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1.0 INTRODUCTION

The procedures contained in this manual include all of the specifications, instructions, and graphics needed to diagnose NAG1 Electronic Automatic Transmission and Shift Lever Assembly problems. The diagnostics in this manual are based on the failure condition or symptom being present at the time of diagnosis.

When repairs are required, refer to the appropriate volume of the service information for the proper removal and repair procedure.

READ THIS MANUAL BEFORE TRYING TO DIAGNOSE A VEHICLE TROUBLE CODE.

Diagnostic procedures change every year. New diagnostic systems may be added and/or carryover systems may be enhanced. It is recommended that you review the entire manual to become familiar with all new and changed diagnostic procedures.

1.1 SYSTEM COVERAGE

This diagnostic procedures manual covers all Sprinter (VA) equipped with a NAG1 Automatic Transmission.

1.2 SIX -STEP TROUBLESHOOTING PROCEDURE

Diagnosis of the NAG1 electronic transmission is done in six basic steps:

- Verification of complaint
- Verification of any related symptoms
- Symptom analysis
- Problem isolation
- Repair of isolated problem
- Verification of proper operation

2.0 IDENTIFICATION OF SYSTEM

The NAG1 Transmission family can be identified by the presence of a 13 pin electrical connector, with a bayonet lock on the right hand side of the transmission. The connector is oriented horizontally.

3.0 SYSTEM DESCRIPTION AND FUNCTIONAL OPERATION

3.1 GENERAL DESCRIPTION

The NAG1 electronic transmission is an electronically controlled five speed transmission with a controlled slip torque converter. The NAG1 elec-

tronic transmission is a conventional transmission in that it uses hydraulically applied clutches to shift a planetary gear train. However, the electronic control system replaces many of the mechanical and hydraulic components used in conventional transmission valve bodies.

The ratios for the gear stages are obtained by 3 planetary gear sets. Fifth Gear is designed as an Overdrive with a high speed ratio. The gears are actuated electronically/hydraulically. The electronic control system enables precise adaptation of pressures to the respective operating conditions and to the engine output during a shift phase, which results in a significant improvement in shift quality.

3.2 FUNCTIONAL OPERATION

The NAG1 electronic transmission has a fully adaptive control system. The system performs its functions based on continuous real-time sensor and switch feedback information. In addition the TCM receives information from the Shift Lever Assembly, ECM (engine management) and ABS (chassis systems) controllers over the CAN bus. The CAN bus is a high speed communication bus that allows real time control capability between various controllers. Most messages are sent every 20 milliseconds, this means critical information can be shared between the Transmission, Shifter, Engine and ABS controllers. The CAN bus is a two wire bus with a **CAN C Bus (+) circuit** and a **CAN C Bus (-) circuit**. The CAN bus uses a twisted pair of wires in the harness to reduce the potential of radio and noise interference. The CAN bus also uses a 120 ohm terminating resistor in both the ECM and Sentry Key Remote Entry Module (SKREEM) modules. The module terminating resistance is measured across both CAN bus circuits at the ECM or SKREEM module.

The control system automatically adapts to changes in engine performance, vehicle speed, and transmission temperature variations to provide consistent shift quality. The control system ensures that clutch operation during upshifting and downshifting is more responsive without increased harshness. The TCM controls the actuation of solenoid valves for modulating shift pressure and gear change. The required pressure level is calculated from the load condition, engine speed. Power for the transmission system is supplied through the Transmission Relay. The TCM is located in the under the drivers seat of the vehicle.

The Transmission Control Module (TCM) continuously checks for electrical problems, mechanical problems, and some hydraulic problems. When a problem is sensed, the TCM stores a diagnostic trouble code (DTC). Some of these codes cause the transmission to go into "limp-in" or "default" mode.

GENERAL INFORMATION

The NAG1 will default in the current gear position if a DTC is detected, then after a key cycle or shift to park the transmission will go into Limp-in, which is mechanical 2nd gear. Some DTC's may allow the transmission to resume normal operation (recover) if the detected problem goes away. Permanent limp-in DTC will recover when the key is cycled, but if the same DTC is detected for three key cycles the system will not recover and the DTC must be cleared from the TCM with the DRBIII scan tool.

Once the DRBIII® is in the Transmission portion of the diagnostic program, it constantly monitors the TCM to see if the system is in limp-in mode. If the transmission is in limp-in mode, the DRBIII® will flash the red LED.

3.2.1 CONTROLLER MODES OF OPERATION

Permanent limp-in mode

When the TCM determines there is a non-recoverable condition present that will not allow proper transmission operation, it will place the transmission in permanent limp-in mode. When the condition occurs the TCM will turn off all solenoids as well as the solenoid supply output circuit. If this occurs while the vehicle is moving, the transmission will remain in the current gear until the ignition is turned off or shifter is placed in the "P" position. Once the shifter has been placed in "P" the Transmission will only allow 2nd gear operation. If the problem occurs while the vehicle is not moving the transmission will only allow 2nd gear operation.

Temporary limp-in mode

This mode is the same as the permanent limp-in mode except if the condition is no longer present the system will resume normal operation. (Recoverable DTC)

Undervoltage limp-in mode

When the TCM detects that system voltage has dropped below 8.5 volts it will disable voltage dependant diagnostics and place the transmission in the temporary limp-in mode. When the TCM senses that the voltage has risen above 9.0 volts, normal transmission operation will be resumed.

Hardware Error Mode

When the TCM detects a major internal error the transmission will be placed in the permanent limp-in mode and cease all communication over the CAN bus. Once the TCM has entered this mode normal transmission operation will not resume until all DTC's are cleared from the TCM.

Loss of Drive

If the TCM detects a situation that has resulted or may result in engine or transmission failure, the transmission will be placed in the neutral position.

Improper Ratio, Input Sensor Overspeed, or Engine Overspeed DTC's will cause the loss of drive.

Controlled Limp-in Mode

When a failure condition does not require the TCM to shut down the solenoid supply, but the failure is of a degree where the TCM will place the transmission into a predefined gear, there will be several shift performance issues. Examples of this are, with the transmission slipping the controller will attempt to place the transmission into third gear and maintain third gear for all forward drive conditions. Another example is some of the CAN bus message issues if the TCM does not receive required information from the Engine Controller, then default values are used which may result in poor transmission shift performance.

3.2.2 MIL ILLUMINATION

For failures detected by the Transmission Controller that result in the controller placing the transmission into a limp-in mode, except for System Overvoltage and System Undervoltage DTCs, the MIL will be illuminated. The Transmission Control Module will inform the ECM over the CAN bus that a failure has occurred. The ECM will illuminate the MIL. If the condition is removed and the failure becomes Stored (Intermittent), the Transmission controller will stop reporting that the DTC is active and the ECM will extinguish the MIL.

NOTE: The MIL will light when the problem is first detected and it will not go off until the next ignition cycle, after all problem conditions have been checked for their presence. This normally takes several minutes of driving.

3.2.3 SOLENOIDS

1-2/4-5 solenoid - The 1-2/4-5 solenoid is activated when the TCM determines that the transmission must shift into or out of 2nd gear or 5th gear. The solenoid is only activated during the shifting of the transmission. When the solenoid is activated, hydraulic pressure is applied to the proper shift elements in the transmission to allow the desired shift. Once the shift is completed, the solenoid is turned off.

2-3 solenoid - The 2-3 solenoid is activated when the TCM determines that the transmission must shift into or out of 3rd gear. The solenoid is only activated during the shifting of the transmission. When the solenoid is activated hydraulic pressure is applied to the proper shift elements in the transmission to allow the desired shift. Once the shift is completed, the solenoid is turned off.

3-4 solenoid - The 3-4 solenoid is activated when the TCM determines that the transmission must shift into or out of 4th gear. The solenoid is only activated during the shifting of the transmission. When the solenoid is activated, hydraulic pressure is applied to the proper shift elements in the transmission to allow the desired shift. Once the shift is completed, the solenoid is turned off.

TCC solenoid - The TCC solenoid is activated when the TCM determines that the Torque converter clutch should be activated. The TCC clutch is a variable slip torque clutch that allows control of torque converter slip from 5% to 95.5% of full TCC engagement. The clutch is controlled by the TCC solenoid which is pulse width modulated (PWM) to provide the desired amount of slip.

Shift Pressure Solenoid - The Shift Pressure Solenoid is activated when the TCM determines that a transmission shift is required. The solenoid is PWM controller to allow the proper amount of hydraulic pressure to the shift elements. The solenoid is only activated during the shifting of the transmission. When the solenoid is activated, hydraulic pressure is removed from the proper shift elements to allow the desired shift. Once the shift is completed, the solenoid is turned off.

Modulation pressure solenoid - The modulation pressure is always active. The solenoid is pulse width modulated (PWM) controlled and is used to modulate the hydraulic system pressure to the desired pressure.

3.2.4 TRANSMISSION COMPONENT DESCRIPTIONS

Shift Assembly

The Shift Lever Selector transmits all selector lever positions, as well as selected shift ranges to the TCM over the CAN Bus. At the same time, the selector lever positions P, R, N, and D are transmitted by a cable to the selector lever shaft in the transmission.

Brake shift inter-lock

To prevent unauthorized shifting out of the park position, the Selector lever is locked in the Park position until the ignition key is turned to the run position and the brake pedal is pressed. This will allow the driver to shift out of the park position.

Reverse Lamp Output

The Reverse Light Switch is integrated into the shifter module and controls the reverse lights.

Reverse Inhibitor

The Shift Lever Assembly constantly monitors ABS wheel speed to prevent an inadvertent selection of reverse at speeds above approximately 6.4 Km/h

(4MPH). The Reverse inhibitor is part of the Shift Lever Assembly and is controlled by the Shift Lever Assembly module.

Trans temp sensor - P/N Switch circuit

The TCM will detect the selector lever in park and neutral positions. The TCM does this by monitoring the Transmission temperature sensor signal along with the shifter position signals. The P/N switch contact is operated by a cam located in the transmission which, opens a reed contact switch that is wired in series with the transmission temperature sensor. When the P/N contact switch is opened in park and neutral, the TCM senses a high transmission temperature. Confirming the P/N switch status. Note: In park or neutral, the TCM uses engine temperature (to avoid setting a DTC). The TCM sends a hardwired signal to the ECM that will allow the ECM controlled start circuit to engage in P or N only. The TCM also sends a P/N bus message to the ECM to confirm the P/N switch status.

The Normal Transmission Temperature Sensor resistance is between 500.0 and 2500.0 ohms. The normal voltage limits for the transmission temperature sensor, are between 0.5 and 3.0 volts.

Input Speed Sensors

The NAG1 transmission has two input speed sensors N2 and N3, both speed sensors are located on the valve body and report DTC's for the input speed sensors errors. The speed sensors are Hall Effect speed sensors that are used by the TCM to calculate the transmissions input speed. Since the input speed could not be measured directly, two of the drive elements are measured. Two input speed sensors were required because both drive elements are not active in all gears. The input sensors N2 and N3 will report the same input speed in gears 2nd, 3rd or 4th. If the N2 and N3 input speed signals are not the same in these gears then there is an issue with the transmission and the DTC Input Sensors Mismatch will be set.

The N3 input speed is not reported in 1st and 5th gears. The N2 sensor is not reported in Reverse. The Input Speed Sensor Overspeed is a rationality check that is intended to indicate a major transmission failure and will cause a loss of drive (place the transmission in Neutral)

Output Speed Sensor (ABS signal)

The NAG1 transmission does not have an output shaft speed sensor. The TCM uses the ABS (Antilock Brake System) Wheel Speed sensor information, it receives over the CAN bus, to calculate the transmissions output shaft speed. The TCM monitors the ABS system for functionality and reports ABS speed sensor and communication DTCs, which will affect proper transmission operation.

GENERAL INFORMATION

3.2.5 TRANSMISSION OPERATION AND SHIFT SCHEDULING

The transmission covered in this manual has unique shift schedules depending on the temperature of the transmission oil. The transmission oil temperature has a decisive effect on the shift quality of the transmission. The shift schedule is modified to extend the life of the transmission while operating under extreme conditions and to improve driver comfort by modifying shift schedules.

The transmission oil temperature is measured with a Temperature Sensor on the NAG1 transmission. The Temperature Sensor is an integral component of the Transmission Solenoid assembly. If the Temperature Sensor is causing a problem, a DTC will be set in the TCM.

The Transmission Temperature Sensor is wired in series with the Park /Neutral (P/N) switch. The P/N switch is also located in the transmission. The transmission temperature is only read by the TCM when the P/N switch closes while in the R, D position. When the shifter lever is in the park or neutral position, the P/N switch opens and the temperature being displayed is Engine temperature.

AutoStick Feature (If equipped)

This feature allows the driver to manually shift the transaxle when the shift lever is moved sideways to the (+ / -) in position D to adjust the shift range.

3.2.6 TRANSMISSION ADAPTIVES - INITIALIZE AND STORE

Initialize Adaptive - This TCM function should be used when a new transmission has been placed in the vehicle. This command will reset the TCM adaptive to the factory setting.

Store Adaptive - This command should be used after the vehicle has been test driven by the technician to store any learned adaptive changes that occurred during the test drive. During normal operation adaptive are updated every 10 minutes. Using this command the latest adaptive will be written to the TCM immediately.

3.3 DIAGNOSTIC TROUBLE CODES

Diagnostic trouble codes (DTC's) are codes stored by the Transmission Control Module (TCM) and the Shift Lever Assembly Module (SLA) to help diagnose Transmission and Shifter problems. They are viewed using the DRBIII® scan tool.

Always begin by performing a visual inspection of the wiring, connectors, cooler lines and the transmission. Any obvious wiring problems or leaks should be repaired prior to performing any diagnostic test procedures. Some engine driveability prob-

lems can be misinterpreted as a transmission problem. Ensure that the engine is running properly and that no ECM DTC's are present that could cause a transmission complaint.

If there is a communication K-ABS, Shifter or K-TCM circuit problem, trouble codes will not be accessible until the problem is fixed. The DRBIII® will display an appropriate message. The following is a possible list of causes for a bus problem:

- open or short to ground/battery in K line circuit.
- internal failure of any module or component connected to the K line circuit

Each diagnostic trouble code is diagnosed by following a specific testing sequence. The diagnostic test procedures contain step-by-step instructions for determining the cause of a transmission diagnostic trouble code. Possible sources of the code are checked and eliminated one by one. It is not necessary to perform all of the tests in this book to diagnose an individual code. These tests are based on the problem being present at the time that the test is run.

If the TCM records a DTC that will adversely affect the vehicles transmission, it will request (via the communication bus) that the ECM illuminate the Malfunction Indicator Lamp (MIL). All transmission DTC's will be stored in the TCM.

3.3.1 ACTIVE (HARD) CODE

Any Diagnostic Trouble Code (DTC) that is set whenever the system or component is monitored is an Active code. This means that the problem is there every time the TCM checks that system or component. Some codes will set immediately at start up and others will require a road test under specific conditions to set the DTC. It must be determined if a code is Active (repeatable) or Stored (Intermittent) before attempting diagnosis.

3.3.2 STORED (INTERMITTENT) CODE

A diagnostic trouble code that is not there every time the TCM checks the circuit or function is a Stored (Intermittent) code. Problems that come and go like this are the most difficult to diagnose, they must be looked for under the specific conditions that cause them. If the DTC is reset (after an ignition cycle) the DTC will be set to Stored (Intermittent) status. A DTC status can be "Active" or "Stored" (Intermittent). Active is when the DTC is present in the controller and the transmission is in the particular mode of operation for that DTC. Stored means that the DTC occurred at some point, but is not currently present, or the conditions have not been right to check for the presence of the problem, when a DTC is classified as Stored (Intermittent), no TCM reaction is required.

Emergency running function

If DTCs occur, safe-driving conditions must be retained but full functionality of the transmission will be limited to avoid damaging the automatic transmission. In the event of certain DTCs the TCM switches to emergency running. The TCM will store the appropriate DTC codes and solenoids will be de-energized (turned off)

The transmission effects will be:

- The last gear shifted remains in that position
- The modulating pressure and shift pressure increase to maximum value
- The torque converter clutch is disengaged (turned off)

Shifting manually after a DTC detection

NOTE: The vehicle can still be shifted manually to 2nd or reverse gear.

To accomplish these shifts you must

Stop the vehicle

Turn the ignition off

Start the engine

Place the selector lever into D for 2nd gear

Place the selector lever into R for reverse gear

The emergency running function is retained until the DTC is eliminated or the stored DTC code is erased.

Stored (Intermittent) DTCs can be reset by cycling the ignition switch

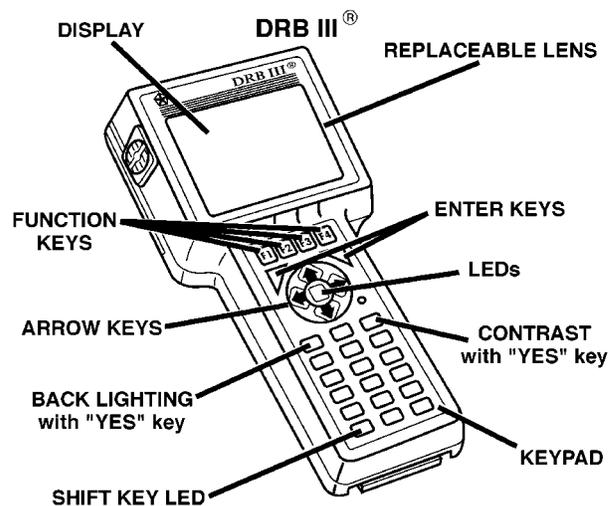
3.3.3 TROUBLE CODE ERASURE

Diagnostic Trouble Codes can be erased in two ways. The first is to erase the DTC with the DRBIII or scan tool. The second is if the DTC is no longer present, the DTC is reset by the TCM (after an ignition cycle), which will place the DTC in an intermittent status (Stored DTC).

When there are no diagnostic trouble codes stored in memory, the DRBIII® will display "NO DTC's DETECTED"

3.4 USING THE DRBIII®

Refer to the DRBIII® user's guide for instructions and assistance with reading trouble codes, erasing trouble codes, and other DRBIII® functions.



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3.5 DRBIII® ERROR MESSAGES

Under normal operation, the DRBIII® will display one of only two error messages:

- User-Requested WARM Boot
- User-Requested COLD Boot

If the DRBIII® should display any other error message, record the entire display and call the S.T.A.R. Center.

3.5.1 DRBIII® DOES NOT POWER UP (BLANK SCREEN)

If the LED's do not light or no sound is emitted at start up, check for loose cable connections or a bad cable. Check the vehicle battery voltage. A minimum of 11 volts is required to adequately power the DRBIII®.

If all connections are proper between the DRBIII® and the vehicle or other devices, and the vehicle battery is fully charged, an inoperative DRBIII® may be the result of faulty cable or vehicle wiring. For a blank screen, refer to the appropriate Body Diagnostic manual.

3.5.2 DISPLAY IS NOT VISIBLE

Low temperatures will affect the visibility of the display. Adjust the contrast to compensate for this condition.

4.0 DISCLAIMERS, SAFETY, AND WARNINGS

4.1 DISCLAIMERS

All information, illustrations, and specifications contained in this manual are based on the latest

GENERAL INFORMATION

information available at the time of publication. The right is reserved to make changes at any time without notice.

4.2 SAFETY

4.2.1 TECHNICIAN SAFETY INFORMATION

WARNING: ENGINES PRODUCE CARBON MONOXIDE THAT IS ODORLESS, CAUSES SLOWER REACTION TIME, AND CAN LEAD TO SERIOUS INJURY. WHEN THE ENGINE IS OPERATING KEEP SERVICE AREAS WELL VENTILATED OR ATTACH THE VEHICLE EXHAUST SYSTEM TO THE SHOP EXHAUST REMOVAL SYSTEM.

Set the parking brake and block the wheels before testing or repairing the vehicle. It is especially important to block the wheels on front-wheel drive vehicles: the parking brake does not hold the drive wheels.

Some operations in this manual require that hydraulic tubes, hoses, and fittings, disconnected for inspection or testing purposes. These systems, when fully charged, contain fluid at high pressure.

Before disconnecting any hydraulic tubes, hoses, and fittings, be sure that the system is fully depressurized.

When servicing a vehicle, always wear eye protection, and remove any metal jewelry such as watchbands or bracelets that might make an inadvertent electrical contact.

When diagnosing a Transmission system problem, it is important to follow approved procedures where applicable. These procedures can be found in the service information. Following these procedures is very important to the safety of individuals performing diagnostic tests.

4.2.2 VEHICLE PREPARATION FOR TESTING

Make sure the vehicle being tested has a fully charged battery. If it does not, false diagnostic DTC's or error messages may occur. It is extremely important that accurate shift lever position data is available to the TCM. The accuracy of any DTC found in memory is doubtful unless the Shift Lever Test, performed on the DRBIII® Scan Tool, passes without failure.

4.2.3 SERVICING SUB-ASSEMBLIES

Some components of the Transmission system are intended to be serviced in assembly only. Attempting to remove or repair certain system sub-components may result in personal injury and/or

improper system operation. Only those components with approved repair and installation procedures in the service information should be serviced.

4.2.4 DRBIII® SAFETY INFORMATION

WARNING: EXCEEDING THE LIMITS OF THE DRBIII® MULTIMETER IS DANGEROUS. IT CAN EXPOSE YOU TO SERIOUS OR POSSIBLY FATAL INJURY. CAREFULLY READ AND UNDERSTAND THE CAUTIONS AND THE SPECIFICATION LIMITS.

- Follow the vehicle manufacturer's service specifications at all times.
- Do not use the DRBIII® if it has been damaged.
- Do not use the test leads if the insulation is damaged or if metal is exposed.
- To avoid electrical shock, do not touch the test leads, tips or the circuit being tested.
- Choose the proper range and function for the measurement. Do not try voltage or current measurements that may exceed the rated capacity.
- Do not exceed the limits shown in the table.

FUNCTION	INPUT LIMIT
Volts	0-500 volts peak AC 0-500 volts DC
Ohms (resistance)*	0-1.12 megohms
Frequency measured Frequency generated	0-10 khz
Temperature	-58-1100°F -50-600C

*Ohms cannot be measured if voltage is present. Ohms can be measured only in a non-powered circuit.

- Voltage between any terminal and ground must not exceed 500v DC or 500v peak AC.
- Use caution when measured voltage above 25v DC or 25v AC.
- The circuit being tested must be protected by a 10A fuse or circuit breaker.
- Use the low current shunt to measure circuits up to 10A. Use the high current clamp to measure circuits exceeding 10A.
- When testing for the presence of voltage or current, make sure the meter is functioning correctly. Take a reading of a known voltage or current before accepting a zero reading.
- When measuring current, connect the meter in series with the load.

- Disconnect the live test lead before disconnecting the common test lead.
- When using the meter function, keep the DRBIII® away from spark plug or coil wires to avoid measuring error from outside interference.

4.3 WARNINGS

4.3.1 VEHICLE DAMAGE WARNINGS

Before disconnecting any control module, make sure the ignition is "lock" position. Failure to do so could damage the module.

When testing voltage or continuity at any control module, use the terminal side (not the wire end) of the connector. Do not probe a wire through the insulation: this will damage the wire and eventually cause the wire to fail because of corrosion.

Be careful when performing electrical tests so as to prevent accidental shorting of terminals. Such mistakes can damage fuses or components. Also, a second DTC could be set, making diagnosis of the original problem more difficult.

When replacing a blown fuse, it is important to use only a fuse having the correct amperage rating. The use of a fuse with a rating other than indicated may result in a dangerous electrical system overload. If a properly rated fuse continues to blow, it indicates a problem in the circuit that must be corrected.

4.3.2 ROAD TESTING A COMPLAINT VEHICLE

Some complaints will require a test drive as part of the repair verification procedure. The purpose of the test drive is to try to duplicate the diagnostic DTC or symptom condition.

CAUTION: Before road testing a vehicle, be sure that all components are reassembled. During the test drive, do not try to read DRBIII® screen while in motion. Do not hang the DRBIII® from the rear view mirror or operate it yourself. Have an assistant available to operate the DRBIII®.

Road testing is an essential step in the diagnostic process that must not be overlooked. Along with the diagnostic information obtained from the DRBIII® Scan Tool and the original customer concern, the road test helps verify the problem was current and any repairs performed, fixed the vehicle correctly. Always operate and observe the vehicle under actual driving conditions.

Just as important as the road test is, there are preliminary inspections that should be performed prior to the road test. Always check the fluid level

and condition before taking the vehicle on a road test. Determine if the incorrect fluid is being used, improper fluid will result in erratic transmission operation.

Some of the conditions of incorrect fluid level are as follows:

- Delayed engagement
- Poor shifting or erratic shifting
- Excessive noise
- Overheating

The next step is to verify that the shift linkage is correctly adjusted. If the shift linkage is incorrectly adjusted, a number of complaints can result.

The TCM monitors the Shift Lever Position (SLP) continuously. If the linkage is incorrectly adjusted, the TCM will sense a shift lever position that is not correct for the gear chosen by the driver. This may cause a DTC to be set.

The following complaints may also be the result of an incorrectly adjusted or worn linkage:

- Delayed clutch engagement
- Erratic shifts
- Vehicle will drive in neutral
- Engine will not crank in park or neutral
- Gear shift linkage will be able to be shifted without the key in the ignition
- Not able to remove the ignition key in park
- Parking pawl will not engage properly

The shift linkage should also be adjusted when replacing the Transmission, repairing the valve body, or when repairing any component between the shift lever and the Transmission.

Some questions to ask yourself when performing the road test are as follows:

- Is the complaint or concern what you think the problem is, based on the drivers description of the problem?
- Is the Transmission operating normally, or is there a real problem?
- When does the problem occur?
- Is the problem only in one gear range?
- What temperature does the problem occur?
- Does the vehicle have to sit over night for the problem to occur?
- Does the transmission go into Limp-in mode?

4.4.4 BULLETINS AND RECALLS

Always perform all Safety Recalls and Technical Service Bulletins that are applicable to the problem.

GENERAL INFORMATION

5.0 REQUIRED TOOLS AND EQUIPMENT

- > DRBIII® (diagnostic read-out box) - DRBIII® must use the latest release level.
- > Jumper wires
- > Test Light
- > Ohmmeter
- > Voltmeter

6.0 GLOSSARY OF TERMS

6.1 ACRONYMS

ABS	Antilock Braking system
A/C	Air conditioner
A/D	Analog to Digital conversion
APP	Accelerator Pedal Position
CAN	Controller Area Network (Vehicle Bus System)
CKT	Circuit
DLC	Data Link Connector
DRBIII®	Diagnostic Readout Box
DTC	Diagnostic Trouble Code
ECM	Diesel Engine Controller
EMCC	Electronically Modulated Converter Clutch
IOD	Ignition off-draw
ISS	Input Speed Sensor (N2 and N3)
K	K line communication bus
LED	Light Emitting Diode
MIL	Malfunction Indicator Lamp

OSS	Output Speed Sensor (derived from the ABS controller)
PEMCC	Partial Electronically Modulated Converter Clutch
PWM	Pulse width modulated
SKREEM	Sentry Key Remote Entry Module
SLA	Shift Lever Assembly
SW	Switch
TCC	Torque Converter Clutch
TCM	Transmission Control Module
TP	Throttle Position
TRD	Torque Reduction
TTS	Transmission Temperature Sensor
1-2/4-5 solenoid	controls the shift into and out of 2nd gear or 5th gear.
V2-3 solenoid	controls the shift into and out of 3rd gear
V3-4 solenoid	controls the shift into and out of 4th gear
VTCC solenoid	is pulse width modulated and controls the TCC clutch
Shift Pressure Solenoid	is a pulse width modulated solenoid and controls the hydraulic pressure to the shift elements.
Modulation pressure solenoid	is a pulse width modulated solenoid and controls the hydraulic system pressure

6.2 DEFINITIONS

Driving cycle counter) - The starts since first set counter indicates the number of driving cycles since the first occurrence of an error.

7.0

DIAGNOSTIC INFORMATION AND
PROCEDURES

Symptom:

***NO RESPONSE FROM SHIFTER ASSEMBLY**

POSSIBLE CAUSES
CHECK POWERS AND GROUNDS TO THE SHIFTER ASSEMBLY CONTROLLER ANTILOCK BRAKE K-ABS, SHIFTER ASSEMBLY CIRCUIT SHORTED TO GROUND CONTROLLER ANTILOCK BRAKE K-ABS, SHIFTER ASSEMBLY CIRCUIT SHORTED TO VOLTAGE K-ABS, SHIFTER ASSEMBLY CIRCUIT OPEN SHIFTER ASSEMBLY

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Shifter Assembly harness connector. Check each power and ground circuit to the module. Were any problems found? Yes → Refer to the wiring diagrams located in the service information to help isolate an open or shorted condition. Repair as necessary. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Disconnect the Shifter Assembly harness connector. Disconnect the DRBIII® from the DLC. Measure the resistance between ground and the K-ABS, Shifter Assembly circuit. Is the resistance below 5.0 ohms? Yes → Go To 3 No → Go To 4	All
3	Turn the ignition off. Disconnect the CAB harness connector. Measure the resistance between ground and the K-ABS, Shifter Assembly circuit. Is the resistance below 5.0 ohms? Yes → Repair the K-ABS, Shifter Assembly circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Replace the Controller Antilock Brake in accordance with the service information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

***NO RESPONSE FROM SHIFTER ASSEMBLY — Continued**

TEST	ACTION	APPLICABILITY
4	<p>Turn the ignition off. Disconnect the DRBIII® from the DLC. Disconnect the Shifter Assembly harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the K-ABS, Shifter Assembly circuit. NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery. Does the test light illuminate brightly?</p> <p>Yes → Go To 5 No → Go To 6</p>	All
5	<p>Turn the ignition off. Disconnect the Controller Antilock Brake harness connector. Turn the ignition on. Using a 12-volt test light connected to ground, probe the K-ABS, Shifter Assembly circuit. NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery. Does the test light illuminate brightly?</p> <p>Yes → Repair the K-ABS, Shifter Assembly circuit for a short to voltage. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Replace the Controller Antilock Brake in accordance with the service information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>Turn the ignition off. Disconnect the Shifter Assembly harness connector. Disconnect the DRBIII® from the DLC. Measure the resistance of the K-ABS, Shifter Assembly circuit between the Shifter Assembly connector and the DLC. Is the resistance below 5.0 ohms?</p> <p>Yes → Replace the Shifter Assembly in accordance with the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Repair the K-ABS, Shifter Assembly circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:

***NO RESPONSE FROM TRANSMISSION CONTROL MODULE**

POSSIBLE CAUSES
CHECK POWERS AND GROUNDS TO THE TRANSMISSION CONTROL MODULE K-TCM CIRCUIT SHORTED TO GROUND K-TCM CIRCUIT SHORTED TO VOLTAGE K-TCM CIRCUIT OPEN TRANSMISSION CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	Turn the ignition off. Disconnect the Transmission Control Module harness connectors. Check each power and ground circuit to the module. Were any problems found? Yes → Refer to the wiring diagrams located in the service information to help isolate an open or shorted condition. Repair as necessary. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 2	All
2	Turn the ignition off. Disconnect the TCM harness connectors. Disconnect the DRBIII® from the DLC. Measure the resistance between ground and the K-TCM circuit. Is the resistance below 5.0 ohms? Yes → Repair the K-TCM circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off. Disconnect the DRBIII® from the DLC. Disconnect the TCM harness connectors. Turn the ignition on. Using a 12-volt test light connected to ground, probe the K-TCM circuit. NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery. Does the test light illuminate brightly? Yes → Repair the K-TCM circuit for a short to voltage. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All

***NO RESPONSE FROM TRANSMISSION CONTROL MODULE — Continued**

TEST	ACTION	APPLICABILITY
4	Turn the ignition off. Disconnect the TCM harness connectors. Disconnect the DRBIII® from the DLC. Measure the resistance of the K-TCM circuit between the TCM connector and the DLC. Is the resistance below 5.0 ohms? Yes → Replace the Transmission Control Module in accordance with the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Repair the K-TCM circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

SHIFT LEVER ASSEMBLY

Symptom:

BACKUP LAMP CKT SHORT TO GROUND

POSSIBLE CAUSES

BACKUP LAMP CIRCUIT SHORT TO GROUND
SHIFT LEVER ASSEMBLY

TEST	ACTION	APPLICABILITY
1	<p>Turn the ignition off to the lock position. Disconnect the Shift Lever Assembly harness connector. Isolate the Backup Lamp circuit, remove the Backup Lamp bulbs. NOTE: Check Backup Lamp bulbs and socket for a short or corrosion. Measure the resistance between ground and the Backup Lamp circuit. Is the resistance below 5.0 ohms?</p> <p>Yes → Repair the Backup Lamp circuit for a short to ground. No → Replace the Shift Lever Assembly per the Service Information.</p>	All

Symptom:

BACKUP LAMP CKT SHORT TO VOLTAGE OR OPEN

POSSIBLE CAUSES
BACKUP LAMP CIRCUIT OPEN BACKUP LAMP CIRCUIT SHORT TO VOLTAGE SHIFT LEVER ASSEMBLY

TEST	ACTION	APPLICABILITY
1	Start the engine. While back probing, measure the voltage of the Backup Lamp circuit. Is the voltage above 0.5 volts? Yes → Go To 2 No → Go To 3	All
2	Turn the ignition off to the lock position. Disconnect the Shift Lever Assembly harness connector. Start the engine. Measure the voltage of the Backup Lamp circuit in the Shift Lever Assembly harness connector. Is the voltage above 0.5 volts? Yes → Repair the Backup Lamp circuit for a short to voltage. No → Replace the Shift Lever Assembly per the Service Information.	All
3	Turn the ignition off to the lock position. Disconnect the Shift Lever Assembly harness connector. Remove the Backup Lamp bulb(s). Connect a jumper wire between Shift Lever Assembly circuit and B(+). Using a 12-volt test light connected to 12-volts, check the Backup Lamp circuit in the Backup Lamp socket(s). NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery. Does the test light illuminate brightly? Yes → Replace the Shift Lever Assembly per the Service Information. No → Repair the Backup Lamp circuit for an open.	All

SHIFT LEVER ASSEMBLY

Symptom:

BACKUP LAMP SUPPLY CIRCUIT OPEN

POSSIBLE CAUSES

FUSED IGNITION SWITCH OUTPUT OPEN
SHIFT LEVER ASSEMBLY

TEST	ACTION	APPLICABILITY
1	<p>Turn the ignition off to the lock position. Disconnect the Shift Lever Assembly harness connector. Start the engine. Using a 12-volt test light connected to ground, check the Fused Ignition Switch Output circuit. NOTE: The test light must illuminate brightly. Compare the brightness to that of a direct connection to the battery. Does the test light illuminate brightly?</p> <p>Yes → Replace the Shift Lever Assembly per the Service Information.</p> <p>No → Repair the Fused Ignition Switch Output circuit for an open. If the fuse is open, make sure to check for a short to ground.</p>	All

Symptom:
CAN BUS CIRCUIT

POSSIBLE CAUSES
CAN COMMUNICATION FAILURE CAN BUS (+) OR (-) OPEN SHIFT LEVER ASSEMBLY

TEST	ACTION	APPLICABILITY
1	<p>With the DRBIII®, read the stored and active DTCs for all modules on the CAN bus. Are other modules reporting CAN bus DTCs?</p> <p style="padding-left: 40px;">Yes → Refer to the reporting category and perform the appropriate symptom. If the ECM is reporting a CAN bus failure, refer to its respective test first.</p> <p style="padding-left: 40px;">No → Go To 2</p>	All
2	<p>Turn the ignition off to the lock position. Disconnect the ECM harness connector. Disconnect the SLA harness connector. Measure the resistance of both the CAN bus (+) and CAN bus (-) circuits from the ECM harness connector to the SLA harness connector. Is the resistance above 5.0 ohms and/or either circuit?</p> <p style="padding-left: 40px;">Yes → Repair the CAN bus (+) and/or (-) circuits for an open.</p> <p style="padding-left: 40px;">No → Replace the Shift Lever Assembly per the Service Information.</p>	All

SHIFT LEVER ASSEMBLY

Symptom:

INCORRECT CAN MESSAGE FROM ABS

POSSIBLE CAUSES

ABS - INTERNAL

SLA - INTERNAL

TEST	ACTION	APPLICABILITY
1	<p>Turn the ignition off to the lock position. Replace the ABS Control Module per the Service Information. Ignition on, engine not running. With the DRBIII®, erase Transmission DTCs. Start the engine and with the brakes firmly applied place the gear selector into Drive. With the DRBIII®, read Transmission DTCs. Did the DTC, ABS CAN MESSAGES INCORRECT, reset?</p> <p>Yes → Replace the Shift Lever Assembly per the Service Information.</p> <p>No → Test complete.</p>	All

Symptom:
INTERNAL CONTROLLER

POSSIBLE CAUSES
INTERNAL CONTROLLER

Repair Instructions:

INTERNAL CONTROLLER

The Shift Lever Assembly has detected an internal fault. Replace the Shift Lever Assembly.

SHIFT LEVER ASSEMBLY

Symptom:

LR WHEEL SPIN CAN MESSAGE NOT VALID

POSSIBLE CAUSES

ABS WHEEL SPEED SENSOR DTCS PRESENT
ABS CONTROL MODULE
SHIFT LEVER ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, read ABS DTCs. Are there any CAN bus or Wheel Speed Sensor DTCs present? Yes → Refer to the ABS category and perform the appropriate symptom. No → Go To 2	All
2	Replace the ABS Control Module per the Service Information. Verify if the DTC returns. NOTE: It may be necessary to drive the vehicle to verify the repair. Does the DTC return? Yes → Replace the Shift Lever Assembly per the Service Information. No → Test Complete.	All

Symptom:
OVER VOLTAGE

POSSIBLE CAUSES
ENGINE CHARGING SYSTEM DTC'S PRESENT CHECK VOLTAGE AT SLA SHIFT LEVER ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, read Engine DTC's. Are there any Engine Charging System DTC's present? Yes → Refer to the Charging category and perform the appropriate symptom. No → Go To 2	All
2	Turn the ignition off to the lock position. Disconnect the Shift Lever Assembly harness connector. Start the engine and raise the engine speed to 1500 RPM. Measure the Transmission Relay Output voltage at the Shift Lever Assembly harness connector. Is the voltage above 16.0 volts, ± 0.3 volts? Yes → Repair the Transmission relay Output circuit for over voltage. Due to a direct connection to the generator, check output voltage at the generator and repair as necessary. No → Replace the Shift Lever Assembly per the Service Information.	All

SHIFT LEVER ASSEMBLY

Symptom:

RR WHEEL SPIN CAN MESSAGE NOT VALID

POSSIBLE CAUSES

ABS WHEEL SPEED SENSOR DTCS PRESENT
ABS CONTROL MODULE
SHIFT LEVER ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, read ABS DTCs. Are there any CAN bus or Wheel Speed Sensor DTCs present? Yes → Refer to the ABS category and perform the appropriate symptom. No → Go To 2	All
2	Replace the ABS Control Module per the Service Information. Verify if the DTC returns. NOTE: It may be necessary to drive the vehicle to verify the repair. Does the DTC return? Yes → Replace the Shift Lever Assembly per the Service Information. No → Test Complete.	All

Symptom:
UNDER VOLTAGE

POSSIBLE CAUSES
ENGINE CHARGING SYSTEM DTC'S PRESENT TRANSMISSION RELAY OUTPUT CIRCUIT LOW AT SLA SHIFT LEVER ASSEMBLY

TEST	ACTION	APPLICABILITY
1	With the DRBIII®, read Engine DTC's. Are there any Engine Charging System DTC's present? Yes → Refer to the Charging category and perform the appropriate symptom. No → Go To 2	All
2	Turn the ignition off to the lock position. Disconnect the Shift Lever Assembly harness connector. Start the engine. Increase the Engine Speed to 1500 RPM. Measure the voltage of the Transmission Relay Output circuit in the Shift Lever Assembly harness connector. Is the voltage below 9.0 volts? Yes → Repair the Transmission Relay Output circuit for an open or high resistance. No → Replace the Shift Lever Assembly per the Service Information.	All

Symptom List:

1-2/4-5 SOLENOID CIRCUIT

1-2/4-5 SOLENOID CIRCUIT SHORT TO GROUND

**Test Note: All symptoms listed above are diagnosed using the same tests.
The title for the tests will be 1-2/4-5 SOLENOID CIRCUIT.**

When Monitored and Set Condition:

1-2/4-5 SOLENOID CIRCUIT

When Monitored: Always monitored with system active at each ignition cycle.

Set Condition: If the TCM detects a short to ground or battery on the solenoid control circuit, shorted solenoid, open solenoid, or an open or shorted solenoid control circuit driver in the TCM.

1-2/4-5 SOLENOID CIRCUIT SHORT TO GROUND

When Monitored: Always monitored with system active at each ignition cycle.

Set Condition: If the TCM detects a short to ground or battery on the solenoid control circuit, shorted solenoid, open solenoid, or an open or shorted solenoid control circuit driver in the TCM.

POSSIBLE CAUSES

INTERMITTENT WIRING AND CONNECTORS

1-2/4-5 SOLENOID CONTROL CIRCUIT OPEN

1-2/4-5 SOLENOID CONTROL CIRCUIT SHORT TO GROUND

1-2/4-5 SOLENOID CONTROL CIRCUIT SHORT TO OTHER CIRCUITS

1-2/4-5 SOLENOID

TCM - 1-2/4-5 SOLENOID CIRCUIT

1-2/4-5 SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, erase DTCs.</p> <p>With the DRBIII®, perform the Solenoid Test.</p> <p>With the DRBIII®, read DTCs.</p> <p>Did the DTC, 1-2/4-5 SOLENOID CIRCUIT, reset?</p> <p style="text-align: center;">Yes → Go To 3 No → Go To 7</p>	All
3	<p>Turn the ignition off to the lock position.</p> <p>Disconnect the Transmission Control Module C2 harness connector.</p> <p>Disconnect the Transmission Solenoid Assembly harness connector</p> <p>Note: Check connectors - Clean/repair as necessary.</p> <p>Measure the resistance of the 1-2/4-5 Solenoid Control circuit from the TCM harness connector to the Transmission Solenoid Assembly harness connector.</p> <p>Is the resistance above 5.0 ohms?</p> <p style="text-align: center;">Yes → Repair the 1-2/4-5 Solenoid Control circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4</p>	All
4	<p>Turn the ignition off to the lock position.</p> <p>Disconnect the Transmission Control Module C2 harness connector.</p> <p>Disconnect the Transmission Solenoid Assembly harness connector.</p> <p>Note: Check connectors - Clean/repair as necessary.</p> <p>Measure the resistance between ground and the 1-2/4-5 Solenoid Control circuit.</p> <p>Is the resistance below 5.0 ohms?</p> <p style="text-align: center;">Yes → Repair the 1-2/4-5 Solenoid Control circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5</p>	All

1-2/4-5 SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the 1-2/4-5 Solenoid Control circuit to all other circuits in the Transmission Solenoid Assembly harness connector. Is the resistance below 5.0 ohms between any other circuit? Yes → Repair the 1-2/4-5 Solenoid Control circuit for a short to other circuit-s. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between the 1-2/4-5 Solenoid Control circuit and the Solenoid Supply Voltage Circuit in the Transmission Control Module C2 harness connector. Is the resistance between 2.5 and 6.5 ohms? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Replace the 1-2/4-5 Solenoid per the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. NOTE: Check for any Technical Service Bulletins that may apply. Were there any problems found? Yes → Repair as necessary Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom List:**2-3 SOLENOID CIRCUIT****2-3 SOLENOID CIRCUIT SHORT TO GROUND**

**Test Note: All symptoms listed above are diagnosed using the same tests.
The title for the tests will be 2-3 SOLENOID CIRCUIT.**

When Monitored and Set Condition:**2-3 SOLENOID CIRCUIT**

When Monitored: Always monitored with system active at each ignition cycle.

Set Condition: If the TCM detects a short to ground or battery on the solenoid control circuit, shorted solenoid, open solenoid, or an open or shorted solenoid control circuit driver in the TCM.

2-3 SOLENOID CIRCUIT SHORT TO GROUND

When Monitored: Always monitored with system active at each ignition cycle.

Set Condition: If the TCM detects a short to ground or battery on the solenoid control circuit, shorted solenoid, open solenoid, or an open or shorted solenoid control circuit driver in the TCM.

POSSIBLE CAUSES
INTERMITTENT WIRING AND CONNECTORS
2-3 SOLENOID CONTROL CIRCUIT OPEN
2-3 SOLENOID CONTROL CIRCUIT SHORT TO GROUND
2-3 SOLENOID CONTROL CIRCUIT SHORT TO OTHER CIRCUITS
2-3 SOLENOID
TCM - 2-3 SOLENOID CIRCUIT

2-3 SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, erase DTCs.</p> <p>With the DRBIII®, perform the Solenoid Test.</p> <p>With the DRBIII®, read DTCs.</p> <p>Did the DTC, 2-3 SOLENOID CIRCUIT, reset?</p> <p style="text-align: center;">Yes → Go To 3 No → Go To 7</p>	All
3	<p>Turn the ignition off to the lock position.</p> <p>Disconnect the Transmission Control Module C2 harness connector.</p> <p>Disconnect the Transmission Solenoid Assembly harness connector</p> <p>Note: Check connectors - Clean/repair as necessary.</p> <p>Measure the resistance of the 2-3 Solenoid Control circuit from the TCM C2 harness connector to the Transmission Solenoid Assembly harness connector.</p> <p>Is the resistance above 5.0 ohms?</p> <p style="text-align: center;">Yes → Repair the 2-3 Solenoid Control circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4</p>	All
4	<p>Turn the ignition off to the lock position.</p> <p>Disconnect the Transmission Control Module C2 harness connector.</p> <p>Disconnect the Transmission Solenoid Assembly harness connector.</p> <p>Note: Check connectors - Clean/repair as necessary.</p> <p>Measure the resistance between ground and the 2-3 Solenoid Control circuit.</p> <p>Is the resistance below 5.0 ohms?</p> <p style="text-align: center;">Yes → Repair the 2-3 Solenoid Control circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5</p>	All

2-3 SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the 2-3 Solenoid Control circuit to all other circuits in the Transmission Solenoid Assembly harness connector. Is the resistance below 5.0 ohms between any other circuit? Yes → Repair the 2-3 Solenoid Control circuit for a short to other circuits. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between the 2-3 Solenoid Control circuit and the Solenoid Supply Voltage circuit in the Transmission Control Module C2 harness connector. Is the resistance between 2.5 and 6.5 ohms? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Replace the 2-3 Solenoid per the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. NOTE: Check for any Technical Service Bulletins that may apply. Were there any problems found? Yes → Repair as necessary Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom List:

3-4 SOLENOID CIRCUIT

3-4 SOLENOID CIRCUIT SHORT TO GROUND

**Test Note: All symptoms listed above are diagnosed using the same tests.
The title for the tests will be 3-4 SOLENOID CIRCUIT.**

When Monitored and Set Condition:

3-4 SOLENOID CIRCUIT

When Monitored: Always monitored with system active at each ignition cycle.

Set Condition: If the TCM detects a short to ground or battery on the solenoid control circuit, shorted solenoid, open solenoid, or an open or shorted solenoid control circuit driver in the TCM.

3-4 SOLENOID CIRCUIT SHORT TO GROUND

When Monitored: Always monitored with system active at each ignition cycle.

Set Condition: If the TCM detects a short to ground or battery on the solenoid control circuit, shorted solenoid, open solenoid, or an open or shorted solenoid control circuit driver in the TCM.

POSSIBLE CAUSES

INTERMITTENT WIRING AND CONNECTORS

3-4 SOLENOID CONTROL CIRCUIT OPEN

3-4 SOLENOID CONTROL CIRCUIT SHORT TO GROUND

3-4 SOLENOID CONTROL CIRCUIT SHORT TO OTHER CIRCUITS

3-4 SOLENOID

TCM - 3-4 SOLENOID CIRCUIT

3-4 SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, erase DTCs.</p> <p>With the DRBIII®, perform the Solenoid Test.</p> <p>With the DRBIII®, read DTCs.</p> <p>Did the DTC, 3-4 SOLENOID CIRCUIT, reset?</p> <p style="text-align: center;">Yes → Go To 3 No → Go To 7</p>	All
3	<p>Turn the ignition off to the lock position.</p> <p>Disconnect the Transmission Control Module C2 harness connector.</p> <p>Disconnect the Transmission Solenoid Assembly harness connector</p> <p>Note: Check connectors - Clean/repair as necessary.</p> <p>Measure the resistance of the 3-4 Solenoid Control circuit from the TCM C2 harness connector to the Transmission Solenoid Assembly harness connector.</p> <p>Is the resistance above 5.0 ohms?</p> <p style="text-align: center;">Yes → Repair the 3-4 Solenoid Control circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4</p>	All
4	<p>Turn the ignition off to the lock position.</p> <p>Disconnect the Transmission Control Module C2 harness connector.</p> <p>Disconnect the Transmission Solenoid Assembly harness connector.</p> <p>Note: Check connectors - Clean/repair as necessary.</p> <p>Measure the resistance between ground and the 3-4 Solenoid Control circuit.</p> <p>Is the resistance below 5.0 ohms?</p> <p style="text-align: center;">Yes → Repair the 3-4 Solenoid Control circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5</p>	All

3-4 SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the 3-4 Solenoid Control circuit between all other circuits in the Transmission Solenoid harness connector. Is the resistance below 5.0 ohms between any other circuit? Yes → Repair the 3-4 Solenoid Control circuit for a short to other circuits. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between the 3-4 Solenoid Control circuit and the Solenoid Supply Voltage circuit in the Transmission Control Module C2 harness connector. Is the resistance between 2.5 and 6.5 ohms? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Replace the 3-4 Solenoid per the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. NOTE: Check for any Technical Service Bulletins that may apply. Were there any problems found? Yes → Repair as necessary Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
ABS BRAKE MESSAGE

When Monitored and Set Condition:

ABS BRAKE MESSAGE

When Monitored: Valid Brake CAN message received at least once and CAN Bus Circuit, ABS CAN Message Missing, ABS CAN Message Incorrect are not active.

Set Condition: Signal "brake-light switch" not valid- ABS sending invalid value.

POSSIBLE CAUSES

CAN C BUS CIRCUIT DTC PRESENT
 ABS DTCS PRESENT
 ABS - BRAKE MESSAGE ERROR
 TCM - BRAKE MESSAGE ERROR

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, read Transmission DTCs.</p> <p>NOTE: If the DTC, CAN BUS CIRCUIT, is present, perform diagnostics on that symptom first.</p> <p>Is the DTC, CAN BUS CIRCUIT, present?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All

ABS BRAKE MESSAGE — Continued

TEST	ACTION	APPLICABILITY
3	Ignition on, engine not running. With the DRBIII®, read ABS DTCs. Are there any ABS or bus related DTCs present? Yes → Repair all ABS DTCS before proceeding. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Replace and program the ABS Control Module. With the DRBIII®, erase Transmission DTCs. Start the engine. With the brakes firmly applied, shift the gear selector into drive. With the DRBIII®, read Transmission DTCs. Did the DTC, ABS BRAKE MESSAGE, reset? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
ABS CAN MESSAGE INCORRECT

When Monitored and Set Condition:

ABS CAN MESSAGE INCORRECT

When Monitored: ABS CAN messages received at least once and CAN Bus Circuit (37) is not active

Set Condition: DTC Detected if the number of bytes incorrect for CAN ID.

POSSIBLE CAUSES

ABS - INTERNAL
 TCM - INTERNAL

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Turn the ignition off to the lock position.</p> <p>Replace the ABS Control Module per the Service Information.</p> <p>Ignition on, engine not running.</p> <p>With the DRBIII®, erase Transmission DTCs.</p> <p>Start the engine and with the brakes firmly applied place the gear selector into Drive.</p> <p>With the DRBIII®, read Transmission DTCs.</p> <p>Did the DTC, ABS CAN MESSAGES INCORRECT, reset?</p> <p style="margin-left: 40px;">Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="margin-left: 40px;">No → Test complete. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:
ABS CAN MESSAGE MISSING

When Monitored and Set Condition:

ABS CAN MESSAGE MISSING

When Monitored: CAN Bus Circuit error not present, 1 second after ignition on and not in Park or Neutral, no System Overvoltage or System Undervoltage conditions present, or transmission in Park or Neutral and engine RPM greater than 850 RPM

Set Condition: This DTC is set when a CAN ID was not received in the required time are not being sent from the ABS Controller. NOTE: The ABS controller is powered by the run only ignition feed. This means that this DTC will be set if the key is placed in the start position with the transmission in gear or if in Park or Neutral and the engine RPM is greater than 850 RPM.

POSSIBLE CAUSES

- CAN BUS CIRCUIT DTC PRESENT
- CAN BUS +/- CIRCUIT OPEN
- ABS DTCS PRESENT
- ABS - CAN MESSAGE MISSING
- TCM - CAN MESSAGE MISSING

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

ABS CAN MESSAGE MISSING — Continued

TEST	ACTION	APPLICABILITY
2	Ignition on, engine not running. With the DRBIII®, read Transmission DTCs. NOTE: If the DTC, CAN BUS CIRCUIT, is present, perform diagnostics on that symptom first. Is the DTC, CAN BUS CIRCUIT, present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	Ignition on, engine not running. With the DRBIII®, read ABS DTCs. Are there any performance or bus related ABS DTCs present? Yes → Repair all ABS DTCs before proceeding. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Disconnect the ABS harness connector. Disconnect the TCM C2 harness connector. NOTE: Check connectors - Clean/repair as necessary. Measure the resistance of the CAN Bus + circuit between the ABS harness connector and the TCM C2 harness connector. Measure the resistance of the CAN Bus - circuit between the ABS harness connector and the TCM C2 harness connector. Is the resistance above 5.0 ohms on either circuit? Yes → Repair the CAN BUS + or - circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Replace and program the ABS Control Module. With the DRBIII®, erase Transmission DTCs. Start the engine. With the brakes firmly applied, shift the gear selector into drive. With the DRBIII®, read Transmission DTCs. Did the DTC, ABS CAN MESSAGE MISSING, reset? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test complete. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
ABS LF SENSOR MESSAGE

When Monitored and Set Condition:

ABS LF SENSOR MESSAGE

When Monitored: Valid ABS CAN messages received at least once and the CAN Bus circuit, ABS CAN Message Missing, ABS CAN Message Incorrect are not active

Set Condition: ABS signal "Wheel Speed Front Left" not valid or ABS has detected a sensor failure.

POSSIBLE CAUSES

CAN BUS CIRCUIT DTC PRESENT
 ABS DTCS PRESENT
 ABS CONTROL MODULE - ABS LF SENSOR MESSAGE
 TCM - ABS LF SENSOR MESSAGE

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information. NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms. With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics. With the DRBIII®, read and record all Transmission DTCs. NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller. NOTE: Check for any Technical Service Bulletins that may apply. Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Ignition on, engine not running. With the DRBIII®, read Transmission DTCs. NOTE: If the DTC, CAN BUS CIRCUIT, is present, perform diagnostics on that symptom first. Is the DTC, CAN BUS CIRCUIT, present?</p> <p style="text-align: center;">Yes → Refer to the Transmission category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="text-align: center;">No → Go To 3</p>	All

ABS LF SENSOR MESSAGE — Continued

TEST	ACTION	APPLICABILITY
3	Ignition on, engine not running. With the DRBIII®, read ABS DTCs. Are there any ABS DTCs present? Yes → Refer to the BRAKE category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Replace the ABS Control Module per the Service Information. With the DRBIII®, erase Transmission DTCs. Road test the Vehicle. With the DRBIII®, read Transmission DTCs. Does the DTC, ABS LF SENSOR MESSAGE, reset? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test complete. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
ABS LR SENSOR MESSAGE

When Monitored and Set Condition:

ABS LR SENSOR MESSAGE

When Monitored: Valid ABS CAN messages received at least once and the CAN Bus circuit, ABS CAN Message Missing, ABS CAN Message Incorrect are not active

Set Condition: ABS signal "wheel speed rear left" not valid or ABS has detected a sensor failure.

POSSIBLE CAUSES

CAN BUS CIRCUIT DTC PRESENT
 ABS DTCS PRESENT
 ABS CONTROL MODULE - ABS LR SENSOR MESSAGE
 TCM - ABS LR SENSOR MESSAGE

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information. NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms. With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics. With the DRBIII®, read and record all Transmission DTCs. NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller. NOTE: Check for any Technical Service Bulletins that may apply. Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Ignition on, engine not running. With the DRBIII®, read Transmission DTCs. NOTE: If the DTC, CAN BUS CIRCUIT, is present, perform diagnostics on that symptom first. Is the DTC, CAN BUS CIRCUIT, present?</p> <p style="text-align: center;">Yes → Refer to the Transmission category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="text-align: center;">No → Go To 3</p>	All

ABS LR SENSOR MESSAGE — Continued

TEST	ACTION	APPLICABILITY
3	Ignition on, engine not running. With the DRBIII®, read ABS DTCs. Are there any ABS DTCs present? Yes → Refer to the BRAKE category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Replace the ABS Control Module per the Service Information. With the DRBIII®, erase Transmission DTCs. Road test the Vehicle. With the DRBIII®, read Transmission DTCs. Does the DTC, ABS LR SENSOR MESSAGE, reset? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test complete. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
ABS RF SENSOR MESSAGE

When Monitored and Set Condition:

ABS RF SENSOR MESSAGE

When Monitored: Valid ABS CAN messages received at least once and the CAN Bus circuit, ABS CAN Message Missing, ABS CAN Message Incorrect are not active

Set Condition: ABS signal "Wheel Speed Front Right" not valid or ABS has detected a sensor failure.

POSSIBLE CAUSES

CAN BUS CIRCUIT DTC PRESENT
 ABS DTCS PRESENT
 ABS CONTROL MODULE - ABS RF SENSOR MESSAGE
 TCM - ABS RF SENSOR MESSAGE

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information. NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms. With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics. With the DRBIII®, read and record all Transmission DTCs. NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller. NOTE: Check for any Technical Service Bulletins that may apply. Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Ignition on, engine not running. With the DRBIII®, read Transmission DTCs. NOTE: If the DTC, CAN BUS CIRCUIT, is present, perform diagnostics on that symptom first. Is the DTC, CAN BUS CIRCUIT, present?</p> <p style="text-align: center;">Yes → Refer to the Transmission category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="text-align: center;">No → Go To 3</p>	All

ABS RF SENSOR MESSAGE — Continued

TEST	ACTION	APPLICABILITY
3	Ignition on, engine not running. With the DRBIII®, read ABS DTCs. Are there any ABS DTCs present? Yes → Refer to the BRAKE category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Replace the ABS Control Module per the Service Information. With the DRBIII®, erase Transmission DTCs. Road test the Vehicle. With the DRBIII®, read Transmission DTCs. Does the DTC, ABS RF SENSOR MESSAGE, reset? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test complete. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
ABS RR SENSOR MESSAGE

When Monitored and Set Condition:

ABS RR SENSOR MESSAGE

When Monitored: Valid ABS CAN messages received at least once and the CAN Bus circuit, ABS CAN Message Missing, ABS CAN Message Incorrect are not active

Set Condition: ABS signal "wheel speed rear right" not valid or ABS has detected a sensor failure.

POSSIBLE CAUSES

CAN BUS CIRCUIT DTC PRESENT
 ABS DTCS PRESENT
 ABS CONTROL MODULE - ABS RR SENSOR MESSAGE
 TCM - ABS RR SENSOR MESSAGE

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information. NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms. With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics. With the DRBIII®, read and record all Transmission DTCs. NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller. NOTE: Check for any Technical Service Bulletins that may apply. Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Ignition on, engine not running. With the DRBIII®, read Transmission DTCs. NOTE: If the DTC, CAN BUS CIRCUIT, is present, perform diagnostics on that symptom first. Is the DTC, CAN BUS CIRCUIT, present?</p> <p style="text-align: center;">Yes → Refer to the Transmission category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="text-align: center;">No → Go To 3</p>	All

ABS RR SENSOR MESSAGE — Continued

TEST	ACTION	APPLICABILITY
3	Ignition on, engine not running. With the DRBIII®, read ABS DTCs. Are there any ABS DTCs present? Yes → Refer to the BRAKE category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Replace the ABS Control Module per the Service Information. With the DRBIII®, erase Transmission DTCs. Road test the Vehicle. With the DRBIII®, read Transmission DTCs. Does the DTC, ABS RR SENSOR MESSAGE, reset? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test complete. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:

ACCEL PEDAL SENSOR CAN MESSAGE INCORRECT

When Monitored and Set Condition:

ACCEL PEDAL SENSOR CAN MESSAGE INCORRECT

When Monitored: When a valid Accelerator Pedal Position (APP) CAN Message Received at least once and the DTCs, CAN Bus Circuit, Engine CAN Message Missing and Engine CAN Message Incorrect are not active.

Set Condition: Accelerator Pedal Position (APP) Message not valid or a ECM Engine Sensor DTC detected.

POSSIBLE CAUSES

- CAN BUS CIRCUIT DTC PRESENT
- ENGINE ACCEL PEDAL DTCS PRESENT
- ENGINE COMMUNICATION DTCS PRESENT
- INTERMITTENT WIRING AND CONNECTORS
- ECM - ACCEL PEDAL SENSOR CAN MESSAGE INCORRECT

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

ACCEL PEDAL SENSOR CAN MESSAGE INCORRECT — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTCs. NOTE: If the DTC, CAN BUS CIRCUIT, is present, perform diagnostics on that symptom first. Is the DTC, CAN BUS CIRCUIT, present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, read Transmission DTCs. Is the DTC Accel Pedal Sensor CAN Message Incorrect displayed as ACTIVE? Yes → Go To 4 No → Go To 8	All
4	Ignition on, engine not running. With the DRBIII®, read Engine DTCs. Are there any Engine bus related DTCs present? Yes → Refer to the Communication category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Ignition on, engine not running. With the DRBIII®, read Engine DTCs. Are there any Accel Pedal DTCs present? Yes → Refer to the Driveability category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Replace the Transmission Control Module. NOTE: Perform the transmission verification test. Did the DTC "Accel Pedal Sensor CAN Message Incorrect" reset? Yes → Go To 7 No → Test Complete.	All
7	If there are no possible causes remaining, view repair. Repair Replace the Engine Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
8	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. NOTE: Check for any Technical Service Bulletins that may apply. Were there any problems found? Yes → Repair as necessary Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
CAN BUS CIRCUIT

When Monitored and Set Condition:

CAN BUS CIRCUIT

When Monitored: Always monitored with system active at each ignition cycle.

Set Condition: Open circuit in the CAN C Bus (+) circuit or CAN C Bus (-) circuit, Short to ground of CAN C Bus (+) circuit or CAN C Bus (-) circuit, Short to Voltage of CAN C Bus (+) circuit or CAN C Bus (-) circuit, CAN C Bus (+) circuit shorted to CAN C Bus (-) circuit, or a TCM failure. Note: All CAN message missing DTCS will also be present, which indicates a Bus Failure.

POSSIBLE CAUSES

CAN BUS CIRCUITS OPEN TO SKREEM OR ECM
CAN BUS CIRCUITS OPEN TO TCM
CAN CIRCUITS SHORTED TO GROUND
CAN CIRCUIT SHORT TO VOLTAGE
CAN CIRCUITS SHORTED TOGETHER
MODULE SHORT INTERNALLY
MODULE SHORT TO GROUND
MODULE SHORT TO VOLTAGE
ECM - TERMINATING RESISTOR
SENTRY KEY REMOTE ENTRY MODULE
TRANSMISSION CONTROL MODULE

CAN BUS CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>With the DRBIII®, read the active and stored DTCs for all modules that use CAN Bus communication.</p> <p>NOTE: Due to capabilities of certain controllers that use the CAN Bus, not all modules report CAN Bus DTCs.</p> <p>NOTE: If a total CAN Bus failure transpires, there will be multiple CAN Bus DTCs present in many modules. If the other modules are reporting Transmission CAN Bus messages ONLY, answer No for the following question.</p> <p>Are other modules reporting active or stored CAN Bus communication DTCs?</p> <p style="text-align: center;">Yes → Go To 3 No → Go To 12</p>	All
3	<p>Turn the ignition off to the lock position.</p> <p>Disconnect the negative battery cable.</p> <p>While back probing, measure the resistance between the CAN C Bus (+) and the CAN C Bus (-) in the selected control module harness connector.</p> <p>NOTE: Termination of the CAN Bus is located in the ECM and SKREEM. Both modules use a 120.0 ohm resistor for termination of the CAN Bus. A properly terminated CAN Bus will read 60.0 ohms ± 5.0 ohms.</p> <p>Pick the one that best describes your readings:</p> <p style="text-align: center;">60.0 ohms ± 5.0 ohms. Go To 4</p> <p style="text-align: center;">120.0 ohms ± 5.0 ohms. Go To 10</p> <p style="text-align: center;">Less than 60.0 ohms Go To 8</p>	All

CAN BUS CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
4	<p>Turn the ignition on.</p> <p>While back probing any module harness connector that uses the CAN Bus, measure the voltage between the CAN C Bus (+) circuit and ground.</p> <p>While back probing any module harness connector that uses the CAN Bus, measure the voltage between the CAN C Bus (-) circuit and ground.</p> <p>Is the voltage above 3.0 volts for either circuit?</p> <p style="padding-left: 40px;">Yes → Go To 5</p> <p style="padding-left: 40px;">No → Go To 6</p>	All
5	<p>Turn the ignition off.</p> <p>Using a voltmeter, connect one end to the CAN circuit that previously measured above 3.0 volts, and the other end to ground.</p> <p>NOTE: When performing the following steps, turn the ignition off and WAIT ONE MINUTE, before disconnecting any module. Repeat this for all modules, failure to turn off ignition may result in damaging the disconnected module.</p> <p>Turn the ignition on.</p> <p>Disconnect a CAN Bus module the vehicle is equipped with. Monitor and note the voltmeter reading.</p> <p>NOTE: Repeat the above step for each CAN Bus module until all the modules have been disconnected.</p> <p>NOTE: Refer to the wiring diagrams in the service information to help determine which modules are on the CAN Bus.</p> <p>Is the voltage steadily above 3.0 volts with all the modules disconnected?</p> <p style="padding-left: 40px;">Yes → Repair the CAN C Bus (+) circuit and/or the CAN C Bus (-) circuit for a short to voltage. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Replace the module that when disconnected, the short to voltage was eliminated. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
6	<p>Turn the ignition off.</p> <p>Disconnect the negative battery cable.</p> <p>While back probing, measure the resistance between ground and the CAN C Bus (+) circuit.</p> <p>While back probing, measure the resistance between ground and the CAN C Bus (-) circuit.</p> <p>Is the resistance below 50.0 ohms for either measurement?</p> <p style="padding-left: 40px;">Yes → Go To 7</p> <p style="padding-left: 40px;">No → Go To 8</p>	All

CAN BUS CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	<p>Turn the ignition off. Disconnect the negative battery cable. Using an ohmmeter, connect one end to the CAN Bus circuit that previously measured below 50.0 ohms and the other end to ground. While monitoring the ohmmeter, disconnect a CAN Bus module and record the reading. NOTE: Repeat the above step for each CAN Bus module until all the modules have been disconnected. NOTE: Refer to the wiring diagrams in the service information to help determine which modules are on the CAN Bus. Is the resistance below 50.0 ohms with all the modules disconnected?</p> <p>Yes → Repair the CAN C Bus (+) circuit or the CAN C Bus (-) circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Replace the module that when disconnected, the short to ground was eliminated. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
8	<p>Turn the ignition off. Disconnect the negative battery cable. Disconnect the SKREEM harness connector. Disconnect the ECM harness connectors. Measure the resistance between the CAN C Bus (+) circuit and the CAN C Bus (-) circuit. Is the resistance below 50.0 ohms after disconnecting ECM and SKREEM?</p> <p>Yes → Go To 9</p> <p>No → Go To 10</p>	All
9	<p>Turn the ignition off. Disconnect the negative battery cable. Disconnect the SKREEM harness connector. Disconnect the ECM harness connectors. Measure the resistance between the CAN C Bus (+) circuit and the CAN C Bus (-) circuit at any CAN Bus module harness connector. Disconnect each CAN Bus module harness connector the vehicle is equipped with, one at a time, while monitoring the resistance. NOTE: Refer to the wiring diagrams in the service information to help determine which modules are on the CAN Bus. Is the resistance below 50.0 ohms after disconnecting all the modules?</p> <p>Yes → Repair the CAN C Bus (+) circuit for a short to the CAN C Bus (-) circuit. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Replace the module that when disconnected, the short was eliminated. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

CAN BUS CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
10	Turn the ignition off to the lock position. Disconnect the ECM harness connector. Measure the resistance between the CAN C Bus (+) and CAN C Bus (-) circuits in the ECM harness connector. Is the resistance 120.0 ohms ± 5.0 ohms? Yes → Replace the ECM per the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 11	All
11	Turn the ignition off to the lock position. Reconnect the ECM harness connectors. Disconnect the SKREEM harness connector. NOTE: Check connectors - Clean/repair as necessary. Measure the resistance between the CAN C Bus (+) circuit and the CAN C Bus (-) circuit in the SKREEM harness connector. Is the resistance 120.0 ohms ± 5.0 ohms? Yes → Replace the Sentry Key Remote Entry Module per the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Repair the CAN C Bus (+) and/or CAN C Bus (-) circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
12	Turn the ignition off to the lock position. Disconnect the negative battery cable. Disconnect the TCM harness connectors. NOTE: Check connectors - Clean/repair as necessary. Measure the resistance between the CAN C Bus (+) circuit and the CAN C Bus (-) circuit at the TCM harness connector. Is the resistance 60.0 ohms ± 5.0 ohms? Yes → Replace the Transmission Control Module per the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Repair the CAN C Bus (+) and/or CAN C Bus (-) circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:**CAN MESSAGE FROM ECM FROM SLA****When Monitored and Set Condition:****CAN MESSAGE FROM ECM FROM SLA**

When Monitored:

Set Condition: CAN Bus message received from the Shift Lever Assembly are incorrect.

POSSIBLE CAUSES

CAN BUS CIRCUIT DTC PRESENT
 SHIFT LEVER DTCS PRESENT
 OPEN CAN BUS CIRCUITS AT SHIFT LEVER
 SHIFT LEVER ASSEMBLY

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, read Transmission DTCs.</p> <p>NOTE: If the DTC, CAN BUS CIRCUIT, is present, perform diagnostics on that symptom first.</p> <p>Is the DTC, CAN BUS CIRCUIT, present?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom.</p> <p>No → Go To 3</p>	All

CAN MESSAGE FROM ECM FROM SLA — Continued

TEST	ACTION	APPLICABILITY
3	Ignition on, engine not running. With the DRBIII®, read Shift Lever DTCs. Are there any Shift Lever DTCs present? Yes → Refer to the Shift Lever category and perform the appropriate symptom. No → Go To 4	All
4	Turn the ignition off to the lock position. Disconnect the Shift Lever harness connector. Measure the resistance between the CAN C Bus (+) circuit and the CAN C Bus (-) circuit in the Shift Lever harness connector. Is the resistance 60 ohms, ± 3.0 ohms? Yes → Replace the Shift Lever Assembly per the service information. No → Repair the CAN Bus (+) or the CAN Bus (-) circuit for an open.	All

Symptom:**CONTROL MODULE TCM IS NOT CODED****POSSIBLE CAUSES**

TRANSMISSION CONTROL MODULE FLASH

TEST	ACTION	APPLICABILITY
1	View repair. Repair Flash the Transmission Control Module to the proper level. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
ENGINE CAN MESSAGE INCORRECT

When Monitored and Set Condition:

ENGINE CAN MESSAGE INCORRECT

When Monitored: CAN-ID received at least once and CAN Bus Circuit DTC is not active.

Set Condition: DTC Detected if the number of bytes incorrect for CAN ID.

POSSIBLE CAUSES
ENGINE DTCS PRESENT
ECM - ENGINE CAN MESSAGE INCORRECT
TCM - ENGINE CAN MESSAGE INCORRECT

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, read Engine DTCs.</p> <p>Are there any performance or bus related Engine DTCs present?</p> <p style="padding-left: 40px;">Yes → Refer to the Driveability category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 3</p>	All

ENGINE CAN MESSAGE INCORRECT — Continued

TEST	ACTION	APPLICABILITY
3	Replace and program the ECM per the Service Information. With the DRBIII®, erase Transmission DTCs. Start the engine. With the brakes firmly applied, shift the gear selector into drive. With the DRBIII®, read Transmission DTCs. Did the DTC, ENGINE CAN MESSAGE INCORRECT, reset? Yes → Go To 4 No → Test Complete Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
4	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
ENGINE CAN MESSAGE MISSING

When Monitored and Set Condition:

ENGINE CAN MESSAGE MISSING

When Monitored: CAN Bus circuit error not present, 1 second after ignition on and not in Park or Neutral, no System Overvoltage or System Undervoltage conditions present, or transmission in Park or Neutral and engine RPM greater than 850 RPM.

Set Condition: This DTC is set if a CAN ID was not received in the required time, being sent from the Engine Controller.

POSSIBLE CAUSES
CAN BUS +/- CIRCUIT OPEN
CAN BUS CIRCUIT DTC PRESENT
ENGINE DTCS PRESENT
ECM - ENGINE CAN MESSAGE MISSING
TCM - ENGINE CAN MESSAGE MISSING

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

ENGINE CAN MESSAGE MISSING — Continued

TEST	ACTION	APPLICABILITY
2	Ignition on, engine not running. With the DRBIII®, read Transmission DTCs. NOTE: If the DTC, CAN BUS CIRCUIT, is present, perform diagnostics on that symptom first. Is the DTC, CAN BUS CIRCUIT, present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	Ignition on, engine not running. With the DRBIII®, read Engine DTCs. Are there any performance or bus related Engine DTCs present? Yes → Refer to the Powertrain category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Disconnect the ECM harness connector(s). Disconnect the TCM C2 harness connector. NOTE: Check connectors - Clean/repair as necessary. Measure the resistance of the CAN Bus + circuit between the ECM harness connector and the TCM C2 harness connector. Measure the resistance of the CAN Bus - circuit between the ECM harness connector and the TCM C2 harness connector. Is the resistance above 5.0 ohms on either circuit? Yes → Repair the CAN BUS + or - circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Replace and program the ECM per the Service Information. With the DRBIII®, erase Transmission DTCs. Start the engine. With the brakes firmly applied, shift the gear selector into drive. With the DRBIII®, read Transmission DTCs. Did the DTC, ENGINE CAN MESSAGE MISSING, reset? Yes → Go To 6 No → Test Complete Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
6	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
ENGINE OVERSPEED

When Monitored and Set Condition:

ENGINE OVERSPEED

When Monitored: Valid Engine RPM message received at least once, the CAN Bus Circuit and Engine CAN Message Missing are not active.

Set Condition: If the engine speed increases above 5100 RPM.

POSSIBLE CAUSES

- ENGINE - MECHANICAL PROBLEM
- TRANSMISSION - MECHANICAL PROBLEM
- ECM - ENGINE OVERSPEED
- TCM - ENGINE OVERSPEED

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>Determine if there are any Engine Mechanical problems present.</p> <p>Are there any Engine Mechanical problems present?</p> <p>Yes → Refer to the Service Information for the proper repair procedure. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All

ENGINE OVERSPEED — Continued

TEST	ACTION	APPLICABILITY
3	Determine if there are any Transmission Mechanical problems present. Remove the Transmission Oil Pan and inspect for debris or a plugged Transmission Oil Filter. Is there any debris, plugged Transmission Oil Filter, or signs of an Internal Transmission problem? Yes → Refer to the Service Information for the proper repair procedure. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	NOTE: The Engine and Transmission must not have mechanical problems and be operating normally before proceeding with this test. Turn the ignition off to the lock position. Replace and program the PCM/ECM Control Module per the Service Information. With the DRBIII®, erase Transmission DTCs. Road test the Vehicle. With the DRBIII®, read Transmission DTCs. Does the DTC, ENGINE OVERSPEED, reset? Yes → Go To 5 No → Replacing the ECM has corrected the problem. Perform the Powertrain Verification test. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the TCM. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
ENGINE RPM MESSAGE

When Monitored and Set Condition:

ENGINE RPM MESSAGE

When Monitored: Valid TPS CAN message received at least once CAN Bus Circuit, Engine CAN Message Missing and Engine CAN Message Incorrect are not active.

Set Condition: Signal "engine speed" not valid or PCM/ECM error.

POSSIBLE CAUSES

- CAN BUS CIRCUIT DTC PRESENT
- ENGINE DTCS PRESENT
- ECM - ENGINE RPM MESSAGE
- TCM - ENGINE RPM MESSAGE

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, read Transmission DTCs.</p> <p>NOTE: If the DTC, CAN BUS CIRCUIT, is present, perform diagnostics on that symptom first.</p> <p>Is the DTC, CAN BUS CIRCUIT, present?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All

ENGINE RPM MESSAGE — Continued

TEST	ACTION	APPLICABILITY
3	Ignition on, engine not running. With the DRBIII®, read Engine DTCs. Are there any performance or bus related Engine DTCs present? Yes → Refer to the Driveability category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Replace and program the ECM per the Service Information. With the DRBIII®, erase Transmission DTCs. Start the engine. With the brakes firmly applied, shift the gear selector into drive. With the DRBIII®, read Transmission DTCs. Did the DTC, ENGINE RPM MESSAGE, reset? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
ENGINE TEMP MESSAGE

When Monitored and Set Condition:

ENGINE TEMP MESSAGE

When Monitored: Valid Engine Temp CAN message received at least once and CAN Bus Circuit error, Engine CAN Message Missing and Engine CAN Messages Incorrect are not active.

Set Condition: Engine coolant temperature signal is not valid - indicates possible coolant temperature sensor error.

POSSIBLE CAUSES

- CAN BUS CIRCUIT DTC PRESENT
- ENGINE DTCS PRESENT
- ECM- ENGINE TEMP MESSAGE
- TCM - ENGINE TEMP MESSAGE

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

ENGINE TEMP MESSAGE — Continued

TEST	ACTION	APPLICABILITY
2	Ignition on, engine not running. With the DRBIII®, read Transmission DTCs. NOTE: If the DTC, CAN BUS CIRCUIT is present, perform diagnostics on that symptom first. Is the DTC, CAN BUS CIRCUIT, present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	Ignition on, engine not running. With the DRBIII®, read Engine DTCs. Are there any Engine Temperature Sensor DTCs present? Yes → Refer to the Driveability category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Replace and program the ECM per the Service Information. With the DRBIII®, erase Transmission DTCs. Start the engine. With the brakes firmly applied, shift the gear selector into drive. With the DRBIII®, read Transmission DTCs. Did the DTC, ENGINE TEMP MESSAGE, reset? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test complete. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
ENGINE TORQUE MESSAGE INCORRECT

When Monitored and Set Condition:

ENGINE TORQUE MESSAGE INCORRECT

When Monitored: Valid Torque CAN messages received at least once and CAN Bus Circuit, Engine CAN Message Missing and Engine CAN Message Incorrect are not active.

Set Condition: Engine torque message not valid or PCM/ECM controller error.

POSSIBLE CAUSES

ENGINE DTCS PRESENT
 PCM/ECM - ENGINE TORQUE MESSAGE INCORRECT
 TCM - TORQUE MESSAGE INCORRECT

TEST	ACTION	APPLICABILITY
<p>1</p>	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information. NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms. With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics. With the DRBIII®, read and record all Transmission DTCs. NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller. NOTE: Check for any Technical Service Bulletins that may apply. Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	<p>All</p>
<p>2</p>	<p>Ignition on, engine not running. With the DRBIII®, read Engine DTCs. Are there any performance or bus related Engine DTCs present?</p> <p style="text-align: center;">Yes → Refer to the Powertrain category and perform the appropriate symptom. No → Go To 3</p>	<p>All</p>

ENGINE TORQUE MESSAGE INCORRECT — Continued

TEST	ACTION	APPLICABILITY
3	Replace and program the ECM per the Service Information. With the DRBIII®, erase Transmission DTCs. Drive the vehicle performing multiple aggressive upshifts and downshifts. With the DRBIII®, read Transmission DTCs. Did the DTC, ENGINE TORQUE MESSAGE INCORRECT, reset? Yes → Go To 4 No → Test Complete Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
4	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
ENGINE TORQUE REDUCTION

When Monitored and Set Condition:

ENGINE TORQUE REDUCTION

When Monitored: Engine intervention active for at least 20 ms, no engine torque errors, engine torque demand is greater than 0.

Set Condition: Torque Reduction acknowledge bit - not set, no shift aborts, the error flag "torque reduction acknowledge" is not set, Engine controller not supporting torque requests.

POSSIBLE CAUSES

- CAN BUS CIRCUIT DTC PRESENT
- CAN C BUS +/- CIRCUIT OPEN
- ENGINE DTCS PRESENT
- PCM/ECM - ENGINE CAN MESSAGE MISSING
- TCM - ENGINE CAN MESSAGE MISSING

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

ENGINE TORQUE REDUCTION — Continued

TEST	ACTION	APPLICABILITY
2	Ignition on, engine not running. With the DRBIII®, read Transmission DTCs. NOTE: If the DTC CAN BUS CIRCUIT is present, perform diagnostics on that symptom first. Is the DTC, CAN BUS CIRCUIT, present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	Turn the ignition off to the lock position. Disconnect the PCM/ECM harness connector(s). Disconnect the TCM C2 harness connector. Measure the resistance of the CAN C Bus + circuit between the PCM/ECM harness connector and the TCM C2 harness connector. Measure the resistance of the CAN C Bus - circuit between the PCM/ECM harness connector and the TCM C2 harness connector. Is the CAN C Bus + or - circuit open? Yes → Repair the CAN C BUS + or - circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Ignition on, engine not running. With the DRBIII®, read Engine DTCs. Are there any performance or bus related Engine DTCs present? Yes → Refer to the Powertrain category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Replace and program the PCM/ECM per the Service Information. With the DRBIII®, erase Transmission DTCs. Start the engine. With the brakes firmly applied, shift the gear selector into drive. With the DRBIII®, read Transmission DTCs. Did the DTC, ENGINE CAN MESSAGE MISSING, reset? Yes → Go To 6 No → Test Complete Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
6	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
IC CAN MESSAGE INCORRECT

When Monitored and Set Condition:

IC CAN MESSAGE INCORRECT

When Monitored:

Set Condition: CAN Bus messages received from the Instrument Cluster are incorrect.

POSSIBLE CAUSES
CAN BUS CIRCUIT DTC PRESENT INSTRUMENT CLUSTER DTCS PRESENT OPEN CAN CIRCUITS AT INSTRUMENT CLUSTER INSTRUMENT CLUSTER

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, read Transmission DTCs.</p> <p>NOTE: If the DTC, CAN BUS CIRCUIT, is present, perform diagnostics on that symptom first.</p> <p>Is the DTC, CAN BUS CIRCUIT, present?</p> <p style="padding-left: 40px;">Yes → Refer to the Transmission category and perform the appropriate symptom.</p> <p style="padding-left: 40px;">No → Go To 3</p>	All

IC CAN MESSAGE INCORRECT — Continued

TEST	ACTION	APPLICABILITY
3	Ignition on, engine not running. With the DRBIII®, read Instrument Cluster DTCs. Are there any Instrument Cluster DTCs present? Yes → Refer to the INSTRUMENT CLUSTER category and perform the appropriate symptom. No → Go To 4	All
4	Turn the ignition off to the lock position. Disconnect the Instrument Cluster C1 harness connector. Measure the resistance between the CAN C Bus (+) circuit and the CAN C Bus (-) circuit in the Instrument Cluster harness connector. Is the resistance 60 ohms, ± 3.0 ohms? Yes → Replace the Instrument Cluster per the service information. No → Repair the CAN C Bus (+) or the CAN C Bus (-) circuit for an open.	All

Symptom:
IC/ATC CAN MESSAGE MISSING

POSSIBLE CAUSES
CAN BUS CIRCUIT DTC PRESENT AUTOMATIC TEMP CONTROL DTCS PRESENT INSTRUMENT CLUSTER DTCS PRESENT OPEN CAN BUS CIRCUITS AT INSTRUMENT CLUSTER OPEN CAN BUS CIRCUITS AUTOMATIC TEMP CONTROL AUTOMATIC TEMP CONTROL INSTRUMENT CLUSTER

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, read Transmission DTCs.</p> <p>NOTE: If the DTC, CAN BUS CIRCUIT, is present, perform diagnostics on that symptom first.</p> <p>Is the DTC, CAN BUS CIRCUIT, present?</p> <p style="padding-left: 40px;">Yes → Refer to the Transmission category and perform the appropriate symptom.</p> <p style="padding-left: 40px;">No → Go To 3</p>	All
3	<p>NOTE: NOTE: If vehicle is equipped with Air Conditioning diagnose the ATC system first.</p> <p>Is the vehicle equipped with air conditioning?</p> <p style="padding-left: 40px;">Yes → Go To 4</p> <p style="padding-left: 40px;">No → Go To 6</p>	All

IC/ATC CAN MESSAGE MISSING — Continued

TEST	ACTION	APPLICABILITY
4	Ignition on, engine not running. With the DRBIII®, read Automatic Temp Control DTCs. Are there any ATC DTCs present? Yes → Refer to the Heating and A/C category and perform the appropriate symptom. No → Go To 5	All
5	Turn the ignition off to the lock position. Disconnect the ATC harness connector. Measure the resistance between the CAN Bus (+) circuit and the CAN Bus (-) circuit in the ATC harness connector. Is the resistance 60 ohms, ± 3.0 ohms? Yes → Replace the Automatic Temp Control per the service information. No → Repair the CAN C Bus (+) or the CAN C Bus (-) circuit for an open.	All
6	NOTE: If vehicle is equipped with Air Conditioning diagnose the ATC system first. Ignition on, engine not running. With the DRBIII®, read Instrument Cluster or Automatic Temp Control DTCs. Are there any Instrument Cluster DTCs present? Yes → Refer to the INSTRUMENT CLUSTER category and perform the appropriate symptom. No → Go To 7	All
7	Turn the ignition off to the lock position. Disconnect the Instrument Cluster C1 harness connector. Measure the resistance between the CAN Bus (+) circuit and the CAN Bus (-) circuit in the Instrument Cluster harness connector. Is the resistance 60 ohms, ± 3.0 ohms? Yes → Replace the Instrument Cluster per the service information. No → Repair the CAN C Bus (+) or the CAN C Bus (-) circuit for an open.	All

Symptom:
IMPROPER GEAR

When Monitored and Set Condition:

IMPROPER GEAR

When Monitored: Engine RPM greater than 450 and output speed (ABS) greater than 180 RPM. No Input Speed sensor N2 - N3, Shift lever, and/or ABS wheel speed DTCs present.

Set Condition: The TCM compares the calculated gear with the gear the transmission has actually engaged. If the actual gear differs from the gear calculated by the TCM, the TCM value is adjusted to the engaged gear and a counter is increased by 2. If after a shift the engaged gear and the calculated gear still match, the counter is decreased by 1 point. A DTC is detected as soon as the counter exceeds a threshold. If the fault is detected 3 consecutive ignition cycles the transmission will be placed in Limp-in and the MIL activated.

POSSIBLE CAUSES

- ABS DTCS PRESENT
- SOLENOID DTCS PRESENT
- INTERNAL TRANSMISSION
- TCM - IMPROPER GEAR

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

IMPROPER GEAR — Continued

TEST	ACTION	APPLICABILITY
2	Ignition on, engine not running. With the DRBIII®, read Transmission DTCs. Are there any Transmission Solenoid DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	With the DRBIII®, read ABS DTCs. Are there any ABS DTCs present? Yes → Refer to the ABS category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Remove and inspect the Transmission Valve Body and Electrohydraulic Control Unit Assembly per the Service Information. NOTE: This DTC is usually set due to an internal transmission problem such as but not limited to: stuck solenoid or valve and/or contamination in the valve body, broken springs, leaking clutch seals, dislodged or broken snap ring. Inspect internal transmission per the Service Information. Where there are any problems found? Yes → Repair internal transmission as necessary. Refer to the Service Information for the proper repair procedure. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
IMPROPER RATIO

When Monitored and Set Condition:

IMPROPER RATIO

When Monitored: Engine rpm greater than 450 rpm, output speed greater than 180 rpm, no N2 - N3 input speed sensor errors present, no gear selector lever errors present, no ABS system errors, and all wheel speeds above 450 rpm.

Set Condition: No shifting operation and detected gear is not the actual gear No shifting operation - detected (calculated) gear is less than actual(expected) gear or no plausible gear is calculated or Actual turbine speed - calculated turbine speed > 300 rpm or calculated transmission ratio is above threshold. During an Upshift - detected (calculated) gear is less than actual(expected) gear-1. During Downshift - detected (calculated) gear is less than actual (expected) gear

POSSIBLE CAUSES

TRANSMISSION MECHANICAL PROBLEM

TCM - IMPROPER RATIO

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

IMPROPER RATIO — Continued

TEST	ACTION	APPLICABILITY
2	<p>Determine if there are any Transmission Mechanical problems present. Remove the Transmission Oil Pan and inspect for debris or a plugged Transmission Oil Filter. Refer to the Service Information for proper removal and inspection procedures. Is there any Debris, plugged Transmission Oil filter, or signs of an Internal Transmission problem?</p> <p>Yes → Refer to the Service Information for the proper repair procedure. Pay particular attention to the Valve body components and stuck solenoids. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:
INPUT SENSOR MISMATCH

When Monitored and Set Condition:

INPUT SENSOR MISMATCH

When Monitored: Engine speed greater than 450 rpm, no engine speed DTC's, no TCM under-voltage system operation, no output speed sensor DTC's (signal from the ABS system), all wheel speeds above 250 rpm (signal from the ABS system), no rear wheel speed DTC's (signal from the ABS system), and no wheel slip detected (signal from the ABS system), no shifting operation, N3 input speed sensor greater than 800 rpm and N2 input speed sensor greater than 0 rpm and the TCM not in reset.

Set Condition: If the speed difference between the N2 and N3 input speed sensors is greater than 150 rpm.

POSSIBLE CAUSES

- SPEED SENSOR DTCS PRESENT
- INTERMITTENT WIRING AND CONNECTORS
- INTERNAL TRANSMISSION
- TCM - INPUT SPEED SENSOR MISMATCH

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

INPUT SENSOR MISMATCH — Continued

TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read DTCs. Are any Speed Sensor or Sensor Supply DTCs present? Yes → Repair any Speed Sensor and/or Sensor Supply DTCs before proceeding with test. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	Ignition on, engine not running. With the DRBIII®, erase Transmission DTCs. Start the engine. Drive the vehicle to speeds to allow multiple 2-3 and 3-4 upshifts. Does the DTC "INPUT SENSOR MISMATCH" reset and displayed as "ACTIVE"? Yes → Go To 4 No → Go To 6	All
4	Remove the Transmission Oil Pan and inspect for debris or a plugged Transmission Oil Filter. Is there any debris, plugged Transmission Oil Filter, or signs of an Internal Transmission problem? Yes → Repair Internal Transmission as necessary. Pay particular attention to the Electrohydraulic Control unit. Refer to the Service Information for proper repair procedures. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
6	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. NOTE: Check for any Technical Service Bulletins that may apply. Were there any problems found? Yes → Repair as necessary Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
INPUT SENSOR OVERSPEED

When Monitored and Set Condition:

INPUT SENSOR OVERSPEED

When Monitored: Whenever the N2 input speed sensor is greater than 0 rpm

Set Condition: If the rpm of the N2 or N3 input speed sensor is greater than 7700 rpm

POSSIBLE CAUSES

INTERMITTENT WIRING AND CONNECTORS

INTERNAL TRANSMISSION

TCM - INPUT SENSOR OVERSPEED

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

INPUT SENSOR OVERSPEED — Continued

TEST	ACTION	APPLICABILITY
2	Ignition on, engine not running. With the DRBIII®, erase Transmission DTCs. Raise the vehicle on the hoist. Start the engine. NOTE: This condition indicates a catastrophic transmission failure. With the DRBIII® in Sensors, monitor the N2 and N3 Speed Sensors. Firmly apply the brakes and place the gear selector in Drive (D). Release the brakes and raise the engine RPM to allow the Transmission to upshift to the 2-3 and 3-4 shift schedule. CAUTION: BE SURE TO KEEP HANDS AND FEET CLEAR OF ROTATING WHEELS. Did either the N2 or N3 Speed Sensors display a RPM above 7700? Yes → Go To 3 No → Go To 5	All
3	Remove the Transmission Oil Pan and inspect for debris or a plugged Transmission Oil Filter. Is there any debris, plugged Transmission Oil Filter, or signs of an Internal Transmission problem? Yes → Repair Internal Transmission as necessary. Pay particular attention to the Electrohydraulic Control unit. Refer to the Service Information for proper repair procedures. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
5	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. NOTE: Check for any Technical Service Bulletins that may apply. Were there any problems found? Yes → Repair as necessary Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
INTERNAL CONTROLLER

When Monitored and Set Condition:

INTERNAL CONTROLLER

When Monitored: Always monitored with system active at each ignition cycle

Set Condition: This code is set whenever Transmission Control Module (TCM) senses an internal error. If this Internal Controller DTC is set with any Solenoid DTC's repair the Solenoid DTC's first, erase all DTC's, then verify the Internal Controller DTC sets before replacing the TCM.

POSSIBLE CAUSES

TCM - INTERNAL ERROR

TEST	ACTION	APPLICABILITY
1	If there are no possible causes remaining, view repair. Repair The Transmission Control Module is reporting internal errors and must be replaced. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
INVALID CONTROL MODULE VERSION

POSSIBLE CAUSES
TRANSMISSION CONTROL MODULE INVALID CONTROL MODULE

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Validate if the TCM part number and flash is correct for the vehicle. Is the TCM part number and flash correct for the vehicle?</p> <p style="padding-left: 40px;">Yes → Replace the Transmission Control Module per the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Flash the controller is applicable. If the controller has the wrong part number or cannot be flashed, replace the TCM per the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:

MODULATING PRESSURE SOLENOID CIRCUIT

When Monitored and Set Condition:

MODULATING PRESSURE SOLENOID CIRCUIT

When Monitored: Always monitored with system active at each ignition cycle.

Set Condition: If the TCM detects a short to ground or battery on the solenoid control circuit, shorted solenoid, open solenoid, or an open or shorted solenoid control circuit driver in the TCM.

POSSIBLE CAUSES

INTERMITTENT WIRING AND CONNECTORS

MOD. PRESS SOLENOID CONTROL CIRCUIT OPEN

MOD. PRESS SOLENOID CONTROL CIRCUIT SHORT TO GROUND

MOD. PRESS SOLENOID CONTROL CIRCUIT SHORT TO OTHER CIRCUITS

MOD PRESS SOLENOID

TCM - MOD. PRESS SOLENOID CIRCUIT

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

MODULATING PRESSURE SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	Ignition on, engine not running. With the DRBIII®, erase DTCs. With the DRBIII®, perform the Solenoid Test With the DRBIII®, read DTCs. Did the DTC, Mod Press SOLENOID CIRCUIT, reset? Yes → Go To 3 No → Go To 7	All
3	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Mod. Press Solenoid Control circuit from the TCM C2 harness connector to the Transmission Solenoid Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Mod. Press Solenoid Control circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the Mod. Press Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the Mod. Press Solenoid Control circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Mod Press Solenoid Control circuit to all other circuits in the Transmission Solenoid Assembly harness connector. Is the resistance below 5.0 ohms between any other circuit? Yes → Repair the Mod. Press Solenoid Control circuit for a short to other circuits. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All

MODULATING PRESSURE SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
6	<p>Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between the Mod Press Solenoid Control circuit and the Solenoid Supply Voltage circuit in the Transmission Control Module C2 harness connector. Is the resistance between 4.0 and 8.0 ohms?</p> <p>Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Replace the Mod Press Solenoid per the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
7	<p>The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. NOTE: Check for any Technical Service Bulletins that may apply. Were there any problems found?</p> <p>Yes → Repair as necessary Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All

Symptom:**N2 INPUT SPEED SENSOR CIRCUIT****When Monitored and Set Condition:****N2 INPUT SPEED SENSOR CIRCUIT**

When Monitored: Engine speed greater than 450 rpm, no engine speed DTC's, no TCM under-voltage system operation, no output speed sensor DTC's (signal from the ABS system), all wheel speeds above 250 rpm (signal from the ABS system), no rear wheel speed DTC's (signal from the ABS system), and no wheel slip detected (signal from the ABS system).

Set Condition: If the N2 input speed sensor is equal to 0 rpm or a short to ground, short to battery, open input speed sensor, faulty input speed sensor, open sensor supply circuit.

POSSIBLE CAUSES

INTERMITTENT WIRING AND CONNECTORS
SENSOR SUPPLY VOLTAGE CIRCUIT OPEN
N2 INPUT SPEED SENSOR SIGNAL CIRCUIT OPEN
N2 SPEED SENSOR SIGNAL CIRCUIT SHORT TO OTHER CIRCUIT
SENSOR GROUND CIRCUIT OPEN
SENSOR GROUND CIRCUIT SHORT TO OTHER CIRCUIT
N2 INPUT SPEED SENSOR SIGNAL CIRCUIT SHORT TO GROUND
SENSOR GROUND CIRCUIT SHORT TO GROUND
N2 INPUT SPEED SENSOR
TCM - N2 INPUT SPEED SENSOR

N2 INPUT SPEED SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Turn the ignition off to the lock position.</p> <p>Disconnect the TCM C2 harness connector.</p> <p>Disconnect the Transmission Solenoid harness connector.</p> <p>NOTE: Check connectors - Clean/repair as necessary.</p> <p>Measure the resistance of the Sensor Supply Voltage circuit between the TCM connector and the Transmission Solenoid Assembly connector</p> <p>Is the resistance above 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the Sensor Supply Voltage circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 3</p>	All
3	<p>With the DRBIII®, read DTCs.</p> <p>NOTE: The vehicle must be driven to at least 32 Km/h (20 MPH) for this DTC to be displayed as active.</p> <p>Is the Warm up counter displayed and equal to 0?</p> <p style="padding-left: 40px;">Yes → Go To 4</p> <p style="padding-left: 40px;">No → Go To 12</p>	All
4	<p>Turn the ignition switch to the lock position</p> <p>Disconnect the TCM C2 harness connector.</p> <p>Disconnect the Transmission Solenoid Assembly harness connector.</p> <p>Note: Check connectors - Clean/repair as necessary.</p> <p>Measure the resistance of the N2 Input Speed Sensor Signal circuit from the TCM connector to the Transmission Solenoid Assembly connector.</p> <p>Is the resistance above 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the N2 Input Speed Sensor Signal circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 5</p>	All

N2 INPUT SPEED SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off to the lock position. Disconnect the TCM C2 harness connectors. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Sensor Ground circuit from the TCM C2 harness connector to the Transmission Solenoid Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Sensor Ground circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the N2 Speed Sensor Signal circuit to all other circuits in the Transmission Solenoid harness connector. Is the resistance below 5.0 ohms between any other circuit? Yes → Repair the N2 Speed Sensor Signal circuit for a short to other circuit-s. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the N2 Input Speed Sensor Signal circuit. Is the resistance Below 5.0 ohms? Yes → Repair the N2 Input Speed Sensor Signal circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Sensor Ground circuit to all other circuits in the Transmission Solenoid harness connector. Is the resistance below 5.0 ohms between any other circuit? Yes → Repair the Sensor Ground circuit for a short to other circuits. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All

N2 INPUT SPEED SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off to the lock position. Disconnect the TCM C2 harness connectors. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the Sensor Ground circuit. Is the resistance Below 5.0 ohms? Yes → Repair the Sensor Ground circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Turn the ignition off to the lock position. With the DRBIII®/PEP Module being used as a Dual Channel Lab Scope with Miller Special tool #6801. Backprobe N2 Input Speed Sensor Signal circuit using Channel 1 at the TCM harness connector. Raise all drive wheels off the ground. CAUTION: Properly support vehicle Start the engine. Place gear selector in drive and increase vehicle speed to engage 2nd gear CAUTION: BE SURE TO KEEP HANDS AND FEET CLEAR OF ROTATING WHEELS. Compare the Scope Pattern on the DRBIII® with a typical 5-volt square wave pattern. Does the scope pattern match a typical 5 volt square wave Signal Scope Pattern? Yes → Go To 11 No → Replace the N2 Input Speed Sensor. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
11	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
12	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. NOTE: Check for any Technical Service Bulletins that may apply. Were any problems found? Yes → Repair as necessary. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
N3 INPUT SPEED SENSOR CIRCUIT

When Monitored and Set Condition:

N3 INPUT SPEED SENSOR CIRCUIT

When Monitored: Engine speed greater than 450 rpm, no engine speed DTC's, no TCM under-voltage system operation, no output speed sensor DTC's (signal from the ABS system), all wheel speeds above 250 rpm (signal from the ABS system), no rear wheel speed DTC's (signal from the ABS system), and no wheel slip detected (signal from the ABS system), no shifting operation, detected gear is 3rd or 4th and the detected gear is the actual vehicle gear.

Set Condition: If the N3 input speed sensor is equal to 0 rpm or a short to ground, short to battery open input speed sensor, faulty input speed sensor, open sensor supply circuit.

POSSIBLE CAUSES

INTERMITTENT WIRING AND CONNECTORS
 SENSOR SUPPLY VOLTAGE CIRCUIT OPEN
 N3 INPUT SPEED SENSOR SIGNAL CIRCUIT OPEN
 N3 SPEED SENSOR SIGNAL CIRCUIT SHORT TO OTHER CIRCUIT
 SENSOR GROUND CIRCUIT OPEN
 SENSOR GROUND CIRCUIT SHORT TO OTHER CIRCUIT
 N3 INPUT SPEED SENSOR SIGNAL CIRCUIT SHORT TO GROUND
 SENSOR GROUND CIRCUIT SHORT TO GROUND
 N3 INPUT SPEED SENSOR
 TCM - N3 INPUT SPEED SENSOR

N3 INPUT SPEED SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Turn the ignition off to the lock position.</p> <p>Disconnect the TCM C2 harness connector.</p> <p>Disconnect the Transmission Solenoid harness connector.</p> <p>NOTE: Check connectors - Clean/repair as necessary.</p> <p>Measure the resistance of the Sensor Supply Voltage circuit between the TCM connector and the Transmission Solenoid Assembly connector</p> <p>Is the resistance above 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the Sensor Supply Voltage circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 3</p>	All
3	<p>With the DRBIII®, read DTCs.</p> <p>NOTE: The vehicle must be driven to at least 32 Km/h (20 MPH) for this DTC to be displayed as active.</p> <p>Is the Warm up counter displayed and equal to 0?</p> <p style="padding-left: 40px;">Yes → Go To 4</p> <p style="padding-left: 40px;">No → Go To 12</p>	All
4	<p>Turn the ignition switch to the lock position</p> <p>Disconnect the TCM C2 harness connector.</p> <p>Disconnect the Transmission Solenoid Assembly harness connector.</p> <p>Note: Check connectors - Clean/repair as necessary.</p> <p>Measure the resistance of the N3 Input Speed Sensor Signal circuit from the TCM connector to the Transmission Solenoid Assembly connector.</p> <p>Is the resistance above 5.0 ohms?</p> <p style="padding-left: 40px;">Yes → Repair the N3 Input Speed Sensor Signal circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Go To 5</p>	All

N3 INPUT SPEED SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
5	Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Sensor Ground circuit from the TCM C2 harness connector to the Transmission Solenoid Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Sensor Ground circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the N3 Speed Sensor Signal circuit to all other circuits in the Transmission Solenoid harness connector. Is the resistance below 5.0 ohms between any other circuit? Yes → Repair the N3 Speed Sensor Signal circuit for a short to other circuit-s. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the N3 Input Speed Sensor Signal circuit. Is the resistance Below 5.0 ohms? Yes → Repair the N3 Input Speed Sensor Signal circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Sensor Ground circuit to all other circuits in the Transmission Solenoid harness connector. Is the resistance below 5.0 ohms between any other circuit? Yes → Repair the Sensor Ground circuit for a short to other circuits. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 9	All

N3 INPUT SPEED SENSOR CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
9	Turn the ignition off to the lock position. Disconnect the TCM C2 harness connectors. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the Sensor Ground circuit. Is the resistance Below 5.0 ohms? Yes → Repair the Sensor Ground circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 10	All
10	Turn the ignition off to the lock position. With the DRBIII®/PEP Module being used as a Dual Channel Lab Scope with Miller Special tool #6801. Backprobe N3 Input Speed Sensor Signal circuit using Channel 1 at the TCM harness connector. Raise all drive wheels off the ground. CAUTION: Properly support vehicle Start the engine. Place gear selector in drive and increase vehicle speed to engage 2nd gear CAUTION: BE SURE TO KEEP HANDS AND FEET CLEAR OF ROTATING WHEELS. Compare the Scope Pattern on the DRBIII® with a typical 5-volt square wave pattern. Does the scope pattern match a typical 5 volt square wave Signal Scope Pattern? Yes → Go To 11 No → Replace the N3 Input Speed Sensor. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
11	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
12	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. NOTE: Check for any Technical Service Bulletins that may apply. Were any problems found? Yes → Repair as necessary. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
SENSOR SUPPLY VOLTAGE

When Monitored and Set Condition:

SENSOR SUPPLY VOLTAGE

When Monitored: Always monitored with system active at each ignition cycle and no under-voltage condition exists.

Set Condition: If measured sensor voltage is not within specified limits 4.8-7.2 volts or if a Faulty regulator, Sensor Supply Voltage shorted to ground, Sensor Supply Voltage shorted to battery is detected.

POSSIBLE CAUSES

INTERMITTENT WIRING AND CONNECTORS
 SENSOR SUPPLY CIRCUIT SHORT TO OTHER CIRCUIT
 SENSOR SUPPLY VOLTAGE CIRCUIT SHORT TO GROUND
 TCM - SENSOR SUPPLY VOLTAGE

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, read Transmission DTCs.</p> <p>Is the DTC Sensor Supply Voltage displayed as ACTIVE?</p> <p>Yes → Go To 3</p> <p>No → Go To 5</p>	All

SENSOR SUPPLY VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
3	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Sensor Supply circuit to all other circuits in the Transmission Solenoid harness connector. Is the resistance below 5.0 ohms between any other circuit?</p> <p>Yes → Repair the Sensor Supply circuit for a short to other circuit-s. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 4</p>	All
4	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Sensor Supply circuit to chassis ground in the Transmission Solenoid Assembly harness connector. Is the resistance below 5.0 ohms?</p> <p>Yes → Repair the Sensor Supply Voltage circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
5	<p>The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. NOTE: Check for any Technical Service Bulletins that may apply. Were there any problems found?</p> <p>Yes → Repair as necessary Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Test Complete.</p>	All

Symptom:
SHIFT LEVER POSITION INVALID

POSSIBLE CAUSES

CAN BUS CIRCUIT DTC PRESENT
 SHIFT LEVER DTCS PRESENT
 OPEN CAN BUS CIRCUITS AT SHIFT LEVER
 SHIFT LEVER ASSEMBLY

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, read Transmission DTCs.</p> <p>NOTE: If the DTC, CAN BUS CIRCUIT, is present, perform diagnostics on that symptom first.</p> <p>Is the DTC, CAN BUS CIRCUIT, present?</p> <p>Yes → Refer to the Transmission category and perform the appropriate symptom.</p> <p>No → Go To 3</p>	All
3	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, read Shift Lever DTCs.</p> <p>Are there any Shift Lever DTCs present?</p> <p>Yes → Refer to the Shift Lever category and perform the appropriate symptom.</p> <p>No → Go To 4</p>	All

SHIFT LEVER POSITION INVALID — Continued

TEST	ACTION	APPLICABILITY
4	Turn the ignition off to the lock position. Disconnect the Shift Lever harness connector. Measure the resistance between the CAN C Bus (+) circuit and the CAN C Bus (-) circuit in the Shift Lever harness connector. Is the resistance 60 ohms, \pm 3.0 ohms? Yes → Replace the Shift Lever Assembly per the service information. No → Repair the CAN Bus (+) or the CAN Bus (-) circuit for an open.	All

Symptom:
SHIFT PRESSURE SOLENOID CIRCUIT

When Monitored and Set Condition:

SHIFT PRESSURE SOLENOID CIRCUIT

When Monitored: When the solenoid is off, solenoid active with 25-75% duty cycle and/or the solenoid supply is active

Set Condition: If the TCM detects a short to ground or battery on the solenoid control circuit, shorted solenoid, open solenoid, or an open or shorted solenoid control circuit driver in the TCM.

POSSIBLE CAUSES

- INTERMITTENT WIRING AND CONNECTORS
- SHIFT PRESSURE SOLENOID CONTROL CIRCUIT OPEN
- SHIFT PRESSURE SOLENOID CONTROL CIRCUIT SHORT TO GROUND
- SHIFT PRESSURE SOLENOID CONTROL CIRCUIT SHORT TO OTHER CIRCUITS
- SHIFT PRESSURE SOLENOID ASSEMBLY
- TCM - SHIFT PRESSURE SOLENOID CIRCUIT

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

SHIFT PRESSURE SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	Ignition on, engine not running. With the DRBIII®, erase DTCs. With the DRBIII®, perform the Solenoid Test. With the DRBIII®, read DTCs. Did the DTC, SHIFT PRESSURE SOLENOID CIRCUIT, reset? Yes → Go To 3 No → Go To 7	All
3	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Shift Pressure Solenoid Control circuit from the TCM C2 harness connector to the Transmission Solenoid Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the Shift Pressure Solenoid Control circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the Shift Pressure Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the Shift Pressure Solenoid Control circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Shift Pressure Solenoid Control circuit to all other circuits in the Transmission Solenoid harness connector. Is the resistance below 5.0 ohms between any other circuit? Yes → Repair the Shift Pressure Solenoid Control circuit for a short to other circuits. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All

SHIFT PRESSURE SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
6	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between the Shift Pressure Solenoid Control circuit and the Solenoid Supply Voltage circuit in the Transmission Control Module C2 harness connector. Is the resistance between 4.0 and 8.0 ohms? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Replace the Shift Pressure Solenoid. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
7	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. NOTE: Check for any Technical Service Bulletins that may apply. Were there any problems found? Yes → Repair as necessary Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
SLA CAN MESSAGE INCORRECT

POSSIBLE CAUSES
SHIFT LEVER ASSEMBLY DTCS PRESENT PCM/ECM - ENGINE TORQUE MESSAGE INCORRECT TCM - TORQUE MESSAGE INCORRECT

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, read Engine DTCs.</p> <p>Are there any performance or bus related Engine DTCs present?</p> <p style="text-align: center;">Yes → Refer to the Shift Lever category and perform the appropriate symptom.</p> <p style="text-align: center;">No → Go To 3</p>	All
3	<p>Replace and program the ECM per the Service Information.</p> <p>With the DRBIII®, erase Transmission DTCs.</p> <p>Drive the vehicle performing multiple aggressive upshifts and downshifts.</p> <p>With the DRBIII®, read Transmission DTCs.</p> <p>Did the DTC, ENGINE TORQUE MESSAGE INCORRECT, reset?</p> <p style="text-align: center;">Yes → Go To 4</p> <p style="text-align: center;">No → Test Complete Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
4	<p>If there are no possible causes remaining, view repair.</p> <p style="text-align: center;">Repair</p> <p style="text-align: center;">Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:
SOLENOID SUPPLY VOLTAGE

When Monitored and Set Condition:

SOLENOID SUPPLY VOLTAGE

When Monitored: When the solenoid is active or not active and no under-voltage condition exists.

Set Condition: If voltage is present when the output is off or the measured supply voltage and measured battery voltage differ by 3.6 volts.

POSSIBLE CAUSES

INTERMITTENT WIRING AND CONNECTORS
 SOLENOID SUPPLY CIRCUIT SHORT TO OTHER CIRCUIT
 SOLENOID SUPPLY VOLTAGE CIRCUIT SHORT TO GROUND
 SOLENOID ASSEMBLY
 TCM - SOLENOID SUPPLY VOLTAGE CIRCUIT

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, read Transmission DTCs.</p> <p>Is the DTC, Solenoid Supply Voltage, displayed as ACTIVE?</p> <p>Yes → Go To 3</p> <p>No → Go To 6</p>	All

SOLENOID SUPPLY VOLTAGE — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Solenoid Supply circuit to all other circuits in the Transmission Solenoid harness connector. Is the resistance below 5.0 ohms between any other circuit? Yes → Repair the Solenoid Supply circuit for a short to other circuits. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the Solenoid Supply circuit to chassis ground in the Transmission Solenoid harness connector. Is the resistance below 5.0 ohms? Yes → Repair the Solenoid Supply Voltage circuit for a short to ground or high resistance. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between all Solenoid Control circuits and chassis ground in the Transmission Control Module C2 harness connector. Is the resistance below 5.0 ohms? Yes → Replace the Solenoid that is shorted to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
6	The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. NOTE: Check for any Technical Service Bulletins that may apply. Were there any problems found? Yes → Repair as necessary Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
SOLENOID SUPPLY/WATCHDOG

When Monitored and Set Condition:

SOLENOID SUPPLY/WATCHDOG

When Monitored: Always monitored with system active at each ignition cycle.

Set Condition: During the power up of the TCM, it tests the ability of the external watchdog to shut down the Solenoid Supply driver.

POSSIBLE CAUSES

SOLENOID SUPPLY CIRCUIT SHORT TO OTHER CIRCUITS
 SOLENOID DTCS PRESENT
 TCM - SOLENOID SUPPLY WATCHDOG

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information. NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms. With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics. With the DRBIII®, read and record all Transmission DTCs. NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller. NOTE: Check for any Technical Service Bulletins that may apply. Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>With the DRBIII®, read DTCs.. Are any Solenoid DTCs present?</p> <p style="text-align: center;">Yes → Repair all Solenoid DTCs before proceeding with test. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="text-align: center;">No → Go To 3</p>	All

SOLENOID SUPPLY/WATCHDOG — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Remove the TCM harness connector. Disconnect the Solenoid harness connector. Check the resistance between the Solenoid Supply circuit and all other circuits in the TCM harness connector. Is the resistance below 5.0 ohms between Solenoid Supply and any other circuit? Yes → Repair the Solenoid Supply circuit short to other circuits. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → The TCM has an internal error. Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
SYSTEM OVERVOLTAGE

When Monitored and Set Condition:

SYSTEM OVERVOLTAGE

When Monitored: Always monitored with system active at each ignition cycle

Set Condition: Ignition voltage above 16.9 volts with the engine and transmission input speed sensors above 2000 rpm for 60 seconds

POSSIBLE CAUSES

VEHICLE JUMP STARTED IMPROPERLY
 ENGINE CHARGING SYSTEM DTC'S PRESENT
 TRANSMISSION RELAY OUTPUT HIGH AT TCM
 TCM - SYSTEM OVERVOLTAGE

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>Determine is the vehicle was jump started improperly.</p> <p>NOTE: If the battery was jump started with the batteries in series, the System Overvoltage DTC will be set.</p> <p>Was the vehicle jump started improperly?</p> <p>Yes → Erase the DTC , if the vehicle was jump started improperly. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All

SYSTEM OVERVOLTAGE — Continued

TEST	ACTION	APPLICABILITY
3	With the DRBIII®, read the Engine DTC's. Are there any Engine Charging System DTC's present? Yes → Refer to the Charging category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Disconnect the TCM C1 harness connector. Check connectors - Clean/repair as necessary. Start the engine. Increase the Engine Speed to 1500 RPM. Measure the voltage of the Transmission Relay Output circuit in the TCM C1 harness connector. Is the voltage below 16.9 volts? Yes → Go To 5 No → Refer the Charging category and perform the symptom, Charging System with No DTCs present. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
5	If there are no possible causes remaining, view repair. Repair Replace the TCM. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
SYSTEM UNDERVOLTAGE

When Monitored and Set Condition:

SYSTEM UNDERVOLTAGE

When Monitored: Always monitored with system active at each ignition cycle.

Set Condition: Ignition voltage falls below 8.5 volts with the engine rpm greater than 2000 rpm for 60 seconds.

POSSIBLE CAUSES

ENGINE CHARGING SYSTEM DTC'S PRESENT
 TRANSMISSION RELAY OUTPUT LO AT TCM
 TCM - SYSTEM UNDER VOLTAGE

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>With the DRBIII®, read Engine DTC's.</p> <p>Are there any Engine Charging System DTC's present?</p> <p>Yes → Refer to the Charging category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All

SYSTEM UNDERVOLTAGE — Continued

TEST	ACTION	APPLICABILITY
3	<p>Turn the ignition off to the lock position. Disconnect the TCM C1 harness connector. Start the engine. Increase the Engine Speed to 1500 RPM. Measure the voltage of the Transmission Relay Output circuit in the TCM C1 harness connector. Is the voltage below 9.0 volts?</p> <p>Yes → Repair the Transmission Relay Output circuit for an open or high resistance. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:
TCC OVER TEMP

When Monitored and Set Condition:

TCC OVER TEMP

When Monitored: Solenoid supply active. No Input Speed Sensor N2 - N3, CAN C Bus, PCM/ECM, CAN Engine, CAN Engine Speed DTCs present. Torque Converter Clutch in slip mode.

Set Condition: Friction loss factor reaches threshold.

POSSIBLE CAUSES

INTERNAL TRANSMISSION

TEST	ACTION	APPLICABILITY
<p>1</p>	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information. NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms. With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics. With the DRBIII®, read and record all Transmission DTCs. NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary. Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run. Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller. NOTE: Check for any Technical Service Bulletins that may apply. Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	<p>All</p>
<p>2</p>	<p>This DTC is an informational DTC. Check for any TSBs or Controller updates that may apply. This is usually a sign of TCC failure or internal transmission problems. Check the Engine and Transmission Cooling Systems for proper operation. View repair.</p> <p>Repair Repair internal Transmission as necessary. Refer to the Service Information for proper repair procedure. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	<p>All</p>

Symptom:
TCC SOLENOID CIRCUIT

When Monitored and Set Condition:

TCC SOLENOID CIRCUIT

When Monitored: Always monitored with system active at each ignition cycle.

Set Condition: If the TCM detects a short to ground or battery on the solenoid control circuit, shorted solenoid, open solenoid, or an open or shorted solenoid control circuit driver in the TCM.

POSSIBLE CAUSES

- INTERMITTENT WIRING AND CONNECTORS
- TCC SOLENOID CONTROL CIRCUIT OPEN
- TCC SOLENOID CONTROL CIRCUIT SHORT TO GROUND
- TCC SOLENOID CONTROL CIRCUIT SHORT TO OTHER CIRCUITS
- TCC SOLENOID
- TCM - TCC SOLENOID CIRCUIT

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

TCC SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	Ignition on, engine not running. With the DRBIII®, erase DTCs. With the DRBIII®, perform the Solenoid Test. With the DRBIII®, read DTCs. Did the DTC, TCC SOLENOID CIRCUIT, reset? Yes → Go To 3 No → Go To 7	All
3	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector Note: Check connectors - Clean/repair as necessary. Measure the resistance of the TCC Solenoid Control circuit from the TCM C2 harness connector to the Transmission Solenoid Assembly harness connector. Is the resistance above 5.0 ohms? Yes → Repair the TCC Solenoid Control circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between ground and the TCC Solenoid Control circuit. Is the resistance below 5.0 ohms? Yes → Repair the TCC Solenoid Control circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 5	All
5	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance of the TCC Solenoid Control circuit to all other circuits in the Transmission Solenoid Assembly harness connector. Is the resistance below 5.0 ohms between any other circuit? Yes → Repair the TCC Solenoid Control circuit for a short to other circuits. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the Transmission Control Module C2 harness connector. Note: Check connectors - Clean/repair as necessary. Measure the resistance between the TCC Solenoid Control circuit and the Solenoid Supply Voltage circuit in the Transmission Control Module C2 harness connector. Is the resistance between 2.0 and 4.0 ohms? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Replace the TCC Solenoid per the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

TCC SOLENOID CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	<p>The conditions necessary to set this DTC are not present at this time. Using the schematics as a guide, inspect the wiring and connectors specific to this circuit. Wiggle the wires while checking for shorts and open circuits. NOTE: Check for any Technical Service Bulletins that may apply. Were there any problems found?</p> <p style="padding-left: 40px;">Yes → Repair as necessary Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="padding-left: 40px;">No → Test Complete.</p>	All

Symptom:
TCC STUCK ON

When Monitored and Set Condition:

TCC STUCK ON

When Monitored: No Input Speed Sensor N2 - N3, CAN C Bus, PCM/ECM, CAN Engine, No CAN Engine Torque and/or Shift in progress DTCs present. Must be in a valid forward gear.

Set Condition: Engine RPM - Turbine Speed is greater than 30 RPM when the Engine torque is less than 100 NM for 1.0 second

POSSIBLE CAUSES

TCC SOLENOID CONTROL CIRCUIT SHORT TO GROUND
 TCC SOLENOID CONTROL CIRCUIT SHORT TO OTHER CIRCUITS
 INTERNAL TRANSMISSION
 TCM - TCC STUCK ON

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

TCC STUCK ON — Continued

TEST	ACTION	APPLICABILITY
2	<p>Turn the ignition off to the lock position. Disconnect the Transmission Solenoid Assembly harness connector. Start the engine. With the brakes firmly applied, shift the gear selector into Drive. Did the engine stall or stumble?</p> <p>Yes → Repair the internal transmission. Pay particular attention to the components related to the TCC. Refer to the Service Information for the proper repair procedure. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 3</p>	All
3	<p>Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Measure the resistance between ground and the TCC Solenoid Control circuit. Is the resistance below 5.0 ohms?</p> <p>Yes → Repair the TCC Solenoid Control circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 4</p>	All
4	<p>Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. Disconnect the Transmission Solenoid harness connector. Measure the resistance of the TCC Solenoid Control circuit to all other circuits in the Transmission Solenoid harness connector. Is the resistance below 5.0 ohms on any circuit?</p> <p>Yes → Repair the TCC Solenoid Control circuit for a short to other circuits. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All

Symptom:**TRANS TEMP SENSOR - P/N SWITCH CIRCUIT****When Monitored and Set Condition:****TRANS TEMP SENSOR - P/N SWITCH CIRCUIT**

When Monitored: Always monitored with system active at each ignition cycle.

Set Condition: Temp sensor is open while in forward gears (1-5), temp sensor, open Trans temp circuit, P/N Switch.

POSSIBLE CAUSES

SHIFTER ADJUSTMENT

SENSOR GROUND CIRCUIT OPEN

TEMP SENSOR - P/N SWITCH CIRCUIT OPEN

TEMP SENSOR - P/N SWITCH CIRCUIT SHORT TO GROUND

SENSOR GROUND CIRCUIT SHORT TO OTHER CIRCUITS

TEMP SENSOR- P/N SWITCH CIRCUIT SHORT TO OTHER CIRCUITS

TEMP SENSOR - P/N SWITCH

TCM - TEMP SENSOR - P/N SWITCH

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All

TRANS TEMP SENSOR - P/N SWITCH CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
2	<p>Check the Shifter Assembly adjustment per the Service Information. Was the Shifter Assembly adjusted correctly?</p> <p>Yes → Go To 3</p> <p>No → Adjust the Shifter Assembly per the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p>	All
3	<p>Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Measure the resistance of the Sensor Ground circuit between the TCM C2 harness connector and the Transmission Solenoid Assembly harness connector. Is the resistance above 5.0 ohms?</p> <p>Yes → Repair the Sensor Ground circuit for an open or high resistance. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 4</p>	All
4	<p>Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Measure the resistance of the Transmission Temp Sensor - P/N Switch circuit between the TCM C2 harness connector and the Transmission Solenoid Assembly harness connector. Is the resistance above 5.0 ohms.</p> <p>Yes → Repair the Transmission Temp Sensor - P/N Switch circuit for an open. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 5</p>	All
5	<p>Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Measure the resistance between ground and the Transmission Temp Sensor - P/N Switch circuit. Is the resistance below 5.0 ohms?</p> <p>Yes → Repair the Transmission Temp Sensor - P/N Switch circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 6</p>	All
6	<p>Turn the ignition off to the lock position. Disconnect the TCM C1 and C2 harness connectors. Disconnect the Transmission Solenoid Assembly harness connector. Measure the resistance between the Sensor Ground circuit and all other circuits in the TCM C1 and C2 harness connectors. Is the resistance below 5.0 ohms on any of the circuits?</p> <p>Yes → Repair the Sensor Ground circuit for a short to other circuits. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p>No → Go To 7</p>	All

TRANS TEMP SENSOR - P/N SWITCH CIRCUIT — Continued

TEST	ACTION	APPLICABILITY
7	Turn the ignition off to the lock position. Disconnect the TCM C1 and C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Measure the resistance between the Temp Sensor - P/N Switch circuit and all other circuits in the TCM C1 and C2 harness connector. Is the resistance below 5.0 ohms on any circuit? Yes → Repair the Transmission Temp Sensor - P/N Switch circuit for a short to other circuits. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All
8	Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. NOTE: Make sure the Transmission Solenoid Assembly harness connector is connected or the results of the test will be invalid. With the brakes firmly applied, place the gear selector in Drive. Measure the resistance between the Temp Sensor - P/N Switch circuit and the Sensor Ground circuit in the TCM C2 harness connector. Is the resistance between 500 and 2500 ohms? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Replace the Temp Sensor - P/N Switch Assembly per the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
TRANS TEMP SENSOR ERRATIC

When Monitored and Set Condition:

TRANS TEMP SENSOR ERRATIC

When Monitored: When transmission temperature is below 170° C (338° F)

Set Condition: When there is a 10° C (18° F) variation between each transmission temperature sensor read. If the DTC is reset (after an ignition cycle), the DTC will be set to Stored (Intermittent) status.

POSSIBLE CAUSES

TRANSMISSION TEMP SENSOR WIRING

TCM - TRANS TEMP SENSOR ERRATIC

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All
2	<p>Ignition on, engine not running.</p> <p>With the DRBIII®, monitor the Transmission Temperature.</p> <p>With the brakes firmly applied, place the gear selector in Drive.</p> <p>While monitoring the DRBIII®, wiggle the wires and connectors from the TCM to the Transmission Solenoid Assembly.</p> <p>Did the Transmission Temperature fluctuate while wiggling the wires?</p> <p style="text-align: center;">Yes → Repair the wiring and/or connectors as necessary. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.</p> <p style="text-align: center;">No → Go To 3</p>	All

TRANS TEMP SENSOR ERRATIC — Continued

TEST	ACTION	APPLICABILITY
3	Replace the Transmission Temp Sensor - P/N Switch Assembly per the Service Information. Perform W5J400 TRANSMISSION VERIFICATION TEST - VER 1. Did the DTC, TRANS TEMP SENSOR ERRATIC, reset? Yes → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Test Complete.	All

Symptom:
TRANS TEMP SENSOR SHORTED

When Monitored and Set Condition:

TRANS TEMP SENSOR SHORTED

When Monitored: Always monitored with system active

Set Condition: Temperature sensor input below a threshold, failed temperature sensor, short to ground, TCM

POSSIBLE CAUSES

- TEMP SENSOR - P/N SWITCH CIRCUIT SHORT TO GROUND
- TEMP SENSOR - P/N SWITCH CIRCUIT SHORT TO OTHER CIRCUITS
- TCM - P/N SWITCH CIRCUIT
- TRANSMISSION TEMPERATURE SENSOR
- TCM - TRANS TEMP SENSOR SHORTED
- TRANSMISSION TEMP SENSOR - P/N SWITCH

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p>Continue Go To 2</p>	All
2	<p>Attempt to start the vehicle in Park and Neutral.</p> <p>Does the engine start in either position, Park or Neutral?</p> <p>Yes → Go To 3</p> <p>No → Go To 5</p>	All

TRANS TEMP SENSOR SHORTED — Continued

TEST	ACTION	APPLICABILITY
3	Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. Place the gear selector to Drive (D). Measure the resistance of the Transmission Temperature Sensor between the Temp Sensor - P/N Switch circuit and the Sensor Ground circuit in the TCM C2 harness connector. Is the resistance between 500 ohms and 2500 ohms. Yes → Go To 4 No → Check for a poor terminal to pin connections at the Solenoid Assembly harness connector and repair as necessary. If no problems are found in the connector, replace the Transmission Temperature Sensor - P/N Switch Assembly per the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
4	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All
5	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid harness connector. NOTE: This procedure may set several DTCs in both the ECM and TCM. Disregard and erase DTCs after this procedure. With the gear selector in park, attempt to start the vehicle. Does the vehicle start? Yes → Replace the Transmission Temperature Sensor - P/N Switch Assembly per the Service Information. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 6	All
6	Turn the ignition off to the lock position. Disconnect the TCM C2 harness connector. Disconnect the Transmission Solenoid Assembly harness connector. Measure the resistance between ground and the Temp Sensor - P/N Switch circuit. Is the resistance below 5.0 ohms? Yes → Repair the Temp Sensor - P/N Switch circuit for a short to ground. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 7	All
7	Turn the ignition off to the lock position. Disconnect the Transmission Solenoid Assembly harness connector. Note: Check connectors - Clean/repair as necessary. Disconnect the TCM C1 and C2 harness connectors. Measure the resistance of the Temp Sensor - P/N Switch circuit to all other circuits in the TCM C1 and C2 harness connectors. Is the resistance below 5.0 ohms between any other circuit? Yes → Repair the Temp Sensor - P/N Switch circuit for a short to other circuits. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 8	All

TRANS TEMP SENSOR SHORTED — Continued

TEST	ACTION	APPLICABILITY
8	If there are no possible causes remaining, view repair. Repair Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Symptom:
TRANSMISSION SLIPPING

When Monitored and Set Condition:

TRANSMISSION SLIPPING

When Monitored: Engine rpm greater than 450 rpm, output speed greater than 180 rpm, no N2 - N3 input speed sensor errors present, no gear selector lever errors present, no ABS system errors, no transfer case errors present, and all wheel speeds between 70 - 380 rpm with no wheel slip detected. Set Condition: Calculated ratio not within allowable range for the engaged gear. No shifting operation.

Set Condition: The TCM constantly calculates the transmission ratio based on the N2 - N3 input speed signals and the calculated output shaft speed (CAN message from the ABS). The TCM will detect if the transmission is slipping or an invalid gear ratio is present

POSSIBLE CAUSES
OTHER DTCS PRESENT
AXLE - MECHANICAL - GEAR RATIO
INTERNAL TRANSMISSION
TCM - TRANSMISSION SLIPPING

TEST	ACTION	APPLICABILITY
1	<p>NOTE: Low fluid level can be the cause of many transmission problems. If the fluid level is low locate and repair the leak then check and adjust the fluid level per the service information.</p> <p>NOTE: Always perform diagnostics with a fully charged battery to avoid false symptoms.</p> <p>With the DRBIII®, read the engine DTCs. Check and repair all engine DTCs prior to performing transmission symptom diagnostics.</p> <p>With the DRBIII®, read and record all Transmission DTCs.</p> <p>NOTE: Check connectors - Clean/repair as necessary. Poor pin to terminal connections can set DTCs.</p> <p>Using the wiring diagram/schematic as a guide, inspect the wiring and connectors. Repair as necessary.</p> <p>Most DTCs set on start up but some must be set by driving the vehicle such that all diagnostic monitors have run.</p> <p>Note: Verify flash level of transmission controller. Some problems are corrected by software upgrades to the transmission controller.</p> <p>NOTE: Check for any Technical Service Bulletins that may apply.</p> <p>Perform this procedure prior to Symptom diagnosis.</p> <p style="text-align: center;">Continue Go To 2</p>	All

TRANSMISSION SLIPPING — Continued

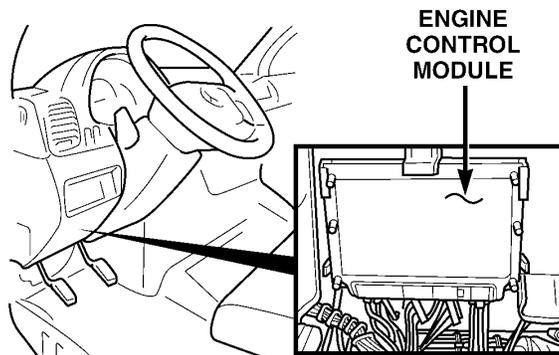
TEST	ACTION	APPLICABILITY
2	With the DRBIII®, read Transmission DTCs. Are there any Improper Gear and/or Improper Ratio DTCs present? Yes → Refer to the Transmission category and perform the appropriate symptom. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 3	All
3	Verify the correct axle gear ratio and make sure there are no mechanical problems. Refer to the Service Information for the proper procedures. Were there any problems found? Yes → Refer to the Service Information for proper repair procedures. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Go To 4	All
4	Determine if the Transmission is mechanically slipping. Is the transmission slipping? Yes → Repair internal transmission as necessary. Refer to the Service Information for the proper repair procedure. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1. No → Replace the Transmission Control Module. Perform NAG1 TRANSMISSION VERIFICATION TEST - VER 1.	All

Verification Tests

NAG1 TRANSMISSION VERIFICATION TEST - VER 1	APPLICABILITY
<p>1. Reconnect any disconnected components.</p> <p>2. Connect the DRBIII® to the Data Link Connector.</p> <p>3. With the DRBIII®, erase ABS DTCs.</p> <p>4. With the DRBIII®, erase ECM DTCs.</p> <p>5. With the DRBIII®, erase Transmission DTCs.</p> <p>6. With the DRBIII®, display Transmission Temperature. Start and run the engine until the Transmission Temperature is HOT, above 43° C (110° F).</p> <p>7. Check the Transmission fluid and adjust if necessary. Refer to the Service Information for the proper Fluid Fill procedure.</p> <p>8. NOTE: If internal repairs were performed and the shift quality is still poor, it may be necessary to check the internal repair. Also check for any TSBs and/or Controller Flash updates that may apply.</p> <p>9. ROAD TEST PROCEDURE</p> <p>10. Road test the vehicle. Make fifteen to twenty 1-2, 2-3, 3-4 and 4-5 upshifts.</p> <p>11. Perform these shifts from a standing start to 72 km/h (45 MPH) with a constant throttle opening of 20 to 25 degrees.</p> <p>12. With speeds below 40 km/h (25 MPH), make five to eight wide open throttle kickdowns to 1st gear. Allow at least 5 seconds each in 2nd and 3rd gear between each kickdown.</p> <p>13. With the DRBIII®, read Transmission DTCs.</p> <p>Were there any Diagnostic Trouble Codes set?</p> <p>Yes → Repair is not complete, refer to appropriate symptom.</p> <p>No → Repair is complete.</p>	<p>All</p>

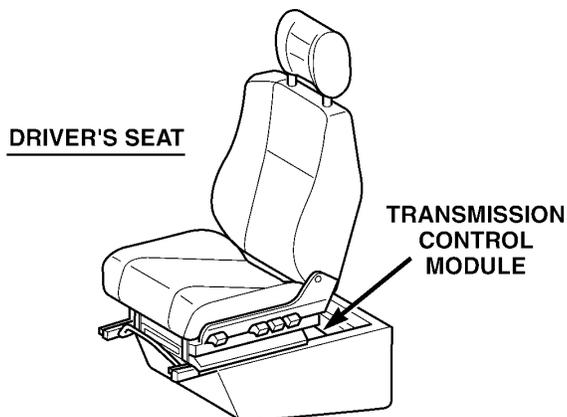
8.0 COMPONENT LOCATIONS

8.1 ENGINE CONTROL MODULE



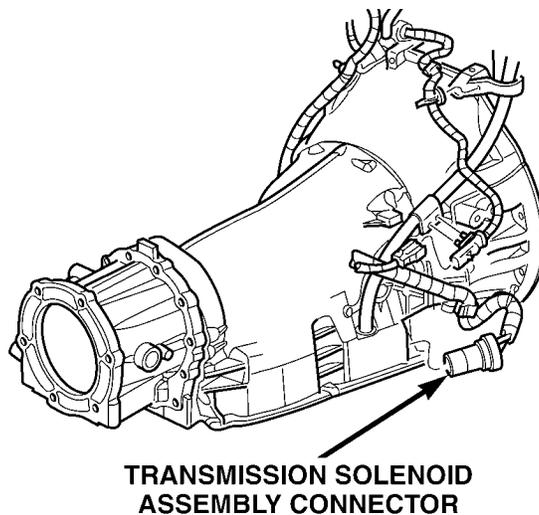
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8.2 TRANSMISSION CONTROL MODULE



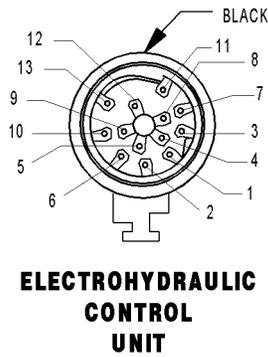
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8.3 TRANSMISSION SOLENOID ASSEMBLY



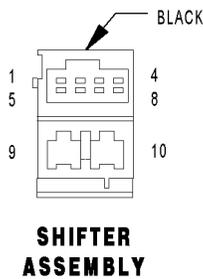
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9.0 CONNECTOR PINOUTS



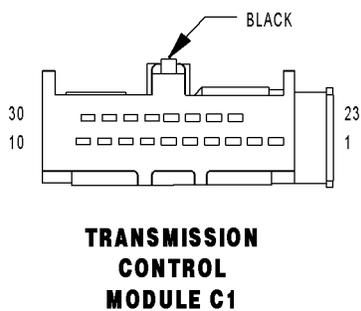
ELECTROHYDRAULIC CONTROL UNIT - BLACK

CAV	CIRCUIT	FUNCTION
1	20BL/DG	N3 INPUT SPEED SENSOR
2	16BR/GY	MODULATION PRESSURE SOLENOID CONTROL
3	20BL/GY	N2 INPUT SPEED SENSOR
4	20GY/BL	TEMPERATURE SENSOR-P/N SWITCH
5	-	-
6	16BK	SOLENOID SUPPLY VOLTAGE
7	20BK/BL	SENSOR SUPPLY VOLTAGE
8	16WT/BL	2-3 SOLENOID CONTROL
9	16YL	3-4 SOLENOID CONTROL
10	16BK/RD	SHIFT PRESSURE SOLENOID CONTROL
11	16YL/BL	TCC SOLENOID CONTROL
12	20PK	SENSOR GROUND
13	16WT	1-2/4-5 SOLENOID CONTROL



SHIFTER ASSEMBLY - BLACK

CAV	CIRCUIT	FUNCTION
1	-	-
2	20GY/DG/RD	LAMP DRIVER
3	20BL/DG	K-ABS/SHIFTER ASSEMBLY
4	18BR	GROUND
5	20BK/BL/RD	BRAKE LAMP SWITCH
6	20DG/WT	CAN C BUS (+)
7	20DG	CAN C BUS (-)
8	18BK/DG	TRANSMISSION RELAY OUTPUT
9	16WT/BL/RD	FUSED IGNITION SWITCH OUTPUT (RUN-START)
10	16WT/RD	BACK-UP LAMP

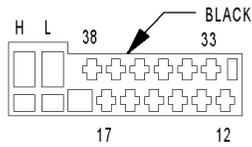


TRANSMISSION CONTROL MODULE C1 - BLACK

CAV	CIRCUIT	FUNCTION
1	20BL	K-TCM/RADIO
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
29	16BK/DG	TRANSMISSION RELAY OUTPUT
30	18BR	GROUND

CONNECTOR PINOUTS

CONNECTOR PINOUTS

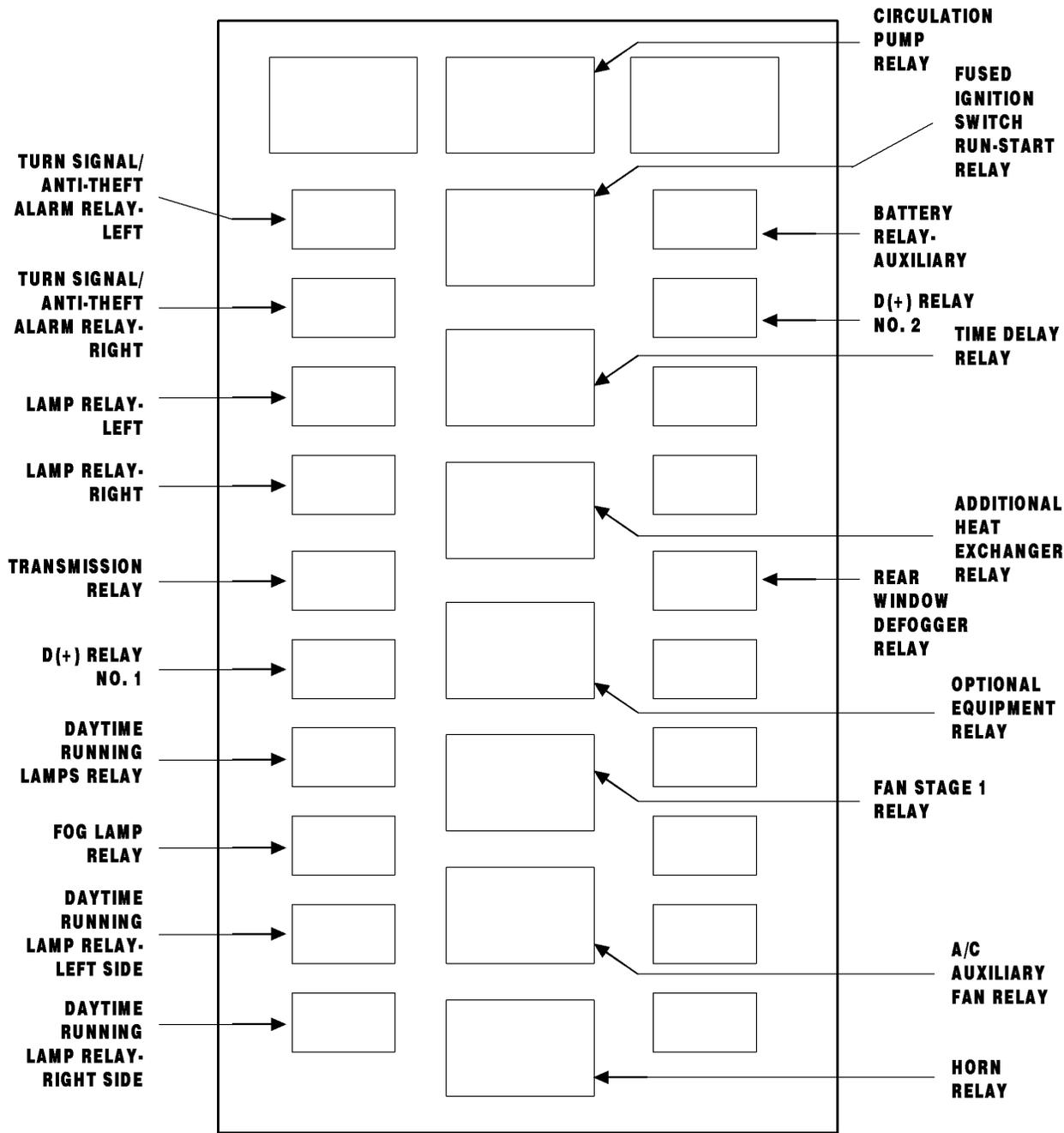


**TRANSMISSION
CONTROL
MODULE C2**

TRANSMISSION CONTROL MODULE C2 - BLACK

CAV	CIRCUIT	FUNCTION
12	20BL/GY	N2 INPUT SPEED SENSOR
13	20BK/BL	SENSOR SUPPLY VOLTAGE
14	16WT	1-2/4-5 SOLENOID CONTROL
15	16YL	3-4 SOLENOID CONTROL
16	16WT/BL	2-3 SOLENOID CONTROL
17	16YL/BL	TCC SOLENOID CONTROL
33	20PK	SENSOR GROUND
34	20GY/BL	TEMPERATURE SENSOR-P/N SWITCH
35	20BL/DG	N3 INPUT SPEED SENSOR
36	16BR/GY	MODULATION PRESSURE SOLENOID CONTROL
37	16BK/RD	SHIFT PRESSURE SOLENOID CONTROL
38	16BK	SOLENOID SUPPLY VOLTAGE
H	20DG/WT	CAN C BUS (+)
L	20DG	CAN C BUS (-)

RELAY BLOCK



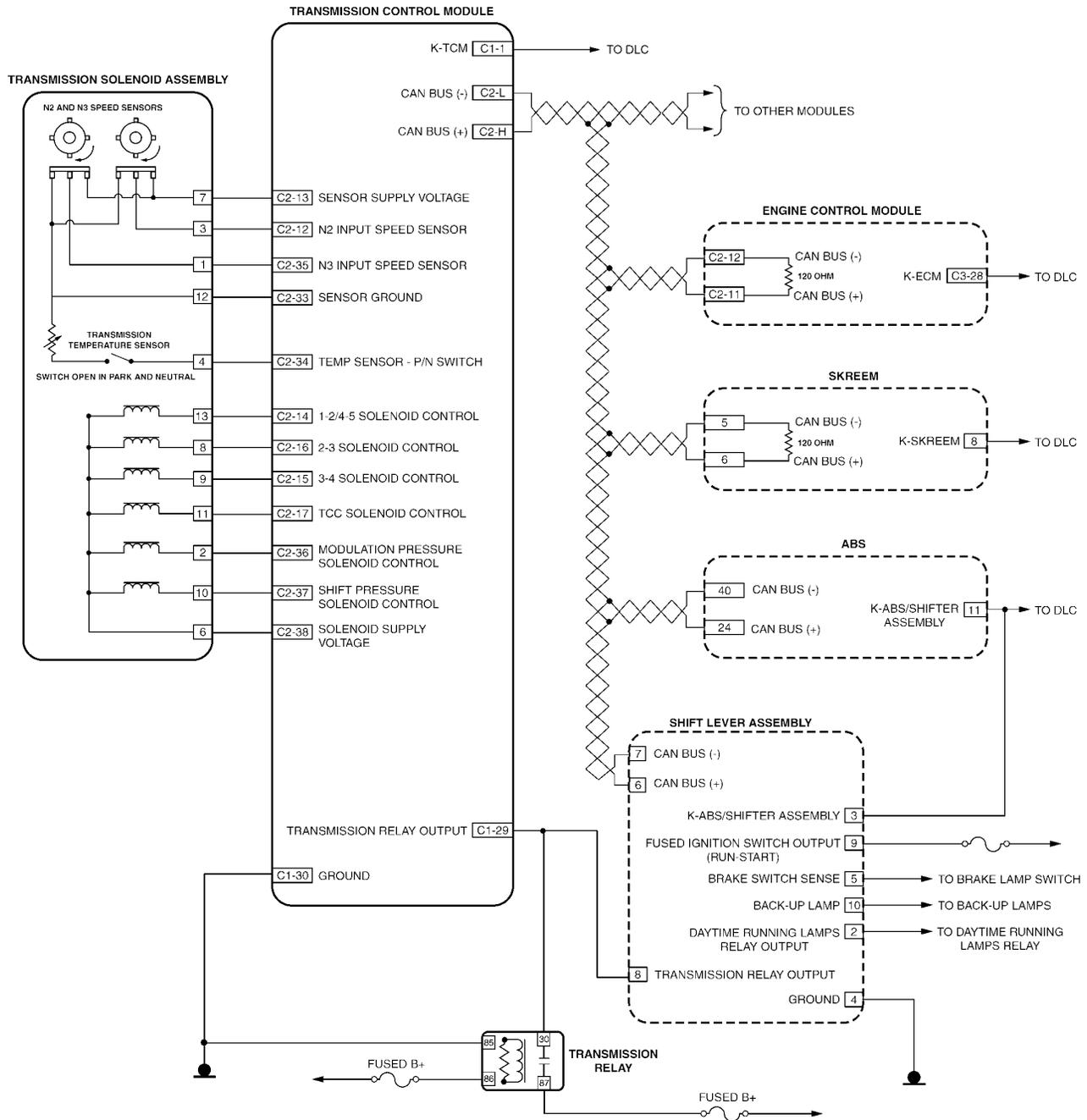
CONNECTOR PINOUTS

NOTE: THE RELAY LOCATIONS SHOWN HERE MAY VARY FROM VEHICLE TO VEHICLE.

TRANSMISSION RELAY (RELAY BLOCK)

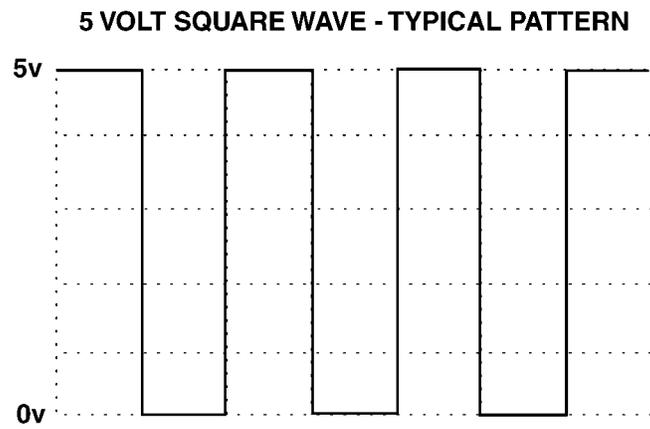
CAV	CIRCUIT	FUNCTION
30	16BK/DG	TRANSMISSION RELAY OUTPUT
85	16BR	GROUND
86	16BK/YL	FUSED IGNITION SWITCH OUTPUT (RUN-START)
87	16RD	FUSED B(+)
87A	-	-

10.0 SCHEMATIC DIAGRAMS



8111defd

11.0 CHARTS AND GRAPHS

11.1 5 VOLT SQUARE WAVE – TYPICAL PATTERN

80e3af99

CHARTS AND GRAPHS

11.2 TRANSMISSION TEMP SENSOR

TRANSMISSION TEMP SENSOR SPECIFICATIONS
TEMPERATURE/VOLTAGE/RESISTANCE CHART

TEMPERATURE (C)	TEMPERATURE (F)	VOLTAGE	RESISTANCE
-50	-58	0.73	506.0
-45	-49	0.77	534.0
-40	-40	0.80	564.0
-35	-31	0.84	593.0
-30	-22	0.88	624.0
-25	-13	0.91	654.0
-20	-4	0.95	686.0
-15	5	0.98	718.0
-10	14	1.02	750.0
-5	23	1.05	783.0
0	32	1.09	817.0
5	41	1.12	851.0
10	50	1.16	886.0
15	59	1.19	921.0
20	68	1.23	957.0
25	77	1.26	994.0
30	86	1.30	1032.0
35	95	1.33	1070.0
40	104	1.37	1109.0
45	113	1.40	1149.0
50	122	1.44	1189.0
55	131	1.48	1231.0
60	140	1.51	1273.0
65	149	1.55	1316.0
70	158	1.58	1360.0
75	167	1.62	1405.0
80	176	1.65	1450.0
85	185	1.69	1497.0
90	194	1.72	1545.0
95	203	1.76	1594.0
100	212	1.79	1644.0
105	221	1.83	1695.0
110	230	1.86	1747.0
115	239	1.90	1800.0
120	248	1.93	1855.0
125	257	1.97	1911.0
130	266	2.00	1968.0
135	275	2.04	2027.0
140	284	2.08	2087.0
145	293	2.11	2148.0
150	302	2.15	2211.0
155	311	2.18	2276.0
160	320	2.22	2342.0
165	329	2.25	2410.0
170	338	2.29	2479.0
175	347	2.32	2551.0

80e3afbe

DIAGNOSTIC TEST PROCEDURES — TELL US!

DaimlerChrysler Corporation is constantly working to provide the technician the best diagnostic manuals possible. Your comments and recommendations regarding the diagnostic manuals and procedures are appreciated.

To best understand your suggestion, please complete the form giving us as much detail as possible.

Model _____ **Year** _____ **Body Type** _____ **Engine** _____

Transmission _____ **Vehicle Mileage** _____ **MDH** _____

Diagnostic Procedure _____ **Book No.** _____ **Page** _____

Comments/recommendations (if necessary, draw sketch)

Name _____

Submitted by: _____

Address _____

City/State/Zip _____

Business Phone # _____

All comments become property of DaimlerChrysler Corporation and may be used without compensation.

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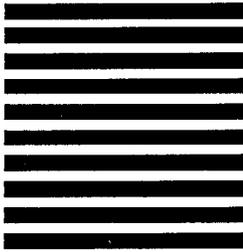


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