Troubleshooting

⚠WARNING ***Hot engine parts can cause severe burns. Always allow the engine time to cool before performing any maintenance or service.***

TABLE 4. TROUBLESHOOTING lists the Fault Codes in numerical order along with step-by-step instructions for corrective action. If you fail to resolve the problem after taking the corrective actions suggested, contact an authorized Onan dealer. See *How to Obtain Service* (Page 33).

First note the following:

- Maintaining engine oil level, keeping battery connections clean and tight, watching the fuel gauge, not overloading the genset, etc. will prevent most shutdowns.
- When the genset and vehicle engine share a common fuel tank the fuel dip tubes are usually arranged so that the genset will run out of fuel first. Marking the genset empty point on the fuel gauge will make it easier to tell when to stop the genset before running it out of fuel.

First-Level Fault Codes: The genset controller provides extensive diagnostics by causing the status indicator light on the Control Switch to blink in a coded fashion. Following a fault shutdown, the indicator light will repeatedly blink 1, 2 or 3 blinks at a time.

- **One blink** indicates shut down due to high temperature
- **Two blinks** indicates shutdown due to a loss of engine oil pressure
- **Three blinks** indicates shutdown due to some other abnormal condition.

Second-Level Fault Codes: *For a 1-blink or 3-blink first-level fault code*, one touch to **Stop** brings up a second-level fault code. This code consists of 1, 2, 3 or 4 blinks, a brief pause, and then 1 to 9 blinks. The first set of blinks represents the tens digit and the second set of blinks the units digit of the fault code number. For example, Fault Code **No. 23** would appear as:

blink-blink—*pause*—blink-blink-blink—...

NOTE: Fault Code Nos. 1, 2 and 3 are first-level faults. Avoid interpreting them as second-level Fault Codes 11, 22 and 33. The pauses between repetitions of the fault code are longer than the pauses between the tens and units digits of the the code. For example, Fault Code 33 would appear as:

blink-blink-blink—*pause*—blink-blink-blink
—*longer pause*—
blink-blink-blink—*pause*—blink-blink-blink—...

Restoring Fault Code Blinking*:** The fault code stops blinking after five minutes. Press **Stop** three times within five seconds to restore blinking. Note that ***the last fault logged will blink, even after the condition that caused the shutdown has been corrected.

TABLE 4. TROUBLESHOOTING

⚠ WARNING ***Some genset service procedures present hazards that can result in severe personal injury or death. Only qualified service personnel with knowledge of fuels, electricity, and machinery hazards should perform genset service. See Safety Precautions.***
GENSET WON'T STOP RUNNING—STATUS INDICATOR LIGHT ON (Faulty Stop Switch or grounded wiring) ⚠WARNING ***Removing genset panels or disconnecting fuel lines to stop a genset that won't stop can lead to severe personal injury or death from electrocution, contact with moving parts or fire. Try the genset Stop Switch if the remote Stop Switch does not work, and vice versa. Otherwise, let the genset run out of fuel.***
GENSET WON'T STOP RUNNING—STATUS INDICATOR LIGHT OFF (Binding governor mechanism, misadjusted speed stop) ⚠WARNING ***Removing genset panels or disconnecting fuel lines to stop a genset that won't stop can lead to severe personal injury or death from electrocution, contact with moving parts or fire. Let the genset run out of fuel.***
STATUS INDICATOR LIGHT STAYS ON (Reversed battery connections) **Corrective Action:** Reconnect the battery correctly (Page 17).
ENGINE CRANKS WHEN BATTERY CONNECTED (Faulty Start Switch or grounded wiring) **Corrective Action:** See an authorized Onan dealer.
ENGINE WON'T CRANK—FUEL PUMP WON'T STOP (Faulty Stop Switch or grounded wiring) **Corrective Action:** See an authorized Onan dealer.
STATUS INDICATOR LIGHT DEAD (Faulty connections, no battery voltage)

TABLE 4. TROUBLESHOOTING (CONT.)

⚠ WARNING ***Some genset service procedures present hazards that can result in severe personal injury or death. Only qualified service personnel with knowledge of fuels, electricity, and machinery hazards should perform genset service. See Safety Precautions.***

STARTING BATTERIES RUN DOWN

(Marginal battery, battery connections, or charging system; or parasitic loads)

Corrective Action:

1. Clean and tighten the positive (+) and negative (–) battery cable connections at the battery, vehicle frame and genset (Page 17).
2. Recharge or replace the battery. Refer to the battery manufacturer's recommendations.

ENGINE CRANKS BUT DOES NOT START

(Fuel delivery, glow plugs or engine are marginal)

Corrective Action:

1. Check fuel level. (Note: The genset fuel pickup is probably higher than the vehicle engine pickup.)
2. Prime the engine fuel system by holding the control switch down in its **Stop** position for at least 1 minute.
3. Check the engine air filter and remove any blockage (Page 17).
4. Replace **Fuse F3** (glow plugs) if blown (Page 7).

STARTER ENGAGES-DISENGAGES

(Cranking voltage dips below 6 volts—low battery charge, poor connections, long cables)

Corrective Action:

1. Have the vehicle propulsion engine running while trying to start the genset—the battery charging alternator may be able to maintain starting voltage high enough to get the genset started.
2. Clean and tighten the positive (+) and negative (–) battery cable connections at the battery, vehicle frame and genset (Page 17).
3. Recharge or replace the battery. Refer to the battery manufacturer's recommendations.
4. Increase battery cable size or run parallel cables.

NO POWER—GENSET RUNNING, RUN LIGHT ON

(Line circuit breaker OFF or tripped or faulty wiring)

Corrective Action: Reset or turn "On" the line circuit breaker on the genset operator's console.

TABLE 4. TROUBLESHOOTING (CONT.)

⚠ WARNING ***Some genset service procedures present hazards that can result in severe personal injury or death. Only qualified service personnel with knowledge of fuels, electricity, and machinery hazards should perform genset service. See Safety Precautions.***

HIGH TEMPERATURE—FAULT CODE NO. 1

(Engine coolant or inverter heat sink temperature exceeded design limit)

Corrective Action: Check the second-level fault code by touching Stop. The second-level fault will be either No. **33** or No. **34**.

LOW OIL PRESSURE—FAULT CODE NO. 2

(Low oil pressure cutoff switch did not open)

Corrective Action:

1. Check engine oil level and add oil as necessary (Page 15).
2. Drain excess oil (above dipstick Full mark).

SERVICE CHECK FAULT—CODE NO. 3

(A second-level fault occurred)

Corrective Action: Check the second-level fault code by touching Stop. The second-level fault will be one of the following in this table.

OVERCURRENT FAULT—CODE NO. 11

(AC output short)

Corrective Action:

1. Turn off the genset line circuit breaker. If the genset no longer shuts down, the genset is probably okay—check for and repair a short circuit in the vehicle appliances, wiring or shorted battery charger transformer.
2. Check whether the vehicle engine and genset share the same starting battery. If so, and this fault occurs when cranking the vehicle engine, low battery voltage may be causing this shutdown. Increase battery capacity or install a separate battery and battery charging system for the genset.

INVERTER OVERVOLTAGE FAULT—CODE NO. 12

(Controller not able to regulate to rated voltage)

Corrective Action: Check whether the vehicle engine and genset share the same starting battery. If so, and this fault occurs when cranking the vehicle engine, low battery voltage may be causing this shutdown. Increase battery capacity or install a separate battery and battery charging system for the genset.

TABLE 4. TROUBLESHOOTING (CONT.)

⚠ WARNING ***Some genset service procedures present hazards that can result in severe personal injury or death. Only qualified service personnel with knowledge of fuels, electricity, and machinery hazards should perform genset service. See Safety Precautions.***
INVERTER UNDERVOLTAGE FAULT—CODE NO. 13 (Controller not able to regulate to rated voltage) **Corrective Action:** Check whether the vehicle engine and genset share the same starting battery. If so, and this fault occurs when cranking the vehicle engine, low battery voltage may be causing this shutdown. Increase battery capacity or install a separate battery and battery charging system for the genset.
INVERTER OVERFREQUENCY FAULT—CODE NO. 14 (Controller not able to regulate to rated frequency) **Corrective Action:** Reduce the number of connected appliances, especially when air conditioners and battery chargers are running.
INVERTER UNDERFREQUENCY FAULT—CODE NO. 15 (Controller not able to regulate to rated frequency) **Corrective Action:** 1. Reduce the number of connected appliances, especially when air conditioners and battery chargers are running. 2. Have air conditioners and other appliances checked for proper operation. (A locked compressor rotor can cause very low power factor.)
GOVERNOR ACTUATOR FAULT—CODE NO. 19 (Controller sensed open or short circuit) **Corrective Action:** See an authorized Onan dealer.
GOVERNOR ACTUATOR OVERLOAD FAULT—CODE NO. 22 (Duration of operation at or near full-duty cycle beyond design limit) **Corrective Action:** Reduce the number of connected appliances, especially when air conditioners and battery chargers are running.
LOW OIL PRESSURE CUTOFF SWITCH FAULT—CODE NO. 23 (Controller sensed switch still open during start—not a running fault)

TABLE 4. TROUBLESHOOTING (CONT.)

⚠ WARNING ***Some genset service procedures present hazards that can result in severe personal injury or death. Only qualified service personnel with knowledge of fuels, electricity, and machinery hazards should perform genset service. See Safety Precautions.***
COOLANT TEMPERATURE SENDER FAULT—CODE NO. 24 (Controller did not sense temperature change during first 5 minutes of operation) **Corrective Action:** See an authorized Onan dealer.
ENGINE ABOVE SPEED TARGET FAULT—CODE NO. 25 (Governor unable to regulate to target speed) **Corrective Action:** See an authorized Onan dealer.
ENGINE BELOW SPEED TARGET FAULT—CODE NO. 26 (Governor unable to regulate to target speed) **Corrective Action:** 1. Reduce the number of connected appliances, especially when air conditioners and battery chargers are running. 2. Prime the engine fuel system by holding the control switch down in its **Stop** position for at least 1 minute.
PMA SENSE LOST FAULT—CODE NO. 27 (Controller unable to sense PMA frequency) **Corrective Action:** See an authorized Onan dealer.
DC SENSE LOST FAULT—CODE NO. 28 (Controller unable to sense DC bus voltage) **Corrective Action:** Open the circuit breaker. If the fault does not persist, check for and disconnect excessive loads from the genset before starting.
HIGH BATTERY VOLTAGE FAULT—CODE NO. 29 (Voltage across battery system greater than 17.5 volts) **Corrective Action:** 1. Check battery bank connections and reconnect if necessary so that the 12 volt batteries serving the genset are connected in parallel (12 volt) rather than in series (24 volt).

TABLE 4. TROUBLESHOOTING (CONT.)

⚠ WARNING ***Some genset service procedures present hazards that can result in severe personal injury or death. Only qualified service personnel with knowledge of fuels, electricity, and machinery hazards should perform genset service. See Safety Precautions.***

OVERSPEED FAULT—CODE NO. 31

(Engine speed greater than 3600 rpm)

Corrective Action: See an authorized Onan dealer.

LOW CRANKING SPEED FAULT—CODE NO. 32

(Cranking speed less than 180 rpm for more than 2 seconds)

Corrective Action:

1. Replace **Fuse F2** (starter solenoid) if blown (Page 7).
2. Clean and tighten the positive (+) and negative (–) battery cable connections at the battery and at the genset (Page 17).
3. Recharge or replace the battery. Refer to the battery manufacturer's recommendations.
4. Replace the engine oil with oil of proper viscosity for the ambient temperature (Page 16). (High oil viscosity can slow cranking speed.)

HIGH ENGINE COOLANT TEMPERATURE FAULT—CODE NO. 33

(Engine coolant temperature exceeded design limit)

Corrective Action:

1. Check the engine coolant level and add coolant and repair leaks as necessary (Page 20).
2. Check for and remove any objects blocking the air inlet or outlet openings in the bottom of the genset.
3. Reduce the number of appliances connected at the same time. (Note that high altitude and high ambient temperature decrease engine cooling capacity.)
4. Clean and flush the cooling system to remove coolant passage fouling.
5. If the genset overheats only underway, see the coach manufacture regarding air baffles or other means to direct cooling air into the genset.

HIGH INVERTER TEMPERATURE FAULT—CODE NO. 34

(Inverter heat sink temperature exceeded design limit*)

Corrective Action:

1. Check for and remove any objects blocking the air inlet or outlet openings in the bottom of the genset.
2. Reduce the number of appliances connected at the same time. (Note that high altitude and high ambient temperature decrease cooling capacity.)

TABLE 4. TROUBLESHOOTING (CONT.)

⚠ WARNING ***Some genset service procedures present hazards that can result in severe personal injury or death. Only qualified service personnel with knowledge of fuels, electricity, and machinery hazards should perform genset service. See Safety Precautions.***

ENGINE STOPPED FAULT—CODE NO. 36

(Engine stopped without command by controller)

Corrective Action:

1. Check fuel level. (Note: The genset fuel pickup is probably higher than the vehicle engine pickup.)
2. Prime the engine fuel system by holding the control switch down in its **Stop** position for at least 1 minute.
3. Check the engine air filter and remove any blockage (Page 17).
4. Check for mechanical damage.

INVALID GENSET CONFIGURATION FAULT—CODE NO. 37

(Genset configuration is preprogrammed at the factory)

Corrective Action: See an authorized Onan dealer.

OVERCURRENT FAULT—CODE NO. 38

(Too many loads connected)

Corrective Action: Reduce the number of appliances running at the same time, especially those with high motor starting loads such as air conditioners. Start up with no load and let the genset run for five minutes to cool down the inverter.

PROCESSOR FAULT—CODE NO. 42

(Microprocessor ROM error during self-test)

Corrective Action: See an authorized Onan dealer.

TABLE 4. TROUBLESHOOTING (CONT.)

⚠ WARNING ***Some genset service procedures present hazards that can result in severe personal injury or death. Only qualified service personnel with knowledge of fuels, electricity, and machinery hazards should perform genset service. See Safety Precautions.***
PROCESSOR FAULT—CODE NO. 43 ((Microprocessor RAM error during self-test) **Corrective Action:** See an authorized Onan dealer.
INVERTER POWER SUPPLY FAULT—CODE NO. 46 (Low battery voltage or power supply device failure) **Corrective Action:** 1. Avoid running the genset while cranking the vehicle engine in installations where the genset batteries are used to supplement the vehicle engine batteries. 2. Clean and tighten the positive (+) and negative (–) battery cable connections at the battery, vehicle frame and genset (Page 17). 3. Recharge or replace the battery. Refer to the battery manufacturer's recommendations. 4. Install or service a battery charging system in the vehicle if the genset is not so equipped.

Specifications

	Model HDKAJ / HDKAT	Model HDKAK
GENSET CONTROLLER: Integrated Microprocessor Based Engine and Generator Controller		
GENERATOR: Brushless, Exciterless, Bearingless, Permanent Magnet Alternator		
AC OUTPUT RATINGS:		
Power (@1.0 power factor)	7500 W	8000 W
Voltage	120 volts	120 volts
Frequency	60 Hz	60 Hz
Number of Phases	1	1
Current	62.5 ampere	66.7 ampere
Line Circuit Breaker(s)	One 2-pole, 30 or 35 amp	One 2-pole, 30 or 35 amp
ENGINE: 3-Cylinder In-Line, Water-Cooled, Indirect-Injection, 4-Stroke Cycle Diesel		
Bore	2.64 inch (67 mm)	
Stroke	2.68 inch (68 mm)	
Displacement	44 inch^3 (719 cc)	
Compression Ratio	23 : 1	
Oil Capacity (with filter)*	3 quart (2.6 l)	
Cooling System Capacity**	4.2 quart (4 l)	
Intake and Exhaust Valve Lash (Cold)	0.0065 inch (0.165 mm)	
OPERATING SPEED RANGE:	1600 to 3200 RPM (HDKAJ) 2300 to 3200 RPM (HDKAT)	1600 to 3300 RPM
FUEL CONSUMPTION:		
No-load Half-load (4000 W) Full-load	.13 gph (.49 l/h) .49 gph (1.85 l/h) .96 gph (3.63 l/h)	.13 gph (.49 l/h) .49 gph (1.85 l/h) 1.02 gph (3.86 l/h)
DC SYSTEM:		
Nominal Battery Voltage	12 volts	
Minimum Battery Capacity	450 CCA*** down to 0° F (–17° C) 650 CCA*** down to –20° F (–29° C)	
Maximum Regulated-Voltage Battery Charging Current (Optional)	10 ampere	
Fuse F1 (control circuit)	10 ampere mini-bayonet	
Fuse F2 (starter solenoid circuit)	10 ampere mini-bayonet	
Fuse F3 (glow plug circuit)	25 ampere	