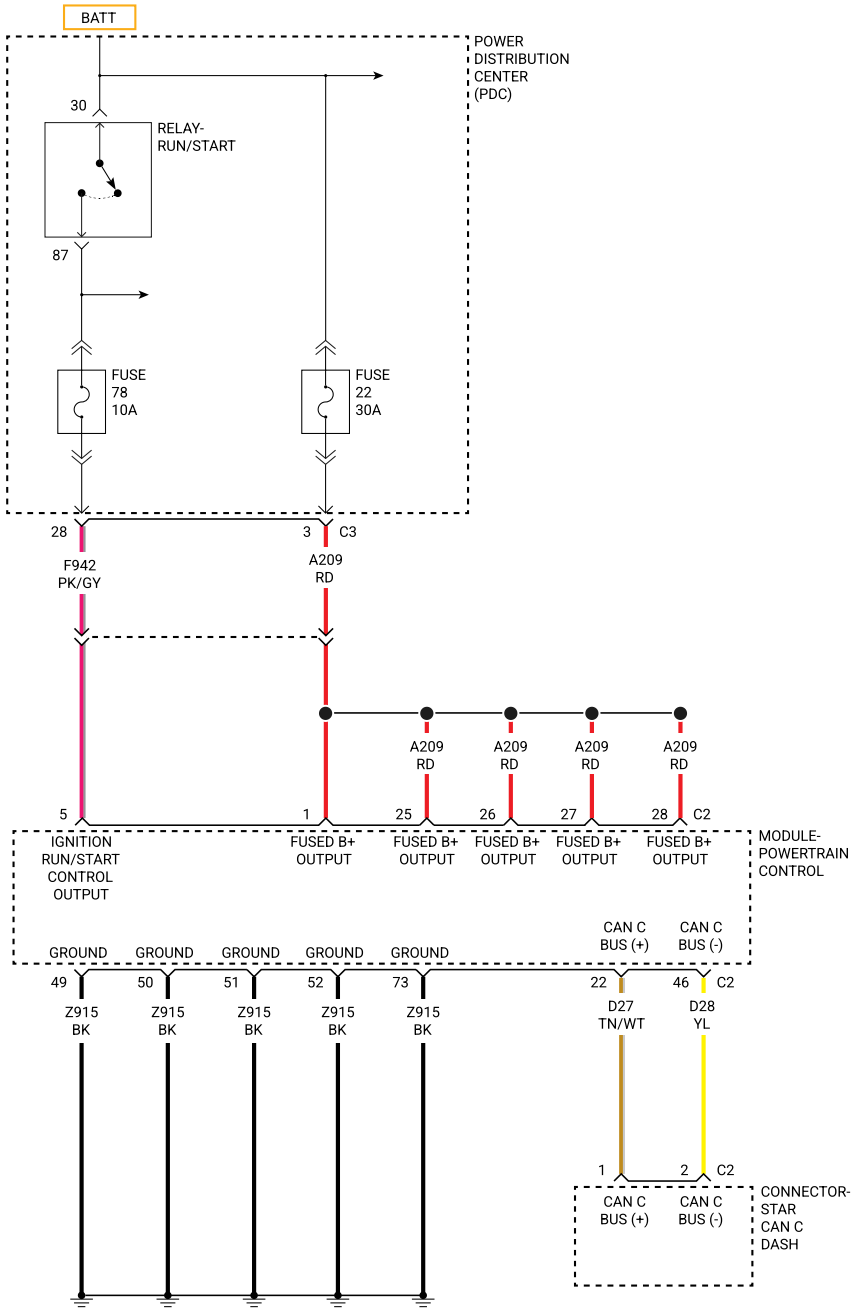
ENGINE NO START/HARD START (6.7L DSL)

NO START HARD START


BATT
POWER DISTRIBUTION CENTER (PDC)
30
RELAY-RUN/START
87
FUSE 78 10A
FUSE 22 30A
28
3
C3
F942 PK/GY
A209 RD
A209 RD
A209 RD
A209 RD
A209 RD
5
1
25
26
27
28
C2
IGNITION RUN/START CONTROL OUTPUT
FUSED B+ OUTPUT
FUSED B+ OUTPUT
FUSED B+ OUTPUT
FUSED B+ OUTPUT
FUSED B+ OUTPUT
MODULE-POWERTRAIN CONTROL
GROUND
GROUND
GROUND
GROUND
GROUND
CAN C BUS (+)
CAN C BUS (-)
49
50
51
52
73
22
46
C2
Z915 BK
Z915 BK
Z915 BK
Z915 BK
Z915 BK
D27 TN/WT
D28 YL
1
2
C2
CAN C BUS (+)
CAN C BUS (-)
CONNECTOR-STAR CAN C DASH

2830037665

Possible Causes
DTC/PRODUCT IMPROVEMENT
FUSE 78 (10A) OPEN
BATTERY VOLTAGE
STARTING ACCESSORIES
ENGINE TIMING
FUEL DELIVERY SYSTEM
FUEL RETURN
AIR SYSTEM
OTHER VEHICLE SYSTEMS
BASE ENGINE

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

Diagnostic Test

1. **VERIFY ALL DTC OR PRODUCT IMPROVEMENTS**

1. Check for any TSBs related to customer's complaint or DTCs present.
2. Follow appropriate guidelines in DTC troubleshooting tree or instructions in TSB.

Is vehicle repaired?

Yes

- Repair complete.
- Perform the PCM VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No

- Go To **2**

2. **CHECK FOR A NO CRANK CONDITION**

Does the engine crank?

Yes

- Go To **3**

No

- Go To **4**

3. **CHECK FUSE 78 (10A) FOR AN OPEN**

1. Check Fuse 78 (10A) in the Power Distribution Center (PDC) for an open.

Is the fuse open?

Yes

- Replace Fuse 78 (10A) and determine the source of the short circuit.
- Perform the PCM VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No

- Go To Sect. 29-Non-DTC Diagnostics-Starting-Diagnosis and Testing-NO CRANK (BCM EQUIPPED)(Refer to 29 - Non-DTC Diagnostics/Starting/Diagnosis and Testing)

4. **CHECK PCM POWER AND GROUND CIRCUITS**

NOTE: If there are any CAN Bus DTCs in any modules, STOP this Diagnostic and perform the Diagnostics for those DTCs before continuing with this one.

1. Using the scan tool, attempt to communicate with the Powertrain Control Module (PCM).

Was the scan tool able to communicate with the PCM?

Yes

- Go To **5**

No

- Go To Section 29-Drivability, 6.7L Diesel-CHECKING THE PCM POWER AND GROUNDS(Refer to 29 - Non-DTC Diagnostics/Drivability - Diesel/Diagnosis and Testing)

5. **CHCEK STARTING ACCESSORIES FOR PROPER OPERATION**

1. Inspect the Ignition switch (check for proper output voltage and/or open circuit).
2. Inspect the Starter operation.
3. Inspect the Grid Heater operation.
4. Inspect the Fuel Heater operation.

Were any problems found?

Yes

- Perform the appropriate repairs.
- Perform the PCM VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No

- Go To **6**

6. **CHECK THE ENGINE TIMING/MECHANICAL CONDITION**

1. Inspect the (Crankshaft) speed indicator ring for damaged/missing teeth.
2. Inspect for dirty or damaged pins at Crankshaft position sensor (CKP) or Camshaft position sensor (CMP).
3. Verify proper overhead valve adjustments.
4. Perform a compression test.

Were any problems found?

Yes

- Perform the appropriate repairs.
- Perform the PCM VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No

- Go To **7**

7. **CHECK THE FUEL PRESSURE ACTUAL COMPARED TO THE SETPOINT**

1. Using a scan tool, compare the fuel pressure actual reading to the set point while cranking the engine.

Does the actual fuel pressure fluctuate more then +/- 500 psi of set point?

Yes

- Go To **8**

No

- Perform the CHECKING THE FUEL DELIVERY SYSTEM test procedure. (Refer to 29 - Non-DTC Diagnostics/Drivability - Diesel - Diagnosis and Testing) .

8. **CHECK THE EGR AIRFLOW CONTROL VALVE FOR PROPER OPERATION**

1. Turn the ignition off.
2. Remove the inlet hose to the EGR Airflow Control Valve.
3. Use a mirror to inspect the valve while an assistant cycles the ignition on and off several times.

Does the EGR Airflow Control Valve cycle open and close without sticking when the ignition is cycled on and off?

Yes

- Go To **9**

No

- Check the electrical circuits for the EGR Airflow Control Valve. If the wiring is good, replace the EGR Airflow Control Valve.
- Perform the PCM VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

9. **INSPECT THE GRID HEATER FOR SOOT OR OTHER FOREIGN MATERIAL**

1. Turn the ignition off.
2. Remove the Intake Air Horn to inspect the Grid Heater.

Is the Grid Heater fouled with soot?

Yes

- Clean the Grid Heater as necessary using EGR Cleaner. Determine the cause of the excess soot buildup.
- Perform the PCM VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No

- Go To **10**

10. **CHECK FOR A PLUGGED EXHAUST SYSTEM**

1. Separate the exhaust system and attempt to start the engine.

Does the engine start?

Yes

- Perform the AFTERTREATMENT INSPECTION GUIDELINE procedure. (Refer to 29 - Non-DTC Diagnostics/Drivability - Diesel - Diagnosis and Testing)
  NOTE: It is imperative to determine root cause of excessive soot build up.

- After repair perform the DIESEL AFTERTREATMENT VALIDATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No

- Go To **11**

11. **CHECK THE FUEL QUALITY OR THE PRESENCE OF CONTAMINATION**

1. Check the quality of the fuel using the DIESEL FUEL CONTAMINATION AND CLEANING PROCEDURE. (Refer to 14 - Fuel System/Fuel Delivery - Standard Procedure) .

Was any contamination detected?

Yes

- Perform the appropriate repair according to the testing and cleaning procedure.
- Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No

- Go To **12**

12. **CHECK THE INTAKE SYSTEM FOR PROPER OPERATION, RESTRICTIONS OR LEAKS**

1. Check for inlet restriction, inspect the Air Filter for excessive dirt/debris. Verify air intake lines are not kinked or restricted.
2. Inspect Turbocharger for wheel clearance.
3. Check for air system leaks. Perform INTAKE AIR SYSTEM PRESSURE TEST procedure. (Refer to 29 - Non-DTC Diagnostics/Drivability - Diesel - Diagnosis and Testing) .

Were any issues found?

Yes

- Perform the appropriate repairs.
- Perform the PCM VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No

- Check for an engine mechanical problem such as low compression due to damaged pistons, cylinder walls, or valve train.
- Perform the PCM VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).