SERVICE BULLETIN

Original Issue Date: **9/12**
Model: **14/20RES/L, 14/20RESA/L and 48RCL**
Market: **Residential/Light Commercial**
Subject: **Recent Controller Updates and Engine Hunting Troubleshooting Tips**

Introduction

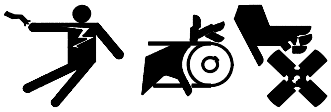
This service bulletin contains the following information for Kohler® Residential and Light Commercial generator sets.

- Recent software updates and improvements for the RDC2 and DC2 residential/light commercial generator set/transfer switch controllers.
- Troubleshooting tips for engine hunting problems on Model 20RES, 20RESL, 20RESA, and 20RESAL generator sets.

Safety Precautions

Observe the following safety precautions while servicing the unit. Refer to the instructions provided with the equipment as needed. Read and follow the safety precautions in the generator set service manual and other documentation provided with the equipment.

⚠ WARNING



Accidental starting.
Can cause severe injury or death.

Disconnect the battery cables before working on the generator set. Remove the negative (-) lead first when disconnecting the battery. Reconnect the negative (-) lead last when reconnecting the battery.

Disabling the generator set. Accidental starting can cause severe injury or death. Before working on the generator set or equipment connected to the set, disable the generator set as follows: (1) Press the generator set off/reset button to shut down the generator set. (2) Disconnect the power to the battery charger, if equipped. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent the starting of the generator set by the remote start/stop switch.

⚠ WARNING

Hot engine and exhaust system.
Can cause severe injury or death.

Do not work on the generator set until it cools.

Servicing the exhaust system. Hot parts can cause severe injury or death. Do not touch hot engine parts. The engine and exhaust system components become extremely hot during operation.

⚠ DANGER

Hazardous voltage.
Will cause severe injury or death.

Only authorized personnel should open the enclosure.

Short circuits. Hazardous voltage/current can cause severe injury or death. Short circuits can cause bodily injury and/or equipment damage**.** Do not contact electrical connections with tools or jewelry while making adjustments or repairs. Remove all jewelry before servicing the equipment.

Routing	Service Manager	Sales Manager	Parts Manager	Technician No. 1	Technician No. 2	Technician No. 3	Return This to
Initial Here							

Software Updates

As each generation of Kohler® Residential generator set controls offers more features and options for the owner, the troubleshooting of these controllers becomes more difficult. In addition, the software that controls the operation of these controllers has increased in complexity. Kohler Co. periodically releases updates to the controller software when new models are released. Software updates are also released to resolve issues on older model products that have been found after the product was manufactured.

Kohler Co. recommends updating the controller software to the latest version whenever servicing Kohler® products or investigating a customer complaint. This will ensure that the owner has the best software available.

The current software versions for all Kohler® Residential products are located in TechTools on the Kohler Power Resource Center and on the Dealer Portal. If you do not have access to the Dealer Portal, please contact your distributor. The Kohler Generator Service Department will provide the most current version if it is not yet available on TechTools or the Dealer Portal.

A laptop computer using Kohler® SiteTech™ software is necessary for the update. SiteTech software is available on TechTools and the Dealer Portal for Kohler distributors and dealers only.

Connect the controller to the laptop computer using the appropriate USB cable to update the firmware. Refer to the SiteTech Software Operation Manual for instructions, if necessary. When the procedure is complete, disconnect the USB cable and remove power from the controller for one minute. This will allow the large capacitor on the RDC2 logic board to discharge. After one minute, reconnect power to the controller.

Recent RDC2 Controller Updates

Kohler Co. has become aware of some issues on the RDC2 controller. These issues and suggested solutions are listed below. Not all products will experience these issues and this is not a requirement to perform service on normally operating equipment.

Note: The current version software must be installed on any controller whenever possible prior to replacing the controller. Kohler Co. reserves the right to deny claims for controller replacement if it is determined that the current version software is not loaded on the controller.

Cooling Fans Cycle at Low Temperatures (48RCL only)

Kohler Co. has seen cases of the radiator cooling fans running during exercise even though the engine temperature is low. Software version 4.05 was introduced in March 2012 to correct this issue.

L1-L2 Low Voltage Shutdown during Exercise

Kohler Co. has seen instances of the generator shutting down with an L1-L2 low voltage fault during exercise. A software update to resolve this condition was released in June, 2012. Update the controller with software version 4.07 or higher.

Display Errors

Some RDC2 controllers used on the 14RESA/L, 20RESA/L, and 48RCL model generator sets manufactured between January 2012 and August 2012 have shown errors on the controller display.

In some cases, the controller display may be blank or may display erroneous characters. This condition occurs when the battery is connected either at startup, during service, or even when the controller firmware is being updated. High ambient temperatures seem to increase the likelihood of this condition occurring.

Kohler Co. has released a software update to fix these errors. Install controller software version 4.09 or higher if the controller demonstrates display errors. Generator sets with serial numbers SGM322H5R and higher have been updated with this change.

It is important to note:

- The controller will function correctly in the event of a power outage even if the display is blank or displaying unusual characters.
- In most cases, even if the screen is blank or has erroneous characters, updating the software to version 4.09 or higher will restore the display to correct operation.

Lack of Communication with Generator RBUS Accessories

Kohler Co. has seen instances of lack of communication between the generator set and the Model RXT transfer switch or optional generator set accessories on the RBUS communication link. If this issue is present, the Model RXT Transfer Switch, Load Control Module (LCM), and Programmable Interface Module (PIM) will not work. For installations with the Model RDT transfer switch, the transfer switch operation is not affected.

Investigation has found that an internal failure of a component in the controller can cause this communication problem. The condition can be checked by verifying the presence of 12 VDC on the RBUS line terminals PWR and COM. Check connections and then replace the controller assembly if 12 VDC is not present on these terminals.

Changes to reduce the likelihood of this failure were implemented on controllers in August, 2012. Generator sets with serial numbers SGM322JNG and higher have been manufactured with this improvement.

RXT Terminal Block Labels

On RXT transfer switches shipped from January 2012 to March 2012, the labels on the T-shaped green terminal block (GM84150) for RBUS connections were reversed. The manuals and controller board labels were correct. Reversing the connections will not damage the equipment, but the transfer switch and other accessories will not operate. Connect the wiring according to the labels on the controller board for correct operation.

Engine Hunting

Models 20RES, 20RESL, 20RESA, and 20RESAL

Engine hunting can be the result of a number of factors. Experience has shown that replacement of the controller or stepper motor is typically not effective in solving hunting-related issues.

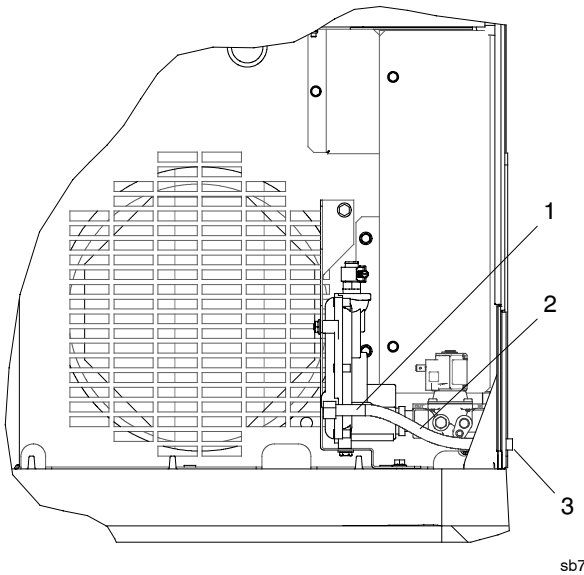
The following steps outline a troubleshooting sequence to help diagnose and pinpoint the cause of the frequency fluctuation and suggestions for resolving the condition. Perform the steps in the order shown and test the operation after each step. If one step does not solve the hunting, proceed to the next step.

1. To prevent automatic starting, disconnect the ATS by disconnecting PWR and COM (RXT) or engine start leads 3 and 4 (RDT).
2. Confirm under what conditions the generator hunts. No load? Loaded? Only during exercise?
3. Most hunting cases can be solved by completing the following two steps:
   a. Update to the most current version of firmware available (4.09 or higher for the RDC2, RESA/RESAL; 3.15 or higher for the RDC, RES/RESL). The Kohler Generator Service Department will provide the most current version if it is not yet available on TechTools.
   b. Install vent tubes on the two reference ports on the fuel regulator. Procure the parts shown in Figure 1 locally, or order Regulator Vent Tube kit GM87489. Route both tubes to the outside through the customer connection openings in the enclosure. See Figure 2.

   If the unit still hunts after performing these steps, continue following the troubleshooting steps below.
4. Use SiteTech to check the Engine Speed Gain Adjustment setting. The default setting is 50 and it normally is not adjusted.
   a. If the setting is different, reset to 50 and run the engine again.
   b. If the setting is 50, change the value in downward increments of 5. Note the effect that the change has on the speed of the hunting.
   c. If decreasing the setting is not effective, reset to 50 and increase in increments of 5.
5. Check the air intake tube that runs from the filter housing to the controller J-box. Is the tube seated properly on the filter housing? Is the grommet completely inserted in the housing?
   a. No? Adjust tubing and grommet as needed.
   b. Yes? Proceed to the next step.
6. Verify that the unit is set up for the proper fuel source. See the generator set Installation Manual for instructions.
   - LPG: Insert orifice and disconnect DSAI leads.
   - NG: Remove orifice and connect DSAI leads.
7. Is fuel pressure from the source steady and at acceptable levels during all phases of operation? Verify the minimum and maximum fuel pressures with the spec sheet. Pressure should not vary more than 10% from static pressure when starting and accepting full load.
   a. If the pressure varies more than 10% during operation, check the fuel supply and adjust as needed.
   b. If the pressure is steady, proceed to the next step.

Qty.	Description	Part Number
2	Elbow, 90°, 1/8”NPT x 3/8” hose barb	25-155-38
2	Tubing, 3/8” ID x 9” long, clear flexible plastic	GM76024

Figure 1 Regulator Vent Tube Kit GM87489



1. Elbow fittings 25-155-38, qty. 2
2. Tubing GM76024, qty. 2
3. Route both hoses to the outside through the existing openings in the enclosure

Figure 2 Fuel Regulator Vent Tube Installation

8. Energize the fuel solenoid valve to verify that it is opening and closing properly. You should hear an audible click if the solenoid is operating. Is it operating correctly?
   a. No? Replace the fuel solenoid valve.
   b. Yes? Proceed to next step.
9. Monitor voltage at the fuel solenoid valve to verify that battery voltage is present when running and absent when not running.
10. Are the carburetor or intake bolts loose, allowing movement and excess air to be introduced into the system?
    a. Yes? Reposition the carburetor so that the throttle plate will not touch the carburetor gasket. Apply Loctite® to the bolt threads and tighten as needed.
    b. No? Proceed to the next step.
11. Do the throttle plate, linkage between throttle and stepper motor, and stepper motor itself move freely?
    a. No? Check for restrictions including:
       - Linkage. Go to step 12.
       - Worn bushings. Go to step 13.
       - Carburetor gasket. Go to step 14.
    b. Yes? Proceed to step 15.
12. On the linkage, is the bias spring in place, around both bushings and/or connected to the holes the bushings are inserted in?
    a. No? Replace bias spring.
    b. Yes? Try different positions on the throttle linkage plate. If it has no effect, replace bias spring to original position and proceed to the next step.
13. Are the bushings worn, causing excessive movement of the linkage?
    a. Yes? Replace the bushings.
    b. No? Proceed to the next step.
14. Is the carburetor gasket interfering with the throttle plate or linkage?
    a. Yes? Always trim the carburetor gasket and test the operation before replacing the carburetor. See Figure 3.

    Note: Engines with serial numbers 4223605221 or higher have a new carburetor gasket that does not require trimming.

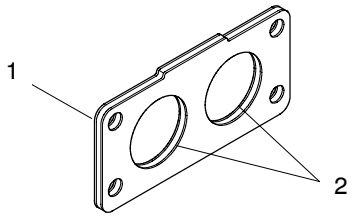
    b. No? Proceed to the next step.
15. While running the unit with no load, unplug the stepper motor harness. Does hunting continue?
    a. Yes? Then it is not a controller or governor issue. We can now narrow it down to these possibilities:
       - Regulator replacement
       - Fuel solenoid replacement
       - Spark plug condition check/replacement
       - Perform a cylinder leak-down test. See the engine service manual for instructions.
       - If none of these procedures remedy the hunting, contact your Kohler distributor.
    b. No? Controller issue. Update the RDC2 controller software to version 4.09 or higher.

Note: For the Model 20RES with RDC controller only, test the magnetic pickup as described below.

- Is the magnetic pickup operating correctly? Measure output voltage at the quick disconnects. Should be a minimum of 3 VAC while cranking.
- Monitor the magnetic pickup frequency measurement while manually holding the engine RPM steady. The frequency should remain constant. If it is erratic, check the wiring and crimp connections. Check that the mag pickup air gap is 0.5 mm (0.020 in.) and adjust if necessary. If measurements are still erratic, replace the magnetic pickup.

16. Reconnect the ATS by connecting PWR and COM (RXT) or engine start leads 3 and 4 (RDT).
17. Verify the generator set operation. See the generator set Operation Manual for instructions.

Note: If the generator set still hunts after performing these procedures, please contact your Kohler distributor for additional information.



1. Trim this edge if necessary
2. Trim 0.75 mm (0.03 in.) from the edge of each opening

Figure 3 Trimming the Carburetor Gasket

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