

Constellation
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Western Star
Service Bulletin

Primary Air System Leak Test

Air leaks may be found using a soap and water solution or by placing a hand in the area where a leak is heard. When the technician's hand is by the leak or a component is moved, there is an audible change from the air leak that may help identify where the leak is.

1. The vehicle air tanks must be drained before starting this procedure. Pump the brakes repeatedly to drain the air tanks.
2. Once the air tanks are drained, remove the air dryer fill port plug, and connect a dial pressure gauge to the air dryer fill port. Ensure that the cutoff valve is closed.

NOTE: If the vehicle has been exposed to high ambient temperatures for an extended period of time before being brought into the shop, additional time must be allowed for the air tanks to stabilize to the ambient shop temperature.

3. Start the vehicle and allow it to fully pressurize the air tanks. Turn the vehicle off once the compressor shut-off switch activates. The air tanks must be allowed to stabilize for 10 minutes before any readings are taken.
4. When the tanks have stabilized, note the air pressure and start a timer for 15 seconds. After 15 seconds, note the air pressure. Did the air pressure drop more than 0.5 psi (3 kPa)?

YES → Go to step 5.

NO → Remove the gauge. There is no warrantable leak present; further diagnostics are not needed.

5. Monitor the primary air gauge in the instrument cluster. Note the air pressure and start a timer for 5 minutes. After 5 minutes, note the air pressure. Did the air pressure drop more than 10 psi (69 kPa)?

YES → There is a leak in the primary air system. Go to step 6.

NO → There is a leak in the secondary air system. Go to "Secondary Air System Leak Test."

6. Inspect the primary air tank for cracks. Are there any cracks present on the tank?

YES → Replace the primary air tank.

NO → Go to step 7.

7. Inspect the air line from the primary air tank to the service brake control valve/pedal assembly. Are there any leaks present?

YES → Replace the air line and fittings as necessary.

NO → Go to step 8.

8. Inspect the service brake control valve and pedal assembly and any connected air lines. Are there any leaks present?

YES → Replace the service brake control valve and pedal assembly and air lines as necessary.

NO → Go to step 9.

9. Use a hood prop or other type of tool to actuate and hold the brake pedal in place. Actuate the service brake with a 30 psi (207 kPa) brake application for 30 seconds. Exit the cab and look at the digital pressure gauge. Does the air pressure drop?

YES → Check the primary air system for leaks from the brake valve to the brake chambers and repair as necessary.

NO → Remove the hood prop or tool used to actuate and hold the brake pedal in place and go to step 10.

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10. Inspect the air line between the service brake control valve and pedal assembly and the trailer air valve. Are there any leaks present?
YES → Replace the air line and fittings as necessary.
NO → Go to step 11.
11. Inspect the trailer air valve assembly and any connected air lines. Are there any leaks present?
YES → Replace the trailer air valve assembly and air lines as necessary.
NO → Go to step 12.
12. Inspect the air line from the primary air tank to the rear air brake valve assembly. Are there any leaks present?
YES → Replace the air line and fittings as necessary.
NO → Go to step 13.
13. Inspect the rear air brake valve assembly and any connected air lines. Are there any leaks present?
YES → Replace the rear air brake valve assembly and air lines as necessary.
NO → Go to step 14.
14. Inspect the air lines from the rear air brake valve assembly to the rear air brake chambers. Are there any leaks present?
YES → Replace the air line and fittings as necessary.
NO → Go to step 15.
15. Inspect the rear air brake chambers. Are there any leaks present?
YES → Replace the rear air brake chambers as necessary.
NO → Go to step 16.
16. Use a hood prop or other type of tool to actuate and hold the brake pedal in place. Actuate the service brake with a 30 psi (207 kPa) brake application for 30 seconds. Exit the cab and look at the digital pressure gauge. Does the air pressure drop?
YES → Check the primary air system for leaks from the rear air brake valve to the rear brake chambers and repair as necessary.
NO → If this procedure did not fix the issue, remove the hood prop or tool used to actuate and hold the brake pedal in place and go to the "Secondary Air System Leak Test."

Secondary Air System Leak Test

1. Inspect the primary air tank for cracks. Are there any cracks present on the tank?
YES → Replace the secondary air tank.
NO → Go to step 2.
2. Inspect the air line from the secondary air tank to the service brake control valve and pedal assembly. Are there any leaks present?
YES → Replace the air line and fittings as necessary.
NO → Go to step 3.

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3. Inspect the air line from the service brake control valve and pedal assembly to the air manifold pass-through unit. Are there any leaks present?
YES → Replace the air line and fittings as necessary.
NO → Go to step 4.
4. Inspect the air manifold pass-through unit. Are there any leaks present?
YES → Replace the air manifold pass-through unit and/or air lines as necessary.
NO → Go to step 5.
5. Inspect the air line from the air manifold pass-through unit to the trailer hand brake. Are there any leaks present?
YES → Replace the air line and fittings as necessary.
NO → Go to step 6.
6. Inspect the trailer hand brake assembly. Are there any leaks present?
YES → Replace the trailer hand brake assembly.
NO → Go to step 7.
7. Inspect the air line from the air manifold pass-through unit to the park brake air valve. Are there any leaks present?
YES → Replace the air line and fittings as necessary.
NO → Go to step 8.
8. Inspect the parking brake air valve and any connected air lines. Are there any leaks present?
YES → Replace the parking brake air valve and air lines as necessary.
NO → Go to step 9.
9. Inspect the air line from the parking brake air valve to the air brake chamber. Are there any leaks present?
YES → Replace the air line and fittings as necessary.
NO → Go to step 10.
10. Inspect the air brake chamber assembly. Are there any leaks present?
YES → Replace the air brake chamber assembly.
NO → Go to step 11.
11. Inspect the air lines from the air manifold pass-through valve to the parking brake control valve. Are there any leaks present?
YES → Replace the air lines and fittings as necessary.
NO → Go to step 12.
12. Inspect the parking brake control valve assembly. Are there any leaks present?
YES → Replace the parking brake control valve assembly.
NO → Go to step 13.
13. Inspect the parking brake pressure switch on the air manifold pass-through valve. Are there any leaks present?

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YES → Replace the parking brake pressure switch.

NO → Go to step 14.

14. Inspect the exhaust line on the air manifold pass-through valve. Are there any leaks present?

YES → Replace the air line and fittings as necessary.

NO → Go to step 15.

15. Inspect the air line from the secondary air tank to the front air brake valve. Are there any leaks present?

YES → Replace the air line and fittings as necessary.

NO → Go to step 16.

16. Inspect the front air brake valve assembly. Are there any leaks present?

YES → Replace the air line and fittings as necessary.

NO → Go to step 17.

17. Inspect the air lines from the front air brake valve assembly to the front air brake chambers. Are there any leaks present?

YES → Replace the air lines and fittings as necessary.

NO → Go to step 18.

18. Inspect the front air brake chambers. Are there any leaks present?

YES → Replace the front air brake chambers.

NO → Go to step 19.

19. Inspect the air line from the secondary air system to the air horn. Are there any leaks present?

YES → Replace the air line and fittings as necessary.

NO → Go to step 20.

20. Inspect the air horn assembly. Are there any leaks present?

YES → Replace the air horn assembly and/or any air line(s) as necessary.

NO → Go to step 21.

21. Inspect the air lines from the secondary air system to the fifth wheel assembly. Are there any leaks present?

YES → Replace the air lines and fittings as necessary.

NO → Go to step 22.

22. Inspect the fifth wheel assembly. Are there any leaks present?

YES → Replace the fifth wheel assembly and air line(s) as necessary.

NO → Go to step 23.

23. Inspect the air line from the secondary air system to the engine fan. Are there any leaks present?

YES → Replace the air line and fittings as necessary.

NO → Go to step 24.

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24. Inspect the engine fan assembly. Are there any leaks present?
YES → Replace the engine fan assembly.
NO → Go to step 25.
25. Inspect the air lines from the secondary air system to the driver and passenger seats. Are there any leaks present?
YES → Replace the air lines and fittings as necessary.
NO → Go to step 26.
26. Inspect the driver and passenger seats. Are there any leaks present?
YES → Replace the seats and/or any air lines and fittings as necessary.
NO → Go to step 27.
27. Actuate (raise or lower and hold) the seat and watch the dash gauges. Does the air pressure decrease?
YES → Replace any air lines and fittings as necessary.
NO → Go to step 28.
28. Inspect the front axle air suspension. Are there any leaks present?
YES → Replace the air bags and/or any air lines and fittings as necessary.
NO → Go to step 29.
29. Inspect the rear axle air suspension. Are there any leaks present?
YES → Replace the air bags and air lines and fittings as necessary.
NO → Go to step 30.
30. Inspect the cab air suspension. Are there any leaks present?
YES → Replace the air bags and air lines and fittings as necessary.
NO → Go to step 31.
31. Inspect the air lines that go to the transmission. Are there any leaks present?
YES → Replace the air lines and fittings as necessary.

Warranty

This is an informational bulletin only. Warranty does not apply.