BRAKES

prevent the loss of fluid and, consequently, loss of braking pressure.

The brake fluid is forced from the master cylinder to a distributor type fitting mounted on the left frame side bar. From this distributor, three lines carry the fluid to the two front wheel cylinders and to the "T" fitting on the rear axle housing where it is directed to the two rear wheel cylinders. Brake lines are routed along the outside of the left frame side bar, away from the left exhaust system, to prevent overheating of the fluid and resultant loss of brake pedal.

The hand brake control assembly is mounted on the lower flange of the instrument panel at the left of the steering column. It is connected by a steel cable to a relay lever mounted on the frame side bar just in front of the left front body mounting bracket. This lever is connected by a second steel cable, to a lever on the frame X-member which operates the equalizer. A cable runs through the equalizer to each rear brake, where it actuates the brake shoes. The handle of the brake control is pulled straight out to apply the brakes, and turned counter-clockwise to release the brakes. An indicator light on the instrument panel cluster warns the driver when the hand brake is on while the ignition switch is "ON".

The brake stop light switch is operated mechanically by the brake pedal lever arm at its location beneath the toe board. When the brake pedal is depressed, the switch arm, under spring pressure, follows the brake lever downward until the switch is "On". When the brakes are released, the switch arm is returned to its normal "Off" position.

Rivited - on, brake shoe linings of high fade resistant quality are used on all 1954 series cars. The primary linings are grooved at the center to permit dissipation of heat from the surface of the brake drum, resulting in better brake performance and longer lining life.

The brake backing plate flange extends into a groove, formed in the edge of the brake drum, to form an effective trap against water splash, road dirt, or other foreign material.

Hydrovac

A vacuum operated Power Brake booster assembly is available as an accessory on all 1954 Cadillac cars. This unit, which is connected in the fluid pressure line between the master cylinder and the brake line distributor fitting on the frame side bar, reduces the amount of foot pedal pressure required to stop the car by utilizing manifold vacuum and atmospheric pressure. The brake pedal height

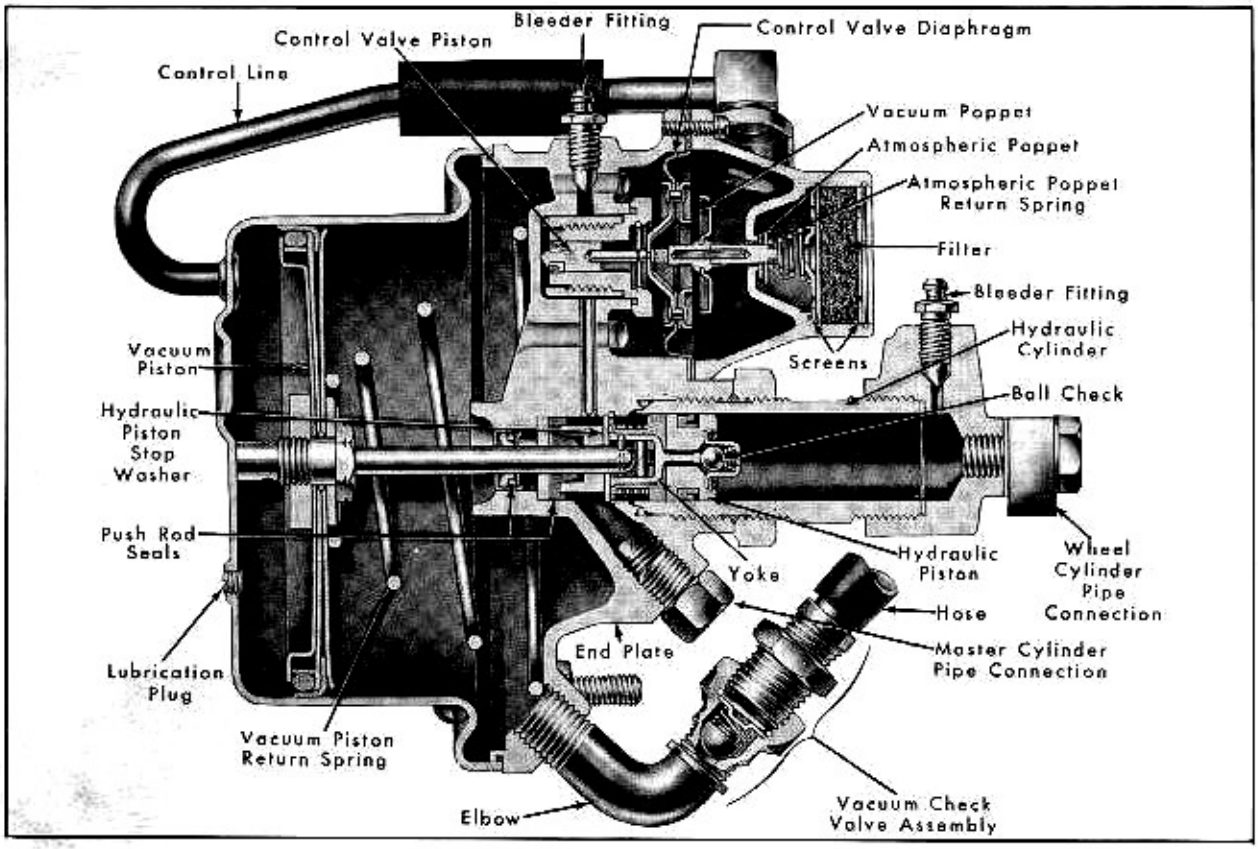

Fig. 9-1 Power Brake Cut-Away View

BRAKES

on cars equipped with the Factory installed Power Brake, is 7/8" lower than that on cars without this accessory.

The Power Brake, Fig. 9-1, consists of three basic units, designed to function as a single assembly and controlled by hydraulic pressure developed in the master cylinder. These three units are:

1. A vacuum power cylinder which contains a piston and a push rod which connects the vacuum piston to the hydraulic piston in the hydraulic cylinder.

2. A hydraulic cylinder which contains a piston with a check valve.

3. A hydraulically actuated vacuum control valve which regulates the degree of brake application or release. This control valve consists of a hydraulically actuated piston, a diaphragm, and an atmospheric and vacuum poppet.

Manifold vacuum is directed to the power brake cylinder through a hose attached to the front of the intake manifold. A check valve in the line between the intake manifold and the power brake serves a dual function:

1. It prevents damage to the power brake in the event of an engine backfire.

2. It traps vacuum in the unit at the highest manifold depression under operating conditions (usually 15 to 22 inches). This trapped vacuum is sufficient to make at least one brake stop with power assist even when manifold vacuum is very low or non-existent.

When the brake pedal is in the released position, the areas on both sides of the vacuum diaphragm

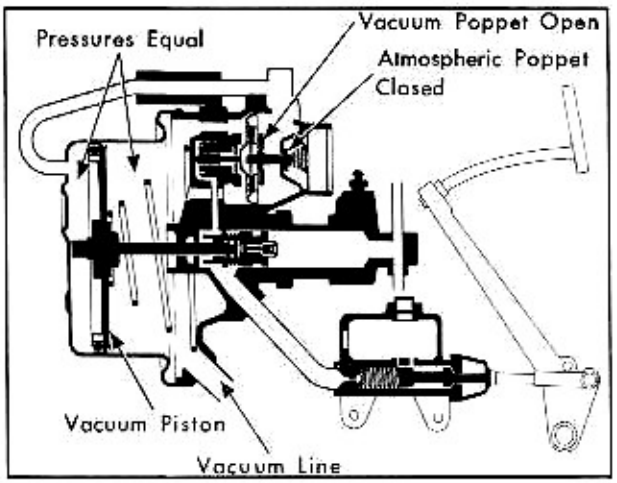

Fig. 9-2 Power Brake Operation - Released Position

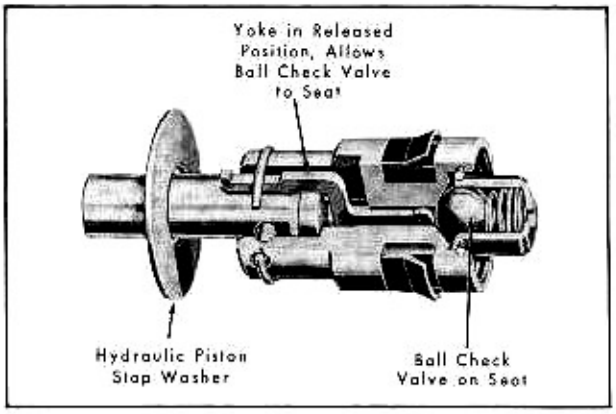

Fig. 9-3 Hydraulic Piston Assembly

and the power piston, Fig. 9-2, are exposed to manifold vacuum.

As the brake pedal is depressed, the hydraulic pressure developed in the master cylinder is transmitted to the power brake hydraulic cylinder and to the hydraulic piston in the vacuum control valve. As the hydraulic piston in the hydraulic cylinder is against the stop washer when the pedal is first depressed, the check ball in the piston is held off of its seat by the hydraulic piston yoke, Fig. 9-3. This allows fluid from the master cylinder to pass through the piston directly to the wheel cylinders. This safety feature permits normal operation of the standard brake system when the engine is not running or in the event that the power system should fail.

Fluid under pressure is also directed to the hydraulic piston in the vacuum control valve. As

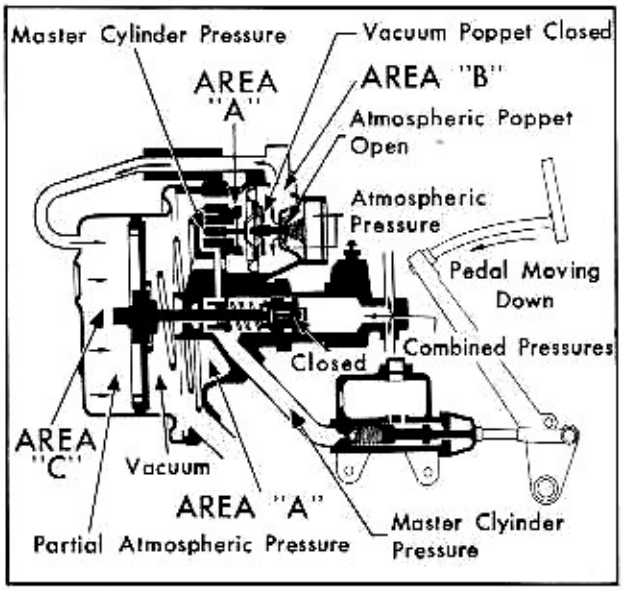

Fig. 9-4 Power Brake Operation - Brakes Applied

fluid pressure moves this piston, it actuates the vacuum diaphragm control shaft and forces the diaphragm against the vacuum poppet valve, sealing off area "B" from manifold vacuum. Continued movement of the piston (and the diaphragm) forces the atmospheric poppet valve off of its seat and admits air under atmospheric pressure through area "B", to area "C". The pressure differential between areas "C" and "A" forces the vacuum piston and push rod toward the hydraulic cylinder. The push rod, attached to the hydraulic piston, forces the hydraulic piston and yoke away from the stop washer, permitting the check valve to close and trap fluid under pressure ahead of the piston. From this point, the total hydraulic pressure, developed in the hydraulic power cylinder and transmitted to the wheel cylinders, is the sum of the push rod pressure and the pressure developed in the master cylinder. Fig. 9-4.

The degree of power brake assist is regulated in the vacuum control valve assembly by controlling the pressure differential between area "B" and "D". Here, hydraulic pressure against the piston is opposed by air pressure and spring pressure on the area "B" side of the diaphragm, when the diaphragm is in contact with the vacuum poppet valve. As the pressure in area "B" increases, (while the atmospheric popper is open) the force against the vacuum valve and the diaphragm also increases, tending to close the atmospheric valve. Therefore, the degree of power assist is proportional to hydraulic pressure on the small hydraulic piston and consequently it is proportional to foot pedal pressure.

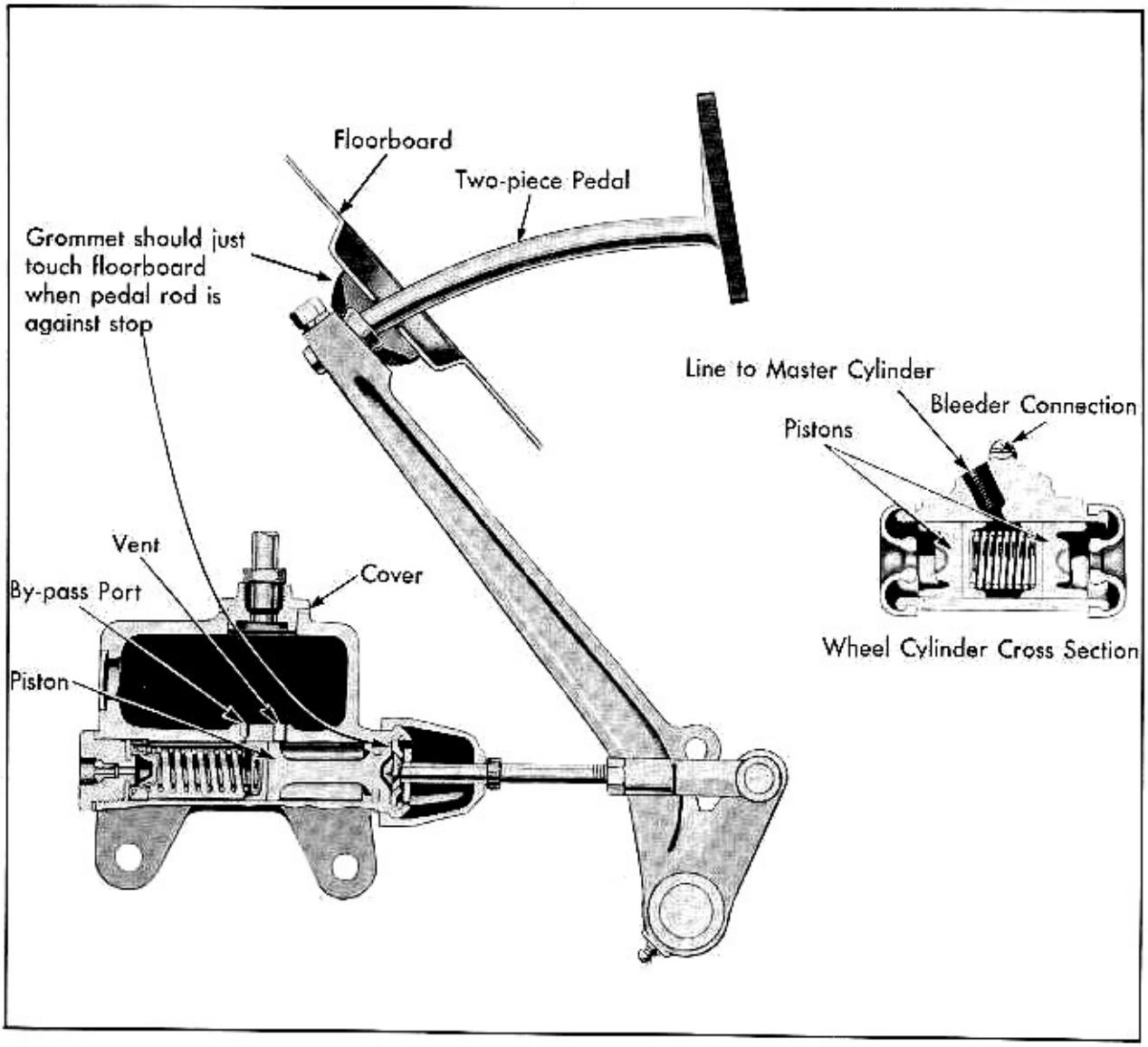

Fig. 9-5 Brake Master Cylinder and Pedal