

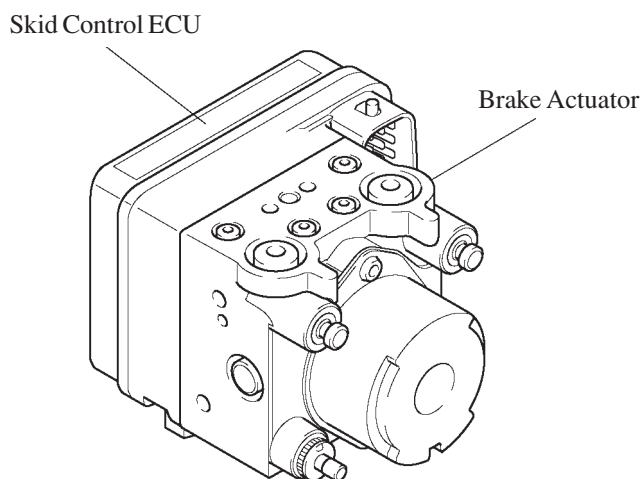
■ BRAKE

1. Brake Control System (ABS with EBD and Brake Assist)

Brake Actuator

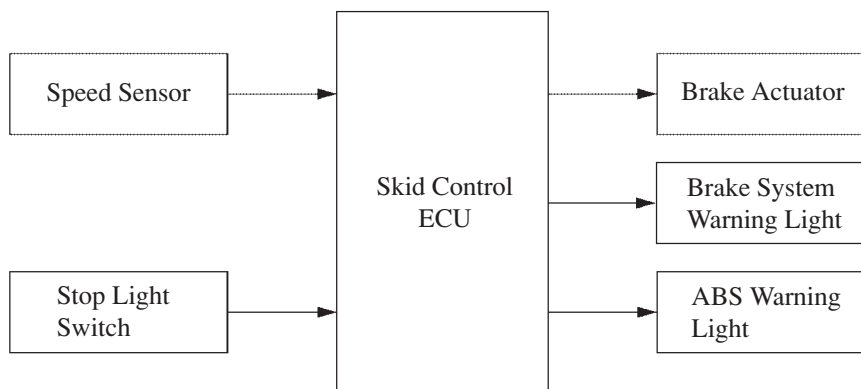
1) General

Along with the new provision of the mechanical type brake assist as standard equipment, the master cylinder pressure sensor and the brake assist switching solenoid valve have been discontinued. As a result, the actuator has been made more compact and lightweight.



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► System Diagram ◀

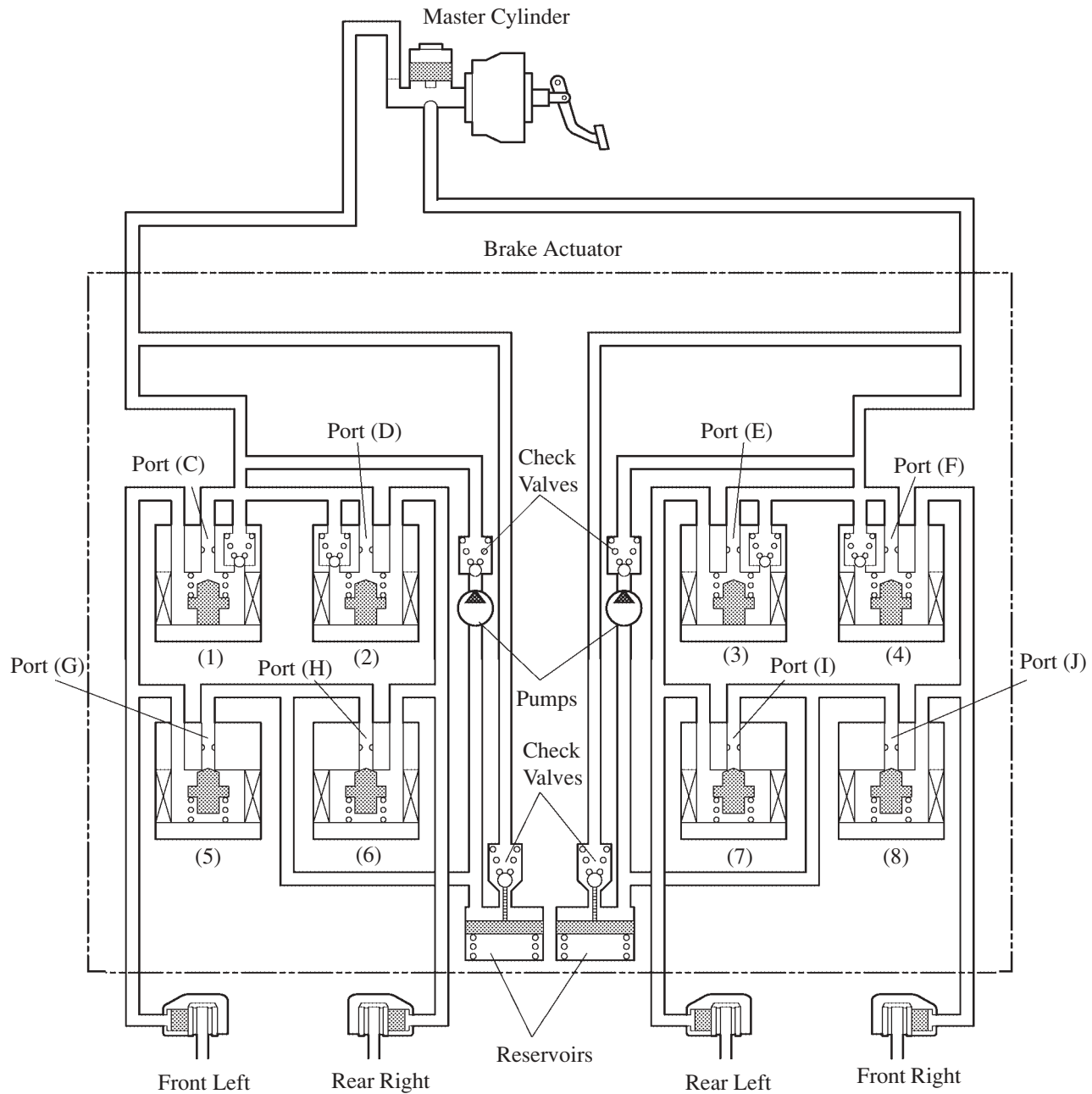


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2) Actuator Portion

The brake actuator consists of 8 two-position valves, 2 pumps, 1 motor, and 2 reservoirs. The 8 two-position solenoid valves consist of the following:

- 4 pressure holding valves [(1), (2), (3), (4)]
- 4 pressure reduction valves [(5), (6), (7), (8)]



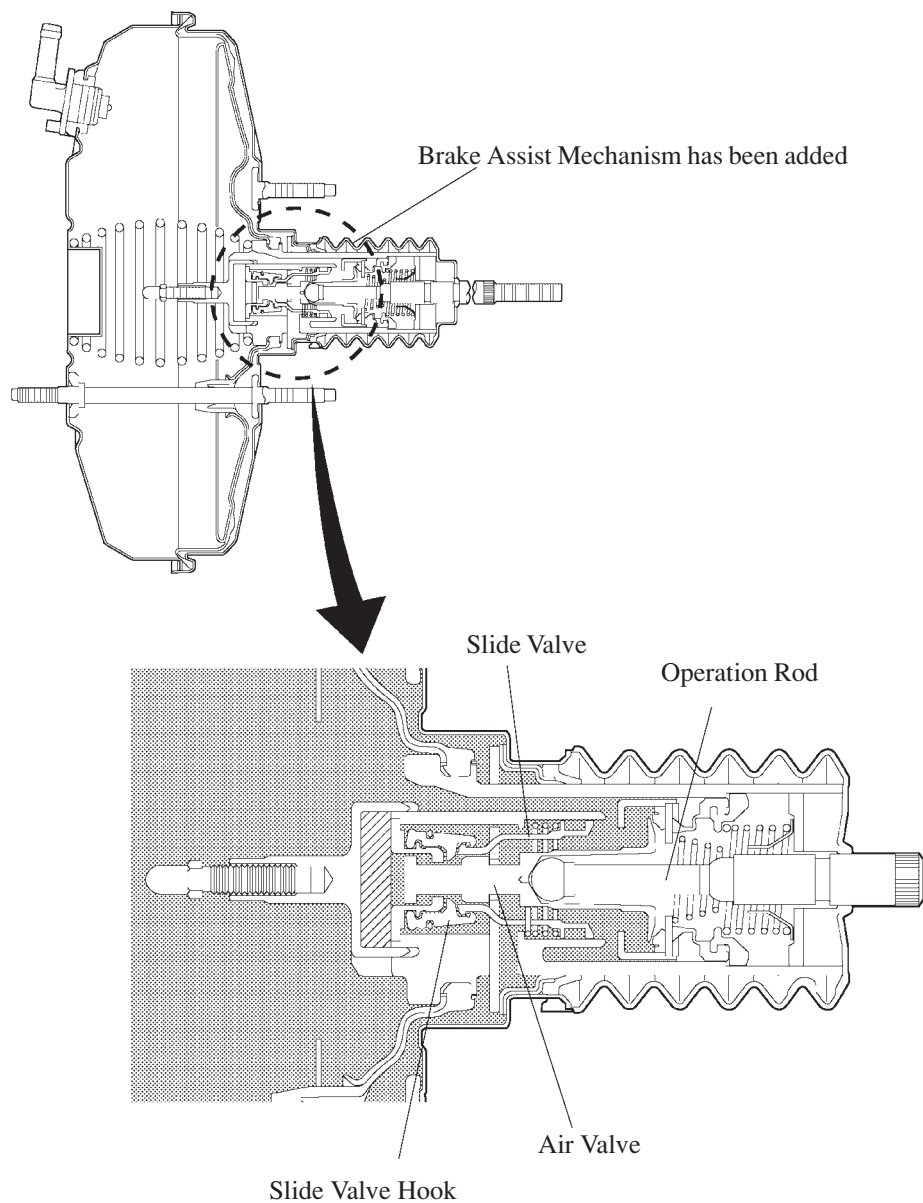
► **Function of Main Components** ◄

Component		Function
(1), (2), (3), (4)	Pressure Holding Valve	Each wheel cylinder contains a pressure holding valve and a pressure reduction valve. A combination of the ON/OFF conditions of the respective valves is used in order to change the increase mode, holding mode, or the reduction mode during the operation of the ABS system.
(5), (6), (7), (8)	Pressure Reduction Valve	
Reservoir		While effecting the reduction mode during the operation of the ABS system, the reservoir stores the brake fluid that has returned from the wheel cylinders. It also functions as an accumulator.
Pump		Pumps the brake fluid that is stored in the reservoir and returns it to the master cylinder.
Check Valve		Check valves are located before and after the between the pump and reservoir. They open only in one direction to prevent the brake fluid from flowing backwards.

Brake Assist Operation (for Brake Assist Mechanical Type)

1) General

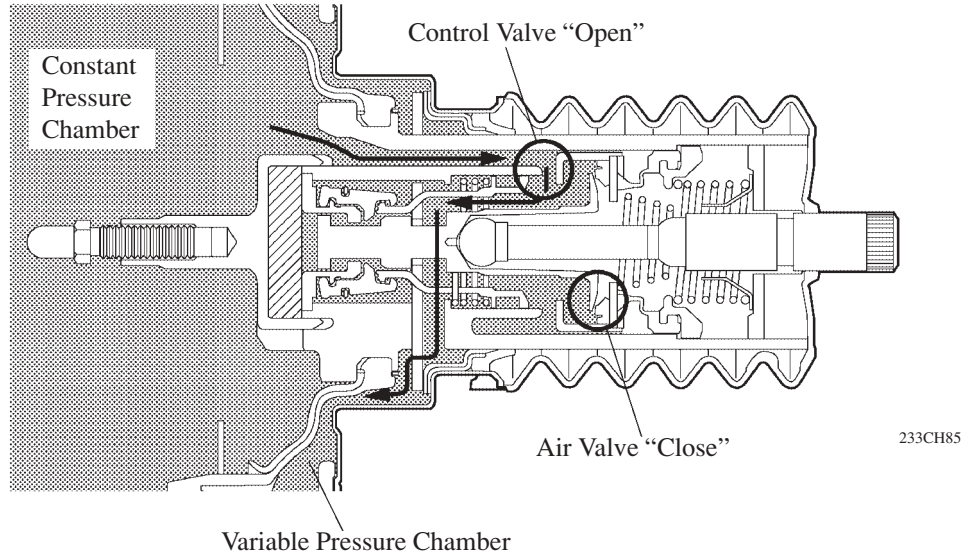
This brake booster consists of a conventional type brake booster to which a brake assist mechanism has been added. During a normal brake operation, the function of the brake booster is the same as in the conventional type. The major difference in construction between this booster from the conventional type is the addition of the slide valve and the slide valve hook in the air valve.



2) Operation

No Braking Condition

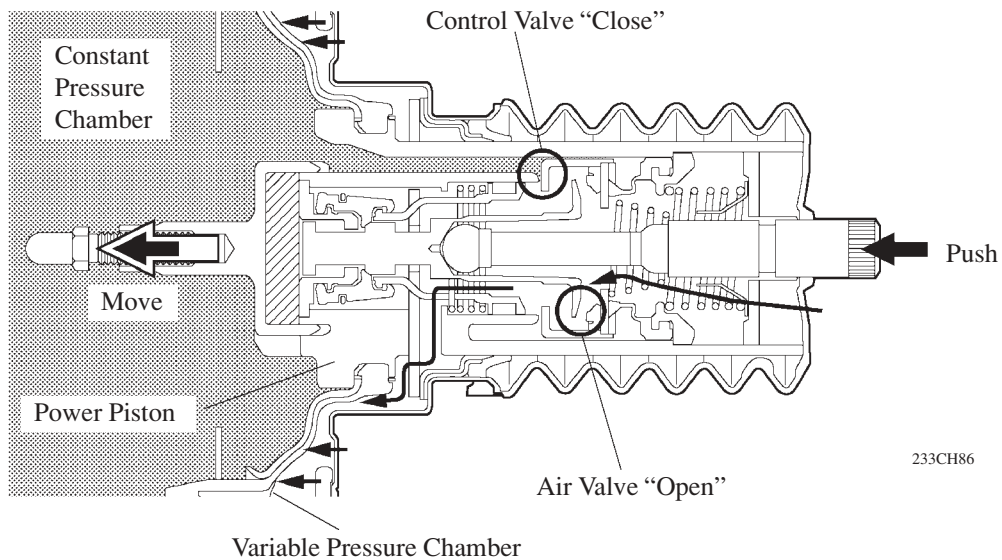
The air valve closes, the control valve opens, and the pressure is the same in the variable pressure chamber and the constant pressure chamber.



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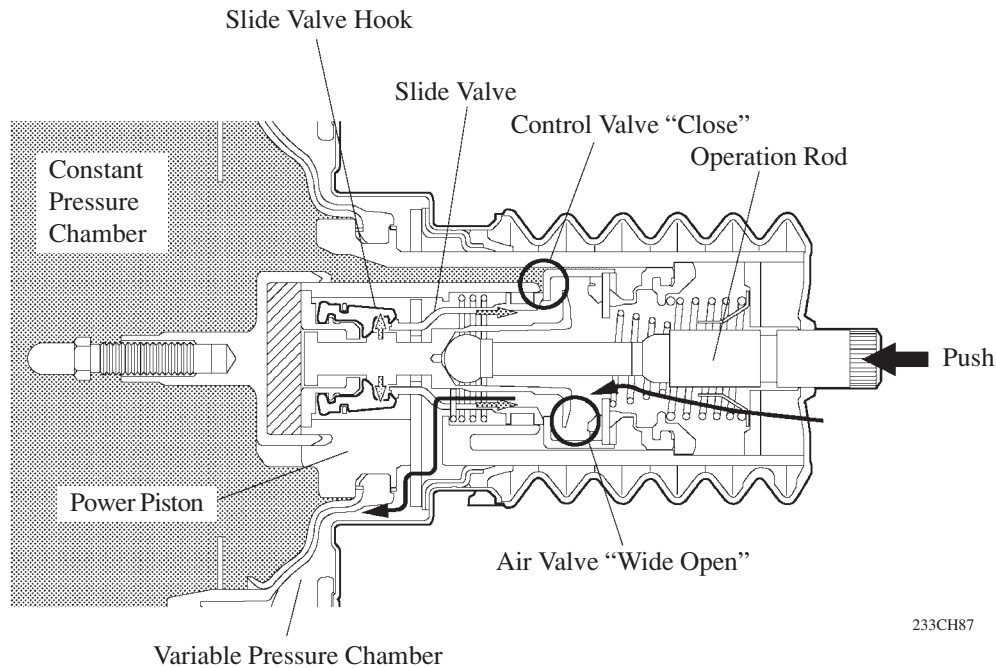
Normal Braking Condition (Operation Rod Speed = Power Piston Speed)

During normal braking, the air valve opens and the control valve closes to activate the brake booster function.

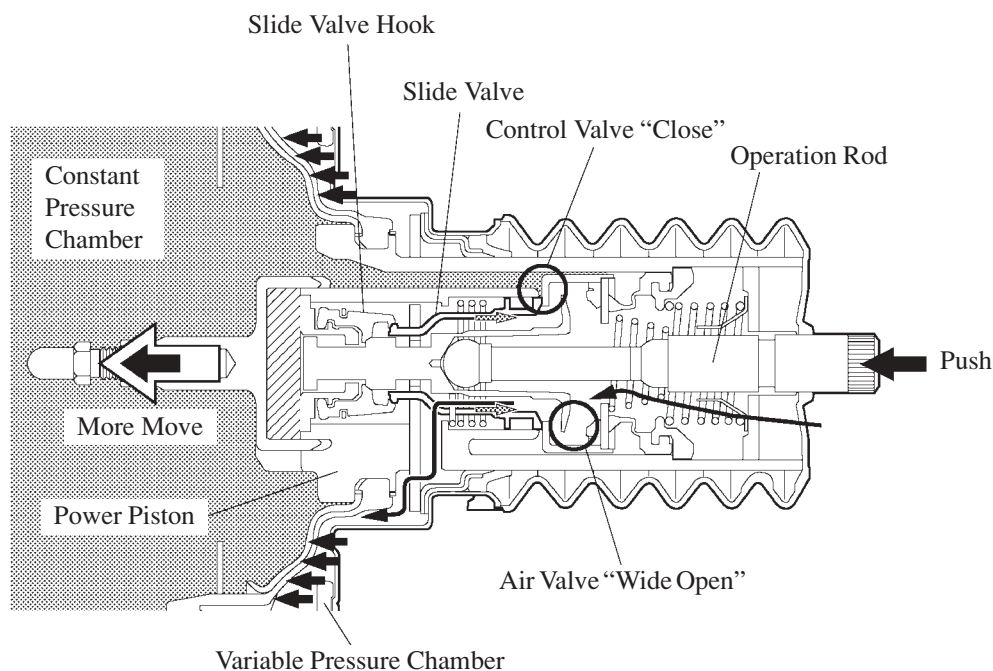


Brake Assist Condition (Operation Rod Speed > Power Piston Speed)

When the operation rod speed is faster than the power piston speed, the air valve pushes the slide valve hook. Consequently, the slide valve separates from the slide valve hook, the spring pushes the control valve, and the control valve closes. Thus, the opening of the air valve becomes enlarged and increases the volume of air that is introduced. This results in a brake assist force to powerfully push the power piston.



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