



Technical Service Bulletin

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TRP 3375: HGJAx Ducting Kits and Carburetor Insulation; Countermeasures for Fault Code 36 Shutdowns Due to Hot Air Recirculation	

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Warranty Statement

The information in this document authorizes specific changes to the repair practice for failures covered under product warranty coverages.

Contents

Product Affected

- HGJAA (Spec A-M)
- HGJAB (Spec A-M)
- HGJAD (Spec A-M)
- HGJAE (Spec A-M)

Issue

Symptom:

- Fault Code 36 – Generator Set Stopped Without Fault Condition
- The generator set might be able to restart after the fuel has had time to cool down, but it is likely the generator set will shut down on Fault Code 36 again after running for a short period of time

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 set until the fuel begins to boil and vaporize, starving the engine of fuel, which may shut the generator set down on Fault Code 36 (FC36)

Verification/Confirmation

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

1. Fault code 36 can be linked to many different root causes, so it is important to fully complete the troubleshooting steps for FC36 laid out in the service manual.
2. One of the steps in FC36 troubleshooting is to perform the hot air recirculation test. Reference the “Hot Air Recirculation Test” section in service manual A035D011 for detailed instructions on performing the test. It is recommended to conduct the test both while the coach is stationary and in motion because coach airflow may induce hot air recirculation. The video in the following link provides further instructions on how this test should be performed. <http://tsb.cumminsvirtualcollege.com/A057X792.aspx>
 - a. The test measures the temperature of the air going into the generator set versus the ambient air temperature, and is recorded as a rise over ambient temperature value (ROA). The service manual gives a range of preferred ROA values. If you are seeing an ROA value greater than that which is outlined in the service manual, air ventilation/ducting and carburetor insulation (HGJAB/HGJAE models only) will be needed.
3. Determine how the air is flowing around and under the generator set. 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 doors, bumpers, and frame rails can all 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 set is key to minimizing hot air recirculation. HGJAx generator sets draw cooling air and discharge hot air out of the bottom, as depicted below in Figure 1.
 - c. A method to see how the air is flowing underneath the generator set is to tape some yarn, dental floss, or marker flags (Figure 2) in various locations underneath the generator set.

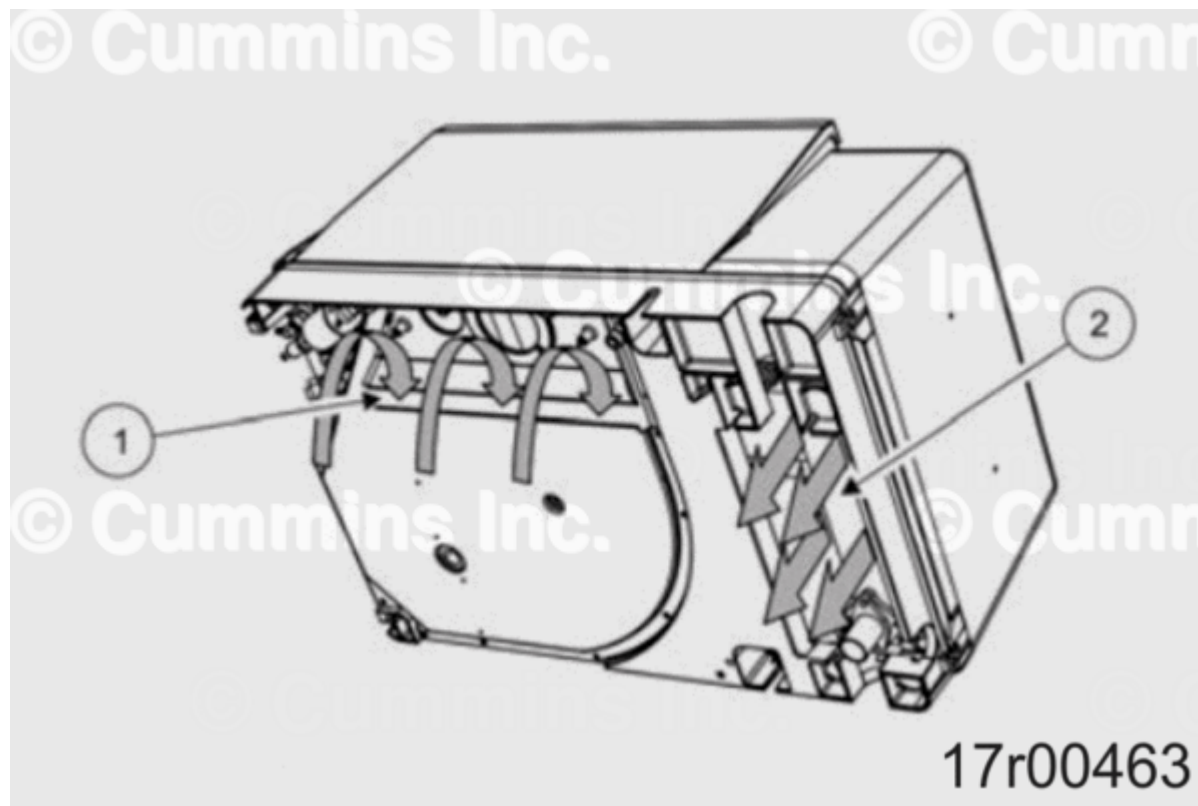


Figure 1, HGJAx Air In and Air Out

- 1. Air Inlet
- 2. Air Outlet

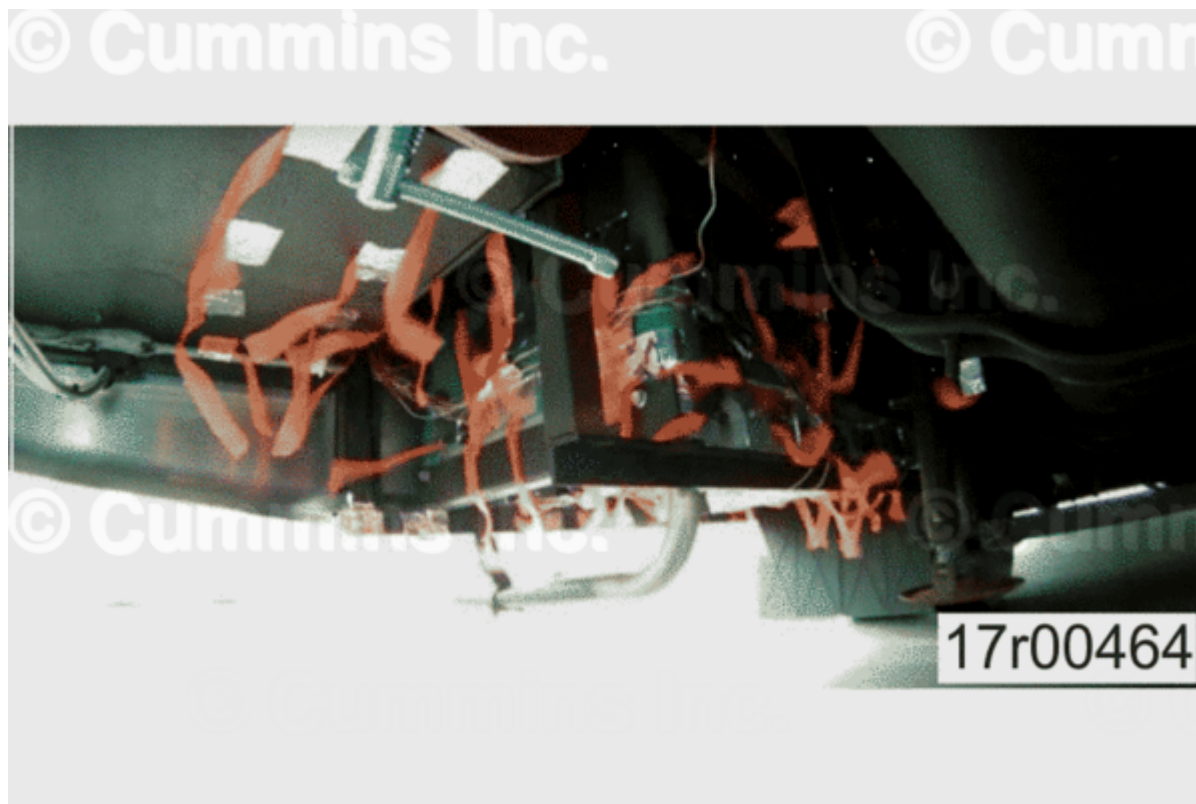


Figure 2, Marker Flags

Resolution

Ducting Kits

1. Once you have a general idea of how air flows below and around the generator set, 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. Refer to the “Part Identification” section of this bulletin 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.
2. Even with the addition of a ducting 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 duct may result in an increase in hot air recirculation or ventilation

restriction, resulting in reduced generator set cooling. In this situation it may be necessary to install a different hot air discharge duct, modify the existing discharge duct to better suit the specific installation, or even fabricate and install an air inlet duct.

3. For further information on generator set temperature concerns, visit www.qsol.cummins.com or the global customer engineering page at www.gce.cummins.com (account registration may be needed). Here you can find customer engineering bulletins (CEB's) that give other recommendations and practices on how to successfully manage airflow for your generator set. These CEB's, when used alongside generator set 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 set is in an environment where proper cooling will occur.

Carburetor Insulation Kits (for HGJAB/HGJAE models only)

Once the ducting has been installed, follow the directions below in to install foam insulation over the carburetor. This insulation is intended to reduce the temperature of the fuel inside the carburetor bowl and lower the chance of fuel vaporization in the bowl. This insulation, in addition to the ducting, will likely result in a reduced number of fault code 36 shutdowns due to engine starvation.

1. Remove the service door of the generator set and remove the air filter housing (not entirely necessary, but makes the carburetor more accessible)
2. Slide the carburetor insulation (A061W247) up over the outside of the carburetor
3. Attach a cable tie around the outside of the insulation, and ensure the foam is securely in place
4. Trim off the excess end of the cable tie
5. Re-install the air filter housing and the service door of the generator set

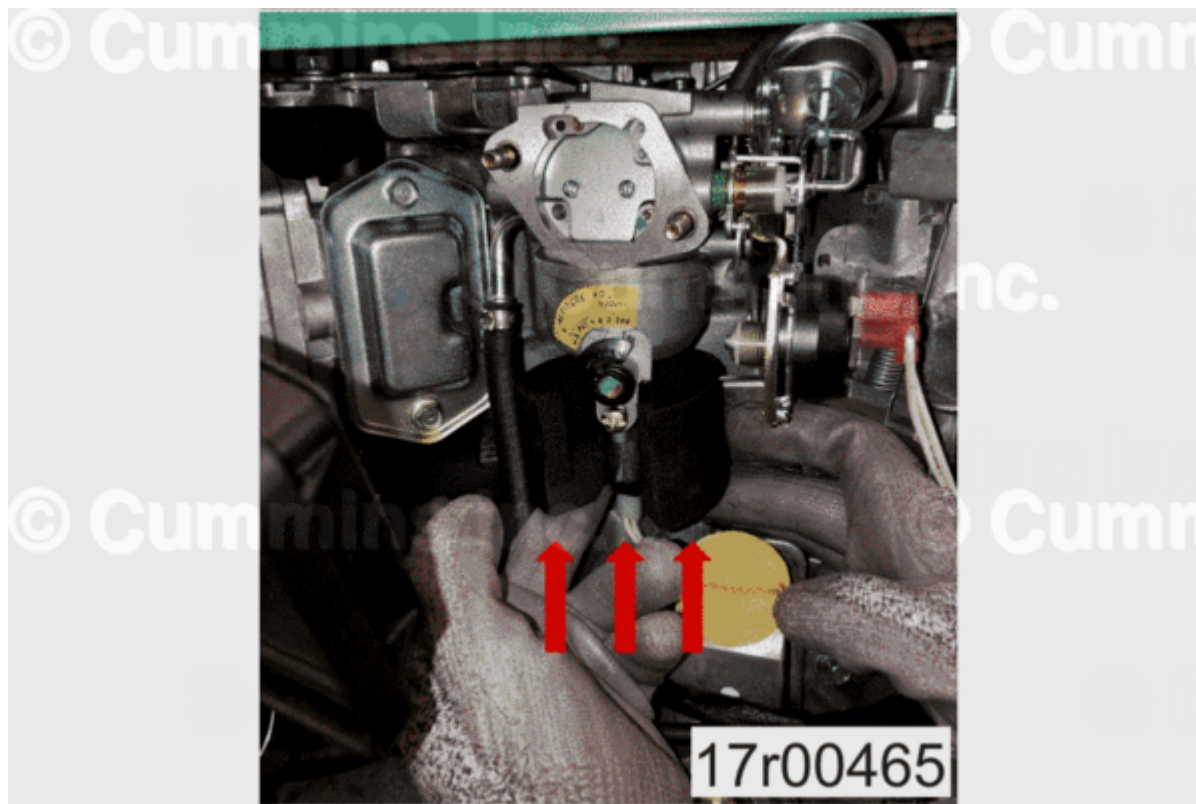


Figure 3, Installing Carburetor Insulation

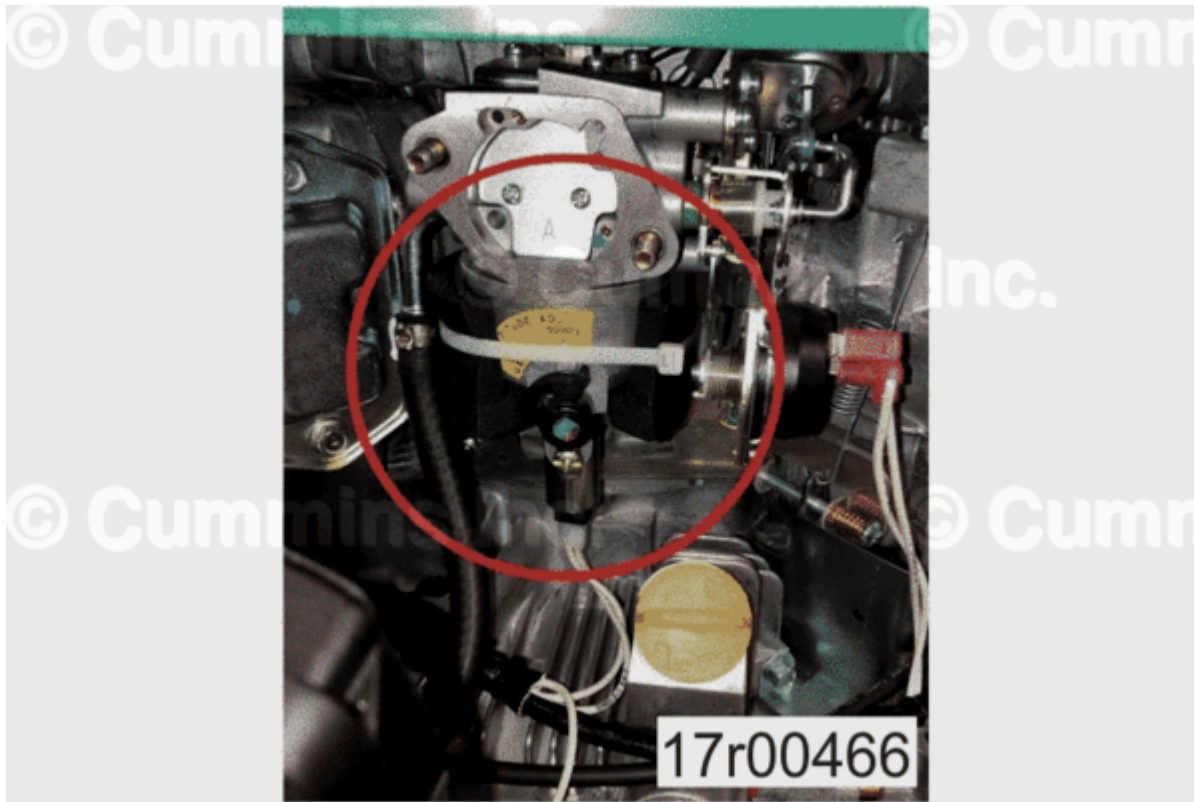


Figure 4, Carburetor Insulation and Cable Tie

Service Instructions

TRP Filing Instructions:

Fail Code: OF CU ID

Account Code: 65

Authorization Code: 3375

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

99-999: 0.2 hours – Carburetor Insulation Installation

Parts: Reimbursement for 1 duct and 1 carburetor insulation is allowed

Travel: No travel is included

Expiration Date: December 31, 2020

Additional Instructions: When the claim is filed, please include the duct part number and information about the generator set installation (RV make and model, generator set location, etc).

Using the information above, a ducting and carburetor insulation claim can be filed for HGJAx generator sets that are no longer covered under warranty.

Service Parts Availability

Carburetor insulation part number A061W247 can be ordered through the Cummins aftermarket channel.

Ducts can be ordered through Cummins Onan Elkhart by reaching the parts department at 574-262-4611. See Table 1 for a list of duct part numbers and see the “Part Identification” section of this bulletin for a description of each part number.

Table 1, Service Parts	
Part Description	Part Number
Carburetor Insulation	A061W247
Side Air Discharge Kit	026-00202
Ducting Kit	026-00494
Ducting Kit	026-00495
Ducting Kit	026-00522
Ducting Kit	026-00531
Ducting Kit	026-00534
Ducting Kit	026-00535

Part Identification

026-00522**Purpose:**

- Directs hot air to the right

Do not use if:

- Proper ground clearance will be an issue when the duct is installed
- There are obstructions to the right of the generator set, as this could cause hot air to circulate back towards the intake

Applications where this may be used:

- When the generator set is installed in the front of a 5th wheel

Installation:

- Four self-tapping screws, one in each corner of the duct (see arrows below)
- Be sure to cover both mouse holes (circled in red) with high temperature aluminum foil tape when using this duct
- If possible, cover all mating surfaces between the duct and the generator set with high temperature aluminum foil tape



Figure 5, Part Number 026-00522

026-00535

Purpose:

- Directs hot air to the right
- Can be used in place of 026-00522 if the tailpipe is an issue (this duct has a cutout for the tailpipe)

Do not use if:

- Proper ground clearance will be an issue when the duct is installed
- There are obstructions to the right of the generator set, as this could cause hot air to circulate back towards the intake

Applications where this may be used:

- When the generator set is installed in the front of a 5th wheel

- Designed for Raptor 5th Wheels, but can be used in other applications

Installation:

- At least 4 self-tapping screws (see arrows below)
- If possible, cover all mating surfaces between the duct and the generator set with high temperature aluminum foil tape

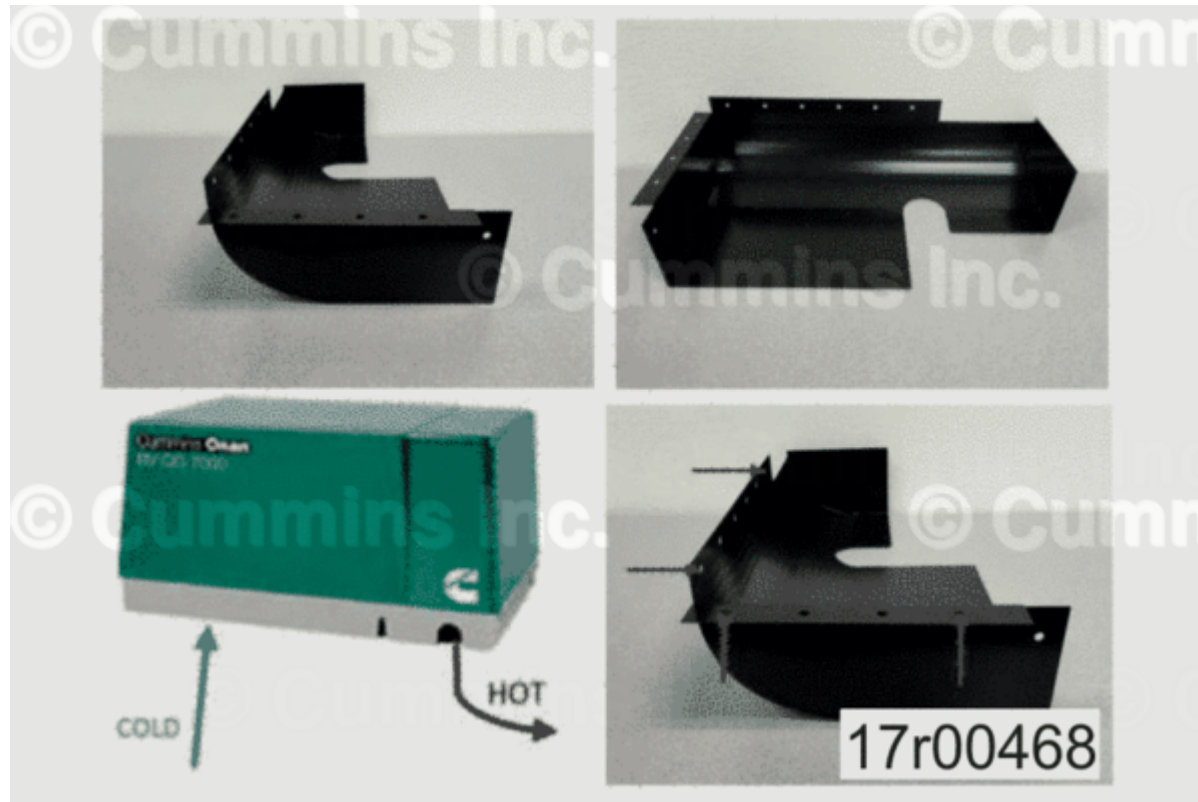


Figure 6, Part Number 026-00535

026-00495

Purpose:

- Directs hot air to the right
- Similar to 026-00522, but 026-00495 is preferred if ground clearance could be an issue

Do not use if:

- There are obstructions to the right of the generator set, as this could cause hot air to circulate back towards the intake

Applications where this may be used:

- When the generator set is installed in such a way that ground clearance may be an issue

Installation:

- Four self-tapping screws, one in each corner of the duct (see arrows below)



Figure 7, Part Number 026-00495

026-00494

Purpose:

- Directs hot air to the rear of the generator set, or to the middle of the coach

Do not use if:

- There are obstructions to the right of the generator set, as this could cause hot air to circulate back towards the intake

Applications where this may be used:

- When there are obstacles to the right of the generator set, such as a tire or mud flap

Installation:

- Four self-tapping screws, one in each corner of the duct (see arrows below)



Figure 8, Part Number 026-00494

026-00202

Purpose:

- This kit completely seals off the normal exhaust opening, cuts a hole on the right side of the enclosure, and forces hot air out of this opening

Do not use if:

- There are obstructions to the right of the generator set, as this could cause hot air to circulate back towards the intake

Applications where this may be used:

- When the generator set is very close to the ground
- If the generator set is installed under the chassis, in the middle of the coach

Installation:

- Instruction sheet 026-00209 (included with kit) gives detailed instructions on installing this kit

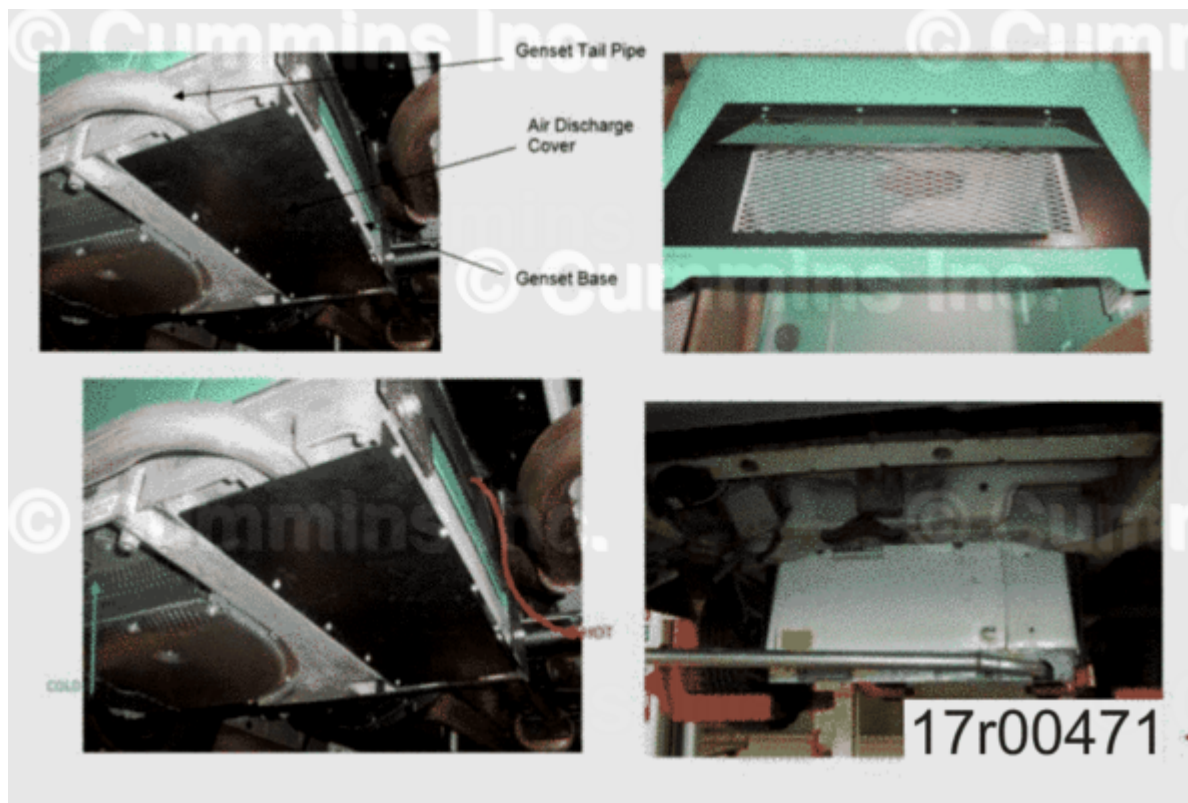


Figure 9, Part Number 026-00202

026-00531**Purpose:**

- Used when the generator set is installed on the passenger side of the coach
- Can also be used to simply direct hot air towards the middle of the coach

Do not use if:

- There are obstructions to the rear of the generator set, as this could cause hot air to circulate back towards the intake

Applications where this may be used:

- When the generator set is installed on the passenger side of the coach

Installation:

- Instruction sheet A053B542 (included with kit) gives detailed instructions on installing this kit
- 9 self-tapping screws (see arrows below)
- Be sure to cover the mouse hole at the front of the generator set (circled in red) with high temperature aluminum foil tape when using this duct
- If possible, cover all mating surfaces between the duct and the generator set with high temperature aluminum foil tape



Figure 10, Part Number 026-00531

026-00534

Purpose:

- Used when the generator set is installed on the passenger side of the coach
- Can also be used to simply direct hot air towards the middle of the coach
- Similar to 026-00531, but this duct has a wider opening in the instance that there is an obstruction behind the generator set

Applications where this may be used:

- When the generator set is installed on the passenger side of the coach

Installation:

- 9 self-tapping screws (see arrows below)

- Be sure to cover the mouse hole at the front of the generator set (circled in red) with high temperature aluminum foil tape when using this duct
- If possible, cover all mating surfaces between the duct and the generator set with high temperature aluminum foil tape



Figure 11, Part Number 026-00534

Document History

Date	Details
2018-6-8	Module Created
2018-6-15	Non-Product Problem Solving (PPS)
2018-6-15	Removed a broken video link.

Date	Details
2019-7-22	Product Problem Solving (PPS)
2019-7-30	Product Problem Solving (PPS)
2020-7-23	Product Problem Solving (PPS)

Last Modified: 24-Jul-2020
