

## **PART THREE: BONUS TOPIC-FOCUSED PRACTICE**

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This section provides targeted, topic-specific practice designed to strengthen your weakest areas before exam day. Unlike the full-length simulation exams in Part Two — which mirror the randomized, mixed-topic format of the actual ASE A5 test — these bonus sections isolate individual subject areas so you can drill down on specific concepts with focused repetition.

Each of the ten bonus sections contains 10 questions dedicated to a single topic, followed by a complete answer key with concise explanations. Use your performance on the Practice Exams in Part Two to identify which topics cost you the most points, then target those sections here for concentrated review.

These questions are supplementary material. They are not a replacement for the full-length simulation exams — they are a precision tool for closing the gaps that remain after full-exam practice. Work through the sections where you are least confident, review every explanation carefully whether you answered correctly or not, and return to any section as many times as needed until the material is second nature.

The ten topic areas covered are: Master Cylinder and Brake Lines, Power Assist Units, Brake Fluid and Valves and System Bleeding, Parking Brake Systems, Drum Brake Components and Repair, Wheel Bearings and Seals, Disc Brake Calipers and Pads and Hardware, Rotors and Runout and Resurfacing, ABS Diagnosis and Wheel Speed Sensors, and TCS and ESC Diagnosis and Repair.

# BONUS SECTION 1: MASTER CYLINDER AND BRAKE LINES

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## 10 Targeted Practice Questions

1. A tandem master cylinder has two separate piston assemblies inside a single bore. The PRIMARY reason for this design is:

- A. To double the hydraulic pressure output compared to a single-piston design
- B. To provide two independent hydraulic circuits so that partial braking remains available if one circuit fails
- C. To allow different pressure outputs to the front and rear brake circuits simultaneously
- D. To reduce the physical size of the master cylinder while maintaining the same fluid displacement volume

2. A technician is bench bleeding a new master cylinder. After completing the procedure, the technician installs the unit and finds the brake pedal still feels slightly spongy. The MOST likely explanation is:

- A. Bench bleeding cannot remove all air from the master cylinder bore and further bleeding is always required after installation
- B. The bench bleed was not completed properly — air remains trapped in the secondary chamber of the master cylinder
- C. The master cylinder outlet ports were not plugged quickly enough during transfer from the bench to the vehicle, allowing air re-entry
- D. Bench bleeding only addresses the primary piston chamber and the secondary chamber must be bled on the vehicle

3. A double-flare brake line fitting is being fabricated. The technician completes the first stage of the flare but the second stage produces a cracked, split flare edge. The MOST likely cause is:

- A. The flaring tool anvil was not properly aligned with the tube end during the second stage
- B. The brake line tubing was not fully annealed before flaring and is too hard and brittle
- C. The tube end was cut at an angle rather than perfectly square before flaring began

D. Excessive force was applied during the first stage, over-expanding the tube beyond the tool's designed bell diameter

4. A master cylinder compensating port serves which of the following functions?

A. It limits maximum hydraulic output pressure to prevent caliper seal damage during hard stops

B. It allows excess fluid to return to the reservoir when the brake pedal is released and the pistons retract, preventing residual pressure buildup

C. It provides a pressure equalization path between the primary and secondary circuits during normal braking

D. It vents the master cylinder bore to atmosphere to prevent vacuum lock during rapid pedal release

5. A vehicle has a brake line that developed a corrosion perforation near the left rear wheel. The technician cuts out the damaged section. The replacement tubing must be:

A. Copper tubing of the same outer diameter as the original line

B. Double-wall steel (Bundy) tubing or SAE-approved stainless steel brake line tubing

C. Aluminum tubing that is rated for hydraulic use at 1,000 PSI or greater

D. High-pressure rubber hose with crimped end fittings rated for brake system use

6. A master cylinder reservoir has two separate compartments divided by an internal wall. Each compartment serves a specific purpose. The correct statement about this design is:

A. One compartment stores fluid for the front brakes only and the other stores fluid exclusively for the rear brakes

B. Each compartment feeds one of the two independent hydraulic circuits — a drop in one compartment's level indicates a leak in that specific circuit

C. The two compartments store fluid at different pressures to accommodate front and rear brake bias

D. One compartment is the primary fluid supply and the other is an overflow reserve for high-temperature expansion

7. When inspecting brake lines during a routine service, which location is MOST likely to show corrosion damage first?

- A. The middle sections of brake lines running along the frame rail away from road spray
- B. Areas where the brake line passes through a rubber grommet or steel routing clip where moisture becomes trapped
- C. The brake line sections closest to the engine where heat cycling causes expansion and contraction
- D. The sections of brake line running above the fuel tank where vapor concentration accelerates oxidation

8. A technician uses a flare nut wrench rather than an open-end wrench when removing brake line fittings. The reason for this is:

- A. A flare nut wrench provides greater torque leverage than an open-end wrench for breaking loose corroded fittings
- B. A flare nut wrench encircles the fitting on five sides, reducing the risk of rounding the soft brass or steel fitting compared to an open-end wrench that contacts only two sides
- C. A flare nut wrench is required by OSHA safety regulations when working with hydraulic brake lines
- D. A flare nut wrench has a longer handle that keeps the technician's hands away from brake fluid spray when fittings are loosened

9. A master cylinder is being tested on the vehicle with the brake lines disconnected and plugged. The technician applies firm pedal pressure and holds it. The pedal slowly falls toward the floor. This result indicates:

- A. The plugged lines are confirming the master cylinder has an internal bypass — the fault is in the master cylinder
- B. The result is normal since plugged lines create excessive back pressure that forces the piston forward
- C. The brake booster is applying excess force to the master cylinder piston, pushing it forward under sustained load
- D. The result is inconclusive since pedal drop tests require the lines to be connected and pressurized

**10.** A vehicle has a master cylinder where the primary piston is pushed by the brake booster pushrod and a secondary piston operates in tandem. If the primary circuit develops a complete hydraulic failure and loses all pressure, what happens to the secondary circuit?

A. The secondary circuit loses pressure immediately since both pistons are hydraulically connected through the compensation ports

B. The primary piston travels forward until it makes mechanical contact with the secondary piston, then pushes it forward to maintain secondary circuit pressure

C. The secondary circuit operates at reduced pressure since it relies on residual pressure from the primary circuit to begin its stroke

D. The proportioning valve isolates the secondary circuit from the failed primary circuit and maintains full pressure

# BONUS SECTION 1 — ANSWERS AND EXPLANATIONS

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**1. B** — Two independent circuits for backup braking — The tandem design ensures that a single hydraulic failure in one circuit does not cause complete brake failure. The remaining circuit provides enough braking force at two wheels to bring the vehicle to a controlled stop, which is a fundamental safety requirement in brake system design.

**2. C** — Air re-entry during transfer from bench to vehicle — After successful bench bleeding, the outlet ports must be plugged immediately before removing the master cylinder from the bench and transporting it to the vehicle. Any delay with open ports allows air to enter the fluid-filled bore, partially undoing the bench bleed and leaving residual air in the circuit.

**3. C** — Tube end cut at an angle — A brake line tube end that is not cut perfectly square enters the flaring die at an angle. This creates an uneven bell in the first stage that distributes material unevenly around the circumference. When the second stage folds this uneven bell back over itself, one side has insufficient material and cracks or splits under the forming pressure.

**4. B** — Returns excess fluid to reservoir on release — The compensating port is a small hole at the forward end of the master cylinder bore. When the piston retracts after pedal release, it uncovers this port, allowing any thermally expanded fluid or excess pressure from the lines to return freely to the reservoir. Without it, residual pressure would build progressively and cause brake drag.

**5. B** — Double-wall steel or approved stainless steel tubing — Brake lines must withstand intermittent pressures exceeding 1,500 PSI and must resist road corrosion over the vehicle's service life. Only double-wall steel Bundy tubing or approved stainless steel brake line tubing meets these structural and corrosion resistance requirements. Copper, aluminum, and rubber hose are not acceptable substitutes for rigid brake line fabrication.

**6. B** — Each compartment feeds one independent circuit — The divided reservoir is a direct extension of the dual-circuit safety design. Each compartment serves one hydraulic circuit independently. Monitoring fluid levels in each compartment separately allows a technician to identify which specific circuit is losing fluid when levels are unequal, directing diagnosis to the correct half of the system.

**7. B** — Rubber grommets and routing clips — Moisture, road salt, and debris become trapped in the gap between the brake line and its grommet or clip. This trapped environment creates a concentrated corrosion cell where moisture and salt contact the steel line continuously. These points experience far more aggressive corrosion than open sections of line exposed to air that can dry between rain events.

**8. B** — Flare nut wrench contacts five sides preventing rounding — Brake line fittings are made from relatively soft brass or steel and are often corroded. An open-end wrench contacts only two flat sides of the fitting, concentrating stress and easily rounding the corners of corroded fittings. A flare nut wrench wraps around five sides, distributing the torque load and maintaining grip even on fittings with minor surface corrosion.

**9. A** — Internal master cylinder bypass confirmed — With brake lines plugged, the hydraulic circuit is completely sealed. If the pedal falls under sustained pressure in a sealed circuit, there is nowhere for fluid to go except past a failing internal seal. This is the definitive bench-on-vehicle test for internal master cylinder bypass — the fault is conclusively inside the master cylinder itself.

**10. B** — Primary piston mechanically contacts and pushes secondary piston — This is the fundamental safety mechanism of the tandem master cylinder design. When primary circuit pressure drops to zero due to a leak, the primary piston has no hydraulic resistance and travels its full stroke until physical contact with the secondary piston. It then acts as a mechanical pushrod, maintaining the ability to pressurize the secondary circuit and provide partial braking.