

brakes the vacuum equipment adds its power to the driver's push on the master cylinder piston rod, thus making it easier for the driver to build up a high pressure in the hydraulic brake system.

ATMOSPHERIC SUSPENDED (SINGLE LINE) SYSTEM

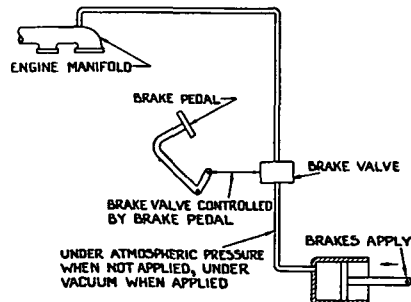


Figure 36

Layout of Atmospheric Suspended Vacuum Brake System (Single Line).

Figure 36 shows the layout of a single line (atmospheric suspended) vacuum power brake system. When the driver presses the brake pedal the brake valve is opened and the vacuum from the engine manifold causes the piston in the booster cylinder to move and thus help apply the brake. This system is called "Atmospheric suspended" because when the brake is off there is atmospheric pressure on both sides of the booster cylinder piston. When the driver presses the brake pedal opening the brake valve there is vacuum on one side of the piston and atmospheric pressure on the other side. Naturally under these conditions the piston moves and helps apply the brakes. As can be seen from the diagram this atmospheric system can be set up using only a single line from the brake control valve to the booster cylinder. Instead of "single line" or "atmospheric suspended," this system is sometimes referred to as simply an "air suspended" system. In certain installations, especially on trailers, the

brake valve is controlled by a hand lever rather than by the driver's foot operating through the brake pedal.

From an examination of the layout shown in Figure 36, it can be seen that each time the brakes are applied there is a quantity of raw air which travels into the engine manifold from the booster cylinder. It can be easily seen why this occurs when we remember that with this system, there is ordinary air pressure on both sides of the booster cylinder piston with the brakes not applied. Pressing the brake pedal opens the brake valve and removes the air from one side of the booster piston and this raw air travels into the engine manifold. With a large booster cylinder the amount of raw air traveling into the engine manifold is considerable and there is quite likely to be detrimental effects upon engine carburetion since the engine is usually at low gas throttle position when the brakes are applied. Therefore, in order to avoid this, we find that large booster cylinders can not be used successfully with the "atmospheric suspended" or "single line" system. Since large booster cylinders cannot be used successfully with this system, we find that the "Atmospheric suspended" system's use is limited to passenger cars, light trucks and in a few cases, light trailers.

VACUUM SUSPENDED (DOUBLE LINE) SYSTEM

Figure 37 shows a layout of the "vacuum suspended" or "double line" vacuum power brake system. This system is called "vacuum suspended" because there is vacuum on both sides of the booster cylinder piston when the brakes are not applied. The brake valve is therefore open to both lines A and B, thus admitting vacuum to both sides of the booster cylinder piston when the brakes are off. When the driver presses on the brake pedal he operates the brake valve