

2014 ENGINE**Starting - Non-DTC Based Diagnostics - Compass & Patriot****DIAGNOSIS AND TESTING****ENGINE CRANKS BUT DOES NOT START**

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

POSSIBLE CAUSES

Possible Causes
NO START PRE-TEST
POWERTRAIN FUSES OPEN
SECONDARY INDICATORS PRESENT
ENGINE MECHANICAL PROBLEM
FUEL CONTAMINATION

DIAGNOSTIC TEST**1. NO START PRE-TEST**

NOTE: The following list of items must be checked before continuing with any no start tests.

1. The battery must be fully charged and in good condition. A low charged battery may produce invalid test results. If the battery is low, charge the battery and then attempt to start the vehicle by cranking the engine for 15 seconds, 3 consecutive times. This will allow any DTCs to set that may have been erased due to a dead battery.
2. Attempt to communicate with the PCM using the scan tool. If the PCM is experiencing a no response condition, for the proper Loss of Communication diagnostic procedure. Refer to **DIAGNOSIS AND TESTING** .
3. Read the PCM DTCs with the scan tool. If any DTCs are present, they must be repaired before continuing with any other No Start diagnostic tests. Perform the appropriate diagnostic procedure.
4. Inspect all fuses in the TIPM and the Junction Box. If an open fuse(s) is

found, check the related circuit(s) for a short to ground or high resistance.

5. Using a test light, check the Powers and Ground to the PCM. The test light must illuminate brightly as if jumpered across a battery.
6. Attempt to communicate with the Instrument Cluster and VTSS. If you are unable to establish communications perform the appropriate diagnostic procedures.
7. The Wireless Control Module (WCM) must be operating properly. Check for proper communication with the scan tool and check for DTCs that may be stored in the WCM. Repair the DTC(s) before continuing.
8. If no DTCs are found, using the scan tool, select Clear PCM (BATT Disconnect).
9. Crank the engine several times. Using the scan tool, read DTCs. If a DTC is present perform the DTC diagnostics before continuing. refer to **DTC INDEX** .

Were any problems found?

Yes

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

No

- Go To 2

2. OPEN FUSE

1. Check for any open fuses in both TIPM or Junction Block that may be related to the no start condition.

NOTE: **If an open fuse is found, inspect the related circuit(s) for a short to ground or high resistance.**

Are any of the fuses open?

Yes

- Replace the open fuse and check the related circuit(s) for a short to ground.
- Perform the PCM VERIFICATION Test. Refer to **POWERTRAIN VERIFICATION TEST** .

No

- Go To 3

3. SECONDARY INDICATORS PRESENT

NOTE: Diagnose only the Secondary Indicators that would cause a no start.

1. Ignition on, engine not running.
2. With the scan tool, check the Secondary Indicators while cranking the engine that would cause a no start condition.

Are there any Secondary Indicators present while cranking the engine?

Yes

- Refer to the appropriate Engine Electrical Diagnostics information and perform the tests related to the no start secondary indicator that is reported by the scan tool.
- Perform the PCM VERIFICATION Test. Refer to **POWERTRAIN VERIFICATION TEST** .

No

- Go To 4

4. POSSIBLE MECHANICAL PROBLEMS

1. Check for any of the following conditions/mechanical problems:
 - ENGINE VALVE TIMING - must be within specifications, check for broken timing components.
 - ENGINE COMPRESSION - must be within specifications.
 - ENGINE EXHAUST SYSTEM - must be free of any restrictions or leaks.

Are there any engine mechanical problems?

Yes

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

No

- Go To 5

5. FUEL PUMP DELIVERY

1. Verify that the Fuel tank is not empty before continuing.
2. Follow the diagnostics for Checking Fuel Delivery in **DIAGNOSIS AND TESTING** Gas or **DIAGNOSIS AND TESTING** Diesel.

Was the No Start condition solved after following the above diagnostic test?

Yes

- Test Complete.

No

- Check for contamination/water in the fuel. Make sure the fuel being used in this vehicle meets manufactures Fuel Requirement, refer to the appropriate service information .
- Perform the PCM VERIFICATION Test. Refer to **POWERTRAIN VERIFICATION TEST** .

INTERMITTENT NO START CONDITION

For a complete wiring diagram refer to appropriate **SYSTEM WIRING DIAGRAMS** article

POSSIBLE CAUSES

Possible Causes
ACTIVE OR STORED VEHICLE DTCS

VEHICLE POWER AND GROUND CIRCUITS
VEHICLE POWER CIRCUITS
FAULTY WIRING, CONNECTORS, TERMINALS

DIAGNOSTIC TEST

1. CHECK ALL VEHICLE MODULES FOR DTCS

1. Turn the ignition on.
2. With the scan tool, check for active and stored DTCS.

Does the scan tool display any active or stored DTCS?

Yes

- Using the appropriate diagnostic procedures, diagnose and repair all active and stored DTCS.

No

- Go To 2

2. ATTEMPT TO DUPLICATE NO START CONDITION

1. Attempt to duplicate the no start condition per the customer scenario.

Were you able to duplicate the no start condition?

Yes

- Perform the NO CRANK CONDITION diagnostic procedure. Refer to **DIAGNOSIS AND TESTING**.

No

- No component replacement is necessary at this time.
- Using the wiring diagrams as a guide, check all vehicle powers, grounds, and related connectors. Check all related splices and connectors for signs of water intrusion, corrosion, pushed out or bent terminals and correct pin tension.

NO RESPONSE WITH A NO START CONDITION

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .

POSSIBLE CAUSES

POSSIBLE CAUSES
(A931) FUSED B+ CIRCUIT (PCM)
(F202) FUSED IGNITION SWITCH OUTPUT (RUN-START) CIRCUITS (PCM)
(Z932) PCM GROUND CIRCUITS (PCM)
(K51) ASD RELAY CONTROL CIRCUIT
(A14) FUSED B+ CIRCUIT (ASD RELAY)
(A935) FUSED B+ CIRCUIT (ASD RELAY)
(K542) ASD RELAY OUTPUT CIRCUIT (TO TIPM)
(F342) ASD RELAY OUTPUT CIRCUIT (TO PCM)
TOTALLY INTEGRATED POWER MODULE (TIPM)
POWERTRAIN CONTROL MODULE (PCM)

DIAGNOSTIC TEST.**1. (A931) FUSED B+ CIRCUIT (PCM)**

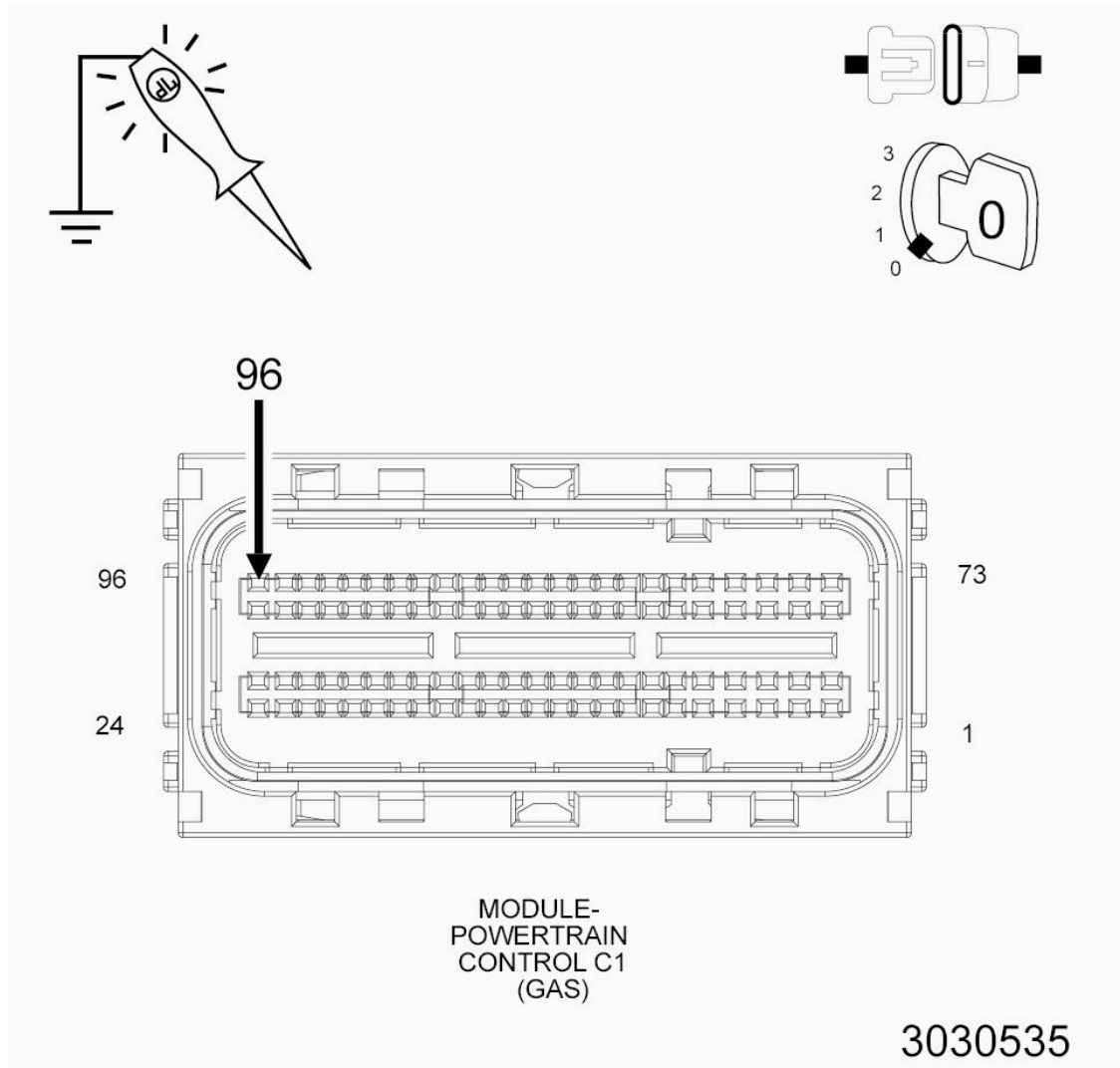


Fig. 1: Checking PCM Fused B+ Circuit
Courtesy of CHRYSLER GROUP, LLC

NOTE: The scan tool and cable must be operating properly for the results of this test to be valid.

NOTE: Make sure the ignition switch was on while trying to communicate with the PCM.

1. Turn the ignition off.
2. Disconnect the C1 PCM harness connectors.

NOTE: When checking circuits at the Powertrain Control Module (PCM), be careful not to damage or distort the connector terminals. Improper measurement

technique could result in poor pin to terminal contact.

3. Using a 12-volt test light connected to ground, probe the (A931) Fused B+ circuit in the PCM C1 harness connector.

NOTE: The test light should be illuminated and bright. Compared the brightness to that of a direct connection to the battery.

Does the test light illuminate brightly?

Yes

- Go To 2

No

- Repair the open or short to ground in the (A931) Fused B+ circuit. Inspect and replace fuses as necessary.
- Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

2. (F202) IGNITION SWITCH OUTPUT (RUN-START) CIRCUITS (PCM)

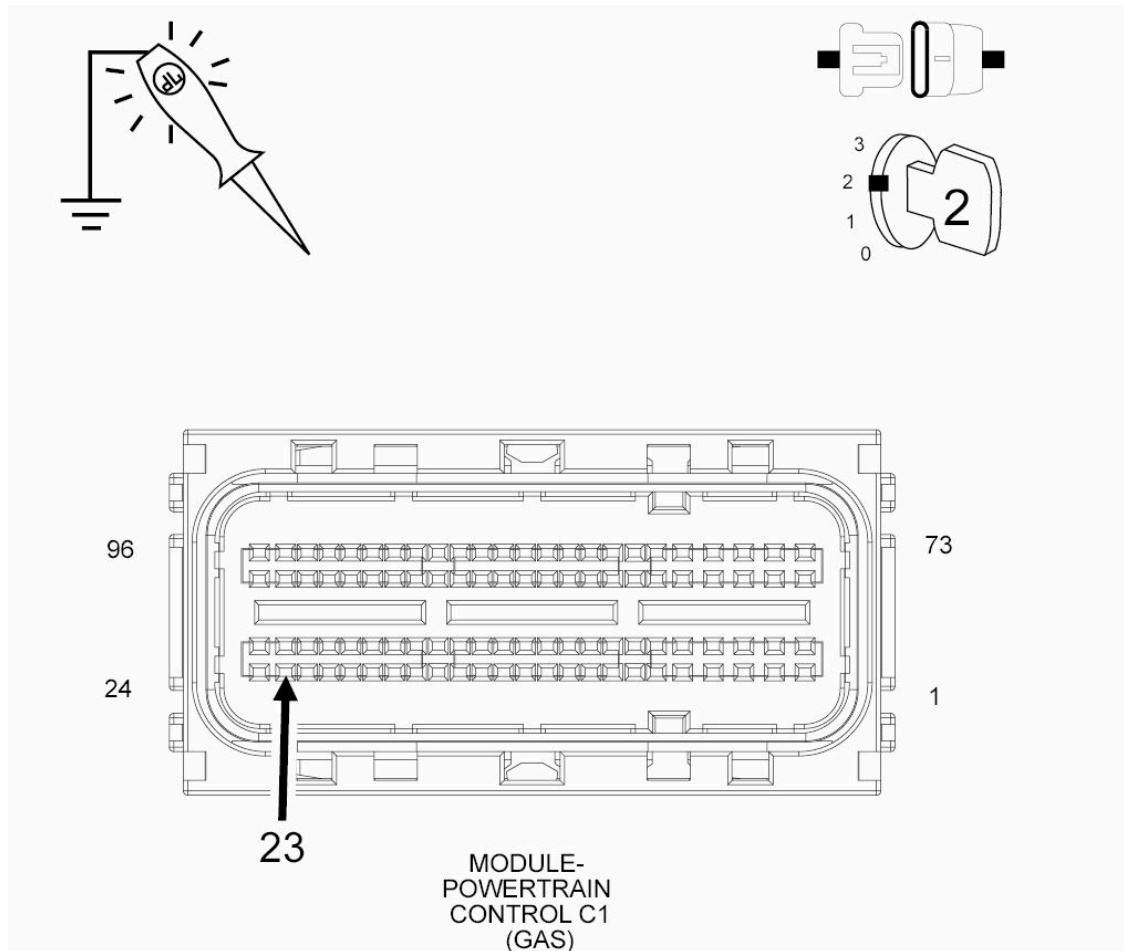


Fig. 2: Checking Ignition Switch Output Circuit For An Open Or Short To Ground

Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition on.

NOTE: When checking circuits at the Powertrain Control Module (PCM), be careful not to damage or distort the connector terminals. Improper measurement technique could result in poor pin to terminal contact.

2. Using a 12-volt test light connected to ground, probe the (F202) Fused Ignition Switch Output circuit in the PCM C1 harness connector.
3. Turn the ignition to run.

NOTE: The test light should be illuminated and bright. Compared the brightness to that of a direct

connection to the battery.

Does the test light illuminate brightly?

Yes

- Go To 3

No

- Repair the (F202) Ignition Switch Output circuits. Inspect and replace fuses as necessary.
- Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

3. (Z932) GROUND CIRCUITS (PCM)

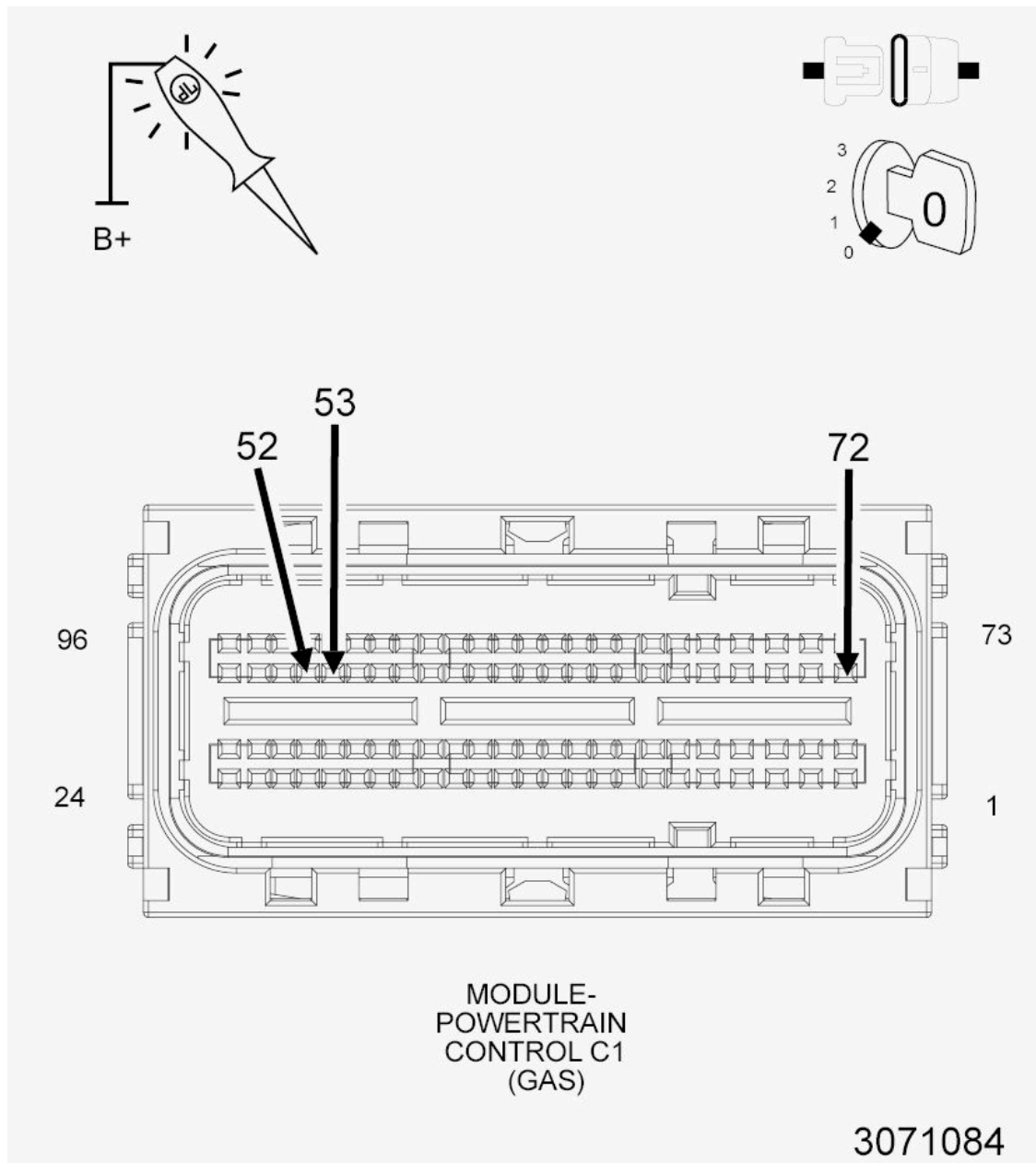


Fig. 3: Checking Powertrain Control Module (PCM) Circuit
 Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.

NOTE: When checking circuits at the Powertrain Control Module (PCM), be careful not to damage or distort the connector terminals. Improper measurement technique could result in poor pin to terminal contact.

2. Using a 12-volt test light connected to battery voltage, probe both the

(Z932) PCM ground circuits

NOTE: **The test light should be illuminated and bright. Compared the brightness to that of a direct connection to the battery.**

Does the test light illuminate brightly at both terminals?

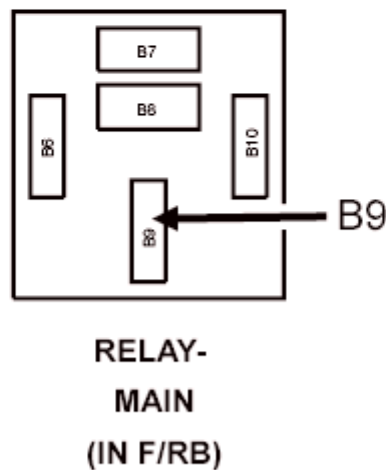
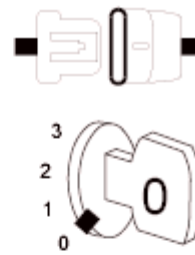
Yes

- Go To 4

No

- Repair the Ground circuit(s).
- Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

4. (A14) FUSED B+ CIRCUIT (ASD RELAY)



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Fig. 4: Checking Fused B+ Circuit A14 At Main Relay
 Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Remove the ASD/Main Relay.
3. Using a 12-volt test light connected to ground, probe the (A14) Fused B+ circuit at the ASD Relay terminal.

NOTE: The test light should be illuminated and bright. Compared the brightness to that of a direct connection to the battery.

Does the Test. light illuminate brightly?

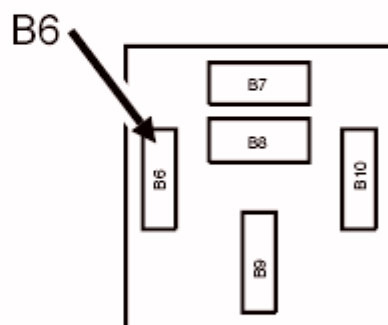
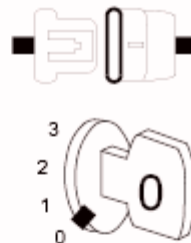
Yes

- Go To 5

No

- Repair the (A14) Fused B+ circuit.
- Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

5. (A935) FUSED B+ CIRCUIT (ASD RELAY)



**RELAY-
MAIN
(IN F/RB)**

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Fig. 5: Checking Fused B+ Circuit At Main Relay
Courtesy of CHRYSLER GROUP, LLC

1. Using a 12-volt test light connected to ground, probe the (A935) Fused B+ circuit at the ASD/Main Relay terminal.

NOTE: **The test light should be illuminated and bright. Compared the brightness to that of a direct connection to the battery.**

Does the test light illuminate brightly?

Yes

- Go To 6

No

- Repair the (A935) Fused B+ circuit.
- Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

6. (F342) ASD RELAY OUTPUT CIRCUITS

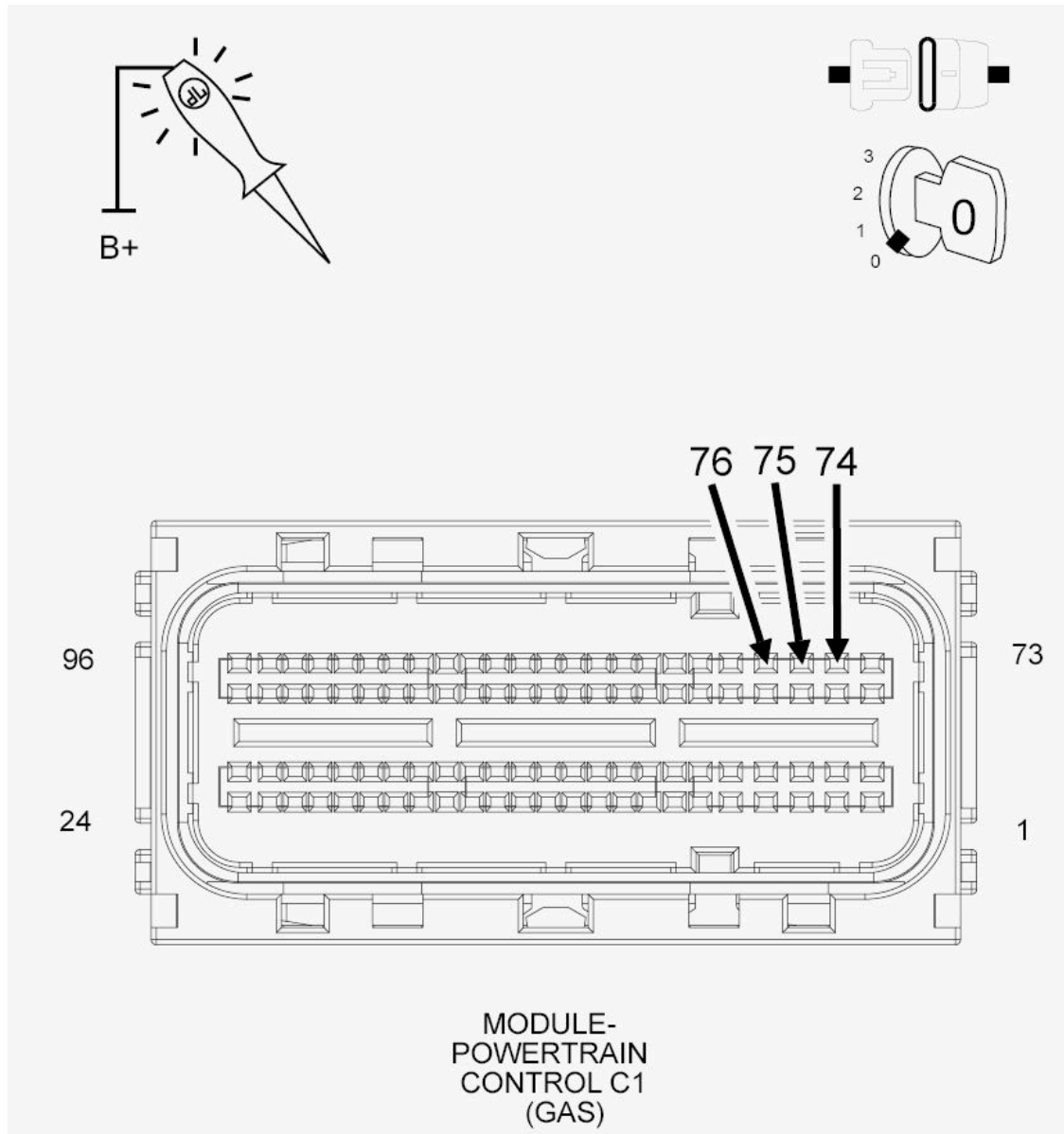


Fig. 6: Checking ASD Relay Output Circuits
Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition on.
2. Using a jumper wire, jumper across the ASD Relay from (K542) ASD Relay Output circuit and the (A14) Fused B+ circuit.

NOTE: When checking circuits at the Powertrain Control Module (PCM), be careful not to damage or distort the connector terminals. Improper measurement technique could result in poor pin to terminal contact.

3. With a 12-volt test light connected to ground, probe the (F342) ASD Relay Output circuits in the PCM C1 harness connector.

NOTE: **The test light should be illuminated and bright. Compared the brightness to that of a direct connection to the battery.**

Does the test light illuminate brightly at both terminals?

Yes

- Go To 8

No

- Go To 7

7. (K542) ASD RELAY OUTPUT CIRCUIT

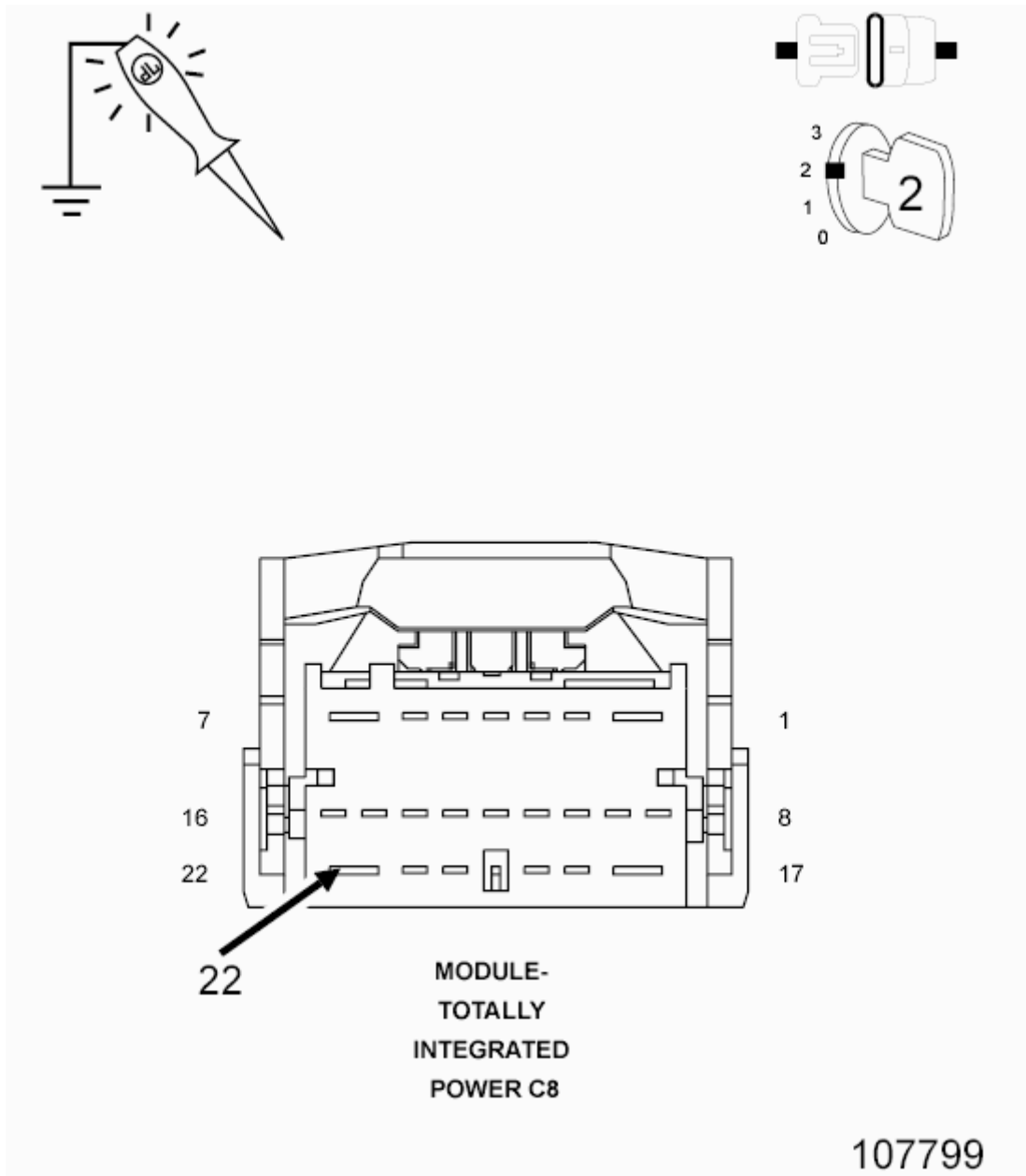


Fig. 7: Checking Main Relay Output Circuit Using 12-Volt Test Light Connected To Ground

Courtesy of CHRYSLER GROUP, LLC

1. Jumper wire still installed.
2. Disconnect the C8 TIPM harness connector.
3. Using a 12-volt test light connected to ground, probe the (K542) ASD Relay Output circuit in the TIPM harness connector.

NOTE: The test light should be illuminated and bright. Compared the brightness to that of a direct

connection to the battery.

Does the test light illuminate brightly?

Yes

- Repair the (F342) ASD Relay Output circuit(s).
- Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

No

- Repair the (K542) ASD Relay Output circuit between the TIPM and the ASD Relay. Inspect the related fuses.
- Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

8. ASD RELAY OUTPUT

1. Turn the ignition off.
2. Remove one end of the jumper wire.
3. Connect the PCM harness connector.
4. Turn the ignition on.
5. Return the jumper wire across the ASD Relay.
6. Using a scan tool, attempt to communication with the PCM.

Were you able to communication with the PCM?

Yes

- Go To 9

No

- Go To 11

9. ASD RELAY

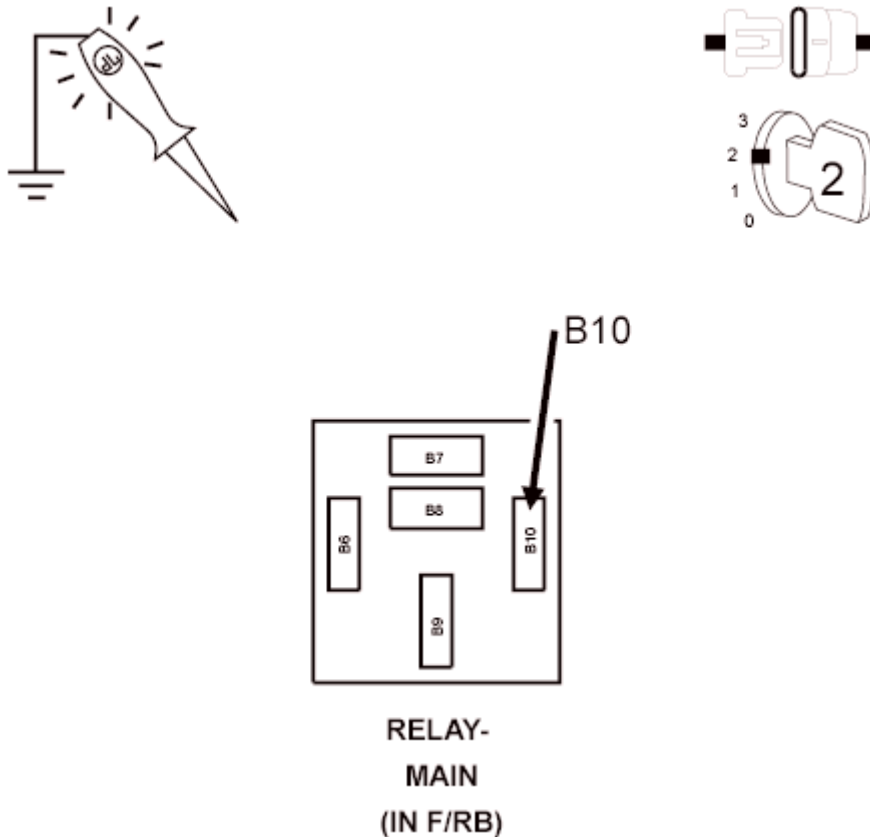


Fig. 8: Checking Main Relay Output Circuit
 Courtesy of CHRYSLER GROUP, LLC

NOTE: To continue the following test, leave the jumper wire in place with the ignition on.

1. Using the scan tool, actuate the ASD/Main Relay.
2. Using a 12-volt test light connected to battery voltage, probe the (K51) ASD Relay Control circuit in the ASD/Main Relay connector.

Does the Test. light illuminate and flash on and off?

Yes

- Replace the ASD/Main Relay.
- Perform the POWERTRAIN VERIFICATION TEST. Refer to POWERTRAIN VERIFICATION TEST.

No

- Go To 10

10. (K51) ASD RELAY CONTROL CIRCUIT

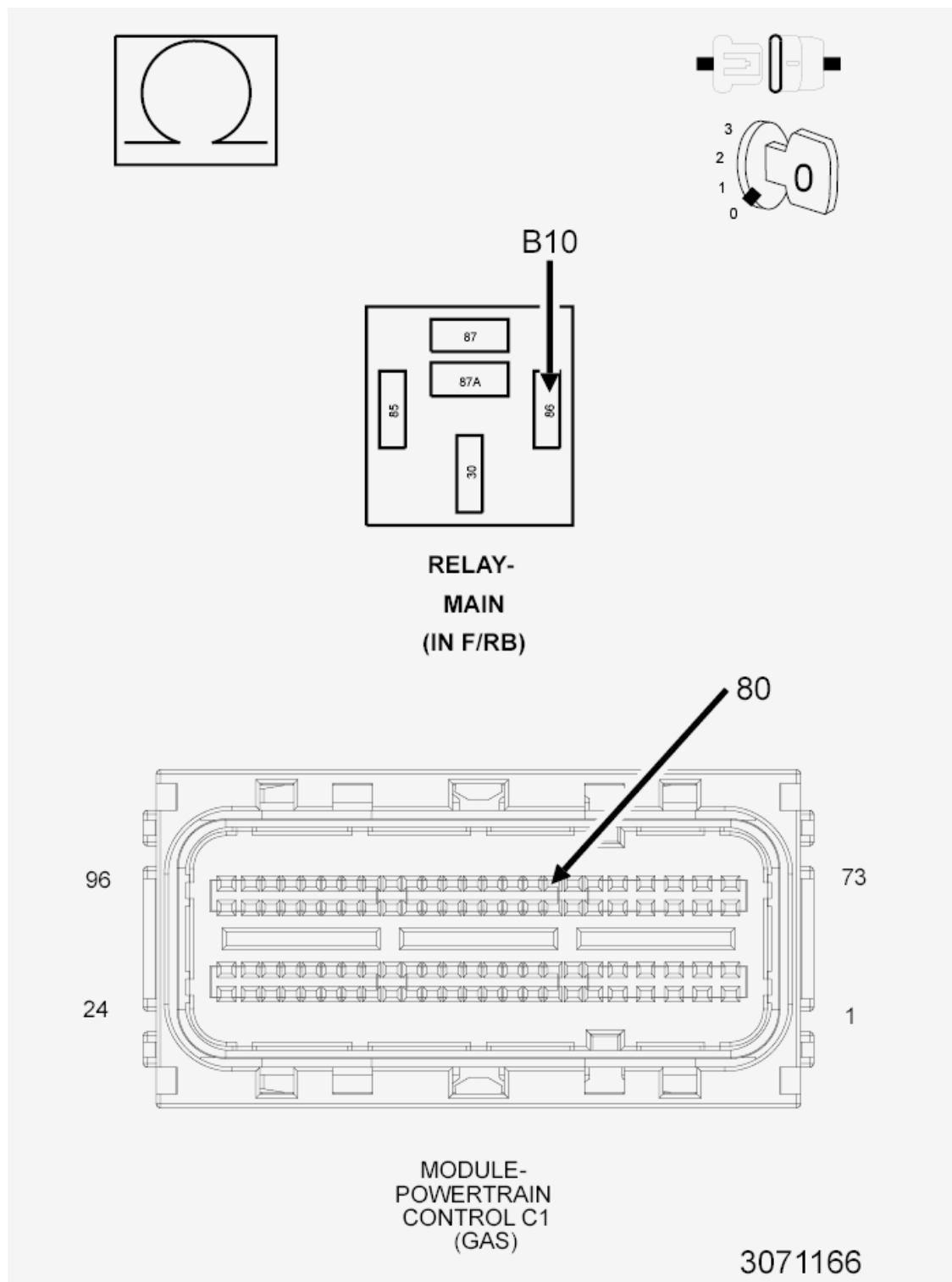


Fig. 9: Checking ASD Relay Control Circuit
Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the C1 PCM harness connector.

NOTE: When checking circuits at the Powertrain Control Module (PCM), be careful not to damage or distort the connector terminals. Improper measurement technique could result in poor pin to terminal contact.

3. Measure the resistance of the (K51) ASD Relay Control circuit between the PCM C1 harness connector and the ASD/Main Relay connector.

Is the resistance below 5.0 Ohms?

Yes

- Repair the open in the (K51) ASD Relay Control circuit.
- 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, REMOVAL** .
- Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

11. (D65) CAN C BUS (+) CIRCUIT OPEN

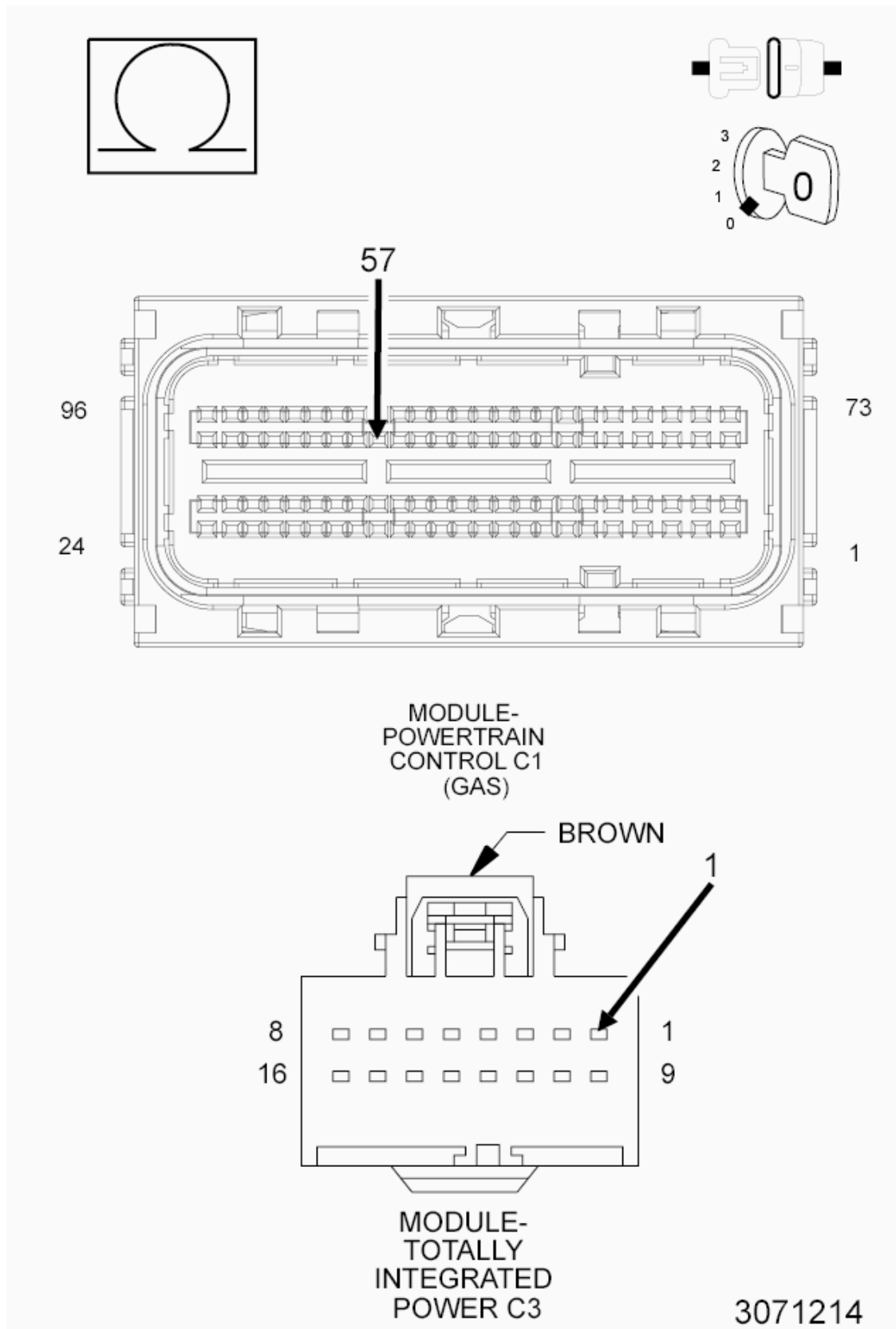


Fig. 10: Checking CAN C BUS (+) Circuit For Open
Courtesy of CHRYSLER GROUP, LLC

1. Turn the ignition off.
2. Disconnect the TIPM C3 harness connector.

NOTE: When checking circuits at the Powertrain Control Module (PCM), be careful not to damage or distort the connector terminals. Improper measurement technique could result in poor pin to terminal contact.

3. Measure the resistance of the (D65) CAN C Bus (+) circuit between the TIPM C3 harness connector and the PCM C1 harness connector.

Is the resistance below 5.0 Ohms?

Yes

- Go To 12

No

- Repair the (D65) CAN C Bus (+) circuit for an open.
- Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

12. (D64) CAN C BUS (-) CIRCUIT OPEN

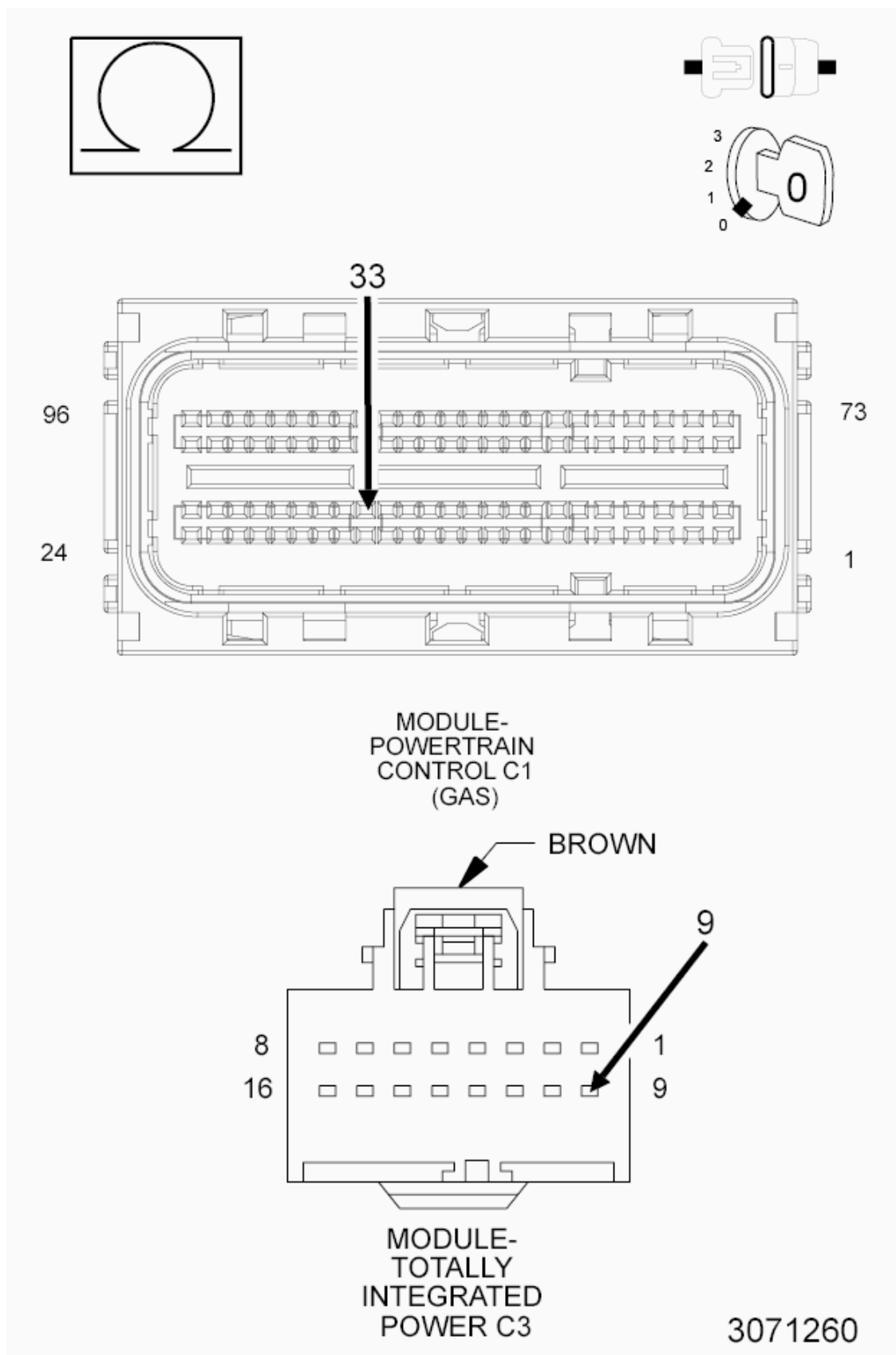


Fig. 11: Checking CAN C BUS (-) Circuit For Open
 Courtesy of CHRYSLER GROUP, LLC

NOTE: When checking circuits at the Powertrain Control Module (PCM), be careful not to damage or distort the connector terminals. Improper measurement technique could result in poor pin to terminal contact.

1. Measure the resistance of the (D64) CAN C Bus (-) circuit between the TIPM C3 harness connector and the PCM C1 harness connector.

Is the resistance below 5.0 Ohms?

Yes

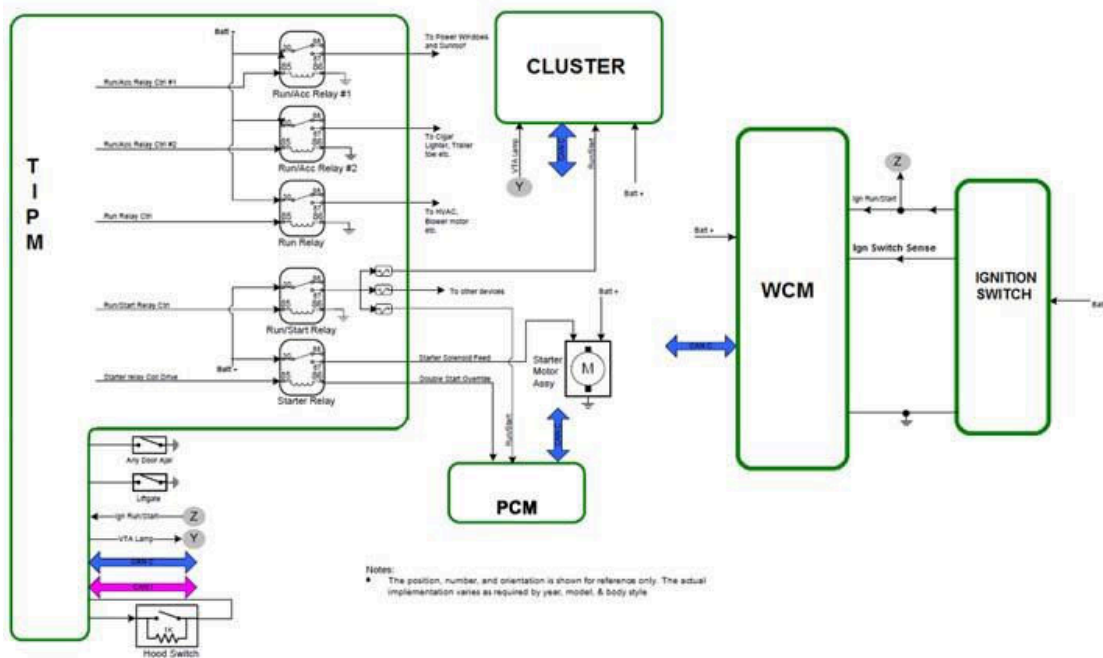
- Replace and program the Powertrain Control Module (PCM) in accordance with the Service Information. Refer to **MODULE, POWERTRAIN CONTROL, REMOVAL** .
- Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

No

- Repair the (D64) CAN C Bus (-) circuit for an open.
- Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

NO CRANK (TIPM - WCM EQUIPPED)

For a complete wiring diagram, refer to appropriate **SYSTEM WIRING DIAGRAMS** article .



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Fig. 12: TIPM - WCM Circuit Diagram
Courtesy of CHRYSLER GROUP, LLC

THEORY OF OPERATION

TIPM and WCM Operation

The TIPM and WCM require two signals to verify the ignition is in the run or start position. The WCM receives a signal from the Ignition Switch on the G20 Ignition Switch Sense circuit which is a muxed voltage. At the same time the Ignition Switch supplies a 12 volt signal on the F20 circuit to the WCM and TIPM. This is a second signal to the WCM and one of the signals to the TIPM. The Ignition Switch status can be monitored in both the WCM and TIPM data display screens as the Ignition Run/Start under the "Sensor" value. The run or start position voltage on the F20 circuit should be at or close to battery voltage.

Once the WCM confirms the signals received on the F20 and G20 circuits, the WCM busses the Ignition Run/Start status to the TIPM. The TIPM monitors the CAN C bussed input information as the second signal/verification on the Ignition Run/Start status. The bussed messages can be monitored in both the WCM and

TIPM data display screens.

The F20 and the bussed message information received by the TIPM regarding the Ignition Run/Start status must agree to enable starting. Once the vehicle is in operation, the loss of only one ignition signal will not cause the vehicle to turn off as long as the other feed still indicates a "run status".

The G20 circuit approximate key position voltages and status can be viewed in the data display screen of the WCM and compared to the values listed below:

- Open Circuit = 5v
- Key Out = 4.6v
- Key In /Lock = 4.04v
- Accessory = 3.2v
- Unlock = 2.2v
- Run = 1.12v
- Start = 0.41v
- Short/Grd = 0.00v

Diagnostic Aids

NOTE: The No Crank Diagnostic serves as an aid in diagnosing the concern and is intended to be used as a general guide, since each condition can be different.

The No Crank Diagnostic Test assumes all of the following to be true:

- The condition is currently present.
- The TCM, PCM, WCM, and TIPM are at the latest calibration (part number) levels.
- There are no active DTCs.
- There are no applicable Recalls.
- There are no applicable TSBs
- There are no PCM inhibits (i.e. RPM, Trans Range, Clutch)
- The Keys/FOBs complete function and operation is correct.
- All battery cables and connections are clean and tight.

- There are no open fuses.
- The battery is fully charged and can pass a load test from the GR8 tester.
- The engine rotates freely.
- Any aftermarket equipment/wiring that has been added was installed and is operating correctly

Starter Relay Operation

In a no crank condition the Starter Relay can be missing power at pin 85, feed at pin 30, controlled ground at pin 86 or output at pin 87. Further explanation of how a relay operates is listed below.

- Pin 85 receives power from the TIPM once the parameters for the Ignition Switch position and status, and all inhibit monitors (i.e. clutch switch, RPM, etc.) are satisfied.
- Pin 30 is a constant B+ feed.
- Pin 86 is a controlled ground by a module (i.e. PCM or BCM). Once power is sent from the TIPM to the pin 85 of the relay it passes through a coil and leaves the relay through pin 86 to control module.
- Pin 87 is an output circuit to the Starter solenoid. Once the circuit on pin 86 is grounded by the control module, the coil winding in the relay magnetically pulls the internal switch closed. When the internal switch is closed the power at pin 30 is sent to pin 87 of the relay.

DIAGNOSTIC TEST

1. STARTER RELAY CHECK

1. When attempting to start the vehicle, listen and if needed feel for a click at the starter relay.

NOTE: Some starter relays are internal to a module and may not be accessible, making it more difficult to hear, or feel the clicking response. It is possible for a poor ground or Trans Range Sensor position could be lost causing the starter to click once.

Did you hear an audible click at the relay or starter?

Yes

- Go To 9

No

- Go To 2

2. STARTER RELAY INPUT CHECK

1. Using a 12 volt test light/DVOM to check for power at/going to pin 85 of the starter relay.

Is there Power/12 volts at pin 85?

Yes

- Go To 8

No

- Go To 3

3. WCM OPERATION

1. Using the scan tool, confirm the ignition switch status changes in the WCM under the data display screen, when using the key in the ignition.

Does the ignition switch status on the data screen match the physical position of the key in the Ignition?

Yes

- Go To 5

No

- Go To 4

4. REMOTE START ANTENNA

NOTE: If the vehicle is not equipped with Remote Start, proceed to the next test step.

1. Turn the ignition off.

2. Disconnect the Remote Start Antenna from the WCM.
3. Using one Key and sitting in the driver's seat, attempt to start the vehicle.

Did the vehicle start?

Yes

- Replace the Remote Start Antenna in accordance with the Service Information.
- Perform the BODY VERIFICATION TEST. Refer to **STANDARD PROCEDURE - BODY VERIFICATION TEST**.

No

- Go To 5

5. TIPM IGNITION STATUS

1. Using the scan tool, confirm the ignition switch status changes in the TIPM under the data display screen for the "Bussed Input" and "Sensor" values.

NOTE: **The change of status in the TIPM for the "Sensor" value validates the voltage activity (with very low amperage) of the F20 circuit.**

In the TIPM, do both values for the ignition switch status match; and do they match those in the WCM?

Yes

- Go To 6

No

- If the status of the Ignition Switch position is not changing under the "Sensor" value, check the F20 circuit at the WCM and TIPM for battery voltage with a DVOM (not a test light). The Ignition switch sends the voltage to the WCM and TIPM simultaneously on the F20 circuit.

- If only one module (WCM or TIPM) receives Battery voltage on the F20 circuit, repair or replace the circuit for a short/open/high resistance in accordance with Service Information.
- If there is NO Battery voltage at the WCM and TIPM on the F20 circuit, then check for voltage on the F20 circuit at the Ignition Switch. If there is voltage on the F20 circuit at the Ignition Switch repair or replace the circuit for a short/open/high resistance. If there is no voltage on the F20 circuit when checked at the ignition switch, verify the power and ground for the Ignition Switch. If no problem found replace the switch and verify the repair.
- In the data display screen of the WCM, if the status of the Ignition Switch Sense voltage was not changing further diagnosis is needed on the G20 Ignition Switch Sense circuit for a short/open/high resistance in accordance with Service Information.
- In the data display screen of the TIPM, if the status of the Ignition Switch Sense voltage was not changing under the "Bussed Input" value, further diagnosis is needed on the communication for the WCM, Bus circuits, Connections and the TIPM for the cause.

6. PCM IGNITION, TRANS RANGE/CLUTCH SWITCH STATUS VERIFICATION

1. Using the scan tool confirm there are no inhibits that have been triggered in the PCM (i.e. Ignition Switch, Trans Range or Clutch Switch) and any switch inputs (filtered states) relating to the starting system function and operate correctly under the data display screen.

Does the PCM show any inhibits (**not DTCs**) for starting (**not remote starting**)?

Yes

- Correct the inhibit reason listed.
- If no problem can be found then verify all power, ground and bus circuits to the PCM and replace in accordance with Service Information. Refer to **MODULE, POWERTRAIN CONTROL, REMOVAL**.

No

- Go To 7

7. TIPM TO STARTER RELAY CHECK

1. At this time if all the correct inputs for the ignition switch status are correct in the WCM, TIPM and PCM, verify both powers (pin 30 and 85) to the Starter Relay in the crank position.

Are both power supplies present at the relay when the ignition is in the crank position?

Yes

- Go To 8

No

- If, there is no power to pin 30 or 85, no DTCs, TSBs, Recalls, or Inhibits replace the TIPM in accordance with appropriate Service Information.

8. STARTER RELAY CONTROL CIRCUIT CHECK

1. Using a test light/DVOM determine if the Starter Control circuit at pin 86 of the relay is missing (at the relay if equipped with a removable relay or wiring to the internal relay) when turning the ignition to the crank position.

Was the Starter Control circuit for pin 86 being grounded when the ignition was in the crank position?

Yes

- Go To 10

No

- Verify the Starter Relay Control circuit from pin 86, that there are no shorts, opens or high resistance on the wiring going from the Starter Relay in the TIPM to the PCM, Starter Solenoid and Starter.
- Verify the cables do not have excessive resistance by performing a voltage drop on the battery cables.

9. STARTER RELAY OUTPUT CIRCUIT CHECK

NOTE: At this point in the test, when the key is in the crank position power has been verified at Pin 30 & 85, along with the control circuit being grounded for pin 86.

1. Remove Starter Relay Output circuit connector from the Starter solenoid.
2. Reinstall/Connect the starter relay into the TIPM.
3. Using a test light/DVOM and ignition in the crank position check for power at pin 87 (If equipped with a removable relay or wiring to the internal relay) of the relay and at the connection to the starter.

Was there power at pin 87 for the output circuit?

Yes

- Go To 10

No

- If power is missing to pin 30 of the starter relay the TIPM is suspect. Verify all power, ground, communication circuits and connections to the TIPM before replacing in accordance with service information.
- If power is missing at pin 87 of the starter relay and the relay is replaceable, change out the relay and recheck the concern. If a known good relay causes no change, check the Starter Output circuit from pin 87 of the relay to the starter for an open, short, excessive resistance, or poor connections to the solenoid or starter.
- Verify and Inspect the Starter to ensure it is free of corrosion, oil, and there is no damage, or binding conditions.
- Verify that all wiring, cables and connections are clean and tight.

10. STARTER RELAY OUTPUT CIRCUIT CHECK

1. Load test the Starter Relay output circuit going from the TIPM to the Starter.

Does the starter relay output circuit pass the load test?

Yes

- Verify that all connections are clean, tight and there is no damage to starter when fully inspected. If no problem found then replace the Starter in accordance with Service Information. Refer to **STARTER, REMOVAL** .

No

- Adjust the shift cable in accordance with the Service Information. Perform the POWERTRAIN VERIFICATION TEST. Refer to **POWERTRAIN VERIFICATION TEST** .

REMOTE START INOPERATIVE (TIPM - WCM EQUIPPED)

For a complete wiring diagram, **refer to appropriate SYSTEM WIRING DIAGRAMS article** .

THEORY OF OPERATION

The customer may notice that the signal range of the Remote Keyless Entry (RKE) system is reduced. This condition may be due to the RKE antenna where the RKE key fob may need to be closer than 3 meters (10 feet) before the functions available on the key fob will operate. The diagnostic flow chart is provided as a diagnostic aid for the dealer technician.

It is necessary to confirm the correct sales code(s) are present in the Standard and Optional Equipment sections of DealerCONNECT to determine if a factory or a Mopar Accessory Remote Start kit was installed. If the vehicle has a Mopar Accessory Remote Start kit, verify that at least 20 minutes has elapsed since the sales codes were added to DealerCONNECT. Once it has been confirmed that the proper sales codes have been added and the allotted time has passed, verify the vehicle has been configured properly using the scan tool. Also make sure that the system shows as enabled in the TIPM, and that the temporary remote start override is set to disabled.

For any further assistance on diagnosing the installed Mopar Accessory kit contact the Mopar Accessories group at 800-84-MOPAR (66787).

DIAGNOSTIC TEST**1. REMOTE START FUNCTION**

NOTE: In some cases the vehicle will start then stall, indicating a fuel level concern (less than a quarter of a tank). Before proceeding verify there is enough fuel in the tank for the vehicle to run.

1. Use the FOB to start the vehicle.

Does the vehicle start when using the FOB?

Yes

- At this time the Remote Start is functioning properly. Check for any related Starting, Communication, or Ignition related DTCs that may inhibit the Remote Starting feature. Check the TIPM for any previous Remote Start Inhibits and mileage that were stored. Inhibits may be found under the system tests or miscellaneous functions tab.

No

- Go To 2

2. REMOTE START VISUAL ASSESSMENT

1. When the FOB buttons are pressed for Remote Start usage the Horn should sound and the exterior parking lights should flash.

Does the horn sound and the exterior parking lights flash?

Yes

- Go To 3

No

- Go To 4

3. CHECKING TIPM INHIBITS

NOTE: Since the horn sounds and the parking lights flash, this verifies the TIPM is receiving the CAN BUS message from the WCM. It also verifies the RF signal for Remote Start from the FOB to the WCM is

operating correctly.

1. Using the scan tool, check the Remote Start inhibits of the TIPM or any ACTIVE DTCs listed in all modules.

NOTE: Inhibits may be found under the system tests or miscellaneous functions tab. The fuel level may not be a listed inhibit.

Are there any Remote Start inhibits or any ACTIVE DTCs listed in the entire vehicle?

Yes

- Refer to **DIAGNOSIS AND TESTING** for a complete list of Remote Start inhibits.
- For any ACTIVE DTCs perform the appropriate diagnostic procedure in **DTC INDEX**.

No

- Check for any related TSBs prior to replacing the TIPM. If no related TSBs are found, then replace the TIPM in accordance with appropriate Service Information.

4. RKE FUNCTION SHORT RANGE

1. Standing next to the Driver door, note the RKE function of the FOB?

Does the RKE function?

Yes

- Go To 5

No

- Go To 7

5. RKE FUNCTION MID RANGE

1. Standing 20 feet from the vehicle, operate the RKE function of the FOB.

Does the RKE function at 20 feet?

Yes

- Go To 6

No

- Go To 7

6. RKE FUNCTION LONG RANGE

1. Standing 100 feet from the vehicle, operate the RKE function of the FOB.

Does the RKE Function at 100 feet?

Yes

- Go To 9

No

- Go To 7

7. FOB SIGNAL STRENGTH

1. Use the RF Tester 9001 to check the signal strength of the FOB.

Does the FOB pass?

Yes

- Go To 10

No

- Go To 8

8. CHECKING THE FOB

1. Replace the battery in the FOB with a known good battery and recheck the signal from the FOB with the RF Tester 9001.

Does the FOBs pass?

Yes

- Go To 9

No

- Check for any related TSBs prior to replacing the FOB. If no related TSBs are found, then replace the FOB in accordance with Service Information. Refer to **TRANSMITTER, INTEGRATED KEY FOB, STANDARD PROCEDURE** .

9. CHECKING FOR ACTIVE DTCs

NOTE: Since the RKE portion of the FOB is operational, it verifies that the WCM is capable of receiving signals and communicating to operate the locks.

1. Use the scan tool to check for ACTIVE DTCs.

Did the diagnostic scan tool show any ACTIVE DTCs in the entire vehicle

Yes

- Diagnose the DTCs in accordance with Service Information before proceeding with the Remote Start Inoperative concern.

No

- Go To 10

10. CHECKING THE WCM

NOTE: Even though the RKE function of the system may work with no concern, the TIPM is either not receiving a message or is receiving a corrupt message from the WCM for the remote start operation.

1. While sitting in the driver's seat and using the scan tool, monitor the WCM on the data display screen for changes when the Remote Start button of the FOBs is pressed.

Did the status change when the Remote Start button of the FOB is pressed?

Yes

- Go To 11

No

- Disconnect the Remote Start antenna. With the FOB next to the WCM attempt to start the vehicle and monitor the scan tool for a change in the status. If the status changes or the vehicle starts replace the Remote Start antenna. If there is no change in the status, check for any related TSBs. If no related TSBs are found, then replace the WCM in accordance with Service Information. Refer to **MODULE, SENTRY KEY IMMOBILIZER (SKREEM), REMOVAL** .

11. CHECKING TIPM INHIBITS

NOTE: Since neither the parking lights flash nor will the horn will sound when the FOB is used, it is not known if the TIPM is the concern or if an "Inhibit" may be stopping the request from taking place.

1. Use the diagnostic scan tool to check for any Remote Start inhibits listed in the TIPM. This may be found under the system tests or miscellaneous functions tab.

Were there any Remote Start Inhibits listed in the TIPM?

Yes

- Perform the REMOTE START SYSTEM Diagnosing and Testing. Refer to **DIAGNOSIS AND TESTING** .

No

- If, this has had a Mopar Accessory kit installed verify the correct Sales Code for Remote Start has been added to Dealer Connect and a Restore Vehicle Configuration has been performed. Confirm the

system is enabled; and the temporary Remote Start override is set to disabled in the TIPM and contact the Mopar Accessories group (800-84-Mopar) for further details before proceeding.

- If, this has a factory installed Remote Start check for any related TSBs prior to replacing the TIPM. If no related TSBs are found, then replace the TIPM in accordance with appropriate Service Information.