

Marine gensets

Operator's manual

8 VSC

12 VSC

16 VSC

Presentation

Dear Customer,

First, we would like to thank you for choosing a Solé Advance product. We recommend that you read this manual carefully before carrying out any of the operations and keep it close at hand, near the genset, as it can be of great use in the future.

Our goal as a manufacturing company is that you enjoy our product, regardless of the use you make of it. The equipment manufactured in Solé Advance facilities is designed to offer the highest performance in the most demanding operating conditions.

The images, text and information contained in this manual are based on the product's features at the time of publication. Solé Advance reserves the right to modify this document without prior notice.

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Safety precautions and instructions



Safety precautions and instructions

Solé Advance is concerned for your safety and your machine's condition. Safety Precautions and Instructions are one of the primary ways to call your attention to the potential hazards associated with our engine operation. Follow the precautions listed throughout the manual before and during operation and maintenance procedures for your safety, the safety of others and the performance of your engine.

Types of Safety Precautions:

⚠ WARNING

Indicates the presence of a hazard that can **cause severe personal injuries, death or substantial property damages.**

⚠ CAUTION

Indicates the presence of a hazard that **will or can cause minor personal injury or property damages.**

⚠ NOTICE

Communicates installation, operation and maintenance information that is safety related but not hazard related.

⚠ WARNING

Servicing the fuel system and combustible materials. A flash fire can cause severe injury or death.



Do not smoke or permit flames or sparks near the fuel injection system, fuel line, fuel filter, fuel pump, or other potential sources of spilled fuels or fuel vapors. Never add fuel to the tank while the engine is running because spilled fuel may ignite on contact with hot parts or from sparks.

Catch fuels in an approved container when removing the fuel line or fuel system. Keep the fuel lines and connections tight and in good condition. Do not replace flexible fuel lines with rigid lines and use flexible sections to avoid fuel line breakage caused by vibrations.

Keep the compartment and the engine clean and free of debris to minimize the risk of fire.



⚠ WARNING

Servicing the air cleaner. A sudden backfire can cause severe injury or death.

Do not operate the engine with the air cleaner/silencer removed.

Combustible materials. A fire can cause severe injury or death.

Engine fuels, fuel vapours and combustible materials are flammable and explosive. Handle these materials carefully to minimize the risk of fire or explosion. Equip the compartment or nearby area with a fully charged fire extinguisher.



In case of fire do not open sound shield compartment and follow these instructions:

- Shut down engine(s)
- Continuously discharge entire contents of a halon or CO2 portable fire extinguisher

(or other provision) immediately.

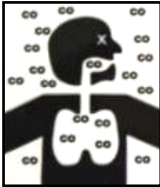
Safety precautions and instructions

⚠ WARNING

Carbon monoxide (CO) can cause severe nausea, fainting or death.

Engine exhaust gases contains carbon monoxide gas. Carbon monoxide is an odourless, colourless, tasteless, no irritating gas that can cause death if inhaled for even a short time.

Get fresh air and do not sit, lie down or fall asleep if anyone shows signs of carbon monoxide poisoning:



- Light-headedness, dizziness
- Physical fatigue, weakness in joints and muscles. Sleepiness, mental fatigue, inability to concentrate or speak clearly, blurred vision. Stomachache, vomiting, nausea.

⚠ WARNING



Keep the area around the battery well ventilated. While the engine is running or the battery is charging, hydrogen gas is produced which can be easily ignited.

Never allow battery fluid (battery contains sulfuric acid) to come in contact with clothing, skin or eyes. Always wear safety gloves and protective clothing when servicing the battery. If battery fluid contacts the eyes and/or skin, immediately flush the affected area with a large amount of clean water and obtain prompt medical treatment.

⚠ CAUTION



Before working on the engine or connected equipment, disable the engine as follows:
Set the genset controller to OFF Mode.

- (1) Disconnect the power input from battery.
- (2) Disconnect the battery cables. Remove the negative (-) lead first when disconnecting the battery. Reconnect the negative (-) lead last when reconnecting the battery.

Follow these precautions to prevent the starting of the engine by engine controller, remote start/stop switch, or engine start command from a remote computer.

⚠ CAUTION



Never remove the cooler cap if the engine is hot. Steam and hot engine coolant will spurt out and seriously burn you. Allow the engine to cool down before you attempt to remove the cooler cap.

⚠ NOTICE

Read the engine operator's manual and understand it before operation and maintenance of the engine, to ensure that it continues operating practices and maintenance procedures.

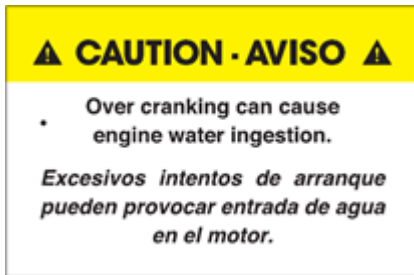
Hearing protection. Use to avoid hearing loss when handling the motor.

⚠ NOTICE

1. The installer / operator of the engine has to wear suitable CLOTHING for the workplace and the situation; in particular, avoid loose clothes, chains, bracelets, rings and all accessories that could become entangled with moving parts.
2. The installer / operator of the engine has to wear personal protective equipment such as gloves, work shoes, eye and hearing protection as required by the task.
3. The area in which the operator is working has to be kept tidy and free of oil and other liquid spillages and solid waste (metal chips, etc.).

Safety precautions and instructions

Engine labels



If the engine does not start after several attempts to crank may cause water entering the engine. In this situation it is recommended:

- 1) Close the seacock.
- 2) Drain the water from the exhaust system in the water trap.
- 3) Do not try to restart the engine until the cause of the start fail is identified.



El motor y/o el inversor se suministran sin ningún fluido en su interior. Consulte el manual para seguir el procedimiento de instalación y puesta en marcha.



The engine and the gearbox are supplied without any fluid inside. Consult the manual to follow the installation procedure and commissioning as well as the fluid capacity - coolant, oil and oil of gearbox



Moving parts. Keep hands, feet, hair, clothing and test leads away from the belts and pulleys when the engine is running. Replace guards, screens and covers before operating the engine.



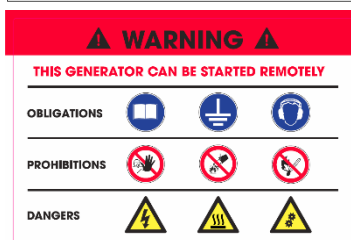
Read the engine operator's manual and understand it before any operation and maintenance of the engine, to ensure that it continues operating practices and maintenance procedures insurance.

Dangerous voltage. Operate the engine only when all guards and electrical panels are ready.

Hot parts, coolant and steam. Stop the engine and let it cool down before touching or removing any engine part.

Moving parts. Keep hands, feet, hair, clothing and test leads away from the belts and pulleys when the engine is running. Replace guards, screens and covers before operating the engine.

Heavy material. Engine is a heavy element, use the right tools for transportation and handling.



Do not use the motor as a step. Use it as a step can cause engine damage plus cause undesired operation.



Connection point of the battery cables to the engine. Red cable (positive) and black cable (negative).

NOTICE

Engine exhaust line installation label, above and below the waterline. See 5.7. *Intake and exhaust system.*

Solé Advance warranty

Read the manual and documents delivered with each engine before carrying out any of the operations or presenting any queries. The engine is supplied without any liquids. Ensure that the liquids used match the specifications contained in Solé Advance manuals.

The application of the conditions described in this document shall only be effective for engines or generator sets that have been invoiced after November 4, 2011.

Solé Advance limited warranty

Solé Advance guarantees that at the time of shipment all its engines and generator sets comply with the provided specifications and do not have any manufacturing defects.

The limited warranty provided by Solé Advance enters into force from the time of sale to the first end-purchaser or user of the engine or generator set. In the event that the product is not immediately delivered to the end-customer, the warranty shall enter into force 6 months after the date of sale. Any limited warranty period that has not elapsed can be transferred to the following purchaser (s).

Unless authorised otherwise by Solé Advance, the warranty periods are applied according to the time elapsed in months from the date of purchase or the limit of hours of operation (whichever occurs first) listed in the following table:

Limited Warranty Coverage Periods				
Product	Pleasure		Comercial	
	Months	Hours	Months	Hours
Propulsion Engines	36	1000	12	2000
Generator Sets	36	1000	12	2000

Solé Advance extended warranty

Solé Advance an extended period of coverage for the following components: engine block, cylinder head, crankshaft, camshaft, flywheel housing, timing gear housing, timing gear, conrod.

Extended Coverage Periods				
Product	Pleasure		Comercial	
	Months	Hours	Months	Hours
Propulsion Engines	24	1500		
Generator Sets	24	1000		

Restrictions

Coverage:

- a) To validate the warranty is necessary fill and send the inspection prior to the delivery of propulsion engines or genset to Solé Advance through an official installer. See SECTION 11.
- b) The warranty covers any failure of the product under normal operating conditions caused by a defect in manufacturing.
- c) The warranty covers the labour costs necessary to replace and/or repair the defective original components, according to Solé Advance standards of excellence. The time period covered for these operations is limited to 4 hours.
- d) The warranty covers reasonable costs of travel required to carry out the necessary operations. The travel distance is limited to 300 kilometres in conjunction to a travel time of 3 hours.

Excluded from coverage:

- a) If Solé Advance products are installed and used alongside other products not designed or manufactured by Solé Advance that affect their operation, the warranty shall apply exclusively to the Solé Advance products and shall not apply if the products from another manufacturer are inappropriate for use alongside Solé Advance products or are the cause of the failure or poor operation of our products.
- b) The warranty doesn't will be effective if don't filled correctly and send the inspection prior to the delivery of propulsion engines and genset to Solé through an official installer. SECTION 11.
- c) The warranty shall not apply if the revisions and maintenance services indicated in the User and Maintenance Manuals have not been adhered to properly. In case of implemented warranty, supporting document of the revisions and maintenance service should be exhibited, proving the requirements outlined in the manuals have been followed.
- d) Deterioration resulting from time of storage exceeding 6 months and/or storage conditions that do not comply with the procedures described in the User and Maintenance Manuals.
- e) Deterioration resulting from not complying with the procedure for winter storage while the engine is not in service, as described in the User and Maintenance Manuals.
- f) Faults due to negligence, lack of service, accidents, abnormal use and inadequate service or installation.
- g) Faults due to the use of components not manufactured or sold by Solé Advance.
- h) Faults due to electrical installations that do not comply with Solé Advance design specifications or are not expressly approved by Solé Advance.
- i) Faults due to the use of and operation with fuels, oils or lubricants that are not authorised by Solé Advance.
- j) Faults due to water entering the cylinder(s) through the exhaust system.
- k) Faults in propulsion engines due to the use of a propeller that is inadequate for the load or application. We recommend contacting Solé Advance to consult the choice of the correct propeller(s).
- l) Failure for general omission of the procedures described in the User and Maintenance Manuals.
- m) Components subjected to normal operating wear and tear.
- n) n) Costs due to phone communications, loss of time or money, discomfort, launching, grounding, removal or replacement of vessel parts or materials because the design of the vessel makes it necessary to do so to access the engine, and damage and/or accidents caused as a result of a failure.

Responsibilities

Responsibilities of the manufacturer:

The obligations of Solé Advance are restricted to repairing the defective parts or, IF DEEMED APPROPRIATE BY Solé Advance, returning the amount of the purchase or replacing the parts to prevent poor operation resulting from defective materials or faults in the manufacture covered by the warranty.

Solé Advance reserves the right to modify the design of any of its products without taking on any obligation to modify a product that has been manufactured previously.

This manual, as well as technical documentation, manuals or pamphlets may undergo modifications without prior notice.

Responsibilities of the purchaser:

The purchaser shall be responsible for the care, operation and maintenance of the product in compliance with the contents of the User and Maintenance Manuals. The purchaser shall provide proof of all the maintenance services performed on the product. The costs of said services and that of the components and liquids replaced during said services shall be at the expense of the purchaser.

The maintenance operations described in this manual shall be performed during the Warranty Contract Periods (Limited and Extended Coverage) by an AUTHORISED Solé Advance DEALER. Non-compliance with this condition shall void the warranty in all its terms. In such an event, the materials (oil, filters, etc.) and labour involved shall be at the expense of the purchaser. The purchaser should keep the invoice of the work performed as proof.

If the service is not covered by the warranty, the purchaser must pay for all labour performed, the associated materials and any other expense related to the service.

All shipments of products or components sent by the purchaser for inspection and repair shall be paid in advance by the purchaser.

After-sales service contact

Claims shall be presented during the warranty period to the nearest authorised Solé Advance dealer (see chart of Solé Advance Dealers), who shall take care the service covered by the warranty.

The purchaser must provide a proof of purchase and date of purchase by presenting the invoice to the authorized dealer for the purchase of the product served or a copy of it. Claims under warranty shall not be dealt with by the dealer until the date of purchase has been verified.

The following information must also be provided by the purchaser:

- a) Owner's name, address and contact telephone number.
- b) Product model and serial number.
- c) Number of service hours of the product.
- d) Detailed description of the problem.
- e) Information regarding any repair or installation performed by a service not included in the Solé Advance distribution network, as well as the services performed.

For an updated list of our distribution network, visit Dealers section in our web page www.soleadvance.com.

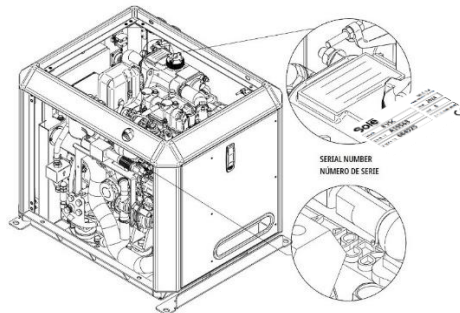
Or request this information by contacting Solé Advance at: **e-mail:** info@soleadvance.com
Phone: +34 93 775 14 00

Section 1 – Genset Information

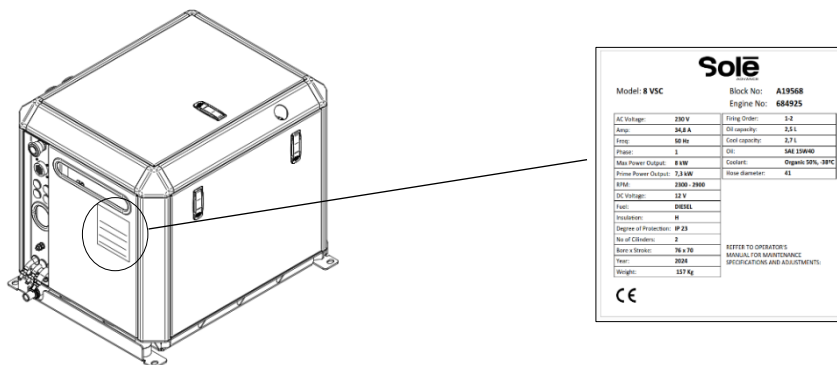
1.1. Genset Identification

Characteristics label, identification label and serial number

The identification label is located above the heat exchanger. Additionally, each engine has the serial number stamped on the fuel injection pump.

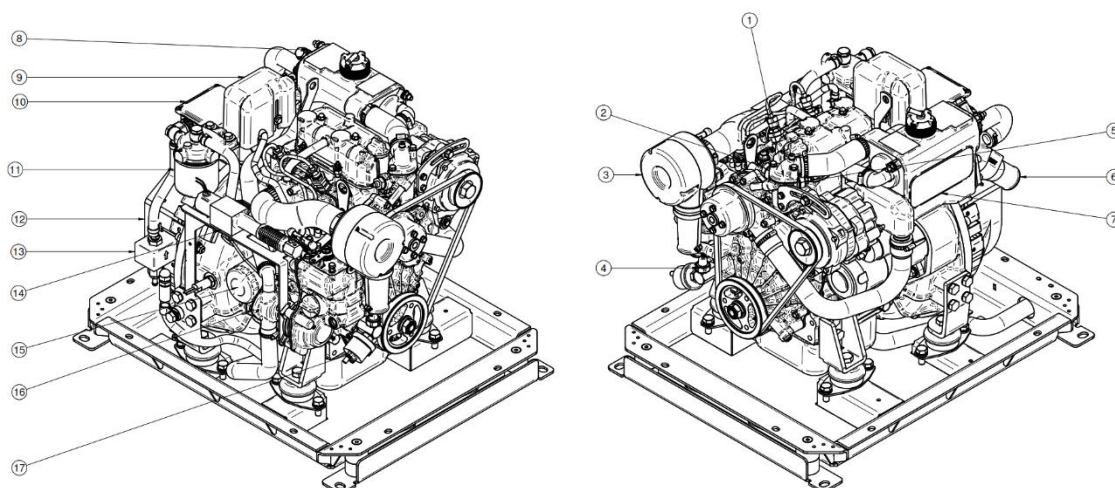


The characteristics label it's located outside the cabine, as shown in the following picture:



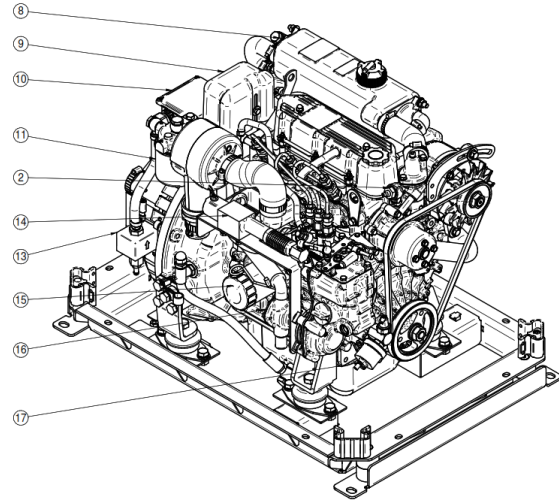
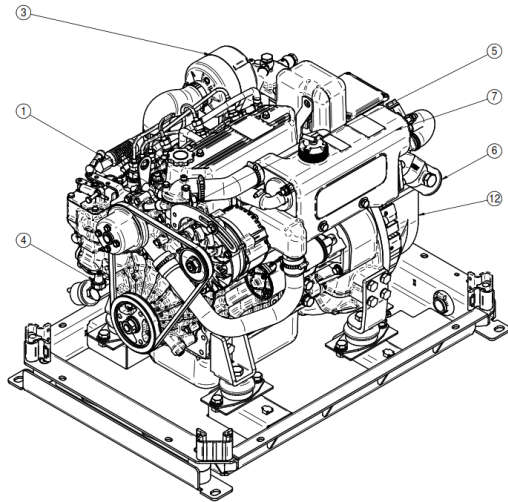
1.2. Genset parts identification

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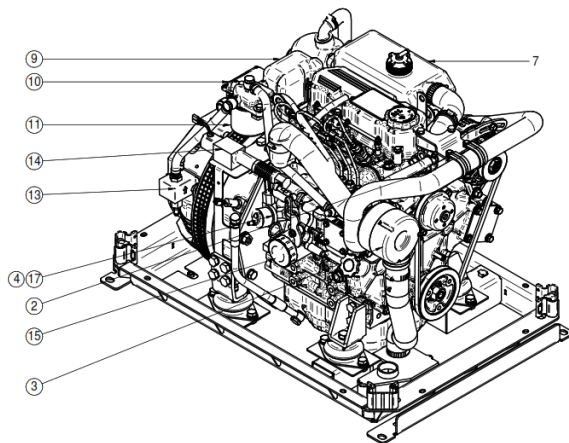
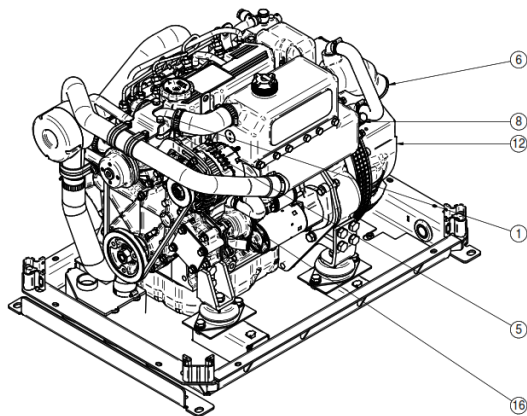


Genset information

12 VSC genset



16 VSC genset



PART	ELEMENT
1	Thermostat
2	Temperature sensor
3	Air filter
4	Oil pressure switch (0,5 Bar)
5	Coolant temperature switch (97°C)
6	Wet exhaust bow
7	Water exchanger
8	Zinc anode
9	Relay assy

PART	ELEMENT
10	Terminal board box
11	Fuel filter
12	PMG alternator
13	Electrical fuel feed pump
14	Electric actuator
15	Oil filter
16	Sea water pump
17	Lubrication oil sensor

Section 2 – Scheduled maintenance

2.1. Security and prevention

Information about special tools required and basic security precautions

Disassembly:

- ✓ Use the correct tools and instruments. Serious injury or damage to the genset can result from using the wrong tools and instruments.
- ✓ Use an overhaul stand or work bench if necessary. Also, use assembly bins to keep the genset parts in order of removal.
- ✓ Lay down disassembled or cleaned parts in the order in which they were removed. This will save you time at reassembly.
- ✓ Pay attention to the marks on assemblies, components and parts for positions or directions. Put on your own marks, if necessary, to aid reassembly.
- ✓ Carefully check each part for faults during removal or cleaning. Signs of abnormal wear will tell if parts or assemblies are functioning improperly.
- ✓ When lifting or carrying heavy parts, get someone to help you if the part is too awkward for one person to handle. Use jacks and chain blocks when necessary.

Reassembly:

- ✓ Wash all genset parts, except oil seals, O-rings, rubber seals, etc. in cleaning solvent and dry them.
- ✓ Use only the correct tools and instruments.
- ✓ Use only good quality lubricating oils and greases. Be sure to apply a coat of oil, grease, or sealant to parts as specified.
- ✓ Use a torque wrench to tighten parts when specified tightening torques is required.
- ✓ Replace all gaskets and packing. Apply appropriate amount of adhesive or liquid gasket when required.
- ✓ Increase the frequency of maintenance in harsh duty conditions (frequent stops and starts, dusty surrounding, prolonged winter season, no-load running).
- ✓ Risk of burns during maintenance operations carried out when the genset is hot. Wear suitable safety clothing.
- ✓ It is strictly forbidden to clean the genset with compressed air.
- ✓ It is strictly forbidden to perform maintenance/cleaning operations in the presence of moving parts.
- ✓ Use gloves, overalls, etc. to protect the body from burns.

2.2. Periodic Maintenance Schedule

The maintenance and fault diagnostic procedures involve risks that may cause severe injury or even death. These procedures should therefore be carried out solely by qualified electrical and mechanical specialists. Before any maintenance and cleaning work, make sure that there are no moving parts, that the generator housing has cooled to ambient temperature, that the electricity generating set cannot be accidentally started up and that all procedures are strictly observed.

Scheduled maintenance

		Intervals							
Inspection Item		Daily	1st 20h-50h	Every 200h	Every 400h	Every 800h	Every year	Every 2 years	Winter storage and Preservation
General	Screw tightening, fastening.		I		I				
	Engine block.								CL
	Valve clearance.				I				
	Exhaust gas, noise and vibrations.	I							
	Compression pressure.					I			
Lubrication system*	Genset oil.	I	C	C			C		C
	Oil filter.		C	C					
Fuel System	Fuel level.	I							
	Fuel tank.							CL	E/CL/I
	Fuel filter.				C				
	Water separator filter (if applicable).		E		C				
	Injection pump.					I			
	Injector.					I			
Cooling system	Purge the feed system.							I	
	Coolant.	I						C	C
	Sea water circuit								I/CL
	Water filter	I	CL	CL					
	Sea water cock	I							
Intake system	Sea water pump impeller.			I/C	I				I/CL
	Anode			I/C					
Electrical system	Air filter.		I		C			C	I
	Instruments.	I							
	Starter and alternator.				I				
	Belt.		I		I	C			I
	Battery level		I	I		C			
	Main alternator - electrical insulation.					I			I

* Use oil with 15W40 viscosity and no less than ACEA E5 or API CH-4/SJ quality.

I: Inspect, adjust or fill. E: Empty. C: Change. CL: Clean.

Section 3 – Operation

3.1. Pre-start checklist

Follow these checks and inspections to ensure the correct genset operation. In addition, some checks require verification after unit starts.

AIR CLEANER: Check for a clean and installed air cleaner element to prevent unfiltered air from entering the genset.

AIR INLETS: Check for clean and unobstructed air inlets.

BATTERY: Check for tight battery connections.

COOLANT LEVEL: Check the coolant level according to coolant circuit capacity.

DRIVE BELTS: Check the belt condition and tension of the coolant pump and battery charging alternator belt.

EXHAUST SYSTEM: Check for exhaust leaks and blockages. Check the silencer and piping condition and check for tight exhaust system connections.

Check that the exhaust outlet is unobstructed.

FUEL LEVEL: Check the fuel level and keep the tank(s) full to ensure adequate fuel supply.

OIL LEVEL: Maintain the oil level below dipstick high mark and above dipstick low mark.

OPERATING AREA: Check for obstructions that could block the flow of admission air.

SEAWATER PUMP PRIMING: Prime the seawater pump before initial startup. To prime the pump:

- Close the seacock.
- Remove the hose from the seawater-filter outlet.
- Fill the hose and seawater pump with clean water.
- Reconnect the hose to the water filter outlet.
- Open the seacock.

Confirm seawater pump operation on startup as indicated by water discharge from the exhaust outlet.

3.2. Genset functioning

To use safely the genset in normal atmospheric conditions, follow the following sequence:

1. After pre-start verification, start the genset via the control panel.
2. Use the genset without load during 5-10 minutes until it reaches the service temperature.
3. Add load progressively.
4. When finishing the operation, stop the engine via the control panel and follow the post-start verification list.

3.3. Post start verification list

Follow the comprobations and inspections after stoping the engine to ensure the great functioning of the genset.

BATTERY: Disconnect the system battery in order to avoid it's discharge.

BOTTOM TAP: Close the bottom tap

3.4. Genset Operation at Low Temperatures

Whenever the atmospheric temperature drops below zero, the following series of circumstances occur:

- The cooling liquids may freeze.
- The oil becomes thicker.
- There is a drop in the voltage at the battery terminals.
- The inlet air temperature is low and the genset has difficulty in starting.
- The fuel loses fluidity.

To prevent the damage caused by low temperature operation, the genset should be prepared:

1. Use special low temperature coolant or suitable anti-freezing agent concentration.
2. Close the seawater cock, when the genset is stopped. Open the seawater filter cover and start the genset adding a mixture of freshwater and suitable anti-freezing agent concentration (see package labels) until the seawater circuit is filled completely. Stop the genset and replace the seawater filter cover. Before starting the genset again, open the seawater cock.
Repeat this operation whenever the genset is used at temperatures below 0°C.
3. Use oil with suitable quality and viscosity. SAE 15W40 is recommended. Under extreme conditions contact with technical support.
4. Cover battery with an adequate material to protect it against the cold. Check that the battery is fully charged.
It is also advisable to use a dielectric spray on the electrical connections.
5. When starting the genset, make sure that the glow plugs become hot enough.
6. If necessary, replace the Diesel oil by a specified Diesel oil type for low temperatures. The accumulation of impurities in the fuel tank could cause faulty firing.

▲ NOTICE

All gensets not in use are subject to rusting and corrosion of machined surfaces that are not protected with a paint coating. The degree of corrosion depends on meteorological changes and climatic conditions. The following recommendations are therefore of a general nature but they will help prevent or reduce the risk of damage due to rusting.

3.5. Winterzation and Preservation

If the boat is not going to be used for a long period of time or during the winter, certain tasks must be carried out to keep it in perfect operating condition. If there is no care, the inside parts can oxidize and cause damage on the genset. When the genset is stored, steps indicated below have to be followed:

1. Clean the outer surface of the genset.
2. Bleed the seawater circuit by filling it with fresh water. Fill the seawater circuit again with a mixture of fresh water and anti-freezing agent.
3. Remove the impeller from the seawater pump, clean it with fresh water and store it in place protected from moisture and sunlight.
4. Renew and refill the heat exchanger to the maximum level with a mixture of fresh water and anti-freezing agent.
5. Renew the oil and oil filter in the genset.
6. Cover the air intake.
7. If the fuel tank is small, empty it completely and clean it; fill it up again with a mixture of Diesel and anti-corrosion additive. Solé S.A. recommends DIECYL PLUS. Add one measure

of this additive for every 25 litres of Diesel. On the other hand, if the fuel tank is large, add 1 litre of this additive for every 500 litres of Diesel.

8. Clean and dry the area where the genset is installed.
9. Loosen the belts.
10. Apply dielectric spray on the electrical connection, disassemble the battery and charge it several times during the time it is not being used.
11. Apply moisture repellent spray on the motor.

3.6. Maintenance during long storage

During the long genset storage, it has to be stored inside a ventilated area and free of humidity.

When the genset stay stopped for 3 months or more, inside parts can be oxidize and lost the oil film. As a result, the genset could to size up after the storage. To avoid this, the genset must work periodically during the storage.

Realize the following steps at least once per month:

1. In case that has a battery next to the genset, check the electrolyte level and fill it.
2. Start the genset during approximately 10 seconds.
3. Stop the genset during 1 minute. Repeat this action two or three times.
4. Be sure that oil pressure of the genset increase.
5. Get the genset work during 5 or 10 minutes without load, as maintenance operation.

3.7. Restoration of Operational Conditions

When starting up the genset again after winter lay-up, certain operations must be performed. Follow these steps:

1. Fill the fuel tank with clean Diesel. The mixture of Diesel oil and anti-corrosion additive in tank for winter lay-up can be used to operate the genset.
2. Get the genset work during 5 or 10 minutes without load, as maintenance operation.
3. Check the fuel filter. If the filter is clogged, replace the filter.
4. Renew the oil in the genset.
5. Check the condition of coolant circuit's rubber hoses.
6. Reconnect the battery and apply a layer of neutral Vaseline to the battery terminals.
7. Remove the nozzle supports and clean them. If possible, verify the setting of the nozzles at a workshop. Then install the clean nozzles.
8. Connect the cooling and exhaust system. Open the seawater cock.
9. 9. Verify whether there are any leaks in the fuel, coolant and oil systems.

3.8. Parallel operation

This generator is designed to operate in parallel with an optional installation kit, allowing the electrical load to be shared between both units.

When operating in parallel, each generator automatically supplies 50% of the total required power, optimizing system performance, reducing the individual strain on each unit, and offering greater stability and efficiency in applications requiring higher or continuous loads.

Section 4 – Troubleshooting

If a fault occurs in the genset, proceed as follows:

- Within the period of warranty:

Contact to Sole Diesel Official Service. See Solé Advance WARRANTY.

- Outside the period of warranty:

Contact to Sole Diesel Official Service. See Solé Advance WARRANTY.

Stop the genset, determine the cause and repair it before continuing driving the motor.

Troubleshooting

GENSET FAILURE	SYSTEM	PROBABLE CAUSES	RECOMMENDED ACTIONS
MANUAL START FAILURE	ELECTRICAL SYSTEM (CC)	Power cable fuse (red).	Replace the fuse in the installation. If fuse blows again, check electrical system for overloads or short circuits.
		Discharged or empty battery.	Charge the battery or replace it with a new one.
		Loose or corroded battery connections.	Check the battery connections are correct, clean and tight.
		Faulty start/preheating relay.	Check and replace the preheating/start relay if necessary.
		Faulty starter motor	Check starter motor and replace it if necessary.
		Control panel start signal	Check the start signal from the controller (pink wire).
		Faulty stop solenoid (ETR).	Check stop solenoid and replace it if necessary.
	GENERAL	Low compression pressure.	Check the compression of each cylinder.
	LUBRICATION SYSTEM	Oil viscosity too high.	Check oil viscosity (according to Technical Specifications).
	FUEL SYSTEM	Faulty or clogged fuel pump.	Check the pump by verifying the fuel inlet and outlet of the pump. Replace it with a new one if necessary.
Clogged fuel pipes		Check fuel pipes.	
Clogged fuel filter		Replace fuel filter.	
Faulty injection pump		Contact an Official Solé Diesel Service.	
Air in fuel system		Bleed fuel system.	
Dirty or faulty fuel injectors		Clean, test and/or replace fuel injector which is not operating properly.	
Fuel injection timing malfunction		Adjust fuel injection timing	
Empty fuel tank or closed fuel valve.		Add fuel and place fuel valve in open position.	
	Dirty or clogged fuel tank.	Clean tank with proper products.	
INLET AND EXHAUST SYSTEM	Dirty or clogged air filter.	Replace the air filter element.	

Troubleshooting

GENSET FAILURE	SYSTEM	PROBABLE CAUSES	RECOMMENDED ACTIONS
STARTS AND THEN STOPS	GENERAL	The fuel regulator is not operational.	Contact an Official Solé Diesel Service.
	FUEL SYSTEM	Faulty or clogged fuel pump	Check fuel pump inlet.
		Clogged fuel filter	Replace fuel filter.
		Air in fuel system	Bleed fuel system.
		Incorrect injection pump setting	Contact an Official Solé Diesel Service.
COOLING SYSTEM	Closed fuel outlet tap	Open the fuel outlet tap.	
	COOLING SYSTEM	Low cooling liquid level.	Check cooling liquid level and fill tank if necessary.
	ELECTRICAL SYSTEM (CC)	Faulty stop solenoid (ETR).	Check stop solenoid and replace it if necessary.
		Pressed emergency stop button.	Reset the emergency stop button position.
	INLET AND EXHAUST SYSTEM	Control panel start signal.	Check the start signal from the controller (yellow wire).
		Dirty or clogged air filter.	Replace the air filter element.
BLACK SMOKE	FUEL SYSTEM	Clogged fuel filter.	Replace fuel filter.
		Dirty or faulty fuel injectors.	Clean, test and/or replace fuel injector which is not operating properly.
Incorrect injection pump setting.		Contact an Official Solé Diesel Service.	
	INLET AND EXHAUST SYSTEM	Clogged air filter.	Replace the air filter element.
BLUE SMOKE	GENERAL	Incorrect valve clearance.	Perform valve adjustment.
	LUBRICATION SYSTEM	Oil level too high.	Check the lubrication oil level and reset it.
LOW OIL PRESSURE	LUBRICATION SYSTEM	Faulty oil pump.	Contact our dealer
		Strangled oil pressure-relief valve.	Clean the valve and check its operation.
		Oil pressure too low.	Check oil level.
		Oil level too low.	Reset oil level. Inspect the marine generator set for leaks.
		Faulty oil pressure valve.	Contact an Official Solé Diesel Service.
		Faulty pressure gauge, pressure sensor and/or pressure switch.	Check and/or replace elements.
Engine tilt above allowable values.	Check the engine installation inclination. Reinstall the engine if necessary.		

Troubleshooting

GENSET FAILURE	SYSTEM	PROBABLE CAUSES	RECOMMENDED ACTIONS
OIL PRESSURE TOO HIGH.	LUBRICATION SYSTEM	Strangled oil pressure-relief valve	Clean the valve and check its operation.
		Faulty oil pressure valve	Contact an Official Solé Diesel Service.
		Oil level too high.	Reset oil level.
		Obstruction of oil lines.	Contact an Official Solé Diesel Service.
HIGH FUEL CONSUMPTION	GENERAL	Low compression pressure.	Check compression.
	FUEL SYSTEM	Electrical overload.	Reduce electrical load.
		The regulator is not working properly.	Contact an Official Solé Diesel Service.
		Fuel injection timing malfunction.	Adjust fuel injection timing
INLET AND EXHAUST SYSTEM	Clogged air filter	Replace the air filter element.	
LOW POWER	GENERAL	Incorrect valve clearance.	Perform valve adjustment.
	FUEL SYSTEM	Clogged fuel filter.	Replace fuel filter.
		Dirty or faulty fuel injectors.	Clean, test and/or replace fuel injector which is not operating properly.
		Water in fuel system.	Clean fuel system with proper products. Inspect the source of the water inlet.
		Fuel injection timing malfunction.	Adjust fuel injection timing
INLET AND EXHAUST SYSTEM	Clogged air filter	Replace the air filter element.	
	GENERAL	Exhaust detonations	Inspect exhaust system. Replace exhaust system components that are not operational.
ENGINE OVERHEATING	GENERAL	Low compression pressure.	Check compression.
		Electrical overload.	Reduce electrical load.
	LUBRICATION SYSTEM	Faulty oil pump.	Contact an Official Solé Diesel Service.
		Oil viscosity too high.	Check oil specifications according to Technical Specifications.
		Oil level too low.	Reset oil level. Inspect the marine generator set for leaks.

Troubleshooting

GENSET FAILURE	SYSTEM	PROBABLE CAUSES	RECOMMENDED ACTIONS
ENGINE OVERHEATING	COOLING SYSTEM	Faulty coolant water pump.	Check coolant pump (impeller, pump sealing).
		Plugged or restricted-pitch salt water tap.	Clean the tap, check if the salt water pump impeller is damaged.
		Faulty salt water pump.	Check sea water pump (impeller, pump sealing).
		Clogged water cooler.	Clean the water cooler.
		Low coolant level.	Restore normal coolant level for operation.
		Thermostat is not operational.	Replace the thermostat.
	INLET AND EXHAUST SYSTEM	Clogged air filter	Replace the air filter element.
GENERATOR SET WITH NOISE	GENERAL	Low compression pressure.	Check compression.
		Electrical overload.	Reduce electrical load.
		Exhaust system leakage.	Inspect exhaust system. Replace exhaust system components that are not operational.
		Excessive vibration.	Check engine brackets. Inspect engine and retighten loose parts.
		Incorrect valve clearance.	Perform valve adjustment.
	ALTERNATOR (AC)	AC worn alternator bearing. Faulty AVR regulator plate.	Replace the CA alternator bearing. Replace AVR regulator plate.
	FAULTY BATTERY CHARGE	ELECTRICAL SYSTEM (DC)	Discharged or empty battery.
Loose or corroded battery connections.			Check the battery connections are correct, clean and tight.
Faulty DC alternator regulator.			Replace alternator.
DC alternator belt tension.			Check belt tension and change if necessary.
LOW OR ZERO OUTPUT VOLTAGE	GENERAL	Electrical overload.	Reduce electrical load.
		The regulator is not working properly.	Contact an Official Solé Diesel Service.

Section 5 – Instructions to replace the genset

When you decide to replace the genset, please contact Solé Advance S.A.; will provide relevant instructions regarding the laws in force at the time. When disposing of the whole or parts of this genset, meets LAWS IN FORCE IN THE COUNTRY OF INSTALLATION.

For more information about the materials they are made of the individual components of the generator, contact Solé Advance S.A

Section 6 – Technical data

Single-Phase

General data

Maximum power*:	8 kW (8 kVA)	Voltage:	230 V
Prime Power**:	7,3 kW	Amperage:	34,8 A
Frequency:	50 Hz	Phases:	1

Dimensions and weights

Total length with canopy:	660 mm
Total width with canopy:	525 mm
Total height with canopy:	567 mm
Dry weight with canopy:	157 kg

Engine

Base engine manufacturer:	Mitsubishi	Diameter:	76 mm (2,99 in)
Model Solé Diesel:	Mini-17 Stage V	Stroke:	70 mm (2,76 in)
Type:	4 stroke	Compression ratio:	23:1
Engine RPM:	2300 - 2900	Injection system:	Mechanical and indirect
Number of cylinders:	2	Intake system:	Naturally aspirated
Total displacement:	635 cc	Flywheel housing:	SAE 5
Oil type:	SAE 15W40	Coolant capacity:	2,7 L (0,71 gal)
Oil capacity:	2,5 L (0,66 gal)	Flywheel:	SAE 6 1/2
Power:	10 kW (13,6 CV)	Coolant flow rate:	30 l/min (7,93 gal/m)
Salt water flow rate:	38 l/min (10,04 gal/m)	Intake air flow rate:	0,83 m3/m

Fuel system details

Consumption at 25 %:	2,5 L/H (0,66 Gal/H)	Fuel type:	Diesel
Consumption at 50 %:	2,9 L/H (0,77 Gal/H)	Fuel standards:	Fueloil diésel ASTM
Consumption at 75 %:	3,1 L/H (0,82 Gal/H)	Injection pump type:	In line
Consumption at 100 %:	3,4 L/H (0,9 Gal/H)		

Electrical system

Battery voltage:	12 V	Stop solenoid type:	ETR
Starter motor:	1,2 kW	Alternator:	40 A

Installation details

Exhaust hose diameter:	41 mm (1,61 in)	Maximum fuel lift height:	0,3 m (0,98 ft)
Sea water hose diameter:	20 mm (0,79 in)	Maximum raw water lift height:	1,3 m (51,18 in)
Fuel feeding hose diameter:	6,5 mm (0,26 in)	Maximum sea water temperature:	32 °C (32 °F)
Fuel return hose diameter:	6,5 mm (0,26 in)	Maximum installation angle***:	25 °
Minimum battery capacity:	12 V 60 A/h		

Alternator details

Brand:	Meccalte	Cos φ:	1
Model:	PM5G	Tropicalized:	Yes
IP protection*:	23	Excitation system:	Brushless
Number of poles:	20	Alternator type:	Synchronous
Isolation type*:	H		
Standards:	EN61000-6-3, EN61000-6-2, EN61000 3-2/3/12, EN550002, EN1000 6-1		

Single-Phase

General data

Maximum power*:	12 kW (12 kVA)	Voltage:	230 V
Prime Power**:	10,9 kW	Amperage:	52,2 A
Frequency:	50 Hz	Phases:	1

Dimensions and weights

Total length with canopy:	750 mm
Total width with canopy:	525 mm
Total height with canopy:	567 mm
Dry weight with canopy:	190 kg

Engine

Base engine manufacturer:	Mitsubishi	Diameter:	76 mm (2,99 in)
Model Solé Diesel:	Mini-29 Stage V	Stroke:	70 mm (2,76 in)
Type:	4 stroke	Compression ratio:	23:1
Engine RPM:	2300 - 2900	Injection system:	Mechanical and indirect
Number of cylinders:	3	Intake system:	Naturally aspirated
Total displacement:	952 cc	Flywheel housing:	SAE 5
Oil type:	SAE 15W40	Coolant capacity:	2,7 L (0,71 gal)
Oil capacity:	2,5 L (0,66 gal)	Flywheel:	SAE 6 1/2
Power:	15,8 kW (21,5 CV)	Coolant flow rate:	30 l/min (7,93 gal/m)
Salt water flow rate:	38 l/min (10,04 gal/m)	Intake air flow rate:	0,64 m3/m

Fuel system details

Consumption at 25 %:	3,36 L/H (0,89 Gal/H)	Fuel type:	Diesel
Consumption at 50 %:	4,05 L/H (1,07 Gal/H)	Fuel standards:	Fueloil diésel ASTM
Consumption at 75 %:	4,5 L/H (1,19 Gal/H)	Injection pump type:	In line
Consumption at 100 %:	4,7 L/H (1,24 Gal/H)		

Electrical system

Battery voltage:	12 V	Stop solenoid type:	ETR
Starter motor:	1,2 kW	Alternator:	40 A

Installation details

Exhaust hose diameter:	50 mm (1,97 in)	Maximum fuel lift height:	0,3 m (0,98 ft)
Sea water hose diameter:	20 mm (0,79 in)	Maximum raw water lift height:	1,3 m (51,18 in)
Fuel feeding hose diameter:	6,5 mm (0,26 in)	Maximum sea water temperature:	32 °C (32 °F)
Fuel return hose diameter:	6,5 mm (0,26 in)	Maximum installation angle***:	25 °
Minimum battery capacity:	12 V 60 A/h		

Alternator details

Brand:	Meccalte	Cos φ:	1
Model:	PM5G	Tropicalized:	Yes
IP protection*:	20	Excitation system:	Brushless
Number of poles:	20	Alternator type:	Synchronous
Isolation type*:	H		
Standards:	EN61000-6-3, EN61000-6-2, EN61000 3-2/3/12, EN550002, EN1000 6-1		

Single-Phase

General data

Maximum power*:	15,5 kW (15,5 kVA)	Voltage:	230 V
Prime Power**:	14,1 kW	Amperage:	67,4 A
Frequency:	50 Hz	Phases:	1

Dimensions and weights

Total length with canopy:	830 mm
Total width with canopy:	560 mm
Total height with canopy:	625 mm
Dry weight with canopy:	260 kg

Engine

Base engine manufacturer:	Mitsubishi	Diameter:	78 mm (3,07 in)
Model Solé Diesel:	Mini-33 Stage V	Stroke:	92 mm (3,62 in)
Type:	4 stroke	Compression ratio:	22:1
Engine RPM:	1700 - 2500	Injection system:	Mechanical and indirect
Number of cylinders:	3	Intake system:	Naturally aspirated
Total displacement:	1318 cc	Flywheel housing:	SAE 5
Oil type:	SAE 15W40	Coolant capacity:	5,7 L (1,51 gal)
Oil capacity:	4,2 L (1,1 gal)	Flywheel:	SAE 7 1/2
Power:	18,4 kW (25,02 CV)	Coolant flow rate:	47 l/min (12,4 gal/m)
Salt water flow rate:	28,3 l/min (7,48 gal/m)	Intake air flow rate:	1,4 m ³ /m

Fuel system details

Consumption at 25 %:	1,45 L/H (0,38 Gal/H)	Fuel type:	Diesel
Consumption at 50 %:	2,79 L/H (0,74 Gal/H)	Fuel standards:	Fueloil diésel ASTM
Consumption at 75 %:	4,27 L/H (1,13 Gal/H)	Injection pump type:	In line
Consumption at 100 %:	5,8 L/H (1,53 Gal/H)		

Electrical system

Battery voltage:	12 V	Stop solenoid type:	ETR
Starter motor:	1,7 kW	Alternator:	40 A

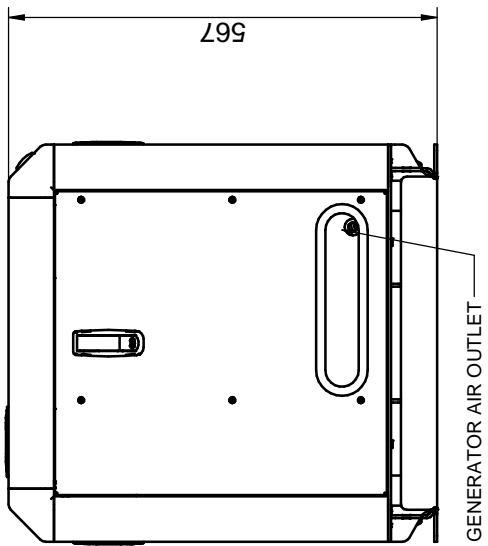
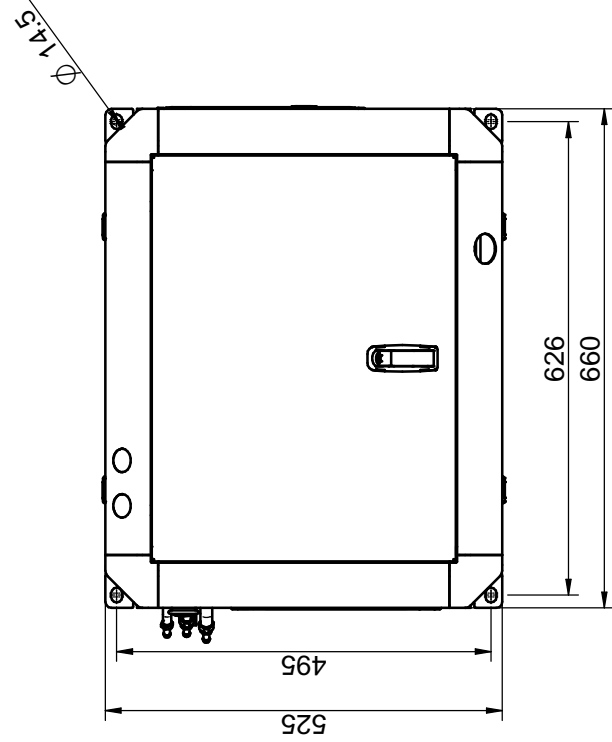
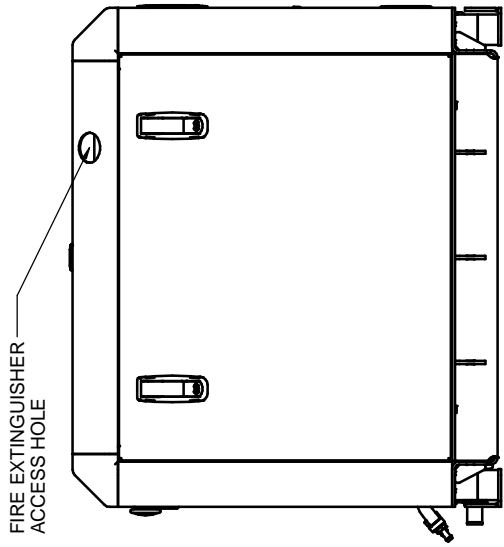
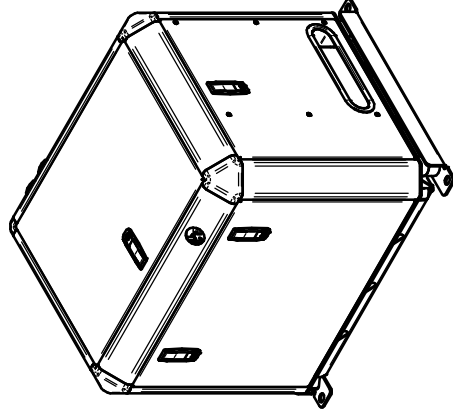
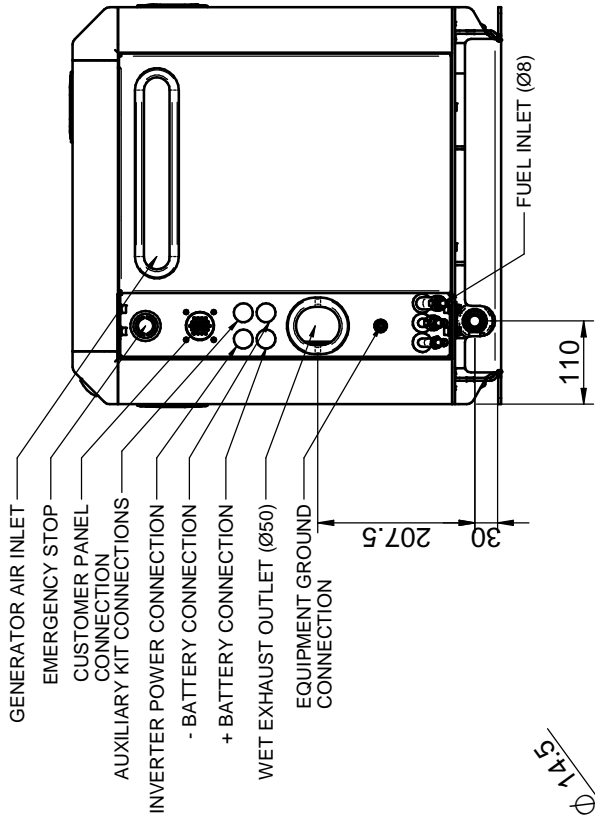
Installation details

Exhaust hose diameter:	50 mm (1,97 in)	Maximum fuel lift height:	0,3 m (0,98 ft)
Sea water hose diameter:	20 mm (0,79 in)	Maximum raw water lift height:	1,5 m (59,06 in)
Fuel feeding hose diameter:	8 mm (0,31 in)	Maximum sea water temperature:	32 °C (32 °F)
Fuel return hose diameter:	8 mm (0,31 in)	Maximum installation angle***:	15°
Minimum battery capacity:	12 V 65 A/h		

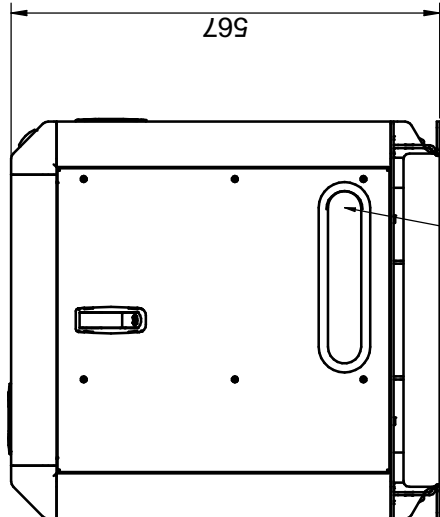
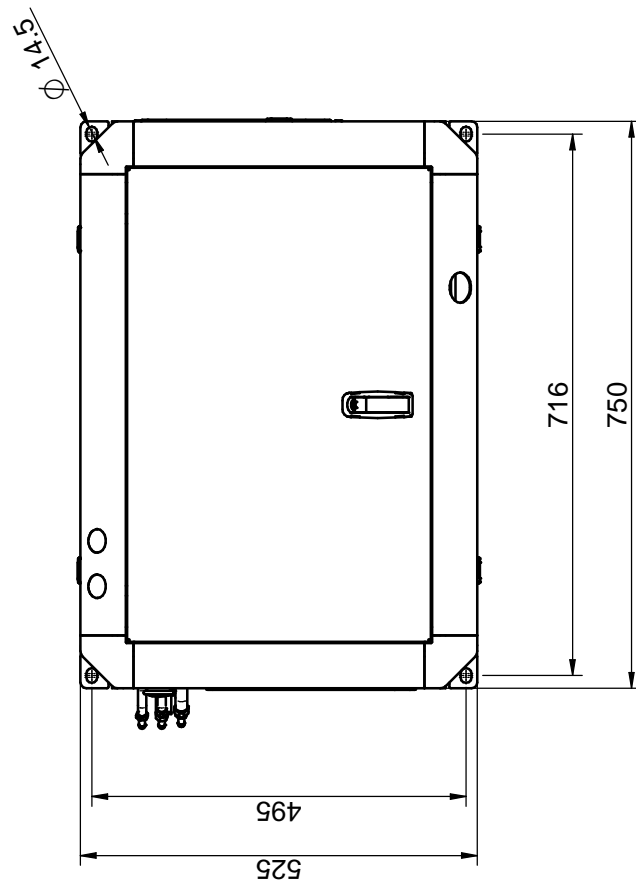
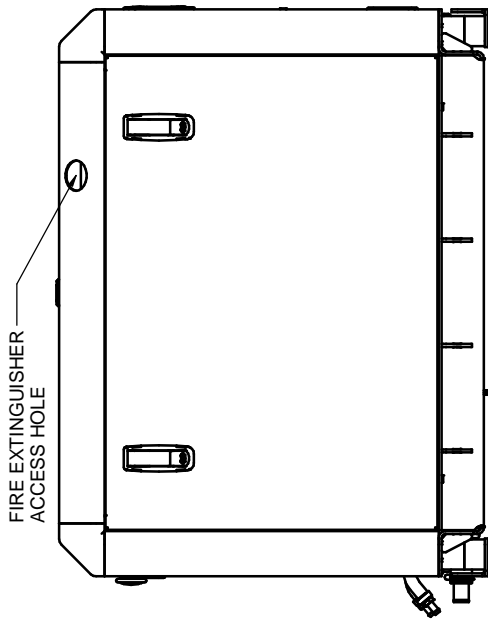
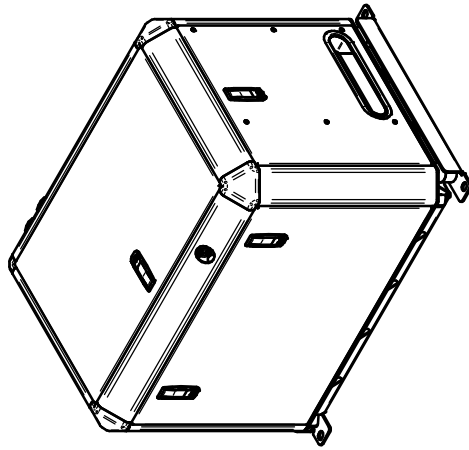
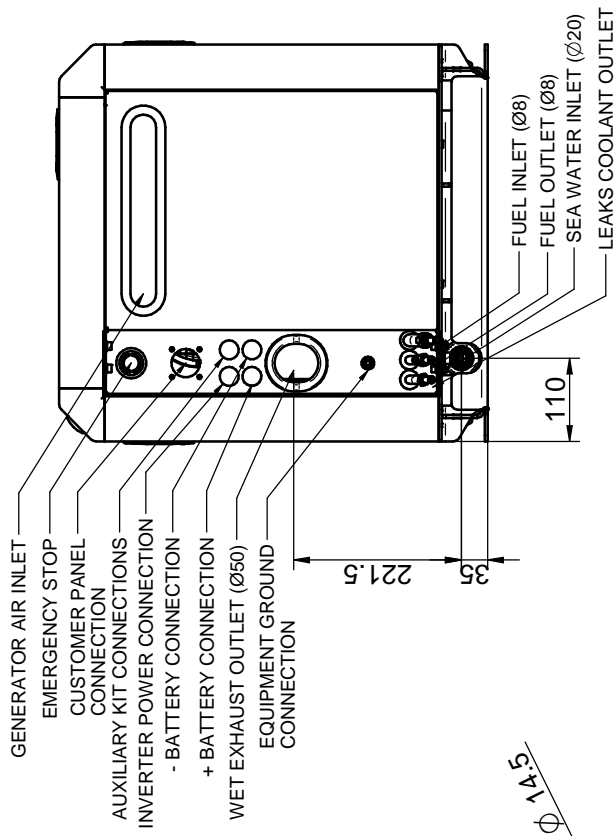
Alternator details

Brand:	Meccalte	Cos φ:	1
Model:	PM5G	Tropicalized:	Yes
IP protection*:	23	Excitation system:	Brushless
Number of poles:	20	Alternator type:	Synchronous
Isolation type*:	H		
Standards:	EN61000-6-3, EN61000-6-2, EN61000 3-2/3/12, EN550002, EN1000 6-1		

Section 7 - Dimensions



Critical Dimensions (XXX)		Limits for Nominal sizes (mm)		Tolerance Class		DIN-7168		Tolerance Class	
over	±0,2	from	±0,05	over	6	over	0	over	Coarse
to	±0,15	to	±0,1	to	30	to	6	to	Medium
to	±0,3	to	±0,2	to	100	to	30	to	Fine
to	±0,8	to	±0,5	to	300	to	100	to	Medium
to	±1,2	to	±0,8	to	500	to	300	to	Coarse
8 VSC GENSET		GRUPO 8 VSC		8 VSC GENSET		GRUPO 8 VSC		8 VSC GENSET	
MATERIAL		FINISH		TREATMENT		SCALE		Remove All Burrs And Sharp Edges	
DRAWN VICTORG		MODIFIED VICTORG		CHECKED P.IGLESIAS		DRAWN DATE 12/09/2024		LAST DATE REV. 18/02/2025	
Tolerance Class Medium		Tolerance Class Medium		Tolerance Class Medium		Tolerance Class Medium		Tolerance Class Medium	
Sole		Sole		Sole		Sole		Sole	
SOLE, S.A.		SOLE, S.A.		SOLE, S.A.		SOLE, S.A.		SOLE, S.A.	
FA1936		FA1936		FA1936		FA1936		FA1936	
A		A		A		A		A	

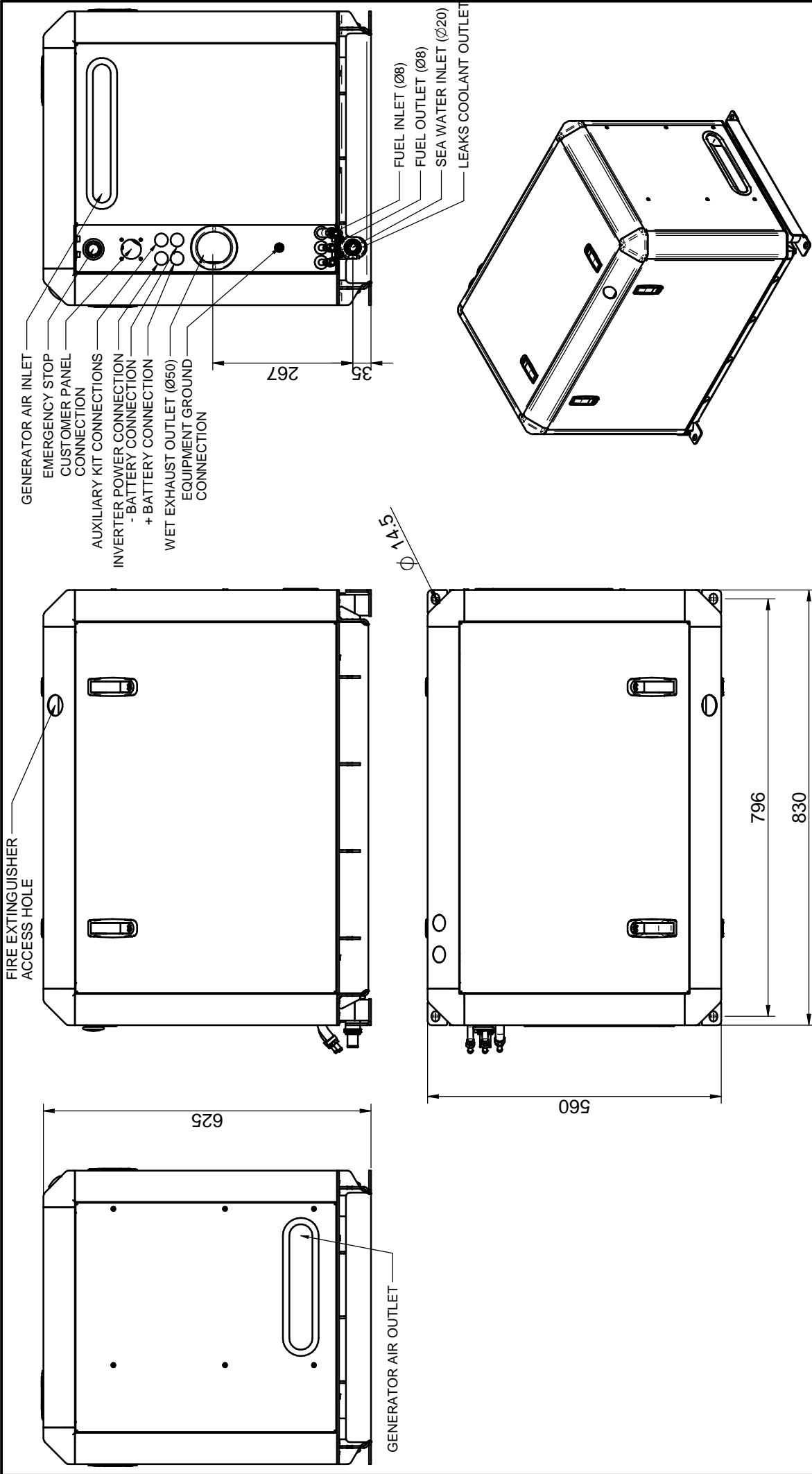


12 VSC GENSET
GRUPO 12 VSC

Medidas Nominales (mm)		Cotas Críticas (XXX)	
Grado de Precisión	0	6	30
a	30	100	300
a	30	100	300
a	30	100	300
Fin	±0.05	±0.1	±0.15
Medio	±0.1	±0.2	±0.3
Basto	±0.2	±0.5	±1.2

MATERIAL	ACABADO	TRATAMIENTO	PRESENTACION	ESCALA
DIBUJADO VICTORG	MODIFICADO VICTORG	VERIFICADO VICTORG	P.IGLESIAS	1/5
GRADO DE PRECISION MEDIO	SOLE S.A.		FECHA CREACION	ULTIMA REVISION
			12/09/2024	02/07/2025
			FA1937	A





Medidas Nominales (mm)		Cotas Críticas (XXX)	
Grado de Precisión de DIN-7168	0	6	30
Fino	±0,05	±0,1	±0,15
Medio	±0,1	±0,2	±0,3
Basto	±0,2	±0,5	±1,2
Grado de Precisión	0	6	30
Medio	±0,1	±0,2	±0,3
Basto	±0,2	±0,5	±1,2

16 VSC GENSET			
GRUPO 16 VSC			
MATERIAL	ACABADO	TRATAMIENTO	PRESENTACION
DIBUJADO: VICTORG	MODIFICADO: VICTORG	VERIFICADO: P. IGLESIAS	FECHA CREACION: 12/09/2024
GRADO DE PRECISION: MEDIO	Sole <small>BY APPOINTMENT</small>		SOLE, S.A. FA1938
ULTIMA REVISION: 02/07/2025			A

Sailing to new horizons

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ADVANCE

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Nº ES065498-1

U_CTGR8VSC_ES
Revisión 3
02/2026