



U.S. Department
of Transportation

**Federal Railroad
Administration**

Memorandum

Date: June 15, 1998

Reply to Att. of: MP&E 98-41

Subject: Locomotive Brake Cylinder Pressure

From: Edward R. English
Director, Office of Safety Assurance and Compliance

To: Regional Administrators, Deputy Regional Administrators,
Motive Power & Equipment Specialists and Inspectors

There have been several recent questions concerning the minimum locomotive brake cylinder pressure required by the Federal regulations.

Section 229.55(c) states:

The minimum brake cylinder pressure shall be 30 pounds per square inch.

Section 232.10(n)(8) states:

Air pressure regulating devices must be adjusted for the following pressures: Self-lapping portion for independent air brake (full application pressure) 30-50 pounds.

These regulations were written when cast iron brake shoes were the standard and the brake cylinder relay air valve delivered 100 percent of the control pressure to the brake cylinders. With the advent of the high friction composition brake shoe, various relay valves have been used depending on whether the rigging was designed for cast iron or composition shoes. To best match the stop distance of cast iron, a two-step relay valve is used for composition shoes. One level is used for the automatic brake where speeds are generally above "switching" speeds and a higher level for the independent brake which is normally used in switching. By tailoring the relay valve to the locomotive, a standard independent brake valve setting can be used universally on a railroad. This setting is usually 45 psi. The resulting brake cylinder pressure may vary 27 psi (with a 60 percent relay) to 72 psi (with a 160 percent relay). The 60 percent relay valves (J-46 or J-64) are normally found on older locomotives which were converted from cast iron shoes with clasp rigging to composition shoes with clasp rigging.

The FRA considers such locomotives to be in compliance with the regulations.

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