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**TAILGATE/TOOLBOX SAFETY TRAINING**
**Safety Services Company-Safety Meeting Division,**
**PO Box 6408 Yuma, AZ 85366-6408 Toll Free (866) 204-4786**

SAFETY SERVICES COMPANY

Job Name: _____ Job Site Location: _____

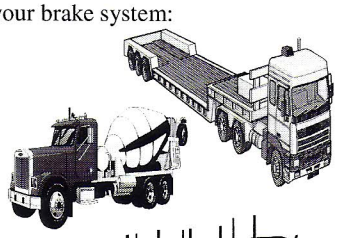
Date: _____ Start Time: _____ Finish Time: _____ Foreman/Supervisor: _____

# *Topic 424: Air Brake Safety (Part A – Inspection)*

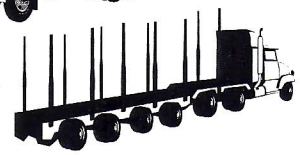
***Introduction***: Air brakes use compressed air to make brake systems work, and are a good, safe way of stopping large and heavy vehicles. Air brakes are used for three different systems of the vehicle: the service brakes, the parking brakes, and the emergency brakes. Air brakes must be well maintained and used properly to do the job they are designed for. Following are guidelines for pre-trip inspection of air brakes:

Most newer heavy-duty vehicles use dual air brake systems for safety. A dual air brake system has two separate air brake systems which use a single set of brake controls. Each system has its own set of air tanks, hoses, lines, etc. One system typically operates the regular brakes on the rear axle or axles. The other system operates the regular brakes on the front axle (and possibly one rear axle). Both systems supply air to the trailer if there is one. The first system is called the "primary" the other system is the "secondary".

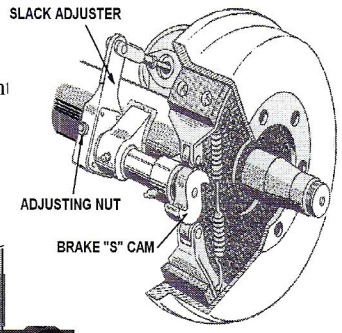
**Air Brake Inspection** – Use the basic seven-step procedure to inspect your vehicle, and check the following areas of your brake system:



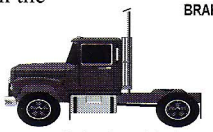




- **DO NOT FORGET TO CHOCK YOUR WHEELS**
- ***If the air tank drains were not left open*** at the previous shut down, drain the tanks completely before starting, then close the drain valve.
- ***Check the compressor drive belt*** (if the system is belt driven). Check the condition and adjustment of the belt.
- ***Check the rate of air pressure build-up***. At operating rpm the pressure should build from 85 to 100 psi within 45 seconds with dual air systems. In single air systems, the typical requirements are air pressure build-up from 50 to 90 psi within three minutes with the engine at idle of 600-900 rpm.
- ***Check air compressor governor***. The compressor should start pumping below 100 psi, and stop at approximately 120 psi ( Check manufacturer's specifications). At fast idle your air gauge should show the pressure build-up stops at around the 120 psi or manufacturer's specification. Pumping the brake pedal to reduce air pressure should show the compressor governor cutting in at around 100 psi.
- ***Test the air leakage rate***. With the system fully charged, turn off the engine and check the air pressure drop. The rate of drop should not be more than two psi in one minute for tractors, and no more than three psi per minute for tractor/trailer combination.
- ***Test the low pressure warning signal***. With electrical power on, pump the brakes to reduce pressure in the system. The low pressure warning signal must come on before the pressure drops to below 60 psi.
- ***Check that the spring brake comes on automatically***. Pump the brake pedal to reduce the air tank pressure. The "parking brake" knob should pop out when the pressure drops below the manufacturer's specification (usually between 20-40 psi).
- ***Check the manual slack adjusters on S-cam brakes.*** Park on level ground and chock the wheels. Release the brakes so that you can move the slack adjusters. Wear gloves and pull hard on each slack adjuster. If the slack adjuster moves more than about 1-inch where the push rod attaches to it, it needs adjustment. Out-of-adjustment brakes are the most common problem found on DOT road side inspections.




- ***Check brake drums, linings, and hoses***. Brake drums or discs must not have cracks longer than one-half the width of the friction area. Linings must not be loose or soaked with oil/grease, or excessively thin. Air hose connections must be tight, and hoses not be cut or broken, or worn from rubbing.
- ***Test the parking brake*** – Start the vehicle, put the parking brake on, and gently pull against it with the vehicle in low gear to ensure the brake will hold.
- ***Test the service brakes*** – With normal air pressure built-up, release the parking brake, move the vehicle forward slowly (about five mph) and apply the brake pedal firmly. Note any pulling to one-side of the vehicle, "skipping, unusual feel of the brakes, or delayed stopping action.



***Conclusion***: The compressed air used for the brake systems usually contains some moisture and compressor oil in it which condenses and gathers in the storage tanks. This oil and moisture collect in the bottom of the tanks, and are bad for the brake system. For example the water in the system can freeze in cold weather and cause brake failure. Be sure to open the tank drain valves when shutting down the vehicle for extended periods (overnight), and leave the valves open to drain. If the vehicle is equipped with an alcohol evaporator system to reduce moisture and prevent freezing, check the alcohol container and keep it filled daily in cold weather. See meeting **#425: Air Brake Safety (Part B),** for proper use of air brakes.

## *Work Site Review*

Work-Site Hazards and Safety Suggestions: _____

Personnel Safety Violations: _____

***Employee Signatures:*** ***(My signature attests and verifies my understanding of and agreement to comply with, all company safety policies and regulations, and that I have not suffered, experienced, or sustained any recent job-related injury or illness.)***

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***These guidelines do not supercede local, state, or federal regulations and must not be construed as a substitute for, or legal interpretation of, any OSHA regulations.***