

ZENORO PREMIUM MARINE GENERATOR

DI16090M Marine Generator Set

513 ekW / 50 Hz 1500 rpm

DIMENSIONS	
3750 x 1600 x 2009 mm	
WEIGHT	
dry weight 5200 kg	
SOUND REDUCTION	
equal or > than 20 dba at 1 meter free field conditions	
VIBRATIONS	
low	



	POWER 513 ekW 400 V 50 Hz
	EMISSION IMO 2
	COLOURS RAL 9010 or custom
	ENCLOSURE aluminium modular design

GENERATOR RATINGS PRIME (KVA AT POWER FACTOR 0,8)

Voltage	Phase	Amps	ekW/KVA
400/230	3	913	513/641,25

SCANIA ENGINE SPECIFICATION

V8, 4 CYCLE-DIESEL

Engine type	DI16 074M
Prime Power	535 kWm
Emission	IMO / Tier 2 compliant
Firing order	1-5-4-2-6-3-7-8
Displacement	16.4 L (1001 cu. in.)
Rated engine speed	1500
Bore	130 mm (5.12 in.)
Stroke	154 mm (6.1 in.)
Aspiration	Turbocharged & aftercooled
Injection system	Unit injection, PDE
Governor	Electronic
Cooling system	Heat exchanged
Fuel filter	Duplex fuel oil filter switchable
Rotation (from flywheel end)	Counter clockwise
Engine crankcase ventilation system	Closed to eliminate engine room contamination

ENGINE ELECTRICAL

Battery voltage	24 volt isolated ground
Starter	7 kW
Battery charging	100 Amps
Battery recommendation	Min. 24V@32 °F (0 °C) 600 amps

COOLING SYSTEM

Seawater pump	Gear driven impeller type
Max. seawater pump suction lift	3,0 m (10 ft)
Seawater pump flow	215 L/min (57 GAL/min)
Sea water temp maximum engine in	32 °C
Ambient temperature max.	
- Intake from Engine room	45 °C
- Intake with inlet duct	60 °C

FUEL

Fuel recommended	EN 590 (DMA or DMX)
Recommended fuel line inside diameter	
Length < 6 m	12 mm*
Total fuel flow	240 L/hr (63,4 US GAL/hr)
Max. suction head of feed pump	1,0 m
Max. fuel level above feed pump	3,5 m
Fuel pre-filter yard supply	Min. 30 Micron

OPERATION REQUIREMENTS

AIR REQUIREMENTS

Engine combustion air	31 m ³ /min
Cooling air flow required for	84 m ³ /min
generator set at 50 °C	
Exhaust flow	85 m ³ /min
Exhaust temperature max	452°C
Maximum Exhaust backpressure	5,0 kPA
without power loss	
Maximum Exhaust backpressure	10,0 kPA

FUEL CONSUMPTION*

Diesel fuel consumption at % engine load	
100%	122,9 l/hr
75%	91,2 l hr
50%	61,5 l hr

*All above values at rated speed and power.
Specific fuel gravity 0,853@ 60 F (15 C)

ZENORO STANDARD FEATURES

- Engine and alternator marine white painted
- Steel frame to support engine & alternator
- Approved vibration isolators
- Dry exhaust + exhaust compensator with exhaust insulation
- Junction box & controller box in one piece, central service connector
- Emergency button
- ABS, BV classification, other classification societies by option

STANDARD ENGINE SAFETY SYSTEM

- Engine oil pressure low warning & shutdown
- Engine coolant temperature high warning & shutdown
- Engine coolant level low warning
- Over speed shutdown
- Belt guard

STANDARD POSITION OF INTERCONNECTIONS

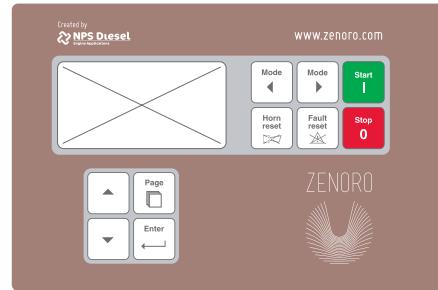
- Fuel connections, fuel inlet/outlet
- Seawater inlet pipe hose connection + rubber seals
- Seawater outlet via pipe hose connection + rubber seals
- Oil drain
- Opening for AC-load leads
- Opening for battery cables

STANDARD HIGH QUALITY HEAVY DUTY SOUND ENCLOSURE

- High quality modular sound enclosure with aluminium extrusion profiles
- RAL 9010 standard color, 2 layers Powder coating, 70% gloss, minimum total layer thickness 120 micron measured according ISO 2808
- Easily built up & dismantle
- Heavy duty service panels, easy removable
- Non-combustible insulation material according IMO (oil & vapour proof)
- Separate generator & engine compartment

ENGINE CONTROLLER PLATFORM FEATURES

- Certified Marine Engine Controller with redundant microprocessor based control for complete engine protection and control
- Engine settings available for Droop load sharing either isochronous load sharing



DISPLAY / USER INTERFACE

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

COMMUNICATION INTERFACES

- Engine speed up/down voltage or current controlled
- Generator ready to start (pot. free contact)
- Engine running (pot. free contact)
- Common warning (pot. free contact)
- Common shutdown (pot. free contact)

ENGINE CONTROL & PARAMETERS

- Black out start, 3 start attempts
- Remote start & stop
- Engine parameters are visualized on display and/or Modbus RS 232 as:
 - Engine running hours
 - Engine status
 - Oil pressure
 - Coolant temperature
 - Rpm
 - Engine load in %
 - Battery voltage
 - Fuel consumption

HISTORY LOGS

- Event based history
- Reason, date and time + all important values are stored
- Battery backed-up RTC

IMPORTANT

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

ALTERNATOR SPECIFICATION

Manufacturer	Leroy Somer
Type	LSAM 49.3 M6
Electrical output	513 ekW / 641.25 KVA
Power factor	0,8
Voltage regulator	AVR +/- 0.25%
Type of regulation	AVR D350
Temp Rise	115°C
Insulation Class	H
Bearing	Single roller bearing
Coupling	Flexible disc
IP	23
Space heater*	250 W 230/240VAC

*To be connected & switched by yard

GENERAL

- Plastic wrap packing
- Manuals supplied with instruction, Operating and Maintenance Manual (in PDF format only)
- Factory Quality Report

OPTIONAL

- Engine coolant level low warning by Murphy gauge
- Engine oil temperature sensor warning & display
- Engine oil drain with hose & hand pump
- Seawater flow sensor
- Modbus converter for RS 485 protocol
- Optional Internet/Ethernet connection for remote monitoring
- Electric cable penetrations with Roxtec
- Outside muffler & water separator
- Other Classification societies as Lloyds, GL-DNV, RINA
- Unit certificates for certain notations
- Manuals in hard copy format
- Stainless steel under plate for single elastic mounting
- Double elastics mounting: with heavy underframe minimum 40% of weight above, first & second layer of Rubber Design isolators

OPTIONAL MARINE CERTIFIED CONTROLLER PACKAGE

Marine certified generator controller package:

- Synchronizing, load sharing and breaker control
- Measurement and display of Volts, amps, PF, KW, KVA, kVAr, kWh, kVAh
- No synchronizing to shore
- No power management
- Circuit breaker (motorized)
- Other details on request

OPTIONAL EXHAUST AFTER TREATMENT SYSTEM

IMO Tier 3 compliant emissions with Zero NOx System
 Zero Soot System, electric, fuel burner either passive available

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).

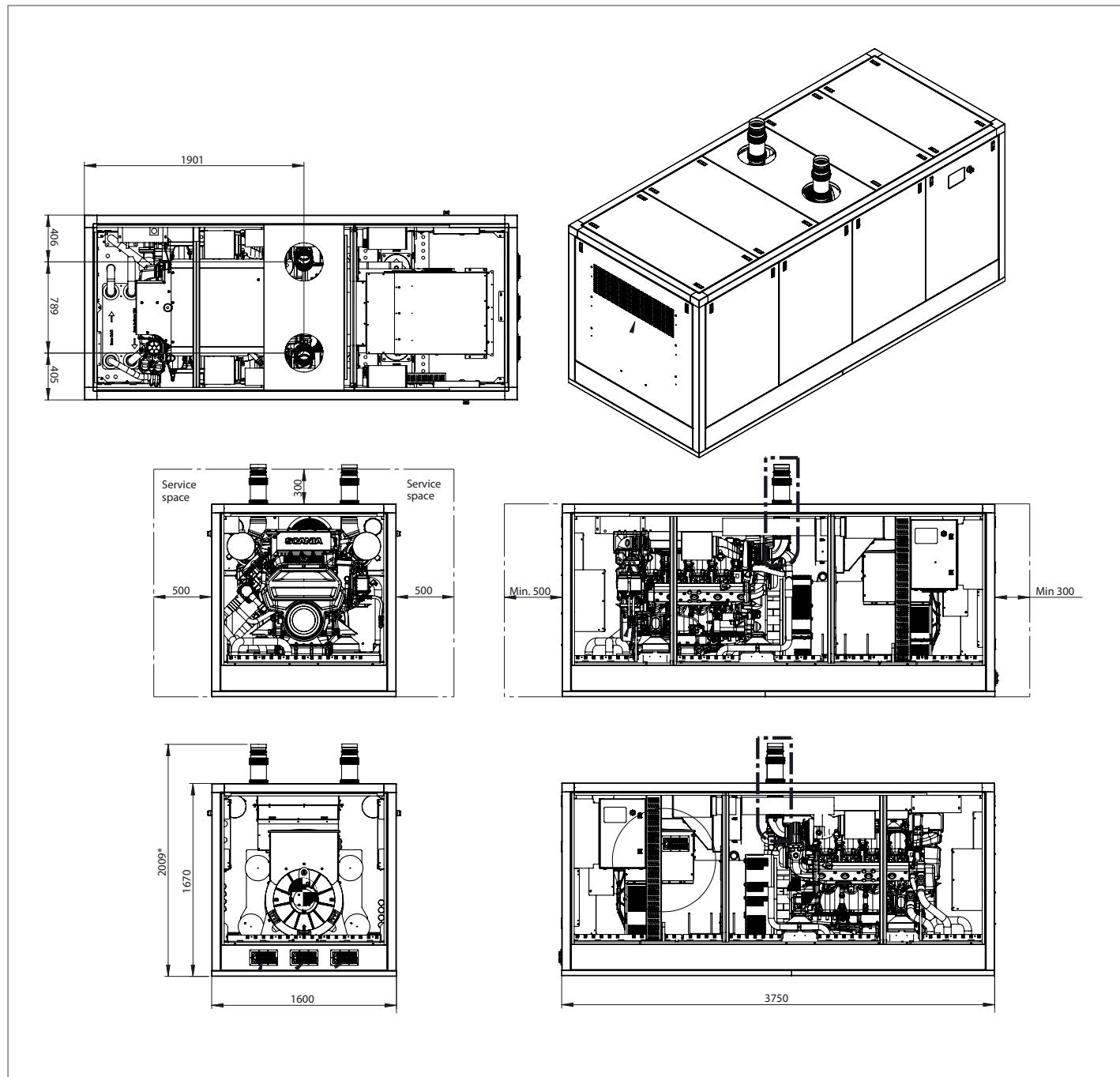
All values from current available data. Subject to manufacturing and measurement variations and to change without notice. Actual performance is subject to application and operation conditions outside of Zenoro control.

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 90% of the prime rating, of which no more than 2 hours are between 100% and 110% of the prime rating. Zenoro recommends to have a minimal average load of 65%

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 200 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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