

ZENORO ESSENTIAL MARINE GENERATOR

4045AFM85 Marine Generator Set

99 ekW / 60 Hz / 1800 rpm

Model: ZBJDMG0996HESE

DIMENSIONS
1754 x 840 x 1046 mm



WEIGHT
dry weight 1225 kg



SOUND REDUCTION
yacht standard



VIBRATIONS
yacht standard



POWER
99 ekW / 220 V / 60 Hz



EMISSION
IMO exempted



COLOURS
RAL 9010



ENCLOSURE
modular design

GENERATOR RATINGS PRIME (KVA AT POWER FACTOR 0.8)

Voltage	Phase	Amps	ekW / kVA
220	3	352	99 / 123.75

JOHN DEERE ENGINE SPECIFICATION

INLINE 4 CYLINDERS, 4 CYCLE-DIESEL

Engine type	4045AFM85
Prime Power	110 kWm
Emission	IMO exempted
Firing order	1-3-4-2
Displacement	4.5 L (275 cu. in.)
Rated engine speed	1800 rpm
Bore	106 mm (4.17 in.)
Stroke	127 mm (5.00 in.)
Aspiration	Turbocharged-aftercooled
Combustion	Direct injection
Governor	Electronic
Cooling system	Heat exchanged
Refill capacity	
- Cooling system	14 L (3.7 US GAL)
- Lube oil system	15 L (3.96 US GAL)
Coolant change interval	Up to six years or 6000 hours of operation with John Deere COOL-GARD™ II Premix, COOL-GARD II PG Premix and COOL-GARD II Concentrate.
Oil change interval	375 hours with John Deere "Plus-50 Oils" & use of Low Sulphur fuel <1000 ppm.
Rotation (from flywheel end)	Counter clockwise
Engine crankcase ventilation system	Closed to eliminate engine room contamination

ENGINE ELECTRICAL

Battery voltage	24 volt isolated ground
Battery charging	50 amps
Battery recommendation	625 CCA

COOLING SYSTEM

Seawater pump	Gear driven impeller type
Max. seawater pump suction lift	3.0 m (10 ft)
Seawater pump flow	197 L/m (52 US GA L/m)
Sea water temp maximum engine in	32 °C

FUEL

Fuel recommended	EN 590 or ASTM D975
Fuel injection system	HPCR
Recommended fuel line inside diameter	8 mm*
*Max. fuel inlet restriction	20 kPa
Total fuel flow	152 L/hr (40 US GAL/hr)
Maximum fuel height above transfer pump	2.4 m
Fuel pre-filter	Yard supply min. 30 micron, recom. 10 micron

OPERATION REQUIREMENTS

AIR REQUIREMENTS

Engine combustion air	8.5 m³/min
Max air intake restriction (dirty)	6.25 kPa
Cooling air flow required for generator	tbd
Exhaust flow	19.5 m³/min
Exhaust temperature max.	434 °C
Ambient temperature max.	45 °C
Maximum exhaust backpressure	7.5 kPa

FUEL CONSUMPTION

Diesel fuel consumption at % load		
100%	28.9 L/hr	(7.6 US GAL/hr)
75%	24.4 L/hr	(5.9 US GAL/hr)
50%	16.1 L/hr	(4.3 US GAL/hr)
25%	9.1 L/hr	(2.4 US GAL/hr)

All above values at rated speed and power at standard conditions per SAE J1995 unless otherwise noted.

ZENORO STANDARD FEATURES

- Engine and alternator marine white painted
- Single service side (oil filter, fuel filter & air filter)
- Steel frame to support engine & alternator
- Approved vibration isolators
- Wet elbow through enclosure 4 inch connection
- Junction box & controller box in one piece, central service connector
- Emergency button
- ABS, RINA Marine practice

STANDARD ENGINE SAFETY SYSTEM

- Horn for alarm warnings
- Engine oil pressure low warning & shutdown
- Engine coolant temperature high warning & shutdown
- Loss of coolant warning
- Over speed shutdown
- Wet exhaust elbow temperature high warning
- Belt guard

STANDARD POSITION OF INTERCONNECTIONS, SEE DRAWING

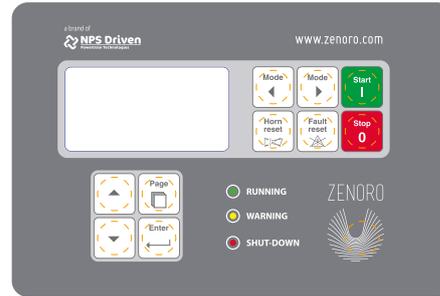
- Fuel connections, fuel inlet/outlet
- Seawater inlet pipe hose connection
- Seawater outlet via wet elbow
- Oil drain
- Opening for AC-load leads
- Opening for battery cables

STANDARD QUALITY SOUND ENCLOSURE

- Sound enclosure with aluminium extrusion profiles
- Standard design, easy built up & breakdown.
- Zincor service panels, easy removable
- Sound insulation material, top layer oil and vapour proof, high temperature resistant.
- White RAL 9010, powder coating, Zenoro standard.
- Separate generator compartment & engine compartment to force radiated heat through enclosure.

ENGINE CONTROLLER PLATFORM FEATURES

- Marine practice engine controller for complete engine protection and control
- Engine settings available for droop load sharing either isochronous load sharing



DISPLAY / USER INTERFACE

- Graphic 128 × 64 pixels display
- English language
- Buttons with mechanical feedback

ENGINE CONTROL & PARAMETERS

- Vital engine parameters are visualized on display and/or Modbus RS 232
- Remote start & stop

COMMUNICATION INTERFACES

- Engine speed up/down voltage or current controlled
- Generator running
- Common warning
- Common shutdown

HISTORY LOGS

- Real time clock and event history log

IMPORTANT

- Engine controller only, no generator protection, no voltage & power & current measurements.
- No paralleling functions. Yard responsibility

ALTERNATOR SPECIFICATION

Electrical output	99 ekW / 123.75 kVA
Power factor	0.8
Voltage regulator	D350 digital automatic voltage regulator (AVR) Regulation accuracy (+/- 0.25%)
Type of regulation	AREP
Temp Rise	115 °C
Insulation Class	H
Bearing	Single roller bearing
Coupling	Flexible disc
IP	23
Space heater*	125 W / 230 - 240 VAC

Droopkit for parallel operations

*To be connected & switched by yard

ALTERNATOR FEATURES

- Compact & low weight
- Standard 12 wire re-connectable winding, 3-phase brushless, 2/3 pitch windings
- High efficiency
- Short circuit current up to 300% of rated current for 10 seconds
- Permanently greased bearings up to 40,000 h

GENERAL

- Plastic wrap packing
- Manuals supplied in digital format with instruction, operating and maintenance manual (in PDF format only)
- Factory quality report

OPTIONAL

- Double walled fuel lines & leak detection
- Dry exhaust
- Seawater flow sensor
- Outside muffler & water separator
- Classification societies as ABS & RINA, others on request
- Modbus converter for RS232 to RS 485 protocol for long distance
- Breaker integrated in design of alternator. Non-motorised, manual breaker function intended for protection of generator back end only
- SOLAS Package AFM85 (mounted in enclosure)
Racor Low-Pressure Fuel System, 24-volt Metal Fuel System Kit, Metal WIF Sensor
- Duplex switchable fuel filter AFM85 (requires installation SOLAS package AFM85)
- Water in fuel sensor
- Priming fuel pump 24 V (loose supply)
- Wet exhaust elbow opposite direction

REFERENCE CONDITIONS

- Rated speed and power
- Gross power guaranteed within +/-5% at SAE J1995 and ISO3046
- J1995 and ISO 1346 conditions:
 - 25 °C (77 °F) air inlet temperature
 - 99 kPa (29.31 in. Hg) barometric pressure
 - 40 °C (104 °F) fuel inlet temperature
 - 0.853 fuel specific gravity @ 15 °C (60 °F)

Ambient air temperature is defined to be the temperature of ambient air close to operating vessel that is not influenced at any manner by operating characteristics of the vessel (free field temperature).

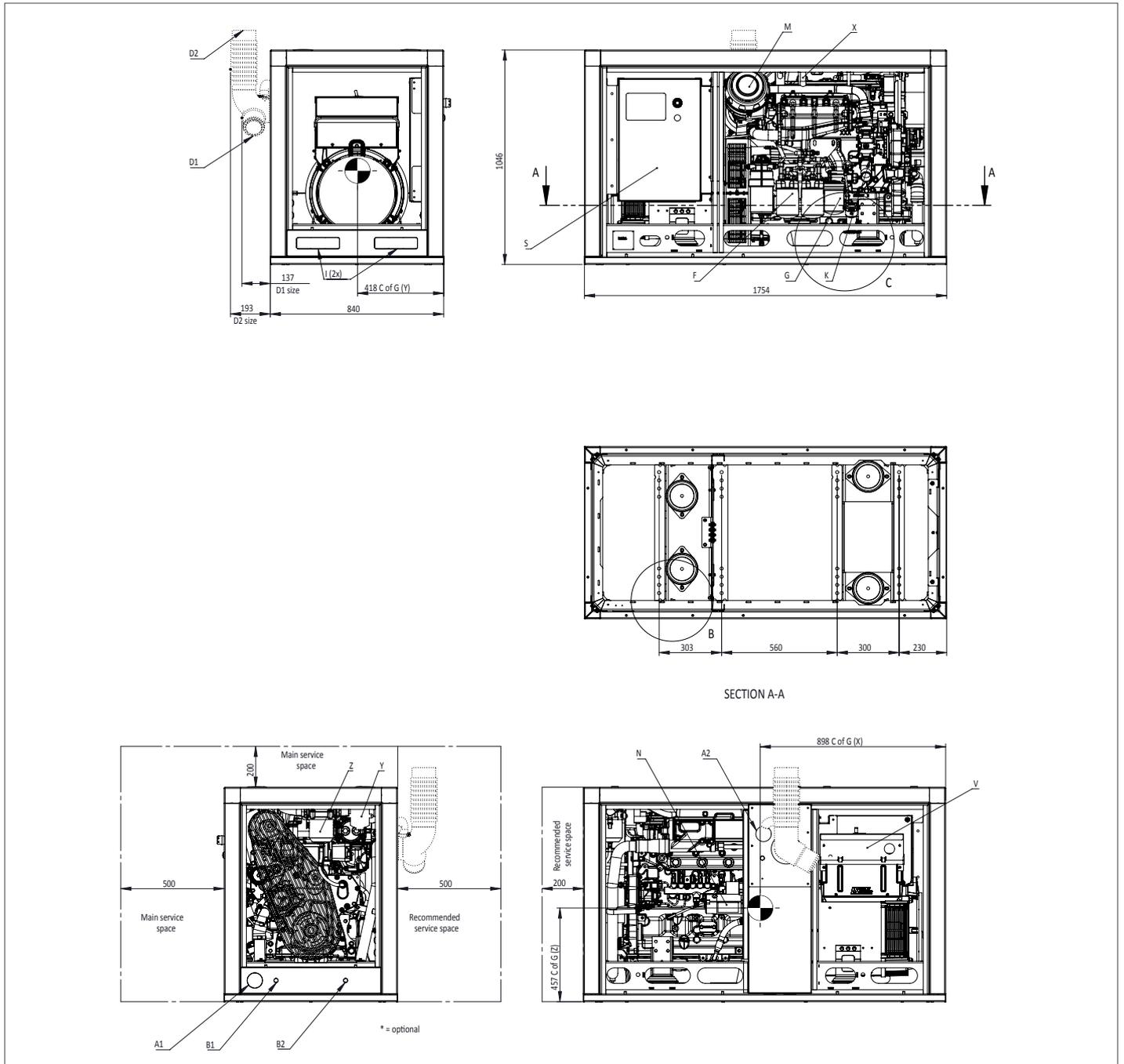
All values from current available data. Subject to manufacturing and measurement variations and to change without notice. Actual performance is subject to application and operation conditions outside of Zenoro control.

RATINGS

Marine generator: the marine generator engine rating is the power available under normal varying electrical load factors for an unlimited number of hours per year in commercial applications.

This rating incorporates a 10% overload capability, and conforms to ISO 8528 prime power. Average load over a 24-hour period shall not exceed 67% of the prime rating, of which no more than 2 hours are between 100% and 110% of the prime rating.

The marine generator rating is restricted to generator applications only. The criteria used to establish marine generator application ratings are the same used to establish industrial prime power generator application ratings.



NOTE: Generator sets to be installed above waterline. If not consult factory. Minimum space required to remove air panels 150 mm, non air panels 80 mm. This drawing is provided for reference only and is not intended for installation purpose. Contact us either your local distributor for detailed information.

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**ESSENTIAL
 MARINE GENERATORS**