



Service Manual

10.0 kW HDKAG Generator Sets

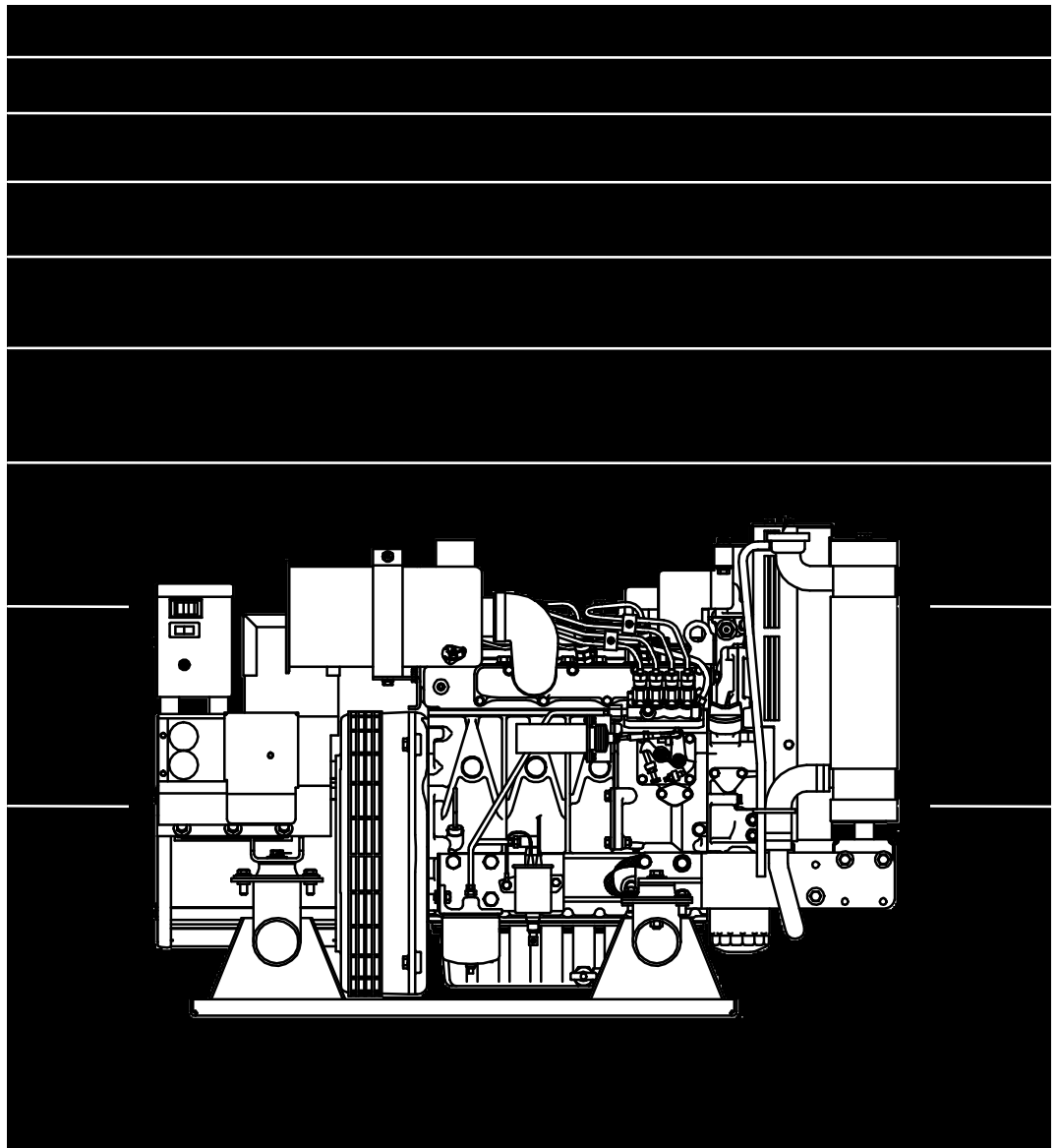


Table of Contents

	SAFETY PRECAUTIONS	iii
1	INTRODUCTION	1-1
	About This Manual	1-1
	Assistance	1-1
	Test Equipment	1-1
	Safety Considerations	1-1
	Set Removal	1-3
2	ENGINE CONTROLS	2-1
	General	2-1
	Start Control at Set	2-1
	Control Troubleshooting	2-6
3	ENGINE CONTROL SERVICE	3-1
	General	3-1
	[A] Battery Check (BT1)	3-1
	[B] Battery Cable Check	3-1
	[C] Battery Charging Check	3-1
	[D] Start Solenoid Check (K11)	3-1
	[E] Heater (Glow Plug) Relay Check (K13)	3-2
	[F] Fuel Solenoid Check (K14)	3-2
	[G] Start/Stop Switch Check (S11)	3-2
	[H] Power Relay Check (A11-K12)	3-2
4	GENERATOR/VOLTAGE REGULATOR	4-1
	General Description	4-1
	Generator Operation	4-5
	Electronic Voltage Regulator	4-5
	Generator Service	4-6
	Generator Disassembly/Assembly	4-8
5	GENERATOR/REGULATOR TROUBLESHOOTING	5-1
	General	5-1
	Troubleshooting Procedures	5-1
6	GENERATOR/REGULATOR TESTS	6-1
	General	6-1
	[A] Testing Field Voltage	6-1
	[B] Testing Generator Rotor	6-1
	[C] Testing Generator Stator	6-2
	[D] Dynamic Rotor/Stator Test	6-3
	[E] Voltage Regulator Replacement	6-5
	[F] Wiring Harness Check	6-5
	[G] Voltage Adjustment	6-5
	[H] Reconnection	6-5

7	ROUTINE MAINTENANCE	7-1
	Introduction	7-1
	Maintenance Schedule	7-1
	Generator Set Inspection	7-2
	Oil and Filter Change	7-3
	Cooling System	7-4
	Fan Belt	7-6
	Fuel System	7-7
	Air Cleaner	7-9
	Battery Care	7-9
	AC Generator	7-10
	Crankcase Breather	7-10
	Muffler/Spark Arrester	7-11
	Cleaning the Generator Set	7-11
	Initial Starting and Checks	7-11
8	WIRING DIAGRAMS	8-1

Safety Precautions

Thoroughly read the **OPERATOR'S MANUAL** before operating the genset. Safe operation and top performance can be obtained only with proper operation and maintenance.

The following symbols in this Manual alert you to potential hazards to the operator, service person and equipment.

⚠ DANGER Alerts you to an immediate hazard which will result in severe personal injury or death.

⚠ WARNING Alerts you to a hazard or unsafe practice which can result in severe personal injury or death.

⚠ CAUTION Alerts you to a hazard or unsafe practice which can result in personal injury or equipment damage.

Electricity, fuel, exhaust, moving parts and batteries present hazards which can result in severe personal injury or death.

GENERAL PRECAUTIONS

- Keep ABC fire extinguishers handy.
 - Make sure all fasteners are secure and torqued properly.
 - Keep the genset and its compartment clean. Excess oil and oily rags can catch fire. Dirt and gear stowed in the compartment can restrict cooling air.
 - Let the engine cool down before removing the coolant pressure cap or opening the coolant drain. Hot coolant under pressure can spray out and cause severe burns.
 - Before working on the genset, disconnect the negative (-) battery cable at the battery to prevent starting.
 - Use caution when making adjustments while the genset is running—hot, moving or electrically live parts can cause severe personal injury or death.
- Used engine oil has been identified by some state and federal agencies as causing cancer or reproductive toxicity. Do not ingest, inhale, or contact used oil or its vapors.
 - Benzene and lead in some gasolines have been identified by some state and federal agencies as causing cancer or reproductive toxicity. Do not ingest, inhale or contact gasoline or its vapors.
 - Do not work on the genset when mentally or physically fatigued or after consuming alcohol or drugs.
 - Carefully follow all applicable local, state and federal codes.

GENERATOR VOLTAGE IS DEADLY!

- Generator output connections must be made by a qualified electrician in accordance with applicable codes.
- The genset must not be connected to the public utility or any other source of electrical power. Connection could lead to electrocution of utility workers, damage to equipment and fire. An approved switching device must be used to prevent interconnections.
- Use caution when working on live electrical equipment. Remove jewelry, make sure clothing and shoes are dry and stand on a dry wooden platform on the ground or floor.

FUEL IS FLAMMABLE AND EXPLOSIVE

- Keep flames, cigarettes, sparks, pilot lights, electrical arc-producing equipment and switches and all other sources of ignition well away from areas where fuel fumes are present and areas sharing ventilation.
- Fuel lines must be secured, free of leaks and separated or shielded from electrical wiring.
- Use approved non-conductive flexible fuel hose for fuel connections at the genset.

ENGINE EXHAUST IS DEADLY!

- Learn the symptoms of carbon monoxide poisoning in this Manual.
- Never sleep in the vehicle while the genset is running unless the vehicle has a working carbon monoxide detector.
- The exhaust system must be installed in accordance with the genset Installation Manual.
- Do not use engine cooling air to heat the vehicle interior.
- Make sure there is ample fresh air when operating the genset in a confined area.

MOVING PARTS CAN CAUSE SEVERE PERSONAL INJURY OR DEATH

- Do not wear loose clothing or jewelry near moving parts such as PTO shafts, fans, belts and pulleys.
- Keep hands away from moving parts.
- Keep guards in place over fans, belts, pulleys, etc.

BATTERY GAS IS EXPLOSIVE

- Wear safety glasses and do not smoke while servicing batteries.
- When disconnecting or reconnecting battery cables, always disconnect the negative (-) battery cable first and reconnect it last to reduce arcing.

DO NOT OPERATE IN FLAMMABLE AND EXPLOSIVE ENVIRONMENTS

Flammable vapor can cause a diesel engine to overspeed and become difficult to stop, resulting in possible fire, explosion, severe personal injury and death. ***Do not operate a diesel-powered genset where a flammable vapor environment can be created by fuel spill, leak, etc., unless the genset is equipped with an automatic safety device to block the air intake and stop the engine.*** The owners and operators of the genset are solely responsible for operating the genset safely. Contact your authorized Onan/Cummins dealer or distributor for more information.

1. Introduction

ABOUT THIS MANUAL

This manual contains troubleshooting and repair data for these components of the HDKAG generator set:

- Control
- Generator

See the Engine Service Manual for engine information.

Study this manual carefully. Heed all warnings and cautions. Proper use and maintenance can result in longer set life, better performance and safer operation.

This manual contains basic wiring diagrams and schematics for troubleshooting. Technicians should use the wiring diagram and schematic shipped with each unit. Update these diagrams and schematics when the set is modified.

PC board information is limited; in the field, it is more efficient to replace the boards than to attempt repair.

ASSISTANCE

When contacting an Onan® distributor, supply the complete model number and serial number shown on the Onan nameplate on the side of the generator control box.

TEST EQUIPMENT

- Multimeter/digital VOM
- AC voltmeter
- DC voltmeter
- Frequency meter
- Jumper leads
- Load test panel
- Megger or insulation resistance meter
- Wheatstone bridge or digital ohmmeter

⚠WARNING *Incorrect service or replacement of parts can result in severe personal injury, death, and/or equipment damage. Service personnel must be qualified to perform electrical and mechanical service.*

SAFETY CONSIDERATIONS

Generator sets present safety hazards that the technician must know about. Read the precautions on the inside cover of this manual. Familiarize yourself with the hazards shown in Table 1-1. When the hazards are known, approach the job with a safety-conscious attitude. Being safety-conscious is the best way to avoid injury. **Reduce the chance of an accident with the following safeguards.**

Safeguards To Avoid Hazards

- **Use Protective Clothing.** Protect your body by wearing protective clothing such as:
 - Safety shoes
 - Gloves
 - Safety glasses
 - Hard hats

Leave rings and jewelry off. Do not wear loose clothing that might get caught on equipment.

- **Reduce Workshop Hazards.**
 - Keep guards and shields in place on machinery
 - Maintain equipment in good working order
 - Store flammable liquids in approved containers away from open flame, spark, pilot light, cigarette, or other ignition source
 - Keep the workshop clean and well-lighted
 - Provide adequate ventilation
 - Keep a fire extinguisher and safety equipment nearby
 - Be prepared to respond to an emergency
- **Develop Safe Work Habits.**

Unsafe actions are the source of most accidents with tools and machines. Be familiar with the equipment and know how to use it safely. Use the right tool for the job, and check its condition before starting. Observe the warnings and cautions in this manual and take special precautions when working around electrical equipment. Do not work alone if possible and do not take unnecessary risks.

BUY NOW

**Then Instant Download
the Complete Manual
Thank you very much!**