



Technical Service Information Ford 4R100

Diagnosis by Symptom Index

4R100	Routines	
	Electrical (a)	Hydraulic/Mechanical
Engagement Concerns <ul style="list-style-type: none">• No forward only• No REVERSE only• Harsh REVERSE only• Harsh forward only• Delayed/soft REVERSE only• Delayed/soft forward only• No forward and no REVERSE only• Harsh forward and REVERSE• Delayed/soft forward and REVERSE	201 202 203 204 205 206 207 208 209	301 302 303 304 305 306 307 308 309
Shift Concerns <ul style="list-style-type: none">• Some or all shifts missing• Timing concerns<ul style="list-style-type: none">— early/late (some/all)— erratic/hunting (some/all)• Feel concerns<ul style="list-style-type: none">— soft/slipping (some/all)— harsh (some/all)• No 1st gear in drive, engages in higher gear• No MANUAL 1st gear• No MANUAL 2nd gear	210 — 211 212 — 213 214 215 216 217	310 — 311 312 — 313 314 315 316 317
Torque Converter Clutch Operation Concerns <ul style="list-style-type: none">• No apply• Always applied/stalls vehicle• Cycling/shudder/chatter	240 241 242	340 341 342
Other Concerns <ul style="list-style-type: none">• Shift lever efforts high• External leaks• Poor vehicle performance• Noise/vibration — forward or REVERSE• Engine will not crank• No PARK range• Overheating• No engine braking in MANUAL 2 position only• No engine braking in MANUAL 1 position only• No engine braking with OVERDRIVE cancelled• Fluid venting or foaming	251 252 253 254 255 256 257 258 259 260 261	351 352 353 354 355 356 357 358 359 360 361

(a) Perform electrical routines first.

Other Concerns: Fluid Venting/Foaming

Possible Component	Reference/Action
261 — ELECTRICAL ROUTINE	
• No electrical concerns	
361 — HYDRAULIC/MECHANICAL ROUTINE	
• Case vent assembly blocked or damaged	• Check case vent assembly for damage or blockage. Repair/replace as required.
• Overfilled transmission	• Check level and adjust as required.
• Fluid contaminated (coolant, water)	• Check for contamination, locate source of contamination. Repair as required.
• Overheating	• Refer to Routine No. 257/357.
• Filter assembly and seal damaged or misassembled	• Inspect filter assembly and seal for damage. Replace as required.
• Pump to case gasket damaged, misaligned	• Inspect for damage and replace.



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DIAGNOSIS AND TESTING

Engagement Concern: No Forward Only

Possible Component	Reference/Action
201 — ELECTRICAL ROUTINE	
• No electrical concerns	
301 — HYDRAULIC/MECHANICAL ROUTINE	
Fluid <ul style="list-style-type: none">• Improper level• Condition	<ul style="list-style-type: none">• Adjust fluid to proper level.• Inspect according to instructions under Fluid Condition Check.
Shift Linkage (Internal/External) or Cable <ul style="list-style-type: none">• Damaged, misadjusted, disconnected	<ul style="list-style-type: none">• 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.
Improper Pressures <ul style="list-style-type: none">• Low line pressure	<ul style="list-style-type: none">• Check pressure at line tap. Perform Line Pressure and Stall Speed Tests. Refer to the Line Pressure Chart for specification. If pressures are low, check the following possible components: Pump inlet filter and seal assembly, main controls, pump assembly, forward clutch assembly.
Filter Assembly and Seal <ul style="list-style-type: none">• Filter seal damaged, cut	<ul style="list-style-type: none">• Inspect filter assembly and seal for damage. Replace as required.
Main Controls <ul style="list-style-type: none">• Manual valve stuck, damaged• Control body housing leakage• Bolts not tightened to specification• Gaskets damaged	<ul style="list-style-type: none">• Inspect for damage and repair/replace as required.• Retighten bolts to specification.• Inspect gasket for damage and replace as required.
Forward Clutch Assembly <ul style="list-style-type: none">• Assembly<ul style="list-style-type: none">• Piston, seal; check ball damaged, missing, not seating• Feed bolt loose, missing• Center support damaged, holes blocked/missing• Forward clutch sealing rings damaged• Forward clutch ring gear damaged• Friction elements damaged, worn; spline teeth damaged, missing	<ul style="list-style-type: none">• Air check clutch assembly; refer to Air Pressure Tests in this section.• Inspect seals for damage, check ball seating, location. Replace piston assembly as required.• Install new feed bolts and tighten to specification.• Inspect for damage. Repair/replace as required.• Inspect for damage. Replace as required.• Inspect for damage. Replace as required.• Check for abnormal wear, damage. Replace as required.
Forward/Reverse Sun Gear Damaged	<ul style="list-style-type: none">• Inspect for damage. Replace as required.
Front Planet Assembly Damaged	<ul style="list-style-type: none">• Inspect for damage. Replace as required.
Output Shaft <ul style="list-style-type: none">• Splines damaged	<ul style="list-style-type: none">• Inspect for damage. Replace as required.
Low One-Way Clutch Assembly (Planetary) <ul style="list-style-type: none">• Worn, damaged or misassembled	<ul style="list-style-type: none">• Inspect for damage. Replace as required.



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DIAGNOSIS AND TESTING

Engagement Concern: No Reverse Only

Possible Component	Reference/Action
202 — ELECTRICAL ROUTINE	
• No electrical concerns	
302 — HYDRAULIC/MECHANICAL ROUTINE	
Fluid <ul style="list-style-type: none">• Improper level• Condition	<ul style="list-style-type: none">• Adjust fluid to proper level.• Inspect per instructions under Fluid Condition Check.
Shift Linkage (Internal/External) or Cable <ul style="list-style-type: none">• Damaged or misadjusted	<ul style="list-style-type: none">• 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.
Improper Pressures <ul style="list-style-type: none">• Low line pressure	<ul style="list-style-type: none">• Check pressure at line pressure tap. Perform Line Pressure and Stall Speed Tests. Refer to the Line Pressure Chart for specifications. If pressures are low, check the following possible components: Pump inlet filter and seal assembly, main control, pump assembly, reverse clutch assembly, coast clutch assembly, direct clutch assembly.
Filter Assembly and Seal <ul style="list-style-type: none">• Damaged or seal missing	<ul style="list-style-type: none">• Inspect filter assembly and seal for damage. Replace as required.
Main Controls <ul style="list-style-type: none">• Bolts not tightened to specification• Gaskets damaged• Valve springs, main control valve body, direct clutch accumulator valve damaged, stuck, missing, or misassembled• Reinforcing plate improperly installed; bolts not torqued to specification	<ul style="list-style-type: none">• Retighten bolts to specification.• Inspect for damage and replace.• Inspect for damage. Repair/replace as required.• Inspect for proper installation. Retighten bolts to specification.
Direct Clutch Assembly NOTE: Only if third gear also is inoperative <ul style="list-style-type: none">• Assembly• Seals or piston damaged• Clutch plates burnt, missing• Check ball damaged, missing• Center support damaged or holes blocked• Center support hub damaged	<ul style="list-style-type: none">• Air check clutch assembly; refer to Air Pressure Tests in this section.• Inspect for damage. Replace as required.• Inspect for damage. Replace as required.• Inspect for damage. Replace as required.• Inspect for damage. Repair/replace as required.• Inspect for damage. Replace as required.
Reverse Clutch Assembly <ul style="list-style-type: none">• Assembly• Seals or piston damaged• Piston bore damaged• Friction elements damaged, worn; missing plates• Feed hole damaged, plugged, missing	<ul style="list-style-type: none">• Air check clutch assembly; refer to Air Pressure Tests in this section.• Inspect for damage. Replace as required.• Inspect for damage. Replace as required.• Inspect for damage. Replace as required.• Inspect for damage. Repair/replace as required.



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DIAGNOSIS AND TESTING

Engagement Concern: Harsh Reverse Only

Possible Component	Reference/Action
203 — ELECTRICAL ROUTINE	
Powertrain Control System <ul style="list-style-type: none">Electrical inputs/outputs, vehicle wiring harnesses, PCM, throttle position sensor, TSS, OSS, ABS electronic pressure control	<ul style="list-style-type: none">Run On-Board Diagnostics. Perform Engagement Test, Electronic Pressure Control Test. Perform Pinpoint Test E using Transmission Tester and Cable and Overlay as outlined in this section. Repair/replace as required. Clear codes, road test, rerun On-Board Diagnostics.
303 — HYDRAULIC/MECHANICAL ROUTINE	
Improper Pressures <ul style="list-style-type: none">High line pressure	<ul style="list-style-type: none">Check pressure at line pressure tap. Perform Line Pressure and Stall Speed Tests. Refer to the Line Pressure Chart for specification. If high, check the main controls.
Main Controls <ul style="list-style-type: none">Bolts not tightened to specificationGasket damagedEPC solenoid stuck or damaged	<ul style="list-style-type: none">Retighten bolts to specification.Inspect for damage and replace.Perform Electronic Pressure Control Tests described in routine No. 203. Replace as required.
Pump Assembly <ul style="list-style-type: none">Bolts not tightened to specificationGaskets damagedMain regulator/booster valve stuck, damaged, misassembled	<ul style="list-style-type: none">Retighten bolts to specification.Inspect for damage and replace.Inspect for damage. Repair/replace as required.

a Can be purchased as a separate item.

Engagement Concern: Harsh Forward Only

Possible Components	Reference/Action
204 — ELECTRICAL ROUTINE	
Powertrain Control System <ul style="list-style-type: none">Electrical inputs/outputs, vehicle wiring harnesses, PCM, throttle position sensor, TSS, OSS, ABS electronic pressure control	<ul style="list-style-type: none">Run On-Board Diagnostics. Perform Engagement Test, Electronic Pressure Control Test. Perform Pinpoint Test E using Transmission Tester and Cable and Overlay as outlined in this section. Repair/replace as required. Clear codes, road test, rerun On-Board Diagnostics.
304 HYDRAULIC/MECHANICAL ROUTINE	
Improper Pressures <ul style="list-style-type: none">High line pressure	<ul style="list-style-type: none">Check pressure at line pressure tap. Perform Line Pressure and Stall Speed Tests. Refer to the Line Pressure Chart for specification. If pressures are high, check main controls.
Main Controls <ul style="list-style-type: none">Bolts not tightened to specificationGaskets damagedElectronic pressure control solenoid stuck or damagedEngagement control valve, springs — damaged, stuck, misassembled, contaminated	<ul style="list-style-type: none">Retighten bolts to specification.Inspect for damage and replace.Perform Electronic Pressure Control Tests described in routine No. 204. Replace as required.Inspect for damage. Repair/replace as required.



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DIAGNOSIS AND TESTING

Engagement Concern: Harsh Forward Only

Possible Components	Reference/Action
Pump Assembly <ul style="list-style-type: none">• Bolts not tightened to specification• Gaskets damaged• Main regulator/booster valve stuck, damaged, misassembled	<ul style="list-style-type: none">• Retighten bolts to specification.• Inspect for damage and replace.• Inspect for damage. Repair/replace as required.
Forward Clutch Assembly <ul style="list-style-type: none">• Assembly• Plates burnt, missing; check ball missing, damaged; hub damaged	<ul style="list-style-type: none">• Air check clutch assembly; refer to Air Pressure Tests in this section.• Inspect for damage. Replace as required.

a Can be purchased as a separate item.

Engagement Concern: Delayed/Soft Reverse Only

Possible Component	Reference/Action
205 — ELECTRICAL ROUTINE	
<ul style="list-style-type: none">• No electrical concerns	
305 — HYDRAULIC/MECHANICAL ROUTINE	
Shift Linkage or Cable <ul style="list-style-type: none">• Damaged, misadjusted	<ul style="list-style-type: none">• 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.
Main Controls <ul style="list-style-type: none">• Bolts not tightened to specification• Gaskets damaged• Direct clutch accumulator regulator valve, low reverse modulator valve, springs — stuck, damaged, missing, misassembled• Check ball missing, damaged• Reinforcing plate improperly installed, bolts not tightened to specification	<ul style="list-style-type: none">• Retighten bolts to specification.• Inspect for damage and replace.• Inspect for damage. Repair/replace as required.• Inspect for damage. Replace as required.• Inspect for proper installation. Retighten bolts to specification
Coast Clutch Assembly <ul style="list-style-type: none">• Assembly• Piston seals damaged, missing• Stator support seals damaged	<ul style="list-style-type: none">• Air check clutch assembly; refer to Air Pressure Tests in this section.• Inspect for damage. Replace as required.• Inspect for damage. Replace as required.• Inspect for damage. Replace as required.
Reverse Clutch Assembly <ul style="list-style-type: none">• Assembly• Seals, piston damaged• Friction elements — damaged, worn• Assembly leakage	<ul style="list-style-type: none">• Air check clutch assembly; refer to Air Pressure Tests in this section.• Inspect for damage. Replace as required.• Inspect for damage. Replace as required.• Inspect for damage. Repair/replace as required.



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DIAGNOSIS AND TESTING

Engagement Concern: Delayed/Soft Forward Only

Possible Component	Reference/Action
206 — ELECTRICAL ROUTINE	
• No electrical concerns	
306 — HYDRAULIC/MECHANICAL ROUTINE	
Fluid <ul style="list-style-type: none">• Improper level• Condition	<ul style="list-style-type: none">• Adjust fluid to proper level.• Inspect according to instructions under Fluid Condition Check.
Shift Linkage or Cable <ul style="list-style-type: none">• Damaged, misadjusted	<ul style="list-style-type: none">• 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.
Improper Pressures <ul style="list-style-type: none">• Low line pressure	<ul style="list-style-type: none">• Check pressure at line tap. Perform Line Pressure and Stall Speed Tests. Refer to the Line Pressure Chart for specification. If pressures are low, check the following possible components: pump inlet filter and seal assembly, main controls, pump assembly.
Filter Assembly and Seal <ul style="list-style-type: none">• Plugged, damaged• Filter seal damaged	<ul style="list-style-type: none">• Inspect filter assembly and seal for damage. Replace as required.
Main Controls <ul style="list-style-type: none">• Bolt not tightened to specification• Gaskets damaged	<ul style="list-style-type: none">• Retighten bolts to specification.• Inspect for damage and replace.
Center Support Assembly <ul style="list-style-type: none">• Feedbolts missing, improperly tightened• Hub damaged, holes blocked or missing	<ul style="list-style-type: none">• Install new feedbolts and tighten to specification.• Inspect for damage. Repair/replace as required.
Forward Clutch Assembly <ul style="list-style-type: none">• Assembly• Seals or piston damaged• Check balls damaged, missing• Clutch hub damaged• Friction elements damaged, missing• Forward clutch cylinder seals damaged	<ul style="list-style-type: none">• Air check clutch assembly; refer to Air Pressure Tests in this section• Inspect seals for damage. Replace as required.• Inspect for mislocation, poor seating, damage. Replace cylinder as required.• Inspect for damage. Replace as required.• Inspect for damage. Replace as required.• Inspect for damage. Replace as required.

Engagement Concern: No Forward and No Reverse Only



Possible Component	Reference/Action
207 — ELECTRICAL ROUTINE	
• No electrical concerns	
307 — HYDRAULIC/MECHANICAL ROUTINE	
Fluid <ul style="list-style-type: none">• Improper level• Condition• Converter drainback valve	<ul style="list-style-type: none">• Adjust fluid to proper level. Inspect according to instructions under Fluid Condition Check.• Inspect converter drainback valve. Perform Torque Converter Drainback Test. Replace as required.



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DIAGNOSIS AND TESTING

Engagement Concern: No Forward and No Reverse Only

Possible Component	Reference/Action
Shift Linkage (Internal/External) or Cable <ul style="list-style-type: none">Damaged, misadjusted or disconnected	<ul style="list-style-type: none">Inspect for damage. Repair as required. Verify linkage adjustment. After linkage repair/adjustment, verify that the digital (TR) sensor is properly adjusted; refer to Digital Transmission Range (TR) Sensor in this section.
Improper Pressures <ul style="list-style-type: none">Low line pressures	<ul style="list-style-type: none">Check pressure at line tap. Perform Line Pressure Test. Refer to the Line Pressure Chart for specification. If pressures are low, check the following possible components: pump inlet filter and seal assembly, main controls, pump assembly, forward clutch assembly.
Filter Assembly and Seal <ul style="list-style-type: none">Plugged, damagedFilter seal damaged or cut	<ul style="list-style-type: none">Inspect filter assembly and seal for damage. Replace as required.
Main Controls <ul style="list-style-type: none">Manual valve — stuck, damagedControl body housing leakageBolts not tightened to specificationGaskets damaged	<ul style="list-style-type: none">Inspect for damage. Repair/replace as required.Retighten bolts to specification.Inspect for damage and replace.
Pump Assembly <ul style="list-style-type: none">Bolts not tightened to specificationGaskets damagedMain regulator/booster valve damaged, missing, misassembledExcessive pump gear end clearance	<ul style="list-style-type: none">Retighten bolts to specification.Inspect for damage and replace.Inspect for damage. Repair/replace as required.Perform pump gear end clearance check.
Center Support Assembly <ul style="list-style-type: none">Damaged, holes blocked.Feedbolts missing or improperly tightened	<ul style="list-style-type: none">Inspect for damage. Repair/replace as required.Install new bolts and tighten to specification.
Forward/Reverse Sun Gear <ul style="list-style-type: none">Damaged	<ul style="list-style-type: none">Inspect for damage. Replace as required.
Forward Planet Assembly <ul style="list-style-type: none">Damaged	<ul style="list-style-type: none">Inspect for damage. Replace as required.
Input Shaft /Center Shaft/ Output Shaft <ul style="list-style-type: none">Splines damaged	<ul style="list-style-type: none">Inspect for damage. Replace as required.
Overdrive Carrier <ul style="list-style-type: none">Damaged	<ul style="list-style-type: none">Inspect for damage. Replace as required.
Drive in  with  Cancelled Note: For diagnostic purposes only. Not for extended driving. Overdrive OWC <ul style="list-style-type: none">Misassembled, damagedSprags or races damaged	<ul style="list-style-type: none">Inspect for damage. Repair/replace as required.Inspect for damage. Replace as required.



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DIAGNOSIS AND TESTING

Engagement Concern: Harsh Forward and Reverse

Possible Components	Reference/Action
208 — ELECTRICAL ROUTINE	
Powertrain Control System <ul style="list-style-type: none">Electrical inputs/outputs, vehicle wiring harnesses, powertrain control module, electronic pressure control, throttle position sensor	<ul style="list-style-type: none">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.
308 — HYDRAULIC/MECHANICAL ROUTINE	
Improper Pressures <ul style="list-style-type: none">High line pressure	<ul style="list-style-type: none">Check pressure at line pressure tap. Perform Line Pressure Test. Refer to the Line Pressure Chart for specification. If high, check main controls.
Main Controls <ul style="list-style-type: none">Bolts not tightened to specificationGasket damagedEPC solenoid stuck or damagedEngagement control valve stuck, damaged, contaminated, misassembled	<ul style="list-style-type: none">Retighten bolts to specification.Inspect for damage and replace.Perform Electronic Pressure Control Tests described in routine No. 208. Replace as required.Inspect for damage, contamination. Repair/replace as required.
Pump Assembly <ul style="list-style-type: none">Bolts not tightened to specificationGaskets damagedMain regulator/booster valve stuck, damaged, misassembled	<ul style="list-style-type: none">Retighten bolts to specification.Inspect for damage and replace.Inspect for damage. Repair/replace as required.

a Can be purchased as a separate item.

Engagement Concern: Delayed/Soft Forward and Reverse

Possible Component	Reference/Action
209 — ELECTRICAL ROUTINE	
<ul style="list-style-type: none">No electrical concerns	
309 — HYDRAULIC/MECHANICAL ROUTINE	
Shift Linkage or Cable <ul style="list-style-type: none">Damaged, misadjusted	<ul style="list-style-type: none">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.
Fluid <ul style="list-style-type: none">Improper level	<ul style="list-style-type: none">Adjust to proper level.
Improper Pressures <ul style="list-style-type: none">Low line pressure	<ul style="list-style-type: none">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.
Filter Assembly and Seal <ul style="list-style-type: none">Plugged, damagedSeal damaged, cut	<ul style="list-style-type: none">Inspect filter assembly and seal for damage. Replace as required.