

PRACTICE EXAM 6: ASE A2 SIMULATION (50 QUESTIONS)

1. A vehicle with a five-speed automatic transmission has normal shift quality in 1st through 4th gear but produces a noticeable engine RPM flare of 400 RPM during the 4-5 upshift under moderate throttle. Heavy-throttle 4-5 shifts produce an even larger flare. Light-throttle 4-5 shifts feel normal. What is the MOST LIKELY cause?

- A. The 5th gear clutch pack is worn and slips under moderate and heavy torque but holds at light loads
- B. The pressure control solenoid reduces line pressure too aggressively during the 4-5 transition event
- C. The 4-5 accumulator absorbs too much pressure during the shift, delaying the clutch application
- D. The torque converter clutch releases momentarily during the 4-5 shift, creating a false RPM spike

2. A technician is road testing a vehicle with a complaint of transmission shudder. The shudder occurs between 42 and 52 mph during light-throttle cruising and disappears when the driver presses the accelerator or lifts off the throttle completely. The scan tool shows TCC slip RPM oscillating between 0 and 60 RPM during the shudder. Which of the following is the MOST appropriate FIRST step?

- A. Remove the transmission for torque converter replacement since the TCC friction surface has failed
- B. Replace all four transmission mounts since drivetrain vibration can mimic TCC shudder at highway speed
- C. Perform a fluid and filter service using the manufacturer's specified fluid to address degraded friction modifiers
- D. Replace the TCC solenoid because the oscillating slip indicates the solenoid cannot maintain steady pressure

3. A customer states that the transmission "seems to have lost a gear." Upon road testing, the technician confirms that the transmission shifts 1-2, then directly to 4th, skipping 3rd gear entirely. The skip occurs at every throttle position. There are no DTCs stored and the fluid level is correct. Which of the following diagnostic approaches is MOST appropriate?

- A. Perform a pressure test to determine if the 3rd gear clutch circuit has a hydraulic pressure deficiency
- B. Use the component application chart to identify the device unique to 3rd gear and test the solenoid that controls it
- C. Remove the transmission for internal inspection since a skipped gear always indicates a mechanical failure
- D. Replace the valve body assembly since a stuck shift valve is the only possible cause of a gear skip

4. Technician A says that a transmission fluid leak from the vent tube is always caused by overfilling the transmission. Technician B says a clogged vent tube can cause internal pressure to build up and force fluid past seals even when the fluid level is correct. Who is correct?

- A. Technician A only
- B. Both Technician A and Technician B
- C. Neither Technician A nor Technician B
- D. Technician B only

5. A vehicle equipped with a six-speed automatic transmission exhibits a firm, harsh engagement when shifting from Neutral to Reverse at idle. The engagement from Neutral to Drive is smooth. A pressure test shows line pressure at 68 psi in both Drive and Reverse at idle, which is within specification. All of the following could cause the harsh Reverse engagement EXCEPT:

- A. A stuck or failed accumulator piston in the reverse clutch apply circuit
- B. A blocked orifice in the reverse clutch feed passage that causes rapid pressure buildup
- C. A pressure control solenoid that defaults to high pressure only when Reverse is selected
- D. A worn reverse clutch return spring that does not fully retract the piston, reducing effective clearance

6. A vehicle with an automatic transmission has normal forward gear operation but makes a grinding noise in Reverse that is accompanied by slight vibration. Shifting into Reverse does not produce a delayed engagement — the engagement is immediate. Fluid is clean and at the correct level. Which of the following is the MOST LIKELY cause?

- A. A worn reverse clutch pack that is slipping during engagement and producing friction-related vibration
- B. A damaged component in the reverse gear power flow path such as a chipped planetary gear or worn thrust surface
- C. A misadjusted manual valve linkage that positions the valve between the Reverse and Neutral detents
- D. A failing torque converter that produces grinding only when the direction of torque reverses through the unit

7. A technician performs a stall test and records a stall speed of 2,250 RPM, which matches the manufacturer's specification exactly. During the test, the technician notices that the vehicle creeps forward slightly despite the brakes being firmly applied. What does this creeping during the stall test indicate?

- A. The torque converter clutch is engaging during the stall test and mechanically locking the drivetrain
- B. The parking brake cable has stretched and is not providing adequate supplemental holding force
- C. The stall speed is correct but the engine is producing more torque than the specification accounts for
- D. The braking system cannot fully overcome the torque being transmitted through the drivetrain at stall

8. A vehicle has a persistent transmission fluid leak at the bell housing area. The technician adds UV dye to the transmission fluid and drives the vehicle for 20 miles. Upon UV inspection, no fluorescent dye is visible at the bell housing area, but the leak persists. What should the technician conclude?

- A. The leak is engine oil from the rear main seal, not transmission fluid, since the ATF dye is not present at the leak source
- B. The UV dye has not had enough time to circulate through the system and reach the leak point in the bell housing
- C. The leak is from the torque converter drain plug, which does not circulate through the main hydraulic system
- D. The UV lamp is defective and is not producing the correct wavelength to illuminate the fluorescent dye properly

9. A customer reports that the transmission occasionally "bangs" into 2nd gear during the 1-2 upshift, but only during the first five minutes of driving in cold weather. After warmup, all shifts are smooth.

There are no DTCs stored. Based on this symptom pattern, which of the following is the MOST LIKELY explanation?

- A. A worn 2nd gear band that grabs unevenly when cold friction material is stiff and releases gradually as it warms
- B. A cracked servo piston that seals adequately when cold but leaks as the case expands from heat during warmup
- C. Cold fluid viscosity causing faster pressure buildup in the 2nd gear accumulator circuit, reducing cushioning effect
- D. A shift solenoid with a temperature-dependent electrical fault that produces incorrect duty cycle when cold

10. A vehicle with a rear-wheel-drive automatic transmission produces a vibration that is present at all speeds above 25 mph and increases in intensity with speed. The vibration is present in Drive, Neutral, and with the engine off while coasting. Rotating the tires to different positions does not change the vibration. Which of the following is the MOST LIKELY cause?

- A. An unbalanced torque converter that produces vibration proportional to engine speed at all driving speeds
- B. A worn transmission output shaft bearing that creates vibration proportional to the output shaft rotation
- C. An internally unbalanced planetary gear set that vibrates when any torque passes through the gear train
- D. A bent or damaged driveshaft or worn center support bearing producing vibration proportional to road speed

11. A technician is diagnosing a vehicle with a customer complaint of "the transmission feels like it's slipping." During a road test, the technician observes that the engine RPM increases 200 RPM without a corresponding change in vehicle speed. This occurs only at exactly 45 mph during steady cruise with the TCC commanded on. At all other speeds, the transmission performs normally. What is the MOST LIKELY cause?

- A. A worn 4th gear clutch pack that slips specifically at the torque load produced during 45 mph cruising

- B. The torque converter clutch is partially slipping at the specific operating conditions present at 45 mph cruise
- C. A faulty vehicle speed sensor that produces an erratic signal at the specific frequency generated at 45 mph
- D. An engine misfire that occurs at the specific RPM and load combination present during 45 mph cruising

12. A scan tool shows the following DTCs stored in the transmission control module: P0750 (Shift Solenoid A Malfunction) and P0785 (Shift Timing Solenoid Malfunction). The technician tests Shift Solenoid A resistance and finds it reads infinite (open circuit). After replacing Shift Solenoid A and clearing codes, the P0750 clears but P0785 returns after a road test. What is the MOST LIKELY explanation?

- A. P0785 was triggered by the shift timing disruption caused by Solenoid A's failure and represents a separate, pre-existing fault
- B. The replacement Shift Solenoid A is also defective and is causing the same shift timing fault as the original
- C. P0785 is a cascading code that always sets when P0750 is present and should have cleared simultaneously
- D. The valve body has internal damage from the original Solenoid A failure that is preventing correct shift timing

13. A vehicle's transmission produces a DTC P0711 — Transmission Fluid Temperature Sensor Range/Performance. The scan tool live data shows the TFT reading is stuck at 176°F and does not change as the vehicle warms up over a 30-minute road test. What does this stuck reading indicate?

- A. The TFT sensor is reading accurately and the thermostat is regulating the fluid temperature perfectly at 176°F
- B. The sensor wiring has a short to a 5-volt reference circuit that produces a fixed voltage corresponding to 176°F
- C. The transmission cooler thermostat is stuck closed, maintaining the fluid at a constant temperature throughout driving
- D. The TFT sensor has failed internally and is producing a fixed resistance value regardless of actual fluid temperature

14. A technician is reviewing scan tool data and observes that the transmission's commanded gear switches between 3rd and 4th rapidly — approximately every two seconds — while the vehicle maintains a steady 50 mph with constant light throttle. The driver reports a surging sensation. What is the MOST LIKELY cause?

- A. Two shift solenoids with intermittent electrical connections that alternately activate and deactivate randomly
- B. A worn clutch pack in 4th gear that slips, causing the module to downshift, then re-attempt the upshift repeatedly
- C. An input signal to the module that is fluctuating near the shift schedule's crossover threshold between 3rd and 4th
- D. A control module with corrupted shift schedule data that cannot determine the correct gear for this driving condition

15. A vehicle equipped with an automatic transmission will not shift above 2nd gear. The MIL is illuminated and a scan tool reveals DTC P0720 — Output Speed Sensor Circuit. The technician replaces the output speed sensor, clears codes, and road tests. The transmission now shifts through all gears normally, but the MIL illuminates again after 50 miles with DTC P0720 returning. The technician tests the new sensor and it reads within specification. What should the technician investigate NEXT?

- A. The reluctor ring on the output shaft for missing teeth, cracks, or looseness that produces an intermittent signal
- B. The transmission control module for a failed internal circuit that cannot reliably process the speed sensor input
- C. The transmission fluid level since low fluid can cause the output shaft to vibrate and affect sensor readings
- D. The replacement sensor's air gap clearance to ensure it was installed at the correct depth in the case bore

16. A technician monitors scan tool live data during a road test. At 55 mph in 5th gear, the data shows: Engine RPM = 2,400, Input Shaft Speed = 2,400, Output Shaft Speed = 2,400. The technician knows that 5th gear in this transmission has a ratio of 0.80:1 (overdrive). What does this data indicate?

- A. The TCC is locked and the transmission is operating correctly in 5th gear at the expected overdrive ratio
- B. The input and output speed sensors are both functioning correctly and the readings confirm proper operation
- C. The transmission is not in 5th gear — it is in direct drive because the input and output speeds are equal
- D. The output speed sensor has failed and is mirroring the input speed sensor reading through a CAN bus fault

17. A vehicle has DTC P0741 — Torque Converter Clutch System Stuck Off. The TCC solenoid resistance tests within specification and the scan tool shows the module commanding TCC engagement at highway speed, but TCC slip RPM remains at 100 RPM. The technician performs a bidirectional test commanding maximum TCC apply pressure through the scan tool. The slip drops to 40 RPM but does not reach zero. What does this test result indicate?

- A. The TCC friction surface inside the converter is worn and cannot achieve full lockup even at maximum pressure
- B. The TCC system is functioning correctly because 40 RPM of slip is within the controlled slip target range
- C. The TCC solenoid is producing adequate force and the problem is a restriction in the cooler return circuit
- D. The control module's maximum commanded pressure is lower than the solenoid's capability due to a calibration limit

18. A technician is diagnosing a vehicle where the transmission shifts normally in all forward gears but sets DTC P0740 — TCC Circuit Malfunction intermittently. The code sets and clears itself repeatedly over several drive cycles. The solenoid, wiring, and connector all test within specification during static testing. Which diagnostic approach would MOST LIKELY reveal the fault?

- A. Replacing the TCC solenoid with a new unit since intermittent codes indicate imminent solenoid failure
- B. Performing a pressure test to determine if the TCC apply circuit has an intermittent hydraulic leak
- C. Replacing the transmission control module since it may have an intermittent internal driver circuit failure

D. Monitoring the TCC solenoid circuit voltage with a scan tool recording while driving over rough road surfaces

19. A vehicle equipped with an eight-speed automatic transmission stores DTC P2714 — Pressure Control Solenoid D Performance/Stuck Off. The scan tool shows that PCS-D is commanded at 60% duty cycle but actual current draw is 0 mA. The technician measures resistance at the TCM connector and reads 15 ohms (specification: 4-7 ohms). What does the high resistance at the TCM connector indicate?

A. An open or high-resistance fault in the wiring between the TCM connector and the solenoid inside the transmission

B. A solenoid coil that has developed increased resistance from internal corrosion but is still marginally functional

C. A normal reading because the wiring resistance adds to the solenoid's inherent resistance at the TCM measurement point

D. A TCM with a failed internal driver that is adding resistance to the circuit even when the connector is backprobed

20. A technician discovers that a vehicle's transmission has a history code P0733 (Gear 3 Incorrect Ratio) and a current code P0894 (Transmission Component Slipping). The vehicle currently exhibits a noticeable flare during the 2-3 upshift under moderate throttle. All other shifts are normal. Which of the following BEST explains the relationship between the two codes?

A. P0733 and P0894 are unrelated codes — the ratio code was from a previous event and the slipping code is a new concern

B. P0894 triggered P0733 because the module assumes any slipping component means the gear ratio must be wrong

C. Both codes confirm that the 3rd gear clutch is slipping — P0733 detects the incorrect ratio and P0894 detects the slippage

D. P0733 is a false code triggered by a speed sensor error, and P0894 is the only valid code representing the actual fault

21. A technician scans a vehicle and finds DTC U0101 — Lost Communication with TCM stored in the ECM. There are no DTCs stored in the TCM itself. The transmission shifts normally. What does this code indicate?

- A. The TCM experienced a temporary communication dropout on the CAN bus that has since resolved itself
- B. The ECM has a failed CAN bus receiver circuit that intermittently drops the TCM's broadcast messages
- C. The TCM software needs to be updated to a version compatible with the ECM's current communication protocol
- D. The CAN bus communication between the ECM and TCM was momentarily interrupted, typically by a wiring or connector fault

22. A vehicle with a continuously variable transmission (CVT) has a customer complaint that the transmission "revs too high" during normal city driving. The technician road tests the vehicle and confirms that engine RPM rises to 4,500 during moderate acceleration from stops, while a similar vehicle only reaches 3,200 RPM during the same maneuver. Fluid level and condition are normal. Which of the following is the MOST LIKELY cause?

- A. A failing CVT belt that has stretched and cannot maintain adequate grip on the primary pulley surface
- B. The CVT primary pulley ratio actuator is not adjusting the pulley to the correct position, limiting the available ratio range
- C. A faulty CVT fluid temperature sensor that causes the module to command a more aggressive ratio schedule
- D. Normal CVT adaptive behavior in response to detecting a driver who prefers aggressive acceleration profiles

23. A technician is diagnosing a vehicle where the transmission downshifts harshly from 4th to 3rd every time the brake pedal is pressed, even during gentle braking. All other downshifts initiated by throttle lift or kickdown are smooth. What is the MOST LIKELY cause?

- A. A worn 3rd gear clutch pack that grabs harshly during every application regardless of how it is commanded
- B. A faulty brake pedal position switch that sends a full-brake signal when even light brake pressure is applied
- C. The brake input signal is triggering an aggressive TCC release and simultaneous downshift with excessive pressure

D. A failing ABS module that sends a false emergency braking signal to the TCM during all brake applications

24. A vehicle's transmission operates normally in all conditions except when the ambient temperature exceeds 95°F. In high ambient temperatures, the transmission begins shifting harshly after approximately 30 minutes of driving. The scan tool shows no DTCs but the fluid temperature reads 255°F. What is the MOST LIKELY root cause?

A. The transmission cooling system is inadequate for high-ambient-temperature operation, allowing the fluid to overheat and trigger a protective high-pressure strategy

B. A faulty TFT sensor that reads higher than actual in warm ambient conditions, causing false overheat protection

C. The EPC solenoid responds differently at high fluid temperatures, commanding excessive pressure as fluid thins

D. The clutch friction material changes coefficient at extreme temperatures, causing harshness without pressure changes

25. A technician uses a scan tool to perform an output test on the TCC solenoid, commanding it to 100% duty cycle. The scan tool displays "Command Active" but the live data shows the TCC solenoid current at 0 mA. The solenoid resistance at the case connector measures 13 ohms (spec: 10-16 ohms). What should the technician suspect?

A. The TCC solenoid is mechanically stuck in the off position despite receiving correct electrical current flow

B. The solenoid resistance is at the high end of specification and is borderline, causing intermittent response

C. The case connector has adequate continuity to read resistance but not enough to pass operational current flow

D. The control module's internal TCC solenoid driver circuit has failed and is not actually sending current to the solenoid

26. A technician is performing a transmission fluid service on a vehicle that specifies Toyota WS (World Standard) fluid. The shop does not stock Toyota WS but has DEXRON VI and a universal synthetic ATF available. Which of the following is the correct action?

- A. Use DEXRON VI since it is a full synthetic fluid and meets or exceeds all Asian manufacturer specifications
- B. Obtain the manufacturer-specified Toyota WS fluid before performing the service to avoid clutch damage
- C. Use the universal synthetic ATF since it is formulated to be compatible with all proprietary specifications
- D. Mix equal parts DEXRON VI and universal ATF to create a blend that approximates the Toyota WS specification

27. A technician replaces a transmission filter and pan gasket. During the refill, the technician adds 5 quarts of the correct fluid. The service information lists the pan-drop refill capacity as 4 quarts. After starting the engine and shifting through all ranges, the fluid level reads above the full mark. What is the MOST appropriate corrective action?

- A. Drive the vehicle for 20 minutes to allow the excess fluid to be absorbed by the converter and cooler circuits
- B. Remove the drain plug and allow fluid to drain until the level drops to the correct mark on the dipstick
- C. Allow the engine to idle for 10 minutes and recheck since the converter may not be fully charged yet
- D. Drain the excess fluid to bring the level within the specified range before driving the vehicle

28. A customer brings a vehicle in for a fluid leak inspection. The technician finds dried red fluid stains around the transmission vent tube opening, but the fluid level is correct and there are no active drips. Which of the following should the technician investigate?

- A. The front pump seal for a weeping condition that sprays fluid toward the vent under converter rotation
- B. The pan gasket for a minor seep that is being drawn upward by airflow and depositing near the vent
- C. The transmission for a previous overfill condition, a momentary overheating event, or a partially restricted vent tube
- D. The cooler line fittings for a micro-leak that sprays fluid toward the vent location during driving conditions

29. A technician adjusts the shift cable on a vehicle and verifies proper engagement in Park, Reverse, Neutral, and Drive. However, when the driver selects the manual Low ("L") position, the transmission does not downshift and remains in the highest automatic gear. What is the MOST LIKELY cause?

- A. The cable adjustment is correct for Park through Drive but does not allow enough travel to fully reach the manual Low detent
- B. The one-way clutch in the low gear circuit has failed and prevents the transmission from holding low gear
- C. The engine braking band has failed and the module prevents the downshift to protect against freewheeling
- D. The shift interlock system is preventing the lever from reaching the full manual Low position at vehicle speed

30. A technician is replacing the transmission range sensor on a vehicle. The old sensor connector has a green corrosion deposit on two of its six pins. The remaining four pins are clean. What should the technician do with the vehicle-side connector before installing the new sensor?

- A. Replace the vehicle-side connector with a new pigtail assembly since corrosion indicates moisture intrusion damage
- B. Apply dielectric grease to all pins without cleaning to seal out future moisture and provide adequate contact
- C. Clean the corroded pins with an electrical contact cleaner, inspect for pin damage, and apply dielectric grease to all pins
- D. Leave the corroded pins as-is since the new sensor connector will make fresh contact and push through the corrosion

31. A technician discovers that the external transmission wiring harness has been spliced and repaired in three separate locations by a previous technician. Two splices use butt connectors and one uses a twist-and-tape method. No DTCs are currently stored. What is the MOST appropriate action?

- A. Replace the three splices with properly soldered and heat-shrink sealed connections to ensure long-term reliability
- B. Leave the repairs in place since they are currently functional and no codes indicate an electrical problem

C. Replace the entire external wiring harness because three splices indicate the harness has been extensively damaged

D. Test each splice with a voltage drop measurement and repair only the ones that exceed the specification

32. A vehicle has a transmission cooler line that uses a quick-connect fitting at the radiator. The technician disconnects the fitting for a cooler line replacement and discovers that the internal O-ring is flattened and hardened. The technician installs the new cooler line with a new O-ring. What should the technician verify after the repair?

A. That the transmission fluid has been completely exchanged since the old O-ring may have contaminated the fluid

B. That the fitting is leak-free at both cold idle and at full operating temperature under driving conditions

C. That the radiator integral cooler was not damaged when the old fitting was removed from the tank connection

D. That the transmission adaptive values are reset since any cooler line disconnection can introduce air into the system

33. A technician is performing an in-vehicle valve body replacement. After removing the old valve body, the technician notices that the case mating surface has a thin, even layer of varnish coating. What is the correct action before installing the new valve body?

A. Install the new valve body directly over the varnish since the new gasket will seal against the coating surface

B. Apply a thin layer of RTV sealant over the varnish to ensure a sealed mating surface for the new valve body

C. Scrape the varnish off aggressively with a steel scraper to expose bare aluminum before installing the new valve body

D. Clean the varnish from the mating surface carefully using solvent and a plastic scraper to restore a clean sealing surface

34. A technician replaces the output speed sensor on a transmission. The old sensor was a magnetic pulse generator type. The replacement sensor from the parts store appears identical but is a Hall effect

type that requires a power supply. The technician installs the sensor and the vehicle immediately sets DTC P0720 — Output Speed Sensor Circuit. What is the problem?

- A. The Hall effect sensor needs a brief initialization period of 10 drive cycles before it begins producing a valid signal
- B. The Hall effect sensor requires a power supply and ground that the original magnetic pulse generator circuit does not provide
- C. The sensor air gap between the Hall effect element and the reluctor ring is different from the original specification
- D. The Hall effect sensor produces a digital square wave that the module interprets as a circuit fault from the expected analog signal

35. A customer reports that the transmission "chatters" when shifting from Park to Reverse in the morning but shifts smoothly after driving for several minutes. Fluid level is correct and there are no DTCs. The technician checks for TSBs and finds one that addresses this exact concern. The TSB recommends a fluid change to a revised specification. What is the MOST LIKELY technical reason for this recommendation?

- A. The revised fluid has a lower viscosity that flows more quickly through the reverse accumulator during cold operation
- B. The original fluid specification breaks down faster in cold conditions, losing its anti-wear properties overnight
- C. The revised fluid has improved cold-temperature friction modifier performance that reduces clutch chatter during cold engagement
- D. The revised fluid contains a corrosion inhibitor that prevents the reverse clutch piston from sticking to the drum after cold soaking

36. A technician is replacing a solenoid on the valve body that is accessed through the pan. The solenoid is retained by a single bolt. When the technician removes the bolt, the solenoid does not come out — it appears to be stuck in its bore. What is the correct extraction method?

- A. Gently rock the solenoid back and forth while pulling straight out to break the O-ring seal and varnish bond
- B. Use a pry bar against the valve body casting to lever the solenoid out of its bore with controlled force

C. Apply heat to the valve body around the solenoid bore to expand the aluminum and loosen the varnish bond

D. Drill a small hole into the solenoid body and use a slide hammer to extract it from the valve body bore

37. A vehicle has a slow transmission fluid leak that the technician traces to the extension housing gasket on a rear-wheel-drive transmission. The technician replaces the gasket and also discovers that the extension housing bushing is severely worn. If the technician replaces only the gasket but not the bushing, what problem may recur?

A. The output shaft will develop excessive vibration that prevents the vehicle from exceeding highway speed

B. The transmission will lose main line pressure through the worn bushing clearance during operation

C. The extension housing seal will not be affected since it rides on the driveshaft yoke, not on the bushing

D. The worn bushing allows the output shaft to orbit eccentrically, accelerating seal wear and causing the leak to return

38. A technician is preparing to remove a transaxle from a front-wheel-drive vehicle. After disconnecting the half-shafts, cooler lines, electrical connectors, and shift cable, the technician attempts to separate the transaxle from the engine. It will not come free. What is the MOST commonly overlooked disconnection that prevents transaxle separation?

A. The exhaust crossover pipe or catalytic converter that physically blocks the transaxle from sliding rearward

B. The torque converter-to-flexplate bolts that are still engaged and holding the converter to the engine

C. The engine ground strap that runs between the engine block and the transaxle bell housing flange

D. The starter motor bolts that pass through the bell housing and thread into the engine block

39. A technician installs a rebuilt torque converter onto a transmission. The converter slides in easily with only one engagement click instead of the expected three. The technician rotates the converter while pushing gently, but no further engagement occurs. What should the technician do?

- A. Remove the converter and inspect the pump drive, stator support shaft, and input shaft for debris, burrs, or damage
- B. Apply assembly lubricant liberally and use a rubber mallet to tap the converter fully into the pump housing
- C. Install the transmission as-is since different converter designs may require fewer engagement points than three
- D. Force the converter in by tightening the bell housing bolts progressively, which will draw it into full engagement

40. During a transmission overhaul, a technician discovers that one steel separator plate in a clutch pack is 0.005 inches thicker than the other four plates. All plates were original equipment from the factory. The service information lists only one thickness for the steel plates. What should the technician do?

- A. Measure the plate carefully again and consult technical references to determine if it is a selective plate used for clutch clearance adjustment
- B. Replace all steel plates with new ones from the rebuild kit since the thicker plate indicates an incorrect original assembly
- C. Install the thicker plate at the bottom of the stack where it will have the least impact on overall clutch engagement
- D. Discard the thicker plate and replace it with a standard-thickness plate to maintain uniform stack dimensions

41. A technician is assembling a clutch pack and discovers that the rebuild kit contains wave-type return springs instead of the coil-type springs that were originally installed. The part number on the kit matches the transmission. What is the correct action?

- A. Return the kit and order one with coil-type springs since the spring type must match the original exactly
- B. Install the wave springs at the same position as the coil springs since the kit is matched to the transmission
- C. Stack the wave springs with the original coil springs to provide the combined return force needed for the piston
- D. Install the wave springs since manufacturers sometimes update spring designs and the correct kit reflects the latest revision

42. A technician performing a transmission overhaul finds that the pump cover mounting surface has a light circular score mark from debris that was trapped between the pump gears and the cover during operation. The score is approximately 0.002 inches deep. What is the correct action?

- A. Reinstall the pump cover since 0.002 inches of scoring is within normal wear tolerance for pump covers
- B. Fill the score with high-temperature epoxy and sand it flush before reinstalling the pump cover assembly
- C. Resurface the pump cover on a flat surface grinder to remove the score and restore a flat sealing surface
- D. Replace the pump cover entirely since any scoring compromises the seal between the gears and the cover

43. A technician measures the clutch pack clearance on a reverse clutch and reads 0.060 inches. The specification is 0.030 to 0.050 inches. The thickest available selective snap ring is already installed. What additional option does the technician have to bring the clearance into specification?

- A. Add an additional steel separator plate to the clutch pack stack to take up the excess clearance
- B. Replace the clutch drum since an out-of-specification clearance with the thickest snap ring indicates a worn drum
- C. Install a second snap ring on top of the first to double the effective snap ring thickness in the groove
- D. Leave the clearance as-is since the thickest snap ring represents the maximum correction available

44. A technician is inspecting the transmission case during an overhaul and finds that the governor bore (on a vehicle with a hydraulic governor) has light scoring. The governor piston seal is being replaced. If the scoring is deep enough to create a path for pressure bypass around the new seal, what symptom will result?

- A. The transmission will not shift out of first gear because governor pressure cannot build against vehicle speed
- B. The transmission will upshift at incorrect vehicle speeds because governor pressure will be lower than normal due to the leak

C. The transmission will lock in the highest gear because governor pressure will be at maximum at all vehicle speeds

D. The transmission will have no reverse gear because governor pressure affects only the forward gear shift circuits

45. A technician has completed a transmission rebuild and is preparing to install the unit. The service information states that the transmission must be pre-filled with two quarts of ATF before installation to prime the pump and lubricate internal components. If the technician skips this step and installs the transmission dry, what is the MOST LIKELY consequence?

A. The pump will produce excessive noise but will prime itself within 30 seconds of the first engine start

B. The transmission will engage normally but will overheat within the first five minutes of driving

C. The pump will run dry during initial startup, potentially damaging the pump gears, bushings, and seals before fluid circulates

D. The torque converter will not fill properly and will produce a rattling noise until the fluid level stabilizes

46. A technician is reassembling a valve body and notices that one spool valve slides freely in its bore when the valve body is held horizontally, but sticks at one specific point when the valve body is tilted vertically. What does this indicate?

A. Normal behavior caused by the weight of the spool valve shifting as gravity acts on it at different angles

B. A minor burr on the spool valve land that only catches on a corresponding imperfection when gravity pulls the valve

C. A valve body bore that has warped from heat, creating a tight spot that only manifests when the body flexes under gravity

D. A contaminant or varnish deposit in the bore at a specific location that interferes with free valve movement

47. After completing a transmission overhaul and installation, a technician fills the transmission with fluid and starts the engine. The fluid level on the dipstick drops rapidly during the first 30 seconds of engine operation. What is happening?

- A. The pump is circulating fluid to fill the torque converter, cooler, cooler lines, and internal passages that were empty after assembly
- B. The front pump seal has failed and fluid is leaking rapidly from the converter-to-pump junction into the bell housing
- C. The fluid is overheating instantly and expanding beyond the dipstick's measuring range due to dry pump friction
- D. The transmission has an internal crack that is allowing fluid to drain from the pan into the bell housing cavity

48. A technician performs a cooler flow test after flushing the cooler following a transmission overhaul. The flow test produces one quart in 15 seconds, which exceeds the manufacturer's minimum specification of one quart in 25 seconds. What does this better-than-specification flow rate indicate?

- A. The cooler core has been damaged by the flushing process and has lost internal baffling that normally slows flow
- B. The cooler and lines are clean and unobstructed, and the flow rate is acceptable for returning the cooler to service
- C. The flushing process has widened the cooler passages beyond their designed diameter, reducing cooling efficiency
- D. The flow rate is too high and will cause the transmission to run cold, requiring an inline flow restrictor to be installed

49. A technician is installing a transmission and threading the bell housing bolts. One bolt requires significantly more effort to thread than the others and does not seem to seat flush against the bell housing surface. What should the technician do?

- A. Apply anti-seize compound to the bolt threads and continue tightening until the bolt seats against the housing
- B. Use an impact wrench to drive the bolt in since the bolt may be encountering factory thread sealant residue
- C. Remove the bolt, inspect the hole for thread damage, debris, or incorrect bolt length, and correct the issue before retrying
- D. Tighten the bolt to specification since some bell housing holes have intentionally tighter thread tolerance than others

50. After a transmission overhaul and installation, a technician performs an initial road test. The transmission shifts smoothly through all gears and TCC operation is normal. However, the technician notices that the fluid temperature rises to 215°F during city driving and 230°F during highway driving. Normal operating temperature for this transmission is 175-200°F. The cooler was flushed and flow-tested successfully before installation. What should the technician investigate?

- A. The cooler thermostat or thermal bypass valve for a stuck-in-bypass condition that is routing fluid around the cooler
- B. The torque converter for an incorrect replacement unit that has a higher stall speed, generating excess heat
- C. The clutch pack clearances for values set too tight during assembly, causing clutch drag and excess heat generation
- D. The oil pump for excessive internal clearances that generate friction heat as the gears mesh at high RPM

Practice Exam 6: Answer Key and Explanations

1. A — The flare occurs only during moderate and heavy throttle 4-5 upshifts but not during light-throttle shifts. This load-dependent pattern is characteristic of a clutch pack with worn friction material that can hold under low torque demand but slips when torque exceeds its reduced holding capacity. A system-wide pressure issue would affect all shifts, and an accumulator fault would produce harshness rather than a flare.

2. C — TCC shudder with oscillating slip RPM at cruise speed is most commonly caused by degraded friction modifier additives in the fluid. Before recommending converter replacement or solenoid replacement, the least invasive and most cost-effective first step is a fluid and filter service using the manufacturer's specified fluid. In many cases, fresh fluid with intact friction modifiers resolves the shudder completely without any component replacement.

3. B — A consistently skipped gear with no DTCs requires systematic identification of the specific component responsible for 3rd gear engagement. The component application chart identifies which clutch, band, or one-way clutch is uniquely applied in 3rd gear. Once identified, the solenoid that controls that device can be tested electrically and hydraulically to determine if it is failing to command the shift. This targeted approach avoids unnecessary transmission removal.

4. D — Technician B is correct. A clogged vent tube prevents internal case pressure from equalizing with atmospheric pressure. As the transmission heats up and internal pressure builds, the trapped pressure forces fluid past seals — particularly the front pump seal — even when the fluid level is correct. Technician A is wrong because overfilling is only one of several causes of vent tube leakage; a clogged vent can produce identical symptoms at the correct fluid level.

5. C — The question asks which option could NOT cause a harsh Reverse engagement. The pressure control solenoid regulates line pressure system-wide — it does not selectively increase pressure only in Reverse. If the PCS defaulted to high pressure, all engagements would be harsh, not just Reverse. A stuck accumulator, blocked orifice, and worn return spring are all Reverse-circuit-specific problems that would affect only Reverse engagement.

6. B — Immediate engagement with grinding noise and vibration specifically in Reverse indicates a mechanical component in the reverse power flow path is damaged. The reverse gear rotation direction reverses the loading on planetary elements, and a chipped gear tooth, worn thrust surface, or damaged bearing that is unloaded in forward gears becomes loaded in Reverse. The engagement is not delayed because the clutch is working — the noise comes from a damaged hard part downstream.

7. D — Slight vehicle creep during a stall test is normal on many vehicles. At stall, the engine is producing maximum torque, which is transmitted through the converter to the drive wheels. The braking system must resist this torque. On some vehicles — particularly those with high-torque engines — the brakes may not fully overcome the converter output at stall, allowing slight creep. This does not indicate a brake or transmission fault; it reflects the torque balance at stall conditions.

8. A — UV dye was added to the transmission fluid, driven for 20 miles, and no fluorescent trace appears at the leak location. This confirms the leaking fluid is not ATF — it is engine oil from the rear main seal. Engine oil and ATF can both appear red (some engine oils and ATF are similar in color when mixed), and a bell housing leak can be either source. The UV dye test definitively differentiates between the two fluids.

9. C — Cold ATF has significantly higher viscosity than warm fluid. The thicker cold fluid flows through orifices and accumulator passages much more slowly, which changes the pressure buildup rate during clutch application. In the 2nd gear accumulator circuit, the cold fluid builds pressure faster than the accumulator can absorb it (because the viscous fluid resists flowing into the accumulator bore), reducing the cushioning effect and producing a harsh shift. Once the fluid warms and thins, normal flow rates resume.

10. D — The vibration is present at all speeds above 25 mph, increases with speed, and is present regardless of gear selection, engine operation, or tire position. The only component that rotates proportionally to road speed independent of all other variables — and is not affected by tire rotation — is the driveshaft or its center support bearing. A bent driveshaft or worn center bearing produces a speed-dependent vibration that persists in every driving condition.

11. B — The 200 RPM increase occurs only at 45 mph during steady cruise with TCC commanded on, and the transmission performs normally at all other speeds. This speed-specific, TCC-dependent symptom indicates the converter clutch is partially slipping at the specific torque and speed conditions present at 45 mph cruise. The TCC friction surface may have a localized worn area that loses grip at this particular operating point but holds at other speeds where the load distribution is different.

12. A — Replacing Solenoid A cleared P0750, confirming the solenoid repair was successful. However, P0785 (Shift Timing Solenoid Malfunction) returned after the road test, indicating it is a separate, independent fault — not a cascading code from the Solenoid A failure. P0785 likely existed before or developed independently, affecting a different solenoid or circuit that controls shift timing. The technician must now diagnose P0785 as a separate concern.

13. D — A TFT reading stuck at exactly 176°F that does not change during 30 minutes of driving is not physically possible — the fluid temperature must rise during operation. A sensor that produces a fixed resistance value regardless of actual temperature creates a fixed voltage at the module, which the module converts to a constant temperature reading. The sensor's thermistor element has failed internally and is no longer responsive to temperature changes.

14. C — Rapid hunting between two adjacent gears at constant speed and throttle is characteristic of an input signal fluctuating near the shift schedule's crossover threshold between those gears. Minor variations in the throttle position sensor, vehicle speed signal, or calculated load value cause the operating point to oscillate back and forth across the shift boundary. Each crossing triggers a shift command, and the rapid alternation produces the surging sensation the driver reports.

15. A — The sensor was replaced and the code cleared, but it returned after 50 miles — and the new sensor tests within specification. Since the sensor and its external wiring are confirmed good, the signal generation source must be investigated. The reluctor ring on the output shaft generates the magnetic signal the sensor reads. If the ring has cracked, lost a tooth, or loosened on the shaft, it produces an intermittent or erratic signal that sets the code despite a perfectly functioning sensor and circuit.

16. C — In 5th gear with a ratio of 0.80:1, the output shaft should spin faster than the input shaft. If input speed equals 2,400 and the ratio were truly 0.80:1, the output speed should be approximately 3,000 RPM. The equal input and output speed readings (both 2,400) indicate a 1:1 ratio — direct drive — which means the transmission is not actually in 5th gear overdrive. It may be in a direct-drive gear despite the module commanding 5th.

17. B — The bidirectional test at maximum TCC apply pressure reduced slip from 100 RPM to 40 RPM but could not achieve zero slip. This proves the solenoid and hydraulic circuit can deliver pressure to the converter clutch piston, but the friction surface inside the converter cannot achieve full lockup even at maximum available pressure. The TCC friction material is worn past the point where any amount of hydraulic pressure can produce a zero-slip mechanical lock.

18. D — Static testing (resistance, voltage drop, and visual connector inspection) all pass, but the code sets and clears intermittently. Intermittent electrical faults are caused by connections that test normal at rest but fail under vibration, heat, or physical stress. Recording the TCC solenoid circuit voltage during driving over rough roads — which introduces vibration to the harness and connectors — is the most likely method to capture the momentary voltage dropout or spike that triggers the code.

19. A — The solenoid specification is 4-7 ohms, but the measurement at the TCM connector reads 15 ohms. This reading includes the solenoid's resistance plus the resistance of all wiring and connections between the TCM connector and the solenoid. The excess resistance (15 minus the solenoid's expected 4-7 ohms = 8-11 ohms of added resistance) indicates a high-resistance fault in the internal wiring harness, case connector, or the connections along the circuit path.

20. C — Both codes are logically linked to the same root cause. P0733 (Gear 3 Incorrect Ratio) indicates the module detected that the actual gear ratio did not match the expected 3rd gear ratio. P0894 (Transmission Component Slipping) indicates the module detected a clutch not engaging fully. The 3rd gear clutch is slipping — P0894 detects the slippage event, and P0733 detects the resulting incorrect ratio. Both codes confirm the same mechanical failure from different monitoring strategies.

21. D — DTC U0101 indicates the ECM lost communication with the TCM on the CAN bus. Since the TCM has no stored DTCs and the transmission shifts normally, the communication loss was temporary — a momentary interruption that has since resolved. CAN bus communication dropouts are most commonly caused by intermittent wiring or connector faults on the shared bus lines, loose pins at a module connector, or transient electrical noise on the bus.

22. B — The CVT engine RPM during moderate acceleration is 1,300 RPM higher than a comparable vehicle, indicating the CVT is not adjusting the primary pulley to the correct ratio — it is holding the engine at a higher RPM than necessary for the given driving condition. The ratio actuator controls the position of the movable pulley half, and if it cannot move the pulley to the correct position, the available ratio range is limited, forcing the engine to spin faster to produce the needed wheel speed.

23. C — The harsh downshift occurs only when the brake pedal is pressed, regardless of braking intensity. The brake input signal triggers two simultaneous events: TCC release and a commanded downshift. If the brake signal triggers an aggressive TCC release combined with an overly firm downshift pressure command, the combined effect produces a harsh transition that feels like a hard downshift. All non-brake-initiated downshifts are smooth because they do not have the brake signal triggering the aggressive response.

24. A — A fluid temperature of 255°F is critically elevated and confirms the transmission is overheating. In high ambient temperatures, the cooling system must work harder because the temperature differential between the ATF and the ambient air (or coolant) is reduced. If the cooling system is marginal — undersized cooler, restricted airflow, or partially blocked cooler core — it cannot maintain adequate cooling under the added thermal load. The module commands harsh shifts as a protective response to the extreme temperature.

25. D — The scan tool reports the command is active, but the solenoid current reads 0 mA — no current is flowing despite the command. The solenoid resistance at the case connector is within specification (13 ohms in the 10-16 range), confirming the coil and wiring between the case connector and solenoid are intact. If the command is active but no current flows, the control module's internal driver circuit — the transistor that switches current to the solenoid — has failed and is not actually delivering current despite the scan tool showing the command.

26. B — Toyota WS is a proprietary fluid formulation with specific viscosity, friction modifier, and additive characteristics designed for Toyota's CVT and conventional automatic transmissions. Neither DEXRON VI, universal ATF, nor any mixture of other fluids can replicate the exact formulation. Using an incorrect fluid risks clutch shudder, premature wear, and seal damage. The technician must obtain the correct manufacturer-specified fluid before performing the service.

27. D — One quart of excess fluid above the specified refill capacity will raise the level above the full mark. Overfilling causes aeration from internal components churning the fluid, which leads to erratic shifting, pressure instability, and potential seal damage from excess internal pressure. The excess must be drained immediately — not driven off, waited out, or ignored — to bring the level into the correct range before the vehicle is operated.

28. C — Dried fluid stains at the transmission vent with a currently correct fluid level suggest a past event caused fluid to be expelled through the vent. Common causes include a previous overfill condition (since corrected), a momentary overheating event that expanded the fluid beyond the vent's capacity, or a partially restricted vent tube that caused intermittent pressure buildup. Investigating and correcting the root cause prevents recurrence.

29. A — The cable adjustment allows correct engagement in Park through Drive but does not provide enough total cable travel to fully reach the manual Low detent. The manual valve must reach the Low position to open the passages that command the downshift and apply the engine braking holding device. If the cable runs out of travel before the manual valve reaches the Low detent, the transmission remains in its current automatic gear.

30. C — Corroded connector pins increase contact resistance, which can alter sensor signal voltages and cause intermittent or continuous faults. Before installing the new sensor, the technician must clean the corrosion from the vehicle-side connector pins using electrical contact cleaner to restore proper contact surfaces. After cleaning, inspecting for pin damage and applying dielectric grease prevents future moisture intrusion and corrosion.

31. A — Three separate splices — two butt connectors and one twist-and-tape — represent three potential failure points in the harness. While currently functional, each splice is susceptible to corrosion, increased resistance, and failure over time, particularly the twist-and-tape splice which provides no moisture protection. The correct action is to replace all three with properly soldered and heat-shrink sealed connections that provide durable, low-resistance, moisture-resistant joints.

32. B — After any cooler line fitting disconnection and O-ring replacement, the technician must verify the fitting is leak-free under actual operating conditions. A connection that appears dry at cold idle may leak when the fluid reaches full operating temperature and pressure, because thermal expansion and full line pressure test the seal more rigorously than cold idle conditions. Both a cold idle check and a hot operating-temperature check are necessary.

33. D — Varnish on the case mating surface prevents proper gasket sealing between the valve body and the case, which can cause internal pressure leaks. The varnish must be removed, but carefully — using solvent and a plastic scraper to avoid gouging the soft aluminum surface. A steel scraper can scratch the aluminum, creating channels that leak. RTV sealant over varnish does not provide a reliable seal and can contaminate the valve body.

34. B — A magnetic pulse generator is a passive sensor that generates its own AC signal from the changing magnetic field — it needs only two wires (signal and ground). A Hall effect sensor is an active sensor that requires an external power supply (typically 5V reference), a ground, and produces a digital output signal. The original vehicle circuit provides only signal and ground wires for the pulse generator. The Hall effect replacement cannot function without the power supply wire that does not exist in this circuit.

35. C — The TSB recommends a fluid change to a revised specification, targeting a cold-operation chatter on the Park-to-Reverse engagement. The technical reason is that the revised fluid formulation contains improved cold-temperature friction modifiers that provide better clutch engagement characteristics when the fluid is cold. The original fluid's friction modifiers perform adequately when warm but produce a grab-slip-grab chatter pattern during cold clutch engagement.

36. A — Solenoids can become bonded in their bores by varnish deposits that accumulate over time from heat-cycled transmission fluid. Gently rocking the solenoid while pulling straight outward breaks the varnish seal without damaging the valve body bore. Using a pry bar risks cracking the aluminum casting. Applying heat can warp the valve body. Drilling into the solenoid risks metal shavings contaminating the valve body passages.

37. D — The extension housing bushing supports the output shaft (or the driveshaft slip yoke on some designs) and maintains the shaft's alignment with the extension housing seal. A severely worn bushing allows the shaft to orbit eccentrically — wobbling within the bore — which causes the seal lip to ride on a constantly changing surface. This eccentric motion rapidly wears the new seal, and the leak will return within a short time. Both the bushing and the seal must be replaced together.

38. B — The most commonly overlooked disconnection during transaxle removal is the torque converter-to-flexplate bolts. These bolts are accessed through an inspection cover on the bell housing and must be removed by rotating the engine to bring each bolt into the access window. If even one converter bolt remains, the converter physically prevents the transaxle from separating from the engine. The technician should verify all converter bolts are removed before attempting separation.

39. A — Only one engagement click instead of the expected three means the converter has engaged only one of the three internal components — likely just the pump drive. The remaining two engagements (stator support shaft and input shaft) are not completing, possibly due to debris in a spline, a burr on a shaft, or damage to one of the engagement interfaces. The converter must be removed so all three engagement points can be inspected and any obstruction cleared.

40. B — One steel separator plate being 0.005 inches thicker than the others in a factory-original assembly suggests it may be a selective plate — a plate intentionally chosen at the factory to set the correct clutch clearance. Some manufacturers use one selective steel plate (rather than a selective snap ring) to fine-tune clutch clearance during original assembly. The technician should measure carefully and consult technical references to confirm whether this is a clearance-setting selective plate.

41. D — Manufacturers occasionally update internal components between production runs. If the rebuild kit part number matches the transmission and the kit contains wave springs instead of coil springs, the wave springs likely represent an updated design revision. Wave springs provide comparable return force in a thinner package and are a common engineering update. Installing the correct kit components — including the updated springs — ensures proper assembly per the latest specifications.

42. C — A 0.002-inch score on the pump cover surface creates a gap between the gear face and the cover that allows pressurized fluid to leak from the high-pressure side back to the low-pressure side. This reduces pump efficiency. Resurfacing the cover on a flat surface grinder removes the score and restores the precision-flat surface needed for proper gear-to-cover sealing. Epoxy fillers are not appropriate for precision hydraulic sealing surfaces.

43. A — When the thickest selective snap ring still produces excessive clearance, adding a steel separator plate to the clutch pack stack increases the overall stack height, taking up the excess space between the pressure plate and the snap ring. This reduces the measured clearance into the specified range. The additional plate does not change the number of friction surfaces — it simply occupies the space that the snap ring alone cannot fill.

44. B — The governor produces a pressure signal proportional to vehicle speed. Scoring in the governor bore allows pressure to leak past the piston seal, reducing the effective governor pressure at any given speed. Because governor pressure is what signals the shift valves to command upshifts (in hydraulically controlled transmissions), reduced governor pressure means the transmission requires a higher vehicle speed to develop enough pressure to trigger each upshift — resulting in late, delayed upshifts.

45. C — Pre-filling the transmission with fluid before installation ensures that the pump, internal passages, and bearings are pre-lubricated for the first engine start. A dry pump running at full engine speed generates metal-to-metal contact between the pump gears and housing, the bushings, and other bearing surfaces before oil pressure has had time to build and circulate. This dry-start damage can score the pump, destroy bushings, and compromise seals within seconds.

46. D — A spool valve that slides freely when horizontal but sticks at one specific point when tilted indicates a localized contamination or varnish deposit in the bore at that position. When the valve is horizontal, gravity does not push the valve through the contaminated area with enough force to catch. When tilted, the valve's weight carries it into the sticky spot. The bore must be cleaned thoroughly with solvent and lint-free swabs to remove the varnish and restore free valve movement.

47. A — During assembly, the torque converter, cooler, cooler lines, and internal passages are empty. When the engine starts and the pump begins circulating fluid, it draws fluid from the pan to fill all of these empty spaces. This rapid redistribution of fluid from the pan to the rest of the system causes the dipstick level to drop quickly. This is normal and expected — the technician must add additional fluid and recheck the level after the system is fully charged.

48. B — A flow rate of one quart in 15 seconds exceeds the minimum specification of one quart in 25 seconds, confirming the cooler passages are clean and unobstructed with better-than-minimum flow capacity. This is the desired outcome of a successful cooler flushing procedure. The cooler is suitable for return to service. A higher-than-minimum flow rate is beneficial — it provides greater cooling capacity, not less.

49. C — A bolt that requires excessive effort to thread and does not seat flush is encountering an obstruction. Possible causes include cross-threading, debris in the threaded hole, a bolt that is the wrong length or diameter, or damaged threads in the case. Continuing to force the bolt risks stripping the threads, cracking the case, or creating a misalignment. The bolt must be removed and the hole inspected and corrected before the bolt is reinstalled.

50. A — The cooler was flushed and flow-tested successfully, so the cooler itself is not restricted. The transmission has all new internal components with correct clearances. Elevated fluid temperatures of 215-230°F during both city and highway driving — despite a clean cooler — point to the cooler thermostat or thermal bypass valve. If this valve is stuck in the bypass position, it routes fluid around the cooler rather than through it, preventing heat dissipation regardless of cooler condition.