Possible Causes
ADAPTIVE CRUISE CONTROL (ACC) MODULE

Always perform the PRE-DIAGNOSTIC TROUBLESHOOTING PROCEDURE before proceeding. Refer to PRE-DIAGNOSTIC TROUBLESHOOTING PROCEDURE .

DIAGNOSTIC TEST

1. **CHECK FOR AN ACTIVE DTC**
    1. With the scan tool, read ACC DTCs and record on the repair order.
    2. With the scan tool, erase Adaptive Cruise Control (ACC) DTCs.
    3. Cycle the ignition switch from off to on at least five times, leaving the ignition on for a minimum of 90 seconds per cycle.
    4. With the scan tool, read ACC DTCs.

       Is the DTC active?

       Yes

       - With a scan tool, program the Adaptive Cruise Control (ACC) Module with latest software version and align the ACC Module in accordance with the Service Information.
       - After the above procedure, Go To 2

       No

       - Go To 3
2. **CONTINUED ACTIVE DTC AFTER PROGRAMING**
    1. With the scan tool, read ACC DTCs.

       Does the scan tool display this DTC as active after programming?

       Yes

       - Replace and align the Adaptive Cruise Control (ACC) Module in accordance with the Service Information. Refer to **MODULE, ADAPTIVE CRUISE CONTROL (ACCM), REMOVAL** .
       - Perform the ADAPTIVE CRUISE CONTROL VERIFICATION TEST. Refer to **ADAPTIVE CRUISE CONTROL (ACC) VERIFICATION TEST**.

       No

       - Test complete.
3. **CHECK THE WIRING AND CONNECTORS**
    1. The conditions necessary to set the DTC are not present at this time.
    2. Using the schematics as a guide, inspect the wiring and connectors specific to this Module. Wiggle the wiring and connectors while checking for shorted and open circuits.
    3. Check all related splices and connectors for signs of water intrusion, corrosion, pushed out or bent terminals, and correct pin tension.
    4. Check Service Bulletins for any possible causes that may apply.

- No CAN Bus DTCs present.
- Adaptive Cruise Control (ACC) Module is not in Plant-Mode.
- ESP is not in diagnostic mode.
- ACC or Forward Collision Warning (FCW) system is enabled.

SET CONDITION

- The Module detects an sudden deceleration/acceleration induced externally or a DTC in another Module.

DEFAULT ACTION

- The Electronic Vehicle Information Center (EVIC) will display "ACC/FCW Unavailable Service Required".
- The Adaptive Cruise Control (ACC) system will be disabled.
- Once the DTC changes from active to stored, the ACC feature will return to normal operation.
- The DTC will be cleared after a 100 consecutive ignition cycles with no active detection.

POSSIBLE CAUSES

Possible Causes
DTCS IN OTHER MODULE(S)
IGNITION CYCLE
BRAKE SYSTEM FUNCTIONALITY
DRIVING CONDITIONS OR ACCIDENT OCCURRED

Always perform the PRE-DIAGNOSTIC TROUBLESHOOTING PROCEDURE before proceeding. Refer to PRE-DIAGNOSTIC TROUBLESHOOTING PROCEDURE .

DIAGNOSTIC TEST

1. **CHECK FOR DTCS IN OTHER MODULES**
    1. With the scan tool, read DTCs.

       Are other modules reporting any DTCs?

       Yes

       - If DTCs are set in the PCM, TCM, or ABS, Refer to **DTC INDEX** for those diagnostic categories first and perform the appropriate diagnostic procedure(s).

       No

       - Go To 2.
2. **CHECK FOR AN ACTIVE DTC**

NOTE: **To help in the service of the Adaptive Cruise Control (ACC) system, it is recommended to communicate with the customer to obtain the environmental conditions they were driving in when the cruise control concern took place. Heavy rain, snow, ice, and fog can cause the ACC system to become inoperative. This is considered as a normal operational**

POSSIBLE CAUSES

Possible Causes
GROUND CIRCUIT OPEN OR HIGH RESISTANCE
LEFT FRONT TURN LAMP DRIVER CIRCUIT OPEN OR HIGH RESISTANCE
LEFT FRONT TURN LAMP DRIVER CIRCUIT SHORTED TO VOLTAGE
LEFT FRONT TURN LAMP BULB
BODY CONTROL MODULE (BCM)

DIAGNOSTIC TEST

1. **CHECK FOR AN ACTIVE DTC**
    1. With the scan tool, read Body Control Module (BCM) DTCs and record on the repair order.
    2. Record the Environmental Data.
    3. With the scan tool, erase DTCs.
    4. Using the recorded Environmental Data, along with the When Monitored and Set Conditions above, operate the vehicle in the conditions that set the DTC.
    5. With the scan tool, read BCM DTCs.

    Did the DTC return?

    Yes

    - Go To 2

    No

    - Perform the TESTING FOR INTERMITTENT CONDITIONS procedure. Refer to **TESTING FOR AN INTERMITTENT CONDITION** .
2. **CHECK FOR VOLTAGE ON THE (L61) LEFT FRONT TURN LAMP DRIVER CIRCUIT**

    NOTE: Make sure the Turn Lamps are off when performing this step.

    1. Turn the Left Turn Lamps off.
    2. Turn the ignition off.
    3. Disconnect the Left Front Lamp Assembly harness connector.
    4. Turn the ignition on.
    5. Measure the voltage on the (L61) Left Front Turn Lamps Driver circuit at the Left Front Lamp Assembly harness connector.

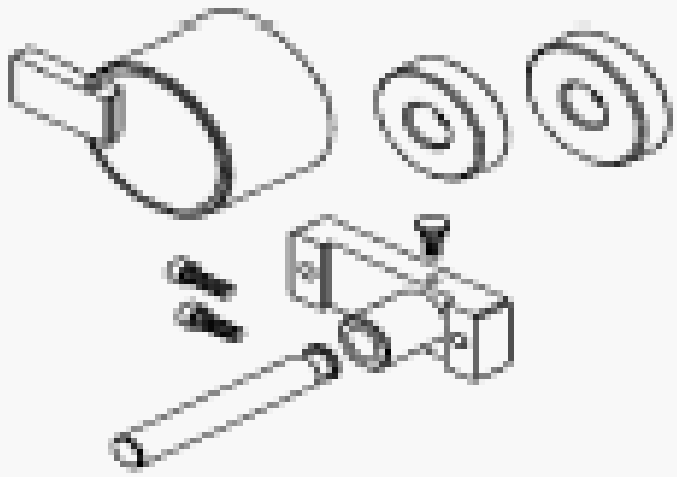
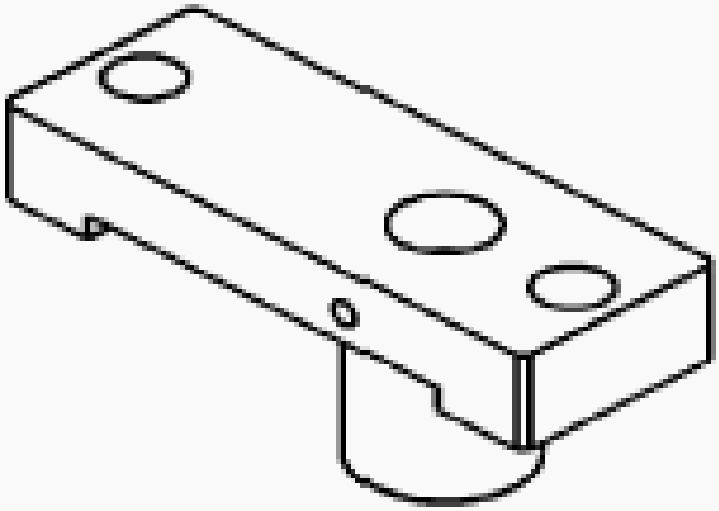
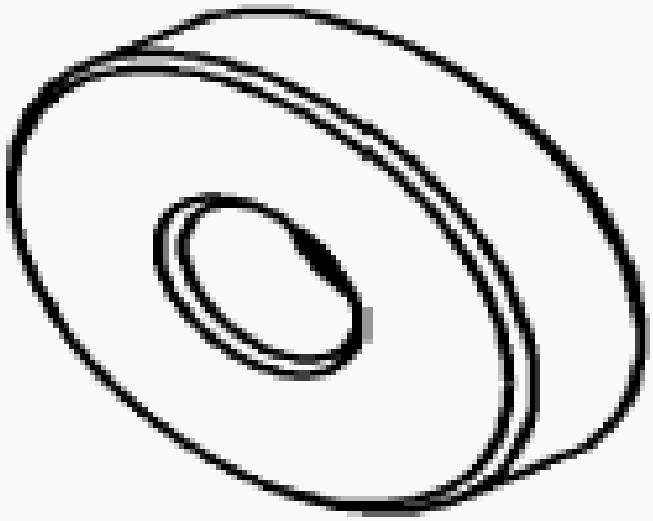
    Is there any voltage present?

    Yes

    - Go To 6

    No

    - Go To 3

	9681-1 - Gauge, Pinion Height (Originally Shipped In Kit Number(s) 9674.)
	9681-2 - Plate, Gage (Originally Shipped In Kit Number(s) 9674.)
	9681-4 - Disc, Arbor (Originally Shipped In Kit Number(s) 9674.)

Yes

- Repair as necessary in accordance with the Service Information.
- Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

No

- Go To 8

8. **POWERTRAIN CONTROL MODULE (PCM)**
    1. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors relative to the components tested in this procedure.
    2. Look for any chafed, pierced, pinched, or partially broken wires.
    3. Look for broken, bent, pushed out or corroded terminals.
    4. Monitor the scan tool data relative to the components tested in this procedure and wiggle test the wiring and connectors.
    5. Look for the data to change or for a DTC to set during the wiggle test.
    6. Perform any Service Bulletins that may apply.

    Were any problems found?

    Yes

    - Repair as necessary.
    - Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

    No

    - Replace and program the Powertrain Control Module (PCM) in accordance with the Service Information. Refer to **MODULE, POWERTRAIN CONTROL (PCM), REMOVAL** .
    - Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

P0307-CYLINDER 7 MISFIRE

THEORY OF OPERATION

The Powertrain Control Module (PCM) uses the Crankshaft (CKP) Sensor to detect and monitor the Crankshaft rotational speed. Normally, the Crankshaft rotational speed is fairly stable from cylinder to cylinder. When a misfire occurs in a cylinder, the Crankshaft speed changes abruptly for that cylinder. Therefore, anything that causes a sudden change in Crankshaft speed detected for a single cylinder is determined to be an engine misfire event. A misfire fault will usually occur due to poor fuel quality or metering, lack of spark, engine timing, low engine compression, engine mechanical or valvetrain issues, a vacuum or coolant leak entering the engine intake air system. Though not as common, other factors such as severe wheel balance or braking vibration, a worn serpentine belt or belt driven accessory binding should also be considered when diagnosing a misfire fault.

Depending on the engine involved, there can be several systems and components that can contribute to a misfire. In many cases, **but not always,** there will be other DTCs set related to these systems. If that is the case, the focus should be on following the diagnostics for the system that has DTCs set against it. The different

- Fuel level above 12%.
- Battery voltage above 10.9 volts.
- The adaptive numerator has been successfully learned.
- Ambient temperature above -23Â°C (-9.4Â°F).
- Coolant temperature at engine start is above -7Â°C (19.4Â°F). If start engine temperature is below threshold, enable monitor when engine temperature reaches 21Â°C (69.8Â°F).
- Engine speed between approximately 400 rpm and 6200 rpm.
    - Misfire monitor is disabled during a Decel Fuel Shutoff Event (DFSO).

SET CONDITION

- The variation in crankshaft speed between cylinders exceeds a calibrated value, based on engine speed and load.

DEFAULT ACTION

- The MIL light will illuminate or flash depending on severity of the misfire.
- During a severe misfire (MIL Light flashing) the PCM will disable the Fuel Injector of the affected cylinder(s) for a calibrated number of engine revolutions to prevent damage to the Catalytic Converter. When the engine rev counter has reached the calculated threshold the Fuel Injector is turned back on. If a misfire is still occurring, the injector is disabled again. This cycle will continue until the misfire has stopped.
- If the vehicle is equipped with the stop/start feature, the system will be disabled when this DTC is active.

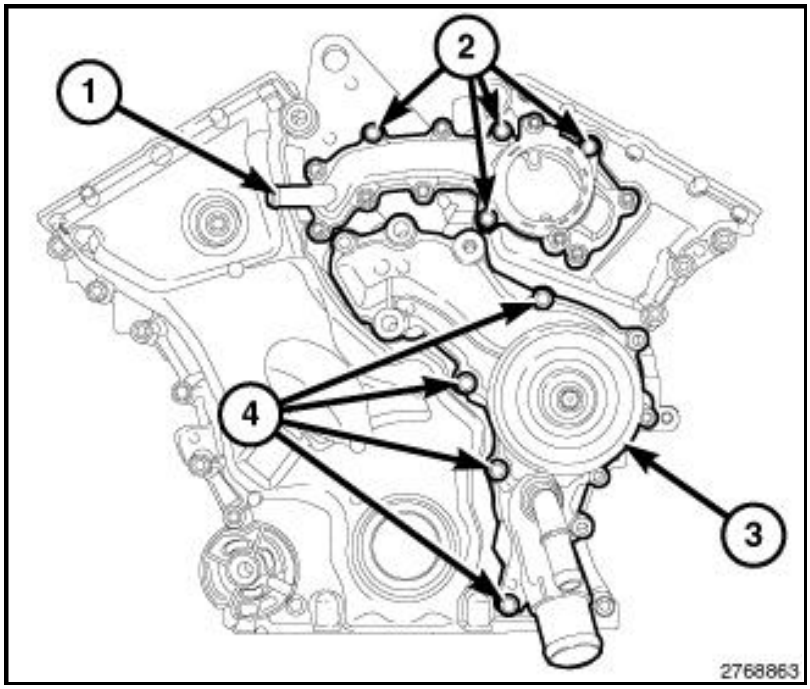
POSSIBLE CAUSES

Possible Causes
ENGINE VACUUM LEAK
FAULTY FUEL INJECTOR
FAULTY IGNITION COIL OR SPARK PLUG
CRANKSHAFT POSITION SENSOR (CKP) OR TONE WHEEL ISSUES
EXCESSIVE CARBON BUILD-UP IN CYLINDER HEAD OR COMBUSTION CHAMBER
VARIABLE CAM TIMING (VCT) SYSTEM ISSUES
COOLANT LEAKING INTO A CYLINDER
FAULTY CYLINDER HEAD GASKET
ENGINE MECHANICAL/LOW COMPRESSION
WORN CAMSHAFT LOBES, SPRINGS OR ROCKER ARMS
POWERTRAIN CONTROL MODULE (PCM)

Always perform the PRE-DIAGNOSTIC TROUBLESHOOTING PROCEDURE before proceeding.
Refer to PRE-DIAGNOSTIC TROUBLESHOOTING PROCEDURE .

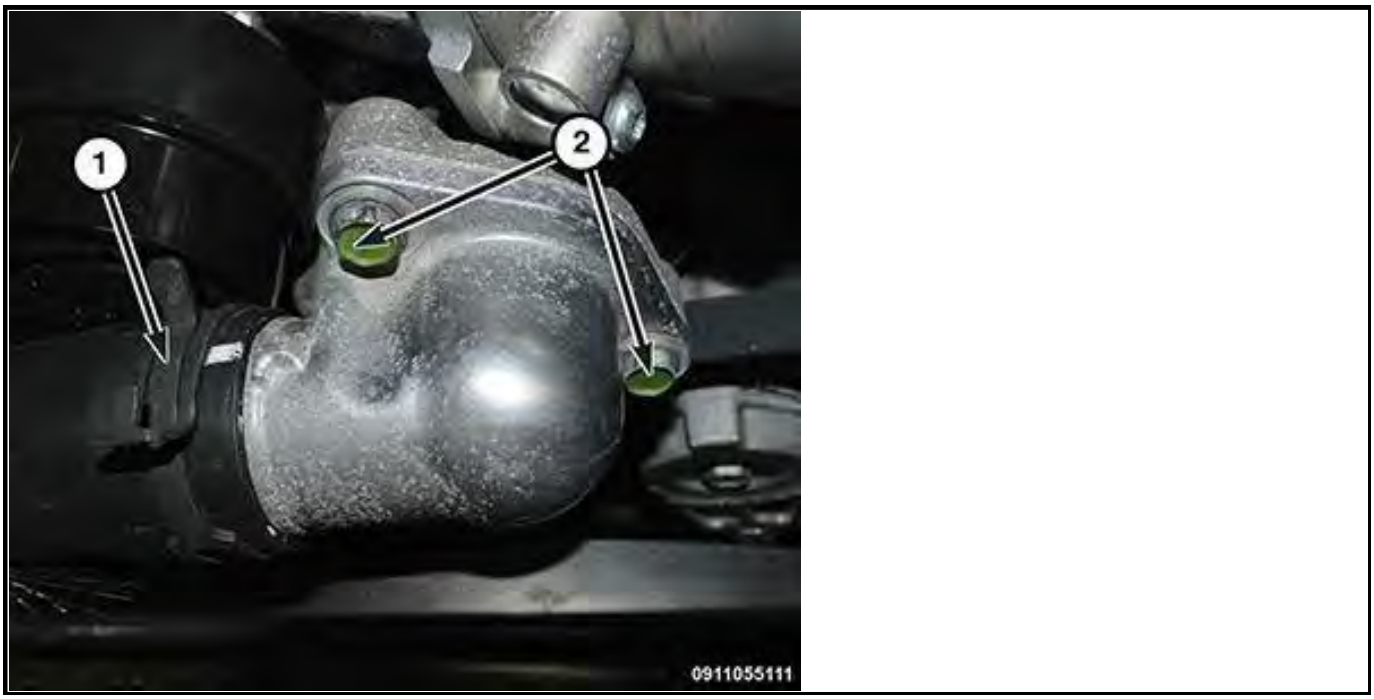
DIAGNOSTIC TEST

1. **CHECK FOR AN ACTIVE CONDITION**
    1. Turn the ignition on.
    2. With the scan tool, read and record all DTCs and Freeze Frame information.
    3. Operate the vehicle under conditions recorded in the Freeze Frame information when the DTC was



2. Remove the heater supply hose from the coolant crossover (1).
3. Remove the coolant crossover mounting bolts. Take notice to the four bolts (2) that bolt directly to the timing cover.
4. Remove the coolant crossover and discard the gaskets.

6.2L



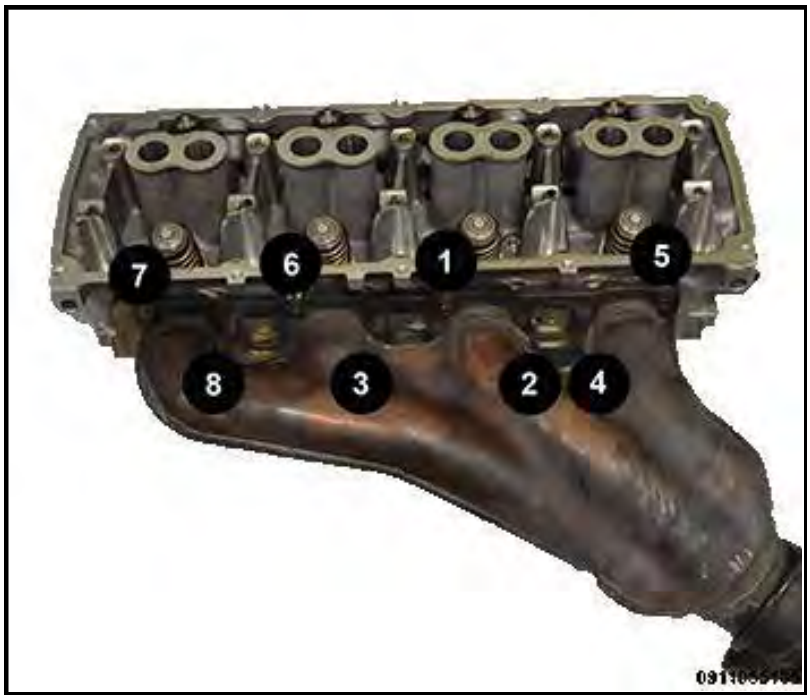
WARNING: Do not loosen the radiator draincock with the cooling system hot and pressurized. Serious burns from the coolant can occur.

If the thermostat is being replaced, be sure that the replacement is the specified thermostat for the vehicle model and engine type.

REMOVAL

NOTE: **The left side shown in illustration. Right side similar.**

1. Disconnect and isolate the negative battery cable.
2. Remove cylinder head. Refer to **CYLINDER HEAD, REMOVAL** .



3. Remove the exhaust manifold bolts using the sequence shown in illustration, starting at eight and going backwards.

INSPECTION

Inspect the exhaust manifold for cracks.

Inspect the mating surface of the exhaust manifold for flatness with a straight edge. The exhaust manifold gasket surface must be flat and within 0.67 mm (0.0264 in.) overall.

INSTALLATION

NOTE: **Left side shown in illustration. Right side similar.**

1. Clean the sealing surfaces of the exhaust manifold and cylinder head.
2. Using a new exhaust manifold gasket, position the exhaust manifold to the cylinder head.

well?"

In the following text, we are going to look at what noid lights and DVOMs do best, do not do very well, and when they can mislead you. As you might suspect, the lab scope, with its ability to look inside an active circuit, comes to the rescue by answering for the deficiencies of these other tools.

OVERVIEW OF NOID LIGHT

The noid light is an excellent "quick and dirty" tool. It can usually be hooked to a fuel injector harness fast and the flashing light is easy to understand. It is a dependable way to identify a no-pulse situation.

However, a noid light can be very deceptive in two cases:

- If the wrong one is used for the circuit being tested. Beware: Just because a connector on a noid light fits the harness does not mean it is the right one.
- If an injector driver is weak or a minor voltage drop is present.

Use the Right Noid Light

In the following text we will look at what can happen if the wrong noid light is used, why there are different types of noid lights (besides differences with connectors), how to identify the types of noid lights, and how to know the right type to use.

First, let's discuss what can happen if the incorrect type of noid light is used. You might see:

- A dimly flashing light when it should be normal.
- A normal flashing light when it should be dim.

A noid light will flash dim if used on a lower voltage circuit than it was designed for. A normally operating circuit would appear underpowered, which could be misinterpreted as the cause of a fuel starvation problem.

Here are the two circuit types that could cause this problem:

- Circuits with external injector resistors. Used predominately on some Asian & European systems, they are used to reduce the available voltage to an injector in order to limit the current flow. This lower voltage can cause a dim flash on a noid light designed for full voltage.
- Circuits with current controlled injector drivers (e.g. "Peak and Hold"). Basically, this type of driver allows a quick burst of voltage/current to flow and then throttles it back significantly for the remainder of the pulse width duration. If a noid light was designed for the other type of driver (voltage controlled, e.g. "Saturated"), it will appear dim because it is expecting full voltage/current to flow for the entire duration of the pulse width.

Let's move to the other situation where a noid light flashes normally when it should be dim. This could occur if a more sensitive noid light is used on a higher voltage/amperage circuit that was weakened enough to cause problems (but not outright broken). A circuit with an actual problem would thus appear normal.

Let's look at why. A noid light does not come close to consuming as much amperage as an injector solenoid. If there is a partial driver failure or a minor voltage drop in the injector circuit, there can be adequate amperage to fully operate the noid light BUT NOT ENOUGH TO OPERATE THE INJECTOR.

If this is not clear, picture a battery with a lot of corrosion on the terminals. Say there is enough corrosion that the starter motor will not operate; it only clicks. Now imagine turning on the headlights (with the ignition in the

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

    Did the DTC return?

    Yes

    - Replace and program the Occupant Restraint Controller in accordance with the Service Information. Refer to **MODULE, OCCUPANT RESTRAINT CONTROLLER, REMOVAL** .
    - Perform the VERIFICATION TEST. Refer to **RESTRAINTS SYSTEM VERIFICATION TEST** .

    No

    - The wiring or poor connection problem has been repaired.
    - Perform the Occupant Restraint Controller VERIFICATION TEST. Refer to **RESTRAINTS SYSTEM VERIFICATION TEST** .

DIAGNOSTIC TEST

1. **CHECK FOR AN ACTIVE DTC**
    1. With the scan tool, read ORC DTCs and record on the repair order.
    2. Record the Environmental Data.
    3. With the scan tool, erase DTCs.
    4. Using the recorded Environmental Data, along with the When Monitored and Set Conditions above, operate the vehicle in the conditions that set the DTC.
    5. With the scan tool, read ORC DTCs.

    Did the DTC return?

    Yes

    - Go To 2

    No

    - Perform the RESTRAINTS SYSTEM VERIFICATION TEST. Refer to **RESTRAINTS SYSTEM INTERMITTENT TEST** .
    - **Probing of the circuit cavities at the ORC Module body harness connectors or vehicle connectors is only to be done with a approved test lead from the test lead 10159-6 or the use of Breakout Box 8443-55 to prevent vehicle wiring harness connector damage during diagnostic procedures.**
2. **CHECK THE (R80, R82) FRONT RIGHT IMPACT SENSOR SIGNAL AND GROUND**

1. Turn the ignition on.
2. With the scan tool, read DTCs and record on vehicle work order.

   Is the DTC active?

   Yes

   - Go To 2

   No

   - Test complete. The condition or conditions that originally set this DTC are not present at this time. Using the wiring diagrams as a guide, check all related splices and connectors for signs of water intrusion, corrosion, pushed out or bent terminals, and correct pin tension.

2. **CHECK FOR DTCS IN THE SCCM**
   1. With the scan tool, read DTCs in the SCCM.

      Is the SCM reporting any DTCs?

      Yes

      - Perform the appropriate diagnostic procedure. Refer to **DIAGNOSTIC CODE INDEX** .

      No

      - Go To 3

3. **CHECK OTHER MODULES FOR CAN C BUS DTCS**
   1. With the scan tool, read the DTCs.

      Are there any CAN C BUS DTCs present?

      Yes

      - Using the schematics as a guide, check the Steering Column Control Module (SCCM) pins, terminals, and connectors for corrosion, damage, or terminal push out. Pay particular attention to all power and ground circuits. If no problems are found, replace the Steering Column Control Module (SCCM) in accordance with the Service Information. Refer to **MODULE, STEERING COLUMN CONTROL (SCCM), REMOVAL** .

      No

      - Using the schematics as a guide, check the Electric Power Steering (EPS) Module pins, terminals, and connectors for corrosion, damage, or terminal push out. Pay particular attention to all power and ground circuits. If no problems are found, replace the Electric Power Steering (EPS) Module in accordance with the Service Information. Refer to **GEAR, REMOVAL** .
      - Perform the EPS Verification Test. Refer to **STANDARD PROCEDURE**.

U148D-00-IMPLAUSIBLE DATA RECEIVED FROM FORWARD FACING CAMERA

WHEN MONITORED

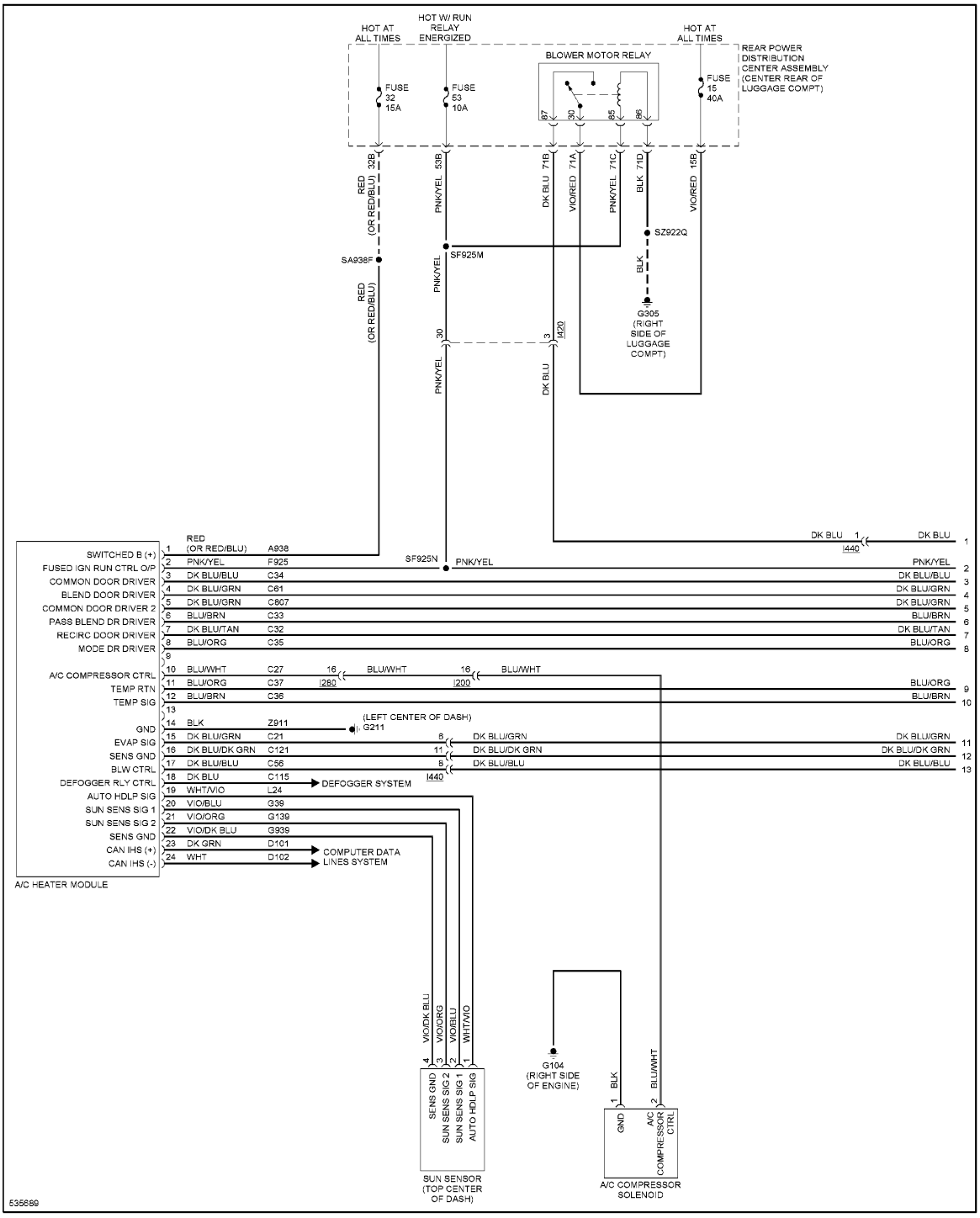
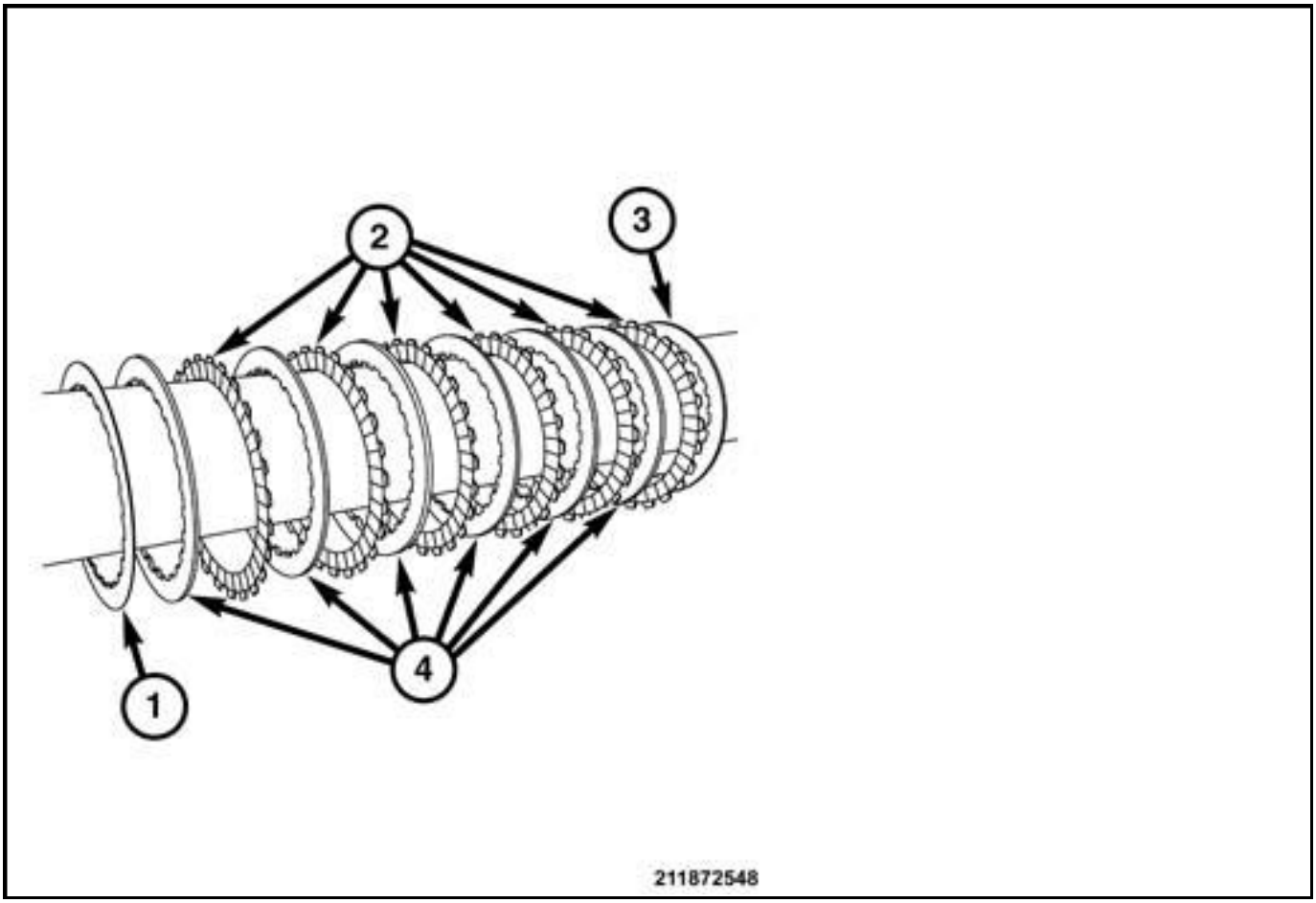


Fig. 1: Automatic A/C Circuit (1 of 4)



1. Wave plate
2. Friction plate
3. Backing plate
4. Steel plate

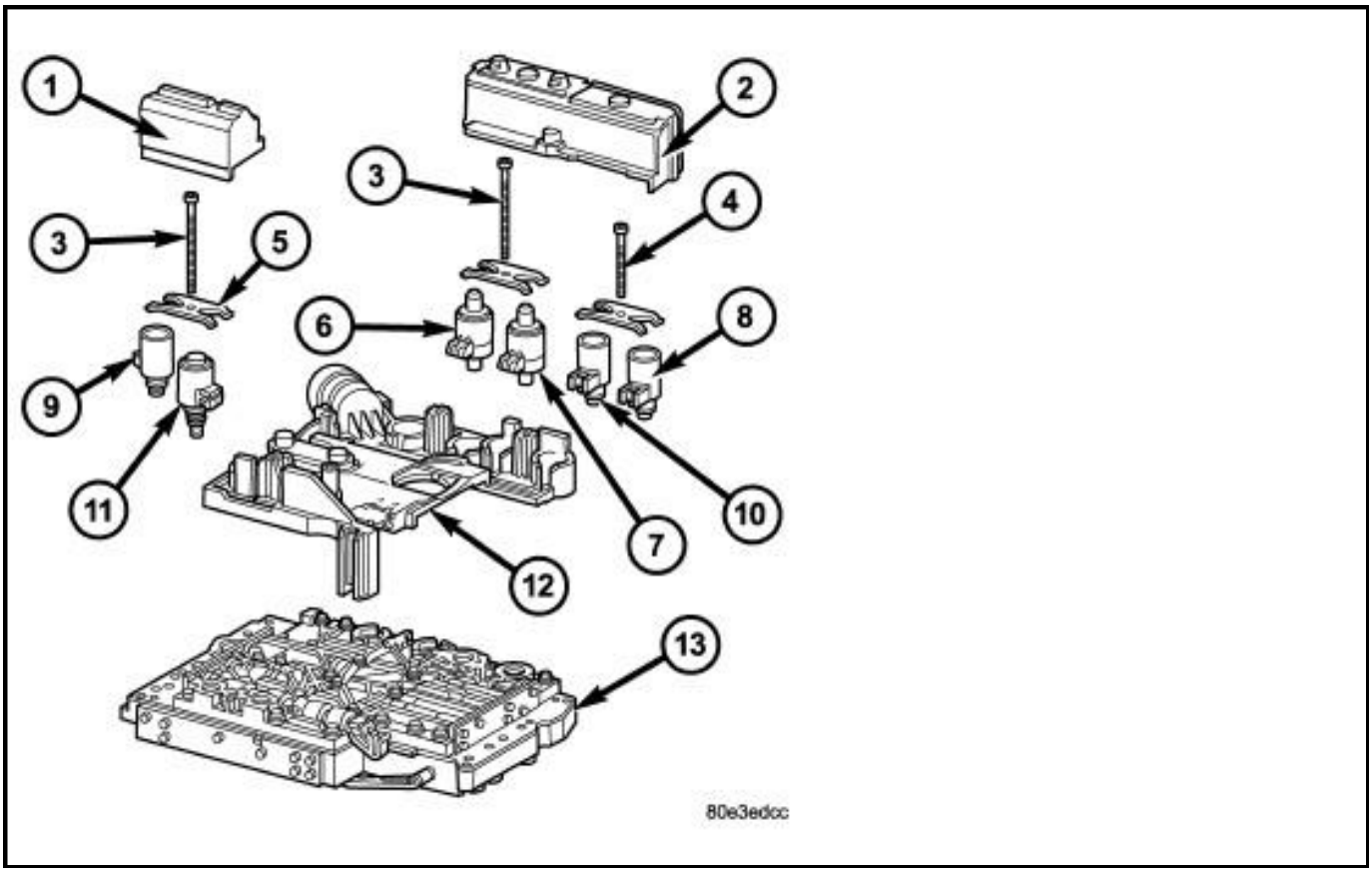
NOTE: **If clutch discs are being replaced, soak in 8HP trans fluid before assembly.**

1. Install the E-clutch (1) seal (2) and O-ring (3).

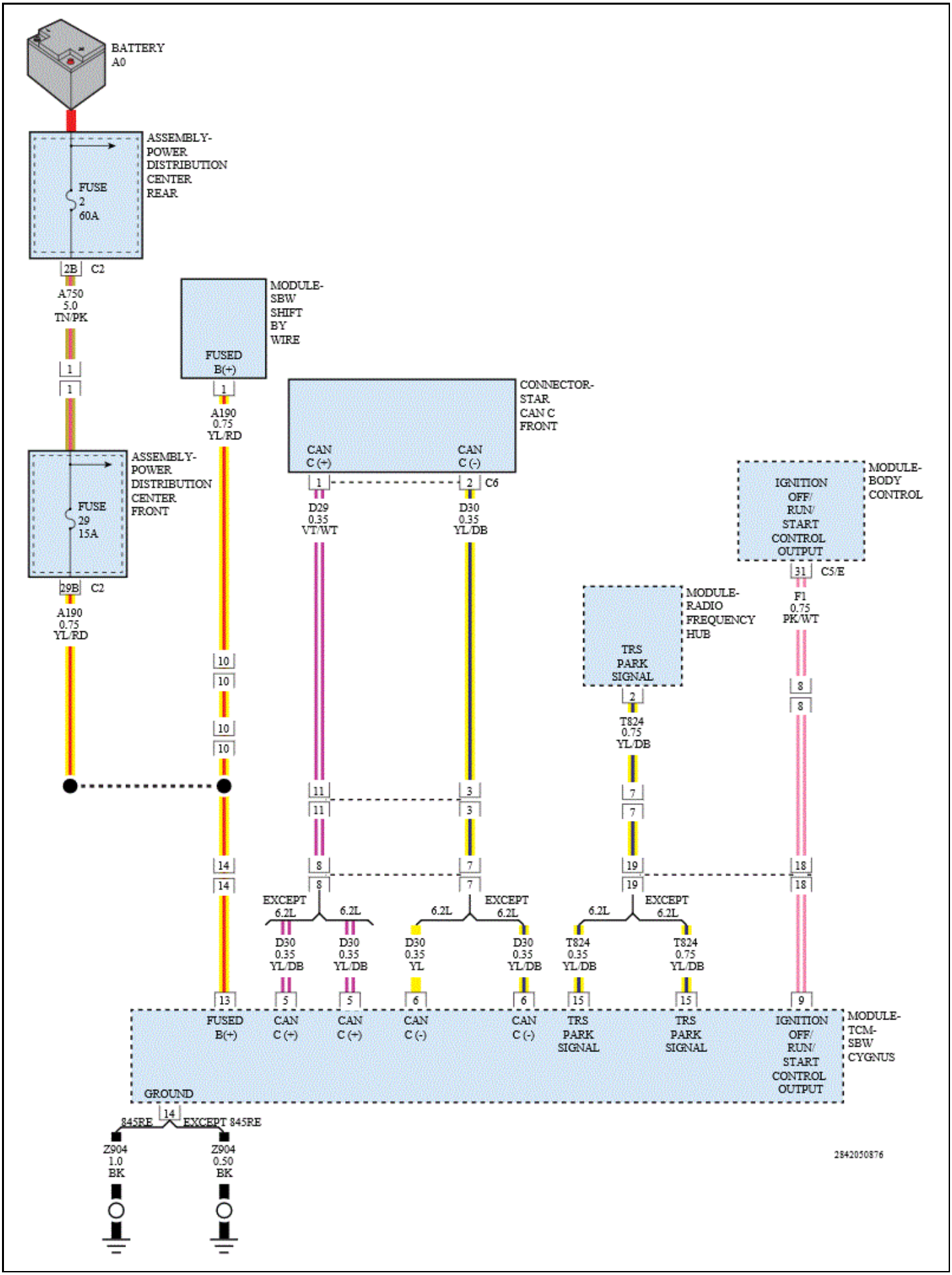
3 - BOLT
4 - OIL FILTER
5 - OIL PAN
6 - CLAMPING ELEMENT
7 - BOLT
8 - 13-PIN PLUG CONNECTOR
9 - BOLT
10 - ADAPTER PLUG

4. Loosen the adapter plug bolt (9) and remove from the adapter plug (10) from the transmission housing.
5. Detach oil pan (5).
6. Remove oil filter (4).
7. Unscrew TorxÂ® socket bolts (3) and remove electrohydraulic control module (2).

DISASSEMBLY



1 - SOLENOID CAP (if equipped)
2 - SOLENOID CAP (if equipped)
3 - BOLT - M6X32
4 - BOLT - M6X30
5 - LEAF SPRING
6 - MODULATING PRESSURE REGULATING SOLENOID VALVE
7 - SHIFT PRESSURE REGULATING SOLENOID
8 - 3-4 SHIFT SOLENOID


BATTERY
A0
ASSEMBLY-
POWER
DISTRIBUTION
CENTER
REAR
FUSE
2
60A
2B C2
A750
5.0
TN/PK
MODULE-
SBW
SHIFT
BY
WIRE
FUSED
B(+)
A190
0.75
YL/RD
CONNECTOR-
STAR
CAN C
FRONT
CAN
C (+)
CAN
C (-)
C6
D29
0.35
VT/WT
D30
0.35
YL/DB
ASSEMBLY-
POWER
DISTRIBUTION
CENTER
FRONT
FUSE
29
15A
29B C2
A190
0.75
YL/RD
MODULE-
BODY
CONTROL
IGNITION
OFF/
RUN/
START
CONTROL
OUTPUT
31 C5/E
F1
0.75
PK/WT
MODULE-
RADIO
FREQUENCY
HUB
TRS
PARK
SIGNAL
T824
0.75
YL/DB
EXCEPT
6.2L
6.2L
D30
0.35
YL/DB
D30
0.35
YL/DB
6.2L
EXCEPT
6.2L
D30
0.35
YL
D30
0.35
YL/DB
6.2L
EXCEPT
6.2L
T824
0.35
YL/DB
T824
0.75
YL/DB
FUSED
B(+)
CAN
C (+)
CAN
C (+)
CAN
C (-)
CAN
C (-)
TRS
PARK
SIGNAL
TRS
PARK
SIGNAL
IGNITION
OFF/
RUN/
START
CONTROL
OUTPUT
MODULE-
TCM-
SBW
CYGNUS
GROUND
845RE
EXCEPT 845RE
Z904
1.0
BK
Z904
0.50
BK
2842050876