

Appendix N (b) Pumper Inspection Procedures

CAB AND CHASSIS

As a safety precaution, remove keys from the ignition while working under or around the vehicle.

1. **Approach** – Check the overall appearance of vehicle stance (not leaning). Check for signs of dripping fluids around major fire engine components.
2. **Hood** – Check the hood latches, springs, and hinges.
3. **Oil** – With the engine on level ground, check oil level; add if needed.
4. **Power Steering Fluid** - Check fluid level; add if needed.
5. **Fuel Filter** - Ensure there are no leaks.
6. **Fuel/Water Separator** - Ensure there are no leaks.
7. **Automatic Transmission Fluid** – With the engine on level ground, ensure that the transmission fluid level meets manufacturer’s recommendations. Ensure fluid is the right consistency. Check the fluid’s color and smell.

Manual Transmissions: Occasionally check fluid level--pull plug and check with finger.

Transfer case: Occasionally check fluid level--pull plug and check with finger.

Differential: Occasionally check fluid level--pull plug and check with finger.

8. **Hydraulic Brake Fluid** - Check fluid level; add if needed.
9. **Fan and Fan Belts** – Ensure that the fan moves freely, has no cracks, and blades are tight. Check belts for wear, frays, tension, or cracks. Replace as necessary.
10. **Driver Side Front Tire, Rim, Hub and Suspension** – Check tread depth, wear patterns, tire damage and tire pressure. Ensure that tires are of same size, type, etc. Ensure lug nuts are present and tight. Inspect rims for damage and proper mounting. Check for leaks and proper operation of manual hubs. Check for missing leaf springs or cracks in leafs. Inspect shock and mounting hardware. Inspect tie rods for damage (bends or looseness).
11. **Front Bumper** – Ensure that brush guard, license plate, and skid plate are present and secured properly and engine number is displayed.
12. **Coolant** – Check fluid level; add if needed. Check coolant color.

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13. **Radiators** - Check that radiator is clean and free of debris.

14. **Air Filters (including air conditioner, cabin, and ember separators)** – Carefully inspect filters, mounting brackets, inlet hose connections, and fittings. Inspect gasket and sealing surface areas. Replace service element, if needed. Ensure that ember separators are clear of particulates. Check air filter restriction gauge.

15. **Hoses** – Check for signs of wear, cracks or leaks; replace as necessary. Check hose clamps for tightness. Check for signs of dripping fluids around major engine components.

16. **Passenger Side Front Tire, Rim, Hub and Suspension** – *Refer to #10 above.* 7

17. **Fuel Tank and Brackets** – Ensure that the fuel tank is full and securely mounted. Look inside the tank to ensure that gauge is reading correctly (if applicable). Ensure that the fuel tank is not leaking.

18. **Passenger Side Door(s)** – Check the latch, lock, handhold, mirrors and hinges.

19. **Passenger Side General Condition** – Ensure that the fire engine is clean and orderly in appearance. Ensure that agency emblems, decals, equipment numbers are present and in good condition. Ensure that cabinet latches, hinges, and locks are in good working condition.

20. **Passenger Side Undercarriage** – Check for loose bolts, hanging wires, leaks, and broken parts. Ensure that the undercarriage is free of debris. Inspect steering components, drive train, body mounts, and cross members for functionality and damage. Check the package mounting brackets and bolts.

21. **Exhaust** – Check all brackets and look for signs of leaks.

22. **Passenger Side Rear Tire, Rim, Hub and Suspension** – *Refer to #10 on page 6.*

23. **Vehicle Rear** – Ensure that the bumper and license plate are securely fastened and cabinets are in working order. Check that the spare tire is present and properly inflated. Ensure that mud flaps are present and in good condition. Ensure engine number is displayed.

24. **Top Deck** – Ensure that the hose reel and boxes are in working order, bolts are tight on all hose reel components, and non-skid surface is in good condition.

25. **Rear Undercarriage (Plumbing)** – *Refer to #20 above.*

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26. **Driver Side General Condition** – *Refer to #19 above.*
27. **Driver Side Rear Tire, Rim, Hub and Suspension** – *Refer to #10 on page 6.*
28. **Driver Side Undercarriage** – *Refer to #20 above.*
29. **Air Tanks** – Check for moisture and bleed. Inspect mounting brackets. Check for leaks in air lines.
30. **Batteries** – Ensure that batteries are secure, connections are tight, and cell caps are in place. Ensure that battery connections are not excessively corroded. Ensure that the battery box and cover are secure. Know locations of fuse boxes and electric junction boxes.
31. **Driver Side Door(s)** – *Refer to #18 above.*
32. **Wheel Chocks** – Ensure that wheel chocks are available and easily accessible.
33. **Hydraulic Oil (if applicable)** – Check fluid level; add if needed.

INSIDE CAB

1. **Start Engine** – Start engine. Allow engine to reach operating temperature and leave running for electrical checks. Ensure that "water in fuel" light goes off after engine starts. If it doesn't, drain water from fuel at the separator.
2. **Lights and Signals** – Check headlights, brake lights, running lights, emergency lights, turn signals, backup lights, work lights, panel lights, license plate lights, off-road lights, cabinet lights, dome and dash lights, and hazards. Replace bulbs as necessary.
3. **Mirrors and Glass** – Check for cleanliness, cracks, chips, and damaged brackets or mounts. Ensure that mirrors are properly adjusted.
4. **Gauges and Switches** – Ensure that all gauges are operational. Document any non-functioning gauges; ensure that the problem is fixed before putting the vehicle into service.
5. **2-Way Radio and P.A.** – Perform a radio check to ensure that the radio receives and transmits. Ensure that the radio is securely mounted and speakers are functional.
6. **Clutch and Gear Shifter** – Ensure gear shifter moves freely with clutch in. Ensure that the clutch has free play. If automatic transmission, ensure that shifter lever locks in place. 8

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7. **Wipers and Washers** – Check condition, reservoir level, and operation. Replace wipers and fill reservoir as necessary.
8. **Horn and Backup Alarm** – Check electric horn. Check air horn mounting brackets. Ensure that air horn and backup alarm are operational.
9. **Seat Belts** – Ensure that seat belts are clean, secure, accessible, and operational—no signs of wear and tear. Ensure there are enough belts to accommodate all engine personnel.
10. **Heater and Air Conditioner** – Check fan, defroster, vents, and controls.
11. **Vehicle Use Book** – Ensure that the vehicle use book is current, neat and accessible. Check for credit card, receipts, proper charge codes, and weight ticket. Ensure that a copy of the self-insurance documentation is included in the log book.
12. **Accident Forms** – Ensure that the DI-135 contains the following forms: DI-134, SF-91, SF-91A, SF-94, CA-1, and OF-26.
13. **Fire Extinguisher** – Ensure that the fire extinguisher is securely mounted, pins are in place, inspection is current and tagged, reflective marker is attached, and unit is charged.
14. **First Aid Kit(s)** – Ensure that the first aid kit(s) is maintained, updated, and clearly marked.
15. **Reflector Set** – Ensure that the reflector set is available and operational.
16. **Jack and Lug Wrench** – Ensure that the properly-sized jack and lug wrench are present and compatible with the vehicle.
17. **Normal Unit Strength (NUS)** – The NUS should reflect the standards established in the Interagency Standards for Fire and Fire Aviation Operations, Appendix R. Check for missing or damaged items; replace if necessary. Ensure that the NUS is documented and kept current.

BRAKES

1. **Parking Brake** - Check for proper operation. Ensure vehicle does not move when brake is set.
2. **Air Brakes** - Perform an air brake check in accordance with Department of Transportation (CDL) standards. Instructions for the Air Brake Check can be found on page 10.

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3. **Slack Adjusters** – Inspect brake assembly for excessive play. Check for broken, loose, or missing parts.
4. **Brake Canister** – Ensure that the brake canister is properly mounted and free of dents and air leaks.
5. **Brake Lines** – Listen for air leaks. Inspect brake lines for rub marks. 9

PUMP PACKAGE

1. **Water Tank, Foam Tank and Baffles** – Ensure that the water and foam tanks are full. Ensure that sight and electronic gauges are working properly.
2. **Valves** – Ensure that valves work smoothly and are not leaking. Check valves for loose handles and bolts. Ensure that valve caps are in place to prevent dirt from damaging the valve. Use dry lube to lubricate valve handles.
3. **Coolant** – Ensure that coolant is at a proper level and overflow container is in place.
4. **Oil** – Ensure that crankcase oil is at a proper level; if low, fill to manufacturer's specifications.
5. **Fuel Filter** – Inspect fuel filter and bracket.
6. **Air Filter(s)** – Ensure that the air filter(s) is in place and clean; change as needed. If a pre-filter is being used, make sure it is clean. Inspect filter housing for damage. When reinstalling, check for proper seal between air intake and filter.
7. **Primer** – Ensure that the primer functions properly and all discharge valves are closed.
8. **Pump On/Off-Start Switch, Oil Pressure Override Switch, Glow Plugs, and Throttle** – Ensure that the pump on/off-start switch is secure and operational. Ensure that the push-to-start switch is secure and operational. Ensure that the glow plugs have cycled and the light goes off. Ensure that pump engine warms up to operating temperature (3-5 minutes).
9. **Gauges** – Ensure that all gauges are functioning properly; replace bad gauges. Ensure that panel lights are operational.
10. **Water Pressure Safety Shutdown Switch** – Ensure that the switch functions properly.

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11. **Live Reels** – Ensure that live reels work properly. Grease hose reel swivels periodically. Operate the nozzle to ensure water flows. Check for leaks. Ensure that the hose reel rewind functions properly and that mounting hardware is secure.
12. **Foam Proportioner** – Ensure that foam proportioner is operational. Follow manufacturer's guidelines for unit operation. Refill with foam if needed.
13. **Water Inlet Strainer** – Check for leaks. Clean out strainer weekly.
14. **Pump Mounting Bolts** – Check for loose or missing bolts.
15. **Pump Exhaust** – Check for signs of leaks.
16. **Gear Box** – Ensure that the gear case oil is at a proper level; if low, fill to manufacturer's specifications.¹⁰

AIR BRAKE CHECK

(Adapted from Department of Transportation CDL Manuals)

1. **Check Air Compressor Drive Belt.** If the air compressor is belt-driven, check the condition and tightness of the belt. The belt should be in good condition.
2. **Check Manual Slack Adjusters on S-Cam Brakes.** Park on level ground and chock the wheels to prevent the vehicle from moving. Turn off the parking brakes so you can move the slack adjusters. Use gloves and pull hard on each slack adjuster. If a slack adjuster moves more than about one inch where the push rod attaches to it, it probably needs adjustment. Adjust it or have it adjusted. Vehicles with too much brake slack can be very hard to stop. Out-of-adjustment brakes are the most common defect found in roadside inspections. Be safe. Check the slack adjusters.
3. **Check Brake Drums (or Discs), Linings, and Hoses.** Brake drums (or discs) must not have cracks longer than one half the width of the friction area. Linings (friction material) must not be loose or soaked with oil or grease. They must not be dangerously thin. Mechanical parts must be in place, not broken or missing. Check the air hoses connected to the brake chambers to make sure they are not cut or worn due to rubbing.
4. **Test Low Pressure Warning Signal.** First, chock the wheels and release the brakes. Shut off the engine when you have enough air pressure so that the low pressure warning signal is not on. Turn on the electrical power and step on and off the brake pedal to reduce air tank pressure. The low air pressure warning signal must come on before the pressure drops to less than 60 PSI in the air tank (or tank with the lowest air pressure, in dual air systems).

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If the warning signal does not work, you could lose air pressure and you would not know it. This could cause sudden emergency braking in a single circuit air system. In dual systems the stopping distance will be increased. Only limited braking can be done before the spring brakes engage.

5. Check that the Spring Brakes Engage Automatically. Chock the wheels, release the parking brakes when you have enough air pressure to do it, and shut off the engine. Step on and off the brake pedal to reduce the air tank pressure. The "parking brake" knob should pop out when the air pressure falls to the manufacturer's specification (usually in a range between 20-45 PSI). This causes the spring brakes to come on.

6. Check Rate of Air Pressure Buildup. When the engine is at operating RPM, the pressure should build from 85 to 100 PSI within 45 seconds in dual air systems. (If the vehicle has larger than minimum air tanks, the buildup time can be longer and still be safe. Check the manufacturer's specifications.) In single air systems (pre-1975), typical requirements are pressure buildup from 50 to 90 PSI within 3 minutes with the engine at an idle speed of 600-900 RPM.

If air pressure does not build up fast enough, your pressure may drop too low during driving, requiring an emergency stop. Do not drive until you get the problem fixed. 11

7. Test Air Leakage Rate.

a. Engine off, all brakes off. With a fully-charged air system (typically 125 PSI) and wheels chocked, turn off the engine, release all brakes, and time the air pressure drop. The loss rate should be less than 2 PSI in one minute for single vehicles and less than 3 PSI in one minute for combination vehicles.

b. Engine off, service brakes applied. Apply 90 PSI or more with the brake pedal. After the initial pressure drop, the loss rate should be less than 3 PSI in one minute for single vehicles and less than 4 PSI in one minute for combination vehicles. Check for air leaks and fix them before driving the vehicle. Otherwise, you could lose your brakes while driving.

8. Check Air Compressor Governor Cut-in and Cut-out Pressures. Pumping by the air compressor should start at about 100 PSI and stop at about 125 PSI. (Check manufacturer's specifications.) Run the engine at a fast idle. The air governor should cut-out the air compressor at about the manufacturer's specified pressure. The air pressure shown by your gauge(s) will stop rising. With the engine idling, step on and off the brake to reduce the air tank pressure. The compressor should cut-in at about the manufacturer's specified cut-in pressure. The pressure should begin to rise.

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If the air governor does not work as described above, it may need to be fixed. A governor that does not work properly may not keep enough air pressure for safe driving.

9. Test Parking Brake. Stop the vehicle, put on the parking brake, and gently pull against it in a low gear to test that the parking brake will hold. If the vehicle moves significantly, have a mechanic inspect the brake system.

10. Test Service Brakes. Wait for normal air pressure, release the parking brake, move the vehicle forward slowly (about 5 mph), and apply the brakes firmly using the brake pedal. Note any vehicle "pulling" to one side, unusual feel, or delayed stopping action. This is not normal; a mechanic inspect the brake system.

These tests may identify problems which you otherwise wouldn't know about until you needed the brakes on the road.

HYDRAULIC BRAKE CHECK

a. Test for hydraulic leaks. Pump the brake pedal three times. Then apply firm pressure to the pedal and hold for five seconds. The pedal should not move. If it does, there may be a leak or other problems. Have a mechanic inspect.

b. Test service brake stopping action. Move the vehicle forward slowly (about 5 mph), apply the brakes firmly using the brake pedal. Note any "pulling" to one side, unusual feel, or delayed stopping action. This is not normal; a mechanic inspect the brake system.

c. Test Parking Brake. Stop the vehicle, put on the parking brake, and gently pull against it in a low gear to test that the parking brake will hold. If the vehicle moves significantly, have a mechanic inspect the brake system.

11. During Freezing weather, be sure to drain all water out of the pump. This can be done in the following manner:

- Open discharge and suction valves halfway, and remove suction tube and discharge valve caps, and suction valve plugs
- On two stage pumps, move transfer valve to both volume and pressure positions
- Open all drain valves and bleeders
- Operate primer for 10 seconds when water stops draining
- Replace caps and close valves

After pumping salt water, hook pump to a fresh water hydrant or other source of fresh clean water, and pump for a few minutes to clean out the salt water.

After pumping water containing sand or other foreign matter, flush as above and flush out all discharge valves, drain lines, relief valve lines, and cooling lines.