

### 18. Diagnostics with Phenomenon

#### A: INSPECTION

Symptoms	Faulty parts
Shifting vehicle speed is low on "D" range.	<ul style="list-style-type: none"><li>• Front and rear vehicle speed sensors</li><li>• Accelerator pedal position sensor</li><li>• Throttle position sensor</li><li>• ATF temperature sensor</li><li>• CAN communication signal</li></ul>
Shifting vehicle speed is high on "D" range.	<ul style="list-style-type: none"><li>• Front and rear vehicle speed sensors</li><li>• Accelerator pedal position sensor</li><li>• Throttle position sensor</li><li>• CAN communication signal</li><li>• Brake switch signal</li><li>• ATF temperature sensor</li></ul>
Excessive shift shock ("N" → "D" range)	<ul style="list-style-type: none"><li>• Engine idle speed</li><li>• Engine speed signal</li><li>• Accelerator pedal position sensor</li><li>• Throttle position sensor</li><li>• Control cable adjustment</li><li>• ATF temperature sensor</li><li>• Oil pressure switch 1 and front brake solenoid valve</li><li>• CAN communication signal</li><li>• Fluid level and condition</li><li>• TCM power supply</li></ul>
Excessive shift shock on 1st of "D" range → 2nd of "D" range or "1st of manual mode" → "2nd of manual mode".	<ul style="list-style-type: none"><li>• Accelerator pedal position sensor</li><li>• Throttle position sensor</li><li>• Control cable adjustment</li><li>• Oil pressure switch 4 and direct clutch solenoid valve</li><li>• CAN communication signal</li><li>• Engine speed signal</li><li>• Turbine speed sensor 1 and turbine speed sensor 2</li><li>• Front and rear vehicle speed sensors</li><li>• Fluid level and condition</li></ul>
Excessive shift shock on 2nd of "D" range → 3rd of "D" range or "2nd of manual mode" → "3rd of manual mode".	<ul style="list-style-type: none"><li>• Accelerator pedal position sensor</li><li>• Throttle position sensor</li><li>• Control cable adjustment</li><li>• Oil pressure switch 5 and high &amp; low reverse clutch solenoid valve</li><li>• CAN communication signal</li><li>• Engine speed signal</li><li>• Turbine speed sensor 1 and turbine speed sensor 2</li><li>• Front and rear vehicle speed sensors</li><li>• Fluid level and condition</li></ul>
Excessive shift shock on 3rd of "D" range → 4th of "D" range or "3rd of manual mode" → "4th of manual mode".	<ul style="list-style-type: none"><li>• Accelerator pedal position sensor</li><li>• Throttle position sensor</li><li>• Control cable adjustment</li><li>• Oil pressure switch 3 and input clutch solenoid valve</li><li>• CAN communication signal</li><li>• Engine speed signal</li><li>• Turbine speed sensor 1 and turbine speed sensor 2</li><li>• Front and rear vehicle speed sensors</li><li>• Fluid level and condition</li></ul>

# Diagnostics with Phenomenon

## AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Symptoms	Faulty parts
Excessive shift shock on 4th of "D" range → 5th of "D" range or "4th of manual mode" → "5th of manual mode".	<ul style="list-style-type: none"> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> <li>• Control cable adjustment</li> <li>• Oil pressure switch 1 and front brake solenoid valve</li> <li>• CAN communication signal</li> <li>• Engine speed signal</li> <li>• Turbine speed sensor 1 and turbine speed sensor 2</li> <li>• Front and rear vehicle speed sensors</li> <li>• Fluid level and condition</li> </ul>
Excessive shock at kick down.	<ul style="list-style-type: none"> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> <li>• Control cable adjustment</li> <li>• CAN communication signal</li> <li>• Engine speed signal</li> <li>• Turbine speed sensor 1 and turbine speed sensor 2</li> <li>• Front and rear vehicle speed sensors</li> <li>• Fluid level and condition</li> </ul>
Excessive shock at shift up.	<ul style="list-style-type: none"> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> <li>• Control cable adjustment</li> <li>• Engine speed signal</li> <li>• CAN communication signal</li> <li>• Turbine speed sensor 1 and turbine speed sensor 2</li> <li>• Front and rear vehicle speed sensors</li> <li>• Fluid level and condition</li> </ul>
Excessive shock at lock up.	<ul style="list-style-type: none"> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> <li>• Control cable adjustment</li> <li>• Engine speed signal</li> <li>• CAN communication signal</li> <li>• Turbine speed sensor 1 and turbine speed sensor 2</li> <li>• Lock up solenoid valve</li> <li>• Front and rear vehicle speed sensors</li> <li>• Fluid level and condition</li> </ul>
Excessive shock at engine brake.	<ul style="list-style-type: none"> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> <li>• Control cable adjustment</li> <li>• CAN communication signal</li> <li>• Fluid level and condition</li> <li>• Line pressure</li> <li>• Forward brake solenoid valve</li> </ul>
Judder is occurred at lock up.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Engine speed signal</li> <li>• Turbine speed sensor 1 and turbine speed sensor 2</li> <li>• Front and rear vehicle speed sensors</li> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> <li>• Lock up solenoid valve</li> <li>• ATF temperature sensor</li> </ul>
Noise at "R", "N" and "D" range.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Engine speed signal</li> <li>• ATF temperature sensor</li> </ul>
Hold at "D" range or 1st on manual mode.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Direct clutch solenoid valve</li> <li>• Line pressure</li> <li>• Up switch signal</li> <li>• CAN communication signal</li> <li>• Accelerator pedal position sensor</li> </ul>

# Diagnostics with Phenomenon

## AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Symptoms	Faulty parts
Hold at "D" range or 2nd on manual mode.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Forward brake solenoid valve</li> <li>• Line pressure</li> <li>• Up switch signal</li> <li>• Down switch signal</li> <li>• CAN communication signal</li> <li>• Accelerator pedal position sensor</li> </ul>
Hold at "D" range or 3rd on manual mode.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Line pressure</li> <li>• Up switch signal</li> <li>• Down switch signal</li> <li>• CAN communication signal</li> <li>• Accelerator pedal position sensor</li> </ul>
Hold at "D" range or 4th on manual mode.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 3 and input clutch solenoid valve</li> <li>• Oil pressure switch 4 and direct clutch solenoid valve</li> <li>• Oil pressure switch 5 and high &amp; low reverse clutch solenoid valve</li> <li>• Forward brake solenoid valve</li> <li>• Front brake solenoid valve</li> <li>• Line pressure</li> <li>• Up switch signal</li> <li>• Down switch signal</li> <li>• CAN communication signal</li> <li>• Accelerator pedal position sensor</li> <li>• TCM power supply</li> </ul>
Hold at "D" range or 5th on manual mode.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 1 and front brake solenoid valve</li> <li>• Line pressure</li> <li>• Down switch signal</li> <li>• CAN communication signal</li> <li>• Accelerator pedal position sensor</li> </ul>
Gear does not shift 1st of "D" range → 2nd of "D" range or "1st of manual mode" → "2nd of manual mode".	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 4 and direct clutch solenoid valve</li> <li>• Line pressure</li> <li>• Up switch signal</li> <li>• CAN communication signal</li> <li>• Accelerator pedal position sensor</li> </ul>
Gear does not shift 2nd of "D" range → 3rd of "D" range or "2nd of manual mode" → "3rd of manual mode".	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 5 and high &amp; low reverse clutch solenoid valve</li> <li>• Line pressure</li> <li>• Up switch signal</li> <li>• CAN communication signal</li> <li>• Accelerator pedal position sensor</li> </ul>
Gear does not shift 3rd of "D" range → 4th of "D" range or "3rd of manual mode" → "4th of manual mode".	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 3 and input clutch solenoid valve</li> <li>• Oil pressure switch 1 and front brake solenoid valve</li> <li>• Line pressure</li> <li>• Up switch signal</li> <li>• CAN communication signal</li> <li>• Accelerator pedal position sensor</li> </ul>

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## AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Symptoms	Faulty parts
Gear does not shift 4th of "D" range → 5th of "D" range or "4th of manual mode" → "5th of manual mode".	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 1 and front brake solenoid valve</li> <li>• Oil pressure switch 4 and direct clutch solenoid valve</li> <li>• Turbine speed sensor 1 and turbine speed sensor 2</li> <li>• ATF temperature sensor</li> <li>• Line pressure</li> <li>• Up switch signal</li> <li>• CAN communication signal</li> <li>• Accelerator pedal position sensor</li> </ul>
Gear does not shift down to 4th on "D" range or manual mode.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 1 and front brake solenoid valve</li> <li>• Oil pressure switch 4 and direct clutch solenoid valve</li> <li>• Line pressure</li> <li>• Down switch signal</li> <li>• CAN communication signal</li> <li>• Accelerator pedal position sensor</li> </ul>
Gear does not shift down to 3rd on "D" range or manual mode.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 3 and input clutch solenoid valve</li> <li>• Oil pressure switch 1 and front brake solenoid valve</li> <li>• Line pressure</li> <li>• Down switch signal</li> <li>• CAN communication signal</li> <li>• Accelerator pedal position sensor</li> <li>• TCM power supply</li> </ul>
Gear does not shift down to 2nd on "D" range or manual mode.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 5 and high &amp; low reverse clutch solenoid</li> <li>• Line pressure</li> <li>• Down switch signal</li> <li>• CAN communication signal</li> <li>• Accelerator pedal position sensor</li> </ul>
Gear does not shift down to 1st on "D" range or manual mode.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 4 and direct clutch solenoid valve</li> <li>• Line pressure</li> <li>• Down switch signal</li> <li>• CAN communication signal</li> <li>• Accelerator pedal position sensor</li> </ul>
No lock-up occurs.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Line pressure</li> <li>• Engine speed signal</li> <li>• Turbine speed sensor 1 and turbine speed sensor 2</li> <li>• Lock up solenoid valve</li> <li>• CAN communication signal</li> <li>• ATF temperature sensor</li> <li>• Accelerator pedal position sensor</li> <li>• Brake switch signal</li> <li>• Range signal</li> </ul>
No shift shock occurred when shifting 1st of "D" range → 2nd of "D" range or "1st of manual mode" → "2nd of manual mode". Or clutch slipping occurred.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 4 and direct clutch solenoid valve</li> <li>• Line pressure</li> <li>• CAN communication signal</li> </ul>

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## AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Symptoms	Faulty parts
No shift shock occurred when shifting 2nd of "D" range → 3rd of "D" range or "2nd of manual mode" → "3rd of manual mode". Or clutch slipping occurred.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 5 and high &amp; low reverse clutch solenoid valve</li> <li>• Line pressure</li> <li>• CAN communication signal</li> </ul>
No shift shock occurred when shifting 3rd of "D" range → 4th of "D" range or "3rd of manual mode" → "4th of manual mode". Or clutch slipping occurred.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 3 and input clutch solenoid valve</li> <li>• Oil pressure switch 1 and front brake solenoid valve</li> <li>• Line pressure</li> <li>• CAN communication signal</li> </ul>
No shift shock occurred when shifting 4th of "D" range → 5th of "D" range or "4th of manual mode" → "5th of manual mode". Or clutch slipping occurred.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 1 and front brake solenoid valve</li> <li>• Oil pressure switch 4 and direct clutch solenoid valve</li> <li>• Line pressure</li> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> </ul>
Engine skids when shifting 5th of "D" range → 4th of "D" range or "5th of manual mode" → "4th of manual mode". Or slipping occurred.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 1 and front brake solenoid valve</li> <li>• Oil pressure switch 4 and direct clutch solenoid valve</li> <li>• Line pressure</li> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> </ul>
Engine skids when shifting 4th of "D" range → 3rd of "D" range or "4th of manual mode" → "3rd of manual mode". Or slipping occurred.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 3 and input clutch solenoid valve</li> <li>• Oil pressure switch 1 and front brake solenoid valve</li> <li>• Line pressure</li> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> </ul>
Engine skids when shifting 3rd of "D" range → 2nd of "D" range or "3rd of manual mode" → "2nd of manual mode". Or slipping occurred.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 5 and high &amp; low reverse clutch solenoid valve</li> <li>• Oil pressure switch 4 and direct clutch solenoid valve</li> <li>• Line pressure</li> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> </ul>
Engine skids when shifting 2nd of "D" range → 1st of "D" range or "2nd of manual mode" → "1st of manual mode". Or slipping occurred.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Front and rear vehicle speed sensors</li> <li>• Oil pressure switch 4 and direct clutch solenoid valve</li> <li>• Line pressure</li> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> </ul>
Engine brake does not function at 5th → 4th of manual mode.	<ul style="list-style-type: none"> <li>• Inhibitor switch</li> <li>• Fluid level and condition</li> <li>• Control cable adjustment</li> <li>• Manual mode switch</li> <li>• Oil pressure switch 1</li> <li>• Down switch signal</li> </ul>
Engine brake does not function at 4th → 3rd of manual mode.	<ul style="list-style-type: none"> <li>• Inhibitor switch</li> <li>• Fluid level and condition</li> <li>• Control cable adjustment</li> <li>• Manual mode switch</li> <li>• Oil pressure switch 1 and oil pressure switch 3</li> <li>• Down switch signal</li> </ul>

# Diagnostics with Phenomenon

## AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Symptoms	Faulty parts
Engine brake does not function at 3rd → 2nd of manual mode.	<ul style="list-style-type: none"> <li>• Inhibitor switch</li> <li>• Fluid level and condition</li> <li>• Control cable adjustment</li> <li>• Manual mode switch</li> <li>• Oil pressure switch 5</li> <li>• Forward brake solenoid valve</li> </ul>
Engine brake does not function at 2nd → 1st of manual mode.	<ul style="list-style-type: none"> <li>• Inhibitor switch</li> <li>• Fluid level and condition</li> <li>• Control cable adjustment</li> <li>• Manual mode switch</li> <li>• Oil pressure switch 4</li> <li>• Forward brake solenoid valve</li> </ul>
Excessive acceleration failure on "D" range.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Line pressure</li> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> <li>• CAN communication signal</li> <li>• Inhibitor switch</li> <li>• Control cable adjustment</li> <li>• Front and rear vehicle speed sensors</li> </ul>
Excessive acceleration failure in "R" range.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Line pressure</li> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> <li>• Oil pressure switch 5 and high &amp; low reverse clutch solenoid valve</li> <li>• CAN communication signal</li> <li>• Inhibitor switch</li> <li>• Control cable adjustment</li> <li>• Front and rear vehicle speed sensors</li> </ul>
Engine skids when start driving (1st) the vehicle. Or slipping occurred.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Line pressure</li> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> <li>• CAN communication signal</li> </ul>
Engine skids when driving at 2nd. Or slipping occurred.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Line pressure</li> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> <li>• CAN communication signal</li> <li>• Oil pressure switch 4 and direct clutch solenoid valve</li> </ul>
Engine skids when driving at 3rd. Or slipping occurred.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Line pressure</li> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> <li>• CAN communication signal</li> <li>• Oil pressure switch 5 and high &amp; low reverse clutch solenoid valve</li> </ul>
Engine skids when driving at 4th. Or slipping occurred.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Line pressure</li> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> <li>• CAN communication signal</li> <li>• Oil pressure switch 3 and input clutch solenoid valve</li> </ul>
Engine skids when driving at 5th. Or slipping occurred.	<ul style="list-style-type: none"> <li>• Fluid level and condition</li> <li>• Line pressure</li> <li>• Accelerator pedal position sensor</li> <li>• Throttle position sensor</li> <li>• CAN communication signal</li> <li>• Oil pressure switch 1 and front brake solenoid valve</li> </ul>

# Diagnostics with Phenomenon

## AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Symptoms	Faulty parts
Slip at lock up.	<ul style="list-style-type: none"> <li>Fluid level and condition</li> <li>Line pressure</li> <li>Engine speed signal</li> <li>Turbine speed sensor 1 and turbine speed sensor 2</li> <li>Lock up solenoid valve</li> <li>CAN communication signal</li> </ul>
Maximum vehicle speed is low.	<ul style="list-style-type: none"> <li>Fluid level and condition</li> <li>Line pressure</li> <li>Accelerator pedal position sensor</li> <li>Throttle position sensor</li> <li>CAN communication signal</li> <li>Direct clutch solenoid valve</li> <li>Front and rear vehicle speed sensors</li> </ul>
There is completely no creep.	<ul style="list-style-type: none"> <li>Fluid level and condition</li> <li>Engine speed signal</li> <li>CAN communication signal</li> <li>Oil pressure switch 4 and direct clutch solenoid valve</li> <li>Line pressure</li> </ul>
Excessive large creep.	<ul style="list-style-type: none"> <li>Engine speed signal</li> <li>CAN communication signal</li> <li>Oil pressure switch 4</li> </ul>
Vehicle cannot be parking condition on "P" range. Parking condition is not released though shifting to other ranges.	<ul style="list-style-type: none"> <li>Inhibitor switch</li> <li>Control cable adjustment</li> </ul>
Vehicle can drive on "P" range.	<ul style="list-style-type: none"> <li>Inhibitor switch</li> <li>Fluid level and condition</li> <li>Control cable adjustment</li> <li>Line pressure</li> </ul>
Vehicle can drive on "N" range.	<ul style="list-style-type: none"> <li>Inhibitor switch</li> <li>Fluid level and condition</li> <li>Control cable adjustment</li> <li>Line pressure</li> </ul>
Vehicle cannot drive at any range.	<ul style="list-style-type: none"> <li>Fluid level and condition</li> <li>Line pressure</li> <li>Inhibitor switch</li> <li>Control cable adjustment</li> <li>Loosing or damaging of propeller shaft.</li> <li>Loosing or damaging of drive shaft.</li> </ul>
Vehicle cannot drive on "D" range.	<ul style="list-style-type: none"> <li>Fluid level and condition</li> <li>Line pressure</li> <li>Inhibitor switch</li> <li>Control cable adjustment</li> <li>Loosing or damaging of propeller shaft.</li> <li>Loosing or damaging of drive shaft.</li> </ul>
Vehicle cannot drive on "R" range.	<ul style="list-style-type: none"> <li>Fluid level and condition</li> <li>Line pressure</li> <li>Inhibitor switch</li> <li>Control cable adjustment</li> <li>Loosing or damaging of propeller shaft.</li> <li>Loosing or damaging of drive shaft.</li> </ul>
Engine cannot start on "N" or "P" range.	<ul style="list-style-type: none"> <li>Starter</li> <li>Control cable adjustment</li> <li>Inhibitor switch</li> <li>CAN communication line</li> <li>TCM</li> </ul>
Engine start other than "N" or "P" range.	<ul style="list-style-type: none"> <li>Starter</li> <li>Control cable adjustment</li> <li>Inhibitor switch</li> <li>TCM</li> </ul>

## Diagnostics with Phenomenon

### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Symptoms	Faulty parts
Engine stalls.	<ul style="list-style-type: none"><li>• Fluid level and condition</li><li>• Engine speed signal</li><li>• Turbine speed sensor 1 and turbine speed sensor 2</li><li>• Lock up solenoid valve</li><li>• Line pressure</li></ul>
Engine stalls when shifting to "N" → "D" and "R" range.	<ul style="list-style-type: none"><li>• Fluid level and condition</li><li>• Engine speed signal</li><li>• Turbine speed sensor 1 and turbine speed sensor 2</li><li>• Lock up solenoid valve</li><li>• Line pressure</li></ul>

# MANUAL TRANSMISSION AND DIFFERENTIAL

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