



SERVICE BULLETIN No.1095

Circulate to listed addressees

COACH MODEL	: C2045
BULLETIN TYPE	: Service Information
MANUAL & SECTION	: Maintenance Manual: Chapter 10 - HVAC System Spare Parts Manual: Section 771809 - Heating accessories
PARTS BOOK REVISION	: Yes
DATE	: November 30th, 2001
SUBJECT	: Proheat combustion heater – carbon build-up
TERMS & CONDITIONS	: No claims will be accepted with reference to this Bulletin.

APPLICATION:

Removal of the combustion heater exhaust heat shield is applicable to following units:

Model	Engine	VIN
C2045	Cummins	45001 → 45229
	Detroit Diesel	45501 → 45688

DESCRIPTION:

- On several C2045 coaches, Proheat combustion heater units have had excessive carbon build-up on the igniters and flame sensors, resulting in the need to frequently clean the system.
- Proheat have determined the cause of this service issue to be air leakage between the fuel nozzle and fuel block contact face.
- Refer to Proheat Service Bulletin # 0038, which is also included, for the recommended air leakage test procedure.
- Refer to the nozzle sealing washer installation procedure if an air leak has been detected.
- Tests at Van Hool have shown that the deflector at the base of the shock absorber behind the exhaust pipe (see Figures 1 and 2) increases the exhaust back pressure, thus reducing the exhaust gas flow and contributing to a certain extent to the carboning also.
- Removing the shield also increases time between service intervals.
- Van Hool recommend removal of the heat shield during the next service interval to improve combustion heater performance. The procedure in this Bulletin explains how this can be done.

Service personnel: please read, initial and circulate.

Service Manager	Parts Manager	Warranty Administrator	Workshop Foreman	Service Technician

PARTS:

Old parts



Figure 1: Proheat heat shield VH 10715349 and hardware to be removed

Description	Qty.
Exhaust heat shield VH 10715349	1
Bolt, M8x1.25x20, stainless	1
Flat washer, 8x20x1.5 mm, stainless	2
Lock washer, stainless	1
Nut, M8, stainless	1

- Part VH 10715349 will be no longer offered as service replacement.

PROCEDURE: To remove the Proheat exhaust heat shield

1. General:

- The time required to remove the exhaust heat shield is approximately 5 minutes.

2. Special tools, equipment or services:

- No special tools, equipment or services are required.

3. Preparations:

- Park the coach on a level surface, apply the parking brake and shut down the engine.
- Make sure the Proheat unit is switched off.
- Switch off all systems and turn off the battery master switch.
- Put a "DO NOT OPERATE" tag on the instrument panel.
- Read the entire procedure before beginning to work.

CAUTION: Before working on the combustion heater exhaust system, disconnect the batteries and check that the exhaust pipe is cold. Disconnect ground cable first and reconnect ground cable last.

4. To remove exhaust heat shield VH 10715349 (see Figure 2):

- 1) Underneath the coach, locate the Proheat combustion heater exhaust pipe and heat shield (see Figure 2).

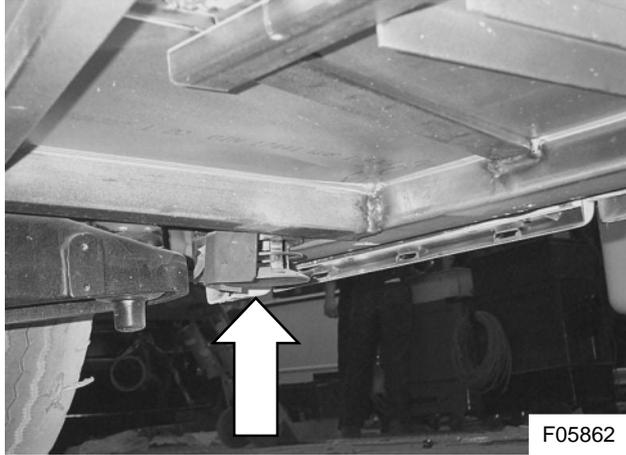


Figure 2: Heat shield installation between Proheat exhaust and shock absorber on C-beam

- 2) Using two 13 mm box wrenches, undo and remove the bolt, nut and washers securing the exhaust heat shield to the chassis mounting bracket (see Figure 3).

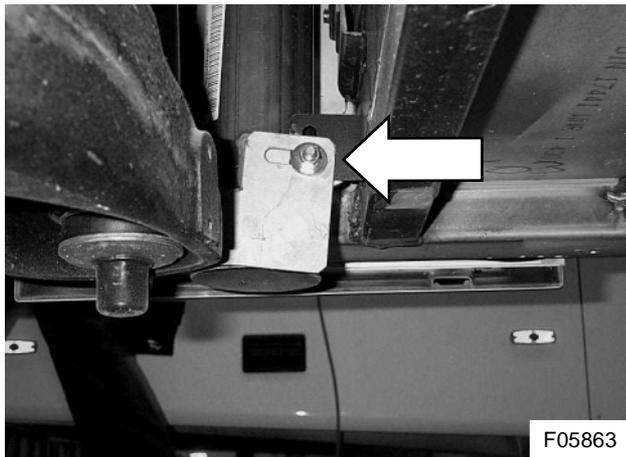


Figure 3: Exhaust heat shield, nut and bolt to be removed

- 3) Remove and discard the heat shield.

Procedure complete.

SERVICE INFORMATION:

Service Bulletins are issued to supplement or supersede information in the Van Hool manuals. Note Service Bulletin number, date and subject on the register at the end of the relevant chapter(s). File Service Bulletin separately for future reference.

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Service Bulletin

SB0038

October 2001

Description: Bravo 80 auxiliary heater.

Purpose: Testing for air leaking from between the fuel nozzle and fuel block contact face. See attached picture.

Symptoms: Diagnostic code indicated = START (1 Flash) caused by:

- Constant and rapid carbon build-up on the flame sensor.
- Constant and rapid carbon build-up on the ignition electrodes.
- No excess carbon build-up in the combustion chamber.

Test Procedure:

1. Disconnect the Power Supply harness, Switch Input harness, Coolant Pump harness, Temperature Sensor harness and Overheat harness at the Proheat PCM (Proheat Control Module).
2. Loosen the two (2) swing bolts that fasten the burner head to the heat exchanger and remove the burner head.
3. Reconnect the Power harness to the Power connection on the PCM (Proheat Control Module) and start the heater by:
 - Reconnecting the coach Switch harness to the Switch Input connection on the PCM (Proheat Control Module) and using the coach operating system.

OR

 - Using Proheat recommended service tool 952925K Remote Start Switch connected to the Switch Input connection on the PCM (Proheat Control Module). This allows the service technician to work at the heater location. (Available through Proheat dealers)

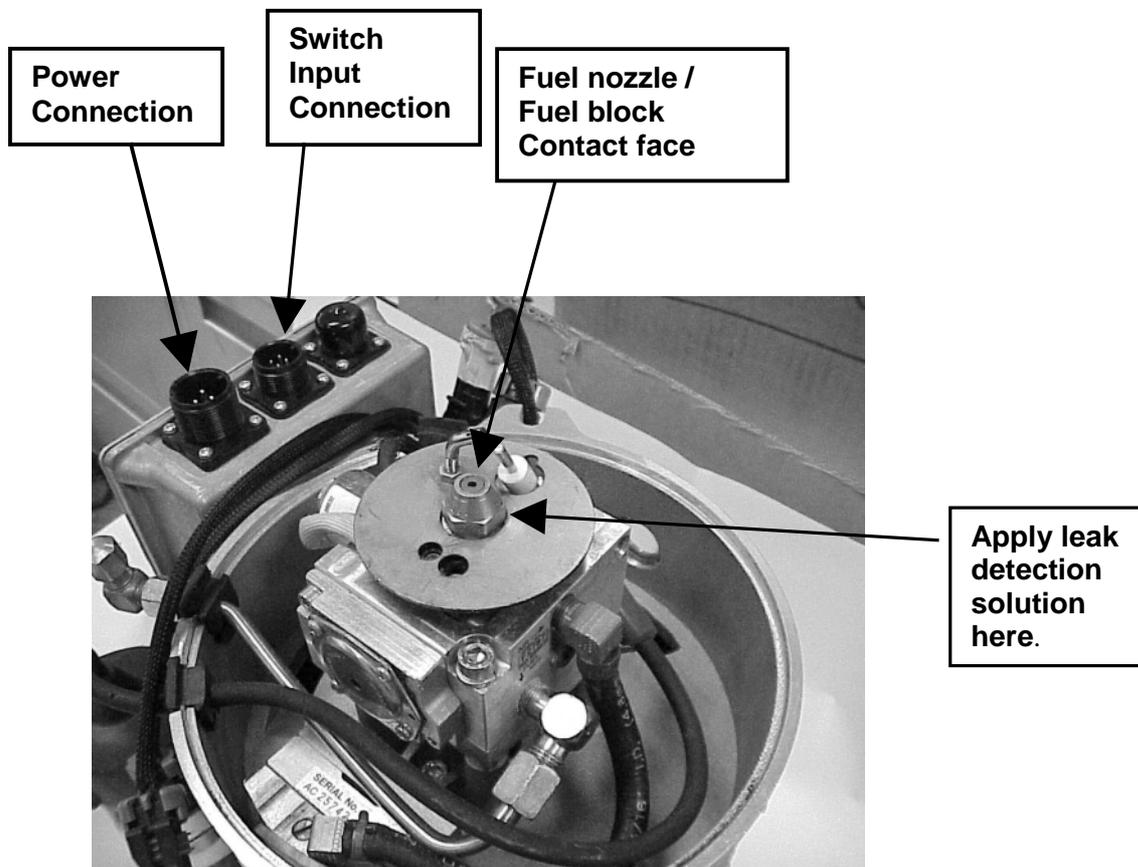
CAUTION: The Coolant Pump, Temperature Sensor and Overheat harnesses **MUST** remain disconnected to ensure that heater will enter purge cycle only.

4. While the heater is running in purge cycle (3 minutes), test for air leaking between the back of the fuel nozzle and the fuel block using a leak detection solution. See Figure 1.
 - If an air leak is detected install washer seal PK0361 (c/w Instructions).

- If an air leak is not detected consult the Service Manual based on the diagnostic code START. See pages 4.3 to 4.4 in the Bravo Service Manual. See attached pages.

Parts Required: PK0361 (only if a leak is detected)

Figure 1



For information and inquiries contact your local Proheat dealer or the Proheat Technical Service Department at 1-800-667-4328.

START ERROR

A START ERROR code indicates that the flame sensor did not see a flame during the 30 second ignition period.

If the Start Error is displayed, reset the PCM by switching the heater OFF and then ON. Let the heater attempt and finish two start cycles. Observe the heater operation either through the inspection window and/or by listening to the combustion process.

Symptom: A flame is visible.

The heater shuts down after the 30 second ignition period.

Check: Flame Sensor

- a. Check the flame sensor as per test procedure.
(See page 4-9)

Symptom: No flame (spark is visible)

The spark continues for the 30 second ignition period.

The heater shuts down after the 30 second ignition period.

Check: Fuel System

- a. Is there sufficient fuel in the tanks or has the fuel gelled?
- b. Is there an air leak in the fuel system?
- c. Is there a restriction in the fuel system or is the fuel filter plugged?
- d. Is the fuel pump operating?
- e. Is the fuel regulator defective? (page 4-23)
- f. Is the compressor functioning? (page 4-18)
- g. Is the fuel solenoid functioning? (page 4-12)
- h. Is the nozzle plugged?

NOTE: If there is no flame, a spark and/or spark reflection should be visible through the inspection window.

Symptom: Heater is Backfiring

Backfiring is usually caused by a severe restriction of combustion air or air in the fuel line.

Check: Combustion Air Flow

- a. Is there a restriction at the blower inlet or in the exhaust system?
- b. Has the combustion air adjustment on the burner head been moved or come loose?

Check: Fuel System

- a. Fuel level
- b. Is there an air leak in the fuel system?

Symptom: No visible flame

No spark

The heater shuts down after the 30 second ignition period.

Check: Ignition System

- a. Check for a poor electrical connection between the ignition coil and the high tension lead.
- b. Check for a poor electrical connection between the electrode and the high tension lead.
- c. Check the coil harness wires and connections to the coil.
- d. Check the coil. *(See page 4-14)*
- e. Check the heater ground wire for damage and corrosion.
- f. Check the spark electrode gap.
- g. Check spark electrode. **Do not over-tighten the set screw for the ignition electrode as this may result in a cracked ceramic insulator resulting in a failed spark.**

FLAME OUT

A Flame Out code indicates that a flame was established but was not maintained. If at any time during the run mode the flame sensor does not see a flame, the ignition spark is switched on immediately. If the flame is not reestablished within 10 seconds the heater will shut down and the Flame Out diagnostic will be displayed. The heater will go into the purge mode and attempt to re-start in 3 minutes if the coolant temperature is below 150° F (65° C).

A Flame Out code indicates that there was ignition and therefore there was a spark. Flame Out or a combination of Flame Out and Start Error are usually an indication of an interruption in fuel flow.

Symptom: Combustion hesitation

Smoking

Coughing heater

Check: Fuel System

- a. Is there sufficient fuel in the tanks or has the fuel
- b. gelled?

- c. Is there an air leak in the fuel system?
- d. Is there a restriction in the fuel system or is the fuel filter plugged?
- e. Is the fuel pump operating?
- f. Is the fuel regulator defective? *(page 4-23)*
- g. Is the compressor functioning? *(page 4-18)*
- h. Is the fuel solenoid functioning? *(page 4-12)*
- i. Is the nozzle plugged?

Description: Part Number PK0361 Nozzle Sealing Washer

Note: The seal washer is ONLY required if an air leak has been detected as per Proheat Service Bulletin SB0038.

Instructions:

Step 1. Remove the nozzle from the fuel block.

Step 2. Install the washer seal over the nozzle threads as shown in figure 1.



Figure 1

Step 3. Lubricate the O-ring on the nozzle with diesel fuel.

Step 4. Re-install the nozzle in to the fuel delivery unit as shown in figure 2.

Step 5. Torque nozzle to 50 +/- 3 in-lbs.



Figure 2