



## Technical Service Information Ford 4R100

### DIAGNOSIS AND TESTING

#### Engagement Concern: Harsh Forward and Reverse

Possible Components	Reference/Action
<b>208 — ELECTRICAL ROUTINE</b>	
<b>Powertrain Control System</b> <ul style="list-style-type: none"><li>Electrical inputs/outputs, vehicle wiring harnesses, powertrain control module, electronic pressure control, throttle position sensor</li></ul>	<ul style="list-style-type: none"><li>Run On-Board Diagnostics. Perform Engagement Test, Electronic Pressure Control Test. Perform Pinpoint Test E using Transmission Tester and Cable and Overlay. Repair/replace as required. Clear codes, road test and rerun On-Board Diagnostics.</li></ul>
<b>308 — HYDRAULIC/MECHANICAL ROUTINE</b>	
<b>Improper Pressures</b> <ul style="list-style-type: none"><li>High line pressure</li></ul>	<ul style="list-style-type: none"><li>Check pressure at line pressure tap. Perform Line Pressure Test. Refer to the Line Pressure Chart for specification. If high, check main controls.</li></ul>
<b>Main Controls</b> <ul style="list-style-type: none"><li>Bolts not tightened to specification</li><li>Gasket damaged</li><li>EPC solenoid stuck or damaged</li><li>Engagement control valve stuck, damaged, contaminated, misassembled</li></ul>	<ul style="list-style-type: none"><li>Retighten bolts to specification.</li><li>Inspect for damage and replace.</li><li>Perform Electronic Pressure Control Tests described in routine No. 208. Replace as required.</li><li>Inspect for damage, contamination. Repair/replace as required.</li></ul>
<b>Pump Assembly</b> <ul style="list-style-type: none"><li>Bolts not tightened to specification</li><li>Gaskets damaged</li><li>Main regulator/booster valve stuck, damaged, misassembled</li></ul>	<ul style="list-style-type: none"><li>Retighten bolts to specification.</li><li>Inspect for damage and replace.</li><li>Inspect for damage. Repair/replace as required.</li></ul>

a Can be purchased as a separate item.

#### Engagement Concern: Delayed/Soft Forward and Reverse

Possible Component	Reference/Action
<b>209 — ELECTRICAL ROUTINE</b>	
<ul style="list-style-type: none"><li>No electrical concerns</li></ul>	
<b>309 — HYDRAULIC/MECHANICAL ROUTINE</b>	
<b>Shift Linkage or Cable</b> <ul style="list-style-type: none"><li>Damaged, misadjusted</li></ul>	<ul style="list-style-type: none"><li>Inspect and repair as required. Verify linkage adjustment. After linkage repair/adjustment, verify that the digital (TR) sensor is properly adjusted; refer to the Digital Transmission Range (TR) Sensor in this section.</li></ul>
<b>Fluid</b> <ul style="list-style-type: none"><li>Improper level</li></ul>	<ul style="list-style-type: none"><li>Adjust to proper level.</li></ul>
<b>Improper Pressures</b> <ul style="list-style-type: none"><li>Low line pressure</li></ul>	<ul style="list-style-type: none"><li>Check pressure at line tap. Refer to the Line Pressure Chart for specification. If low check the following components: pump inlet filter/seal assembly, main control, pump assembly.</li></ul>
<b>Filter Assembly and Seal</b> <ul style="list-style-type: none"><li>Plugged, damaged</li><li>Seal damaged, cut</li></ul>	<ul style="list-style-type: none"><li>Inspect filter assembly and seal for damage. Replace as required.</li></ul>



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### DIAGNOSIS AND TESTING

#### Engagement Concern: Delayed/Soft Forward and Reverse

Possible Component	Reference/Action
<b>Main Controls</b> <ul style="list-style-type: none"><li>• Bolts not tightened to specification</li><li>• Gaskets damaged</li><li>• Springs — stuck, damaged, missing, misassembled</li></ul>	<ul style="list-style-type: none"><li>• Retighten bolts to specification.</li><li>• Inspect for damage and replace.</li><li>• Inspect for damage. Repair/replace as required.</li></ul>
<b>Torque Converter Drainback (Initial Engagement Only)</b>	<ul style="list-style-type: none"><li>• Refer to Torque Converter Drainback Test procedures in this section for diagnosis.</li></ul>

#### Shift Concerns: Some or All Shifts Missing

Possible Component	Reference/Action
<b>210 — ELECTRICAL ROUTINE</b>	
<b>Powertrain Control System</b> <ul style="list-style-type: none"><li>• Electrical inputs/outputs, vehicle wiring harness, PCM, throttle position sensor, digital (TR) sensor, TSS, OSS, ABS, SSA, SSB</li></ul>	<ul style="list-style-type: none"><li>• Perform Shift Point Road Test.</li><li>• Run On-Board Diagnostics. Perform Pinpoint Tests A and D using the Transmission Tester, Cable and Overlay and the TRS-E Cable. Repair/replace as required. Clear code, road test, rerun On-Board Diagnostics.</li></ul>
<b>310 — HYDRAULIC/MECHANICAL ROUTINE</b>	
<b>Fluid</b> <ul style="list-style-type: none"><li>• Improper level</li><li>• Condition</li></ul>	<ul style="list-style-type: none"><li>• Adjust fluid to proper level. Inspect according to instructions under Fluid Condition Check.</li></ul>
<b>Shift Linkage (Internal/External) or Cable</b> <ul style="list-style-type: none"><li>• Damaged, misadjusted, disconnected</li></ul>	<ul style="list-style-type: none"><li>• Inspect and repair as required. Verify linkage adjustment. After linkage repair/adjustment, verify that the digital (TR) sensor is properly adjusted; refer to the Digital Transmission Range (TR) Sensor in this section.</li></ul>
<b>Filter Assembly and Seal</b> <ul style="list-style-type: none"><li>• Plugged, damaged</li><li>• Filter seal damaged</li></ul>	<ul style="list-style-type: none"><li>• Inspect filter assembly and seal for damage. Replace as required.</li></ul>
<b>Main Controls</b> <ul style="list-style-type: none"><li>• Valves stuck, damaged, misassembled</li></ul>	<ul style="list-style-type: none"><li>• Inspect for damage. Repair/replace as required.</li></ul>
<b>For diagnosis related to a specific shift, see Reference/Action</b>	<ul style="list-style-type: none"><li>• To diagnose specific No Shift, refer to the appropriate shift routine.<ul style="list-style-type: none"><li>— No Shift 1-2, Routine 220/320</li><li>— No Shift 2-3, Routine 221/321</li><li>— No Shift 3-4, Routine 222/322</li><li>— No Shift 4-3, Routine 223/323</li><li>— No Shift 3-2, Routine 224/324</li><li>— No Shift 2-1, Routine 225/325</li></ul></li></ul>



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### DIAGNOSIS AND TESTING

#### Shift Concerns: Shift Timing — Early/Late (Some/All)

Possible Component	Reference/Action
<b>211 — ELECTRICAL ROUTINE</b>	
<b>Powertrain Control System</b> <ul style="list-style-type: none"><li>• Electrical inputs/outputs, vehicle wiring harnesses, PCM, throttle position sensor, TFT sensor, TSS, OSS, ABS, SSA, SSB</li></ul>	<ul style="list-style-type: none"><li>• Perform Shift Point Road Test.</li><li>• Run On-Board Diagnostics.</li><li>• Perform Pinpoint Tests A and B using Transmission Tester and Cable and Overlay. Repair/replace as required. Clear codes, road test and rerun On-Board Diagnostics.</li></ul>
<b>Other Electrical Concerns</b> <ul style="list-style-type: none"><li>• No power to PCM, keep-alive memory erased from PCM</li></ul>	<ul style="list-style-type: none"><li>• Restore memory by performing Transmission Drive Cycle Test.</li></ul>
<b>311 — HYDRAULIC/MECHANICAL ROUTINE</b>	
<b>Other</b> <ul style="list-style-type: none"><li>• Tire size change</li><li>• Speedometer gear change (model dependent)</li><li>• Axle ratio change</li></ul>	<ul style="list-style-type: none"><li>• Refer to the specification decal on door panel and verify that vehicle has original equipment. Changes in tire size or axle ratio may affect shift timing.</li></ul>
<b>Power/Engine Performance — Poor Engine Performance</b>	<ul style="list-style-type: none"><li>• Refer to Routine No. 253/353.</li></ul>
<b>Main Controls</b> <ul style="list-style-type: none"><li>• Valves, accumulators, stuck or damaged</li><li>• Gaskets damaged</li><li>• Bolts not tightened to specification</li></ul>	<ul style="list-style-type: none"><li>• Inspect for damage, contamination. Repair/replace as required.</li><li>• Inspect for damage and replace.</li><li>• Retighten bolts to specification.</li></ul>
For diagnosis related to a specific shift or if all above are OK, see Reference/Action	<ul style="list-style-type: none"><li>• To diagnose specific shift/timing concern refer to Soft/Slipping routines:<ul style="list-style-type: none"><li>— Soft/Slipping Shift 1-2, Routine 226/326</li><li>— Soft/Slipping Shift 2-3, Routine 227/327</li><li>— Soft/Slipping Shift 3-4, Routine 228/328</li><li>— Downshifts, 229/329</li></ul></li></ul>

a Can be purchased as a separate item.

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

Possible Component	Reference/Action
<b>212 — ELECTRICAL ROUTINE</b>	
<b>Powertrain Control System</b> <ul style="list-style-type: none"><li>• Vehicle wiring harnesses, PCM, TP sensor, TFT sensor, SSA, SSB, digital (TR) sensor, TCC solenoid</li></ul>	<ul style="list-style-type: none"><li>• Perform Shift Point Road Test and Torque Converter Clutch Operation Tests.</li><li>• Run On-Board Diagnostics.</li><li>• Perform Pinpoint Tests A, B, C, D using Transmission Tester, Cable and Overlay and the TRS-E Cable. Repair/replace as required. Clear codes, road test and rerun On-Board Diagnostics.</li></ul>
<b>With Speed Control On</b> <ul style="list-style-type: none"><li>• Torque converter cycling</li><li>• Shift cycling (3-4 / 4-3 shifts)</li></ul>	<ul style="list-style-type: none"><li>• Re-evaluate with speed control off or depress TCS (overdrive cancelled). If condition still exists, proceed with diagnosis.</li></ul>



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### DIAGNOSIS AND TESTING

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

Possible Component	Reference/Action																												
<b>312 — HYDRAULIC/MECHANICAL ROUTINE</b>																													
<b>Fluid</b> <ul style="list-style-type: none"><li>• Improper level</li></ul>	<ul style="list-style-type: none"><li>• Adjust fluid to proper level.</li></ul>																												
<b>Filter Assembly and Seal</b> <ul style="list-style-type: none"><li>• Plugged, damaged</li><li>• Filter seal damaged</li></ul>	<ul style="list-style-type: none"><li>• Inspect filter assembly and seal for damage. Replace as required.</li></ul>																												
<b>Main Control</b> <ul style="list-style-type: none"><li>• Valves, accumulators, damaged, stuck</li><li>• Bolts not tightened to specification</li><li>• Gaskets damaged</li><li>• Wrong parts used in rebuild</li></ul>	<ul style="list-style-type: none"><li>• Inspect for damage. Repair/replace as required.</li><li>• Retighten bolts to specification.</li><li>• Inspect for damage and replace.</li><li>• Verify that proper parts were used.</li></ul>																												
<b>Torque Converter Clutch</b>	<ul style="list-style-type: none"><li>• Refer to Torque Converter Clutch Operation Concern: Cycling/Shudder/Chatter (No. 342).</li></ul>																												
For further diagnosis of timing issues, refer to Reference/Action	<ul style="list-style-type: none"><li>• Refer to the following shift routine(s) for further diagnosis:</li></ul> <table><tr><th>Shifts</th><th>No</th><th>Soft/Slip</th><th>Harsh</th></tr><tr><td>1-2</td><td>220/320</td><td>226/326</td><td>232/332</td></tr><tr><td>2-3</td><td>221/321</td><td>227/327</td><td>233/333</td></tr><tr><td>3-4</td><td>222/322</td><td>228/328</td><td>234/334</td></tr><tr><td>4-3</td><td>223/323</td><td>229/329</td><td>235/335</td></tr><tr><td>3-2</td><td>224/324</td><td>229/329</td><td>236/336</td></tr><tr><td>2-1</td><td>225/325</td><td>223/329</td><td>237/337</td></tr></table>	Shifts	No	Soft/Slip	Harsh	1-2	220/320	226/326	232/332	2-3	221/321	227/327	233/333	3-4	222/322	228/328	234/334	4-3	223/323	229/329	235/335	3-2	224/324	229/329	236/336	2-1	225/325	223/329	237/337
Shifts	No	Soft/Slip	Harsh																										
1-2	220/320	226/326	232/332																										
2-3	221/321	227/327	233/333																										
3-4	222/322	228/328	234/334																										
4-3	223/323	229/329	235/335																										
3-2	224/324	229/329	236/336																										
2-1	225/325	223/329	237/337																										

a Can be purchased as a separate item.

#### Shift Concerns: Feel — Soft/Slipping (Some/All)

Possible Component	Reference/Action
<b>213 — ELECTRICAL ROUTINE</b>	
<b>Powertrain Control System</b> <ul style="list-style-type: none"><li>Electrical inputs/outputs, vehicle wiring harnesses, PCM, TP sensor, electronic pressure control, TFT sensor</li></ul>	<ul style="list-style-type: none"><li>Perform Shift Point Road Test.</li><li>Run On-Board Diagnostics.</li><li>Perform Pinpoint Tests E and B in this section using Transmission Tester and Cable and Overlay. Repair/replace as required. Clear codes, road test, rerun On-Board Diagnostics.</li></ul>
<b>313 — HYDRAULIC/MECHANICAL ROUTINE</b>	
<b>Fluid</b> <ul style="list-style-type: none"><li>Improper level</li><li>Condition</li></ul>	<ul style="list-style-type: none"><li>Adjust fluid to proper level.</li><li>Inspect according to instructions in this section under Fluid Condition Check.</li></ul>
<b>Improper Pressures</b> <ul style="list-style-type: none"><li>Low line pressure</li></ul>	<ul style="list-style-type: none"><li>Check pressures at line pressure tap. Perform Line Pressure Tests. Refer to the Line Pressure Chart for specifications. If pressures are low or all shifts are soft/slipping, go to main controls.</li></ul>



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### DIAGNOSIS AND TESTING

#### Shift Concerns: Feel — Soft/Slipping (Some/All)

Possible Component	Reference/Action
<b>Main Controls</b> <ul style="list-style-type: none"><li>• Bolts not tightened to specification</li><li>• Gaskets damaged</li><li>• Line modulator valve springs damaged, stuck, misassembled</li><li>• EPC solenoid failure to operate in a normal manner</li><li>• Accumulator assembly damaged or wrong assembly</li></ul>	<ul style="list-style-type: none"><li>• Retighten bolts to specification.</li><li>• Inspect for damage and replace.</li><li>• Inspect for damage, contamination. Repair/replace as required.</li><li>• Refer to Electrical Routine No. 213.</li><li>• Inspect for damage. Replace as required. Verify correct assembly is used.</li></ul>
<b>Pump Assembly</b> <ul style="list-style-type: none"><li>• Bolts not tightened to specification</li><li>• Gaskets damaged</li><li>• Main regulator/booster valve damaged, misassembled</li><li>• Electronic pressure control air bleed check valve damaged or missing</li></ul>	<ul style="list-style-type: none"><li>• Retighten bolts to specification.</li><li>• Inspect for damage and replace.</li><li>• Inspect for damage. Repair/replace as required.</li><li>• Inspect for damage. Replace as required.</li></ul>
For diagnostics related to specific shifts, see Reference/Action	<ul style="list-style-type: none"><li>• Refer to the following Shift Routine(s) for further diagnosis:<ul style="list-style-type: none"><li>— Soft/Slipping Shift 1-2, Routine 226/326</li><li>— Soft/Slipping Shift 2-3, Routine 227/327</li><li>— Soft/Slipping Shift 3-4, Routine 228/328</li><li>— Downshifts, 229/329</li></ul></li></ul>

a Can be purchased as a separate item.

#### Shift Concerns: Feel — Harsh (Some/All)

Possible Component	Reference/Action
<b>214 — ELECTRICAL ROUTINE</b>	
<b>Powertrain Control System</b> <ul style="list-style-type: none"><li>• Electrical inputs/outputs, vehicle wiring harnesses, PCM, electronic pressure control, TFT sensor, TP sensor, digital (TR) sensor</li></ul>	<ul style="list-style-type: none"><li>• Run On-Board Diagnostics. Perform Pinpoint Tests B, D and E in this section using Transmission Tester, Cable and Overlay and the TRS-E Cable. Repair/replace as required. Clear codes, road test and rerun On-Board Diagnostics.</li></ul>
<b>Engine Performance Issues</b>	<ul style="list-style-type: none"><li>• Refer to PC/ED<sup>a</sup> for diagnosis.</li></ul>
<b>314 — HYDRAULIC/MECHANICAL ROUTINE</b>	
<b>Fluid</b> <ul style="list-style-type: none"><li>• Improper level</li><li>• Condition</li></ul>	<ul style="list-style-type: none"><li>• Adjust fluid to proper level.</li><li>• Inspect according to instructions in this section under Fluid Condition Check.</li></ul>
<b>Improper Pressures</b> <ul style="list-style-type: none"><li>• High line pressure</li></ul>	<ul style="list-style-type: none"><li>• Check pressures at line pressure tap. Perform Line Pressure and Stall Speed Tests. Refer to the Line Pressure Chart for specifications. If pressures are high or all shifts are harsh, go to main controls.</li></ul>
<b>Main Controls</b> <ul style="list-style-type: none"><li>• Bolts not tightened to specification</li><li>• Gaskets damaged</li><li>• Line modulator valve/spring misassembled, stuck, damaged</li><li>• EPC solenoid failure to operate in a normal manner</li><li>• Accumulator assembly damaged or wrong assembly</li></ul>	<ul style="list-style-type: none"><li>• Retighten bolts to specification.</li><li>• Inspect for damage and replace.</li><li>• Inspect for damage, contamination.</li><li>• Replace as required.</li><li>• Refer to Electrical Routine No. 214.</li><li>• Inspect for damage. Replace as required. Verify correct assembly is used.</li></ul>



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### DIAGNOSIS AND TESTING

#### Shift Concerns: Feel — Harsh (Some/All)

Possible Component	Reference/Action
<b>Pump Assembly</b> <ul style="list-style-type: none"><li>• Bolts not tightened to specification</li><li>• Gaskets damaged</li><li>• Main regulator/booster valve damaged, misassembled</li></ul>	<ul style="list-style-type: none"><li>• Retighten bolts to specification.</li><li>• Inspect for damage and replace.</li><li>• Inspect for damage. Repair/replace as required.</li></ul>
For diagnostics related to a specific shift, see Reference/Action	<ul style="list-style-type: none"><li>• Refer to the following Shift Routine(s) for further diagnosis:<ul style="list-style-type: none"><li>— Harsh Shift 1-2, Routine 232/332</li><li>— Harsh Shift 2-3, Routine 233/333</li><li>— Harsh Shift 3-4, Routine 234/334</li><li>— Harsh Shift 4-3, Routine 235/335</li><li>— Harsh Shift 3-2, Routine 236/336</li><li>— Harsh Shift 2-1, Routine 237/337</li></ul></li></ul>

a Can be purchased as a separate item.

#### Shift Concerns: No 1st Gear In Drive, Engages in Higher Gear

Possible Component	Reference/Action
<b>215 — ELECTRICAL ROUTINE</b>	
<b>Powertrain Control System</b> <ul style="list-style-type: none"><li>• Electrical inputs/outputs, vehicle wiring harnesses, PCM, SSA, SSB, digital (TR) sensor</li></ul>	<ul style="list-style-type: none"><li>• Run On-Board Diagnostics. Perform Pinpoint Tests A and D in this section using the Transmission Tester, Cable and Overlay and the TRS-E Cable. Repair/replace as required. Clear codes, road test and rerun On-Board Diagnostics.</li></ul>
<b>315 — HYDRAULIC/MECHANICAL ROUTINE</b>	
<b>Shift Linkage (Internal/External) or Cables, Digital Transmission Range (TR) Sensor</b> <ul style="list-style-type: none"><li>• Damaged, not connected, misadjusted</li></ul>	<ul style="list-style-type: none"><li>• Inspect and repair as required. Verify linkage adjustment. After linkage repair/adjustment, verify that the digital (TR) sensor is properly adjusted; refer to the Digital Transmission Range (TR) Sensor in this section.</li></ul>
<b>Main Controls</b> <ul style="list-style-type: none"><li>• Bolts not tightened to specification</li><li>• Gaskets damaged, misaligned</li><li>• SSA, SSB stuck or damaged</li><li>• Solenoid regulator valve, 2-3 shift valve, 3-4 shift valve, D2 valve — stuck, missing, misassembled, damaged</li><li>• Air bleeds for S1-S2 circuits missing</li><li>• Wrong components used in rebuild</li></ul>	<ul style="list-style-type: none"><li>• Retighten bolts to specification.</li><li>• Inspect for damage and replace.</li><li>• Refer to Electrical Routine No. 215.</li><li>• Inspect for damage. Repair/replace as required.</li><li>• Inspect for damage. Replace case.</li><li>• Verify that proper components were used. Replace as required.</li></ul>
<b>Mechanical</b> <ul style="list-style-type: none"><li>• Band servo, clutches damaged</li></ul> For diagnosis related to a specific gear, use Transmission Tester to determine gear	<ul style="list-style-type: none"><li>• Refer to proper disassembly procedures in this section. Refer to the following routine(s) for further diagnosis:<ul style="list-style-type: none"><li>No Shift 1-2, Routine 220/320</li><li>No Shift 2-3, Routine 221/321</li><li>No Shift 3-4, Routine 222/322</li></ul></li></ul>
<b>Reverse Ring Gear</b> <ul style="list-style-type: none"><li>• Damaged gear lugs to reverse carrier</li></ul>	<ul style="list-style-type: none"><li>• Inspect for damage. Replace as required.</li></ul>
<b>Low One-Way Clutch</b> <ul style="list-style-type: none"><li>• Damaged, misassembled</li></ul>	<ul style="list-style-type: none"><li>• Inspect for damage, proper assembly. Repair/replace as required.</li></ul>



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#### Shift Concerns: No Manual 1st Gear

Possible Component	Reference/Action
<b>216 — ELECTRICAL ROUTINE</b>	
<b>Powertrain Control System</b> <ul style="list-style-type: none"><li>Electrical inputs/outputs, vehicle wiring harnesses, PCM, SSA1, SSB, digital (TR) sensor</li></ul>	<ul style="list-style-type: none"><li>Run On-Board Diagnostics. Perform Pinpoint Tests A and D in this section using Transmission Tester, Cable and Overlay and the TRS-E Cable. Repair/replace as required. Clear codes, road test and rerun On-Board Diagnostics.</li></ul>
<b>316 — HYDRAULIC/MECHANICAL ROUTINE</b>	
<b>Shift Linkage (Internal/External) or Cable</b> <ul style="list-style-type: none"><li>Damaged, misadjusted, not connected</li></ul>	<ul style="list-style-type: none"><li>Inspect for damage. Repair as required. Verify linkage adjustment. After linkage repair/adjustment, verify that the digital (TR) sensor is properly adjusted; refer to the Digital Transmission Range (TR) Sensor in this section.</li></ul>
<b>Main Controls</b> <ul style="list-style-type: none"><li>Bolts not tightened to specification</li><li>Gaskets damaged</li><li>Manual control lever outer and shaft assembly, manual valve, low reverse modulator valve, 1-2 shift valve, 2-3 shift valve, BS1 check ball, 4-3-2 timing valve — stuck, damaged</li><li>SSA failure to operate in a normal manner</li><li>Air bleed for SSA/SS1 circuit damaged or missing</li><li>Wrong parts used in rebuild</li></ul>	<ul style="list-style-type: none"><li>Retighten bolts to specification.</li><li>Inspect for damage and replace.</li><li>Inspect for damage. Repair/replace as required.</li><li>Refer to Electrical Routine No. 216.</li><li>Inspect for damage. Replace case.</li><li>Verify that proper parts were used.</li></ul>
<b>Low One-Way Clutch Assembly</b> <ul style="list-style-type: none"><li>Damaged, misassembled</li></ul>	<ul style="list-style-type: none"><li>Inspect for damage. Repair/replace as required.</li></ul>

a Can be purchased as a separate item.

#### Shift Concerns: No Manual 2nd Gear

Possible Component	Reference/Action
<b>217 — ELECTRICAL ROUTINE</b>	
<b>Powertrain Control System</b> <ul style="list-style-type: none"><li>Electrical inputs/outputs, vehicle wiring harnesses, PCM, SSA, SSB, digital (TR) sensor</li></ul>	<ul style="list-style-type: none"><li>Run On-Board Diagnostics. Perform Pinpoint Tests A and D in this section using Transmission Tester, Cable and Overlay and the TRS-E Cable. Repair/replace as required. Clear codes, road test and rerun On-Board Diagnostics.</li></ul>
<b>317 — HYDRAULIC/MECHANICAL ROUTINE</b>	
<b>Shift Linkage (Internal/External) or Cable</b> <ul style="list-style-type: none"><li>Damaged, misadjusted</li></ul>	<ul style="list-style-type: none"><li>Inspect for damage. Repair as required. Verify linkage/cable adjustment. After linkage/cable repair/adjustment, verify that the digital (TR) sensor is properly adjusted; refer to the Digital Transmission Range (TR) Sensor in this section.</li></ul>
<b>Main Controls</b> <ul style="list-style-type: none"><li>Bolts not tightened to specification</li><li>Gaskets damaged</li><li>2-3 shift valve, 3-4 shift valve, manual 1-2 transition valve, spring — stuck, damaged, missing, misassembled</li><li>BS6, BS1 — missing, leaks or seats damaged</li><li>Improper parts used in rebuild</li></ul>	<ul style="list-style-type: none"><li>Retighten bolts to specification.</li><li>Inspect for damage and replace.</li><li>Inspect for damage. Repair/replace as required.</li><li>Inspect for damage. Replace as required.</li><li>Verify that proper parts were used.</li></ul>



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#### Shift Concerns: No Manual 2nd Gear

Possible Component	Reference/Action
<b>Intermediate Clutch Assembly</b> <ul style="list-style-type: none"><li>• Assembly</li><li>• Seals or piston damaged</li><li>• Friction elements worn, missing, damaged, misassembled</li><li>• Ball check stuck/missing</li><li>• Feedbolt torque incorrect, leaks, missing</li><li>• Cylinder assembly outer diameter/case bore damaged, leaking</li></ul>	<ul style="list-style-type: none"><li>• Air check clutch assembly; refer to Air Pressure Tests in this section.</li><li>• Inspect for damage. Replace as required.</li><li>• Inspect for damage. Repair/replace as required.</li><li>• Inspect for damage. Repair/replace as required.</li><li>• Inspect and retighten bolts as required.</li><li>• Inspect for damage. Repair/replace as required.</li></ul>
<b>Intermediate One-Way Clutch Assembly</b> <ul style="list-style-type: none"><li>• Case/sprags damaged, improperly assembled on inner race</li></ul>	<ul style="list-style-type: none"><li>• Inspect for damage. Repair/replace as required.</li></ul>

a Can be purchased as a separate item.

#### Shift Concerns: No 1-2 Shift (Automatic)

Possible Component	Reference/Action
<b>220 — ELECTRICAL ROUTINE</b>	
<b>Powertrain Control System</b> <ul style="list-style-type: none"><li>• Electrical inputs/outputs, vehicle wiring harnesses, PCM, TP sensor, TSS, OSS, ABS, SSA, SSB</li></ul>	<ul style="list-style-type: none"><li>• Run On-Board Diagnostics. Perform Pinpoint Test A in this section using Transmission Tester and Cable and Overlay. Repair/replace as required. Clear codes, road test and rerun On-Board Diagnostics.</li></ul>
<b>320 — HYDRAULIC/MECHANICAL ROUTINE</b>	
<b>Shift Linkage (Internal/External) or Cable</b> <ul style="list-style-type: none"><li>• Damage, misadjusted</li><li>• Digital (TR) sensor damaged, misadjusted</li></ul>	<ul style="list-style-type: none"><li>• Inspect for damage. Repair as required. Verify linkage adjustment. After linkage repair/adjustment, verify that the digital (TR) sensor is properly adjusted; refer to the Digital Transmission Range (TR) Sensor in this section.</li></ul>
<b>Main Controls</b> <ul style="list-style-type: none"><li>• Bolts not tightened to specification</li><li>• Gaskets damaged, misaligned</li><li>• SSB failure to operate in a normal manner</li><li>• D2 valve, 1-2 shift valve, 1-2 manual transition valve, intermediate clutch accumulator regulator valves, springs — stuck, damaged, missing or misassembled</li><li>• Air bleed for SSB circuit damaged or missing</li><li>• Wrong parts used in rebuild</li></ul>	<ul style="list-style-type: none"><li>• Retighten bolts to specification.</li><li>• Inspect for damage and replace.</li><li>• Refer to Electrical Routine No. 220.</li><li>• Inspect for damage. Repair/replace as required.</li><li>• Inspect for damage. Replace case.</li><li>• Verify that proper parts were used.</li></ul>
<b>Intermediate Clutch Assembly</b> <ul style="list-style-type: none"><li>• Assembly</li><li>• Seals or piston damaged</li><li>• Friction elements worn, missing, damaged, misassembled</li><li>• Ball check stuck/missing</li><li>• Feedbolt torque incorrect, leaks, missing</li><li>• Cylinder assembly outer diameter/case bore damaged, leaking</li></ul>	<ul style="list-style-type: none"><li>• Air check clutch assembly; refer to Air Pressure Tests in this section.</li><li>• Inspect for damage. Replace as required.</li><li>• Inspect for damage. Repair/replace as required.</li><li>• Inspect for damage. Repair/replace as required.</li><li>• Inspect and retighten bolts as required.</li><li>• Inspect for damage. Replace as required.</li></ul>





## Technical Service Information Ford 4R100

### DIAGNOSIS AND TESTING

#### Shift Concerns: No 1-2 Shift (Automatic)

Possible Component	Reference/Action
<b>Intermediate One-Way Clutch Assembly</b> <ul style="list-style-type: none"><li>• Cage/sprags damaged, improperly assembled on inner race</li><li>• Improper components used in rebuild</li></ul>	<ul style="list-style-type: none"><li>• Inspect for damage. Repair/replace as required.</li><li>• Verify that proper components are used.</li></ul>

- a Can be purchased as a separate item.

#### Shift Concerns: No 2-3 Shift (Automatic)

Possible Component	Reference/Action
<b>221 — ELECTRICAL ROUTINE</b>	
<b>Powertrain Control System</b> <ul style="list-style-type: none"><li>• Electrical inputs/outputs, vehicle wiring harness, PCM, TP sensor, TSS, OSS, ABS, SSA, SSB</li></ul>	<ul style="list-style-type: none"><li>• Run On-Board Diagnostics. Perform Pinpoint Test A in this section using Transmission Tester and Cable and Overlay. Repair/replace as required. Clear codes, road test and rerun On-Board Diagnostics.</li></ul>
<b>321 — HYDRAULIC/MECHANICAL ROUTINE</b>	
<b>Main Controls</b> <ul style="list-style-type: none"><li>• Bolts not tightened to specification</li><li>• Gaskets damaged</li><li>• SSA failure to operate in a normal manner</li><li>• Direct clutch accumulator regulator valve, 2-3 shift valve, springs — stuck, missing, damaged, misassembled</li><li>• Air bleed for SSB circuit damaged or missing</li><li>• Improper components used in rebuild</li></ul>	<ul style="list-style-type: none"><li>• Retighten bolts to specification.</li><li>• Inspect for damage and replace.</li><li>• Refer to Electrical Routine No. 221.</li><li>• Inspect for damage. Repair/replace as required.</li><li>• Inspect for damage. Replace case.</li><li>• Verify that proper components are used.</li></ul>
<b>Center Support Assembly</b> <ul style="list-style-type: none"><li>• Feedbolts missing, not tightened to specification</li><li>• Seal rings damaged</li><li>• Assembly damaged</li><li>• Outside diameter or case bore damaged or leaking</li></ul>	<ul style="list-style-type: none"><li>• Inspect, install new feedbolts and tighten to specification.</li><li>• Inspect for damage. Replace as required.</li><li>• Inspect for damage. Replace as required.</li><li>• Inspect for damage. Replace as required.</li></ul>
<b>Direct Clutch Assembly</b> <ul style="list-style-type: none"><li>• Assembly<ul style="list-style-type: none"><li>• Center support hub seals damaged</li><li>• Seals, piston, cylinder damaged</li><li>• Friction elements missing or damaged</li><li>• Ball check missing, damaged</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Air check clutch assembly; refer to Air Pressure Tests in this section.</li><li>• Inspect for damage. Replace as required.</li><li>• Inspect for damage. Replace as required.</li><li>• Inspect for damage. Replace as required.</li><li>• Inspect for damage. Replace as required.</li></ul>