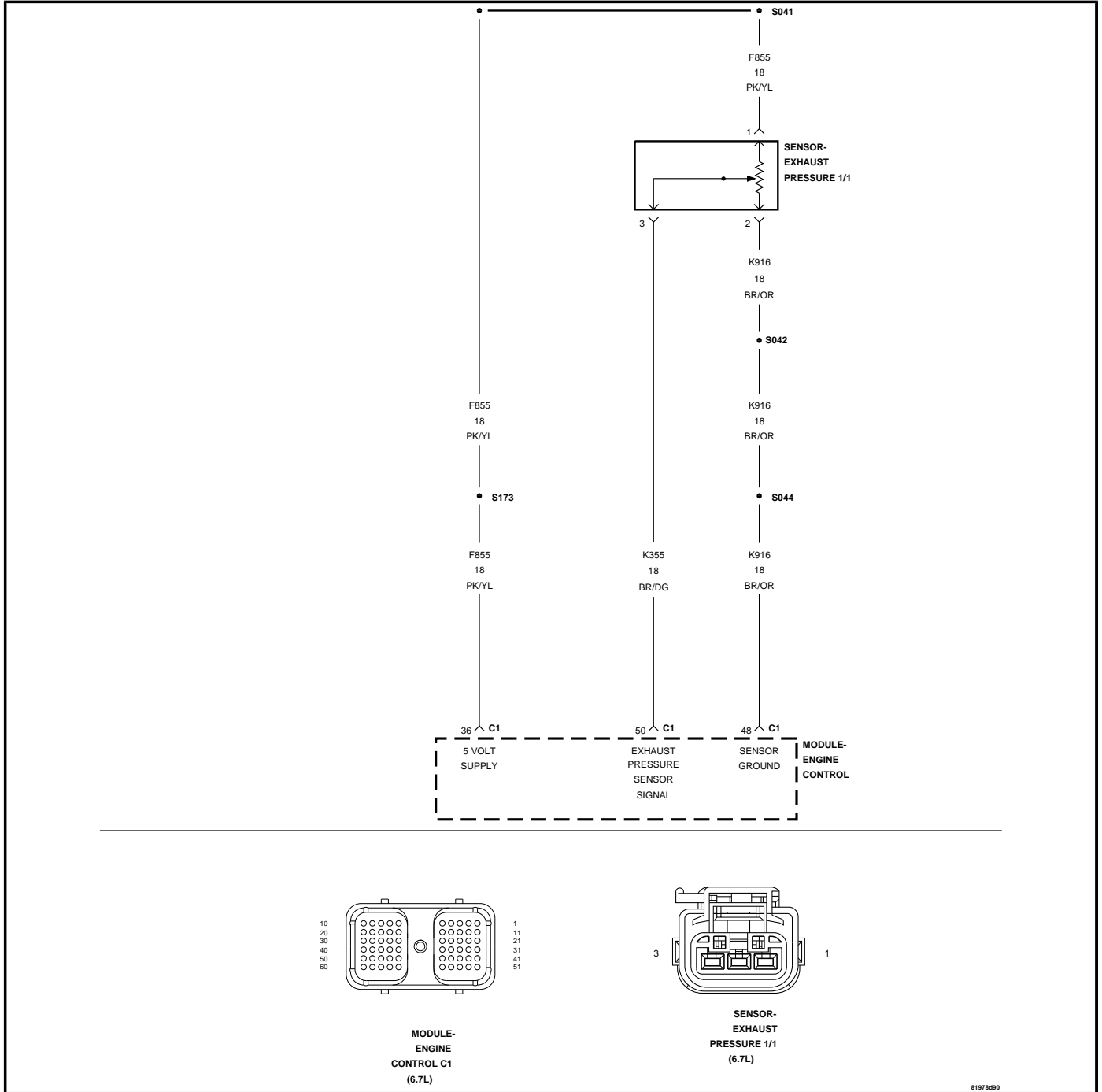


P0471-EXHAUST PRESSURE SENSOR 1 PERFORMANCE



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

Theory of Operation

The Exhaust Gas Pressure Sensor is used to measure exhaust gas pressure in the exhaust manifold. The Electronic Control Module (ECM) provides a 5-volt supply to the Exhaust Gas Pressure Sensor on the sensor supply circuit. The ECM also provides a ground on the sensor return circuit. The Exhaust Gas Pressure Sensor provides a signal to the ECM on the exhaust gas pressure sensor signal circuit. At key on, the readings for the exhaust gas pressure, intake Manifold pressure and ambient air pressure are compared. This fault code occurs if the exhaust gas pressure reading is different from the other

two. During normal engine operation EGR position and Boost Pressure Sensor readings are used to calculate an estimated exhaust pressure. If the difference between the estimated and the value read from the Exhaust Gas Pressure Sensor is above a calibrated threshold for a calibrated period of time then an error is recorded. The key-on portion of the rationality will light the MIL immediately after the diagnostic runs and fails. The rationality portion has to fail in two consecutive drive cycles for the MIL to become illuminated. If this fault becomes active the ECM will light the MIL light immediately. During this time the ECM uses an estimated exhaust gas pressure. The ECM turns off the MIL when the diagnostic runs and passes in 4 consecutive drive cycles.

- **When Monitored:**

Five seconds after key on.

- **Set Condition:**

The Exhaust Gas Pressure Sensor reading at key on differs by a calibratable amount of pressure from the Barometric Pressure Sensor and Boost Pressure Sensor or the Exhaust Gas Pressure Sensor reading varies from an estimated value during normal engine operation.

Possible Causes
DEBRIS PLUGGING THE PRESSURE TUBE
DEBRIS PLUGGING THE PRESSURE SENSOR PORTS ON THE WATER OUTLET CONNECTION
EXHAUST GAS PRESSURE SENSOR

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

1. EXHAUST GAS PRESSURE SENSOR TUBE

1. Remove the steel tube between the Exhaust Manifold and the Exhaust Gas Pressure Sensor port (located on the water outlet connection).

NOTE: The orifice in the water outlet connection is 2 mm in diameter. Closely inspect this location as it can accumulate debris.

Is the pressure tube and pressure sensor ports located in the manifold and water outlet connection free from debris?

Yes • Go To 2

No • Clean the tube and reinstall.
 • Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).

2. AIR INLET/CHARGE AIR/EXHAUST GAS RECIRCULATION LEAKS

1. Check vehicle/engine for leaks of inlet air (air filter to turbocharger), Charge Air (Turbocharger to intake manifold), or EGR gases (exhaust manifold to intake manifold). (Refer to 29 - Non-DTC Diagnostics/Drivability - Diesel - Diagnosis and Testing).

Were there any leaks detected?

Yes • Repair leak condition.
 • Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).

No • Go To 3

3. THERMOSTAT OUTLET

1. Remove the Exhaust Gas Pressure Sensor from the thermostat outlet.

NOTE: Carefully make sure the sensing end of the Exhaust Gas Pressure Sensor is clear. The Exhaust Gas Pressure Sensor diaphragm can be damaged if a tool is inserted into the end of the sensor. Take care not to damage the sensor.

Is the outlet and sensor free of debris?

Yes • Go To 4

No • Remove debris from outlet and wipe the sensor with a clean cloth.
• Go To 4

4. EXHAUST GAS PRESSURE SENSOR

1. Turn ignition switch on.
2. Wait five seconds after ignition switch is turned on.
3. With the scan tool, read DTCs.

Is P0471 stored?

Yes • Go To 5

No • Replace the Exhaust Gas Pressure Sensor 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).

5. EXHAUST GAS PRESSURE SENSOR

1. With the scan tool, erase DTCs.
2. Start the engine and let it idle for 1 minute.
3. With the scan tool, monitor the Exhaust Gas Pressure Sensor reading.

Does the value fluctuate slightly, indicating the sensor is not stuck?

Yes • Repair complete.
• Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).

No • Replace the Exhaust Gas Pressure Sensor 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).