN

DESCRIPTION

Auxiliary, four-stroke marine diesel propulsion engines developing 12 h.p. per cylinder at 2000 rev/min, available in two and three cylinder models. Ratings are in accordance with ISO 694/1982.

LUBRICATION

Wet sump system. A rotary pump situated below the oil level in the sump supplies oil under pressure to all crankshaft bearings, the gear axis, valve rocker gear and cylinder gear. Heavy duty diesel engine detergent following oil is ISO 100/152 (S-1), ISO-1-100/152 must be used in the following grades —

- for ambient temperatures up to 32°C (90°F—104°F),
- 32°F to 57°F—104°F—120°F,
- Above 57°C (135°F—148°F).

A full flow filter is supplied as standard equipment. Where the ambient air temperature exceeds 32°C (90°F) an oil cooler must be ordered for the three cylinder engine.

FUEL SYSTEM

The fuel injectors (piston) are fitted with cooling fins on the outside top face, and the design of the combustion chamber in the piston crown ensures easy starting by heat and complete combustion.

COOLING

It is vitally important that free circulation of fresh cooling air is available. Each engine is supplied with a cooling air intake filter (vertical) which standard flow which minimizes air to easily admit to cool the installation.

STARTING

Overhead hand starting is supplied as standard. 12 volt electric starting equipment is available if ordered.

FUEL LIFT PUMP

Can be supplied where gravity feed to the fuel pump is not practicable. Flange operated directly from the crankshaft and operated on the crankshaft cam.

WATER PUMP

Is available as an option where a continuous supply of cooling water is required such as in a raw water system. A belt driven, direct operated pump of the screw-drive can be supplied as a bilge pump.



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POWER CURVELINE CHARTS



TECHNICAL DATA

Engine Size	MAXIMUM	MINIMUM
RPM at 100% BHP	2000	1500
Maximum Torque at 100% Efficiency	1500	1200
100% at 100% Efficiency	100% (100% Efficiency)	
Max. Air Intake at 100%	100% (100% Efficiency)	
Maximum Torque at 100% Efficiency	100% (100% Efficiency)	100% (100% Efficiency)

STANDARD EQUIPMENT

Engine complete with Reverse Gear, Variable Speed Control, Wet Sump Lubrication System including Lubricating Oil Filter, Lubricating Oil Pressure Gauge, Air Filter, Relief Valve Spring, Spring Drive Pump, Cooling Air Exhaust Case, Air Temperature Thermometer, Inversion Valve, Set of Spacers, Inversion Bolt and Nut 1/2".

OPTIONAL FITTINGS

1:1 or 1:1.5 Reduction Gear, Reverse Rotation, Exhaust Muffler, Oil Seal, Electric Starting Equipment, Fuelometer, Lubricating Oil Gauge, Fuel Lift Pump, Water Pump, High Pump, Governor and Inversion Spring.

ADAPTION—check before when looking up with 1/2" propeller 1/2" propeller with reduction gear.



FIGURE 1000000

Engine	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1000000	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1000000	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Engine complete with 1/2" propeller
 * Inversion Gear 1/2" diameter

Engine complete with 1/2" propeller
 * Inversion Gear 1/2" diameter

APPROXIMATE WEIGHTS (Standard Engine)

Engine	Net Weight		Gross Weight		Torque	
	lb	kg	lb	kg	ft-lb	kg-m
1000000	100	45	100	45	100	1.0
1000000	100	45	100	45	100	1.0

LISTER

AIR-COOLED PROPULSION ENGINES HAM FOUR CYLINDER 48 H.P. — SIX CYLINDER 72 H.P. AT 3000 REV/MIN

DESCRIPTION

Air-cooled four-cylinder marine diesel propulsion engines developing 48 h.p. per cylinder at 3000 rev/min. Ratings are in accordance with ISO 1484/1994.

LUBRICATION

Wet Sump System. A rotary pump situated below the oil level in the sump supplies oil under pressure through a full flow filter and cooler to all mainshaft and camshaft bearings, the gear train and valve train gear. All other parts are lubricated by splash. Heavy duty diesel engine bearings (bearing oil or ISO 100, 151 (D.O.), HL-L (D.M.) may be used in the following grades: —

For ambient temperatures up to 30°C (90°C) — SAE 100,
32 SAE 150 — 150 SAE 150,
Above 30°C (90°C) — SAE 150.

FUEL SYSTEM

A fuel lift pump delivers the fuel through a filter and C.A.V. multi-element fuel pump to the injection.

COOLING

Single stage axial flow engine-cooling fans L are on the 4800 and two on the 48000 are built direct into the engine giving an intake supply of air for cooling the engine with inlet temperatures up to 120°C (250°F). It is equally important that a free circulation of fresh cooling air is arranged.

Each engine is supplied with a cooling air intake filter from which accessories can be easily added to suit the installation.

STARTING

12 volt electric starting equipment is standard (battery rated).

ROFATION—Anti-clockwise looking forward. L/R propeller for starboard drive, R/L propeller with reduction gear. The shaft extension at the forward end can be used as a power take-off.

REVERSE GEAR—Electrically operated designed for heavy duty diesel operation. Pressure lubricated three engine. Mount drive through multiple gear shaft. Arrangement fixed shafts back to back.



LISTER

SPACE REQUIREMENT CHART



- Minimum Room Size for Installation of 1000 BTU/hr
- Minimum Room Size for Installation of 10000 BTU/hr
- Minimum Room Size for Installation of 100000 BTU/hr
- Minimum Room Size for Installation of 100000 BTU/hr

TECHNICAL DATA

Engine Type	Minimum	Maximum
1000 BTU/hr (30 kW)	4	10
10000 BTU/hr (300 kW)	10	100
100000 BTU/hr (3000 kW)	Minimum 100 (Maximum 1000)	
1000000 BTU/hr (30000 kW)	4 x 8, 1000 x 1000	
Available for Installation in Rooms	100	100

STANDARD EQUIPMENT

Remote Heat, Oil Burner, Air Cleaner, Exhaust Muffler, Guard, Fuel Filter, Fuel Oil Pump, Lubricating Oil Filter, Intake/Air Filter, High Speed Bearings, Intermediate Speed Compressor with Venturi-Assisted Air Temperature Gauge, Lubricating Oil Pressure Gauge, Governor and Governor Drive Pulley, Belt, 12 Volt Electric Starting Equipment, Fuel Solenoid, Sump Pump, Air-Exhaust Valve, Starting Handle, Portable Speed Control, Tank and Inverter Bank.

OPTIONAL EXTRAS

24 or 36 Reduction Gear, Water Pump, Water-Cooled Exhaust Muffler, Battery, Exhaust Silencer, Exhaust Muffler (counter-rotating), Governor, Inverter Spring.



MINIMUM DIMENSIONS

	4	6	8	10	12	15	20	25	30	40	50	60	75	100
Weight (kg)	100	150	200	250	300	350	450	550	650	800	1000	1200	1500	2000
Weight (lb)	220	330	440	550	660	770	990	1210	1430	1760	2200	2640	3300	4400

Minimum installation height:
 1.500 m (5 ft) for 1000 BTU/hr
 2.000 m (6 ft 6 in) for 10000 BTU/hr

Minimum installation height:
 2.000 m (6 ft 6 in) for 10000 BTU/hr
 2.500 m (8 ft 2 in) for 100000 BTU/hr

APPROXIMATE WEIGHTS (WEIGHTS IN POUNDS) (Standard engine)

	Dry Weight		Dry Weight		Total	
	kg	lb	kg	lb	kg	lb
1000 BTU/hr	100	220	100	220	200	440
10000 BTU/hr	100	220	100	220	200	440



July 1968 Listers 10000
Marine and Auxiliary Engines
10000
10000
10000
10000
10000

LISTER

OTHER LISTER MARINE DIESEL ENGINES

The following alternative engines are also available for both propulsion and auxiliary duties.

- 5,1200** Air-cooled, Single and six-cylinder 20M engines develop 15 h.p. per cylinder at 1800 rev./min., supplied only as auxiliary. Single and three-cylinder 15 engines develop 4 h.p. per cylinder at 1800 rev./min. The four-cylinder 15 engines develop 20 h.p. at 1800 rev./min. Hand starting standard. 12 volt electric starting is optional extra. On the four-cylinder engine electric starting only is supplied as standard and gears to available only from the manufacturer. Wet sump lubrication standard.
- 500** Air-cooled, Single and three-cylinder 20M engines develop 4 h.p. per cylinder at 1800 rev./min. Hand starting standard. 12 volt electric starting is optional extra. Wet sump lubrication standard.
- 12000** Water-cooled, Twin and three-cylinder engines developing 12 h.p. per cylinder at 1200 rev./min. Hand starting standard. 12 volt electric starting is optional extra. Heat Exchanger cooling standard or fuel-cooling. Wet sump lubrication standard.
- 1200** Water-cooled, Three-cylinder engine developing 14 h.p. per cylinder at 1200 rev./min. Hand starting standard, compressed air or 12 volt electric starting available as an optional extra. Dry sump lubrication standard.
- 1200** Water-cooled, Four and six-cylinder engines developing 15 h.p. per cylinder at 1200 rev./min. Compressed air or 24 volt electric starting available. Dry sump lubrication standard.

LISTER

PROPULSION

Water-cooled (Closed circuit fresh water-cooling standard). Both in direct, four, six and eight-cylinder sizes, all with common parts available for propellers and auxiliary drives. Series 87M runs at 400 rev./min., developing 40 h.p. per cylinder. Series 88M runs at 750 rev./min., and develops 10½ h.p. per cylinder. Series 89M runs at 900 rev./min., developing 47½ h.p. per cylinder. The four, six and eight-cylinder models are available with various valve patterns, timing and develop 40 h.p. per cylinder at 400 rev./min., 85 h.p. at 750 rev./min. and 100 h.p. per cylinder at 900 rev./min. Running by compressed air. Dry sump lubrication standard.

* Four bank * engines of twelve and sixteen-cylinders are available using the same components, giving power outputs up to 1200 h.p. per unit for both propulsion and auxiliary drives.

TRIM

Water-cooled. Three-cylinder horizontally opposed green diesel injection trim-boost engine with three stages developing 40/100 h.p. at 1800/2000 rev./min. Wet sump lubrication. 12 volt electric starting standard. 24 volt on order. Oil operated reverse gear for propulsion models with optional rates of 1.5:1, 2:1, and 3.1:1. Wet sump lubrication standard.

LISTER BLACKSTONE PROPULSION & AUXILIARY DIESEL ENGINES

Every Lister-Blackstone engine is designed to exceed the requirements of Lloyd's and other Classification Societies and can be built to comply when specified.

All engines are oil-fueled Diesels. The water-cooled models are available with Reducer, Heat Exchanger or Heat Exchanger, Reducer gear sets available on all propulsion engines. Auxiliary engines are supplied either as four-pulse motors, or as complete line, driving Generators, Pumps, and/or Compressors.

We will be glad to send comparative literature on any of the above when so requested, and to assist in helping it fulfil details of the design and requirements as forwarded with your enquiry.

The information given in this brochure is intended as a guide only. The maximum output of any unit is based upon specific operating conditions, and is not guaranteed. The maximum output and operating conditions of any unit will be detailed elsewhere in our literature. Please refer to the literature for details of construction, optional accessories and information on other models in the Lister-Blackstone range of Diesel and Gas Engines.

LISTER BLACKSTONE MARINE LIMITED

DURLEY, GLoucestershire, ENGLAND