



TODAYS AIR BRAKE SYSTEMS

Stopping a heavy-duty, air-braked vehicle is a conversion of energy. The energy of motion (vehicle and cargo traveling down the road at a speed) will be converted to the energy of heat (brakes applied and friction rubbing against the brake drum), which will allow the tire friction to the road to bring the vehicle to a complete stop in a safe distance.

Stopping a commercial vehicle by conversion of energy requires a variety of sub-systems that together are called the "brake system". These sub systems must all work together efficiently to stop the vehicle. These sub-systems are as follows:

- Air Supply: Air filter, air compressor, governor, air dryer, supply reservoir (wet tank), drain valves, pressure relief valves, single-check valve, primary and secondary reservoirs, low-pressure indicators
- Service (Primary And Secondary): Dual-circuit foot valve, front axle quick release/ABS modulator valve, rear axle relay valve/ABS modulator valve package, parking control & trailer charging valve module, spring brake relay or quick release valve, double check valves, tractor protection valve, stop lamp switch, in-line quick release valves, trailer supply and service coupling, service/spring brake chambers, service brake chambers
- PARKING: Parking control and trailer-charging valve module, tractor protection valve, trailer supply reservoir, spring brake chambers.
- FOUNDATION BRAKES: Brake spyder, brake anchor and pins, axle housing, S-cam and bushings, brake slack adjuster, brake service and parking chambers, brake chamber push rod and clevis and clevis pin, brake shoe retaining hardware, brake shoe return springs, brake drums, brake shoe table, friction material, wheel bearings, wheel seals and lubricants.

Each time a friction reline is required on a heavy-duty vehicle you must ask yourself, "Do all the components of all the sub systems function properly?" If you cannot answer this question, the proper operation of the braking system may be impaired.

Each component of each sub-system has a task to perform that will allow the entire brake system to function properly. Each component has a specification and task assigned to it. If an air intake system is allowed to clog, it can cause oil introduction to the air supply for the air brakes, which in turn will cause brake valves not to function. That in turn can cause brake valves to actuate at differing times causing axles to do more or less work than designed. This will cause axles to overheat, because they are not doing their share of the heat conversion. The first sign that there is something not in specifications is the premature wear or overheating of the friction material.

To think that all of this could be avoided by simply checking all components to insure that they do their tasks efficiently thus making the friction material last and safely stop the vehicle.