

Air Brake System Operational Checks

Truck, Bus and Tractor Trailer Combination



1. Build the air system to governor cut-out (120-135 psi), release the parking (spring) brakes and cycle the service brake pedal until the compressor cuts-in.

Note the cut-in pressure, minimum 85 psi bus, 100 psi truck/tractor (*FMVSS 571.121 S5.1.1.1*). With the compressor cut-in (pumping) and the engine at idle, cycle the service brake pedal again until pressure is between 80 & 90 psi, make a full service brake application and hold. The air compressor is required to maintain or build the system pressure (*CVSA Out of Service Criteria h.(1)(2)(3)(4)*). If system pressure does not maintain or build, repairs must be made to address leaks or failed components. For Federal Annual Inspection purposes; no audible air leakage is allowed (*FMCSR Appendix G section 1. Brake Systems*). Release the foot pedal and establish full system pressure. Set the parking brakes and shut off engine.

2. Determine the location of the air reservoirs; wet (supply), front service (secondary), and rear service (primary) reservoirs.

3. With the engine off and the ignition switch on, drain the wet tank. The two service reservoir gauges or single gauge with two needles should remain unaffected (120-135 psi) (*FMVSS 571.121 S5.1.2.3*) and the low air warning device should activate at below 60 psi (light or buzzer) (*FMVSS 571.121 S5.1.5, FMCSR 393.51 and CVSA Out of Service Criteria (g)*). If either or both gauges move at all, one or more one-way check valves are defective and require replacement.

4. Drain the front service reservoir. The rear service reservoir gauge or needle should remain unaffected (*FMVSS 571.121 S5.1.2.3*) while the other gauge or needle will fall to zero. If both gauges or needles fall, one or more check valves are defective and require replacement. The low air warning device should activate below 60 psi (*FMVSS 571.121 S5.1.5 and CVSA Out of Service Criteria (g)*).

5. Insure the parking (spring) brakes can be released (FMVSS 571.121 S5.6.5.1). If the rear service reservoir gauge reads more than 100 psi, drain to approximately 100 psi. Have someone in the cab make a full service

brake application and hold. Check to insure there is a rear axle brake application, this is the Emergency Brake System (*FMVSS 571.121 S5.7.2*). This is a good time to measure each rear brake chamber pushrod stroke (see *CVSA Out of Service Criteria paragraph 1.a. Part II* or *FMCSR Appendix G, section 1.(5)* for required stroke).

6. Close all reservoir drain valves and run the engine to once again reach governor cut-out. Set the parking (spring) brakes and turn off engine.

7. Drain the rear service reservoir. The front service reservoir gauge or needle should remain unaffected (*FMVSS 571.121 S5.1.2.3*) while the other gauge or needle will fall to zero. If both gauges or needles fall, one or more check valves are defective and require replacement. The low air warning device should activate below 60 psi. (*FMVSS 571.121 S5.1.5, FMCSR 393.51 and CVSA Out of Service Criteria (g)*).

8. Insure the parking (spring) brakes can be released (FMVSS 571.121 S5.6.5.1). If the front service reservoir gauge reads more than 100 psi, drain to approximately 100 psi. Have someone in the cab make a full service brake application and hold. Check to insure there is a front axle brake application, this is the Emergency Brake System (*FMVSS 571.121 S5.7.2*). On a truck, bus or a truck/tractor a modulated rear axle spring brake application should be noted (this indicates the Haldex Inversion Valve or Bendix SR-1 Valve is operating correctly). It should be noted that some vehicles do not require a modulated spring brake application, check with the vehicle or brake manufacture to determine this. This is a good time to measure the pushrod stroke of each front brake chamber (see *CVSA Out of Service Criteria paragraph 1.a. Part II* or *FMCSR Appendix G, section 1.(5)* for required stroke).



End of Truck
& Bus Section.
See Tractor Trailer
Section on the
Reverse Side.

Air Brake System Operational Checks

Tractor Trailer Combination



9. Close all tractor reservoir drain valves and run the engine to once again reach governor cut-out. Release both the tractor and trailer parking (spring) brakes and turn off engine.

10. Drain the trailer air reservoir(s) to achieve approximately 100 psi system pressure as indicated by the tractor air gauge(s). Have someone in the cab make a full service brake application and hold (do not use the trailer hand control valve if equipped). Measure the pushrod stroke of each trailer brake chamber (*CVSA Out of Service Criteria paragraph 1.a. Part II* and *FMCSR Appendix G, section 1.(5)* for required stroke).

11. Drain the trailer air reservoir(s) completely and insure that none of the trailer brakes apply (*FMVSS 571.121 S5.8.4*). A clear ringing noise while tapping on each drum with a wrench indicates no shoe contact.

12. Close the trailer reservoir drain valve(s) and run the engine to once again reach governor cutout. Insure all parking (spring) brakes remain in the released position and turn off engine.

13. At the rear of the tractor, uncouple the service and emergency gladhands. Note that air will escape for a time from the tractor emergency gladhand, but should stop shortly. The tractor and trailer parking brake control valves should have automatically applied (automatic actuation is not required but usually does). Make a full service brake application (foot valve) and make sure no air escapes from either of the tractor's gladhands. If air does escape from either tractor gladhand, the tractor protection valve is defective and requires replacement. The tractor air system is required to have enough air at this time to make one controlled stop (there is no pressure requirement)(*FMVSS 571.121 S5.1.3* and *FMCSR 393.43(a)*).

14. Other than a very brief burst of air from the "trailer" emergency gladhand there should be no air venting from either trailer gladhand after uncoupling (*FMCSR 393.43(e)*). Insure that all brakes on all axles are in the applied (parked) position. A dead "clunk" sound while tapping each drum with a wrench indicates solid shoe to drum contact. The trailer's parking (spring) brakes are considered to be emergency brakes and are required to hold for at least 15 minutes, axles without spring brakes must apply and hold using air. (*FMVSS 571.121 S5.1.3* and *FMCSR 393.43(d)(e)*).

15. Reconnect the tractor to trailer gladhand connections. Run the engine to once again reach governor cutout and release all the parking brakes and turn off engine.

16. Have someone cycle the service brakes (foot valve) until the trailer brakes are seen to automatically apply. Note the air system pressure according to the dash gauges. The trailer emergency brakes are required to automatically apply when the tractor's air system falls between 20-45 psi.

Note: As long as the trailer brakes actuate, it is not required that the trailer dash valve actually pop (*FMCSR 393.43(b)*).

NOTICE:

This checklist is to be used for reference and training purposes only. The information presented here is correct and current to the best of our knowledge and belief, and is compiled from reliable and official sources. However, regulations, standards and other guidelines are subject to change.

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