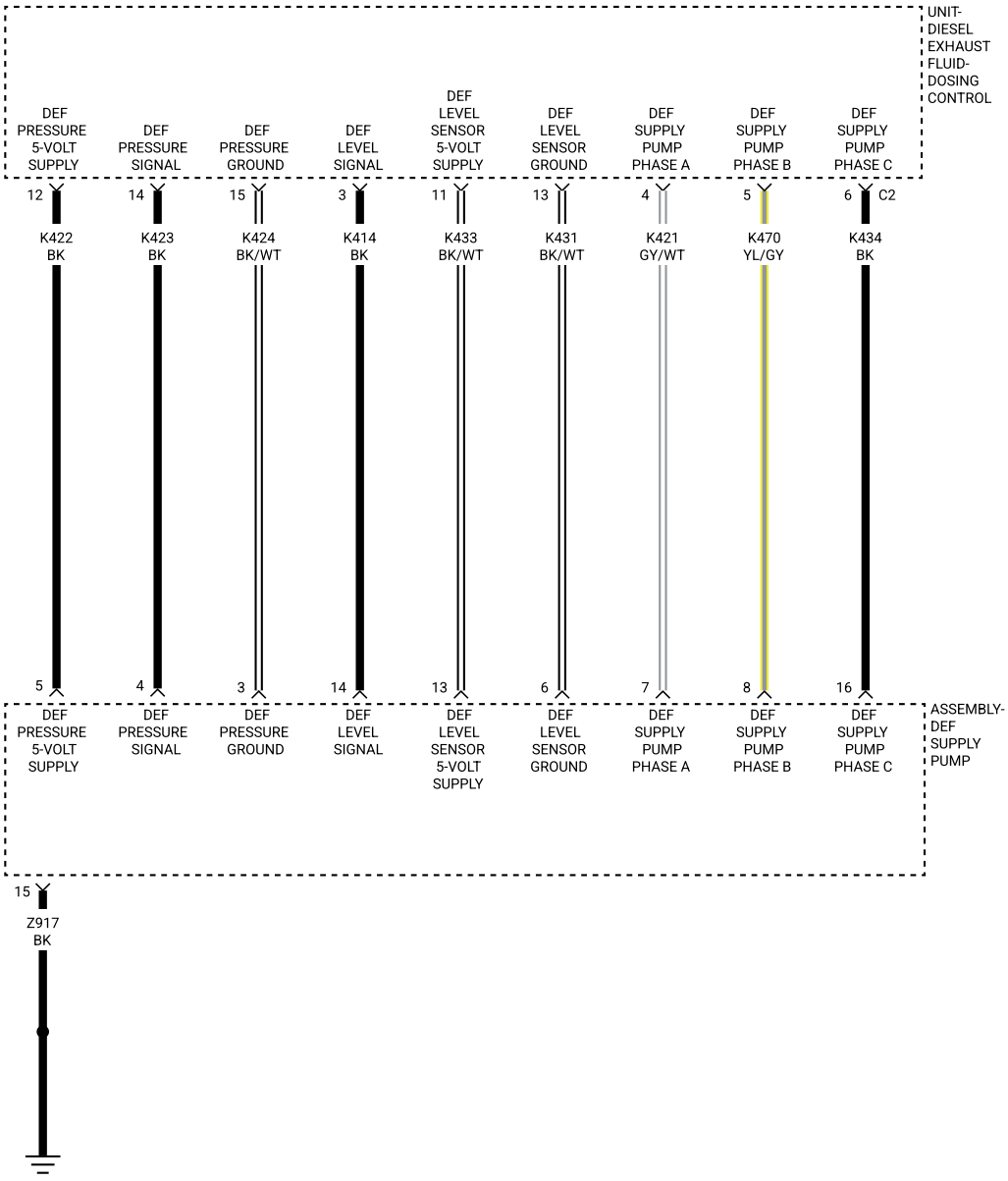
POWERTRAIN CONTROL MODULE (PCM) - (DIESEL EXHAUST FLUID) REDUCTANT PUMP CONTROL CIRCUIT OPEN

P208A-(DIESEL EXHAUST FLUID) REDUCTANT PUMP CONTROL CIRCUIT OPEN



Theory of Operation

The Diesel Exhaust Fluid (DEF) Supply Pump Assembly has many functions. It's primary purpose is to build adequate system pressure for dosing into the exhaust. When the system is shut down the pump is used to purge the fluid out of the line and back into the tank. The DEF Dosing Control Unit provides a Pulse-Width Modulated (PWM)

power supply and a constant ground to the DEF supply Pump assembly to control the speed and output of the pump. The DEF Dosing Control Unit will illuminate the MIL via the Powertrain Control Module (PCM) immediately after the system detects a failure to prime after ten consecutive attempts.

The DEF Supply Pump's most common cause for failing to prime is DEF system contamination and/or ice build-up in various DEF system components.

The first warning will occur when the DTC becomes pending or active. The customer will hear a chime and get an EVIC message reading "Service DEF System See Dealer." The second warning level will occur if the customer continues to drive and the code has not cleared. The customer will hear a chime and get an EVIC message reading "Speed Limited to 5 mph in XXX MILES See Dealer". Upon driving until the countdown reaches zero, the customer will hear a chime and get an EVIC message reading "5 mph Max on Restart, Long Idle or Refuel See Dealer." Upon key-off, refuel, or 1 hour long idle, the EVIC message will read, "Speed Limited to 5 mph See Dealer." **Once induced to a 5 mph derate, the inducement will not clear unless the diagnostic runs and passes, or the PCM is recalibrated.**

- **When Monitored:**
  Continuously with the ignition on.
- **Set Condition:**
  The DEF Dosing Control Unit detects an open in the DEF Supply Pump Assembly circuits.

Possible Causes
DEF SUPPLY PUMP MOTOR A SUPPLY CIRCUIT OPEN/HIGH RESISTANCE
DEF SUPPLY PUMP MOTOR B SUPPLY CIRCUIT OPEN/HIGH RESISTANCE
DEF SUPPLY PUMP MOTOR C SUPPLY CIRCUIT OPEN/HIGH RESISTANCE
DEF SUPPLY PUMP ASSEMBLY
DEF DOSING CONTROL UNIT

Always perform the Pre-Diagnostic Troubleshooting procedure before proceeding. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

1. **ACTIVE DTC**

1. Turn the ignition on, engine not running.
2. With the scan tool, navigate to Systems Tests and actuate the Prime Test.
3. With the scan tool, View DTCs.

Is the DTC Active?

Yes

- Go To **2**

No

- Perform the INTERMITTENT CONDITION - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

2. **CHECK THE DEF SUPPLY PUMP MOTOR A SUPPLY CIRCUIT FOR AN OPEN/HIGH RESISTANCE**

1. Turn the ignition off.
2. Disconnect the DEF Dosing Control Unit C2 harness connector.
3. Measure the resistance of the DEF Supply Pump Motor A Supply circuit between the DEF Supply Pump Assembly harness connector and the DEF Dosing Control Unit C2 harness connector.

Is the resistance below 5.0 Ohms?

Yes
- Go To **3**

No
- Repair the DEF Supply Pump Motor A Supply circuit for an open or high resistance.
- Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

3. **CHECK THE DEF SUPPLY PUMP MOTOR B SUPPLY CIRCUIT FOR AN OPEN/HIGH RESISTANCE**

1. Measure the resistance of the DEF Supply Pump Motor B Supply circuit between the DEF Supply Pump Assembly harness connector and the DEF Dosing Control Unit C2 harness connector.

Is the resistance below 5.0 Ohms?

Yes
- Go To **4**

No
- Repair the DEF Supply Pump Motor B Supply circuit for an open or high resistance.
- Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

4. **CHECK THE DEF SUPPLY PUMP MOTOR C SUPPLY CIRCUIT FOR AN OPEN/HIGH RESISTANCE**

1. Measure the resistance of the DEF Supply Pump Motor C Supply circuit between the DEF Supply Pump Assembly harness connector and the DEF Dosing Control Unit C2 harness connector.

Is the resistance below 5.0 Ohms?

Yes

- Go To **5**

No

- Repair the DEF Supply Pump Motor C Supply circuit for an open or high resistance.
- Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

5. **REPLACE THE DIESEL EXHAUST FLUID (DEF) PUMP AND RETEST FOR DTCS**

1. Turn the ignition off.
2. Replace the DEF Pump in accordance with the Service Information.
3. Connect all disconnected harness connectors.
4. Turn the ignition on.
5. With the scan tool, erase all DTCs.
6. Turn the ignition off for a minimum of 10.0 seconds.
7. Turn the ignition on.
8. Using the When Monitored and Set Conditions above and recorded data, operate the vehicle in the conditions that set the DTC.
9. With the scan tool, read DTCs.

Did the DTC return?

Yes

- Go To **6**

No

- Replacing the faulty DEF Pump repaired the fault.
- Perform the POWERTRAIN VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

6. **CHECK RELATED DEF DCU AND COMPONENT CONNECTIONS**

1. Perform any Service Bulletins that apply.
2. Disconnect all DEF DCU harness connectors.
3. Disconnect all related in-line harness connections (if equipped).
4. Disconnect the related component harness connectors.

5. Inspect harness connectors, component connectors, and all male and female terminals for the following conditions:
    - Proper connector installation.
    - Damaged connector locks.
    - Corrosion.
    - Other signs of water intrusion.
    - Weather seal damage (if equipped).
    - Bent terminals.
    - Overheating due to a poor connection (terminal may be discolored due to excessive current draw).
    - Terminals that have been pushed back into the connector cavity.
    - Check for spread terminals and verify proper terminal tension.

   Repair any conditions that are found.
6. Reconnect all DEF DCU harness connectors. Be certain that all harness connectors are fully seated and the connector locks are fully engaged.
7. Reconnect all in-line harness connectors (if equipped). Be certain that all connectors are fully seated and the connector locks are fully engaged.
8. Reconnect all related component harness connectors. Be certain that all connectors are fully seated and the connector locks are fully engaged.
9. With the scan tool, erase DTCs.
10. Test drive or operate the vehicle in accordance with the when monitored and set conditions.
11. With the scan tool, read DTCs.

Did the DTC return?

Yes

- Replace and program the DEF DOSING CONTROL UNIT (DCU) in accordance with the Service Information.
- Perform the POWERTRAIN VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No

- The wiring or poor connection problem has been repaired.
- Perform the POWERTRAIN VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).