



OWNER'S MANUAL

Generator Set RGS17Y — 17 kW

Yanmar Engine | Stamford Alternator | Deep Sea Electronics Controller



Tier 3 Stationary Emergency Certified

ROYALGEN

Phone: 1 (450) 822-0408 | Email: info@royalgen.ca

Section 1: Table of Contents

Section	Sub-sections
Section 1: Table of Contents	—
Section 2: Introduction	—
Section 3: Safety and Precautions	3.1 Safety Pictograms 3.2 General Precautions 3.3 Electrical Precautions
Section 4: Generator Set Overview	4.1 General Description 4.2 Key Specifications 4.3 Dimensions and Weight
Section 5: Technical Specifications	5.1 Performance 5.2 Noise Levels 5.3 Fuel Consumption
Section 6: Diesel Engine — Yanmar 4TNV88	6.1 Engine Specifications 6.2 Lubrication System 6.3 Air Intake System 6.4 Exhaust System 6.5 Diesel Fuel Requirements 6.6 Cooling System
Section 7: Alternator — Stamford SOL2-M1	7.1 Alternator Specifications 7.2 Alternator Maintenance
Section 8: Controller — DSE4620-06	8.1 Description 8.2 Specifications 8.3 Operating Modes 8.4 Control Buttons 8.5 Alarms and Protections 8.6 Configuration
Section 9: Battery Charger — SmartGen BAC4812-KP	9.1 Description 9.2 Specifications 9.3 Charging Principle 9.4 LED Indicators 9.5 Troubleshooting
Section 10: Operation	10.1 Pre-Start Checks 10.2 Starting Procedures 10.3 During Operation 10.4 Shutdown Procedures
Section 11: Periodic Maintenance	11.1 Maintenance Schedule 11.2 Oil and Filter Change 11.3 Fuel Filter Replacement

Section	Sub-sections
	11.4 Air Filter Service 11.5 Battery Maintenance
Section 12: Troubleshooting Guide	12.1 Quick Diagnostic Flowchart 12.2 Engine 12.3 Battery and Electrical 12.4 Controller 12.5 Alternator 12.6 Fuel System 12.7 General Tips
Section 13: Long-Term Storage	13.1 Preparing for Storage 13.2 Returning to Service
Section 14: Warranty	14.1 Warranty Coverage 14.2 Warranty Conditions
Section 15: Contact Information and Service	—
Section 16: Maintenance Log	16.1 General Service and Repair Log 16.2 Annual Load Test Log

Section 2: Introduction

Thank you for choosing the RoyalGen RGS17Y generator set. This owner’s manual provides essential information for the safe installation, operation, and maintenance of your generator. Please read this manual thoroughly before operating the unit, and keep it accessible for future reference.

The RGS17Y is a premium silent diesel generator set designed for stationary emergency standby applications. It integrates the following core components into a weather-resistant, sound-attenuated enclosure:

- **Engine:** Yanmar 4TNV88-BGGES — 4-cylinder, naturally aspirated, water-cooled diesel
- **Alternator:** Stamford SOL2-M1 — brushless, self-exciting, single-bearing
- **Controller:** Deep Sea Electronics DSE4620-06 — automatic mains failure (AMF) controller

- **Battery Charger:** SmartGen BAC4812-KP — 12V / 5A float charger

The RGS17Y is CSA compliant and certified to Tier 3 Stationary Emergency emission standards. It delivers **17 kW / 17 kVA continuous** and **18 kW / 18 kVA emergency** power at 120/240V, single-phase, 60 Hz.

WARNING

Failure to follow the safety, operation, and maintenance instructions contained in this manual may result in serious injury, death, or significant property damage. Only qualified personnel should install, service, and repair this generator set. Always disconnect utility power before performing any maintenance.

Section 3: Safety and Precautions

3.1 Safety Pictograms

The following signal words and pictograms are used throughout this manual and on the generator set to indicate the nature and severity of hazards:

Signal Word	Color	Meaning
DANGER	Red background, white text	Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.
WARNING	Orange background, white text	Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.
CAUTION	Yellow background, black text	Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

Signal Word	Color	Meaning
NOTICE	Blue background, white text	Indicates information considered important but not hazard-related. May result in equipment damage if not followed.

3.2 General Precautions

Observe the following safety precautions at all times when operating or servicing the RGS17Y generator set:

Hazard	Level	Precaution
Carbon Monoxide	DANGER	Exhaust gases contain deadly carbon monoxide (CO). Never operate the generator indoors, in enclosed spaces, or near open windows, doors, or vents. CO is colourless and odourless — exposure can be fatal within minutes.
Fire / Explosion	WARNING	Diesel fuel is flammable. Do not refuel while the engine is running or hot. Keep the area around the generator clear of combustible materials. Maintain a fire extinguisher nearby at all times.
Hot Surfaces	CAUTION	Engine, exhaust, and coolant system components reach extremely high temperatures during operation. Allow the unit to cool before performing any maintenance. Do not touch exhaust manifold, muffler, or radiator hoses during or immediately after operation.
Moving Parts	WARNING	Keep hands, clothing, hair, and tools away from belts, fans, and other rotating components. Ensure all guards and covers are in place before starting the unit.
Personal Protective Equipment	CAUTION	Wear appropriate PPE including safety glasses, gloves, hearing protection (noise exceeds 68 dB(A)), and steel-toed boots when servicing the generator set.
Children and Animals	WARNING	Keep children and animals away from the generator at all times. The generator set contains hot surfaces, electrical hazards, and moving parts that can cause severe injury or death.

3.3 Electrical Precautions

Hazard	Level	Precaution
Electrocution	DANGER	This generator produces 120/240V AC power, which can cause fatal electrocution. Never touch electrical connections or components while the generator is running. All electrical work must be performed by a licensed electrician.
Transfer Switch	DANGER	A CSA-approved automatic transfer switch must be installed by a licensed electrician. Never connect the generator directly to building wiring without a transfer switch. Back-feeding utility lines can electrocute utility workers and neighbours.
Grounding	WARNING	The generator frame must be properly grounded in accordance with local electrical codes (CEC / NEC). A missing or improper ground connection creates a serious risk of electrocution.
Wet Conditions	WARNING	Do not operate or service the generator with wet hands or while standing in water. Protect all electrical connections from moisture. Ensure the enclosure is properly sealed and drainage paths are clear.

Section 4: Generator Set Overview

4.1 General Description

The RGS17Y is a fully integrated, sound-attenuated diesel generator set engineered for stationary residential and commercial standby or prime power applications. Key features include:

- 4-cylinder Yanmar 4TNV88-BGGES diesel engine — proven reliability and fuel efficiency
- Stamford SOL2-M1 brushless alternator — 100% block load acceptance capability
- Built with CSA compliant component for Canadian installations
- 12V glow plug system for reliable cold-weather starting
- SmartGen BAC4812-KP 5A automatic battery charger — maintains battery readiness
- 120V / 500W block heater standard — ensures rapid starts in cold climates

- Quick-drain valve for simplified oil changes
- 100L integrated fuel tank — approximately 21 hours of runtime at 75% load
- Low fuel level alarm with controller integration
- LED service light for maintenance access in low-light conditions
- Tier 3 Stationary Emergency emission certified

4.2 Key Specifications

Parameter	Value
Model	RGS17Y
Continuous Power Rating	17 kW / 17 kVA
Emergency Power Rating	18 kW / 18 kVA
Voltage	120/240V, Single Phase
Frequency	60 Hz
Power Factor	1.0
Rated Current	75 A
Engine Speed	1800 RPM
Safety Certification	CSA Compliant
Emission Standard	Tier 3 Stationary Emergency

4.3 Dimensions and Weight

Parameter	Value
Length	1800 mm (70.9 in)
Width	780 mm (30.7 in)
Height	1180 mm (46.5 in)
Dry Weight	840 kg (1852 lbs)

Section 5: Technical Specifications

5.1 Performance

Parameter	Value
Output Voltage	120/240V, Single Phase
Frequency	60 Hz
Power Factor	1.0
Continuous (Prime) Power	17 kW / 17 kVA
Emergency (Standby) Power	18 kW / 18 kVA
Rated Current	75 A
Block Load Acceptance	100%

5.2 Noise Levels

Distance	Sound Level
1 metre (3.3 ft)	68 dB(A)
7 metres (23 ft)	63 dB(A)

Sound levels measured at rated load per ISO 8528-10. Actual levels may vary depending on installation, load, and environmental conditions.

5.3 Fuel Consumption

Load (%)	Consumption (L/h)	Estimated Runtime (100L tank)
25%	3.00	~33 hours
50%	3.80	~26 hours
75%	4.76	~21 hours
100%	6.35	~16 hours

Fuel Tank Capacity: 100 litres (26.4 US gallons).

Section 6: Diesel Engine — Yanmar 4TNV88

6.1 Engine Specifications

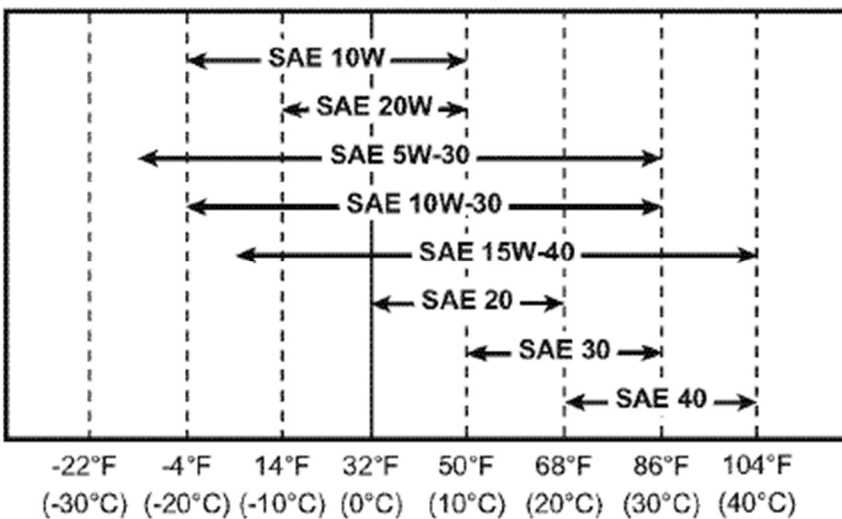
Parameter	Value
Manufacturer	Yanmar
Model	4TNV88-BGGES
Type	4-stroke, water-cooled diesel
Number of Cylinders	4, in-line
Displacement	2190 cc (133.6 cu in)
Bore × Stroke	88 mm × 90 mm
Compression Ratio	20:1
Aspiration	Naturally aspirated
Fuel Injection	Direct injection, mechanical
Rated Speed	1800 RPM
Emergency Gross Power	19.6 kW
Frequency Regulation	5.00%
Governor	Mechanical
Starting System	12V electric starter with glow plugs

6.2 Lubrication System

Parameter	Value
Oil Capacity (with filter)	7.4 litres (7.8 US quarts)
Normal Operating Oil Pressure	54 psi (372 kPa)
Low Oil Pressure Shutdown	7 psi (48 kPa)
Oil Change Interval	Every 250 hours or annually
Oil Specification	API CI-4 or higher

Viscosity Selection Chart:

SAE Grade	Ambient Temperature Range	Notes
SAE 5W-30	-30°C to +20°C (-22°F to +68°F)	Cold climate / winter use
SAE 10W-30	-20°C to +30°C (-4°F to +86°F)	General purpose
SAE 15W-40	-10°C to +40°C (+14°F to +104°F)	Warm climate / recommended



6.3 Air Intake System

Parameter	Value
Air Filter Type	Dry element
Maximum Intake Restriction	2.9 kPa (0.42 psi)
Cleaning Interval	Every 250 hours
Replacement Interval	Every 500 hours or when damaged

6.4 Exhaust System

Parameter	Value
Exhaust Gas Flow	195 CFM (5.52 m ³ /min)
Exhaust Temperature	550°C (1022°F)
Maximum Allowable Back Pressure	1.42 PSI (9.8 kPa)

DANGER — CARBON MONOXIDE

Engine exhaust contains carbon monoxide (CO), a colourless, odourless, deadly gas. Never operate the generator in enclosed or partially enclosed spaces. Ensure exhaust is vented to the outdoors and directed away from windows, doors, and air intake vents. CO exposure can cause unconsciousness and death within minutes.

6.5 Diesel Fuel Requirements

Parameter	Requirement
Fuel Standard	ASTM D975 No. 2-D S15 (Ultra-Low Sulfur Diesel — ULSD)
Minimum Cetane Number	45 or higher
Maximum Biodiesel Blend	B20 (20% biodiesel)

⚠ WARNING

Never use gasoline, ethanol blends, or any fuel other than diesel in this engine. Gasoline will cause catastrophic engine damage, fire, and explosion. Damage caused by improper fuel use is not covered under warranty.

6.6 Cooling System

Parameter	Value
Coolant Capacity	10 litres (2.6 US gallons)
Coolant Type	Yanmar Genuine Long Life Coolant (LLC)
Coolant Mixture	50/50 coolant to distilled water
Radiator Cap Pressure	13 PSI (90 kPa)
Cooling Fan Power	0.4 kW
Block Heater	120V / 500W (standard equipment)
Coolant Replacement Interval	Every 2000 hours or 2 years

⚠ CAUTION — HOT RADIATOR

Never remove the radiator cap when the engine is hot. The cooling system is pressurized at 13 PSI during operation. Allow the engine to cool completely before checking or adding coolant. Hot coolant under pressure can cause severe burns.

Section 7: Alternator — Stamford SOL2-M1

7.1 Alternator Specifications

Parameter	Value
Manufacturer	Stamford (Cummins Generator Technologies)
Model	SOL2-M1
Excitation System	Brushless, self-exciting
Insulation Class	Class H (180°C)
Ingress Protection	IP23
Bearing Configuration	1 ball bearing (single-bearing design)
Winding Configuration	4-wire
Total Harmonic Distortion (THD)	< 5%
Block Load Acceptance	100%
Maximum Overspeed	2250 RPM (2 minutes maximum)

7.2 Alternator Maintenance

The Stamford SOL2-M1 alternator is designed for minimal maintenance. Follow these guidelines to ensure long service life:

- **Keep clean and dry:** Periodically inspect the alternator for dust, dirt, or moisture buildup. Clean with dry compressed air at low pressure. Do not use water or solvents.
- **Inspect insulation:** Check winding insulation resistance annually using a megger. Minimum acceptable resistance: 1 MΩ at operating temperature.
- **Check bearing:** Listen for unusual noise or vibration during operation. The single ball bearing is lubricated for life but should be inspected at 2000-hour intervals.
- **Verify electrical connections:** Inspect all terminal connections for tightness, corrosion, or discolouration. Torque to manufacturer specifications.
- **Ensure ventilation:** Verify that cooling air intake and outlet screens are clear of debris. Obstructed airflow will cause overheating and premature insulation failure.
- **Field flashing:** If the alternator fails to produce voltage after extended storage, field flashing with a 12V battery may be required to restore residual magnetism. Refer to Stamford service documentation for the procedure.

Section 8: Controller — DSE4620-06

8.1 Description

The Deep Sea Electronics DSE4620-06 is an automatic mains (utility) failure controller designed for single-generator standby applications. It continuously monitors the mains supply and automatically starts the generator when a utility failure is detected. Upon mains restoration, the controller transfers the load back to the utility and shuts down the generator after a programmable cool-down period.

The controller provides comprehensive engine monitoring, protection, and status display via an integrated LCD panel. It supports programmable exerciser functions for periodic test runs and offers USB connectivity for advanced configuration.

8.2 Specifications

Parameter	Value
Manufacturer	Deep Sea Electronics
Model	DSE4620-06
Operating Modes	Auto / Manual
Exerciser	Programmable (day, time, duration)
Operating Temperature	–30°C to +70°C (–22°F to +158°F)
DC Supply Range	8–35V DC
Communication	USB 2.0

8.3 Operating Modes

Mode	Indicator	Description
STOP / RESET	STOP LED lit	The generator is stopped and will not auto-start. All active alarms are cleared. Use this mode for maintenance or when the generator is not required.
AUTO	AUTO LED lit	The controller monitors the mains supply. When a utility failure is detected, the generator starts automatically after a programmable delay. Upon mains restoration, the load is transferred back and the generator shuts down after a cool-down period. This is the normal operating mode.
MANUAL / START	MANUAL LED lit	The generator starts immediately when the button is pressed, regardless of mains status. The operator has full manual control of start and stop. Use for testing, exercising, or when manual control is required.

8.4 Control Buttons

Button	Function
Stop / Reset	Stops the engine and resets all active alarms. Press once to stop; press and hold to reset fault conditions. The generator will not auto-start while in STOP mode.

Button	Function
Auto	Places the controller in automatic mode. The generator will start and stop automatically based on mains supply status. This is the recommended mode for standby operation.
Manual / Start	Manually starts the generator engine. The generator runs continuously until the operator presses Stop / Reset. Mains monitoring is inactive in this mode.

8.5 Alarms and Protections

Alarm	Type	Description
Low Oil Pressure	Shutdown	Engine oil pressure has dropped below 7 psi. Engine stops immediately to prevent damage.
High Coolant Temperature	Shutdown	Engine coolant temperature has exceeded the safe operating limit. Engine stops to prevent overheating.
Overspeed	Shutdown	Engine speed has exceeded the maximum safe RPM. Engine stops immediately.
Fail to Start	Shutdown	Engine failed to start after the programmed number of crank attempts (typically 3).
Under/Overvoltage	Shutdown	Generator output voltage is outside the acceptable range. Engine stops to protect connected loads.
Under/Overfrequency	Shutdown	Generator output frequency is outside the acceptable range (typically $\pm 5\%$ of 60 Hz).
Low Battery Voltage	Warning	Starting battery voltage is below the minimum threshold. Check charger and battery condition.
High Battery Voltage	Warning	Starting battery voltage exceeds the maximum threshold. Check charger output regulation.
Low Fuel Level	Warning	Fuel level has dropped below the low fuel sensor threshold. Refuel as soon as possible.
Charge Failure	Warning	The engine-driven alternator charging circuit is not producing the expected output. Check belt and wiring.

8.6 Configuration

The DSE4620-06 controller can be configured via the front panel buttons or by connecting a computer via USB 2.0 using the **DSE Configuration Suite** software (available for download from Deep Sea Electronics). Configuration includes:

- Start/stop delay timers
- Alarm thresholds and response actions
- Exerciser schedule (day, time, duration, with or without load transfer)
- Voltage and frequency trip points
- Crank cycle parameters (crank duration, rest period, number of attempts)
- Cool-down timer duration

i NOTICE

Controller configuration is PIN-protected to prevent unauthorized changes. The default PIN is provided on a separate card included with the generator documentation. Record the PIN in a secure location. If the PIN is lost, contact RoyalGen or Deep Sea Electronics for reset assistance. Incorrect configuration may result in equipment damage or failure to start during a power outage.

Section 9: Battery Charger — SmartGen BAC4812-KP

9.1 Description

The SmartGen BAC4812-KP is a switch-mode, two-stage automatic battery charger designed to maintain the starting battery of the RGS17Y generator set at full charge. It is powered by the engine-driven

alternator (48V DC input) and charges the 12V starting battery continuously during generator operation, ensuring reliable starting capability at all times.

9.2 Specifications

Parameter	Value
Input Voltage	120 VAC
Output Voltage	12V DC / 13.8V float
Charging Current	5A maximum
Fuse Rating	6A
Charging Method	Switch-mode, 2-stage (constant current + float)

9.3 Charging Principle

The BAC4812-KP operates in two stages:

1. **Stage 1 — Constant Current:** When the battery voltage is below the float threshold, the charger delivers a constant current of up to 5A to rapidly bring the battery to full charge.
2. **Stage 2 — Float Charge:** Once the battery reaches the target voltage, the charger transitions to float mode, maintaining a steady 13.8V DC to keep the battery at full capacity without overcharging.

9.4 LED Indicators

LED	Colour	Status	Meaning
POWER	Green	On	The charger is powered and operational. Input voltage is present.
CHARGING	Red	On	The charger is actively delivering current to the battery (Stage 1). LED turns off when the battery reaches float voltage.

9.5 Troubleshooting

Symptom	Possible Cause	Corrective Action
No LEDs illuminated	Blown fuse or no input power	Check the 6A fuse and replace if blown. Verify 48V DC input is present. Check input wiring connections.
POWER LED on, battery not charging	Wiring fault or disconnected battery	Verify output wiring connections to the battery terminals. Check for corroded or loose terminals. Measure output voltage at the charger terminals.
Battery not holding charge	Battery at end of service life	Test the battery with a load tester. Replace the battery if it fails to hold charge under load. Typical lead-acid battery life is 3–5 years.
Fuse blows repeatedly	Short circuit in output wiring	Disconnect the battery and inspect all output wiring for damage, chafing, or shorts. Repair or replace damaged wiring before replacing the fuse.

Section 10: Operation

10.1 Pre-Start Checks

Perform the following checks before every start. Do not operate the generator if any check reveals an abnormal condition.

#	Check Item	Requirement
1	Engine Oil Level	Verify oil level is between the LOW and HIGH marks on the dipstick. Capacity: 7.4 L. Top up with API CI-4+ oil if required.
2	Coolant Level	Check coolant level in the overflow tank. Capacity: 10 L. Top up with 50/50 Yanmar LLC mixture if low. Do not open the radiator cap when hot.
3	Fuel Level	Verify adequate fuel in the 100 L tank. Refuel if below 25%. Use ASTM D975 No. 2-D S15 ULSD only.

#	Check Item	Requirement
4	Water Separator	Drain the fuel/water separator. Water in the fuel system can cause injector damage and engine failure.
5	Visual Inspection	Inspect for fuel, oil, or coolant leaks. Check for loose bolts, damaged hoses, or signs of animal intrusion.
6	Air Filter	Visually inspect the air filter element. Replace if visibly dirty or damaged. Check that the air intake is unobstructed.
7	Drive Belt	Check belt tension and condition. Belt should deflect approximately 10 mm under moderate thumb pressure. Replace if cracked, frayed, or glazed.
8	Battery	Check battery terminals for corrosion and tightness. Verify battery voltage is 12.4V or higher. Ensure the charger is operational.
9	Exhaust System	Inspect exhaust piping for leaks, damage, or blockages. Verify the exhaust outlet is clear and unobstructed.

10.2 Starting Procedures

Manual Start

- Complete all pre-start checks (Section 10.1).
- Verify the main circuit breaker is in the OFF position.
- Confirm no loads are connected or that all branch breakers are off.
- Press the **Manual / Start** button on the DSE4620-06 controller.
- The controller will activate the glow plugs for the pre-heat cycle (approximately 10 seconds).
- The engine will crank automatically. If the engine fails to start on the first attempt, the controller will retry up to 3 times with rest periods between attempts.
- Once the engine starts, allow it to stabilize for 30–60 seconds before applying load. Monitor oil pressure (54 psi normal), voltage, and frequency on the controller display.
- Close the main circuit breaker and apply load gradually.

Automatic Start (AUTO Mode)

- Complete all pre-start checks (Section 10.1).
- Press the **Auto** button on the DSE4620-06 controller. The AUTO LED will illuminate.

13. The controller continuously monitors the mains (utility) supply.
14. When a mains failure is detected, the controller will automatically start the generator after the programmed delay, transfer the load, and supply power to the building.
15. When mains power is restored, the controller will transfer the load back to the utility and shut down the generator after the programmed cool-down period.

10.3 During Operation

While the generator is running, periodically monitor the following parameters on the DSE4620-06 controller display:

- **Oil Pressure:** Normal operating pressure is 54 psi (372 kPa). The engine will shut down automatically if pressure drops below 7 psi.
- **Coolant Temperature:** Monitor for rising temperature trends. The controller will trigger an alarm and shutdown if the temperature exceeds the programmed limit.
- **Output Voltage:** Should read 120/240V $\pm 5\%$. Significant deviation may indicate a governor or AVR issue.
- **Output Frequency:** Should read 60 Hz $\pm 3\%$. Deviation indicates a speed regulation issue.
- **Unusual Noise or Vibration:** Any change in sound or vibration pattern may indicate a mechanical problem. Investigate immediately.
- **Leaks:** Periodically check for fuel, oil, or coolant leaks around the engine and enclosure.

10.4 Shutdown Procedures

16. Remove or reduce the electrical load by opening branch circuit breakers.
17. Open the main generator circuit breaker.
18. Allow the engine to run at no load for a minimum of **5 minutes** to cool down. This is critical for turbo-equivalent thermal management of exhaust components.
19. Press the **Stop / Reset** button on the DSE4620-06 controller.
20. The engine will stop. Verify that all warning lights are clear.

i NOTICE

Never stop the engine abruptly under full load. Shutting down without a cool-down period can cause excessive heat buildup in the engine, turbo-equivalent components, and alternator, leading to premature wear and potential damage. Always allow at least 5 minutes of unloaded idle time before shutdown.

Section 11: Periodic Maintenance

11.1 Maintenance Schedule

Interval	Maintenance Task
Daily / Before Each Start	Check oil level (7.4 L capacity) Check coolant level (10 L capacity) Check fuel level (100 L tank) Drain fuel/water separator Visual inspection for leaks and damage Check battery voltage and connections
Every 50 Hours	Clean battery terminals Inspect drive belt tension and condition Check air filter restriction indicator
Every 250 Hours	Clean air filter element Check all fluid levels and top up
Every 500 Hours	Change engine oil and oil filter (7.4 L, API CI-4+) Replace fuel filter Replace air filter element Inspect exhaust system Check coolant condition and concentration
Every 1000 Hours	Check and adjust valve clearance Inspect fuel injectors Inspect starter motor and glow plugs Test alternator insulation resistance
Every 2000 Hours or 2 Years	Replace coolant (10 L, 50/50 Yanmar LLC) Inspect and replace coolant hoses as needed Inspect alternator bearing Full electrical system inspection

11.2 Oil and Filter Change

Change the engine oil and oil filter every **500 hours** or **annually**, whichever comes first. Oil capacity with filter: **7.4 litres**.

21. Run the engine for 5–10 minutes to warm the oil for better drainage.
22. Stop the engine and place the controller in STOP / RESET mode.
23. Place a drain pan (minimum 8 L capacity) beneath the quick-drain valve.
24. Open the quick-drain valve and allow all oil to drain completely. This may take 10–15 minutes.
25. Remove the used oil filter using a filter wrench. Clean the filter mounting surface.
26. Apply a thin film of clean oil to the gasket of the new oil filter. Install the new filter hand-tight plus $\frac{3}{4}$ turn. Do not over-tighten.
27. Close the quick-drain valve.
28. Fill the engine with **7.4 litres** of fresh API CI-4+ oil of the correct viscosity grade for the ambient temperature (refer to Section 6.2).
29. Start the engine and run for 2 minutes. Check for leaks around the oil filter and drain valve. Stop the engine, wait 5 minutes, then recheck the oil level on the dipstick. Top up if necessary.

11.3 Fuel Filter Replacement

Replace the fuel filter every **500 hours** or **annually**.

WARNING — HIGH-PRESSURE FUEL

The fuel system may be under pressure. Wear safety glasses and gloves. Place rags around the fuel filter to catch spilled fuel. Do not smoke or use open flames in the vicinity. Dispose of used fuel and filters in accordance with local environmental regulations.

30. Place the controller in STOP / RESET mode. Allow the engine to cool.
31. Close the fuel supply valve (if equipped).

32. Place rags beneath the fuel filter to catch spillage.
33. Remove the old fuel filter. Clean the filter head mounting surface.
34. Fill the new fuel filter with clean diesel fuel.
35. Apply a thin film of clean diesel to the gasket. Install hand-tight plus $\frac{3}{4}$ turn.
36. Open the fuel supply valve. Bleed the fuel system per the engine service manual.
37. Start the engine and inspect for fuel leaks. Wipe up any spilled fuel immediately.

11.4 Air Filter Service

Interval	Action
Every 250 hours	Remove and clean the air filter element. Tap gently to dislodge loose dirt, or blow with low-pressure compressed air from the clean side outward. Inspect for tears or damage.
Every 500 hours	Replace the air filter element with a new genuine or equivalent part, regardless of condition. Also replace any time the element is damaged, wet, or excessively dirty.

11.5 Battery Maintenance

- Keep battery terminals clean and tight. Remove corrosion with a baking soda solution and wire brush. Apply a thin coat of dielectric grease after cleaning.
- Check battery voltage monthly. A fully charged 12V lead-acid battery should read 12.6–12.8V at rest.
- Verify the SmartGen BAC4812-KP charger is operational (green POWER LED lit when the generator is running).
- Inspect battery case for cracks, bulging, or electrolyte leaks. Replace immediately if any damage is found.
- For flooded lead-acid batteries: check electrolyte levels and top up with distilled water as needed. Never add acid.
- Replace the starting battery every 3–5 years, or sooner if it fails a load test.

Section 12: Troubleshooting Guide

This section provides diagnostic guidance for common issues encountered during the operation of the RGS17Y generator set. Sub-sections include: 12.1 Quick Diagnostic Flowchart, 12.2 Engine, 12.3 Battery and Electrical, 12.4 Controller, 12.5 Alternator, 12.6 Fuel System, 12.7 General Tips.

See detailed troubleshooting tables below. This section will be completed in a subsequent revision.

Section 13: Long-Term Storage

This section covers the procedures for preparing the RGS17Y for extended periods of non-use and returning it to service. Sub-sections include: 13.1 Preparing for Storage, 13.2 Returning to Service.

Detailed storage and recommissioning procedures will be completed in a subsequent revision.

Section 14: Warranty

This section details the warranty coverage and conditions applicable to the RGS17Y generator set. Sub-sections include: 14.1 Warranty Coverage, 14.2 Warranty Conditions.

Full warranty terms and conditions will be completed in a subsequent revision.

ROYALGEN — POWER DENSITY | Owner's Manual — RGS17Y

© 2026 RoyalGen. All rights reserved.

Section 15: Contact Information and Service

For technical support, warranty claims, parts ordering, and service inquiries, please contact RoyalGen directly.

Full contact directory and authorized service centre listings will be completed in a subsequent revision.

ROYALGEN — POWER DENSITY | Owner's Manual — RGS17Y

© 2026 RoyalGen. All rights reserved.

Section 16: Maintenance Log

Accurate maintenance records are essential for warranty compliance, resale value, and reliable operation. Use the following logs to document all service activities performed on your RGS17Y generator set. Record entries immediately after each service is completed.

NOTICE

— Retain all receipts for parts and fluids purchased. Attach them to this manual or store them with your warranty documentation. Incomplete maintenance records may affect warranty coverage.

16.1 General Service and Repair Log

Date	Hours	Oil Type/Brand	Oil Filter Part No.	Quantity (L)	Performed By	Notes

16.2 Annual Load Test Log

Load test recommended annually or after any extended storage period. Run at rated load for minimum 2 hours.

[illegible]