California Department of Education
Office of School Transportation

Dual Air System (Spring Brakes)
THIS INSPECTION MAY EXCEED MINIMUM LEGAL REQUIREMENTS.
BLOCK WHEELS IF NECESSARY

Air Governor Adjustment
13 CCR 1061

1. Using appropriate and safe procedures, (i.e, park brake applied, transmission in neutral, clutch disengaged if equipped) start the engine to build up air pressure. Ensure the parking brake is applied.
2. CUT-OUT. When air governor cut-out pressure is reached, *note the pressure. (max. 130 psi)
3. CUT-IN. Apply and release service brake pedal gently to allow the air pressure to drop and the air governor to cut in. *Note the pressure when it begins to rise.(min 85 psi) Allow the system to build back to cut-out pressure.

Air Leakage Rates
13 CCR 1245(k)(1)

Air Leakage Rates
13 CCR 1245(k)(2)

4. STATIC TEST. Place the vehicle in first or reverse gear if equipped with manual transmission. If the vehicle is equipped with an automatic transmission place vehicle in park or ensure the vehicle will not move when parking brake is released. Shut the engine off, and check the pressure gauge(s) for one minute. Note any pressure drop (2 psi per minute allowed).

5. APPLIED TEST. Release the parking brake. Make a full service brake application, after the gauge(s) stabilize, hold for one minute observing any drop in pressure. (3 psi per minute allowed). *Note the amount of air required to make a full service brake application.

Warning Signal
49 CFR
571.121.5.1.5
Warning Device
VC 26506(a)
13 CCR 1246(b)

6. LOW AIR WARNING DEVICES. (If the front and rear air systems <u>cannot</u> be drained separately.) Turn on ignition, do not start engine. Apply and release the service brake pedal gently until the low air warning devices activate. (must activate no lower than 60 psi.)

If systems can be drained separately by the driver.

6.a. LOW AIR WARNING DEVICES, FRONT. (If the front and rear air systems <u>can</u> be drained separately.) Turn on ignition, do not start engine. Drain the air in the front service system until the low air pressure warning device actuates (no lower than 60 psi).*Note the pressure. (When draining air from either front or rear service systems, air in the tank not depleted should remain intact. Loss of air in the tank not depleted might indicate a faulty check valve.)

6.b. EMERGENCY STOPPING SYSTEM. Continue to reduce the air pressure to zero psi, then release the parking brake, start the engine and immediately move the vehicle. Depress the clutch if so equipped, and apply the emergency stopping system by using the service brake pedal. The system should have rear service brakes only

Warning Signal
49 CFR
571.121.S.1.5

6.c LOW AIR WARNING DEVICES, REAR. Start engine. Allow the air system to build to at least 100 psi and repeat steps 6a and 6b for the rear service system test. The system should have front service brakes and rear brakes applied by modulated release of air from the spring brake chamber.

Parking Brake System
VC 26451(a)

7. PARKING BRAKE. Start engine. Allow the air system to build to no less than 100 psi, release the parking brake and move the vehicle a short distance. Depress the clutch if so equipped and apply the parking brake.

CHP HPH 82.7
Annex B

8. SERVICE BRAKE. Make a stop to test the function of the service brakes before picking up passengers.

This inspection procedure is not conclusive as to brake adjustment status

* Cut-out, cut-in, application and low air warning pressures should be consistent for each pre-trip inspection. Noticeable changes from previous inspection should be communicated to maintenance staff.

Example of Dual Air System Park Brake Valve

California Department of Education
Office of School Transportation

Modulated Air System (Spring Brakes)
THIS INSPECTION MAY EXCEED MINIMUM LEGAL REQUIREMENTS.
BLOCK WHEELS IF NECESSARY
This system does not automatically apply

Air Governor Adjustment
13 CCR 1061

1. Using appropriate and safe procedures, (i.e, park brake applied, transmission in neutral, clutch disengaged if equipped) start the engine to build up air pressure. Ensure that the parking brake is applied.
2. CUT-OUT. When air governor cut-out pressure is reached, *note the pressure. (max. 130 psi)
3. CUT-IN. Apply and release service brake pedal gently to allow the system air pressure to drop and the air governor to cut in. (pressure should begin to rise at or above 85 psi), *Note the pressure. Allow the system to build back to cut-out pressure.

Air Leakage Rates
13 CCR 1245(k)(1)

Air Leakage Rates
13 CCR 1245(k)(2)

4. STATIC TEST. Shut the engine off, and check the pressure gauge(s) for one minute. *Note any pressure drop (2 psi per minute allowed). Place the vehicle in first or reverse gear if equipped with manual transmission. If the vehicle is equipped with an automatic transmission place vehicle in park or ensure the vehicle will not move when parking brake is released
5. APPLIED TEST. Release the parking brake. Make a full service brake application, after the gauge(s) stabilize, hold for one minute observing any drop in pressure. (3 psi per minute allowed). *Note the amount of air required to make a full service brake application.

Warning Device
VC 26506(b)
13 CCR 1246(b)

6. LOW AIR WARNING DEVICES. Turn on ignition, do not start engine. Apply and release the service brake pedal gently to allow low air warning devices to activate. (Warning devices must activate between 55 psi and 75psi.)*Note the pressure

Emergency Stopping System
VC 26508 (f)

7. EMERGENCY STOPPING SYSTEM. Continue to reduce the air pressure to 0 psi. Start the engine and immediately move the vehicle a short distance. Depress the clutch if equipped and apply the emergency stopping system with the modulated hand control valve.
8. SERVICE BRAKE. Allow the air system to build to no less than 100 psi. Make a stop to test the function of the service before picking up passengers.

This inspection procedure is not conclusive as to brake adjustment status

* Cut-in, cut-out, application and low air warning pressures should be consistent for each pre-trip inspection. Noticeable changes from previous inspection should be communicated to maintenance staff.

Example of Modulated Park Brake Valve

California Department of Education
Office of School Transportation

Automatic Actuated Air System (Spring Brakes)
THIS INSPECTION MAY EXCEED MINIMUM LEGAL REQUIREMENTS.
BLOCK WHEELS IF NECESSARY
This system does automatically apply

Air Governor Adjustment
13 CCR 1061

1. Using appropriate and safe procedures, (i.e, park brake applied, transmission in neutral, clutch disengaged if equipped) start the engine to build up air pressure. Ensure that the parking brake is applied.
2. CUT-OUT. When air governor cut-out pressure is reached, *note the pressure. (max. 130 psi)
3. CUT-IN. Apply and release service brake pedal gently to allow the system air pressure to drop and the air governor to cut in. (pressure should begin to rise at or above 85 psi), *Note the pressure. Allow the system to build back to cut-out pressure.

Air Leakage Rates
13 CCR 1245(k)(1)

Air Leakage Rates
13 CCR 1245(k)(2)

4. STATIC TEST. Shut the engine off, and check the pressure gauge for one minute. Note any pressure drop (2 psi per minute allowed). Place the vehicle in first or reverse gear if equipped with manual transmission. If the vehicle is equipped with an automatic transmission place vehicle in park or ensure the vehicle will not move when parking brake is released.
5. APPLIED TEST. Release the parking brake. Make a full service brake application, after the gauge(s) stabilize, and hold for one minute observing any drop in pressure. (3 psi per minute allowed). *Note the amount of air required to make a full service brake application.

Warning Device
VC 26506(b)
13 CCR 1246(b)

6. LOW AIR WARNING DEVICES. Turn on ignition, do not start engine. Apply and release the service brake pedal gently to allow low air warning devices to activate. (warning devices must activate between 55 psi and 75psi.)*Note the pressure

Emergency Stopping System
VC 26508 (f)

7. EMERGENCY STOPPING SYSTEM. Continue to reduce the air pressure and *note the pressure at which the automatic brake application occurs. Release the emergency stopping system. Start the engine and immediately move the vehicle a short distance. Depress the clutch if equipped and reapply the emergency stopping system using the hand operated push/pull valve.

CHP HPH 82.7
Annex B

8. SERVICE BRAKE. Allow the air system to build to no less than 100 psi. Make a stop to test the function of the service brakes before picking up passengers.

This inspection procedure is not conclusive as to brake adjustment status

* Cut-in, cut-out, application, low air warning and automatic activation pressures should be consistent for each pre-trip inspection. Noticeable changes from previous inspection should be communicated to maintenance staff.

Example of Automatic Actuated Valves
(Lower Application Valve; Upper Emergency Release Valve)

California Department of Education
Office of School Transportation

DD3 System (Air Applied)
THIS INSPECTION MAY EXCEED MINIMUM LEGAL REQUIREMENTS.
BLOCK WHEELS IF NECESSARY

Air Governor Adjustment
13 CCR 1061

1. Using appropriate and safe procedures, (i.e, park brake applied, transmission in neutral, clutch disengaged if equipped) start the engine to build up air pressure. Ensure that the parking brake is applied.
2. CUT-OUT. When air governor cut-out pressure is reached, *note the pressure. (max. 130 psi)
3. CUT-IN. Apply and release service brake pedal gently to allow the system air pressure to drop and the air governor to cut in. (pressure should begin to rise at or above 85 psi), *Note the pressure. Allow the system to build back to cut-out pressure.

Air Leakage Rates
13 CCR 1245(k)(1)

Air Leakage Rates
13 CCR 1245(k)(2)

4. STATIC TEST. Place the vehicle in first or reverse gear if equipped with manual transmission. If the vehicle is equipped with an automatic transmission place vehicle in park or ensure the vehicle will not move when parking brake is released. Shut the engine off, and check the pressure gauge for one minute. Note any pressure drop (2 psi per minute allowed).
5. APPLIED TEST. Release the parking brake. Make a full service brake application, after the gauge(s) stabilize, and hold for one minute observing any drop in pressure. (3 psi per minute allowed). *Note the amount of air required to make a full service brake application.

Warning Signal
49 CFR
571.121.S.1.5
Warning Device
VC 26506(a)(b)
13 CCR 1246(b)

6. LOW AIR WARNING DEVICES. Turn on ignition, do not start engine. Apply and release the service brake pedal gently to allow low air warning devices to activate. (See VC 26506 to determine low air warning pressure .)*Note the pressure

Emergency Stopping System
VC 26508 (f)

7. EMERGENCY STOPPING SYSTEM. Continue to reduce the air pressure to 0 psi. Start the engine and immediately move the vehicle a short distance. Depress the clutch if equipped and apply the emergency stopping system valve.
8. SERVICE BRAKE. Allow the air system to build to no less than 100 psi. Make a stop to test the function of the service brakes before picking up passengers.

This inspection procedure is not conclusive as to brake adjustment status

* Cut-in, cut-out, application and low air warning pressures should be consistent for each pre-trip inspection. Noticeable changes from previous inspection should be communicated to maintenance staff.

Because of the variety of design and operation for this particular brake system, the instructor should use the original equipment manufacturer (OEM) brake inspection information as a guide in developing an effective brake inspection procedure for a particular vehicle. The OEM information can be found in the vehicle's owner's manual or may be obtained from the chassis manufacturer.

California Department of Education
Office of School Transportation

Hydraulic Brake System with Vacuum Booster, Vacuum Gauge and Storage Tank
BLOCK WHEELS IF NECESSARY

CHP HPH 83.2
Ch. 6

1. STATIC TEST Using appropriate and safe procedures, (i.e, park brake applied, transmission in neutral, clutch disengaged if equipped) start the engine allow the vacuum to reach maximum and shut off the engine. Check gauge for vacuum loss for one minute. (Should not exceed more than three inches of mercury)
2. APPLIED TEST Apply service brake pedal all the way down and hold. Check vacuum loss for one minute. (Should not exceed more than three inches of mercury)
3. FLUID LEAKS Maintain full application on the brake pedal. The pedal should feel firm. Any release of tension or movement of the pedal is an indication of a possible fluid leak.

VC 26521
13 CCR
1246 (b)

4. WARNING DEVICE TEST Turn on ignition. (DO NOT START ENGINE). Apply the brake pedal repeatedly to reduce vacuum. Note the point that the warning device activates. (Must activate at no less than eight inches of mercury.)
5. VACUUM BOOSTER Continue to reduce vacuum to zero, apply the brake pedal two or three times and then hold firm and start engine. When engine starts and vacuum is restored, the pedal should fall slightly (1/4 inch or more). This will indicate the vacuum booster is working. Should the vacuum booster fail, the primary backup system will be the hydraulic side of the brakes; however, should a complete hydraulic failure occur, the only remaining system will be the parking brake which is not designed to stop the vehicle in motion.
6. PARKING BRAKE
    A. Set the parking brake
    B. Attempt to move the vehicle forward gently, using minimal throttle. The vehicle should remain stationary.

California Department of Education
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Hydraulic Brake System with Power Steering Booster

General Information

These systems can be identified by following hydraulic supply and return lines between the power steering pump and the master cylinder. The brake system receives power assist from the power steering pump when the engine is running. When the engine is not running or the belt that drives the power steering pump is not in place, the power assist comes from a different source. For example, on some buses this emergency power assist is generated from an electric motor and pump attached to the master cylinder. This motor is designed to engage when the regular power assist is not working. This type of system can be tested by stepping on the brake pedal while the engine is off. By stepping on the brake pedal a “hum’’ should be heard meaning the electric motor has started running. The pedal should feel normal in reaction just as the engine is running. Also, a red light may appear on the dash with the word “brake” illuminated. This would indicate the emergency stopping system is working properly.

Because of the variety and design of hydraulic power brake systems and the operation of the warning devices, the instructor should use the original equipment manufacturer (OEM) brake inspection information as a guide in developing an effective brake inspection procedure for a particular vehicle. The OEM information can be found in the vehicle’s owner’s manual or may be obtained from the chassis manufacturer.