

# Diagnostics with Phenomenon

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

## 15. Diagnostics with Phenomenon

### A: INSPECTION

Symptom	Problem parts
Starter does not operate when select lever is in "P" or "N" range. Starter operates when select lever is in "R" or "D" range.	<ul style="list-style-type: none"> <li>• Inhibitor switch</li> <li>• Select cable</li> <li>• Select lever</li> <li>• Starter motor and harness</li> </ul>
Abnormal noise when select lever is in "P" or "N".	<ul style="list-style-type: none"> <li>• Strainer</li> <li>• Transfer duty solenoid</li> <li>• Oil pump</li> <li>• Drive plate</li> <li>• ATF level too high or too low</li> </ul>
Hissing noise occurs during standing start.	<ul style="list-style-type: none"> <li>• Strainer</li> <li>• ATF level too high or too low</li> </ul>
Noise occurs while driving in "D1".	<ul style="list-style-type: none"> <li>• Final gear</li> <li>• Planetary gear</li> <li>• Reduction gear</li> <li>• Differential gear oil level too high or too low</li> </ul>
Noise occurs while driving in "D2".	
Noise occurs while driving in "D3".	<ul style="list-style-type: none"> <li>• Final gear</li> <li>• Low &amp; reverse brake</li> <li>• Reduction gear</li> <li>• Differential gear oil level too high or too low</li> </ul>
Noise occurs while driving in "D4".	<ul style="list-style-type: none"> <li>• Final gear</li> <li>• Low &amp; reverse brake</li> <li>• Planetary gear</li> <li>• Reduction gear</li> <li>• Differential gear oil level too high or too low</li> </ul>
Vehicle moves when select lever is in "N" range.	<ul style="list-style-type: none"> <li>• Select cable</li> <li>• Inhibitor switch</li> <li>• TCM</li> <li>• Low clutch</li> </ul>
Shock occurs when select lever is shifted from "N" to "D" range.	<ul style="list-style-type: none"> <li>• Accelerator pedal position sensor</li> <li>• ATF temperature sensor</li> <li>• Line pressure linear solenoid</li> <li>• Low clutch duty solenoid</li> <li>• Low clutch</li> <li>• TCM</li> <li>• Harness</li> <li>• Control valve</li> <li>• ATF deterioration</li> </ul>
Excessive time lag occurs when select lever is shifted from "N" to "D" range.	<ul style="list-style-type: none"> <li>• Control valve</li> <li>• Low clutch</li> <li>• Line pressure linear solenoid</li> <li>• Seal ring</li> <li>• Front gasket of transmission case</li> </ul>
Shock occurs when select lever is shifted from "N" to "R" range.	<ul style="list-style-type: none"> <li>• Accelerator pedal position sensor</li> <li>• ATF temperature sensor</li> <li>• Line pressure linear solenoid</li> <li>• TCM</li> <li>• Harness</li> <li>• Control valve</li> <li>• ATF deterioration</li> </ul>
Excessive time lag occurs when the select lever is shifted from "N" to "R" range.	<ul style="list-style-type: none"> <li>• Control valve</li> <li>• Low &amp; reverse clutch</li> <li>• Reverse clutch</li> <li>• Line pressure linear solenoid</li> <li>• Seal ring</li> <li>• Front gasket of transmission case</li> </ul>

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### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Symptom	Problem parts
Vehicle does not start in any shift range. (Engine stalls)	<ul style="list-style-type: none"> <li>• Parking brake mechanism</li> <li>• Planetary gear</li> </ul>
Vehicle does not start in any shift range. (Engine operates)	<ul style="list-style-type: none"> <li>• Strainer</li> <li>• Line pressure linear solenoid</li> <li>• Control valve</li> <li>• Drive pinion</li> <li>• Hypoid gear</li> <li>• Axle shaft</li> <li>• Differential gear</li> <li>• Oil pump</li> <li>• Input shaft</li> <li>• Output shaft</li> <li>• Planetary gear</li> <li>• Drive plate</li> <li>• ATF level is too low</li> <li>• Front gasket of transmission case</li> </ul>
Vehicle does not start in "R" range only. (Engine operates)	<ul style="list-style-type: none"> <li>• Select cable</li> <li>• Select lever</li> <li>• Line pressure linear solenoid</li> <li>• Control valve</li> <li>• Low &amp; reverse clutch</li> <li>• Reverse clutch</li> </ul>
Vehicle does not start in "R" range only. (Engine stalls)	<ul style="list-style-type: none"> <li>• Low clutch</li> <li>• 2-4 brake</li> <li>• Planetary gear</li> <li>• Parking brake mechanism</li> </ul>
Vehicle does not start in "D" range. (Engine operates)	<ul style="list-style-type: none"> <li>• Low clutch</li> <li>• One-way clutch</li> </ul>
Vehicle does not start in "D" range. (Engine stalls)	Reverse clutch
Vehicle does not start in "R" range only. (Engine operates)	Control valve
Acceleration during standing start is poor. (High rpm stall)	<ul style="list-style-type: none"> <li>• Control valve</li> <li>• Low clutch</li> <li>• Reverse clutch</li> <li>• ATF level is too low</li> <li>• ATF deterioration</li> <li>• Front gasket of transmission case</li> <li>• Differential gear oil level too high or too low</li> </ul>
Acceleration during standing start is poor. (Low rpm stall)	<ul style="list-style-type: none"> <li>• Oil pump</li> <li>• Torque converter one-way clutch</li> <li>• Engine performance</li> </ul>
Acceleration is poor when select lever is in "D" range. (Normal rpm stall)	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Control valve</li> <li>• High clutch</li> <li>• 2-4 brake</li> <li>• Planetary gear</li> </ul>
Acceleration is poor when select lever is in "R" range. (Normal rpm stall)	<ul style="list-style-type: none"> <li>• Control valve</li> <li>• High clutch</li> <li>• 2-4 brake</li> <li>• Planetary gear</li> </ul>
No shift occurs from 1st to 2nd gear.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Rear vehicle speed sensor</li> <li>• Front vehicle speed sensor</li> <li>• Accelerator pedal position sensor</li> <li>• Control valve</li> <li>• 2-4 brake</li> </ul>
No shift occurs from 2nd to 3rd gear.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Control valve</li> <li>• High clutch</li> </ul>

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Symptom	Problem parts
No shift occurs from 3rd to 4th gear.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• ATF temperature sensor</li> <li>• Control valve</li> <li>• 2-4 brake</li> </ul>
Engine brake is not effected when select lever is shifted from 4th gear to 3rd gear.	<ul style="list-style-type: none"> <li>• Inhibitor switch</li> <li>• TCM</li> <li>• Accelerator pedal position sensor</li> <li>• Control valve</li> </ul>
Engine brake is not effected when select lever is shifted from 3rd gear to 2nd gear.	Control valve
Engine brake is not effected when select lever is shifted from 2nd gear to 1st gear.	<ul style="list-style-type: none"> <li>• Control valve</li> <li>• Low &amp; reverse brake</li> </ul>
Shift characteristics are erroneous.	<ul style="list-style-type: none"> <li>• Inhibitor switch</li> <li>• TCM</li> <li>• Front vehicle speed sensor</li> <li>• Rear vehicle speed sensor</li> <li>• Accelerator pedal position sensor</li> <li>• Control valve</li> <li>• Ground</li> </ul>
No lock-up occurs.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Accelerator pedal position sensor</li> <li>• ATF temperature sensor</li> <li>• Control valve</li> <li>• Lock-up facing</li> <li>• Engine speed signal</li> </ul>
Parking brake does not function.	<ul style="list-style-type: none"> <li>• Select cable</li> <li>• Select lever</li> <li>• Parking mechanism</li> </ul>
Shift lever cannot be moved or is hard to move from "P" range.	
ATF spurts out.	ATF level too high
Differential oil spurts out.	Differential gear oil level too high
Differential oil level changes excessively.	<ul style="list-style-type: none"> <li>• Seal pipe</li> <li>• Double oil seal</li> </ul>
Odor is produced from ATF supply pipe.	<ul style="list-style-type: none"> <li>• High clutch</li> <li>• 2-4 brake</li> <li>• Low &amp; reverse clutch</li> <li>• Reverse clutch</li> <li>• Lock-up facing</li> <li>• ATF deterioration</li> </ul>
Shock occurs when shifting from 1st to 2nd gear.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Torque converter turbine speed sensor</li> <li>• Accelerator pedal position sensor</li> <li>• 2-4 brake duty solenoid</li> <li>• ATF temperature sensor</li> <li>• Line pressure linear solenoid</li> <li>• Control valve</li> <li>• 2-4 brake</li> <li>• ATF deterioration</li> <li>• Engine performance</li> <li>• Low &amp; reverse duty solenoid</li> </ul>
Slippage occurs when shifting from 1st to 2nd gear.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Accelerator pedal position sensor</li> <li>• 2-4 brake duty solenoid</li> <li>• ATF temperature sensor</li> <li>• Line pressure linear solenoid</li> <li>• Control valve</li> <li>• 2-4 brake</li> </ul>

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Symptom	Problem parts
Shock occurs when shifting from 2nd to 3rd gear.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Torque converter turbine speed sensor</li> <li>• Accelerator pedal position sensor</li> <li>• 2-4 brake duty solenoid</li> <li>• ATF temperature sensor</li> <li>• Line pressure linear solenoid</li> <li>• Low &amp; reverse duty solenoid</li> <li>• Control valve</li> <li>• High clutch</li> <li>• 2-4 brake</li> <li>• ATF deterioration</li> <li>• Engine performance</li> <li>• High clutch duty solenoid</li> </ul>
Slippage occurs when shifting from 2nd to 3rd gear.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Accelerator pedal position sensor</li> <li>• 2-4 brake duty solenoid</li> <li>• ATF temperature sensor</li> <li>• Line pressure linear solenoid</li> <li>• Control valve</li> <li>• High clutch</li> <li>• 2-4 brake</li> <li>• Low &amp; reverse duty solenoid</li> </ul>
Shock occurs when shifting from 3rd to 4th gear.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Torque converter turbine speed sensor</li> <li>• Accelerator pedal position sensor</li> <li>• 2-4 brake duty solenoid</li> <li>• ATF temperature sensor</li> <li>• Line pressure linear solenoid</li> <li>• Control valve</li> <li>• Low clutch duty solenoid</li> <li>• 2-4 brake</li> <li>• ATF deterioration</li> <li>• Engine performance</li> </ul>
Slippage occurs when shifting from 3rd to 4th gear.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Accelerator pedal position sensor</li> <li>• 2-4 brake duty solenoid</li> <li>• ATF temperature sensor</li> <li>• Line pressure linear solenoid</li> <li>• Control valve</li> <li>• 2-4 brake</li> </ul>
Shock occurs when shifting from 3rd to 2nd gear.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Torque converter turbine speed sensor</li> <li>• Accelerator pedal position sensor</li> <li>• ATF temperature sensor</li> <li>• Line pressure linear solenoid</li> <li>• Control valve</li> <li>• 2-4 brake duty solenoid</li> <li>• 2-4 brake</li> <li>• ATF deterioration</li> <li>• High clutch duty solenoid</li> </ul>
Shock occurs when shifting from 2nd to 1st gear.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Torque converter turbine speed sensor</li> <li>• Accelerator pedal position sensor</li> <li>• ATF temperature sensor</li> <li>• Line pressure linear solenoid</li> <li>• Control valve</li> <li>• Low &amp; reverse clutch</li> <li>• ATF deterioration</li> <li>• 2-4 brake duty solenoid</li> <li>• Low &amp; reverse brake duty solenoid</li> </ul>

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Shock occurs when accelerator pedal is released from medium speed.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Accelerator pedal position sensor</li> <li>• ATF temperature sensor</li> <li>• Line pressure linear solenoid</li> <li>• Control valve</li> <li>• Lock-up damper</li> <li>• Engine performance</li> </ul>
Vibration occurs during straight-forward operation.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Lock-up duty solenoid</li> <li>• Lock-up facing</li> <li>• Lock-up damper</li> </ul>
Vibration occurs during turns. (Tight corner braking phenomenon)	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Front vehicle speed sensor</li> <li>• Rear vehicle speed sensor</li> <li>• Accelerator pedal position sensor</li> <li>• ATF temperature sensor</li> <li>• Transfer clutch</li> <li>• Transfer valve</li> <li>• Transfer duty solenoid</li> <li>• ATF deterioration</li> <li>• Harness</li> </ul>
Front wheel slippage occurs during standing starts.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Front vehicle speed sensor</li> <li>• Accelerator pedal position sensor</li> <li>• ATF temperature sensor</li> <li>• Control valve</li> <li>• Transfer clutch</li> <li>• Transfer valve</li> <li>• Transfer pipe</li> <li>• Transfer duty solenoid</li> </ul>
It is not set in FWD mode.	<ul style="list-style-type: none"> <li>• TCM</li> <li>• Transfer clutch</li> <li>• Transfer valve</li> <li>• Transfer duty solenoid</li> <li>• Fuse</li> </ul>
Select lever is hard to move.	<ul style="list-style-type: none"> <li>• Select cable</li> <li>• Select lever</li> <li>• Detent spring</li> <li>• Manual plate</li> </ul>
Select lever is excessively hard to move. (Unreasonable resistance)	<ul style="list-style-type: none"> <li>• Detent spring</li> <li>• Manual plate</li> </ul>
Select lever slips out of selected shift position during acceleration or while driving on rough terrain.	<ul style="list-style-type: none"> <li>• Select cable</li> <li>• Select lever</li> <li>• Detent spring</li> <li>• Manual plate</li> </ul>
Manual mode can not be set.	<ul style="list-style-type: none"> <li>• SPORT shift switch</li> <li>• TCM</li> <li>• Body integrated unit</li> </ul>
Gear does not change though the select lever is operated in manual mode.	<ul style="list-style-type: none"> <li>• Up shift switch</li> <li>• Down shift switch</li> <li>• TCM</li> <li>• Body integrated unit</li> </ul>
AWD warning light remains blinking or illuminated.	<ul style="list-style-type: none"> <li>• Tire size</li> <li>• Tire pressure</li> <li>• TCM</li> <li>• FWD switch</li> <li>• Harness</li> </ul>

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AUTOMATIC TRANSMISSION (DIAGNOSTICS)

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# AUTOMATIC TRANSMISSION

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