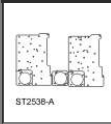
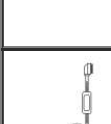
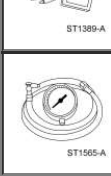


Diagnosis By Symptom

Special Tool(s)

 ST2538-A	Air Test Plate, Transmission 307-433-01 , 307-433-02 , 307-433-03
 ST1137-A	73 III Automotive Meter 105-R0057 or equivalent
 ST1781-A	Trans Tester TR/MLP Overlay and Manual 007-00131 or equivalent
 ST2332-A	Worldwide Diagnostic System (WDS) Vehicle Communication module (VCM) with appropriate adapters, or equivalent diagnostic tool
 ST1632-A	MLP-TR Cable 418-F107 (007-00111) or equivalent
 ST1389-A	Transmission Tester 307-F016 (007-00130) or equivalent
 ST1565-A	Pressure Gauge, Transmission Fluid 307-004 (T57L-77820-A)

The Diagnosis by Symptom Index gives the technician diagnostic information and direction, and suggests possible components, using a symptom as a starting point.

Diagnosis by Symptom Index — Directions

1. Using the Symptom Index, select the Concern/Symptom 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 diagnostic trouble code (DTC). Be aware that the components listed may still be the cause.*

NOTE: *When the battery is disconnected or a new battery is installed, certain transmission operating parameters can be lost. The powertrain control module (PCM) must relearn these parameters. During this learning process, you may experience 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 with the ROUTINE, if indicated. Follow the reference or action statements. Always carry out the on-board diagnostic tests as necessary. Never skip steps. Repair as necessary.
5. These components are listed in the removal sequence and by most probable cause. All components listed must be inspected to make sure that the repairs are complete.

Diagnosis by Symptom Index

Diagnosis by Symptom Index

5R55S	Routines
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Timing Concern	
Early/Late (Some/All)	211
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5R55S	217	Routines
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Engine Will Not Crank	255	
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No Engine Braking in Manual 2nd Position	258	
No Engine Braking in Manual 1st Position	259	
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5R55S	Routines
Engine Braking in ALL Gears	283
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Diagnostic Routines

Engagement Concern: No Forward in D or D ((D) Cancelled) Only

Possible Component	Reference/Action
201A — ROUTINE	
Powertrain Control System	
PCM, vehicle wiring harnesses, pressure control solenoid B (PC B)	Carry out on-board diagnostic tests. Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM.
	GO to Pinpoint Test D.
	Repair as required. Clear DTCs, road test and rerun on-board diagnostic test.
Main Control	
Screw not tightened to specification	Tighten to specification.
Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
Contamination	Disassemble and clean.
Valves, springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install a new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
Filter damaged, missing	Inspect for damage, repair as necessary.
Center Support	
Screw not tightened to specification	Tighten to specification.
Seal rings or bearing damaged	Inspect for damage. Repair as necessary.

Possible Component		Reference/Action
	Outside diameter of case bore damaged	Inspect for damage. Repair as necessary.
	Support damaged or leaking	Inspect for damage. Repair as necessary.
Overdrive Servo		
	Servo retaining screws damaged	Inspect for damage. Repair as necessary.
	Seals (piston and cover) damaged	Inspect for damage. Repair as necessary.
Overdrive Band		
	Band damaged	Inspect for damage. Repair as necessary.
	Servo worn or damaged	Inspect for damage. Repair as necessary.
	Not adjusted correctly	Inspect for damage. Repair as necessary.
Case		
	Damaged	Inspect for damage. Repair as necessary.

Engagement Concern: No Forward

Possible Component		Reference/Action
201B — ROUTINE		
Powertrain Control System		
	PCM, vehicle wiring harnesses, pressure control solenoid B (PC B)	Carry out on-board diagnostic tests. Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM.
		GO to Pinpoint Test D.
		Repair as required. Clear DTCs, road test and rerun on-board diagnostic test.
Transmission Fluid		
	Incorrect transmission fluid level	Adjust transmission fluid to the correct level. Refer to Transmission Fluid Level Check in this section.

Possible Component		Reference/Action
	Transmission fluid condition	Carry out the Transmission Fluid Condition Check. Refer to Preliminary Inspection in this section.
Main Control		
	Screw not tightened to specification	Tighten to specification.
	Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
	Contamination	Disassemble and clean.
	Valves, springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install a new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
	Filter damaged, missing	Inspect for damage, repair as necessary.
Forward Clutch Assembly		
	Seals, piston damaged	Inspect for damage. Repair as necessary.
	Check ball damaged, missing, not seating, off location	Inspect for mislocation, poor seating, damage. Install a new cylinder.
	Friction elements damaged or worn	Inspect for damage. Repair as necessary.
	Return springs damaged	Inspect for damage. Repair as necessary.
	Bronze seal ring or bearing damaged	Inspect for damage. Repair as necessary.
Center Support		
	Screw not tightened to specification	Tighten to specification.
	Seal rings or bearing damaged	Inspect for damage. Repair as necessary.
	Outside diameter or case bore damaged	Inspect for damage. Repair as necessary.
	Support damaged or leaking	Inspect for damage. Repair as necessary.
Forward Planetary Assembly		

Possible Component	Reference/Action
Planteary damage	Inspect for damage. Repair as necessary.
Low One-Way Clutch	
Worn, damaged or assembled incorrectly	Inspect for damage. Repair as necessary.
Case	
Damaged	Inspect for damage. Repair as necessary.

Engagement Concern: No Reverse

Possible Component	Reference/Action
202 — ROUTINE	
Powertrain Control System	
PCM, vehicle wiring harnesses, pressure control solenoid C (PC C), shift solenoid B (SSB)	Carry out on-board diagnostic tests. Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM.
	GO to Pinpoint Test A and GO to Pinpoint Test D.
	Repair as required. Clear DTCs, road test and rerun on-board diagnostic test.
Main Control	
Screws not tightened to specification	Tighten to specification.
Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
Contamination	Disassemble and clean.
Valves, springs damaged, misassembled, missing, stuck or bore damage	If damaged or parts are missing, install a new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
Filter damaged, missing	Inspect for damage, repair as necessary.
Direct Clutch Assembly	
Seals, piston damaged	Inspect or damage. Repair as necessary.

Possible Component		Reference/Action
	Check ball damaged, missing, not seating, off location	Inspect for mislocation, poor seating, damage. Install a new cylinder.
	Friction elements damaged or worn	Inspect for damage. Repair as necessary.
	Return springs damaged	Inspect for damage. Repair as necessary.
Reverse Servo		
	Servo retaining screws damaged	Inspect for damage. Repair as necessary.
	Seals (piston and cover) damaged	Inspect for damage. Repair as necessary.
Reverse Band		
	Band damaged	Inspect for damage. Repair as necessary.
	Servo worn or damaged	Inspect for damage. Repair as necessary.
Reverse Drum Assembly		
	One-way clutch damaged	Inspect for damage. Install a new drum assembly.
	Bearing damaged	Inspect for damage. Install a new drum assembly.
Torque Converter Assembly		
	Torque converter internal failure preventing engagement, piston release	Remove the transmission. Inspect for damage. Refer to Torque Converter Contamination Inspection in this section. If the torque converter fails to pass the criteria or is damaged, install a new or remanufactured torque converter.

Engagement Concern: Harsh Reverse ONLY

Possible Component		Reference/Action
203 — ROUTINE		
Powertrain Control System		
	PCM, vehicle wiring harnesses, pressure control solenoid C (PC C)	Carry out on-board diagnostic tests. Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM.
		GO to Pinpoint Test D.
		Repair as required. Clear DTCs, road test and rerun on-board diagnostic test.

Possible Component		Reference/Action
Incorrect Pressures		
	High pressures	Carry out Line Pressure Test. Refer to Special Testing Procedures in this section.
Main Control		
	Screws not tightened to specification	Tighten to specification.
	Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
	Contamination	Disassemble and clean.
	Valves, spring damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install a new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
	Filter damaged, missing	Inspect for damage, repair as necessary.
Direct Clutch Assembly		
	Seals, piston damaged	Inspect for damage. Repair as necessary.
	Check ball damaged, missing not seating, off location	Inspect for mislocation, poor seating, damage. Install a new cylinder.
	Friction elements damaged or worn	Inspect for damage. Repair as necessary.
	Return springs damaged	Inspect for damage. Repair as necessary.
Forward Clutch Assembly		
	Seals, piston damaged	Inspect for damage. Repair as necessary.
	Check ball damaged, missing, not seating, off location	Inspect for mislocation, poor seating, damage. Install a new cylinder.
	Friction elements damaged or worn	Inspect for damage. Repair as necessary.
	Return springs damaged	Inspect for damage. Repair as necessary.
	Bronze seal ring or bearing damaged	Inspect for damage. Repair as necessary.
Reverse Servo		

Possible Component		Reference/Action
	Servo retaining screws damaged	Inspect for damage. Repair as necessary.
	Seals (piston and cover) damaged	Inspect for damage. Repair as necessary.
Reverse Band		
	Band damaged	Inspect for damage. Repair as necessary.
	Servo worn or damaged	Inspect for damage. Repair as necessary.
Reverse Drum Assembly		
	One-way clutch damaged	Inspect for damage. Install a new drum assembly.
	Bearing damaged	Inspect for damage. Install a new drum assembly.

Engagement Concern: Harsh Forward ONLY

Possible Component		Reference/Action
204A — ROUTINE		
Powertrain Control System		
	PCM, vehicle wiring harnesses, pressure control solenoid A (PC A), pressure control solenoid C (PC C)	Carry out on-board diagnostic tests. Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM.
		GO to Pinpoint Test D.
		Repair as required. Clear DTCs, road test and rerun on-board diagnostic test.
Incorrect Pressures		
	High pressures	Carry out Line Pressure Test. Refer to Special Testing Procedures in this section.
Main Control		
	Screws not tightened to specification	Tighten to specification.
	Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
	Contamination	Disassemble and clean.

Possible Component		Reference/Action
	Valves, springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install a new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
	Filter damaged, missing	Inspect for damage, repair as necessary.
Center Support		
	Screw not tightened to specification	Tighten to specification.
	Seal rings or bearing damage	Inspect for damage. Repair as necessary.
	Outside diameter of case bore damage	Inspect for damage. Repair as necessary.
	Support damaged or leaking	Inspect for damage. Repair as necessary.
Forward Clutch Assembly		
	Seals, piston damaged	Inspect for damage. Repair as necessary.
	Check ball damaged, missing, not seating, off location	Inspect for mislocation, poor seating, damage. Install a new cylinder.
	Friction elements damaged or worn	Inspect for damage. Repair as necessary.
	Return springs damaged	Inspect for damage. Repair as necessary.
	Bronze seal ring or bearing damaged	Inspect for damage. Repair as necessary.

Engagement Concern: Harsh Manual 1st Gear ONLY

Possible Component		Reference/Action
204B — ROUTINE		
Powertrain Control System		
	PCM, vehicle wiring harnesses, pressure control solenoid B (PC B), turbine shaft speed (TSS) sensor	Carry out on-board diagnostic tests. For additional information, refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM.
		GO to Pinpoint Test D and GO to Pinpoint Test E.

Possible Component	Reference/Action
	Repair as necessary. Clear DTCs, road test and rerun on-board diagnostic test.

Engagement Concern: Delayed or Soft Reverse ONLY

Possible Component	Reference/Action
205 — ROUTINE	
Powertrain Control System	
PCM, vehicle wiring harnesses, pressure control solenoid C (PC C)	Carry out on-board diagnostic tests. For additional information, refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM.
	GO to Pinpoint Test D.
	Repair as required. Clear DTCs, road test and rerun on-board diagnostic test.
Incorrect pressures	
Low pressure	Carry out Line Pressure Test. Refer to Special Testing Procedures in this section.
Main Control	
Screws not tightened to specification	Tighten to specification.
Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
Contamination	Disassemble and clean.
Valves, springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install a new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
Filter damaged, missing	Inspect for damage, repair as necessary.
Direct Clutch Assembly	
Seals, piston damaged	Inspect for damage. Repair as necessary.
Check ball damaged, missing not seating, off location	Inspect for mislocation, poor seating, damage. Install a new cylinder.

Possible Component		Reference/Action
	Friction elements damaged or worn	Inspect for damage. Repair as necessary.
	Return springs damaged	Inspect for damage. Repair as necessary.
Reverse Servo		
	Servo retaining screws damaged	Inspect for damage. Repair as necessary.
	Seals (piston and cover) damaged	Inspect for damage. Repair as necessary.
Reverse Band		
	Band damaged	Inspect for damage. Repair as necessary.
	Servo worn or damaged	Inspect for damage. Repair as necessary.

Engagement Concern: Delayed/Soft Forward ONLY

Possible Component		Reference/Action
206 — ROUTINE		
Powertrain Control System		
	PCM, vehicle wiring harnesses, pressure control solenoid B (PC B)	Carry out on-board diagnostic tests. Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM.
		GO to Pinpoint Test D.
		Repair as necessary. Clear DTCs, road test and rerun on-board diagnostic test.
Incorrect Pressures		
	Low pressures	Carry out Line Pressure Test. Refer to Special Testing Procedures in this section.
Main Control		
	Screws not tightened to specification	Tighten to specification.
	Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
	Contamination	Disassemble and clean.

Possible Component		Reference/Action
	Valves, spring damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install a new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
	Filter damaged, missing	Inspect for damage, repair as necessary.
Overdrive Servo		
	Servo retaining screws damaged	Inspect for damage. Repair as necessary.
	Seals (piston and cover) damaged	Inspect for damage. Repair as necessary.
Overdrive Band		
	Band damaged.	Inspect for damage. Repair as necessary.
	Servo worn or damaged	Inspect for damage. Repair as necessary.
	Not adjusted correctly	Inspect for damage. Repair as necessary.
Center Support		
	Screw not tightened to specification	Tighten to specification.
	Seal rings or bearing damaged	Inspect for damage. Repair as necessary.
	Outside diameter of case bore damaged	Inspect for damage. Repair as necessary.
	Support damaged or leaking	Inspect for damage. Repair as necessary.
Forward Clutch Assembly		
	Seals, piston damaged	Inspect for damage. Repair as necessary.
	Check ball damaged, missing, not seating, off location	Inspect for mislocation, poor seating, damage. Install a new cylinder.
	Friction element damaged or worn	Inspect for damage. Repair as necessary.
	Return springs damaged	Inspect for damage. Repair as necessary.

Possible Component	Reference/Action
Bronze seal ring or bearing damaged	Inspect for damage. Repair as necessary.

Engagement Concern: No Forward and No Reverse

Possible Component	Reference/Action
207 — ROUTINE	
Powertrain Control System	
PCM, vehicle wiring harnesses, pressure control solenoid B (PC B)	Carry out on-board diagnostic tests. Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM.
	GO to Pinpoint Test D.
	Repair as required. Clear DTCs, road test and rerun on-board diagnostic test.
Transmission Fluid	
Incorrect transmission fluid level	Adjust the transmission fluid to the correct level. Refer to Transmission Fluid Level Check in this section.
Transmission fluid condition	Carry out Transmission Fluid Condition Check. Refer to Preliminary Inspection in this section.
Selector Lever Cable/Digital Transmission Range (TR) Sensor	
Selector lever cable system or digital TR sensor damaged, misaligned	Inspect and repair as necessary. Refer to Transmission Range (TR) Sensor Adjustment in this section or Section 307-05.
Main Control	
Screws not tightened to specification	Tighten screws to specification.
Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
Contamination	Disassemble and clean.
Valve, springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.

Possible Component		Reference/Action
	• Filter damaged, missing	• Inspect for damage, repair as necessary.
Input Shaft		
	• Damaged	• Inspect for damage. Repair as necessary.
Pump Assembly		
	• Screws not tightened to specification	• Tighten screws to specification.
	• Gasket damaged	• Inspect for damage. If damaged, install a new gasket.
	• Porosity, cross leaks, ball missing, plugged hole	• Inspect for damage. If damaged, repair as necessary.
	• Pump gears cracked and/or seized	• Inspect for damage. Install a new pump.
	• Flow control valves, springs, or seals damaged, stuck or not assembled correctly	• Inspect for damage. Install a new seal or flow control valve.
Overdrive Planetary Assembly		
	• Planetary damaged	• Inspect for damage. Repair as necessary.
Center Shaft Assembly		
	• Damaged. One-way clutch damaged	• Inspect for damage. Repair as necessary.
Forward Clutch Assembly		
	• Seals, piston damaged	• Inspect for damage. Repair as necessary.
	• Check ball damaged, missing, not seating, off location	• Inspect for mislocation, poor seating, damage. Install a new cylinder.
	• Friction elements damaged or worn	• Inspect for damage. Repair as necessary.
	• Return springs damaged	• Inspect for damage. Repair as necessary.
	• Bronze seal ring or bearing damaged	• Inspect for damage. Repair as necessary.
Forward Planetary Assembly		

Possible Component	Reference/Action
Planetary damaged	Inspect for damage. Repair as necessary.
Reverse Planetary Assembly	
Planetary damaged	Inspect for damage. Repair as necessary.
Output Shaft	
Damage	Inspect for damage. Repair as necessary.
Torque Converter	
Damaged flexplate or adapter plate	Remove the transmission. Inspect for damage. Refer to Torque Converter Contamination Inspection in this section. If the torque converter fails to pass the criteria or is damaged, install a new or remanufactured torque converter.
Damaged impeller hub	
Damaged turbine hub	
Direct One-Way Clutch	
Worn, damaged or assembled incorrectly	Inspect for damage. Repair as necessary.

Engagement Concern: Harsh Forward and Harsh Reverse

Possible Component	Reference/Action
208 — ROUTINE	
Powertrain Control System	
PCM, vehicle wiring harnesses, digital transmission range (TR) sensor, transmission fluid temperature (TFT) sensor	Carry out on-board diagnostic tests. Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM.
	GO to Pinpoint Test B and GO to Pinpoint Test C.
	Repair as necessary. Clear DTCs, road test and rerun on-board diagnostic test.
Transmission Fluid	
Incorrect transmission fluid level	Adjust the transmission fluid to the correct level. For additional information, refer to Transmission Fluid Level Check in this section.

Possible Component		Reference/Action
	Transmission fluid condition	Carry out Transmission Fluid Condition Check. For additional information, refer to Preliminary Inspection.
Incorrect Pressures		
	High pressures	Carry out Line Pressure Test, refer to Special Testing Procedures in this section.
Main Control		
	Screws not tightened to specification	Tighten to specification.
	Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
	Contamination	Disassemble and clean.
	Valves, springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
	Filter damaged, missing	Inspect for damage, repair as necessary.
Forward Clutch Assembly		
	Seals, piston damaged	Inspect for damage. Repair as necessary.
	Check ball damaged, missing, not seating, off location	Inspect for mislocation, poor seating, damage. Install a new cylinder.
	Friction elements damaged or worn	Inspect for damage. Repair as necessary.
	Return springs damaged	Inspect for damage. Repair as necessary.
	Bronze seal ring or bearing damaged	Inspect for damage. Repair as necessary.

Engagement Concern: Delayed Forward and Delayed Reverse

Possible Component	Reference/Action
209 — ROUTINE	
Powertrain Control System	

Possible Component		Reference/Action
	PCM, vehicle wiring harnesses, transmission fluid temperature (TFT) sensor	Carry out on-board diagnostic tests. Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM.
		GO to Pinpoint Test B.
		Repair as necessary. Clear DTCs, road test and rerun on-board diagnostic test.
Transmission Fluid		
	Incorrect transmission fluid level	Adjust the transmission fluid to the correct level. For additional information, refer to Transmission Fluid Level Check in this section.
	Transmission fluid condition	Carry out Transmission Fluid Condition Check. For additional information, refer to Preliminary Inspection.
Incorrect Pressures		
	High pressures	Carry out Line Pressure Test, refer to Special Testing Procedures in this section.
Main Control		
	Screws not tightened to specification	Tighten to specification.
	Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
	Contamination	Disassemble and clean.
	Valves and springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install a new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
	Filter damaged, missing	Inspect for damage, repair as necessary.
Fluid Pump Assembly		
	Screws not tightened to specification	Tighten screws to specification.
	Gasket damaged	Inspect for damage. If damaged, install a new gasket.
	Porosity, cross leaks, ball missing, plugged hole	Inspect for damage. If damaged, repair as necessary.

Possible Component		Reference/Action
	Pump gears cracked and/or seized	Inspect for damage. Install a new pump.
	Flow control valves, springs, or seals damaged, stuck or not assembled correctly	Inspect for damage. Install a new seal or flow control valve.

Shift Concern: Some/All Shifts Missing (Automatic Mode Only)

Possible Component		Reference/Action
210 — ROUTINE		
Powertrain Control System		
	PCM, vehicle wiring harnesses, shift solenoids A, B, C, torque converter clutch (TCC) solenoid, pressure control solenoids A, B, C (PC A, B, C), output shaft speed (OSS) sensor, digital transmission range (TR) sensor, intake air temperature (IAT) sensor, vehicle speed sensor (VSS) input	Carry out on-board diagnostic tests. Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM, IAT and VSS.
		GO to Pinpoint Test A, GO to Pinpoint Test C, GO to Pinpoint Test D and GO to Pinpoint Test E.
		Repair as necessary. Clear DTCs, road test and rerun on-board diagnostic test.
Some Shifts Missing ONLY		
		If only some shifts are missing, determine which shift(s) is missing.
		- Refer to the following routine(s) for further No Shift concerns: - No 1-2 Shift, Routine 220 - No 2-3 Shift, Routine 221 - No 3-4 Shift, Routine 222 - No 4-5 Shift, Routine 270 - No 5-4 Shift, Routine 271 - No 4-3 Shift, Routine 223 - No 3-2 Shift, Routine 224 - No 2-1 Shift, Routine 225
Transmission Fluid		
	Incorrect transmission fluid level	Adjust transmission fluid to correct level, refer to Transmission Fluid Level Check in this section.
	Transmission fluid condition	Carry out Transmission Fluid Condition Check. For additional information, refer to Preliminary Inspection in this section.

Possible Component		Reference/Action
Selector Lever Cable/Digital TR Sensor		
	Selector lever cable system or digital TR sensor damaged, misaligned	Inspect and repair as necessary. For additional information, refer to Transmission Range (TR) Sensor Adjustment in this section or Section 307-05.
Incorrect Pressures		
	High/low pressures	Carry out Line Pressure Test. Refer to Special Testing Procedures in this section.
Main Control		
	Screws not tightened to specification	Tighten to specification.
	Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
	Contamination	Disassemble and clean.
	Valve, springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
	Filter damaged, missing	Inspect for damage, repair as necessary.
Pump Assembly		
	Screws not tightened to specification	Tighten screws to specification.
	Gasket damaged	Inspect for damage. If damaged, install a new gasket.
	Porosity, cross leaks, ball missing, plugged hole	Inspect for damage. If damaged, repair as necessary.
	Pump gears cracked and/or seized	Inspect for damage. Install a new pump.
	Flow control valves, springs, or seals damaged, stuck or not assembled correctly	Inspect for damage. Install a new seal or flow control valve.
Overdrive Planetary Assembly		
	Planetary damaged	Inspect for damage. Repair as necessary.
Center Support		
	Screw not tightened to specification	Tighten to specification.

Possible Component		Reference/Action
	Seal rings or bearing damaged	Inspect for damage. Repair as necessary.
	Outside diameter of case bore damaged	Inspect for damage. Repair as necessary.
	Support damaged or leaking	Inspect for damage. Repair as necessary.
Direct Clutch Assembly		
	Seals, piston damaged	Inspect for damage. Repair as necessary.
	Check ball damaged, missing, not seating, off location	Inspect for mislocation, poor seating, damage. Install a new cylinder.
	Friction elements damaged or worn	Inspect for damage. Repair as necessary.
	Return springs damaged	Inspect for damage. Repair as necessary.

Shift Concern: Timing Concerns—Early/Late

Possible Component	Reference/Action
211— ROUTINE	
Powertrain Control System	
PCM, vehicle wiring harnesses, output shaft speed (OSS) sensor, intake air temperature (IAT) sensor	Carry out on-board diagnostic tests. Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM and IAT.
	GO to Pinpoint Test E.
	Repair as necessary. Clear DTCs, road test and rerun on-board diagnostic test.
Some Shifts Early/Late ONLY	
	If only some shifts are early/late, determine which shift(s) is missing.
	- Refer to the following routine(s) for further No Shift concerns: - Soft/Slipping 1-2 Shift, Routine 226 - Soft/Slipping 2-3 Shift, Routine 227 - Soft/Slipping 3-4 Shift, Routine 228 - Soft/Slipping 4-5 Shift, Routine 272 - Soft/Slipping 5-4 Shift, Routine 273 - Soft/Slipping 4-3 Shift, Routine 229 - Soft/Slipping 3-2 Shift, Routine 230 - Soft/Slipping 2-1 Shift, Routine 221

Possible Component	Reference/Action
Transmission Fluid	
Incorrect transmission fluid level	Adjust the transmission fluid to the correct level. Refer to Transmission Fluid Level Check in this section.
Transmission fluid condition	Carry out Transmission Fluid Condition Check. Refer to Preliminary Inspection in this section.
Main Control	
Screws not tightened to specification	Tighten to specification.
Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
Contamination	Disassemble and clean.
Valve, springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
Filter damaged, missing	Inspect for damage, repair as necessary.
Overdrive Servo	
Servo retaining screws damaged	Inspect for damage. Repair as necessary.
Seals (piston and cover) damaged	Inspect for damage. Repair as necessary.
Overdrive Band	
Band damaged	Inspect for damage. Repair as necessary.
Servo worn or damaged	Inspect for damage. Repair as necessary.
Not adjusted correctly	Inspect for damage. Repair as necessary.

Shift Concern: Timing Concerns—Erratic/Hunting (Some/All)

Possible Component	Reference/Action
212 — ROUTINE	
Powertrain Control System	
PCM, vehicle wiring harnesses, output shaft speed (OSS) sensor, intake air temperature (IAT) sensor	Carry out on-board diagnostic tests. For additional information, refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM and IAT.

Possible Component	Reference/Action
	GO to Pinpoint Test E.
	Repair as necessary. Clear DTCs, road test and rerun on-board diagnostic test.
Transmission Fluid	
Incorrect transmission fluid level	Adjust the transmission fluid to the correct level. Refer to Transmission Fluid Level Check in this section.
Transmission fluid condition	Carry out Transmission Fluid Condition Check. Refer to Preliminary Inspection in this section.
Main Control	
Screws not tightened to specification	Tighten to specification.
Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
Contamination	Disassemble and clean.
Valve, springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
Filter damaged, missing	Inspect for damage, repair as necessary.
Overdrive Servo	
Servo retaining screws damaged	Inspect for damage. Repair as necessary.
Seals (piston and cover) damaged	Inspect for damage. Repair as necessary.
Further Diagnosis	
For further diagnosis for timing issues, refer to Reference/Action	- Refer to the following routine(s) for specific diagnosis: - No 1-2 Shift, Routine 220 - No 2-3 Shift, Routine 221 - No 3-4 Shift, Routine 222 - No 4-5 Shift, Routine 270 - No 5-4 Shift, Routine 271 - No 4-3 Shift, Routine 223 - No 3-2 Shift, Routine 224 - No 2-1 Shift, Routine 225 - Soft/Slip 1-2 Shift, Routine 226 - Soft/Slip 2-3 Shift, Routine 227 - Soft/Slip 3-4 Shift, Routine 228 - Soft/Slip 4-5 Shift, Routine 272 - Soft/Slip 5-4 Shift, Routine 273 - Soft/Slip 4-3 Shift, Routine 229 - Soft/Slip 3-2 Shift, Routine 230

Possible Component	Reference/Action
	• Soft/Slip 2-1 Shift, Routine 231 • Harsh 1-2 Shift, Routine 232 • Harsh 2-3 Shift, Routine 233 • Harsh 3-4 Shift, Routine 234 • Harsh 4-5 Shift, Routine 274 • Harsh 5-4 Shift, Routine 275 • Harsh 4-3 Shift, Routine 235 • Harsh 3-2 Shift, Routine 236 • Harsh 2-1 Shift, Routine 237

Engagement Concern: Feel—Soft/Slipping (Some/All)

Possible Component	Reference/Action
213 — ROUTINE	
Powertrain Control System	
• PCM, vehicle wiring harnesses, shift solenoids A, B, C, pressure control solenoids A, B, C, D (PC A, B, C, D), intermediate shaft speed sensor, transmission fluid temperature (TFT) sensor, intake air temperature (IAT) sensor, vehicle speed sensor (VSS) input	• Carry out on-board diagnostic tests. For additional information, refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM, IAT and VSS.
	• GO to Pinpoint Test A, GO to Pinpoint Test B, GO to Pinpoint Test D and GO to Pinpoint Test E.
	• Repair as necessary. Clear DTCs, road test and rerun on-board diagnostic test.
Some Shifts Soft/Slipping ONLY	
	• If only some of the shifts are soft/slipping, determine which shift(s) is missing.
	• Refer to the following routine(s) for further Soft/Slipping concerns: ▪ Soft/Slipping 1-2 Shift, Routine 226 ▪ Soft/Slipping 2-3 Shift, Routine 227 ▪ Soft/Slipping 3-4 Shift, Routine 228 ▪ Soft/Slipping 4-5 Shift, Routine 272 ▪ Soft/Slipping 5-4 Shift, Routine 273 ▪ Soft/Slipping 4-3 Shift, Routine 229 ▪ Soft/Slipping 3-2 Shift, Routine 230 ▪ Soft/Slipping 2-1 Shift, Routine 231
Transmission Fluid	
• Incorrect transmission fluid level	• Adjust the transmission fluid to the correct level. Refer to Transmission Fluid Level Check in this section.
• Transmission fluid condition	• Carry out Transmission Fluid Condition Check. Refer to Preliminary Inspection in this section.

Possible Component		Reference/Action
Incorrect Pressures		
	High/low pressures	Carry out Line Pressure Test. Refer to Special Testing Procedures in this section.
Main Control		
	Screws not tightened to specification	Tighten to specification.
	Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
	Contamination	Disassemble and clean.
	Valves, springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
	Filter damaged, missing	Inspect for damage, repair as necessary.
Pump Assembly		
	Screws not tightened to specification	Tighten screws to specification.
	Gasket damaged	Inspect for damage. If damaged, install a new gasket.
	Porosity, cross leaks, ball missing, plugged hole	Inspect for damage. If damaged, repair as necessary.
	Pump gears cracked and/or seized	Inspect for damage. Install a new pump.
	Flow control valves, springs, or seals damaged, stuck or not assembled correctly	Inspect for damage. Install a new seal or flow control valve.
Coast Clutch Assembly		
	Seals, piston damaged	Inspect for damage. Repair as necessary.
	Check ball damaged, missing, not seating, off location	Inspect for mislocation, poor seating, damage. Install a new cylinder.
	Friction elements damaged or worn	Inspect for damage. Repair as necessary.
	Return springs damaged	Inspect for damage. Repair as necessary.
Center Support		

Possible Component		Reference/Action
	Screw not tightened to specification	Tighten to specification.
	Seal rings or bearings damaged	Inspect for damage. Repair as necessary.
	Outside diameter of case bore damage	Inspect for damage. Repair as necessary.
	Support damaged or leaking	Inspect for damage. Repair as necessary.
Intermediate Servo		
	Servo retaining screws damaged	Inspect for damage. Repair as necessary.
	Seals (piston and cover) damaged	Inspect for damage. Repair as necessary.
Intermediate Band		
	Band damaged	Inspect for damage. Repair as necessary.
	Servo worn or damaged	Inspect for damage. Repair as necessary.
	Not adjusted correctly	Inspect for damage. Repair as necessary.
Direct Clutch Assembly		
	Seals, piston damaged	Inspect for damage. Repair as necessary.
	Check ball damaged, missing, not seating, off location	Inspect for mislocation, poor seating, damage. Install a new cylinder.
	Friction elements damaged or worn	Inspect for damage. Repair as necessary.
	Return springs damaged	Inspect for damage. Repair as necessary.
Forward Clutch Assembly		
	Seals, piston damaged	Inspect for damage. Repair as necessary.
	Check ball damaged, missing, not seating, off location	Inspect for mislocation, poor seating, damage. Install a new cylinder.
	Friction elements damaged or worn	Inspect for damage. Repair as necessary.
	Return springs damaged	Inspect for damage. Repair as necessary.

Possible Component	Reference/Action
Bronze seal ring or bearing damaged	Inspect for damage. Repair as necessary.
Reverse Servo	
Servo retaining screws damaged	Inspect for damage. Repair as necessary.
Seals (piston and cover) damaged	Inspect for damage. Repair as necessary.
Reverse Band	
Band damaged	Inspect for damage. Repair as necessary.
Servo worn or damaged	Inspect for damage. Repair as necessary.
Not adjusted correctly	Inspect for damage. Repair as necessary.
Case	
Damaged	Inspect for damage. Repair as necessary.
Torque Converter Assembly	
Torque converter internal failure preventing engagement, piston release	Remove the transmission. Inspect for damage. Refer to Torque Converter Contamination Inspection in this section. If the torque converter fails to pass the criteria or is damaged, install a new or remanufactured torque converter.

Shift Concern: Feel—Harsh (Some/All)

Possible Component	Reference/Action
214— ROUTINE	
Powertrain Control System	
PCM, vehicle wiring harnesses, shift solenoids A, B, C, pressure control solenoids A, B, C, D (PC A, B, C, D), intermediate shaft speed sensor, digital transmission range (TR) sensor, transmission fluid temperature (TFT) sensor, intake air temperature (IAT) sensor, vehicle speed sensor (VSS) input	Carry out on-board diagnostic tests. For additional information, refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM, IAT and VSS.
	GO to Pinpoint Test A, GO to Pinpoint Test B, GO to Pinpoint Test D and GO to Pinpoint Test E.
	Repair as necessary. Clear DTCs, road test and rerun on-board diagnostic test.

Possible Component	Reference/Action
Some Shifts Harsh ONLY	
	If only some of the shifts are harsh, determine which shift(s) is missing.
	- Refer to the following routine(s) for further No Shift concerns: - Harsh 1-2 Shift, Routine 232 - Harsh 2-3 Shift, Routine 233 - Harsh 3-4 Shift, Routine 234 - Harsh 4-5 Shift, Routine 274 - Harsh 5-4 Shift, Routine 275 - Harsh 4-3 Shift, Routine 235 - Harsh 3-2 Shift, Routine 236 - Harsh 2-1 Shift, Routine 237
Transmission Fluid	
Incorrect transmission fluid level	Adjust the transmission fluid to the correct level. Refer to Transmission Fluid Level Check in this section.
Incorrect Pressures	
High/low pressures	Carry out Line Pressure Test, refer to Special Testing Procedures in this section.
Main Control	
Screws not tightened to specification	Tighten to specification.
Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
Contamination	Disassemble and clean.
Valves, springs damaged, misassembled, missing, stuck, or bore damaged	If damaged or parts are missing, install new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
Filter damaged, missing	Inspect for damage, repair as necessary.
Input Shaft	
Damaged	Inspect for damage. Install new as necessary.
Overdrive Servo	
Servo retaining screws damaged	Inspect for damage. Repair as necessary.

Possible Component		Reference/Action
	Seals (piston and cover) damaged	Inspect for damage. Repair as necessary.
Overdrive Band		
	Band damaged	Inspect for damage. Repair as necessary.
	Servo worn or damaged	Inspect for damage. Repair as necessary.
	Not adjusted correctly	Inspect for damage. Repair as necessary.
Center Shaft Assembly		
	Center shaft assembly damaged	Inspect for damage. Repair as necessary.
	One-way clutch damaged	Inspect for damage. Repair as necessary.
Center Support		
	Screw not tightened to specification	Tighten to specification.
Intermediate Servo		
	Servo retaining screws damaged	Inspect for damage. Repair as necessary.
	Seals (piston and cover) damaged	Inspect for damage. Repair as necessary.
Intermediate Band		
	Band damaged	Inspect for damage. Repair as necessary.
	Servo worn or damaged	Inspect for damage. Repair as necessary.
	Not adjusted correctly	Inspect for damage. Repair as necessary.
Forward Clutch Assembly		
	Seals, piston damaged	Inspect for damage. Repair as necessary.
	Check ball damaged, missing, not seating, off location	Inspect for mislocation, poor seating, damage. Install a new cylinder.
	Friction elements damaged or worn	Inspect for damage. Repair as necessary.
	Return springs damaged	Inspect for damage. Repair as necessary.
	Bronze seal ring or bearing damaged	Inspect for damage. Repair as necessary.

Reverse Servo	Possible Component	Reference/Action
	Servo retaining screws damaged	Inspect for damage. Repair as necessary.
	Seals (piston and cover) damaged	Inspect for damage. Repair as necessary.
Reverse Band		
	Band damaged	Inspect for damage. Repair as necessary.
	Servo worn or damaged	Inspect for damage. Repair as necessary.
	Not adjusted correctly	Inspect for damage. Repair as necessary.
Output Shaft		
	Damaged	Inspect for damage. Install new as necessary.
Case		
	Damaged	Inspect for damage. Repair as necessary.

Shift Concern: No 1st and 2nd Gear in Drive, Engages in a Higher Gear

Possible Component	Reference/Action
215 — ROUTINE	
Powertrain Control System	
PCM, vehicle wiring harnesses, shift solenoids A, B, C, digital transmission range (TR) sensor	Carry out on-board diagnostic tests. Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM.
	GO to Pinpoint Test A and GO to Pinpoint Test C.
	Repair as necessary. Clear DTCs, road test and rerun on-board diagnostic test.
Incorrect Pressures	
High/low pressures	Carry out Line Pressure Test. Refer to Special Testing Procedures in this section.
Main Control	
Screws not tightened to specification	Tighten to specification.
Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.

Possible Component		Reference/Action
	Contamination	Disassemble and clean.
	Valves/springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
	Filter damaged, missing	Inspect for damage, repair as necessary.
Overdrive Servo		
	Servo retaining screws damaged	Inspect for damage. Repair as necessary.
	Seals (piston and cover) damaged	Inspect for damage. Repair as necessary.
Direct One-Way Clutch		
	Worn, damaged or assembled incorrectly	Inspect for damage. Repair as necessary.
Low One-Way Clutch		
	Worn, damaged or assembled incorrectly	Inspect for damage. Repair as necessary.

Engagement Concern: No 1st Gear in Manual 1 Position

Possible Component		Reference/Action
216 — ROUTINE		
Powertrain Control System		
	PCM, vehicle wiring harnesses, shift solenoids A, B, pressure control solenoids B, C (PC B, C)	Carry out on-board diagnostic tests. Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM.
		GO to Pinpoint Test A and GO to Pinpoint Test D.
		Repair as necessary. Clear DTCs, road test and rerun on-board diagnostic test.
Incorrect Pressures		
	High/low pressures	Carry out Line Pressure Test. Refer to Special Testing Procedures in this section.
Main Control		
	Screws not tightened to specification	Tighten to specification.

Possible Component	Reference/Action
Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
Contamination	Disassemble and clean.
Valves, springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
Filter damaged, missing	Inspect for damage, repair as necessary.
Overdrive Planetary Assembly	
Planetary damaged	Inspect for damage. Repair as necessary.
Direct One-Way Clutch	
Worn, damaged or assembled incorrectly	Inspect for damage. Repair as necessary.
Low One-Way Clutch	
Worn, damaged or assembled incorrectly	Inspect for damage. Repair as necessary.

Shift Concern: No 2nd Gear in Manual 2 Position

Possible Component	Reference/Action
217 — ROUTINE	
Powertrain Control System	
PCM, vehicle wiring harnesses, shift solenoids A, B, C, pressure control solenoid B (PC B)	Carry out on-board diagnostic tests. For additional information, refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the PCM.
	GO to Pinpoint Test A and GO to Pinpoint Test D.
	Repair as necessary. Clear DTCs, road test and rerun on-board diagnostic test.
Incorrect Pressures	
High/low pressures	Carry out Line Pressure Test. Refer to Special Testing Procedures in this section.
Main Control	
Screws not tightened to specification.	Tighten to specification.

Possible Component		Reference/Action
	Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
	Contamination	Disassemble and clean.
	Valves, springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install a new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
	Filter damaged, missing	Inspect for damage, repair as necessary.
Overdrive Servo		
	Servo retaining screws damaged	Inspect for damage. Repair as necessary.
	Seals (piston and cover) damaged	Inspect for damage. Repair as necessary.
	Not adjusted correctly	Inspect for damage. Repair as necessary.
Overdrive Band		
	Band damaged	Inspect for damage. Repair as necessary.
	Servo worn or damaged	Inspect for damage. Repair as necessary.
	Not adjusted correctly	Inspect for damage. Repair as necessary.
Direct One-Way Clutch		
	Worn, damaged or assembled incorrectly	Inspect for damage. Repair as necessary.
Low One-Way Clutch		
	Worn, damaged or assembled incorrectly	Inspect for damage. Repair as necessary.

Torque Converter Operation Concerns: Does Not Apply

Possible Component		Reference/Action
240 — ROUTINE		
Powertrain Control System		
	PCM, vehicle wiring harnesses, torque converter clutch (TCC) solenoid, transmission	Carry out on-board diagnostic tests. For additional information, refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for

Possible Component		Reference/Action
	fluid temperature (TFT) sensor and engine coolant temperature (ECT) sensor	diagnosis and testing of the PCM.
		GO to Pinpoint Test A and GO to Pinpoint Test B.
		Repair as necessary. Clear DTCs, road test and rerun on-board diagnostic test.
Incorrect Pressures		
	High/low pressures	Carry out Line Pressure Test. Refer to Special Testing Procedures in this section.
Main Control		
	Screws not tightened to specification	Tighten to specification.
	Separator plate damaged	Inspect for damage. If damaged, install a new separator plate.
	Contamination	Disassemble and clean.
	Valve, springs damaged, misassembled, missing, stuck or bore damaged	If damaged or parts are missing, install new main control assembly. If misassembled, reassemble correctly. DO NOT stone, file or sand valves. This will remove the anodized finish and may result in further main control or transmission damage.
	Filter damaged, missing	Inspect for damage, repair as necessary.
Pump Assembly		
	Screws not tightened to specification	Tighten screws to specification.
	Gasket damaged	Inspect for damage. If damaged, install a new gasket.
	Porosity, cross leaks, ball missing, plugged hole	Inspect for damage. If damaged, repair as necessary.
	Pump gears cracked and/or seized	Inspect for damage. Install a new pump.
	Flow control valves, springs or seals damaged, stuck or not assembled correctly	Inspect for damage. Install a new seal or flow control valve.
Torque Converter Assembly		
	Torque converter internal failure preventing engagement, piston application	Remove the transmission. Inspect for damage. Refer to Torque Converter Contamination Inspection in this section. If the torque converter fails to pass the criteria or is damaged, install a new or remanufactured torque converter.