

Marine Generators

Operator's manual

8 GSA/GSAC
10 GTA/GTAC
12 GSA/GSAC
14 GTA/GTAC
17 GSA/GSAC
20 GTA/GTAC

U_CT2644EPA_EN
Revision 0

⚠ WARNING

Proposition 65 Warning Statement

Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Always start and operate the engine in a well-ventilated area.

If in an enclosed area, vent the exhaust to the outside.

Do not modify or tamper with the exhaust system.

Do not idle the engine except as necessary.

For more information go to www.P65warnings.ca.gov/diesel

Presentation

Dear Customer,

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 engine, as it can be of great use in the future.

Our goal as a manufacturing company is to 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.

Table of contents

Safety precautions and instructions.....	7
Solé Advance Warranty	14
Section 1 – Generator Information	17
1.1. Generator Identification.....	17
1.2. Generator parts identification	19
Section 2 – Installation	21
Section 3 - Operation.....	22
3.1. Pre-start Checklist.....	22
Fuel, Oil and Coolant	22
Air Inlet	22
Engine Oil Level	22
Coolant Level	23
Fuel Level.....	23
Seawater Filter.....	23
3.2. Generator Operation	24
Connecting load.....	24
Engine Temperature	24
Standard values.....	24
Checking	25
Low temperature operation	25
3.3. After Operation	25
Disconnect the load.....	26
Disconnect the battery	26
Close the seawater intake valve.....	26
Section 4 – Programmed Maintenance	27
4.1. Maintenance	27
4.2. Maintenance Table	28
4.3. Basic Maintenance Instructions.....	30
Oil change	30
Oil filter replacement.....	30
Coolant change.....	30
Cooling system bleeding	31
Drive belt adjustment and replacement	31
Seawater pump maintenance	31
Anode replacement	31

Fuel filter replacement	31
Fuel System Bleeding	31
Air Filter Replacement	32
Exhaust System	32
Section 5 – Troubleshooting.....	34
Section 6 – Disposal instructions.....	35
Section 7 - Technical Data	36
Section 8 - Dimensions	43

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.

Read and understand the safety instructions outlined below. Keep all safety labels in good condition and replace them if they become damaged.

Unauthorized modifications to the generator or its systems may affect its operation, emissions, and safety parameters.

Types of Safety Precautions



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



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



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

Fire and Explosion Hazards



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, or other potential sources of spilled fuels or fuel vapours. Keep the compartment and the engine clean and free of debris to minimize the risk of fire. Never add fuel to the tank while the engine is running. 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.



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. Shut down the generator and continuously discharge entire contents of a halon or CO2 portable fire extinguisher.

⚠ WARNING

If any fuel, oil, or exhaust leak is detected, stop the engine immediately. Allow the engine to cool completely before carrying out any repairs. Contact between hot surfaces and spilled fuel or oil, or the presence of exhaust gases near flammable materials can lead to fire, property damage, or personal injury. Do not store fuel, oil, or any other flammable substances near the engine. These materials can ignite or explode. Keep the engine and its surrounding area free from dust, dirt, and any foreign substances.

⚠ WARNING

When inspecting fuel, engine oil, coolant, battery electrolyte, or similar components, always use a flameproof inspection lamp. Ordinary lighting devices may ignite vapors and create a risk of explosion.

⚠ WARNING

Keep fire extinguishers accessible and be familiar with their use. Maintain a first-aid kit in an easily accessible location. Establish an emergency plan for fire or accidents, including evacuation routes, emergency contact points, and communication procedures.

Exhaust Gases and Carbon Monoxide

⚠ WARNING

Carbon monoxide (CO) can cause severe nausea, fainting or death. Engine exhaust gases contain 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, stomach-ache, vomiting, nausea, etc).

Electrical Hazards

⚠ WARNING

Short circuits in electrical systems can cause fires and electric shocks that may result in severe injury or death. The electrical system and its grounding must be properly protected against short circuits.

⚠ 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 get 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.

Hot Surfaces and Pressurized Fluids

⚠ CAUTION

Do not touch the engine during or immediately after operation. A hot engine may cause burns.

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. Do not fill in the cooler until the coolant temperature has decreased.

If fuel is leaking from the high-pressure fuel injection pipe, do not touch it. The fuel injection pipe delivers hot and high-pressure fuel.

Operation, Maintenance and Servicing

⚠ WARNING

Never modify the change the speed setting. Any modification may cause the engine and connected equipment to operate at excessive speed, leading to hazardous conditions and potential accidents.

⚠ CAUTION

Do not start the generator from any location other than the control panel. Doing so bypasses safety interlocks and creates an operational hazard.

⚠ CAUTION

Before working on the engine or connected equipment, disable the engine as follows.

1. Set the generator controller to OFF Mode.
2. Disconnect the power input from battery.
3. Disconnect the battery cables. Remove the negative terminal first when disconnecting the battery. Reconnect the negative terminal lead last when reconnecting the battery.

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

⚠ CAUTION

Improper servicing or replacement parts can result in serious personal injury or death, as well as equipment damage. Service personnel must be qualified to perform both electrical and mechanical work.

⚠ CAUTION

Before performing inspection or maintenance, apply lockout/tagout procedures. Be sure that the generator is stopped. Turn off the controller, set the battery switch to OFF, and attach a "DO NOT OPERATE" label on the starting button.

⚠ CAUTION

Remove all tools used during maintenance and inspection work from the top of the engine and areas close to it.

⚠ CAUTION

Use only fuel, oil, and coolant that meets the specifications indicated in the data sheet.

⚠ CAUTION

Never dispose used oil, coolant, or other hazardous fluids in the environment. Discard them in accordance with applicable laws and regulations.

⚠ NOTICE

Do not operate the starter for more than 10 seconds at a time. If the engine fails to start, wait at least one minute before trying again. Excessive cranking can affect the battery capacity or cause the starter to damage.

Mechanical Hazards

⚠ CAUTION

Incorrect lifting and transport of heavy components can cause serious injury or damage to the equipment. To lift and move the generator, follow all procedures recommended in the Installation Manual.

⚠ CAUTION

Ensure that all protective covers over rotating engine components are properly installed. Repair or replace any damaged or loose covers. Never remove protective covers while the engine is running.

⚠ CAUTION

The generator must not be used as a step. Standing or placing weight on the generator can damage its components, affect proper operation, or create a risk of injury. Always use a stable foothold during maintenance.

Abnormal Operation and Engine Protection

⚠ CAUTION

Do not attempt to restart the engine immediately after an abnormal shutdown. If the engine stops due to a malfunction, identify and correct the cause before restarting. Operating the engine with any damage and without proper repairs may result in severe damage.

⚠ CAUTION

Stop the engine immediately if oil pressure drops abnormally and inspect the lubrication system. Continuing to run the engine under low oil pressure can cause bearing seizure and other serious failures.

⚠ CAUTION

Do not allow water to enter the engine through the air inlet or exhaust outlet. Never wash the engine while it is running, as water may be drawn into the intake. Water entering the combustion chambers can cause hydraulic lock and severe internal damage.

Personal Safety and Work Environment

⚠ NOTICE

The operator of the engine must 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.

The operator of the engine must wear personal protective equipment such as gloves, work shoes, eye and hearing protection as required by the task.

The area in which the operator is working must be kept tidy and free of oil and other liquid spillages and solid waste.

⚠ NOTICE

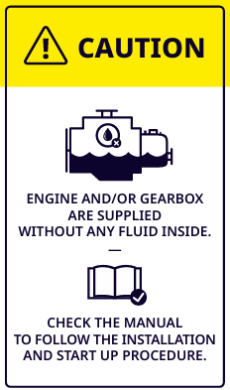
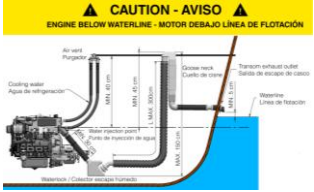
The generator produces noise. Prolonged exposure may increase the risk of hearing damage. Use suitable hearing protection to safeguard against generator noise.

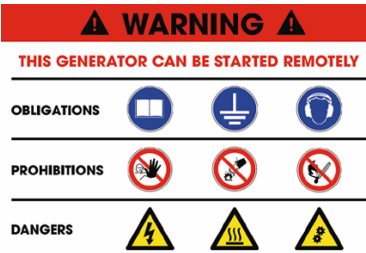
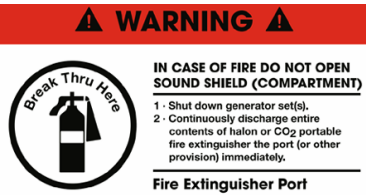
Electromagnetic Interference

⚠ NOTICE

The generator emits electromagnetic interference. If the generator is affecting other devices, or if those devices are affecting the generator, increase the distance between them.

Engine labels

	If the generator fails to start after several attempts, attempting to start it again may cause water to enter inside. If the generator does not start, it is recommended that you close the drain valve, drain the water from the exhaust system, and do not attempt to restart the generator until the cause of the starting failure has been identified.
	The generator is supplied with no fluids inside. Please refer to the manual for the installation and commissioning procedure, as well as the fluid capacity.
	Installation label for the generator's exhaust system, above and below the waterline.
	The label indicates the coolant filling cap. Do not open the cap when the engine is hot, as the coolant is at a high temperature and under high pressure.
	Warning label regarding potential hazards such as hot surfaces, electrical hazards or rotating parts. It specifies the minimum weight that the crane used to handle the generator set must be capable of lifting and warns that the generator set must not be used as a step. The operator's manual must be read before operating the generator set.
	Connection point for the battery cables to the generator. Red cable (positive) and black cable (negative).

	Label identifying the seawater pump.
	Label identifying the oil filler cap.
	Label identifying the presence of a zinc anode.
	The label warns of the presence of electrical voltage in the equipment, indicating a risk of electric shock. This warning highlights the need to take extreme care and follow safety procedures before entering or working in the marked area.
	Moving parts. Keep your hands, feet, hair, clothing and test leads away from the belts and pulleys whilst the generator set is running.
	The label states that you must not stand on the unit. Standing on the equipment may damage it or affect its operation. There is also a risk of falling or injury.
	The label warns that the unit can be started remotely. Therefore, please note the following: REQUIREMENTS: Read the manual, earth the equipment and wear ear protection. PROHIBITIONS: Do not touch hazardous areas of the unit, do not use water to extinguish flames, do not light flames inside the equipment compartment. HAZARDS: Electrical risk, hot surfaces and moving parts.
	The label indicates the correct procedure to follow in the event of a fire within a cabin-equipped group.

Solé Advance Warranty

Solé Advance Full Warranty

Solé ensures that each engine and generator shipped meets the specifications and is free from manufacturing defects. Our full warranty takes effect on the date the engine is sold by Solé. If the official commissioning document is issued, the warranty will instead take effect on the date of commissioning, if the commissioning occurs within six months from the date of sale by Solé to the dealer.

Additionally, it is transferable, ensuring future buyers. At Solé, we keep our products in optimal condition, offering solid support at every stage.

Unless expressly authorized by Solé Advance, warranty periods apply according to the period in months from the date of purchase or the maximum number of operating hours (whichever occurs first) as indicated in the following table:

Full Warranty Coverage Periods				
Product	Pleasure		Duty	
	Months	Hours	Months	Hours
Engine	36	1000	12	2000
Generator	36	1000	12	2000

Solé Advance Limited Warranty

In addition to the Total Warranty, Solé provides an additional 24-month coverage period for the following engine components: Engine block, cylinder head, crankshaft, camshaft, flywheel housing, timing gear casing, timing gears, and connecting rod.

Warranty Extension

By contracting this additional service, you extend our Total Warranty, giving you full coverage for your entire equipment. You choose the extension that best suits your needs: by years and/or operating hours.

With the Warranty Extension, we reaffirm our commitment to providing you with continuous peace of mind throughout the lifetime of your product.

Restrictions

Coverage:

- a) To validate the warranty is necessary fill and send the inspection prior to the delivery of propulsion engines or generator to Solé Advance through an official installer.
- 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 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 will not be effective if the inspection prior to the delivery of propulsion engines and generator to Solé is not correctly filled in and sent to an official installer.
- 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) 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 because of a failure.

Responsibilities

Responsibilities of the manufacturer:

Solé Advance's obligations are limited to repairing defective parts or, at Solé Advance's discretion, refunding the purchase price or replacing the parts to prevent any malfunction resulting from defective materials or manufacturing faults covered by the warranty.

Solé Advance reserves the right to modify the design of any product without assuming any obligation to modify a previously manufactured product. This manual, as well as technical documents, manuals or commercial brochures, are subject to change without prior notice.

Responsibilities of the purchaser:

The care, operation and maintenance of the product in accordance with the specifications in the user and maintenance manuals is the responsibility of the buyer. The buyer must provide proof of all maintenance services performed. The costs of these services, components and fluids are borne by the buyer.

The maintenance operations described in this manual must be carried out during the Contractual Warranty Periods (Limited and Extended Coverage) by an Authorised Solé Advance Service Centre. Failure to comply with this condition will invalidate the warranty for all purposes. In all cases, both the materials (oils, filters, etc.) and the labour used are the responsibility of the purchaser. You must keep the invoice for the work carried out as proof that it has been done.

If the service is not covered by the warranty, the purchaser shall pay for all labour, related materials and any other expenses associated with 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 – Generator Information

1.1. Generator Identification

Identification label

The serial number label is located above the cooler. The specifications label of generator it's located above the alternator case. In addition, all generators are marked with the serial number on the block, on the fuel injection pump.

For generators with canopy, the specifications label it's located outside, as shown in the following picture.

Emissions label

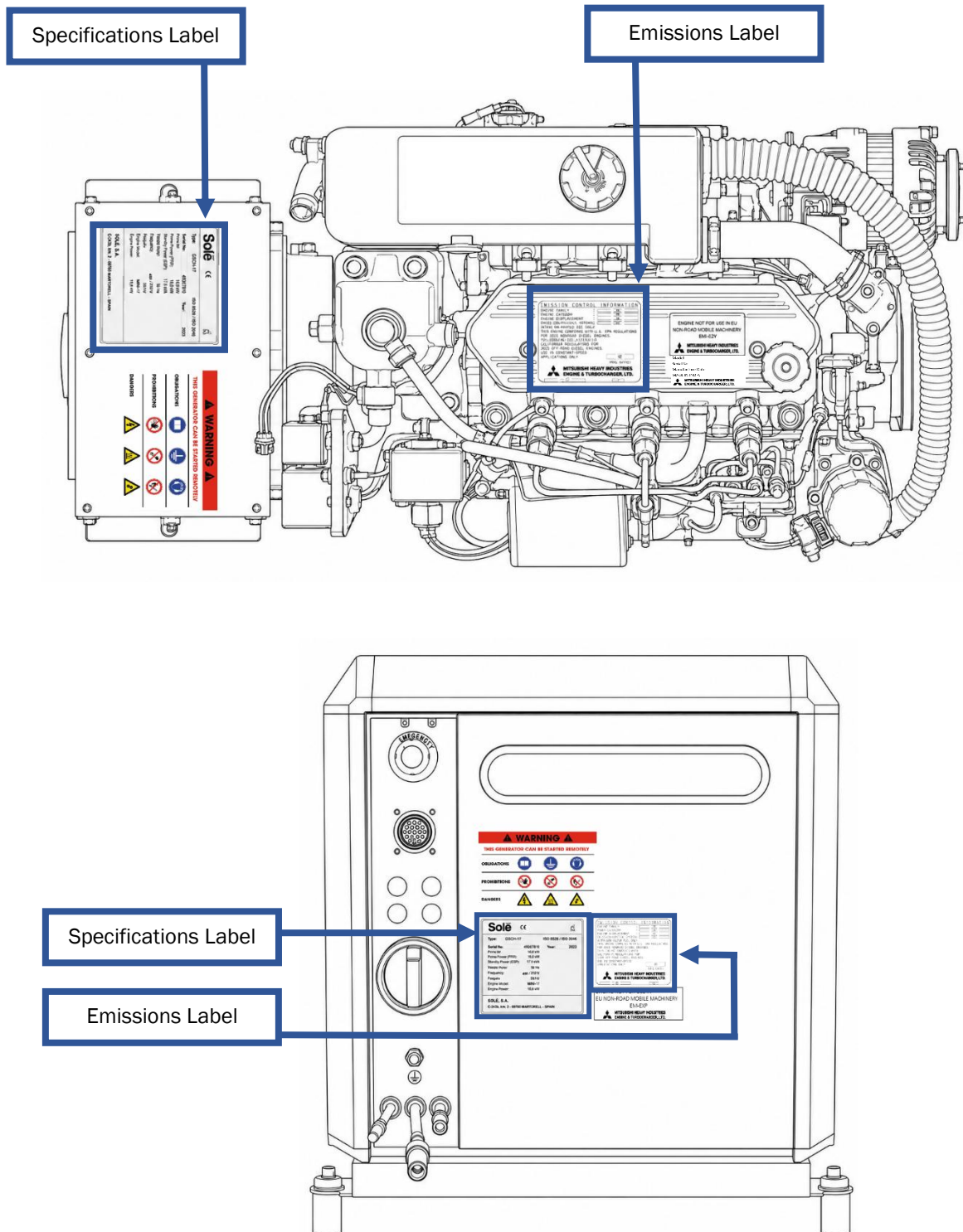
The label confirming compliance with EPA emissions regulations is located on the rocker cover. For generators with canopy, a second emissions label is also placed next to the specifications label.

This label contains the following information.

EMISSION CONTROL INFORMATION	
ENGINE FAMILY	: (A)
POWER CATEGORY	: (B)
ENGINE DISPLACEMENT	: (C)
EMISSION-CONTROL SYSTEM	: (D)
ULTRA LOW SULFUR FUEL ONLY	
THIS ENGINE COMPLIES WITH U. S. EPA REGULATIONS FOR 2025 NONROAD DIESEL ENGINES.	
THIS ENGINE COMPLIES WITH CALIFORNIA REGULATIONS FOR 2025 OFF-ROAD DIESEL ENGINES.	
USE IN CONSTANT-SPEED APPLICATIONS ONLY	
	(E)
	(MFG DATE)
 MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.	
(F)	(G)

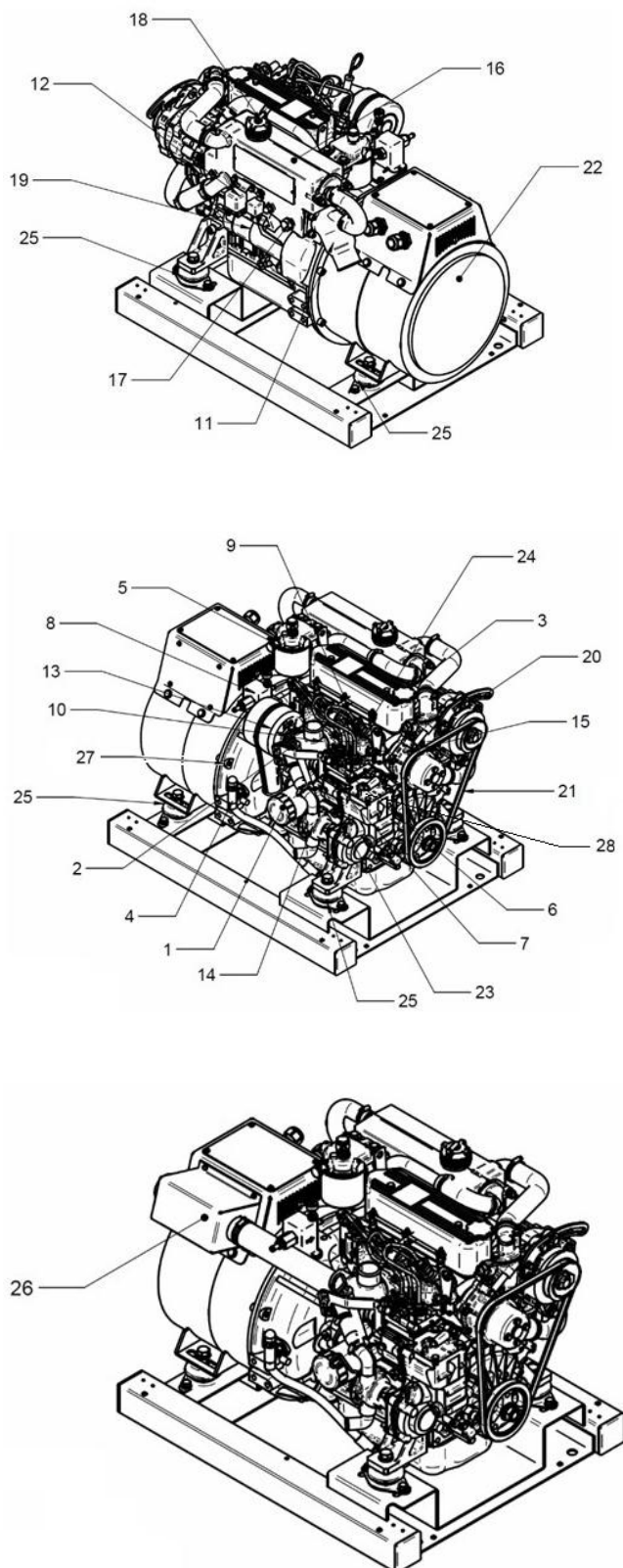
A	Engine family
B	Power category
C	Engine displacement
D	Emission control system
E	MFG Date
F	Reference
G	Identification symbol

The attached images show the location of all the indicated labels on the 8 GSA/GSAC and 10 GTA /GTAC generator. On the other units, the labels are attached to the same components, although their layout may vary slightly.



1.2. Generator parts identification

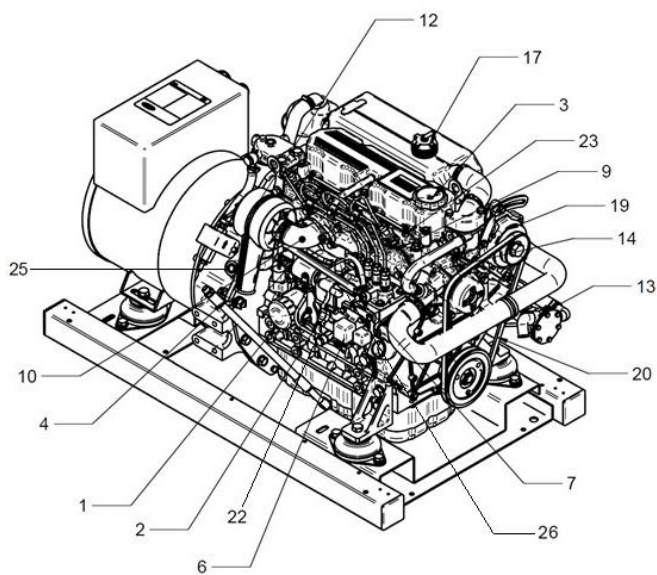
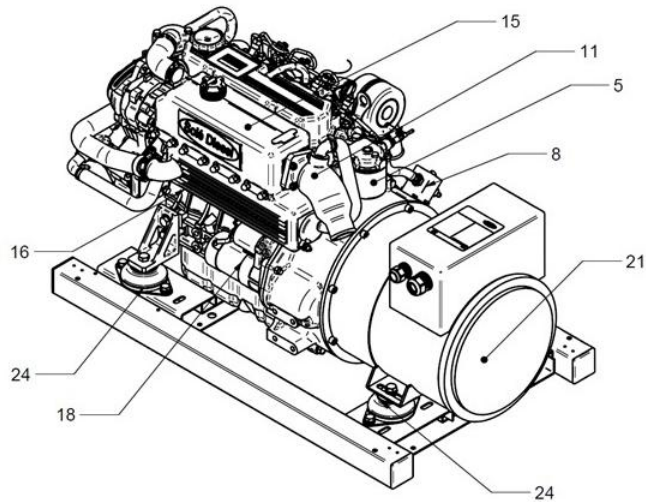
Generators: 8 GSA / 10 GTA / 12 GSA.



PIECE	ELEMENT
1	Oil filter
2	Oil dipstick
3	Oil filler
4	Oil outlet pipe
5	Fuel filter
6	Oil drain plug
7	Injection pump
8	Electrical fuel pump
9	Injectors
10	Air inlet elbow
11	Wet exhaust elbow
12	Relay set
13	Air filter
14	Seawater pump
15	Raw water pump
16	Cooler assy
17	Coolant drain plug
18	Coolant filler plug
19	Starter assy
20	DC Alternator
21	V-belt
22	AC alternator
23	Pressure atmospheric sensor
24	Glow plugs
25	Silentblocks
26	Governor bracket housing ¹
27	Pick up
28	ECU

¹ Only for 8 GSA generators.

Generators: 14 GTA / 17 GSA / 20 GTA.



PIECE	ELEMENT
1	Oil filter
2	Oil dipstick
3	Oil fill cap
4	Oil drain tube
5	Fuel filter
6	Relay set
7	Fuel pump
8	Electrical fuel pump
9	Injectors
10	Air inlet elbow
11	Wet exhaust elbow
12	Air filter
13	Seawater pump
14	Raw water pump
15	Cooler assy
16	Coolant drain plug
17	Coolant filler plug
18	Starter assy
19	DC alternator
20	V-belt
21	AC alternator
22	Atmospheric sensor
23	Glow plugs
24	Silentblocks
25	Pick up
26	ECU

Section 2 – Installation

The installation of this generator must be carried out exclusively by an authorized Solé Service Centre, as it requires specific knowledge of the generator and its safe integration on board. Incorrect installation may compromise the performance of the equipment, reduce its service life, or create electrical and operational risks for the vessel and its occupants.

Before starting any work, the installer must consult the corresponding Installation Manual for the specific generator model where all the installation requirements are presented. Only by following the procedures described in that manual can the system operate within the parameters defined by Solé Advance and the validity of the equipment warranty be ensured.

Any intervention, modification, or connection not described in the Installation Manual, or performed by unauthorized personnel, may lead to malfunction, system damage, or safety risks for the vessel.

Section 3 - Operation

3.1. Pre-start Checklist

Before each start, all verifications below must be checked.

Fuel, Oil and Coolant

Fuel Recommendations

The fuel type and sulfur content must comply with all emissions regulations applicable in the area where the generator will operate.

- Low-sulfur diesel with a sulfur concentration below 15 ppm must be used in areas where **US EPA Regulation for non-Road engines** is applied. In these areas, ASTM S15 Grade 2-D diesel fuel must be used. Fuel ASTM S15 Grade 1-D can be used in areas where temperatures are below -10°C.

Engine Oil Recommendations

The engine oil must meet API CI-4 specifications to ensure adequate lubrication and long-term protection of engine components. Regarding the oil viscosity, a multi-grade oil such as 15W40 is recommended.

Engine Coolant

Coolant must comply with ASTM D3306 standards. Use a coolant containing 50% ethylene glycol, providing freeze protection down to -37°C and ensuring corrosion resistance within the cooling system.

⚠ WARNING

Do not mix different fluid types or brands, as compatibility issues may lead to lubrication failure. Always dispose of used fluids in accordance with local environmental regulations, as used engine liquids may contain substances known to be harmful.

Air Inlet

Check that the air inlets are clean and clear. Check that the air filter is properly installed and cleaned to prevent unfiltered air from entering the engine.

Engine Oil Level

Check the oil level before each start-up to ensure that the level is correct. To check the oil level, you should follow the following procedure:

1. Remove the dipstick.
2. Clean the end of the dipstick.
3. Re-insert the dipstick completely into the guide.
4. Pull it out again to check the oil level.

Note that the marks on the oil dipstick refer to the engine in horizontal position. Therefore, check the tilt of the engine when the oil level has been checked. If the engine is installed without tilt, the oil level should be between the minimum and maximum mark on the dipstick.

If the engine is installed with tilt, the minimum and maximum level indicator marks vary. The Official Installer must leave the dipstick marked with the new maximum and minimum level indication and oil level checks will be made based on this new mark.

These genset models have two oil dipsticks. The oil level can be checked on either dipstick.

⚠ WARNING

Do not operate the engine if the oil level is below the minimum mark or above the maximum mark.

⚠ WARNING

Hot oil can cause severe burns. Allow the engine to cool before checking or filling oil.

Coolant Level

Release the pressure in the cooling system before removing the plug. To release pressure, cover the pressure plug with a thick cloth and turn it slowly counterclockwise. Remove the plug when the pressure has been fully released and the engine has cooled down. Check the coolant level in the cooler.

⚠ WARNING

Never open the coolant pressure cap when the engine is hot; coolant under pressure can cause severe burns. Ethylene glycol-based coolant is toxic. Avoid contact with skin and eyes. Dispose of used coolant according to local hazardous waste regulations.

Fuel Level

Periodically, it is necessary to check the fuel level to ensure engine operation. Also, if the fuel pump sucks air when the fuel level is lower than the pump suction, it could be damaged. When possible, keep the fuel tank full. Temperature changes can cause condensation of moist air to accumulate at the bottom of the tank. If the fuel pump sucks in this water, it can lead to increased corrosion or the inability to start the engine.

⚠ WARNING

Diesel fuel can cause severe injury or death. Do not smoke or permit flames or sparks near the fuel injection system, fuel line, fuel filter, or other potential sources of spilled fuels or fuel vapours. Diesel fuel vapours can accumulate in confined spaces. Ensure proper ventilation of the engine compartment and immediately clean any spilled fuel. Do not use fuel with sulfur content exceeding regulatory limits, as this may cause increased emissions.

Seawater Filter

It is important to install a seawater filter (supplied as an accessory) between the bottom tap and the saltwater pump to prevent impurities from clogging the cooling circuit or the pump itself.

To clean the Solé Advance water filter, the following procedure must be followed:

- Remove the filter cover.
- Remove the filtering component and clean it.
- Reinstall it, making sure that the cover is correctly tightened.
- Start the engine to check for seawater leaks.

3.2. Generator Operation

Keep a log of maintenance and the running hours and perform any appropriate maintenance base on the engine hours and table on Section 4.

⚠ WARNING

If the generator fails to start, three automatic start attempts will be performed. If the generator still does not start, stop cranking immediately to avoid damaging the starter motor or allowing water to enter through the exhaust system. Identify the cause of the failure and carry out the necessary repairs before attempting to start the generator again.

Once the equipment has been started and during operation, the following points must be observed points.

Connecting load

The load must be connected gradually to avoid overstressing the engine.

The power rating indicated on the generator's nameplate defines the maximum electrical load the unit can supply. If the total connected load exceeds this rating, the generator will shut down. The generator is rated under standard pressure, temperature, and humidity conditions in accordance with ISO 3046; variations from these conditions may reduce available engine power.

⚠ CAUTION

No-load operation should be kept to a minimum. When running without load, cylinder temperatures may drop to a level where fuel does not burn completely.

Engine Temperature

Before adding load to your generator, it is essential that the engine reaches its normal operating temperature. This warm-up process ensures proper lubrication of of the internal components, reducing premature wear.

To do this, start the generator and let it run without load until the coolant temperature and oil pressure stabilize within the range specified in the technical data sheet. Only after this warm-up period can you proceed to clutch the engine or connect the load to your generator.

Standard values

Each generator model has a specific range of operating values that guarantees its correct operation and durability. These values can be found in the technical data sheet.

It is essential to consult the technical data sheet to know the limits of your equipment and to avoid operating it outside its specifications. operating it outside its specifications, as exceeding these ranges may cause mechanical failure or even irreversible damage. or even irreversible damage.

Checking

The following checks should also be performed.

- **Vibration.** Verify that the motor does not present excessive vibrations.
- **Leaks.** Check for oil, coolant or fuel leaks by visually inspecting all connections and components. all connections and components.
- **Charging.** Check that the engine or generator can support the connected load without exceeding its operating limits or showing signs of overload (smoke, low rpm).
- **Panel.** Check that the instrument readings on the panel are within the correct ranges.
- **Exhaust system check.** Check that there are no blockages or leaks in the exhaust system. system. Check the condition of all elements of the exhaust system and check that the connections are tight. connections are tight. Confirm operation of the saltwater pump at start-up, indicated by the discharge of water from the exhaust outlet. Take the opportunity to check for the presence of excessive smoke from the exhaust outlet.

Low temperature operation

Whenever the atmospheric temperature drops below freezing, the following events may occur.

- Coolants may freeze.
- Oil and fuel become thicker.
- There is a voltage drop across the battery terminals.
- The intake air temperature is low, and the engine has difficulty starting

To prevent damage caused by low temperature operation, the motor must be prepared, and the following recommendations must be observed prepared, and the following recommendations should be considered.

1. Use special low temperature coolant or a suitable concentration of antifreeze agent.
2. Close the seawater tap when the engine is off. Open the seawater filter cap and start the engine by adding a mixture of fresh water and appropriate antifreeze agent concentration until the seawater circuit is completely full. Turn off the engine and replace the seawater filter cover. Before restarting the engine, open the seawater tap. Repeat this operation every time the engine is used at temperatures below 0°C.
3. Use oil of suitable quality and viscosity. In extreme conditions consult with technical service.
4. Cover the battery with a suitable material to protect it from 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 engine, make sure that the glow plugs are sufficiently fanned.

3.3. After Operation

After each operating period of the generator set, the following actions must be carried out to ensure that the equipment remains in safe condition and does not suffer damage while it is stopped. These operations reduce the risk of failures, electrical overloads, battery discharge, and damage to mechanical and electrical systems.

Disconnect the load

Before stopping the generator set, all connected electrical loads must be completely disconnected progressively. Once the load has been removed, allow the generator to run for a few minutes without load to ensure proper stabilization, and then proceed to shut it down. Never stop the generator set while it is supplying electrical loads.

Disconnect the battery

Once the generator set has been stopped, the main battery switch must be turned off to avoid unnecessary electrical consumption and to prevent battery discharge during periods of inactivity.

If the system is not equipped with a main battery switch, the battery terminals must be disconnected manually, always starting with the negative terminal.

Close the seawater intake valve

The seawater intake valve of the cooling system must be closed to prevent seawater from entering the engine or generator while the system is not in operation.

This action helps protect internal components from corrosion and water ingress during shutdown periods.

Section 4 – Programmed Maintenance

Maintenance and troubleshooting procedures involve risks that can cause serious injury or even death. Therefore, these procedures should only be carried out by authorized Solé Advance services.

Any modification, alteration, or removal of the emission control system or exhaust system may void the EPA certification granted to this equipment. These modifications may increase pollutant emissions and adversely affect the performance and safety of the generator.

4.1. Maintenance

During the service life of the engine, the following maintenance should be performed.

First 50 hours maintenance. The first 50 hours maintenance is a unique procedure that is performed only once in the entire engine's useful life, specifically when the engine reaches 50 hours of use. It consists of changing the engine oil and oil filter to remove manufacturing residues and adjust components.

Maintenance every 250 hours. Every 250 hours the engine oil and oil filter should be changed. oil and engine oil filter change. The seawater pump should also be serviced and the engine anodes replaced. replace the engine anodes.

Maintenance every 500 hours. Every 500 hours, the same maintenance should be performed as in the previous 500-hour maintenance. maintenance performed in the previous 250-hour maintenance. and air filters are also changed, and valve adjustment is performed.

Maintenance every 1000 hours. Every 1000 hours, the same maintenance performed in the previous performed in the previous maintenance of 500 hours. The nozzles and belts are also replaced, and the operation of the pump is checked. The operation of the injector pump and turbocharger are also checked. In addition, the coolant is also changed, and the cooler is cleaned.

To be able to carry out the indicated maintenance, Solé Advance has the following packs available maintenance packs. Each of these packs contains the material to carry out the necessary maintenance when the engine or generator necessary when the engine or generator has certain hours of operation.

- Maintenance pack first 50 hours
- Maintenance pack 250 hours
- Maintenance pack 500 hours
- Maintenance pack 1000 hours

If you wish to have several packs on board to be able to perform maintenance over a long period of time, the following table will guide you on how many packs of each type to purchase time, the following table will guide you to know how many packs of each type you should buy.

Maintenance Pack	50h	250h	500h	750h	1000h	1250h	1500h	1750h	2000h	2250h	2500h	2750h	3000h	3250h	3500h	3750h	4000h
50h Pack	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
250h Pack	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8
500h Pack	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4
1000h Pack	0	0	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4

4.2. Maintenance Table

The scheduled maintenance table summarizes the actions to be performed when the motor has certain hours of operation.

If the equipment operates more than 500 hours per year, maintenance should be performed following Interval 1. After the 1000-hour maintenance is completed and the equipment has been operated for an additional 250 hours, the maintenance interval is restarted, beginning again with the 250-hour maintenance. This process ensures that the equipment is properly maintained at regular intervals.

The following table indicates which pack is required to perform maintenance when the engine has hours of operation.

50h	250h	500h	750h	1000h	1250h	1500h	1750h	2000h	2250h	2500h	2750h	3000h	3250h	3500h	3750h	4000h
50h Pack	250h Pack	500h Pack	250h Pack	1000h Pack	250h Pack	500 Pack	250h Pack	1000h Pack	250h Pack	500h Pack	250h Pack	1000h Pack	250h Pack	500h Pack	250h Pack	1000h Pack

If the equipment does not reach 500 hours of operation per year or 1000 hours in a two-year period, Interval 2 maintenance should be followed. years, then Interval 2 maintenance should be followed.

basic maintenance every year and more complete maintenance every two years. This ensures that, at least once a year, the required basic maintenance is performed.

	Item to inspect	First 50 h	250h	500h / 1 año	750h	1000h / 2 años
General	Tightening torque	I	I	I	I	I
	Valve adjustment			I		I
	Exhaust, noise and vibrations		I	I	I	I
	Leaks	I	I	I	I	I
	Compression pressure					I
Lubrication	Engine oil	R	R	R	R	R
	Engine oil level	I	I	I	I	I
	Oil filter	R	R	R	R	R
Fuel	Fuel tank			I		I
	Fuel filter			R		R
	Fuel sedimenter filter	I		R		R
	Injection pump					I
	Injector					I
	Glow plugs			I		I
Cooling	Coolant					R
	Coolant level	I	I	I	I	I
	Cooling circuit					C
	Water filter	I	I	I	I	I
	Seawater pump		R	R	R	R
	Anode		R	R	R	R
Intake	Air filter	I		R		R
	Turbo					I
Electrical	Starter motor and alternator					I
	Belts	I		I		R
	Battery level	I	I	I	I	I
	Connections		I	I	I	I
AC Alternator	General cleaning			C		C
	Tightening torque					I
	Check windings					I
	Check bearings					I

4.3. Basic Maintenance Instructions

The equipment maintenance must be carried out exclusively by an Official Solé Advance Service Center. However, in case of an emergency, the following basic procedures can be performed by the user to temporarily solve unexpected issues.

Accidental or remote start-up can cause serious injury or even death. Disconnect the battery power supply to prevent any unexpected start-up while performing maintenance on the generator.

Oil change

- Run the engine to allow the oil to flow more easily.
- Turn off the engine and ensure safe working conditions.
- Locate the oil pan drain plug or use the extractor pump provided with the engine to drain the used oil.
- Reinstall the drain plug, replacing the copper washer.
- Refill the engine with the recommended oil up to the correct level on the dipstick. The oil must be added through the rocker cover plug, identified with the oil symbol.

The oil specifications can be found in the Technical Data Sheet in Section 8.

⚠ CAUTION

Low oil levels can cause serious damage to the engine, while excessive oil levels can increase oil consumption.

⚠ CAUTION

Do not mix two different oil types.

Oil filter replacement

- Locate the oil filter and use an oil filter wrench to remove it.
- Lubricate the gasket of the new filter with clean oil and install it by hand, without over-tightening.

The oil specifications can be found in the Technical Data Sheet in Section 8.

Coolant change

- Cool down the engine and drain the used coolant by loosening the drain plug and/or removing the lowest hose in the system.
- Clean the cooling system (cooler and hoses) with fresh water if necessary.
- Refill the engine with the recommended coolant until the cooler is completely full. The coolant must be added through the cooler cap, identified with the coolant symbol.
- Bleed the system to remove any air bubbles by loosening the engine's bleed screws.

The coolant specifications can be found in the Technical Data Sheet in Section 8.

⚠ CAUTION

Allow the generator to cool before removing the radiator cap or draining the engine. High-temperature and high-pressure coolants can cause severe burns. Safety glasses are recommended. Filling a hot engine with cold coolant can cause component failure.

CAUTION

Low coolant levels can cause severe engine damage. Ensure that the system is full.

CAUTION

Do not mix two different coolant types.

Cooling system bleeding

- After filling the system, leave the cooler cap open.
- Start the engine and let it warm up.
- Locate and loosen the engine bleed screws.
- Add more coolant if necessary.
- Close the cap and ensure that the temperature is within the correct range.

The coolant specifications can be found in the Technical Data Sheet in Section 8.

Drive belt adjustment and replacement

- Loosen the tensioner and remove the belt.
- Install the new belt and adjust it according to the specified tension, allowing slight flexibility. The belt deflection should be approximately 11 mm.
- Check the alignment of the pulleys.

Seawater pump maintenance

- Close the seawater intake valve.
- Locate the seawater pump and remove the cover.
- Replace the impeller and cover gasket.
- Reinstall the pump cover and open the intake valve.

Anode replacement

- Locate the sacrificial anodes on your engine.
- Remove the worn-out anode using an appropriate wrench.
- Install the new anode, ensuring good contact.

Fuel filter replacement

- Close the fuel valve.
- Locate the fuel filter and remove it with a filter wrench.
- Fill the new filter with clean fuel before installing it.
- Lubricate the filter gasket with clean fuel and install it by hand, without over-tightening.
- Bleed the fuel system if necessary.

The fuel specifications can be found in the Technical Data Sheet in Section 8.

Fuel System Bleeding

- Locate the bleed screws on your engine, usually found on the filter and injection pump.

- Loosen the screws and open the fuel valve until fuel flows out without air bubbles.
- Tighten the bleed screws.

The fuel specifications can be found in the Technical Data Sheet in Section 8.

Air Filter Replacement

- Locate the air filter at the intake.
- Remove the filter.
- Install the new filter, ensuring proper fit.

Exhaust System

Inspect the exhaust system for leaks and loose hose clamps at the exhaust manifold, elbow, waterlock, muffler, water separator, and hull fittings. Replace any damaged sections.

⚠ WARNING

Exhaust gas is deadly. Do not operate the generator until all exhaust leaks have been fully repaired.

4.4. Maintenance Indications

Failure to perform maintenance according to the intervals and procedures set out in the table above may invalidate EPA certification, as the emissions system may no longer comply with the required regulatory limits. Failure to perform proper maintenance can result in a significant increase in pollutant emissions, poor engine performance, increased fuel consumption, and a shortened equipment life. In addition, prolonged use of a poorly maintained emissions system can cause irreversible damage, leading to costly repairs and possible legal or environmental penalties.

It is the operator's responsibility to maintain the equipment in optimal condition, record all maintenance tasks performed, and ensure that only spare parts, lubricants, coolants, and adjustments authorized by Solé S.A. are used. The use of non-original parts may alter the operation of the engine and invalidate both the manufacturer's warranty and EPA certification. Maintaining a rigorous maintenance program not only ensures regulatory compliance, but also protects the long-term efficiency, reliability and safety of the equipment.

4.5. Winterization and Preservation – Long Storage

If the boat is not used for a long period of time or during the winter, certain tasks must be carried out to keep it in good condition. Carefully follow the steps below:

1. Clean the exterior surface of the engine.
2. Change the motor and inverter oil.
3. Change the oil filter.
4. Change the fuel filter and pre-filter.
5. Disassemble the seawater pump impeller, clean it with fresh water and store it in a place protected from dust and sunlight.
6. Drain and clean the sea water circuit components with fresh water.
7. Check the coolant level and condition. Refill or replace if necessary.
8. Remove and store the air filter. Cover the air intake.
9. If the fuel tank is small, empty it completely and clean it; fill it 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 liters of diesel. On the other hand, if the fuel tank is large, add 1 liter of this additive for every 500 liters of diesel.

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

4.6. Maintenance during the storage

During prolonged storage of the engine or generator, it should be stored in a ventilated, humidity-free indoor area. Extended storage refers to the storage of a storage of equipment for a period equal to or longer than three months.

When the equipment remains in non-operational storage for three months or more, its internal parts may rust and lose its internal parts may oxidize and lose their oil film. As a result, the equipment may become equipment may become stuck after a period.

To avoid this, the engine or generator should be operated periodically during storage by performing the following periodically during storage by performing the following actions at least once a month. once a month.

1. In case of having a battery next to the engine, check the electrolyte level and charge it.
2. Start the engine for approximately 10 seconds.
3. Stop the operation for one minute. Repeat this action two or three times.
4. Make sure that the engine oil pressure rises.
5. Run the engine for 5 to 10 minutes without load as a maintenance operation.

4.7. Operation Conditions Reset

When the engine is restarted after prolonged storage, the following operations should be carried out.

1. Perform an external cleaning of the motor and check its general condition.
2. Fill the fuel tank with clean diesel fuel if this was not done prior to storage. The mixture of diesel oil and anti-corrosion additive that we fill the tank with during winter storage can be used to drive the engine.
3. Check the fuel filter. If the filter is clogged, replace it.
4. Check the oil and coolant level.
5. Check the condition of the rubber hoses in the cooling circuit.
6. Check the condition of the impeller stored and replace it if necessary. Install the impeller.
7. Adjust the belt tension.
8. Unplug the air intake and reinstall the air filter.
9. Reconnect the battery and apply a coating of neutral petroleum jelly to the terminals.
10. Connect the cooling and exhaust system. Open the seawater tap

Once the check is completed, connect the battery, open the bottom tap and start the engine. Check that there are no leaks in the fuel, coolant and oil systems.

Section 5 – Troubleshooting

Some generator maintenance procedures involve risks that could cause serious injury or even death. Only qualified and experienced maintenance personnel familiar with handling fuels, electrical work, and the risks associated with operating machinery should perform these tasks.

If any anomaly appears on the motor, proceed as follows.

- Stop the engine, determine the cause and repair it before continuing to operate your engine or generator.
- Contact Solé Advance Official Service. See section **Solé Advance Warranty**.

The causes of faults can be varied. If the problem is not solved by following the troubleshooting, contact an authorized Solé Advance Service Center. Do not operate the engine or generator if you have not been able to detect the fault.

ENGINE FAILURE	POSSIBLE CAUSES	RECOMENDATIONS
Engine does not start	Loose or corroded battery connections	Clean and retighten battery cables
	Discharged battery	Check battery voltage
	Fuse power cable	Check installation fuse and replace it.
	Empty fuel tank	Check fuel tank level. Fill if necessary
	Dirty fuel tank	Check fuel tank level. Clean if necessary
	Air in the fuel system	Bleed fuel system
	Fuel filter clogged	Check fuel filter. Change if necessary
	Dirty or clogged air filter	Check air filter. Clean or change if necessary
	Dirty or clogged air filter	Check air filter. Clean or replace if necessary
	Emergency stop triggered	Check stop button. Disengage if depressed.
	Empty fuel tank	Check fuel tank level. Fill if necessary
	Dirty fuel tank	Check fuel tank level. Clean if necessary
Battery charge failure	Battery connections loosed or corroded	Clean and retighten battery cables
	Discharged battery	Check battery voltage
Engine overheated	Closed bottom tap	Check bottom tap. Open if closed
	Sea water filter clogged	Check water filter. Clean if necessary
	Low coolant level	Check coolant level. Top up coolant if necessary
Low oil pressure	Low oil level	Check oil level. Top up if necessary
	Engine inclination above the admissible values	Check engine inclination. In case it exceeds the inclination mentioned in the manual, contact Technical Service to solve it.
High oil pressure	High oil level	Check the oil level. Empty it if necessary

Section 6 – Disposal instructions

When you decide to replace the motor, please contact Solé Advance. We will provide you with the relevant instructions in relation to the laws in force at the time. When disposing of the entire motor or motor components, please comply with the laws in force in the country of installation.

Used oils, fuels, and batteries must be handled, stored, and disposed of responsibly to prevent soil, water, and air contamination. Collect oils and fuels in approved containers, keep them away from heat or ignition sources, and never pour them onto the ground or into drainage systems. Batteries should be taken to authorized centers for recycling or safe disposal.

Always comply with applicable local, state and federal regulations, and consult your Authorized Dealer center for guidance on proper environmental handling practices.

For more information about the materials of which the individual motor components are made, please contact Solé Advance.

Section 7 - Technical Data

General data

Maximum power*:	7 kWe (7 kVA)	Voltage:	120/240 V
Prime Power**:	6.4 kWe (6.4 kVA)	Amperage:	29,4 A
Frequency:	60 Hz	Phases:	2

Dimensions and weights

Total lenght without canopy:	773 mm	Total lenght with canopy:	892 mm
Total width without canopy:	560 mm	Total width with canopy:	560 mm
Total height without canopy:	561 mm	Total height with canopy:	608 mm
Dry weight without canopy:	198 Kg	Dry weight with canopy:	220 Kg

Engine

Base engine manufacturer:	Mitsubishi	Diameter:	76 mm (2,99 in)
Model Solé Diesel:	P MINI-26 1800 EPA	Stroke:	70 mm (2,76 in)
Type:	Diesel 4 stroke	Compression ratio:	23:1
Engine RPM:	1800	Injection system:	Mechanical and indirect
Number of cylinders:	3	Intake system:	Naturally aspirated
Total displacement:	952 cc	SAE Flywheel housing:	SAE 5
Oil:	SAE 15W40	Coolant capacity:	3 L (0,79 gal)
Oil capacity:	4 L (1,06 gal)	Flywheel:	SAE 6 1/2
Power:	7,2 kW (9,79 CV)	Coolant flow rate:	27 l/min (7,13 gal/m)
Salt water flow rate:	17,2 l/min (4,54 gal/m)	Intake air flow rate:	0,75 m3/m
Starting aid:	Glow plugs		

Fuel system details

Consumption:	1,1 L/H (0,29 Gal/H)	Fuel type:	Diesel
Consumption at 50 %:	1,8 L/H (0,48 Gal/H)	Fuel standards:	Fueloil diesel ASTM
Consumption at 75 %:	2,4 L/H (0,63 Gal/H)	Injection pump type:	In line
Consumption at 100 %:	3 L/H (0,79 Gal/H)	Governor type:	Electronical

Electrical system

Battery voltage:	12 V	Engine shut off system:	ETR
Starter motor:	1,2 kW	Alternator:	40 A
Battery cable section:	70 mm2	Battery cable length:	1,5 m

Installation details

Exhaust hose inner diameter:	50 mm (1,97 in)	Maximum fuel lift height:	0,3 m (0,98 ft)
Sea water hose inner diameter:	20 mm (0,79 in)	Maximum raw water lift height:	1,5 m (59,06 in)
Fuel feeding hose inner diameter:	8 mm (0,31 in)	Maximum sea water temperature:	32 S/N (32 S/N)
Fuel return hose inner diameter:	6 mm (0,24 in)	Maximum installation angle***:	25 °
Minimum battery capacity:	12 V 60 Ah		

Alternator details

Brand:	Sincro	Cos φ:	1
Model:	SK160SZ1	Tropicalized:	S
Regulator type:	BL4	Excitation system:	Brushless
Number of poles:	4	Voltage regulation accuracy**:	1%
Isolation type*:	H	Standards:	EN60034-1, IEC 60034-1, ISO8528-3, UL-CSA
IP protection*:	23	Alternator type:	Synchronous

General data			
Maximum power*:	11,1 kWe (11,1 kVA)	Voltage:	120/240 V
Prime Power**:	10,1 kWe (10,1 kVA)	Amperage:	46,3 A
Frequency:	60 Hz	Phases:	2

Dimensions and weights			
Total lenght without canopy:	885 mm	Total lenght with canopy:	1032 mm
Total width without canopy:	580 mm	Total width with canopy:	580 mm
Total height without canopy:	609 mm	Total height with canopy:	668 mm
Dry weight without canopy:	271 Kg	Dry weight with canopy:	308 Kg

Engine			
Base engine manufacturer:	Mitsubishi	Diameter:	78 mm (3,07 in)
Model Solé Diesel:	P MINI-33 1800 EPA	Stroke:	92 mm (3,62 in)
Type:	4 stroke	Compression ratio:	22:1
Engine RPM:	1800	Injection system:	Mechanical and indirect
Number of cylinders:	3	Intake system:	Naturally aspirated
Total displacement:	1318 cc	SAE Flywheel housing:	SAE 5
Oil:	SAE 15W40	Coolant capacity:	5,7 L (1,51 gal)
Oil capacity:	4 L (1,06 gal)	Flywheel:	SAE 7 1/2
Power:	10,9 kW (14,82 CV)	Coolant flow rate:	47 l/min (12,42 gal/m)
Salt water flow rate:	19,8 l/min (5,23 gal/m)	Intake air flow rate:	1,1 m3/m
Starting aid:	Glow plugs		

Fuel system details			
Consumption:	1,7 L/H (0,45 Gal/H)	Fuel type:	Diesel
Consumption at 50 %:	2,2 L/H (0,58 Gal/H)	Fuel standards:	Fueloil diesel ASTM
Consumption at 75 %:	3 L/H (0,79 Gal/H)	Injection pump type:	In line
Consumption at 100 %:	3,8 L/H (1 Gal/H)	Governor type:	Electronical

Electrical system			
Battery voltage:	12 V	Engine shut off system:	ETR
Starter motor:	1,7 kW	Alternator:	50 A
Battery cable section:	70 mm2	Battery cable length:	1,5 m

Installation details			
Exhaust hose inner diameter:	50 mm (1,97 in)	Maximum fuel lift height:	0,3 m (0,98 ft)
Sea water hose inner diameter:	20 mm (0,79 in)	Maximum raw water lift height:	1,5 m (59,06 in)
Fuel feeding hose inner diameter:	8 mm (0,31 in)	Maximum sea water temperature:	32 S/N (32 S/N)
Fuel return hose inner diameter:	6 mm (0,24 in)	Maximum installation angle***:	25 °
Minimum battery capacity:	12 V 65 Ah		

Alternator details			
Brand:	Sincro	Cos φ:	1
Model:	SK160CA1	Tropicalized:	Yes
Regulator type:	BL4	Excitation system:	Brushless
Number of poles:	4	Voltage regulation accuracy**:	1%
Isolation type*:	H	Standards:	EN60034-1,IEC60034-1,ISO8528-3,UL-CSA
IP protection*:	23	Alternator type:	Synchronous

General data			
Maximum power*:	11,1 kWe (11,1 kVA)	Voltage:	120/240 V
Prime Power**:	10,1 kWe (10,1 kVA)	Amperage:	46,3 A
Frequency:	60 Hz	Phases:	2

Dimensions and weights			
Total lenght without canopy:	885 mm	Total lenght with canopy:	1032 mm
Total width without canopy:	580 mm	Total width with canopy:	580 mm
Total height without canopy:	609 mm	Total height with canopy:	668 mm
Dry weight without canopy:	271 Kg	Dry weight with canopy:	308 Kg

Engine			
Base engine manufacturer:	Mitsubishi	Diameter:	78 mm (3,07 in)
Model Solé Diesel:	P MINI-33 1800 EPA	Stroke:	92 mm (3,62 in)
Type:	4 stroke	Compression ratio:	22:1
Engine RPM:	1800	Injection system:	Mechanical and indirect
Number of cylinders:	3	Intake system:	Naturally aspirated
Total displacement:	1318 cc	SAE Flywheel housing:	SAE 5
Oil:	SAE 15W40	Coolant capacity:	5,7 L (1,51 gal)
Oil capacity:	4 L (1,06 gal)	Flywheel:	SAE 7 1/2
Power:	10,9 kW (14,82 CV)	Coolant flow rate:	47 l/min (12,42 gal/m)
Salt water flow rate:	19,8 l/min (5,23 gal/m)	Intake air flow rate:	1,1 m3/m
Starting aid:	Glow plugs		

Fuel system details			
Consumption:	1,7 L/H (0,45 Gal/H)	Fuel type:	Diesel
Consumption at 50 %:	2,2 L/H (0,58 Gal/H)	Fuel standards:	Fueloil diesel ASTM
Consumption at 75 %:	3 L/H (0,79 Gal/H)	Injection pump type:	In line
Consumption at 100 %:	3,8 L/H (1 Gal/H)	Governor type:	Electronical

Electrical system			
Battery voltage:	12 V	Engine shut off system:	ETR
Starter motor:	1,7 kW	Alternator:	50 A
Battery cable section:	70 mm2	Battery cable length:	1,5 m

Installation details			
Exhaust hose inner diameter:	50 mm (1,97 in)	Maximum fuel lift height:	0,3 m (0,98 ft)
Sea water hose inner diameter:	20 mm (0,79 in)	Maximum raw water lift height:	1,5 m (59,06 in)
Fuel feeding hose inner diameter:	8 mm (0,31 in)	Maximum sea water temperature:	32 S/N (32 S/N)
Fuel return hose inner diameter:	6 mm (0,24 in)	Maximum installation angle***:	25 °
Minimum battery capacity:	12 V 65 Ah		

Alternator details			
Brand:	Sincro	Cos φ:	1
Model:	SK160CA1	Tropicalized:	Yes
Regulator type:	BL4	Excitation system:	Brushless
Number of poles:	4	Voltage regulation accuracy**:	1%
Isolation type*:	H	Standards:	EN60034-1,IEC60034-1,ISO8528-3,UL-CSA
IP protection*:	23	Alternator type:	Synchronous

14 GTA/GTAC EPA



Three-Phase

General data			
Maximum power*:	10,6 kWe (13,2 kVA)	Voltage:	480/277 V
Prime Power**:	9,6 kWe (12,0 kVA)	Amperage:	15,9 A
Frequency:	60 Hz	Phases:	3

Dimensions and weights			
Total lenght without canopy:	885 mm	Total lenght with canopy:	1032 mm
Total width without canopy:	580 mm	Total width with canopy:	580 mm
Total height without canopy:	609 mm	Total height with canopy:	668 mm
Dry weight without canopy:	264 Kg	Dry weight with canopy:	300 Kg

Engine			
Base engine manufacturer:	Mitsubishi	Diameter:	78 mm (3,07 in)
Model Solé Diesel:	P MINI-33 1800 EPA	Stroke:	92 mm (3,62 in)
Type:	4 stroke	Compression ratio:	22:1
Engine RPM:	1800	Injection system:	Mechanical and indirect
Number of cylinders:	3	Intake system:	Naturally aspirated
Total displacement:	1318 cc	SAE Flywheel housing:	SAE 5
Oil:	SAE 15W40	Coolant capacity:	5,7 L (1,51 gal)
Oil capacity:	4 L (1,06 gal)	Flywheel:	SAE 7 1/2
Power:	10,9 kW (14,82 CV)	Coolant flow rate:	47 l/min (12,42 gal/m)
Salt water flow rate:	19,8 l/min (5,23 gal/m)	Intake air flow rate:	1,1 m3/m
Starting aid:	Glow plugs		

Fuel system details			
Consumption:	1,7 L/H (0,45 Gal/H)	Fuel type:	Diesel
Consumption at 50 %:	2,2 L/H (0,58 Gal/H)	Fuel standards:	Fueloil diesel ASTM
Consumption at 75 %:	3 L/H (0,79 Gal/H)	Injection pump type:	In line
Consumption at 100 %:	3,8 L/H (1 Gal/H)	Governor type:	Electronical

Electrical system			
Battery voltage:	12 V	Engine shut off system:	ETR
Starter motor:	1,7 kW	Alternator:	50 A
Battery cable section:	70 mm2	Battery cable length:	1,5 m

Installation details			
Exhaust hose inner diameter:	50 mm (1,97 in)	Maximum fuel lift height:	0,3 m (0,98 ft)
Sea water hose inner diameter:	20 mm (0,79 in)	Maximum raw water lift height:	1,5 m (59,06 in)
Fuel feeding hose inner diameter:	8 mm (0,31 in)	Maximum sea water temperature:	32 S/N (32 S/N)
Fuel return hose inner diameter:	6 mm (0,24 in)	Maximum installation angle***:	25 °
Minimum battery capacity:	12 V 65 Ah		

Alternator details			
Brand:	Sincro	Cos φ:	0,8
Model:	SK160CA	Tropicalized:	Yes
Regulator type:	BL4	Excitation system:	Brushless
Number of poles:	4	Voltage regulation accuracy**:	1%
Isolation type*:	H	Standards:	EN60034-1,IEC60034-1,ISO8528-3,UL-CSA
IP protection*:	23	Alternator type:	Synchronous

General data			
Maximum power*:	16 kWe (16,0 kVA)	Voltage:	120/240 V
Prime Power**:	14,5 kWe (14,5 kVA)	Amperage:	66,5 A
Frequency:	60 Hz	Phases:	2

Dimensions and weights			
Total lenght without canopy:	1036 mm	Total lenght with canopy:	1181 mm
Total width without canopy:	580 mm	Total width with canopy:	580 mm
Total height without canopy:	612 mm	Total height with canopy:	668 mm
Dry weight without canopy:	294 Kg	Dry weight with canopy:	344 Kg

Engine			
Base engine manufacturer:	Mitsubishi	Diameter:	78 mm (3,07 in)
Model Solé Diesel:	P MINI-44 1800 EPA	Stroke:	92 mm (3,62 in)
Type:	4 stroke	Compression ratio:	22:1
Engine RPM:	1800	Injection system:	Mechanical and indirect
Number of cylinders:	4	Intake system:	Naturally aspirated
Total displacement:	1758 cc	SAE Flywheel housing:	SAE 5
Oil:	SAE 15W40	Coolant capacity:	8 L (2,11 gal)
Oil capacity:	6 L (1,59 gal)	Flywheel:	SAE 7 1/2
Power:	15,1 kW (20,54 CV)	Coolant flow rate:	66 l/min (17,44 gal/m)
Salt water flow rate:	20 l/min (5,28 gal/m)	Intake air flow rate:	1,4 m3/m
Starting aid:	Glow plugs		

Fuel system details			
Consumption:	2,2 L/H (0,58 Gal/H)	Fuel type:	Diesel
Consumption at 50 %:	3,1 L/H (0,82 Gal/H)	Fuel standards:	Fueloil diesel ASTM
Consumption at 75 %:	4,1 L/H (1,08 Gal/H)	Injection pump type:	In line
Consumption at 100 %:	5,4 L/H (1,43 Gal/H)	Governor type:	Electronical

Electrical system			
Battery voltage:	12 V	Engine shut off system:	ETR
Starter motor:	2 kW	Alternator:	50 A
Battery cable section:	70 mm2	Battery cable length:	1,5 m

Installation details			
Exhaust hose inner diameter:	50 mm (1,97 in)	Maximum fuel lift height:	0,3 m (0,98 ft)
Sea water hose inner diameter:	20 mm (0,79 in)	Maximum raw water lift height:	2 m (78,74 in)
Fuel feeding hose inner diameter:	8 mm (0,31 in)	Maximum sea water temperature:	32 S/N (32 S/N)
Fuel return hose inner diameter:	6 mm (0,24 in)	Maximum installation angle***:	25 °
Minimum battery capacity:	12 V 80 Ah		

Alternator details			
Brand:	Sincro	Cos φ:	1
Model:	SK160MA1	Tropicalized:	Yes
Regulator type:	BL4	Excitation system:	Brushless
Number of poles:	4	Voltage regulation accuracy**:	1%
Isolation type*:	H	Standards:	EN60034-1,IEC60034-1,ISO8528-3,UL-CSA
IP protection*:	23	Alternator type:	Synchronous

General data			
Maximum power*:	15,2 kWe (19,0 kVA)	Voltage:	480/277 V
Prime Power**:	13,8 kWe (17,2 kVA)	Amperage:	22,9 A
Frequency:	60 Hz	Phases:	3

Dimensions and weights			
Total lenght without canopy:	1036 mm	Total lenght with canopy:	1181 mm
Total width without canopy:	580 mm	Total width with canopy:	580 mm
Total height without canopy:	612 mm	Total height with canopy:	668 mm
Dry weight without canopy:	282 Kg	Dry weight with canopy:	344 Kg

Engine			
Base engine manufacturer:	Mitsubishi	Diameter:	78 mm (3,07 in)
Model Solé Diesel:	P MINI-44 1800 EPA	Stroke:	92 mm (3,62 in)
Type:	4 stroke	Compression ratio:	22:1
Engine RPM:	1800	Injection system:	Mechanical and indirect
Number of cylinders:	4	Intake system:	Naturally aspirated
Total displacement:	1758 cc	SAE Flywheel housing:	SAE 5
Oil:	SAE 15W40	Coolant capacity:	8 L (2,11 gal)
Oil capacity:	6 L (1,59 gal)	Flywheel:	SAE 7 1/2
Power:	15,1 kW (20,54 CV)	Coolant flow rate:	66 l/min (17,44 gal/m)
Salt water flow rate:	20 l/min (5,28 gal/m)	Intake air flow rate:	1,4 m3/m
Starting aid:	Glow plugs		

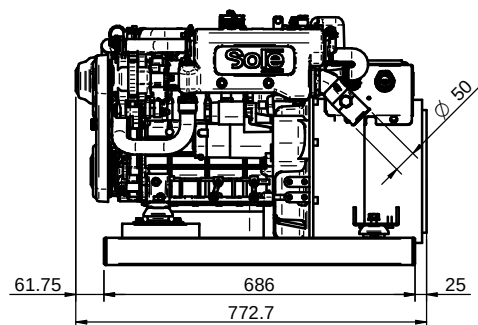
Fuel system details			
Consumption:	2,2 L/H (0,58 Gal/H)	Fuel type:	Diesel
Consumption at 50 %:	3 L/H (0,79 Gal/H)	Fuel standards:	Fueloil diesel ASTM
Consumption at 75 %:	4,1 L/H (1,08 Gal/H)	Injection pump type:	In line
Consumption at 100 %:	5,4 L/H (1,43 Gal/H)	Governor type:	Electronical

Electrical system			
Battery voltage:	12 V	Engine shut off system:	ETR
Starter motor:	2 kW	Alternator:	50 A
Battery cable section:	70 mm2	Battery cable length:	1,5 m

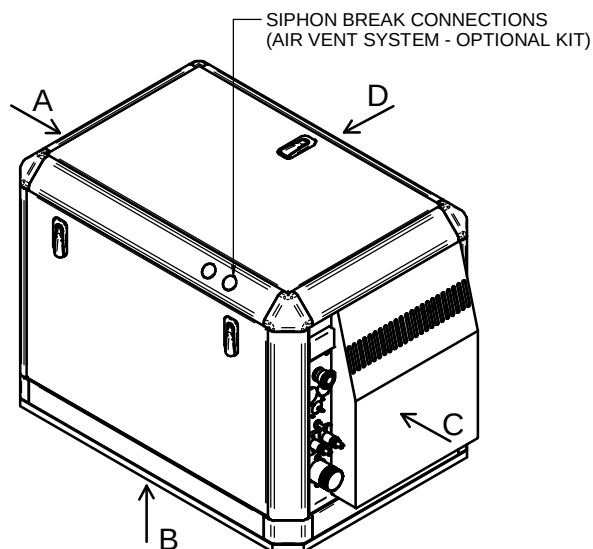
Installation details			
Exhaust hose inner diameter:	50 mm (1,97 in)	Maximum fuel lift height:	0,3 m (0,98 ft)
Sea water hose inner diameter:	20 mm (0,79 in)	Maximum raw water lift height:	2 m (78,74 in)
Fuel feeding hose inner diameter:	8 mm (0,31 in)	Maximum sea water temperature:	32 S/N (32 S/N)
Fuel return hose inner diameter:	6 mm (0,24 in)	Maximum installation angle***:	25 °
Minimum battery capacity:	12 V 80 Ah		

Alternator details			
Brand:	Sincro	Cos φ:	0,8
Model:	SK160MA	Tropicalized:	Yes
Regulator type:	BL4	Excitation system:	BRUSHLESS
Number of poles:	4	Voltage regulation accuracy**:	1%
Isolation type*:	H	Standards:	EN60034-1,IEC60034-1,ISO8528-3,UL-CSA
IP protection*:	23	Alternator type:	Synchronous

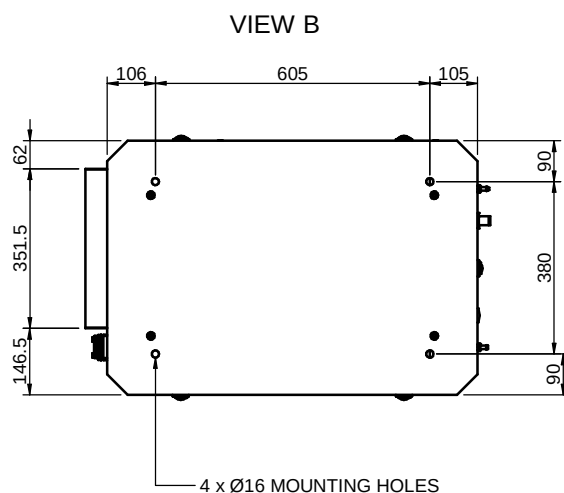
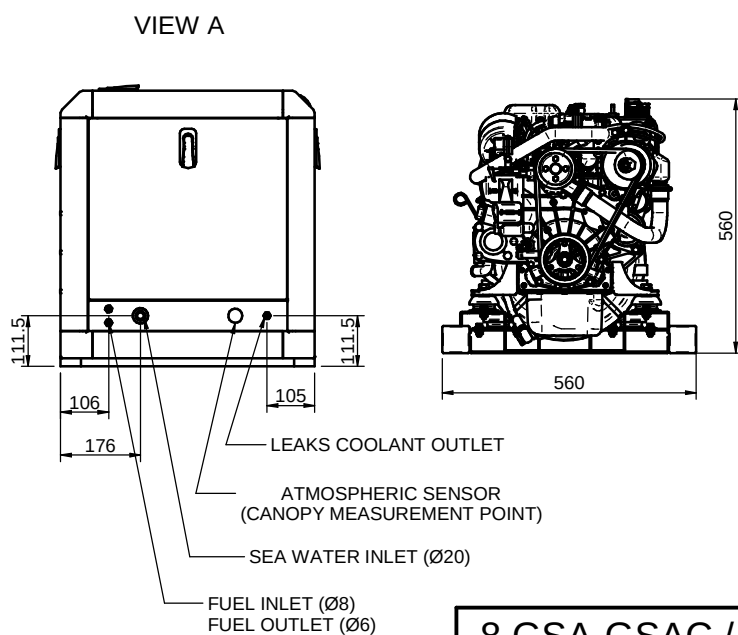
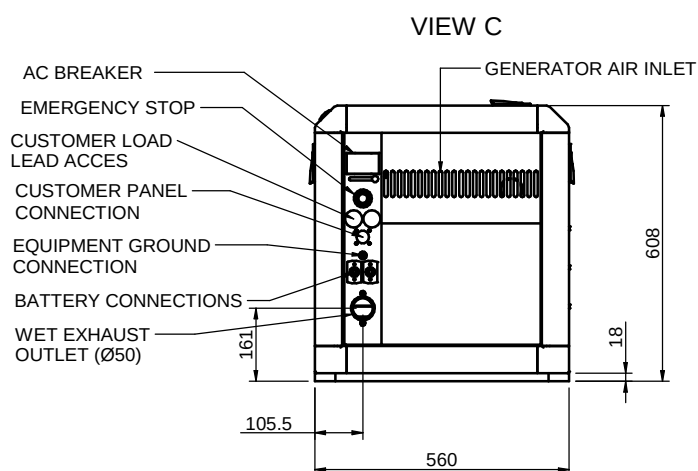
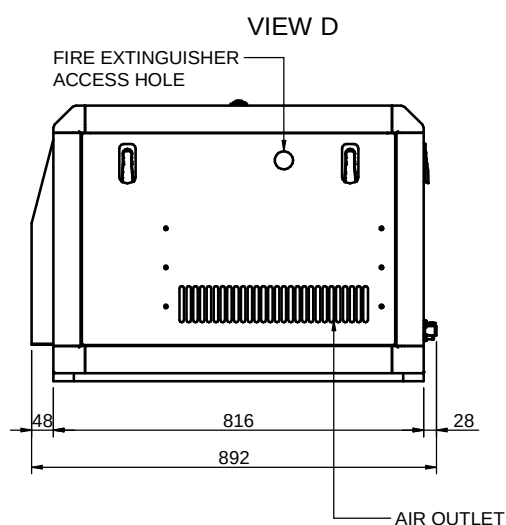
Section 8 - Dimensions



(8 GSA / 10 GTA)



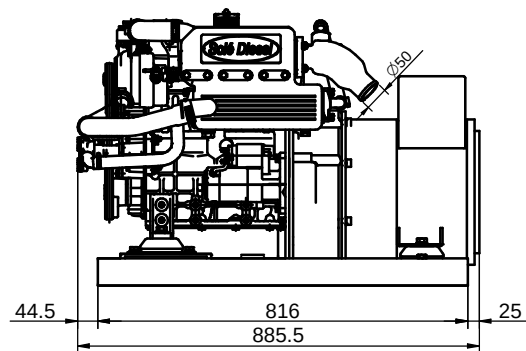
(8 GSAC / 10 GTAC)



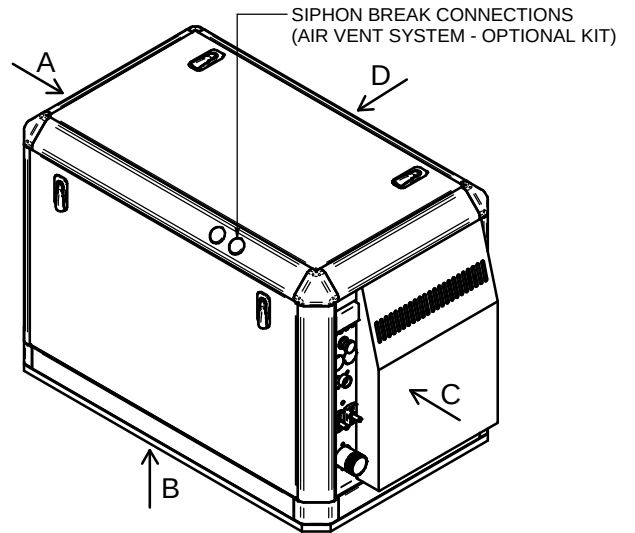
8 GSA-GSAC / 10 GTA-GTAC (EPA)

8 GSA-GSAC / 10 GTA-GTAC (EPA)

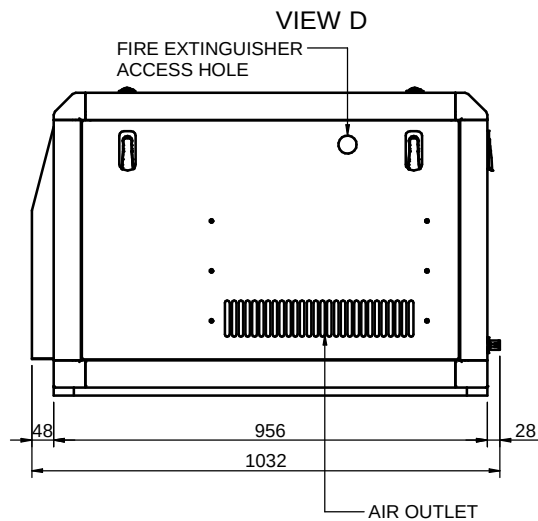
MATERIAL	FINISH	TREATMENT	Remove All Burrs And Sharp Edges	SCALE
DRAWN OSCARV	MODIFIED -	CHECKED P.IGLESIAS	DRAWN DATE 06/10/2025	LAST DATE REV. --
Tolerance Class Medium			SOLE, S.A. FA1891-FA1892-FA1859	



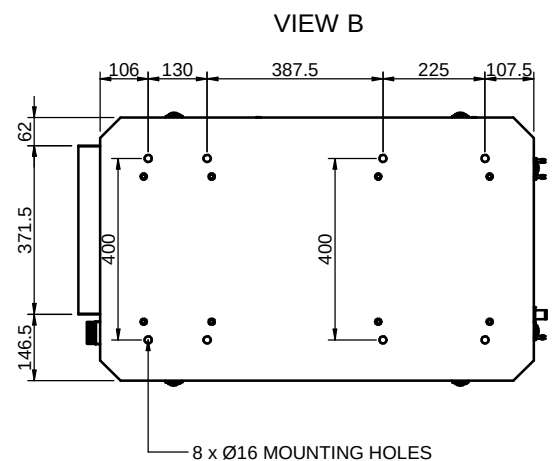
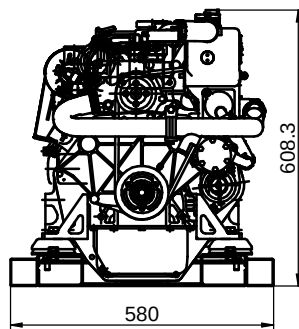
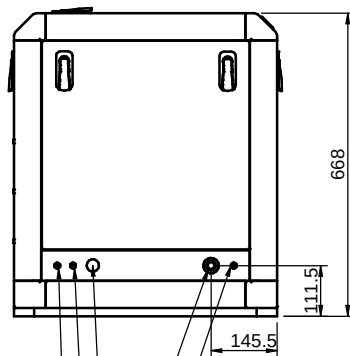
(12 GSA / 14 GTA)



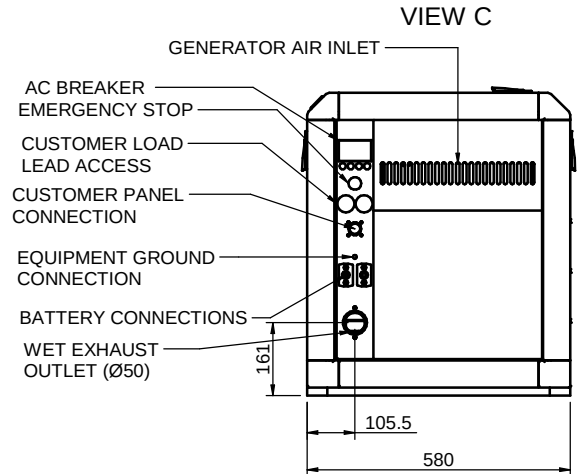
(12 GSAC / 14 GTAC)



VIEW A



VIEW B



VIEW C

FIRE EXTINGUISHER
ACCESS HOLE

GENERATOR AIR INLET

AC BREAKER
EMERGENCY STOP
CUSTOMER LOAD
LEAD ACCESS
CUSTOMER PANEL
CONNECTION
EQUIPMENT GROUND
CONNECTION
BATTERY CONNECTIONS
WET EXHAUST
OUTLET (Ø50)

AIR OUTLET

FUEL INLET (Ø8)

SEA WATER INLET (Ø20)

ATMOSPHERIC SENSOR
(CANOPY MEASUREMENT POINT)

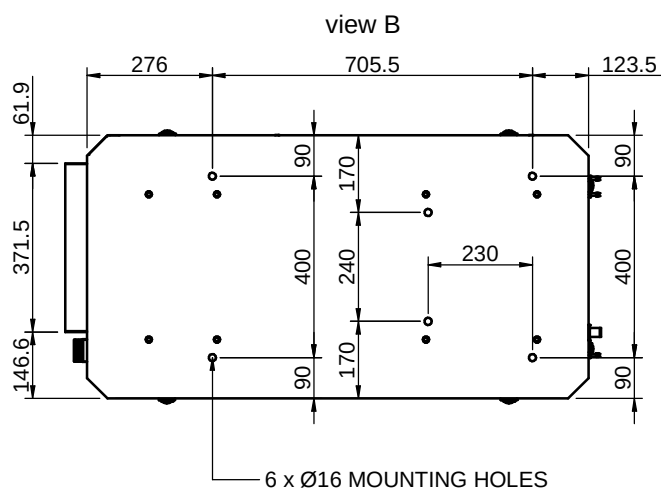
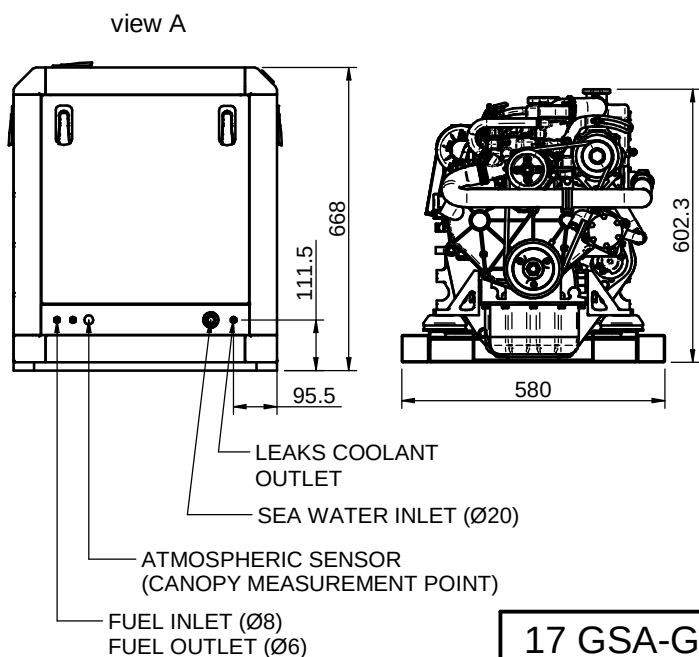
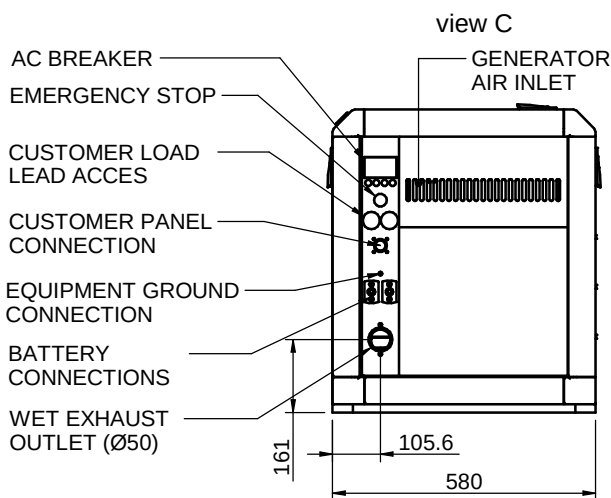
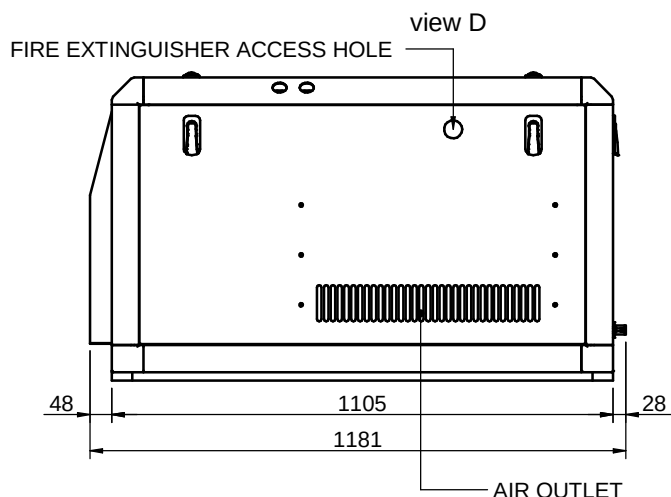
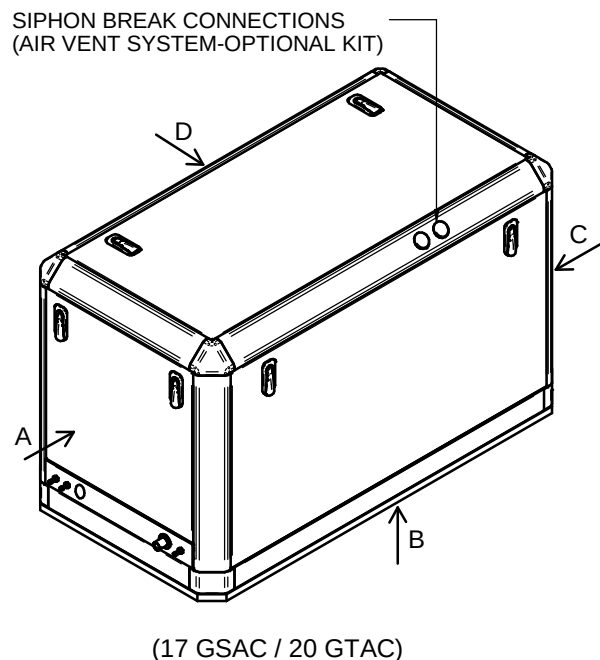
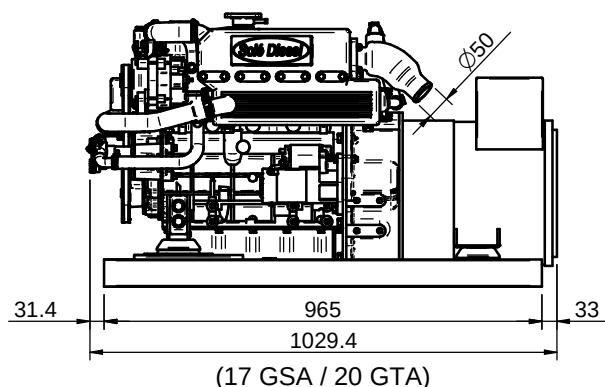
FUEL OUTLET (Ø8)

LEAKS COOLANT
OUTLET (Ø8)

12 GSA-GSAC / 14 GTA-GTAC (EPA)

12 GSA-GSAC / 14 GTA-GTAC (EPA)

MATERIAL	FINISH	TREATMENT	Remove All Burrs. And Sharp Edges	SCALE
DRAWN OSCARV	MODIFIED -	CHECKED P.IGLESIAS	DRAWN DATE 06/10/2025	LAST DATE REV. --
Tolerance Class Medium	 SOLE, S.A.		FA1893-FA1894-FA1918	



17 GSA-GSAC / 20 GTA-GTAC (EPA)

17 GSA-GSAC / 20 GTA-GTAC (EPA)

MATERIAL	FINISH	TREATMENT	Remove All Burrs And Sharp Edges	SCALE
DRAWN OSCARV	MODIFIED -	CHECKED P.IGLESIAS	DRAWN DATE 06/10/2025	LAST DATE REV. --
Tolerance Class Medium	 SOLE, S.A.		FA1895-FA1896-FA1919	

Sailing to new horizons



C-243 B, KM 2 · 08760 Martorell (Barcelona)
Tel. +34 937 751 400 · Fax +34 937 753 013
soleadvance.com info@soleadvance.com

Follow us:



Copyright 2024 Solé Advance. All right reserved. Texts and specifications are subject to change without notice and without any obligation or liability whatsoever.



N° ES065498-1

U_CT2644EPA_EN
Revision 0
06/2026