CHASSIS

Product Service Bulletin

MODEL: HDX, EF, & EFX

SUBJECT: GENTECH DEF COOLANT-FLOW SOLENOID, TESTING & REPLACEMENT

DATE: JULY 21, 2014 **INDEX:** 24

 BULLETIN: 13

GENERAL INFORMATION

NOTE: The test procedure should be performed with the header unit installed in the DEF tank and Fault codes present.

NOTE: This bulletin pertains to vehicles with Cummins engines and after treatment systems only.

The Gentech diesel exhaust fluid (DEF) coolant-flow-control solenoid is an electric 12V solenoid that controls the flow of coolant through stainless steel tubes in the DEF tank. The solenoid is checked every time the bus is started and is used when the DEF temperature drops to its freezing point, 12°F (-11°C) or below. The command is controlled by the Cummins engine controller. Several different fault codes may indicate a problem with the DEF tank temperature data. See **Table 1** for the most common examples. If any Gentech DEF coolant-flow-control solenoid related fault codes are shown, perform the following test to determine if the solenoid valve functions correctly.

GENTECH DEF COOLANT-FLOW SOLENOID, COMMON FAULT CODES (TYPICAL)	
FAULT CODE	**DESCRIPTION**
1679	AFTERTREATMENT DEF TANK TEMPERATURE - DATA ERRATIC, INTERMITTENT, OR INCORRECT
1683	AFTERTREATMENT DEF TANK HEATER - VOLTAGE ABOVE NORMAL, OR SHORTED TO HIGH SOURCE
1684	AFTERTREATMENT DEF TANK HEATER - VOLTAGE BELOW NORMAL, OR SHORTED TO LOW SOURCE

TABLE 1, GENTECH DEF COOLANT-FLOW SOLENOID, COMMON FAULT CODES (TYPICAL)

If the solenoid valve is functioning correctly, test the rest of the system for the problem.

If the solenoid valve is not functioning correctly, replace the solenoid valve assembly only. **Do not** replace the complete header.

SOLENOID TEST

NOTE: Wear protective gloves when working on the DEF system to protect from crystallized DEF.

1. Park the vehicle on a level surface, shut down the engine, and set the parking brakes. Chock the tires.

   IMPORTANT: Gentech changed the design of the coolant-flow-control solenoid in March 2011. There are two different solenoids with the same part number but different resistance values. Refer to Figure 1 and Figure 2 to see the differences in the solenoid housings. The tag on the solenoid will say, "7W" or "10W".

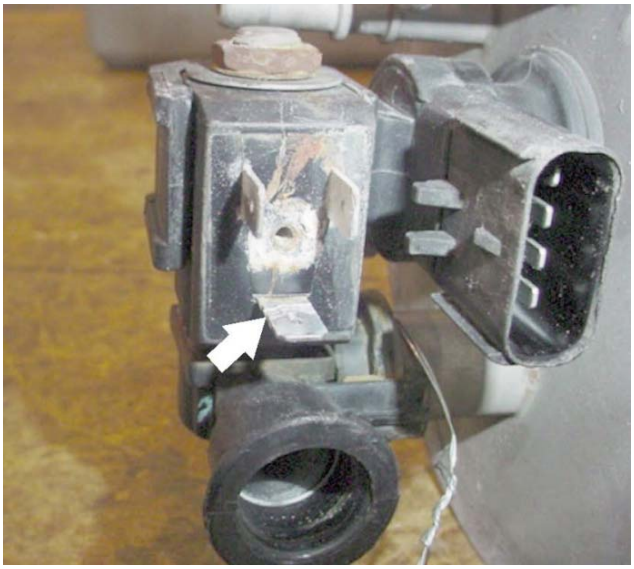
2. Determine which style of solenoid is installed on the vehicle. See **Figure 1 and Figure 2**.
3. Disconnect the 2-pin solenoid connector from the harness.
4. Measure the resistance of the solenoid. The solenoid resistance should be 20±1 Ω for the 7-watt unit, or 13.5±0.7 Ω for the 10-watt unit. Wiggle the solenoid pigtail to test for an intermittent condition.

FIGURE 1, 7-WATT SOLENOID VALVE (20±1 Ω)

FIGURE 2, 10-WATT SOLENOID VALVE (13.5±0.7 Ω)

If the reading is within specification, remove the Phillips screw from the solenoid, separate the two parts of the solenoid, and check for corrosion on or around the solenoid terminals. See **Figure 3**.

If the solenoid resistance is out of range, or if there is corrosion, replace the solenoid valve assembly only. Do not replace the complete header.

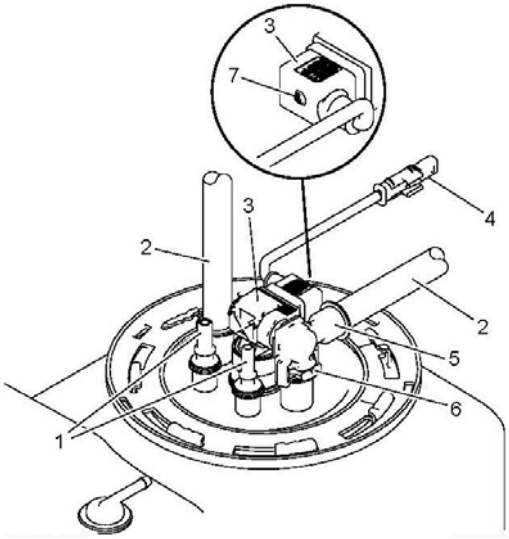


REMOVE THE PIGTAIL CABLE AND CHECK THIS AREA FOR CORROSION

FIGURE 3, CHECKING FOR CORROSION

SOLENOID VALVE ASSEMBLY REPLACEMENT (Refer to **Figure 4** for this procedure.)

1. Park the vehicle on a level surface, shut down the engine, and set the parking brakes. Chock the tires.
2. Using hose-pinch pliers, pinch off the rubber coolant lines connected to the DEF tank.
3. Remove the DEF tank cover, if equipped.
4. Place a catch pan under the DEF tank to catch any lost coolant.
5. Remove the retaining clip, and disconnect the coolant line at the solenoid valve.
6. Disconnect the solenoid pigtail connector.
7. Remove the retaining clip.
8. Rotate the solenoid valve out of the retainer, and pull it from the header.
9. Push the new solenoid valve into the header, and rotate it into the retainer.
10. Install the retaining clip.
11. Connect the wire harness.
12. Connect the coolant lines at the valve.
13. Remove the pinch pliers from the coolant lines.
14. Install the DEF tank cover, if equipped.
15. Check the coolant level, and add coolant as needed.



Test the solenoid resistance at the 2-pin connector.

1. **DEF Line Connections (lines not shown for clarity)**
2. **Coolant Line**
3. **Retainer, Solenoid Valve**
4. **2-Pin Connector, Solenoid**
5. **Solenoid Valve**
6. **Retaining Clip, Solenoid Valve to Header**
7. **Phillips Screw**

FIGURE 4, DEF COOLANT-FLOW SOLENOID INSTALLATION (DEF LINES NOT SHOWN FOR CLARITY)

Parts are available through the PDC. See **Table 2**.

PARTS REQUIRED		
PART NUMBER(S)	**QUANTITY**	**DESCRIPTION**
04-28039-000	1	SOLENOID VALVE, LH, 10-GALLON DEF TANKS

TABLE 2, REPLACEMENT DEF SOLENOID VALVE

WARRANTY

If a failure is not found, this procedure is considered preventive and warranty does not apply.

Normal warranty applies. See **Table 3** for OWL VMRS Codes and Labor Allowance information. Enter this PSB number in the Service Bulletin #: field.

OWL VMRS CODES AND LABOR ALLOWANCE					
PRIMARY FAILED PART	**COMPONENT CODE**	**CAUSE CODE**	**SRT CODE**	**DESCRIPTION**	**TIME: HOURS**
04-28039-000	043-007-018	12	234-5005B	DEF, Coolant Flow, Solenoid, Test	1.0
04-28039-000	043-007-018	12	234-5005A	DEF, Coolant Flow, Solenoid, Test, R/R	1.5

TABLE 3, OWL VMRS CODES AND LABOR ALLOWANCE