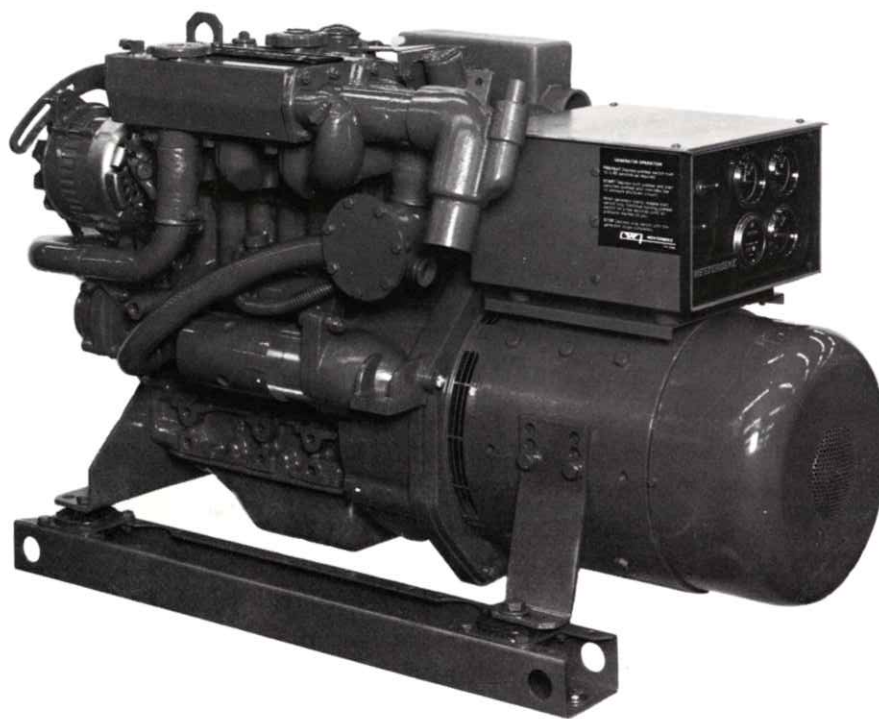


What to look for in marine diesel generators



J. H. WESTERBEKE CORP.

AVON INDUSTRIAL PARK, AVON, MASS. 02322 · (617) 588-7700
CABLE: WESTCORP, AVON · TELEX: 92-4444

WHAT TO LOOK FOR IN A GENERATOR

CUBIC INCH DISPLACEMENT AND HORSEPOWER

Used to help measure the ability of the generator set to carry its rated load. Allowing for inefficiencies in the generator, a conservative rating is 2 HP for each KW of output. An oversized engine is not necessarily better for a generator set which spends a great deal of its life running lightly loaded. Unlike a propulsion engine which experiences varying speeds, a generator set operates at a constant 1800 RPM which compounds the carbon build-up in a generator set engine, especially if it is oversized, or run lightly loaded for long periods. In this case, more is not necessarily better.

R.P.M.

Generators must run at a constant speed to provide 60 cycles AC output. A 4-pole generator operates at 1800 RPM, while a 2-pole generator operates at 3600 RPM. The preferred operating speed is 1800 RPM because of the lower noise level, smoother operation, greater reliability, and longer engine life.

FRESH WATER COOLING

Allows the engine to operate at a higher and more constant temperature. This is especially important during periods of light load operation which are prevalent in generator set use. All marine diesel generator sets should be fresh water cooled, either by the heat exchanger or keel cooler method.

KW RATING

KW means kilowatt - one kilowatt equals 1,000 watts. For single phase generators, the following formulas apply:

$$\begin{aligned}\text{Volts} \times \text{Amps} &= \text{Watts} \\ \text{Watts} \div \text{Volts} &= \text{Amperes}\end{aligned}$$

NUMBER OF CYLINDERS

The more cylinders, the smoother and quieter the engine will operate.

ELECTRIC FUEL PUMP

This type of fuel pump is more effective than an engine-driven pump, especially during cranking periods. It is necessary on an engine with a self-bleeding fuel system.

SELF-BLEEDING

Eliminates the need for hand priming or bleeding when the engine is run out of fuel. It provides almost immediate starting after the fuel supply has been restored. Any person who has had to hand-bleed a hot engine at sea, will immediately recognize this great advantage.

STARTING MOTOR

These are common on most generator sets, but on some units the DC exciter portion of the AC generator is motorized to crank the engine. This exciter cranking is less effective than a starting motor, needs larger batteries to operate it, requires more maintenance, and is expensive to repair.

BATTERY CHARGING

Most competitors' marine generator sets provide only a small amount of battery charging capacity for replacing starting current and to maintain control circuits. Westerbeke units provide high battery charging capabilities which allow other ships' batteries to be maintained when the generator set is being operated. This is definite "plus" when anchored out for long periods when the main engines are operated.

CHARGING INDICATOR

By using a volt meter instead of an amp meter in the D.C. charging system, we can show the condition of the battery and remote mount the control panel without running heavy wiring. Also, although there may be amperage going into a battery, unless the in/out voltage is in excess of the battery voltage, the battery will not be charged. Therefore the volt meter more accurately indicates the charging status of the system.

HOUR METER

This is essential for properly maintaining the generator set. Generator sets run mostly unsupervised and in most cases estimates of generator set operating hours are extremely inaccurate. Proper maintenance at the proper intervals is essential to dependability and long life of the generator set.

COOLANT TEMPERATURE GAUGE

Although Westerbeke units are provided with a high coolant temperature cut-off, the coolant temperature gauge can provide an early indication of cooling system problems. This allows corrective steps to be taken before engine overheating occurs and the unit shuts down.

ENGINE CONTROL SYSTEM

Westerbeke's control system is extremely simple and uses only switches. Competition uses solid state controls or relays which tend to be troublesome in a marine environment and are complicated to troubleshoot and repair.

VOLTAGE REGULATION

Inherently regulated generators are simple in design, have few components, and are dependable and easily maintained. While voltage regulation is not as good as other types of generators, it is within the range of all household appliances and as good as the electricity provided by the power companies. Inherently regulated generators do use brushes, but these operate on smooth slip rings with an expected brush life of 3,000+ hours.

Externally regulated generators give better voltage regulation and have no brushes; however, they are more complicated and use solid state equipment which tends to be troublesome when subjected to a marine environment and the high ambient temperatures in engine rooms.

The solid state controls used in the Westerbeke generators are less complicated than our competitors', and are designed for high ambients and rough service.

RECONNECTABLE FOUR-LEAD

This allows the generator to be connected either as a 2-wire, 120 V output, or as a 3-wire 120/240V output. This option is not offered on our 4.4KW unit, because it would add to the length of the unit. 99.9% of the 4.4KW sales are for installation on small boats which use only a 2-wire system. A separate 3-wire 4.4KW model is available if needed. Larger units, 30KW and up, are always used with 3-wire systems.

REMOTE PANEL PROVISIONS

The control panel on the Westerbeke can be remoted, using the plug-in extension harnesses which are available in 15 ft. increments. This allows the panel with the instruments to be placed away from the unit itself where they can be more easily monitored. Competitors who offer this feature have no extension harnesses available, and the installer must make his own which requires a much greater number of wires than are required on the Westerbeke units.

REMOTE START/STOP

This is a small control containing only the preheat, start/stop switches with a "unit run" pilot light. One or several of these remote controls can be mounted throughout the boat for operation of the generator sets. All of our competitors offer this also and use only two switches for the same purpose instead of three. This means that our control takes up more room and uses seven control wires instead of the four used by the competitors. However, Westerbeke's control system contains no relays or solid state devices. The control uses switches only which provide high reliability, require no maintenance, and make troubleshooting and repair extremely easy.

AUTOMATIC CAPABILITIES

This refers to automatic demand starting. This is a control which senses when an electrical device turns on, automatically starts the generator and connects the load to it once the unit is up to speed and voltage. The control reverses the process when there is no longer a requirement for electrical power.

This type of control has proved to be extremely troublesome and creates dead batteries and starter problems because of frequent starts and short running cycles. Also, many a quiet anchorage has been disturbed late at night when some owner has forgotten to put his unit on "manual" before bunking in. Generally, no one uses these demand controls any more and to provide its presumed features only complicates the generator control system.

SOUND ENCLOSURES

These provide extremely good sound deadening and are used mostly on units that 15KW and larger. These are installed in the bigger and more expensive boats. 4.4KW and 7.7KW units are very quiet without the Sound Guard and space sometimes is a problem in the smaller boats using these sizes. We recommend no Sound Guard on these smaller units if they are installed in a well-insulated engine room or compartment. These units without Sound Guards are quieter than our competitors' units with sound enclosures.

Unlike our competitors, the Westerbeke Sound Guard offers easy access to the engine generator from all sides and can be quickly removed for major servicing. Sound insulation is mechanically held in place, has its edges sealed, and is foil-faced for cleaning.

DIMENSIONS

Sizes and weights of machinery are always critical in any boat. In most cases, Westerbeke is the same or smaller than our competition.

PLEASE SEE PAGES 4 + 5 FOR A DIRECT COMPARISON OF DIESEL GENERATORS.



J. H. WESTERBEKE CORP.

AVON INDUSTRIAL PARK, AVON, MASS. 02322 · (617) 588-7700
CABLE: WESTCORP, AVON · TELEX: 92-4444

DIRECT COMPETITIVE COMPARISON OF MARINE GENERATOR SETS

DESCRIPTIONS	ONAN	WESTERBEKE	ONAN	WESTERBEKE	ONAN	WESTERBEKE	ONAN	WESTERBEKE
KW RATING	3.0KW	4.4KW ✓	7.5KW	7.7KW ✓	12.0KW	11.0KW	12.5KW ✓	
NO. OF CYLINDERS	1	2 ✓	2	3 ✓	4	4	4	
HORSEPOWER	7 H.P.	8.6 H.P. ✓	13.9 H.P.	14 H.P.	30.4 H.P.	18.4 H.P.	23 H.P.	
CU. INCH DISP.	30	37 ✓	70	60	120	80	91	
R.P.M.	1800	1800	1800	1800	1800	1800	1800	
F.W. COOLING	OPT.	STD. ✓	OPT.	STD. ✓	OPT.	STD. ✓	STD. ✓	
ELECTRIC FUEL PUMP	NO	STD. ✓	NO	STD. ✓	NO	STD. ✓	STD. ✓	
SELF-BLEEDING	NO	STD. ✓	NO	STD. ✓	NO	STD. ✓	STD. ✓	
STARTING MOTOR	NO	STD. ✓	STD.	STD.	STD.	STD.	STD.	
BATTERY CHARGING	2-5 AMPS.	50 AMPS. ✓	2-5 AMPS.	50 AMPS. ✓	2-5 AMPS	50 AMPS.	50 AMPS ✓	
CHARGE INDICATOR	AMTR.	VOLTMTR. ✓	AMTR.	VOLTMTR. ✓	AMTR.	VOLTMTR.	VOLTMTR ✓	
HOUR METER	OPT.	STD. ✓	OPT.	STD. ✓	OPT.	STD. ✓	STD. ✓	
COOLANT TEMP. GAUGE	NO	STD. ✓	NO	STD. ✓	NO	STD. ✓	STD. ✓	
ENGINE CONTROL SYST.	RELAY	MECH. ✓	RELAY	MECH. ✓	RELAY	MECH.	MECH. ✓	
VOLTAGE REGULATION	INHER.	INHER. ✓	ELEC.	INHER. ✓	ELEC.	INHER.	INHER. ✓	
RECONNECTABLE-4 LEAD	OPT	NO	STD.	STD.	STD.	STD.	STD.	
REMOTE PANEL PROV.	NO	STD. ✓	NO	STD.	NO	STD.	STD. ✓	
REMOTE START/STOP	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	
AUTOMATIC CAPABILITIES	STD.	NO	STD.	NO	STD.	NO	NO	
SOUND ENCLOSURE	NO	OPT. ✓	OPT.	OPT.	OPT.	OPT.	OPT.	
LENGTH	30.56"	32"	33.38"	37.5"	45.31"	43.75"	45.25"	
WIDTH	20.62"	19.5"	19.06"	19.5"	20.31"	21.5"	21.78"	
HEIGHT	26.81"	23"	26.75"	23.5"	26.69"	24.9"	26.25"	
WEIGHT	395 LB.	432 LB.	520 LB.	520 LB.	765 LB.	660 LB.	715 LB.	

OPT. = OPTIONAL
 ELEC. = ELECTRONIC/SOLID STATE
 INHER. = INHERENT
 MECH. = MECHANICAL
 STD. = STANDARD
 AMTR. = AMMETER
 VOLTMTR. = VOLTMETER

✓ WESTERBEKE POINTS OF DIFFERENCE

SPECIFICATIONS OF WESTERBEKE GENERATOR SETS

SPECIFICATIONS

	4.4	7.7	11.0	12.5	15.0	20.0	26.0	30.0	32.0	45.0
KW RATING	4.4	7.7	11.0	12.5	15.0	20.0	26.0	30.0	32.0	45.0
NO. OF CYLINDERS	2	3	4	4	4	4	4	4	6	6
HORSEPOWER	8.6 HP	14 HP	18.4 HP	23 HP	30 HP	40 HP	50 HP	59 HP	68 HP	90 HP
CU. IN. DISP.	37	60	80	91	134.8	154	182	230.2	247.2	345.3
R.P.M.	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
F.W. COOLING	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.
ELECTRIC FUEL PUMP	STD.	STD.	STD.	STD.	NO	NO	NO	NO	NO	NO
SELF-BLEEDING	STD.	STD.	STD.	STD.	NO	NO	NO	NO	NO	NO
STARTING MOTOR	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.
BATTERY CHARGING	50 AMPS.	50 AMPS.	50 AMPS.	50 AMPS.	55 AMPS.	55 AMPS.	55 AMPS.	55 AMPS.	55 AMPS.	55 AMPS.
CHARGE INDICATOR	VOLTMTR.	VOLTMTR.	VOLTMTR.	VOLTMTR.	VOLTMTR.	VOLTMTR.	VOLTMTR.	VOLTMTR.	VOLTMTR.	VOLTMTR.
HOUR METER	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.
COOLANT TEMP. GAUGE	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.
ENGINE CONTROL SYST.	MECH.	MECH.	MECH.	MECH.	MECH.	MECH.	MECH.	MECH.	MECH.	MECH.
VOLTAGE REGULATION	INHER.	INHER.	INHER.	INHER.	ELEC.	ELEC.	ELEC.	ELEC.	ELEC.	ELEC.
RECONNECTABLE-4 LEAD	NO	STD.	STD.	STD.	STD.	STD.	STD.	NO	NO	NO
REMOTE PANEL PROV.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.
REMOTE START/STOP	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.
AUTOMATIC CAPABILITIES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
SOUND ENCLOSURE	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.
LENGTH	32"	37.5"	43.75"	45.25"	49.5"	50.69"	49.59"	55.75"	62.5"	67.38"
WIDTH	19.5"	19.5"	21.5"	21.78"	23"	22.59"	23.12"	22.37"	22.21"	24.5"
HEIGHT	23"	23.5"	24.9"	26.25"	26.56"	27.91"	28.59"	36.63"	31.0"	36.63"
WEIGHT	432 LB.	520 LB.	660 LB.	715 LB.	875 LB.	910 LB.	955 LB.	1285 LB.	1300 LB.	1965 LB.

OPT. = OPTIONAL
 ELEC. = ELECTRONIC/SOLID STATE
 INHER. = INHERENT
 MECH. = MECHANICAL
 STD. = STANDARD
 VOLTMTR. = VOLTMETER



J. H. WESTERBEKE CORP.

AVON INDUSTRIAL PARK, AVON, MASS. 02222-10171
 CABLE: WESTCORP, AVON TELEK 92 44