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Air Brake System – Field Testing

by Christopher W. Ferrone¹ and Dror Kopernik²

ABSTRACT

It is often necessary to establish the integrity and adjustment of truck brake systems following an accident. This is not always a straightforward exercise because of the associated traumatic damage, resulting fire damage or new damage introduced during towing. Furthermore, improper procedures frequently compromise the determination of the brake adjustment. A simulator has been developed that ameliorates some of these problems.

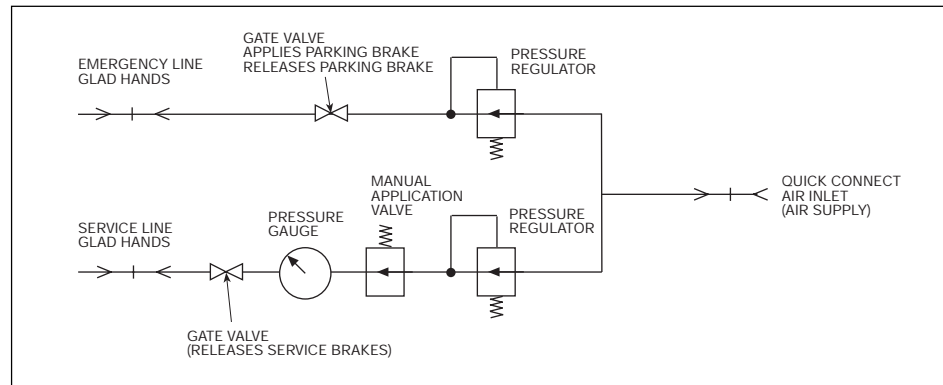


FIG. 1 SCHEMATIC OF SIMULATOR

The use of the simulator eliminates the common problems experienced during brake adjustment measurements in a post-accident environment:

- Measurements with unregulated air pressure
- System leaks creating false measurements
- Incomplete parking brake release

The simulator shown schematically in Fig. 1 introduces an application/release valve which acts as a service brake pedal or parking brake valve. This enables the vehicle to be tested in a condition as close to normal operation as possible. The simulator allows the braking system to be tested for adjustment and to determine overall system air leaks and their location. In the event of an air leak, the simulator can be connected directly to a brake chamber thus bypassing the leak. Furthermore, the simulator applies the brakes in a controlled manner with regulated air pressure ensuring test validity.

By using the simulator, engineers can diagnose air brake failures and accurately determine adjustments in a minimal amount of time. Fig. 2 shows typical simulator applications.

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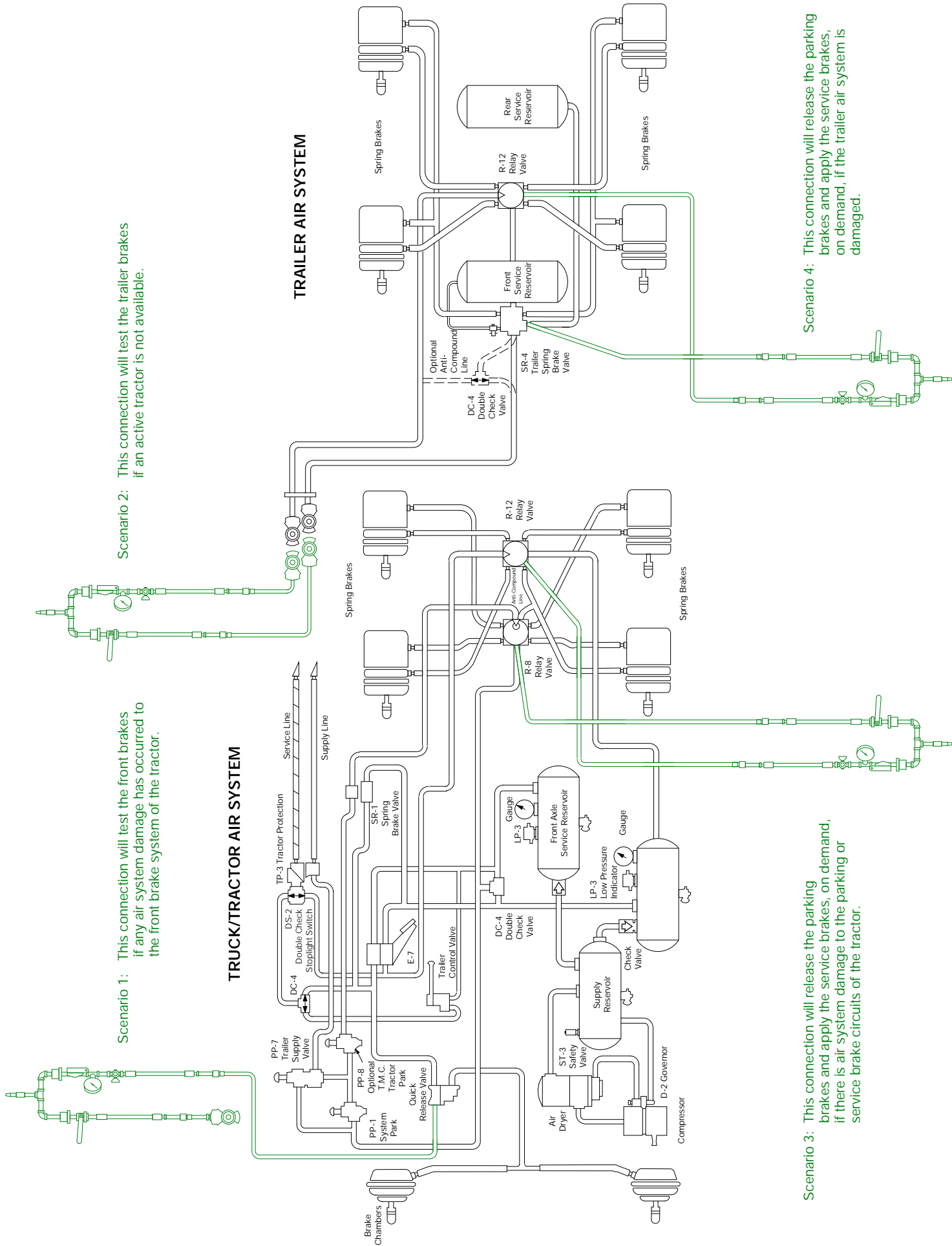


FIG. 2 TYPICAL SIMULATOR APPLICATIONS