

Product Support Bulletin



Service

Issue Date:

April 27, 2017

Global Lit Num:

CPGF - S - 00000421 - 0

Revision: 0

Title: TRP 3015: Nuisance FC36 Shutdowns and Temperature Concerns

Model(s) HGJAA HGJAB HGJAD HGJAE

Background/Description:

Cummins Power Generation has noticed an increase in nuisance fault code 36 (FC36) shutdowns, which many associate to overheat shutdowns. An overheat shutdown will usually first appear as a FC36 - Generator Set Stopped Without Fault Condition. This fault code represents a situation where the generator has stopped without command from the control. Fault codes should always be properly diagnosed, and fully investigated before assuming root cause.

In certain situations, hot air coming from the ventilation exhaust can be recirculated back into the cool air intake. The recirculation continues and increases the internal temperatures of the generator until the fuel begins to boil and vaporize, starving the engine of fuel which may shut the generator down on FC36.

Overheating of a generator can show up as a few different kinds of symptoms. All events of fault shutdown, unexpected shutdown, or unusual operation of the generator should be properly diagnosed and serviced by a qualified technician. The following should be referenced only as general guidelines. Refer to the generator service manual, A035D011, for more information regarding troubleshooting, diagnosis, and repair.

Corrective Actions:

Below are steps that should be taken when faced with a nuisance FC36 shutdown.

1. Fault code 36 represents a situation where the generator has stopped without a command from the control. However, FC36 **does not** always mean a temperature related shutdown. Be sure to fully complete the troubleshooting steps for FC36 laid out in the service manual called out in section 12.32. Document results and values for tests called out in this troubleshooting. Note: Troubleshooting results and values will be required before any further action can be taken.

2. The final step in FC36 troubleshooting is to perform the hot air recirculation test. Reference section 8.3.7 in the service manual for detailed instructions on performing this test. This test confirms if the generator is experiencing hot air recirculation. Depending on the installation, the shutdowns may be happening while the coach is moving. Coach transit airflow can impact recirculation of the generator hot air. If this is the case, it is recommended to conduct the hot air recirculation test both while the coach is stationary and in motion. Follow the link to watch a short video on how this test should be performed. <https://www.youtube.com/watch?v=6Ba57fIQ9Dc>. Contact the authorized service provider generator set technical support group through 1-800-CUMMINS for questions regarding this test.
 - A. The hot air recirculation test is the best way to determine if hot air is finding its way to the generator air intake. The test measures the air temperature going into the generator versus the ambient air temperature.
3. The result of this test will be a rise over ambient temperature value (ROA). The service manual gives a recommended or preferred ROA value. If you are seeing a ROA value greater than that which is outlined in the service manual, air ventilation or ducting will be needed. Do not refer customer to OEM to correct the installation.
4. Determine how the air is flowing around and under the generator. This knowledge will be used to ultimately select the best duct for the installation.
 - A. Several factors can restrict or redirect airflow, and should be considered when determining air management. Tall RV skirting, mud flaps, compartment and compartment doors, bumpers, and frame rails all can have an impact on airflow. While analyzing the airflow at hand, be sure to consider if any of these items may be obstructing the intended path of air flow.
 - B. Understanding and visualizing air flow for a generator is key to minimizing hot air recirculation. HGJAx generators draw all of the cooling air in and discharge hot air out of the bottom. As such, cool air in and hot air out are very close together. Below is a visual example of hot and cold airflow for HGJAx generators.

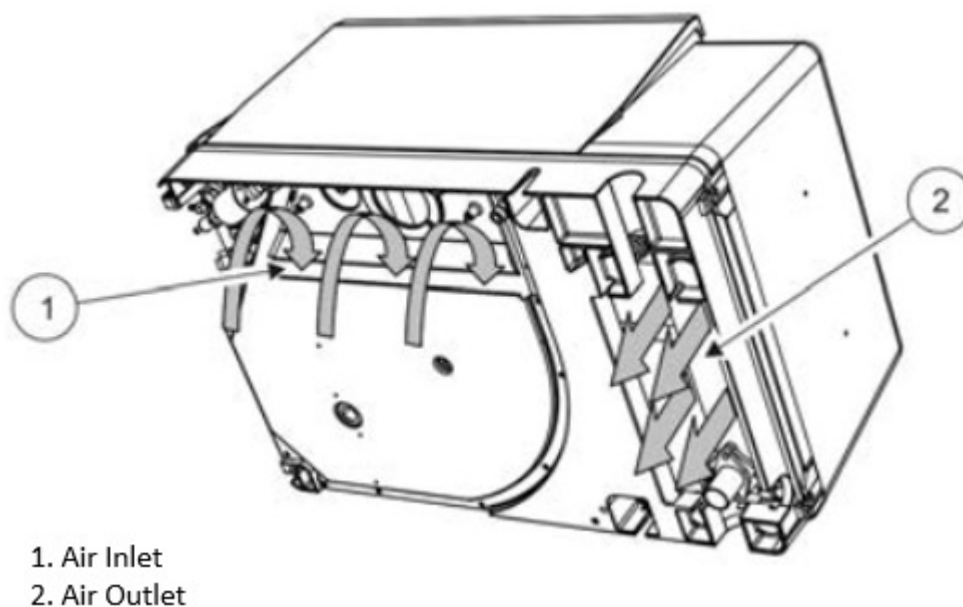


Figure 1

- C. A method to see how the air is flowing underneath the generator is to tape some yarn, dental floss, or marker flags (shown below) in various locations underneath the generator. See Figure 2.

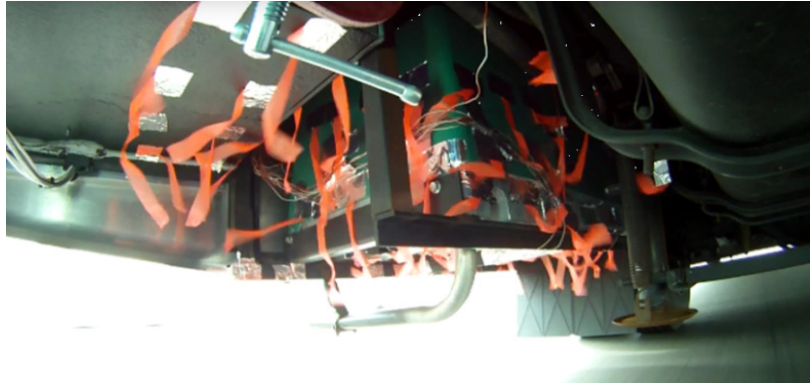


Figure 2

5. Once you have a general idea of how air flows below and around the generator, steps can be taken towards reducing the amount of hot air that is recirculated. There are several ducting kits that Cummins Onan Elkhart sells that have been designed to mitigate recirculation. Ducts can be ordered through Cummins Onan Elkhart by reaching the parts department at 574-262-4611. Open the following attachment for a complete list of these ducts and what they are designed to do. 
- A. Each of these ducts take a bit of understanding on air flow and handling to accurately decide which kit is best for the installation at hand. Be sure to consider all the items mentioned above when selecting a duct for the application.
6. Even with the installation of a kit, the installation must be reviewed per the installation manual and must pass the hot air recirculation test. In certain installations, the addition of a kit may result in an increase in hot air recirculation or ventilation restriction, resulting in reduced generator cooling. If the installation fails the hot air recirculation test after the installation of a duct, escalate through 1-800-CUMMINS to the authorized service provider generator set technical support group.
7. For further information on generator temperature concerns, visit www.qsol.cummins.com or the global customer engineering page at www.qce.cummins.com (account registration may be needed. If this is the case and immediate assistance is needed, contact the authorized service provider generator set technical support group via 1-800-CUMMINS). Here you can find customer engineering bulletins (CEB's) that give other recommendations and practices on how to successfully manage airflow for your generator. These CEB's, when used alongside generator installation manuals, will give ideas to form an installation that application engineering believes will be successful. There are also documents on environmental factors and what you can discuss with the RV end user, to help them ensure their generator is in an environment where proper cooling will occur.

Warranty Statement:

This work is authorized by a campaign. See details below.

Campaign Authorization Details:

TRP Filing Instructions:

Fail Code: OF CU ID

Account Code: 65

Authorization Code: 3015

Applicable SRT's:

00-901: 0.4 hours - Administrative time

99-999: 2.0 hours - air circulation troubleshooting

99-999: 0.5 hours - Duct Installation

Parts:

Reimbursement for 1 duct is allowed

Travel: No travel is included

Expiration Date: December 31, 2017

When claim is filed, please include ducting part number, and information on generator installation (RV make and model and generator location).

Contact:

For further questions or concerns regarding notification or the information stated above, please contact in the following order:

- 1) Your local Service Manager
- 2) The Cummins Distributor Technical Support line at 1-800-CUMMINS