

pressurized fluid is prevented from leaking by a fluid seal fitted into the cylinder wall. The seal is pressed, against the piston, and instead of sliding when the piston moves, the seal is only distorted, allowing no fluid leakage at all. When the brake lever or pedal is released and fluid pressure lowers, the elasticity of the seal returns the piston to its original position. After the brakes are used for a while and the pads wear slightly, the rubber seal will no longer be able to distort the additional amount that the piston travels. Instead, when piston travel forces the seal past its limit, the seal slips on the piston. The seal then returns the piston to a new rest position that is closer to the disc.

A small amount of fluid from the reservoir supplements the fluid in the brake line to compensate for the difference in piston position. Consequently, the length of the brake lever or pedal stroke remains unchanged, and the brake never needs adjustment.

The seal and the cup at the head of the master cylinder piston are made of special heat resistant rubber for best performance and to prevent deterioration. For this reason, only standard parts should be used.

### Braking Stroke

When the brake lever is pulled or the pedal is pushed, the piston 10 in the master cylinder is pushed and moves forward against the force of the return spring 7. At this time, the primary cup 9 at the head of the piston closes the small relief port 4, which connects the pressure chamber 8 and the reservoir 6. Until this port is fully closed, the brake fluid does not start being pressurized, in spite of the forward movement of the piston.

The pressure stroke starts as soon as the relief port is closed. The piston compresses the brake fluid, which is being used as the pressure medium, forcing it through the check valve 3 (only on front) and out into

the brake line. The pressure is transmitted through the line to the cylinder portion of the caliper assembly, where it forces the piston towards the disc. The piston presses pad A against the disc, but since the disc is immovable, further pressure cannot move the pad any farther. Instead, the entire caliper assembly moves in the opposite direction such that pad B is also forced against the disc. In this manner, the disc is gripped between the two pads, and the resulting friction slows wheel rotation.

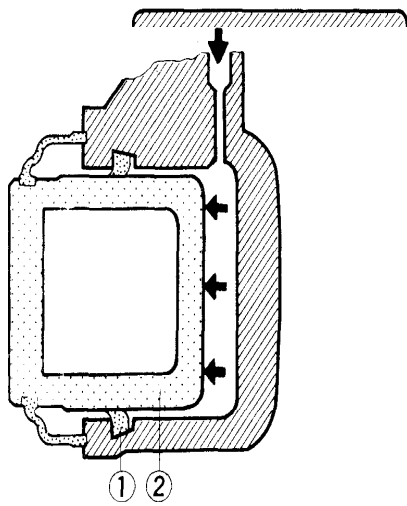
### Braking Release Stroke

When the brake lever or pedal is released, the piston in the master cylinder is quickly returned toward its rest position by the spring 7, and brake fluid pressure drops in the line and in the caliper cylinder. The elasticity of the fluid seal 1 in the cylinder then returns the piston. This leaves no pressure against either pad A or B so that slight friction against the disc pushes them both slightly away from the disc.

As the master cylinder piston moves back further, the brake fluid in the line rushes to fill the low pressure area in front of the primary cup at the piston head.

But the fluid is prevented from moving quickly by the check valve (only on front), and the low pressure area in front of the piston is not relieved. At this time, fluid from the reservoir flows through the large supply port 5 into the space between the primary and secondary cups, through the non-return valve, and passes around the edges of the primary cup to fill the vacuum. When the piston has returned to its rest position against the stopper, the small relief port is uncovered. As the brake fluid returns from the line through the check valve (only on front), excess fluid passes through the relief port into the reservoir until the brake line pressure returns to zero.

### Braking Stroke



1. Fluid Seal
2. Piston
3. Check Valve
4. Relief Port
5. Supply Port
6. Reservoir
7. Spring
8. Pressure Chamber
9. Primary Cup
10. Piston