

PRACTICE EXAM 8: ASE T4 BRAKES SIMULATION

1. A fleet maintenance technician is performing an annual inspection required under 49 CFR 396.17. The inspection report must document all of the following EXCEPT:

- A. Vehicle identification information
- B. The driver's hours-of-service log
- C. Brake adjustment measurements at each wheel
- D. Applicable air system test results

2. The FMCSA regulation that defines the qualifications required for a "brake inspector" is:

- A. 49 CFR 393.1
- B. 49 CFR 396.3
- C. 49 CFR 396.25
- D. 49 CFR 380.12

3. A technician's repair order should include all of the following EXCEPT:

- A. The driver's personal credit score
- B. Measurements taken during service
- C. Diagnostic findings from inspection
- D. Parts installed with part numbers

4. A wheel speed sensor measures approximately 950 ohms at room temperature. This reading is:

- A. Below the typical range, indicating a short to ground
- B. Well above the typical range of 2,500 to 3,500 ohms
- C. Exceeding limits for a modern ABS system
- D. Within the typical range of approximately 900 to 2,000 ohms

5. A driver reports that the ABS warning lamp comes on after driving for about 10 minutes, then goes out when the truck is cold the next morning. This intermittent pattern is MOST consistent with:

- A. A faulty ABS ECU permanently damaged
- B. Wiring that is chafing and intermittently shorting as it flexes during driving
- C. A completely failed wheel speed sensor
- D. Low engine oil pressure

6. During a brake dynamometer test, one wheel produces 40% less braking torque than its opposite counterpart at the same applied pressure. This finding indicates:

- A. Normal variation on heavy-duty applications
- B. A tire pressure discrepancy on that wheel
- C. A brake imbalance that must be diagnosed and corrected
- D. Proper operation of the ABS system

7. A CVSA inspection handbook is published:

- A. Annually, with updates typically released in April
- B. Every five years with major revisions only
- C. Only when new federal regulations require updates

D. On an as-needed basis by individual states

8. A technician's post-service verification for a hydraulic brake service should include:

A. Bench-bleeding the already-installed master cylinder

B. Replacing all hardware as preventive maintenance

C. Adjusting drum brakes to zero clearance

D. Road-testing the vehicle to verify the repair

9. A static air leakage test on a bobtail tractor with service brakes applied at 90 psi measures 4 psi loss per minute. This result is:

A. Within the 2 psi bobtail released-brake limit

B. Exceeds the 3 psi per minute bobtail applied-brake limit

C. Acceptable on combination vehicles only

D. Grounds for compressor replacement without other diagnosis

10. A technician is performing a Level I CVSA inspection. The brake adjustment at a Type 20 standard chamber measures 2 inches applied stroke. This measurement:

A. Is within specification for the Type 20 standard limit

B. Is within limits only if temperature is below 40°F

C. Falls within the Type 20 long-stroke allowance

D. Exceeds the 1-3/4 inch readjustment limit for Type 20 standard

11. The electronic stability control (ESC) system uses all of the following sensor inputs EXCEPT:

A. Wheel speed sensors

- B. Steering angle sensor
- C. Engine oil pressure sensor
- D. Yaw rate sensor

12. An air brake chamber's type number corresponds to:

- A. The effective diaphragm area in square inches
- B. The manufacturing lot number
- C. The assembly torque rating in foot-pounds
- D. The number of service years expected

13. A driver reports that after driving through heavy rain, the brakes feel slightly weaker on the first application. The MOST likely cause is:

- A. Air pressure loss during the rain exposure
- B. Water on the brake linings causing temporary friction reduction
- C. Failed master cylinder return spring
- D. Excessive tire pressure at the drive axle

14. When a wheel bearing cup must be replaced, the correct tool for driving the new cup into the hub is:

- A. A standard mechanic's hammer and punch
- B. A sharp-edged chisel
- C. A torque wrench set to 200 lb-ft
- D. A cup installation tool sized to match the cup's outside diameter

15. A heavy truck's air compressor has worn piston rings, causing oil to pass into the air system. Downstream from the compressor, the FIRST affected component is typically:

- A. The air dryer's coalescing filter and desiccant
- B. The tractor protection valve
- C. The brake chambers at the rear axle
- D. The spring brake circuit

16. A technician is inspecting a trailer and notes the trailer ABS warning lamp does not illuminate during the ignition self-test. Under FMVSS 121, this condition:

- A. Is only a concern on tractor-mounted ABS systems
- B. Indicates normal operation with no faults stored
- C. Represents a safety-critical fault that must be corrected
- D. Is acceptable if the trailer has been recently inspected

17. A driver with a recently installed new trailer reports that supply air pressure at the red gladhand is 95 psi when the dash shows 120 psi at the tractor. The MOST likely cause is:

- A. Normal pressure drop across the gladhand coupling
- B. Excessive tractor protection valve hysteresis
- C. Trailer reservoir temperature-induced pressure loss
- D. Restriction or damaged seal at the supply gladhand coupling

18. A hydraulic brake system's bleed sequence on a medium-duty truck with diagonal split is typically:

- A. All four wheels simultaneously using a pressure bleeder
- B. Working from the wheel farthest from the master cylinder toward the closest

- C. Only the two front wheels because they are most critical
- D. Starting at the master cylinder outlet ports and working outward

19. A Class 8 tractor's parking brake is applied for long-term storage. After 6 months of parked time with no operation, the MOST likely condition the technician should inspect is:

- A. The engine control module memory
- B. The ABS warning lamp
- C. Accumulated moisture and corrosion within the air brake system
- D. The color coding of the dash control valves

20. The primary reason brake linings must always be replaced as an axle-matched set is to:

- A. Prevent brake pull from uneven braking torque between sides
- B. Match the manufacturer's warranty requirements
- C. Minimize labor time per wheel
- D. Ensure compatibility with upcoming ABS faults

21. A hydraulic brake system has developed an external fluid leak at a caliper. The MOST likely immediate consequence if not corrected is:

- A. Activation of the ABS warning lamp only
- B. Excessive compressor duty cycle
- C. Increased engine oil consumption
- D. Progressive reservoir level loss leading to eventual pedal failure

22. On a heavy truck with air disc brakes, the caliper's internal adjusting mechanism:

- A. Requires manual resetting at each PM interval
- B. Automatically compensates for pad wear without external slack adjuster intervention
- C. Cannot be adjusted — worn pads must be replaced with new calipers
- D. Uses hydraulic fluid to automatically self-adjust

23. A driver reports that the trailer's service brakes apply intermittently during normal stops — sometimes the trailer brakes respond and sometimes they do not. The MOST likely cause is:

- A. A failed tractor protection valve
- B. A stuck-open air dryer purge valve
- C. A faulty service line or intermittent signal to the trailer relay emergency valve
- D. An undercharged trailer reservoir

24. The NHTSA regulation that requires Electronic Stability Control on air-braked truck tractors over 26,000 pounds GVWR was phased in beginning approximately:

- A. 2017
- B. 1995
- C. 1985
- D. 2005

25. A technician discovers corrosion and moisture inside a wheel bearing during service. The MOST likely cause is:

- A. Excessive wheel bearing torque at installation
- B. Normal use of the recommended lubricant

- C. High ambient humidity during storage
- D. Failed wheel seal allowing contamination into the hub

26. A brake technician identifies a chamber as a Type 24 long-stroke. The applicable CVSA readjustment limit is:

- A. 1-3/4 inches
- B. 2 inches
- C. 2-1/2 inches
- D. 1-3/8 inches

27. A driver describes a brake pedal that feels lower than normal after sitting overnight, then returns to normal pedal height after several miles of driving. The MOST likely cause is:

- A. Air entering the hydraulic lines overnight
- B. ABS ECU requiring warm-up time
- C. Master cylinder compensation port blockage that clears with fluid circulation
- D. Self-adjuster action during normal driving that reseats the brake shoes

28. The LEAST likely cause of the ABS warning lamp staying on continuously is:

- A. Low engine oil pressure warning simultaneously activated
- B. Faulty wheel speed sensor at one wheel
- C. Damaged wiring between sensor and ECU
- D. Tone ring damaged or missing teeth

29. A technician replacing a slack adjuster must verify the clevis position on the pushrod because:

- A. The chamber manufacturer requires serial number matching
- B. ABS tone ring alignment depends on pushrod length
- C. Proper pushrod-to-slack-adjuster geometry at full application must be approximately 90 degrees
- D. Service information must be documented on the repair order

30. A driver reports the trailer brakes never release — even with tractor air pressure normal and the red valve pushed in. After confirming tractor pressure is 120 psi at the red gladhand, the NEXT diagnostic step is to:

- A. Replace the trailer reservoir as the root cause
- B. Apply a scan tool to the trailer ECU
- C. Replace the tractor's red dash valve
- D. Check for a failed trailer relay emergency valve or stuck trailer spring brake priority valve

31. A technician performing preventive maintenance inspects the pushrod travel of each air chamber. On a Type 30 long-stroke chamber with an applied stroke of 2-1/4 inches, the brake is:

- A. Out of adjustment beyond the readjustment limit
- B. Within the 2-1/2 inch long-stroke limit
- C. Close to the standard Type 30 readjustment limit of 2 inches
- D. Grounds for immediate chamber replacement

32. A heavy truck with Electronic Stability Control detects high lateral acceleration during cornering that suggests pre-rollover conditions. The ESC's response is typically to:

- A. Increase engine torque to power through the turn

- B. Disable the ABS system for the duration of the maneuver
- C. Reduce engine torque and apply brakes to slow the vehicle
- D. Apply the parking brake at the drive axles

33. A technician is inspecting a tractor-trailer and notes uneven wear on the front axle tires. This finding is MOST likely related to:

- A. Wheel alignment or suspension issues, not the brake system
- B. Brake pull affecting tire wear on the front axle specifically
- C. Uneven steer-axle brake application
- D. Failed ABS on the front axle

34. A heavy truck is equipped with an Automatic Traction Control (ATC) system. The driver switch is in the OFF position. The MOST likely effect is:

- A. All ABS functions are disabled
- B. Only ATC intervention is disabled; ABS remains functional
- C. Spring brake chambers are disabled
- D. Low-air warning is disabled

35. A Class 5 truck is equipped with a Hydromax power assist system. During a road test, the "Brake Assist" warning lamp illuminates while the engine is running normally. The MOST likely cause is:

- A. The parking brake is applied
- B. Low brake fluid level in the reservoir
- C. Normal operation of the system at low vehicle speeds
- D. Power steering pump pressure has fallen below threshold, and the electric backup pump is now active

36. A brake drum with deep scoring but with dimensions within the maximum discard diameter should be:

- A. Machined to restore the friction surface
- B. Returned to service without machining
- C. Replaced immediately regardless of dimensions
- D. Sold to a scrap metal recycling program

37. The cassette-style wheel seal's primary advantage over traditional single-lip designs is that:

- A. It requires no lubrication at installation
- B. It provides longer service life without maintenance
- C. The sealing element and wear sleeve are pre-assembled at the correct geometry
- D. It can be used on any hub regardless of seal bore size

38. On a 4S/2M ABS trailer configuration, the designation means:

- A. Four modulators and two sensors with redundant systems
- B. Four-wheel anti-lock for improved stopping
- C. Two-channel ABS with one sensor per wheel
- D. Four wheel speed sensors and two modulator channels, one per side

39. A driver reports that the vehicle's engine RPM drops noticeably when the brake pedal is first applied. The MOST likely cause on a vacuum-boosted hydraulic brake system is:

- A. Normal engine response to booster demand
- B. Excessive vacuum leak at the booster inlet affecting manifold vacuum
- C. Failed alternator limiting electrical supply

D. Transmission torque converter slippage

40. A heavy-truck compressor is driven by a gear off the engine timing train. This drive method provides all of the following benefits EXCEPT:

- A. No slippage under heavy torque loads
- B. Shared engine lubrication through pressurized oil
- C. Ability to disengage the compressor when unloaded
- D. Reliable timing and RPM relationship to the engine

41. A CVSA inspector measures brake adjustment on a trailer and finds one chamber with an applied stroke of 1-1/2 inches on a Type 20 standard chamber. This brake is:

- A. Within the 1-3/4 inch limit for Type 20 standard
- B. Grounds for immediate out-of-service status
- C. Well below minimum stroke indicating a stuck chamber
- D. Identical to the limit for long-stroke chambers

42. A typical hydraulic disc brake pad incorporates a mechanical wear indicator that produces a distinctive squealing sound when pad thickness approaches:

- A. 8 to 10 mm remaining material
- B. 6 to 8 mm remaining material
- C. 4 to 5 mm remaining material
- D. 2 to 3 mm remaining material

43. The wheel seal on an oil-bath hub uses the oil bath environment as:

- A. A protection against the high-pressure oil leaking past the seal
- B. A pressure differential-based seal energization helped by the hub's internal oil pressure
- C. A replacement for conventional rubber sealing materials
- D. A heat sink for normal operating conditions

44. An ABS ECU's self-test occurs:

- A. Every time the vehicle reaches highway speed
- B. Only after the ABS warning lamp has first illuminated
- C. At each ignition cycle, as required by FMVSS 121
- D. On demand through the driver's request

45. The primary advantage of using a pressure protection valve on the accessory circuit of a heavy-truck air system is:

- A. Isolating the accessory circuit if primary brake system pressure drops below the protection threshold
- B. Boosting accessory pressure above the main system pressure
- C. Eliminating the need for a supply reservoir
- D. Reducing the number of pressure switches required

46. A Class 8 tractor equipped with air ABS experiences a wheel speed sensor fault that disables ABS on one wheel. The ABS ECU typically:

- A. Shuts off the engine to prevent unsafe operation
- B. Applies the parking brake automatically
- C. Illuminates the ABS warning lamp and allows normal service braking to continue

D. Disables all pressurized air brake function

47. A hydro-boost unit on a Class 6 truck uses power steering pump pressure of approximately:

A. 200 to 400 psi

B. 1,200 to 1,500 psi

C. 3,000 to 4,000 psi

D. 6,000 to 8,000 psi

48. A brake technician documenting a repair should include the technician's name or identifier because:

A. Federal law requires the technician's name on all parts warranties

B. Customer satisfaction ratings depend on technician identification

C. This enables traceability for warranty, liability, and regulatory verification

D. Billing must include the specific technician's labor rate

49. A driver's complaint is "brakes feel normal but I hear a noise during stops." During diagnosis, the technician should:

A. Verify the symptom by recreating the condition during a road test

B. Replace the master cylinder on the assumption of internal bypass

C. Replace all brake hardware preventively

D. Disregard the complaint as subjective

50. The LEAST likely reason to place a commercial vehicle out of service under CVSA criteria is:

- A. 20% or more of brakes defective
- B. A single ABS fault code with service brakes still functioning normally
- C. Inoperative low-air pressure warning device
- D. A ruptured brake chamber diaphragm at any wheel

PRACTICE EXAM 8 — ANSWER KEY AND EXPLANATIONS

1. B — The driver's hours-of-service log. Driver hours-of-service records are separate from vehicle inspection records and fall under different sections of the regulations. Annual vehicle inspection reports under 49 CFR 396.17 must document vehicle identification, equipment inspection findings, brake measurements, and air system test results — but not driver duty-status logs.
2. C — 49 CFR 396.25. This regulation defines the qualifications required for a person to be considered a qualified "brake inspector" on commercial motor vehicles. Requirements include documented training, experience, and certification — typically ASE T4 certification for commercial brake work — that must be on file for each person performing brake inspections.
3. A — The driver's personal credit score. Driver credit information has no place on a repair order and would violate privacy regulations. Repair orders must document vehicle-specific information: identification, complaint, diagnosis, measurements, repair performed, parts installed, verification, and technician identification.
4. D — Within the typical range of approximately 900 to 2,000 ohms. Most heavy-truck ABS wheel speed sensors read between approximately 900 and 2,000 ohms at room temperature. A reading of 950 ohms falls comfortably within this range, indicating the sensor coil itself is electrically healthy.
5. B — Wiring that is chafing and intermittently shorting as it flexes during driving. Intermittent ABS warning patterns that correlate with operating conditions (such as driving temperature or chassis flex) most commonly point to wiring issues. Chafed or damaged wiring can intermittently short or open as the chassis flexes, producing temperature- or motion-correlated symptoms.
6. C — A brake imbalance that must be diagnosed and corrected. A 40% disparity in braking torque between opposite wheels on the same axle is well outside normal variation and represents a significant imbalance. The cause must be identified and corrected — the imbalance will produce brake pull, uneven wear, and dangerous handling under hard braking.
7. A — Annually, with updates typically released in April. CVSA publishes updates to its North American Standard Inspection handbook annually, typically with revisions effective each April. Technicians and fleet compliance managers must stay current with each update because measurement thresholds and violation codes can change.
8. D — Road-testing the vehicle to verify the repair. Post-service verification requires a road test to confirm the repair corrected the original complaint and that no new symptoms were introduced.

Skipping road verification is never acceptable on the T4 exam or in professional practice — it is the final test that a repair is truly complete.

9. B — Exceeds the 3 psi per minute bobtail applied-brake limit. CVSA allows approximately 3 psi per minute leakage on a bobtail tractor with service brakes applied. A measured 4 psi loss exceeds this limit and represents excessive leakage that must be located and corrected before the vehicle returns to service.
10. D — Exceeds the 1-3/4 inch readjustment limit for Type 20 standard. The CVSA readjustment stroke limit for a Type 20 standard chamber is 1-3/4 inches at 90 psi. A measured 2 inch stroke exceeds this limit, placing the brake out of adjustment and counting as a defective brake under the 20% out-of-service rule.
11. C — Engine oil pressure sensor. ESC uses wheel speed sensors (shared with ABS), steering angle sensor, yaw rate sensor, and lateral acceleration sensor. Engine oil pressure is unrelated to ESC function — it is an engine management parameter, not a brake system input.
12. A — The effective diaphragm area in square inches. Brake chamber type numbers directly correspond to the effective diaphragm area. A Type 20 chamber has approximately 20 square inches, a Type 30 has approximately 30 square inches, and so on. Larger chambers produce more pushrod force for the same delivery pressure.
13. B — Water on the brake linings causing temporary friction reduction. Water on brake friction surfaces temporarily reduces the coefficient of friction. After the first brake application, heat from the braking event evaporates the water, and friction — and braking performance — returns to normal. This is a common and normal rain-related symptom.
14. D — A cup installation tool sized to match the cup's outside diameter. Using an improperly sized tool or makeshift tools (hammer, chisel) distorts the cup or damages the hub bore. The installation tool must contact the cup's outside edge and drive it squarely into the hub seat to ensure proper fit and alignment.
15. A — The air dryer's coalescing filter and desiccant. Compressor oil first enters the air dryer, where it contaminates the coalescing filter and saturates the desiccant, accelerating its failure. This is why identifying compressor oil blowby early is important — allowing oil carry-through eventually damages the entire supply-side system.
16. C — Represents a safety-critical fault that must be corrected. FMVSS 121 requires a working ABS warning lamp because the driver must be able to recognize an ABS fault. A non-functional warning lamp is itself a safety-critical fault and must be repaired before the vehicle returns to service.
17. D — Restriction or damaged seal at the supply gladhand coupling. A 25 psi pressure drop across the gladhand coupling is significantly more than normal and typically indicates a restriction, damaged seal, or partially obstructed supply line. This restriction reduces the pressure delivered to the trailer and must be corrected to ensure proper trailer brake function.

18. B — Working from the wheel farthest from the master cylinder toward the closest. The standard bleeding sequence works from the wheel farthest from the master cylinder toward the nearest wheel. This ensures air trapped in the longest line is purged first and minimizes the chance of reintroducing air into already-bled sections.
19. C — Accumulated moisture and corrosion within the air brake system. Long-term storage without operation allows moisture to accumulate and corrode brake system components — reservoirs, chambers, valves, and line fittings. Before returning such a vehicle to service, the air system should be thoroughly inspected and drained to identify moisture-related damage.
20. A — Prevent brake pull from uneven braking torque between sides. Unmatched brake shoes produce different braking torque between the two wheels on the axle, causing the vehicle to pull during application. This is the fundamental reason the practice is universal — and also why it fails DOT inspection if not followed.
21. D — Progressive reservoir level loss leading to eventual pedal failure. An external hydraulic leak produces a finite-volume loss from the master cylinder reservoir. As fluid drains, the reservoir eventually empties, leaving the master cylinder unable to develop pressure. This is why even small external hydraulic leaks are safety-critical.
22. B — Automatically compensates for pad wear without external slack adjuster intervention. Air disc brakes contain an internal adjusting mechanism within the caliper that compensates automatically as pads wear, eliminating the need for an external slack adjuster. This reduces maintenance labor compared to S-cam drum brakes where the slack adjuster must be manually verified.
23. C — A faulty service line or intermittent signal to the trailer relay emergency valve. Intermittent trailer brake response points to an intermittent signal reaching the trailer's relay emergency valve — commonly from damaged or chafed service line, a faulty service gladhand seal, or intermittent valve response. The fault must be traced along the service signal path.
24. A — 2017. FMCSA and NHTSA began phasing in Electronic Stability Control requirements for air-braked truck tractors over 26,000 pounds GVWR beginning in 2017. Subsequent rulemakings have extended ESC requirements to additional classes of commercial vehicles.
25. D — Failed wheel seal allowing contamination into the hub. Water, dirt, and other contamination entering a wheel bearing through a failed seal is the leading cause of bearing-cavity contamination and corrosion. The seal must be replaced along with the bearings to prevent recurrence.
26. B — 2 inches. The CVSA readjustment stroke limit for a Type 24 long-stroke chamber is 2 inches at 90 psi applied. A Type 24 standard chamber has a shorter 1-3/4 inch limit. Identifying the chamber type marking before comparing stroke to the limit is essential.
27. D — Self-adjuster action during normal driving that reseats the brake shoes. Some hydraulic drum brake self-adjusters operate only during parking brake application. If the driver set the parking

brake overnight, the self-adjusters would have engaged, bringing the shoes closer to the drum and raising the pedal height — explaining the morning-vs-driving pedal difference.

28. A — Low engine oil pressure warning simultaneously activated. Low engine oil pressure is an engine management issue unrelated to ABS function. The other three options all directly trigger ABS warning lamp illumination because they represent actual ABS-circuit faults that the ECU detects and reports.
29. C — Proper pushrod-to-slack-adjuster geometry at full application must be approximately 90 degrees. The clevis position on the pushrod threads determines the pushrod length. Correct clevis position produces approximately 90-degree geometry at full application, which maximizes mechanical advantage at the S-cam — essential for designed braking torque.
30. D — Check for a failed trailer relay emergency valve or stuck trailer spring brake priority valve. With supply air confirmed at the red gladhand, the fault is on the trailer side. The likely culprits are the trailer relay emergency valve or spring brake priority valve — either of which can fail in a manner that prevents spring brake release despite adequate supply pressure.
31. B — Within the 2-1/2 inch long-stroke limit. The CVSA readjustment stroke limit for a Type 30 long-stroke chamber is 2-1/2 inches. A measured 2-1/4 inch stroke is below this limit and therefore within specification. The chamber type markings determine which limit applies.
32. C — Reduce engine torque and apply brakes to slow the vehicle. When ESC/Roll Stability Control detects pre-rollover conditions, the system simultaneously reduces engine torque and applies brakes at all wheels to rapidly slow the vehicle. This aggressive intervention brings the vehicle back into the safe operating envelope before rollover momentum develops.
33. A — Wheel alignment or suspension issues, not the brake system. Uneven front-tire wear is typically caused by alignment or suspension problems, not brake issues. Brake-related tire wear is unusual and would typically occur on the drive or trailer axles. The inspector should investigate alignment and steering geometry.
34. B — Only ATC intervention is disabled; ABS remains functional. The driver's ATC disable switch affects only the traction control function — ABS and its lockup-prevention function remain active and are not affected by the ATC switch. This allows the driver to disable ATC for specific situations like off-road use.
35. D — Power steering pump pressure has fallen below threshold, and the electric backup pump is now active. The "Brake Assist" warning lamp on Hydromax systems illuminates when the electric backup pump activates. Its illumination during normal engine operation indicates that primary pressure from the power steering pump has fallen below the designed threshold, activating the backup pump.
36. A — Machined to restore the friction surface. Deep scoring on a drum within the maximum discard diameter can typically be machined to restore a clean friction surface. Machining is acceptable as

long as the final machined diameter does not exceed the maximum discard dimension stamped on the drum.

37. C — The sealing element and wear sleeve are pre-assembled at the correct geometry. Cassette-style unitized seals combine the sealing lip and wear sleeve into a single pre-assembled unit. This factory-set geometry prevents installation errors that would compromise seal performance when the two components are fitted separately.
38. D — Four wheel speed sensors and two modulator channels, one per side. In ABS nomenclature, "S" is the number of wheel speed sensors and "M" is the number of modulator channels. A 4S/2M trailer has four sensors (one per wheel) and two modulators (one per side), providing enhanced control compared to the simpler 2S/1M or 2S/2M configurations.
39. B — Excessive vacuum leak at the booster inlet affecting manifold vacuum. A vacuum leak at the booster inlet or its supply line allows unmetered air to enter the intake manifold, affecting engine operation. The rapid engine RPM drop on pedal application suggests the booster is consuming significant vacuum — a vacuum leak is loading the engine.
40. C — Ability to disengage the compressor when unloaded. The compressor does not disengage when unloaded — it continues to rotate mechanically because gear drive cannot be disconnected. Instead, the unloader mechanism holds the inlet valves open so the compressor rotates without compressing air. This is intentional, not a disadvantage.
41. A — Within the 1-3/4 inch limit for Type 20 standard. A Type 20 standard chamber has a CVSA readjustment stroke limit of 1-3/4 inches. A measured 1-1/2 inch stroke is comfortably below this limit and is within specification — no defective-brake status for this measurement.
42. D — 2 to 3 mm remaining material. Mechanical wear indicators on disc brake pads produce a distinctive squealing sound when the indicator tab contacts the rotor surface. This occurs when pad friction material thickness falls to approximately 2 to 3 mm — the industry-standard replacement threshold.
43. B — A pressure differential-based seal energization helped by the hub's internal oil pressure. On oil-bath hubs, the small pressure generated by internal oil flow actually helps energize the sealing lip against the wear surface. This integrated design relies on the oil environment as part of the sealing strategy rather than purely mechanical spring loading.
44. C — At each ignition cycle, as required by FMVSS 121. FMVSS 121 requires the ABS warning lamp to perform a self-test at every ignition cycle. The lamp illuminates briefly to verify functionality, then extinguishes if the ABS ECU completes its self-check without detecting a fault. Lamp failure during the self-test is itself a violation.
45. A — Isolating the accessory circuit if primary brake system pressure drops below the protection threshold. The pressure protection valve isolates non-essential accessories from the main brake

system when primary pressure falls. This preserves remaining pressure for the critical brake function rather than allowing accessories to continue consuming air during a fault condition.

46. C — Illuminates the ABS warning lamp and allows normal service braking to continue. An ABS fault illuminates the warning lamp and disables only the lockup-prevention function. Service brake capability continues because it uses the same pneumatic delivery path regardless of ABS status. The vehicle is drivable to a repair facility.
47. B — 1,200 to 1,500 psi. Power steering pumps on medium-duty trucks operate at approximately 1,200 to 1,500 psi, supplying this high pressure to the hydro-boost unit. This pressure range provides adequate assist force for the brake application while also powering the vehicle's steering gear.
48. C — This enables traceability for warranty, liability, and regulatory verification. Technician identification on repair orders establishes the person accountable for the specific work performed. This traceability supports warranty verification, protects against liability claims, and documents compliance with FMCSA brake inspector qualification requirements.
49. A — Verify the symptom by recreating the condition during a road test. Before investigating or replacing components, the technician must verify the complaint is real and characterize it precisely through a road test. This prevents unnecessary parts replacement and ensures the diagnosis is based on confirmed, specific observations.
50. B — A single ABS fault code with service brakes still functioning normally. An ABS fault with normal service braking is a violation that must be corrected at the next PM interval — but it is not an out-of-service condition on its own. The vehicle remains drivable because basic braking is intact. The other three options are immediate OOS triggers under CVSA criteria.