

Diagnosis By Symptom

The Diagnosis by Symptom gives the technician diagnostic information and direction, and suggests possible components using a symptom as a starting point. All routines start out with any potential electrical components that can cause or contribute to the symptom described. The routines then list all possible hydraulic or mechanical components that can cause or contribute the symptom described.

Diagnosis by Symptom Chart Directions

1. Using the Diagnosis by Symptom, select the condition that best describes the condition.
2. Refer to the routine indicated in the Diagnosis by Symptom Index.
3. Always begin diagnosis of a symptom with:
 1. preliminary inspections.
 2. verifications of condition.
 3. checking the fluid levels.
 4. carrying out other test procedures as directed.
4. **NOTE:** Not all concerns and conditions with electrical components will set a DTC. Be aware that the components listed may still be the cause. Verify correct function of these components prior to proceeding to the Hydraulic/Mechanical Routine listed.

NOTE: When the battery is disconnected or a new battery is installed, certain transmission operating parameters can be lost. The PCM must relearn these parameters. During this learning process, the vehicle may exhibit slightly firm shifts, delayed or early shifts. This operation is considered normal and will not affect the function of the transmission. Normal operation will return once these parameters are stored by the PCM.

Begin Diagnosis by Symptoms with the Routines, if indicated. Follow the reference or action required statements. Always perform the self-tests as required. Never skip steps. Repair as required. If the concern is still present after electrical diagnosis, proceed to the Hydraulic/Mechanical Routine listed.

5. The list contains only possible hydraulic or mechanical components that may cause or contribute to the concern. These components are listed in the removal sequence and by most probable cause. All components listed must be inspected to make sure that repairs are complete.

Diagnosis by Symptom Index

Title	Routines
Engagement Concerns	
No Forward in D	201
No Reverse	202
Harsh Reverse	203
Harsh Forward	204

Delayed/Soft Reverse	205
Delayed/Soft Forward	206
No Forward and No Reverse	207
Harsh Forward and Harsh Reverse	208
Delayed Forward and Delayed Reverse	209
Shift Concerns	
Some/All Shifts Missing	210
Timing — Early/Late	211
Timing — Erratic/Hunting	212
Feel Concerns	
Soft/Slipping (some or all)	213
Harsh (some or all)	214
No 1st Gear, Engages in Higher Gear	215
No Manual 1st Gear	216
No Manual 2nd Gear	217
No Manual 3rd Gear	218
No 1-2 Shift (Automatic)	220
No 2-3 Shift (Automatic)	221
No 3-4 Shift (Automatic)	222
No 4-5 Shift (Automatic)	270
No 5-6 Shift (Automatic)	272
No 6-5 Shift (Automatic)	273
No 5-4 Shift (Automatic)	271
No 4-3 Shift (Automatic)	223
No 3-2 Shift (Automatic)	224
No 2-1 Shift (Automatic)	225
Torque Converter Operation Concerns	
No Apply	240
Cycling/Chatter	241
Always Applied/Stalls Vehicle	242
Other Concerns	
External Leaks	252
Noise/Vibration in Forward or Reverse	254
Engine Will Not Crank	255
No Park (P) Range	256
Transmission Overheating	257
Fluid Venting/Foaming	261

Diagnostic Routines

Engagement Concerns: No Forward in D

Possible Component	Reference/Action
201 — ROUTINE	
Transmission Fluid	
Incorrect level	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Fluid filter and seal assembly — plugged, damaged	INSTALL a new filter assembly.
Selector Lever Linkage	
Selector lever linkage — damage or incorrectly adjusted	INSPECT and REPAIR as required. VERIFY transmission selector lever cable adjustment. REFER to Section 307-05. ADJUST transmission selector lever cable as necessary.
Powertrain Control System	
PCM, external vehicle harness, main control molded leadframe or Shift Solenoid A (SSA).	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A. INSPECT and CLEAN the SSA terminals on the molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section.
Main Control	
Defective manual valve	INSPECT manual valve linkage.
Defective clutch (A) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Front pump adapter seal — cracked, leaking or damaged	INSTALL a new front pump adapter seal.
Clutch Plates	
Forward clutch (A) friction and steel plate — failure	INSPECT the forward clutch assembly for damage. REPAIR as required. REFER to Forward Clutch Assembly in this section.
Direct clutch (B) friction and steel plate — failure	INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section.
Low One-Way Clutch (OWC) assembly — failure	INSPECT the OWC assembly for damage. The OWC must rotate counterclockwise and lock clockwise. REPLACE the OWC. REFER to Transmission — Early Build or Transmission — Late Build in this section.
Pump	
Pump gear — failure	INSTALL a new pump assembly. REFER to Pump Assembly in this section.

Engagement Concerns: No Reverse

Possible Component	Reference/Action
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202 — ROUTINE	
Transmission Fluid	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Incorrect level	
Powertrain Control System	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A. INSPECT and CLEAN the shift solenoid terminals on the molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section.
PCM, external vehicle harness, main control leadframe or Shift Solenoid B (SSB).	
Main Control	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (B) regulator valve	
Clutch Plates	INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section.
Direct clutch (B) friction and steel plate — failure	
Pump	INSTALL a new pump assembly. REFER to Pump Assembly in this section.
Pump gear — failure	

Engagement Concerns: Harsh Reverse

Possible Component	Reference/Action
203 — ROUTINE	
Transmission Fluid	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Incorrect level	
Driveline	REPAIR as required.
Engine driveline looseness in the driveshaft, U-joints or the engine mounts	
Powertrain Control System	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A. INSPECT and CLEAN the shift solenoid terminals on the molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section.
PCM, external vehicle harness, main control leadframe or Shift Solenoid B (SSB).	
Main Control	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (B) regulator valve	
Clutch Plates	

• Direct clutch (B) friction and steel plate — failure	• INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section.
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Engagement Concerns: Harsh Forward

Possible Component	Reference/Action
204 — ROUTINE	
Transmission Fluid	• CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
• Incorrect level	
Driveline	• REPAIR as required.
• Engine driveline looseness in the driveshaft, U-joints or the engine mounts	
Powertrain Control System	• If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A. INSPECT and CLEAN the shift solenoid terminals on the molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section.
• PCM, external vehicle harness, main control leadframe or Shift Solenoid A (SSA).	
Main Control	• INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section. • INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section. • INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
• Defective clutch (A) regulator valve	
• Defective clutch (A) latch valve	
• Defective clutch (A) latch valve	

Engagement Concerns: Delayed/Soft Reverse

Possible Component	Reference/Action
205 — ROUTINE	
Transmission Fluid	• CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section. • INSTALL a new filter assembly.
• Incorrect level	
• Fluid filter and seal assembly — plugged, damaged	• If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine
Powertrain Control System	
• PCM, external	

vehicle harness, main control leadframe or Shift Solenoid B (SSB).	OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A . INSPECT and CLEAN the shift solenoid terminals on the molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section.
Main Control	
Defective clutch (B) regulator valve	- INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section. - INSTALL a new front pump adapter seal.
Front pump adapter seal — cracked, leaking or damaged	
Clutch Plates	
Direct clutch (B) friction and steel plate — failure	INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section.

Engagement Concerns: Delayed/Soft Forward

Possible Component	Reference/Action
206 — ROUTINE	
Transmission Fluid	
Incorrect level	- CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section. - INSTALL a new filter assembly.
Fluid filter and seal assembly — plugged, damaged	
Powertrain Control System	
PCM, external vehicle harness, main control leadframe or a defective Shift Solenoid A (SSA).	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A. INSPECT and CLEAN the shift solenoid terminals on the mechatronic leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section.
Main Control	
Defective clutch (A) latch valve	- INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section. - INSTALL a new front pump adapter seal.
Front pump adapter seal — cracked, leaking or damaged	
Clutch Plates	
Forward clutch (A) friction and steel plate — failure	INSPECT the forward clutch assembly for damage. REPAIR as required. REFER to Forward Clutch Assembly in this section.

Engagement Concerns: No Forward and No Reverse

Possible Component	Reference/Action
207 — ROUTINE	
Transmission Fluid	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Incorrect level	
Selector Lever Linkage (Internal/External)	INSPECT for damage, repair as required.
Damaged, out of adjustment	
Transmission Filter and Seal Assembly	- INSPECT for position, damage and restriction. INSTALL a new filter and seal assembly. . - INSPECT for crack or damage. INSTALL new as required.
Not seated, damaged or plugged	
Pump adapter Seal	
Main Controls	- INSPECT for damage. Replace as required. - INSPECT for loose main control to transmission bolts. Tighten to specification. - INSPECT for valve stuck in spring compressed position or broken spring. CLEAN or REPLACE main control as required. Main Control
Manual Valve	
Mounting bolt torque	
Solenoid Pressure Regulator Valve	
Pump Assembly	- INSPECT for damage. REPLACE as required. - INSPECT for damage. REPLACE as required.
- Gear - Sun gear hub/splines	
Other Possible Components	- INSPECT for damage. REPAIR as required. - INSPECT for damage. REPAIR as required. - INSPECT for damage. REPAIR as required. - INSPECT for damage. REPAIR as required.
Turbine shaft	
Front planetary gear set	
Forward clutch drum	
Output shaft/ring gear	

Engagement Concerns: Harsh Forward and Harsh Reverse

Possible Component	Reference/Action
208 — ROUTINE	
Transmission Fluid	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Incorrect level	

Fluid filter and seal assembly — plugged, damaged	INSTALL a new filter assembly.
Powertrain Control System	
PCM electrical inputs/outputs, external vehicle wiring harnesses, main control molded leadframe, Transmission Range (TR) sensor, Shift Solenoid A (SSA) or Line Pressure Control (LPC)	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A. If engine control DTCs return, REFER to Powertrain Control/Emissions Diagnosis (PC/ED) manual.
Multiple shift missing (more than one gear)	If some shifts are missing, DETERMINE which shifts do not occur. REFER to Clutch and Solenoid Application Charts in this section. MONITOR appropriate PIDs as listed in Diagnostic Parameters Identification (PID) Chart. REFER to Routine 210.
Gears 4-6 default to 5th gear and gears 1-3 default to 3rd gear	RETRIEVE DTCs.

Engagement Concerns: Delayed Forward and Delayed Reverse

Possible Component	Reference/Action
209 — ROUTINE	
Transmission Fluid	
Incorrect level	- CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section. - INSTALL a new transmission fluid filter assembly.
Transmission fluid filter and seal assembly — plugged, damaged	
Powertrain Control System	
PCM, external vehicle wiring harnesses or molded leadframe	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. INSPECT and CLEAN the shift solenoid terminals on the molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section.
Main Control	
Front pump adapter seal — cracked, leaking or damaged	INSTALL a new front pump adapter seal.

Shift Concerns: Some/All Shifts Missing

Possible Component	Reference/Action
210 — ROUTINE	
Transmission Fluid	

• Incorrect level	• CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
• Transmission fluid filter and seal assembly — plugged, damaged	• INSTALL a new transmission fluid filter assembly. REFER to Fluid Pan, Gasket and Filter in this section.
Selector Lever Linkage Damaged or Incorrectly Adjusted	
• Selector lever cable	• INSPECT and REPAIR as required. VERIFY selector lever cable adjustment. REFER to Section 307-05. ADJUST selector lever cable as necessary.
Powertrain Control System	
• PCM electrical inputs/outputs, external vehicle wiring harnesses, main control molded leadframe, Transmission Range (TR) sensor, Shift Solenoid A (SSA) or Line Pressure Control (LPC)	• If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A. If engine control DTCs return, REFER to Powertrain Control/Emissions Diagnosis (PC/ED) manual.
• Multiple shift missing (more than one gear)	• If some shifts are missing, DETERMINE which shifts do not occur. REFER to clutch and solenoid application charts in this section. MONITOR appropriate PIDs as listed in Diagnostic Parameters Identification (PID) Chart.
Main Control	
• Leadframe — contamination	• REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A.
• Defective clutch (A) regulator valve	• INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
• Defective clutch (A) latch valve	• INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
• Defective clutch (B) regulator valve	• INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
• Defective clutch (B) latch valve	• INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
• Defective clutch (C) regulator valve	• INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
• Defective clutch (E) regulator valve	• INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
• Defective clutch (E) latch valve	• INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Clutch Plates	
• Forward clutch (A) friction and steel plate — failure or Low One-Way Clutch (OWC) assembly — failure	• For 1st, 2nd, 3rd or 4th gear concerns, INSPECT the forward clutch assembly for damage. REPAIR as required. REFER to Forward Clutch Assembly in this section. For the One-Way Clutch (OWC), INSPECT for damage. One-Way Clutch (OWC) must rotate counterclockwise and lock clockwise. REFER to

	Transmission — Early Build or Transmission — Late Build in this section.
Direct clutch (B) friction and steel plate — failure	For 3rd or 5th gear concerns, INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section.
Intermediate clutch (C) friction and steel plate — failure	For 2nd or 6th gear concerns, INSPECT the intermediate clutch assembly for damage. REPAIR as required. REFER to Intermediate Clutch Assembly in this section.
Overdrive clutch (E) assembly — failure	For 4th, 5th or 6th gear concerns, INSPECT the overdrive clutch for damage. REPLACE the overdrive clutch. REFER to Overdrive Clutch Assembly in this section.

Shift Concerns: Timing — Early/Late

Possible Component	Reference/Action
211 — ROUTINE	
Powertrain Control System	
PCM electrical inputs/outputs, external vehicle wiring harnesses or main control molded leadframe	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If engine control DTCs return, REFER to Powertrain Control/Emissions Diagnosis (PC/ED) manual. INSPECT and CLEAN the shift solenoid terminals on the main control molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section.
Engine driveability concerns	REFER to Section 303-00.
Main Control	
Bolts not tightened to specification	TIGHTEN to specification.
Main control unit contaminated, solenoid(s) damaged, stuck or bore damaged. Manual valve damaged, stuck or bore damaged	REFER to Main Control in this section.
Incorrect Pressures	
Application pressures are incorrect	Incorrect application pressures may be due to non-transmission components, main control assembly or internal transmission damage. REPAIR all non-transmission components then continue with this routine.
Other	
Tire size change, axle ratio change	VERIFY the vehicle has the original equipment. REFER to the certification label. Changes in tire size and axle ratio will affect shift timing.

Shift Concerns: Timing — Erratic/Hunting

Possible Component	Reference/Action
212 — ROUTINE	
Transmission Fluid	
Incorrect level	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Condition	- CARRY OUT the fluid level check in Transmission Fluid Level Check in this section. - REFER to Routine 257 Transmission Overheating.
Transmission fluid over temperature condition	
Powertrain Control System	
PCM electrical inputs/outputs, external vehicle wiring harnesses or main control leadframe	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If engine control DTCs return, REFER to Powertrain Control/Emissions Diagnosis (PC/ED) manual.
Torque Converter Concerns	
Torque converter	REFER to torque converter operation concern: Cycling/Chatter.

Feel Concerns: Soft/Slipping (Some or All)

Possible Component	Reference/Action
213 — ROUTINE	
Transmission Fluid	
Incorrect level	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Transmission fluid filter and seal assembly — plugged, damaged	INSTALL a new transmission fluid filter assembly. REFER to Fluid Pan, Gasket and Filter in this section.
Powertrain Control System	
PCM electrical inputs/outputs, external vehicle wiring harnesses, main control molded leadframe or Transmission Fluid Temperature (TFT) sensor.	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test B.
Main Control	
Main control molded leadframe	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A.
Front pump adapter seal — cracked, leaking or damaged	INSTALL a new front pump adapter seal.
Bolts not tightened to	TIGHTEN to specification.

specification	
Main control contaminated, solenoid(s) damaged, stuck or bore damaged. Manual valve damaged, stick or bore damaged	INSPECT for damage. If damaged, INSTALL a new main control assembly. REFER to Main Control in this section.

Feel Concerns: Harsh (Some or All)

Possible Component	Reference/Action
214 — ROUTINE	
Transmission Fluid	
Incorrect level	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Transmission fluid filter and seal assembly — plugged, damaged	INSTALL a new transmission fluid filter assembly. REFER to Fluid Pan, Gasket and Filter in this section.
Powertrain Control System	
PCM electrical inputs/outputs, external vehicle wiring harnesses, main control molded leadframe or solenoid body information does not match PCM information	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If solenoid body and PCM information does not match, REPROGRAM the PCM with the latest calibration. PERFORM the Solenoid Body Strategy Data Download. REFER to Solenoid Body Strategy in this section. PERFORM Road Test — Adaptive Drive Cycle, REFER to Shift Point Road Test in this section. ROAD TEST and CHECK for DTCs.
Main Control	
Bolts not tightened to specification	TIGHTEN bolts to specification.
Main control contaminated, solenoid(s) damaged, solenoids stuck or bore damaged	INSPECT for damage. If damaged, INSTALL a new main control assembly. REFER to Main Control in this section.
Manual valve damaged, stuck or bore damaged	INSPECT for damage. If damaged, INSTALL a new main control assembly. REFER to Main Control in this section.

Feel Concerns: No 1st Gear, Engages in a Higher Gear

Possible Component	Reference/Action
215 — ROUTINE	
Powertrain Control System	
PCM, external vehicle wiring harnesses or main control molded leadframe	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs.

Clutch Plates	
Low One-Way Clutch (OWC) assembly — failure	INSPECT the <u>OWC</u> assembly for damage. The <u>OWC</u> must rotate counterclockwise and lock clockwise. REPLACE the <u>OWC</u>. REFER to Transmission — Early Build or Transmission — Late Build in this section.
Incorrect Gear	
Transmission failure	DETERMINE which gear the transmission is in. REFER to the Clutch and Solenoid Application Charts in this section.

Feel Concerns: No Manual 1st Gear

Possible Component	Reference/Action
216 — ROUTINE	
Transmission Fluid	
Incorrect level	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Transmission fluid filter and seal assembly — plugged, damaged	INSTALL a new transmission fluid filter assembly. REFER to Fluid Pan, Gasket and Filter in this section.
Selector Lever Linkage	
Selector lever cable system — damaged, misaligned	INSPECT and REPAIR as necessary. VERIFY selector lever cable adjustment. REFER to Section 307-05.
Powertrain Control System	
PCM, external vehicle harness, main control molded leadframe or Shift Solenoid A (SSA).	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and Manual for DTCs. If the DTCs return, GO to Pinpoint Test A.
Main Control	
Molded leadframe — contamination	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control molded leadframe for metallic contamination., REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A.
Clutch Plates	
Forward clutch (A) friction and steel plate — failure	INSPECT the forward clutch assembly for damage. REPAIR as required. REFER to Forward Clutch Assembly in this section.
Low/reverse clutch (D) friction and steel plate — failure	INSPECT the low/reverse clutch assembly for damage. REPAIR as required. REFER to Low/Reverse Clutch Assembly in this section.
Low One-Way Clutch (OWC) assembly — failure	If no 1st gear above 3 mph, INSPECT the <u>OWC</u> assembly for damage. The <u>OWC</u> must rotate counterclockwise and lock clockwise. REPLACE the <u>OWC</u>. REFER to Transmission — Early Build or Transmission — Late Build in this section.
Pump	

• Pump gear — failure	• INSTALL a new pump assembly. REFER to Pump Assembly in this section.
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Feel Concerns: No Manual 2nd Gear

Possible Component	Reference/Action
217 — ROUTINE	
Transmission Fluid	
• Incorrect level	• CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
• Transmission fluid filter and seal assembly — plugged, damaged	• INSTALL a new transmission fluid filter assembly.
Selector Lever Linkage	
• Selector lever cable system — damaged, misaligned	• INSPECT and REPAIR as necessary. VERIFY selector lever cable adjustment. REFER to Section 307-05.
Powertrain Control System	
• PCM, external vehicle wiring harnesses, main control molded leadframe or Shift Solenoid A (SSA)	• If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A.
Main Control	
• Molded leadframe — contamination	• REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A.
Clutch Plates	
• Forward clutch (A) friction and steel plate — failure	• INSPECT the forward clutch assembly for damage. REPAIR as required. REFER to Forward Clutch Assembly in this section.
• Intermediate clutch (C) friction and steel plate — failure	• INSPECT the intermediate clutch assembly for damage. REPAIR as required. REFER to Intermediate Clutch Assembly in this section.
Pump	
• Pump gear — failure	• INSTALL a new pump assembly. REFER to Pump Assembly in this section.

Feel Concerns: No Manual 3rd Gear

Possible Component	Reference/Action
218 — ROUTINE	

Selector Lever Linkage	
Selector lever cable system — damaged, misaligned	INSPECT and REPAIR as necessary. VERIFY selector lever cable adjustment. REFER to Section 307-05.
Powertrain Control System	
PCM, external vehicle wiring harnesses, main control molded leadframe or Shift Solenoid B (SSB).	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A.
Main Control	
Molded leadframe — contamination	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A.
Clutch Plates	
Forward clutch (A) friction and steel plate — failure	INSPECT the forward clutch assembly for damage. REPAIR as required. REFER to Forward Clutch Assembly in this section.
Direct clutch (B) friction and steel plate — failure	INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section.
Pump	
Pump gear — failure	INSTALL a new pump assembly. REFER to Pump Assembly in this section.

Feel Concerns: No 1-2 Shift

Possible Component	Reference/Action
220 — ROUTINE	
Transmission Fluid	
Incorrect level	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Transmission fluid filter and seal assembly — plugged, damaged	INSTALL a new transmission fluid filter assembly. REFER to Fluid Pan, Gasket and Filter in this section.
Powertrain Control System	
PCM, external vehicle wiring harnesses, main control molded leadframe, Shift Solenoid C (SSC) or Shift Solenoid D (SSD).	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A.
Main Control	
Molded leadframe — contamination	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs.

	ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A .
Defective clutch (B) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (B) latch valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (C) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Clutch Plates	
Intermediate clutch (C) friction and steel plate — failure	INSPECT the intermediate clutch assembly for damage. REPAIR as required. REFER to Intermediate Clutch Assembly in this section.
Low/reverse clutch (D) friction and steel plate — failure	INSPECT the low/reverse clutch assembly for damage. REPAIR as required. REFER to Low/Reverse Clutch Assembly in this section.
Low One-Way Clutch (OWC) assembly — failure	INSPECT the OWC assembly for damage. The OWC must rotate counterclockwise and lock clockwise. REPLACE the OWC. REFER to Transmission — Early Build or Transmission — Late Build in this section.

Feel Concerns: No 2-3 Shift

Possible Component	Reference/Action
221 — ROUTINE	
Transmission Fluid	
Incorrect level	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Transmission fluid filter and seal assembly — plugged, damaged	INSTALL a new transmission fluid filter assembly. REFER to Fluid Pan, Gasket and Filter in this section.
Powertrain Control System	
PCM, external vehicle wiring harnesses, main control molded leadframe, Shift Solenoid B (SSB) or Shift Solenoid C (SSC).	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A.
Main Control	
Molded leadframe — contamination	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A.
Defective clutch (B) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (B) latch	INSPECT main control assembly for stuck valves or

valve	contamination. REFER to Main Control in this section.
Defective clutch (C) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Clutch Plates	
Direct clutch (B) friction and steel plate — failure	INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section.
Intermediate clutch (C) friction and steel plate — failure	INSPECT the intermediate clutch assembly for damage. REPAIR as required. REFER to Intermediate Clutch Assembly in this section.

Feel Concerns: No 3-4 Shift

Possible Component	Reference/Action
222 — ROUTINE	
Powertrain Control System	
PCM, external vehicle wiring harnesses, main control molded leadframe, Shift Solenoid B (SSB), Shift Solenoid D (SSD) or Shift Solenoid E (SSE).	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A.
Main Control	
Molded leadframe — contamination	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A.
Defective clutch (B) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (B) latch valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (E) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective solenoid multiplex valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Clutch Plates	
Direct clutch (B) friction and steel plate — failure	INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section.
Overdrive clutch (E) friction and steel plate — failure	INSPECT the overdrive clutch assembly for damage. REPAIR as required. REFER to Overdrive Clutch Assembly in this section.

Feel Concerns: No 4-3 Shift

Possible Component	Reference/Action
223 — ROUTINE	
Powertrain Control System	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A.
PCM, external vehicle wiring harnesses, main control molded leadframe, Shift Solenoid B (SSB) or Shift Solenoid D (SSD).	
Main Control	
Molded leadframe — contamination	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A.
Defective clutch (E) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (E) latch valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (B) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Solenoid multiplex valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Drive enable valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Clutch Plates	
Direct clutch (B) friction and steel plate — failure	INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section.
Overdrive clutch (E) friction and steel plate — failure	INSPECT the overdrive clutch assembly for damage. REPAIR as required. REFER to Overdrive Clutch Assembly in this section.

Feel Concerns: No 3-2 Shift

Possible Component	Reference/Action
224 — ROUTINE	
Powertrain Control System	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A.
PCM, external vehicle wiring harnesses, main control molded leadframe, Shift Solenoid B (SSB) or Shift Solenoid C (SSC).	
Main Control	
Molded leadframe — contamination	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control molded leadframe for metallic

	contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A .
Defective clutch (B) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (B) latch valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (C) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Clutch Plates	
Direct clutch (B) friction and steel plate — failure	INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section.
Intermediate clutch (C) friction and steel plate — failure	INSPECT the intermediate clutch assembly for damage. REPAIR as required. REFER to Intermediate Clutch Assembly in this section.

Feel Concerns: No 2-1 Shift

Possible Component	Reference/Action
225 — ROUTINE	
Powertrain Control System	
PCM, external vehicle wiring harnesses, main control molded leadframe or Shift Solenoid C (SSC).	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A.
Main Control	
Molded leadframe — contamination	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A.
Defective clutch (C) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Clutch Plates	
Direct clutch (C) friction and steel plate — failure	INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section.
Low/reverse clutch (D) friction and steel plate — failure	INSPECT the low/reverse clutch assembly for damage. REPAIR as required. REFER to Low/Reverse Clutch Assembly in this section.
Low One-Way Clutch (OWC) assembly — failure	INSPECT the <u>OWC</u> assembly for damage. The <u>OWC</u> must rotate counterclockwise and lock clockwise. REPLACE the <u>OWC</u>. REFER to Transmission — Early Build or Transmission — Late Build in this section.

Torque Converter Operation Concerns: No Apply

Possible Component	Reference/Action
240 — ROUTINE	
Transmission Fluid	
Incorrect level	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Fluid condition	CHECK transmission fluid condition. REFER to Preliminary Inspection in this section.
Powertrain Control System	
PCM, external vehicle wiring harnesses, main control molded leadframe or Torque Converter Clutch (TCC) solenoid.	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A.
Main Control	
Molded leadframe — contamination	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the TCC solenoid terminals on the main control molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A.
Main control assembly contaminated, solenoid(s) damaged, stuck or bore damaged. Manual valve damaged, stuck or bore damaged	INSPECT for damage. If damaged, install a new main control assembly. REFER to Main Control in this section.
Defective torque converter apply regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective torque converter release regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Main control assembly bolts — not tightened to specification	TIGHTEN to specification.
Torque Converter	
Torque converter components	REMOVE the transmission. INSPECT for damage. INSTALL a new or remanufactured torque converter. REFER to Transmission — Four Wheel Drive (4WD) or Transmission — Rear Wheel Drive (RWD) in this section.

Torque Converter Operation Concerns: Cycling/Chatter

Possible Component	Reference/Action
241 — ROUTINE	

Transmission Fluid	
Incorrect level	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Fluid condition	CHECK transmission fluid condition. REFER to Preliminary Inspection in this section.
Powertrain Control System	
PCM, vehicle wiring harnesses, main control molded leadframe, Torque Converter Clutch (TCC) solenoid or Transmission Fluid Temperature (TFT) sensor	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A for TCC solenoid diagnosis and GO to Pinpoint Test B for TFT sensor diagnosis.
Main Control	
Molded leadframe — contamination	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the TCC solenoid terminals on the main control molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A to diagnosis the Torque Converter Clutch (TCC) or GO to Pinpoint Test B to diagnosis the Transmission Fluid Temperature (TFT) sensor.
Main control assembly contaminated, solenoid(s) damaged, stuck or bore damaged. Manual valve damaged, stuck or bore damaged	INSPECT for damage. If damaged, install a new main control assembly. REFER to Main Control in this section.
Defective torque converter apply regulator valve	- INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section. - TIGHTEN to specification.
Main control assembly bolts — not tightened to specification	
Torque Converter	
Torque converter components	REMOVE the transmission. INSPECT for damage. INSTALL a new or remanufactured torque converter. REFER to Transmission — Four Wheel Drive (4WD) or Transmission — Rear Wheel Drive (RWD) in this section.

Torque Converter Operation Concerns: Always Applied/Stalls Vehicle

Possible Component	Reference/Action
242 — ROUTINE	
Transmission Fluid	
Incorrect level	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.

Fluid condition	CHECK transmission fluid condition. REFER to Preliminary Inspection in this section.
Powertrain Control System	
PCM, vehicle wiring harnesses, main control molded leadframe, Torque Converter Clutch (TCC) solenoid or Transmission Fluid Temperature (TFT) sensor	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A for TCC solenoid diagnosis and GO to Pinpoint Test B for TFT sensor diagnosis.
Main Control	
Molded leadframe — contamination	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the TCC solenoid terminals on the main control molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A to diagnosis the Torque Converter Clutch (TCC) or GO to Pinpoint Test B to diagnosis the Transmission Fluid Temperature (TFT) sensor.
Main control assembly contaminated, solenoid(s) damaged, stuck or bore damaged. Manual valve damaged, stuck or bore damaged	INSPECT for damage. If damaged, install a new main control assembly. REFER to Main Control in this section.
Main control assembly bolts — not tightened to specification	TIGHTEN to specification.
Torque Converter	
Torque converter components	REMOVE the transmission. INSPECT for damage. INSTALL a new or remanufactured torque converter. REFER to Transmission — Four Wheel Drive (4WD) or Transmission — Rear Wheel Drive (RWD) in this section.

Other Concerns: External Leaks

Possible Component	Reference/Action
252 — ROUTINE	
Transmission Fluid	
Incorrect level	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Transmission case vent — damaged, case porosity	REPAIR as necessary.
Leakage at gaskets, seals, electrical connector	REFER to Leakage Inspection, Fluid Leakage in Torque Converter Area and Leak Check Test with A Black Light in this section. REMOVE all traces of lubricant on exposed surface of the transmission. REPAIR as necessary.

Fluid Cooler Tubes	
Cooler tube fittings	LOCATE leak source. REPAIR as required. REFER to Section 307-02.
Cooler tube O-rings, cooler tubes	LOCATE leak source. REPAIR as required. REFER to Section 307-02.
Torque Converter	
Torque converter studs	INSTALL a new torque converter. If a new or remanufactured torque converter is installed, use the scan tool and follow the on-screen instructions and perform the Misfire Monitor Neutral Profile Correction procedure.
Torque converter hub seal	INSTALL a new torque converter hub seal.
Torque converter weld	INSTALL a new torque converter. If a new or remanufactured torque converter is installed, use the scan tool and follow the on-screen instructions and perform the Misfire Monitor Neutral Profile Correction procedure.
Transmission Case	
Case — leaking	INSTALL a new transmission case. REFER to Transmission — Early Build or Transmission — Late Build in this section.
Transmission vehicle harness connector	INSTALL a new transmission vehicle harness connector O-ring.
Transmission fluid fill plug	INSTALL a new transmission fluid fill plug.
Output shaft seal	INSTALL a new seal. REFER to Output Shaft Seal in this section.
Manual control lever seal	INSTALL a new seal.
Transmission fluid pan gasket	INSTALL a new gasket.
Fluid Pump	
Fluid pump O-ring	INSTALL a new O-ring. REFER to Pump Assembly in this section.
Fluid pump seal ring	INSTALL a new seal ring. REFER to Pump Assembly in this section.

Other Concerns: Noise/Vibration in Forward or Reverse

NOTE: NVH symptoms should be identified using the diagnostic tools that are available. For a list of these tools, an explanation of their uses and a glossary of common terms, refer to [Section 100-04](#). Since it is possible any one of multiple systems may be the cause of a symptom, it may be necessary to use a process of elimination type of diagnostic approach to pinpoint the responsible system. If this is not the causal system for the symptom, refer back to [Section 100-04](#) for the next likely system and continue diagnosis.

Possible Component	Reference/Action
254 — ROUTINE	
Transmission Fluid	
Incorrect level (low) pump cavitation	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level

	Check in this section.
Fluid Cooler Tubes	• ADJUST or REPOSITION cooler tubes.
• Cooler tubes grounding out	
Torque Converter	• LOCATE source of disturbance. REPAIR as required. If a new or remanufactured torque converter is installed, use the scan tool and follow the on-screen instructions and perform the Misfire Monitor Neutral Profile Correction procedure.
• Check the torque converter components/balance weight	
Engine Driveline	• REFER to Section 303-00.
• Engine drive accessories	

Other Concerns: Engine Will Not Crank

Possible Component	Reference/Action
255 — ROUTINE	
Selector Lever Cable System	• INSPECT and REPAIR as necessary. REFER to Section 307-05.
• Selector lever cable system — damaged, misaligned	
Powertrain Control System	• If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test C.
• PCM, vehicle wiring harnesses, engine starting and charging system, main control molded leadframe or Transmission Range (TR) sensor	
Torque Converter	• REPAIR as necessary.
• Flexplate — damaged	
Vehicle Starter	• INSPECT and REPAIR as necessary. REFER to Section 303-06.
• Starter system concerns	
Transmission Range (TR) Sensor Assembly	• INSPECT and REPAIR as necessary.
• <u>TR</u> sensor assembly — damaged	
Fluid Pump Assembly	• REPAIR as necessary.
• Internal parts seized	

Other Concerns: No Park (P) Range

Possible Component	Reference/Action
256 — ROUTINE	
Selector Lever Cable	• INSPECT and REPAIR as necessary. REFER to Section 307-05 for additional information.
• Selector lever cable system — damaged, misaligned	

Manual control lever assembly damaged, manual valve inner lever pin bent, manual valve inner lever damaged, spring rod damaged, park pawl pin loose or damaged, park rod actuating plate loose, damaged or missing	INSPECT for damage. REPAIR as necessary.
Transmission case	INSPECT for damage. If damaged, REPAIR as necessary.
Park gear, park pawl, park pawl return spring, part or guide, park actuating rod, park pawl shaft, manual lever	INSPECT for damage. If damaged, REPAIR as necessary.
External linkages/brackets — damaged	INSPECT for damage. REPAIR as necessary.
Powertrain Control System	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test C.
PCM, vehicle wiring harnesses, main control molded leadframe or Transmission Range (TR) sensor	
Transmission Range (TR) Sensor Assembly Damaged	INSPECT for damage. REPAIR as necessary. INSTALL a new main control assembly. REFER to Main Control in this section.
Manual lever detent spring	
TR sensor assembly	

Other Concerns: Transmission Overheating

Possible Component	Reference/Action
257 — ROUTINE	
Transmission Fluid	
Incorrect level	CHECK transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Fluid condition	CHECK transmission fluid condition. REFER to Preliminary Inspection in this section.
Powertrain Control System	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A for TCC solenoid diagnosis and GO to Pinpoint Test B for TFT sensor diagnosis.
PCM, vehicle wiring harnesses, main control molded leadframe, Torque Converter Clutch (TCC) solenoid or Transmission Fluid Temperature (TFT) sensor	
Torque Converter Not Engaging	INSTALL a new torque converter. If a new or remanufactured torque converter is installed, use the scan tool and follow the on-screen instructions and perform the Misfire Monitor Neutral Profile Correction procedure.
Torque converter	

Case Vent Damaged	
Transmission case	INSPECT for damage. If damaged, REPAIR as necessary.
Other	
Restriction in transmission cooling system	CHECK transmission cooling system efficiency. REFER to Section 307-02 for automatic transmission cooling system diagnostic procedures.
Excessive trailer tow load	REFER to the Owner's Literature for specifications on trailer towing.
Vehicle heat shield — missing or damaged	INSPECT for damage. REPAIR as necessary.
Vehicle airflow is restricted	INSPECT for damage. REPAIR as necessary.
Thermal bypass valve — missing or damaged	INSPECT for damage. REPAIR as necessary. REFER to Main Control in this section.

Other Concerns: Fluid Venting/Foaming

Possible Component	Reference/Action
261 — ROUTINE	
Transmission Fluid	
Incorrect level	CHECK the transmission fluid level. ADJUST transmission fluid to correct level. REFER to Transmission Fluid Level Check in this section.
Case Vent Damaged	
Transmission case	INSPECT for damage. If damaged, REPAIR as necessary.

Feel Concerns: Shift Concerns: No 4-5 Shift

Possible Component	Reference/Action
270 — ROUTINE	
Powertrain Control System	
PCM, vehicle wiring harnesses, main control molded leadframe, Shift Solenoid A (SSA) solenoid or Shift Solenoid B (SSB) sensor	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A.
Main Control	
Molded leadframe — contamination	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A.

Defective clutch (A) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (A) latch valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (B) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Clutch Plates	
Forward clutch (A) friction and steel plate — failure	INSPECT the forward clutch assembly for damage. REPAIR as required. REFER to Forward Clutch Assembly in this section.
Direct clutch (B) friction and steel plate — failure	INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section.

Feel Concerns: No 5-4 Shift (Automatic)

Possible Component	Reference/Action
271 — ROUTINE	
Powertrain Control System	
PCM, vehicle wiring harnesses, main control molded leadframe or Shift Solenoid B (SSB)	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A.
Main Control	
Molded leadframe — contamination	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A.
Defective clutch (B) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (B) latch valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (A) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Clutch Plates	
Direct clutch (B) friction and steel plate — failure	INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section.
Forward clutch (A) friction and steel plate — failure	INSPECT the forward clutch assembly for damage. REPAIR as required. REFER to Forward Clutch Assembly in this section.

Feel Concerns: No 5-6 Shift (Automatic)

Possible Component	Reference/Action
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272 — ROUTINE	
Powertrain Control System	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A.
PCM, vehicle wiring harnesses, main control molded leadframe, Shift Solenoid B (SSB) or Shift Solenoid C (SSC)	
Main Control	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A.
Molded leadframe — contamination	
Defective clutch (B) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (B) latch valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (C) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Clutch Plates	- INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section. - INSPECT the intermediate clutch assembly for damage. REPAIR as required. REFER to Intermediate Clutch Assembly in this section.
Direct clutch (B) friction and steel plate — failure	
Intermediate clutch (C) friction and steel plate — failure	

Feel Concerns: No 6-5 Shift (Automatic)

Possible Component	Reference/Action
273 — ROUTINE	
Powertrain Control System	If DTCs are set, CLEAR the DTCs. CARRY OUT the Key ON Engine OFF (KOEO) and Key ON Engine Running (KOER) self-test. ROAD TEST the vehicle and CHECK for DTCs. If the DTCs return, GO to Pinpoint Test A.
PCM, vehicle wiring harnesses, main control leadframe or Shift Solenoid C (SSC)	
Main Control	REMOVE the main control assembly, REFER to Main Control in this section. INSPECT and CLEAN the shift solenoid terminals on the main control molded leadframe for metallic contamination, REFER to Shift Solenoids (SS) in this section. INSTALL the main control assembly. CLEAR the DTCs. ROAD TEST the vehicle. If the symptom returns, GO to Pinpoint Test A.
Molded leadframe — contamination	
Defective clutch (B) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Defective clutch (B) latch valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.

Defective clutch (C) regulator valve	INSPECT main control assembly for stuck valves or contamination. REFER to Main Control in this section.
Clutch Plates	
Direct clutch (B) friction and steel plate — failure	INSPECT the direct clutch assembly for damage. REPAIR as required. REFER to Direct Clutch Assembly in this section.
Intermediate clutch (C) friction and steel plate — failure	INSPECT the intermediate clutch assembly for damage. REPAIR as required. REFER to Intermediate Clutch Assembly in this section.

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