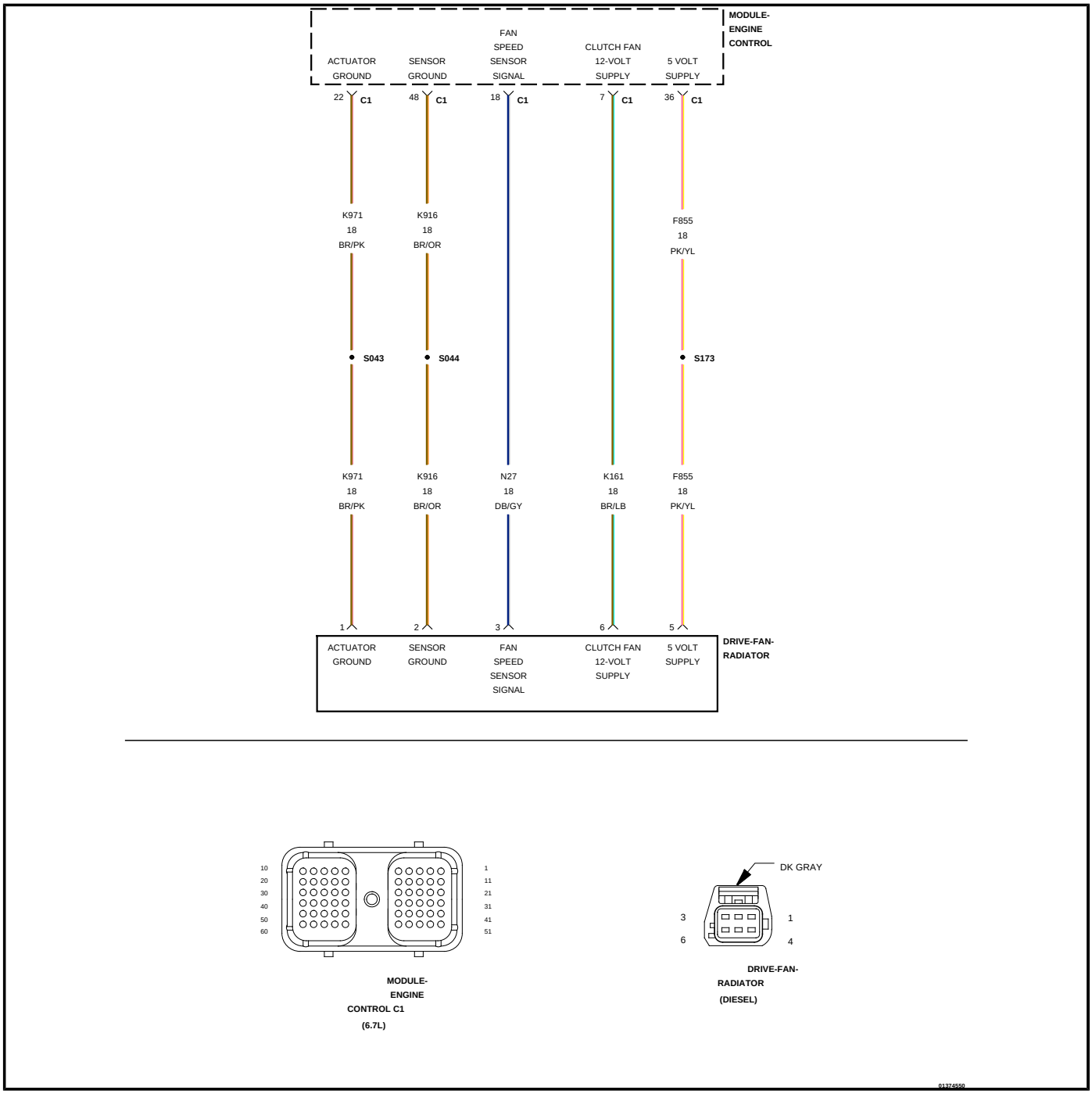
P0480-COOLING FAN 1 CONTROL CIRCUIT/OPEN



For a complete wiring diagram, **refer to the Wiring Information**.

Theory of Operation

The cooling fan is a hydro-electric controlled device that is engine mounted. The Engine Control Module (ECM) monitors various sensors to control fan speed. The cooling fan provides temperature control for engine coolant, engine charged air, A/C Freon and automatic transmission fluid. Fan speed increases as cooling requirements increase. Since the fan is mounted to the engine, fan speed is related to engine speed (RPM). The ECM uses a Pulse Width Modulated (PWM) driver

to control the amount of fluid to the clutch fan. When the fan is fully engaged it is capable of speeds about 10% greater than engine speed. The fan will rotate anytime the engine is running, even when the ECM is not sending a PWM signal.

- **When Monitored:**

  When the ignition is on.

- **Set Condition:**

  When the control coil is electrically shorted or open.

Possible Causes
(K161) CLUTCH FAN 12-VOLT SUPPLY CIRCUIT OPEN
(K971) ACTUATOR GROUND CIRCUIT OPEN
(K161) CLUTCH FAN 12-VOLT SUPPLY CIRCUIT SHORTED TO GROUND
(K161) CLUTCH FAN 12-VOLT SUPPLY CIRCUIT SHORTED TO THE (K971) ACTUATOR GROUND CIRCUIT
RADIATOR FAN
ENGINE CONTROL MODULE (ECM)

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

1. ACTIVE DTC

1. Turn the ignition on.
2. Using the scan tool, record all Freeze frame data.
3. Using the scan tool, erase DTCs.
4. Turn the ignition off for 30 seconds.
5. Start the engine and let idle. It may be necessary to test drive vehicle.
6. Using the scan tool, read DTCs.

Did the DTC reset?

Yes • Go To 2

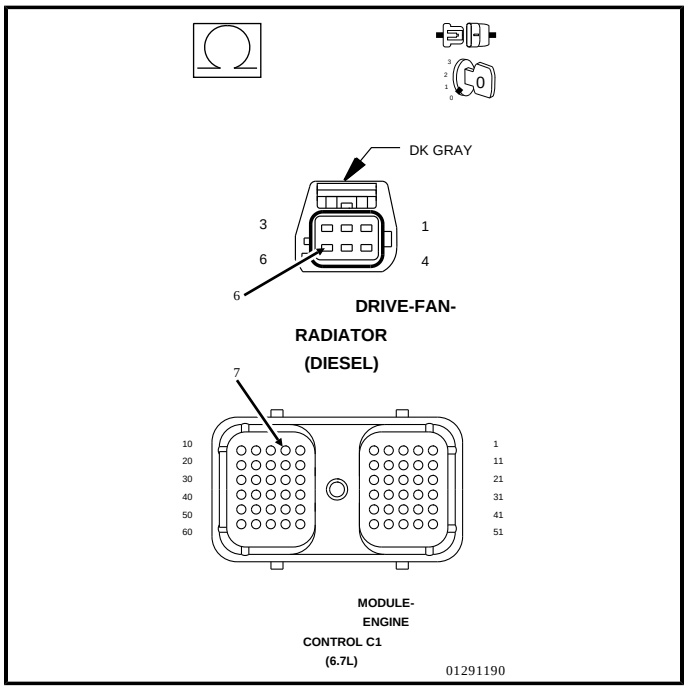
No • (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure) and perform the INTERMITENT DTC diagnostic procedure.

2. (K161) CLUTCH FAN 12-VOLT SUPPLY CIRCUIT OPEN

1. Turn the ignition off.
2. Disconnect the Radioator Fan harness connector.
3. Disconnect the ECM C1 harness connector.

NOTE: Check connectors - Clean/repair as necessary.

4. Measure the resistance of the (K161) Clutch Fan 12-volt Supply circuit between the ECM C1 harness connector and the Clutch Fan Assembly harness connector.



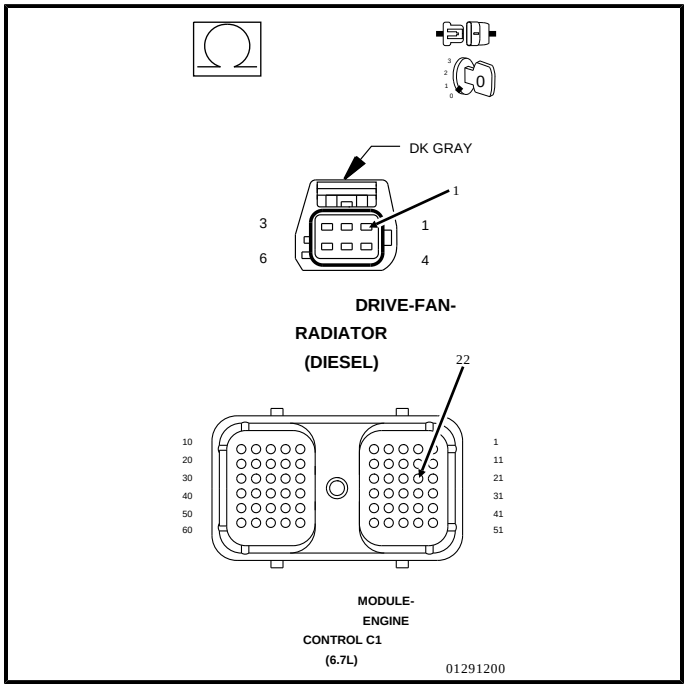
Is the resistance below 10.0 Ohms?

Yes
- Go To 3

No
- Repair the open or high resistance in the (K161) Clutch Fan 12-volt Supply circuit.
- Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).

3. (K971) ACTUATOR GROUND CIRCUIT OPEN

1. Measure the resistance of the (K971) Actuator Ground circuit between the ECM C1 harness connector and the Radiator Fan harness connector.



Is the resistance below 10.0 Ohms?

Yes
- Go To 4

No
- Repair the open or high resistance in the (K971) Actuator Ground circuit.
- Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).

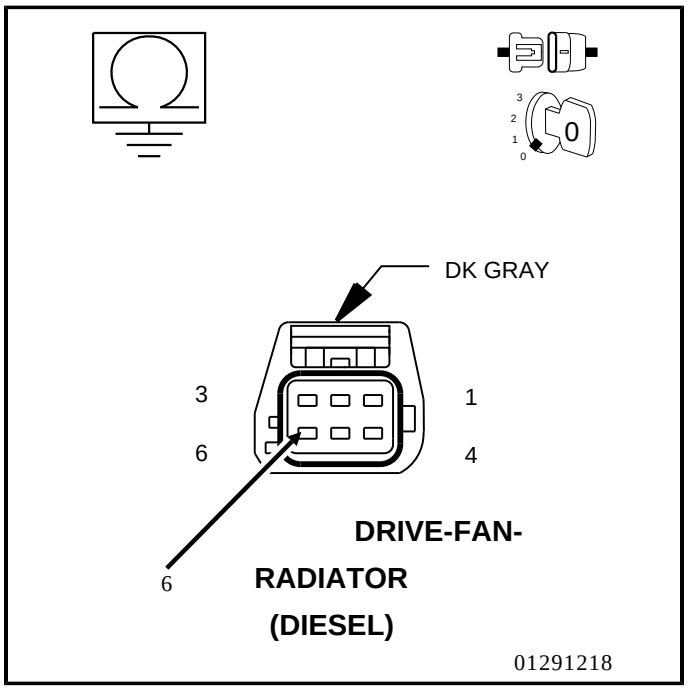
4. (K161) CLUTCH FAN 12-VOLT SUPPLY CIRCUIT SHORTED TO GROUND

1. Measure the resistance between ground and the (K161) Clutch Fan 12-volt Supply circuit at the Radiator Fan harness connector.

Is the resistance below 10k Ohms?

Yes
- Repair the short to ground in the (K161) Clutch Fan 12-volt Supply circuit.
- Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).

No
- Go To 5



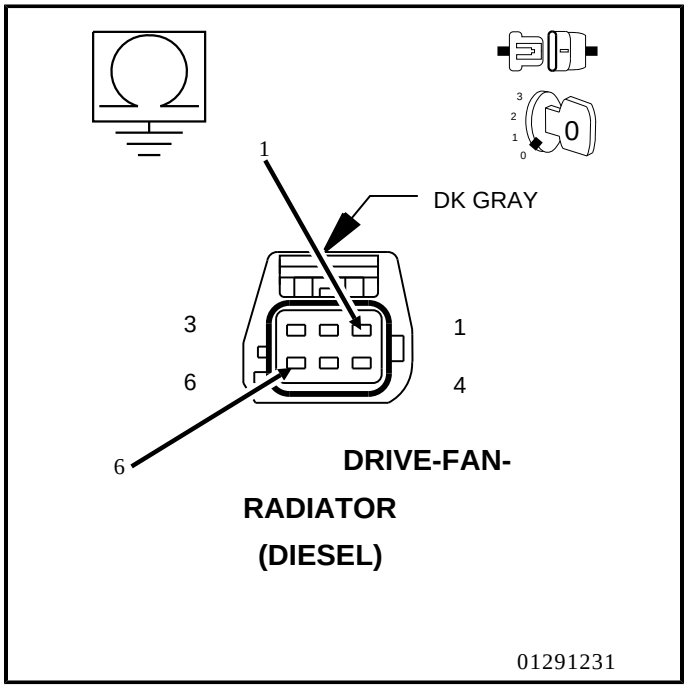
5. (K161) CLUTCH FAN 12-VOLT SUPPLY CIRCUIT SHORTED TO THE (K971) ACTUATOR GROUND CIRCUIT

1. Measure the resistance between the (K161) Clutch Fan 12-volt Supply circuit and the (K971) Actuator Ground circuit at the Radiator Fan harness connector.

Is the resistance below 10k Ohms?

Yes
- Repair the short between the (K161) Clutch Fan 12-volt Supply circuit and the (K971) Actuator Ground circuit.
- Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).

No
- Go To 6



6. FAN CLUTCH

1. Measure the resistance between the (K161) Clutch Fan 12-volt Supply circuit and the (K971) Actuator Ground circuit at the Radiator Fan.

Is the resistance between 6.0 Ohms and 10.0 Ohms?

Yes

- Replace the Engine Control Module (ECM) in accordance with the Service Information.
- Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/ MODULE, Engine Control (ECM) - Standard Procedure).

No

- Replace the Radiator Fan in accordance with the Service Information.
- Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/ MODULE, Engine Control (ECM) - Standard Procedure).