

No Diagnostic Trouble Codes (DTCs) Present Symptom Charts

Chart 1

- Starting Concerns: No Crank/Slow Crank

Carry out the following preliminary checks:

- Automatic transmission in PARK or NEUTRAL.
- Battery connections.

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Starting System Components Or Circuits	REFER to the Workshop Manual Section 303-06, Starting System.
Transmission Range (TR) Sensor	REFER to the Workshop Manual Section 307-05, Automatic Transmission External Controls, to diagnose the selector lever cable is out of adjustment.
Reference Voltage (VREF)	GO to Pinpoint Test B .

Chart 2

- Stalls/Quits: Idle, Acceleration, Cruise, Deceleration

Carry out the following preliminary checks:

- Engine overheating.

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Fuel Quality	REFER to Section 4, Diagnostic Procedures , Sufficient Clean Fuel.
RPM Signal	GO to Pinpoint Test D .
Exhaust Gas Recirculation (EGR) System	GO to Pinpoint Test W .
Torque Converter Operation (If Stalls at Idle)	REFER to the Workshop Manual Section 307-01, Automatic Transmission, Torque Converter Diagnosis.
Auto Start Stop System	GO to Pinpoint Test AA .

Chart 3

- Starting Concerns: Hard Start/Long Crank/Erratic Start/Erratic Crank, Stall After Start, No Start/Normal Crank

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Aftermarket Anti-Theft Devices	Visual
Fuel Delivery	GO to Pinpoint Test A .
Fuel Quality	REFER to Section 4, Diagnostic Procedures , Sufficient Clean Fuel.
Glow Plug System	GO to Pinpoint Test AF .
Exhaust Gas Recirculation (EGR) System	GO to Pinpoint Test W .

Chart 4

- Unique Idle Concern: Slow Return to Idle, Fast Idle

Carry out the following preliminary checks:

- External fuel source.
- Power take off (PTO), auxiliary idle control, and charge protect devices engaged.

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Fuel Quality	REFER to Section 4, Diagnostic Procedures , Sufficient Clean Fuel.
Engine Operating Temperature	WARM engine to normal operating temperature. SELECT the engine oil temperature (EOT) PID. If the engine oil temperature value is less than 38°C (100°F), GO to Pinpoint Test L .
Exhaust Gas Recirculation (EGR) System	GO to Pinpoint Test W .
PTO Engagement	GO to Pinpoint Test AN .

Chart 5

- Unique Idle Concerns: Rolling Idle
- Runs Rough: Idle

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Fuel Quality	REFER to Section 4, Diagnostic Procedures , Sufficient Clean Fuel.
Fuel Pump Pressure	GO to Pinpoint Test MA .
Power Balance	CARRY OUT the Power Balance test on the scan tool. REFER to the scan tool for directions.
Crankcase Ventilation System	CHECK the crankcase ventilation heater system operation. GO to Pinpoint Test C .
Engine Wear	REFER to the Workshop Manual Section 303-01, Engine, General Procedures, Compression Test.
Exhaust Gas Recirculation (EGR) System	GO to Pinpoint Test W .

Chart 6

Note: When a high engine temperature condition is present, the engine may exhibit a lack of power concern without a DTC due to the derate strategies designed for engine temperature protection.

- Lack/Loss Of Power: Acceleration, Cruise
- Runs Rough: Acceleration, Cruise
- Misses: Idle, Acceleration, Cruise
- Buck/Jerk: Acceleration, Cruise, Deceleration
- Hesitation/Stumble: Acceleration
- Surge: Acceleration, Cruise
- Poor Fuel Economy

Access the PCM and monitor the following temperature PIDS with the scan tool:

- ECT (F-650 / F-750, Transit) or ECT1 (all others) — Derate will occur when the engine coolant temperature is greater than 109°C (225°F)
- EOT — Derate will occur when the oil temperature is greater than 125°C (257°F)
- FRT — Derate will occur when the fuel temperature is greater than 80°C (176°F)
- EGRTA — Derate will occur when the recirculated exhaust gas temperature is greater than 800°C (1472°F)

Carry out the following preliminary checks:

- Compare the loaded weight of the vehicle with the performance expectations.

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Exhaust Restriction	Visual. INSPECT the exhaust system for obstructions or restrictions. REPAIR as necessary.
Fuel Quality	REFER to Section 4, Diagnostic Procedures , Sufficient Clean Fuel.
Power Balance	CARRY OUT the Power Balance test on the scan tool. REFER to the scan tool for directions.
Fuel Pump Pressure	GO to Pinpoint Test MA .
Turbocharger	GO to Pinpoint Test KA .
Exhaust Gas Recirculation (EGR) System	GO to Pinpoint Test W .
Engine Wear	REFER to the Workshop Manual Section 303-01, Engine, General Procedures, Compression Test.
Oil Pressure	REFER to the Workshop Manual Section 303-01, Engine.
Instrument Cluster Exhaust System Message	Drive the vehicle at normal operating temperature until the message clears. If the message does not clear, CHECK for PCM and reductant dosage control module (RDCM) self-test DTCs. If any PCM or RDCM DTCs are retrieved, REFER to Section 4, Diagnostic Trouble Code (DTC) Charts and Descriptions.
Transmission Concerns	REFER to the Workshop Manual Section 307-01, Automatic Transmission, Preliminary Inspection.
Exhaust Pressure (EP) Sensor	GO to Pinpoint Test X .
Manifold Absolute Pressure (MAP) Sensor	GO to Pinpoint Test E .
Mass Airflow (MAF) Sensor	GO to Pinpoint Test J .
Biased EOT Sensor	GO to Pinpoint Test L .

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Brake Over Accelerator	CHECK for simultaneous brake pedal and accelerator pedal operation inadvertently activating the brake over accelerator feature. CHECK the BRKOV _R _ACTION, BRKOV _R D_POSS, and DIST_BRKOV _R D PIDs for recent simultaneous brake pedal and accelerator pedal operation. ADVISE the customer that simultaneous brake pedal and accelerator pedal operation by the vehicle operator activates the brake over accelerator feature. REFER to Section 1, Powertrain Control Software for additional information.
Auto Start Stop System	GO to Pinpoint Test AA .

Chart 7

- Warning Indicators: Malfunction Indicator Lamp (MIL), Powertrain Malfunction Indicator (Wrench)

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Instrument Panel Cluster Prove-Out	CYCLE the ignition switch to verify MIL and powertrain malfunction indicator (wrench) illumination. REFER to the Workshop Manual Section 413-01, Instrumentation, Message Center, and Warning Chimes.

Chart 8

- Exhaust System Concerns: Visible Smoke (No Oil Consumption)

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Fuel Quality	REFER to Section 4, Diagnostic Procedures , Sufficient Clean Fuel.
Black Exhaust Smoke	CHECK for charge air cooler (CAC) restrictions.
White Exhaust Smoke	Some white exhaust smoke is a normal condition at start up with temperatures below 10°C (50°F) or with an extended idle in a cool climate. GO to Pinpoint Test AF .
Charge Air Cooler (CAC) For Restrictions	CHECK for any conditions that may restrict airflow through the CAC. DISCONNECT the tubes at the CAC and CHECK for restrictions. CHECK inside of the CAC for restrictions. If there are any restrictions, REPAIR as necessary.
Engine Coolant Leak	REFER to the Workshop Manual Section 303-03, Engine Cooling, Component Tests, Engine Cooling System Pressure Test.
Thermostat Operation	REFER to the Workshop Manual Section 303-03, Engine Cooling, Component Tests, Thermostat.
Engine Compression	REFER to the Workshop Manual Section 303-01, Engine, General Procedures, Compression Test.
Exhaust Gas Recirculation (EGR) System	GO to Pinpoint Test W .

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Mass Airflow (MAF) Sensor	GO to Pinpoint Test J .
Cylinder Compression	REFER to the Workshop Manual Section 303-01, Engine, General Procedures, Compression Test. CARRY OUT the Compression Test.

Chart 9

- Warning Indicator: Tow Haul

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Tow Haul Switch	REFER to the Workshop Manual Section 307-05, Automatic Transaxle/Transmission External Controls, to diagnose the tow haul switch is not operating correctly.

Chart 10

- Automatic Transmission (A/T) Shift Concerns: A/T Upshift, A/T Downshift, Engagement

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Automatic Transmission	REFER to the Workshop Manual Section 307-01, Automatic Transmission, Shift Point Road Test.

Chart 11

- Oil System Concerns: Engine Oil Level Overfull, High Oil Consumption, Leaks

Carry out the following preliminary checks:

- Loads do not exceed maximum gross vehicle weight rating (GVWR).

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Engine Oil Level And Quality	Visual. If there is coolant or fuel contamination in the engine oil, REPAIR as necessary.
Base Engine	Visual. INSPECT the engine for damage or external oil leaks. REPAIR as necessary. REFER to the Workshop Manual Section 303-01, Engine, Diagnosis and Testing, Engine.
Engine Oil Level Overfull	GO to Pinpoint Test AB .

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
High Oil Consumption	REFER to the Workshop Manual Section 303-01, Engine System, Diagnosis And Testing for a description of the Oil Consumption Test.

Chart 12

Cooling System Concerns: Cooling Fan Does Not Operate

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Cooling Fan	For Transit Connect, GO to Pinpoint Test KN . For all others, GO to Pinpoint Test AH .
Cooling System	REFER to the Workshop Manual Section 303-03, Engine Cooling, to diagnose the engine does not reach normal operating temperature.

Chart 13

Cooling System Concerns: Cooling Fan Always On

Note: This chart is intended to only diagnose a cooling fan that always runs with a cool engine and the A/C and defroster off.

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Cooling Fan	For Transit Connect, GO to Pinpoint Test KN . For all others, GO to Pinpoint Test AH .

Chart 14

Extended Idle Shutdown

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Extended Idle Shutdown Does Not Operate Correctly	REFER to the Workshop Manual Section 303-14, Electronic Engine Controls, General Procedures and CARRY OUT the Extended Idle Shutdown Initialization to correct the concern. REFER to Section 1, Powertrain Control Software , Engine Shutdown Timer for additional information on the description and operation.

Chart 15

Regeneration Concerns:

Note: Regeneration is interrupted if the transmission is shifted into PARK or NEUTRAL position. If a regeneration event did not complete because the vehicle was shifted into the PARK or NEUTRAL position, regeneration may continue in a subsequent drive cycle. When the distance traveled between completed regenerations is greater than 1073 km (667 mi), during each subsequent drive cycle, the PCM continues to initiate the regeneration until the regeneration event completes. After the regeneration event is completed the filter is sufficiently cleaned and continues to trap the particulate matter. An internally damaged particulate filter may result in a greater than normal distance traveled value since the last completed regeneration.

Carry out the following preliminary checks:

- Confirm the biodiesel fuel percentage, the maximum approved biodiesel percentage is 20%
- Confirm customer regeneration interval complaint.
 - Normal distance traveled between completed regeneration events is 97 to 805 km (60 to 500 miles). Fully completed regeneration events may be indicated by the Exhaust Filter Drive Complete message.
 - The vehicle enters a regeneration event when the particulate filter soot or ash loading is above a predetermined threshold that indicates cleaning is required. The engine coolant temperature must be greater than 70°C (158°F) and the vehicle speed must be greater than 7 km/h (4 mph).

SYSTEM OR COMPONENT	REFERENCE (Section 5 Pinpoint Test unless noted)
Exhaust Restriction	Visual. INSPECT the exhaust system for obstructions or restrictions. REPAIR as necessary.
Fuel Quality	REFER to Section 4, Diagnostic Procedures , Sufficient Clean Fuel.
Power Balance	CARRY OUT the Power Balance test on the scan tool. REFER to the scan tool for directions.
Turbocharger	GO to Pinpoint Test KA .
Exhaust Gas Recirculation (EGR) System	GO to Pinpoint Test W .
Exhaust Pressure (EP) Sensor	GO to Pinpoint Test X .
Mass Airflow (MAF) Sensor	GO to Pinpoint Test J .
Engine Compression	REFER to the Workshop Manual Section 303-01, Engine, General Procedures, Compression Test.
Check The Turbocharger For Internal Oil Leaks	REFER to the Workshop Manual Section 303-04, Fuel Charging and Controls - Turbocharger - Symptom Chart, Excessive oil consumption.
Verify The Distance Traveled Since Last Fully Completed Regeneration	ACCESS and MONITOR the DIST_LAST_DPF PID. MONITOR this PID to determine the distance traveled since a regeneration event was completed. This parameter resets to zero each time a regeneration event completes. If the regeneration event is interrupted, the PID continues to increment from the value stored at the time the regeneration event was initiated. This PID will remain at a locked value during the regeneration process. The EXHAUST FILTER DRIVE COMPLETE message may display when the regeneration event completes. For a detailed description, REFER to Section 1, Powertrain Control Software , Diesel Particulate Regeneration. GO to Pinpoint Test RB .

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