

ABS HU PART CONSTRUCTION/OPERATION

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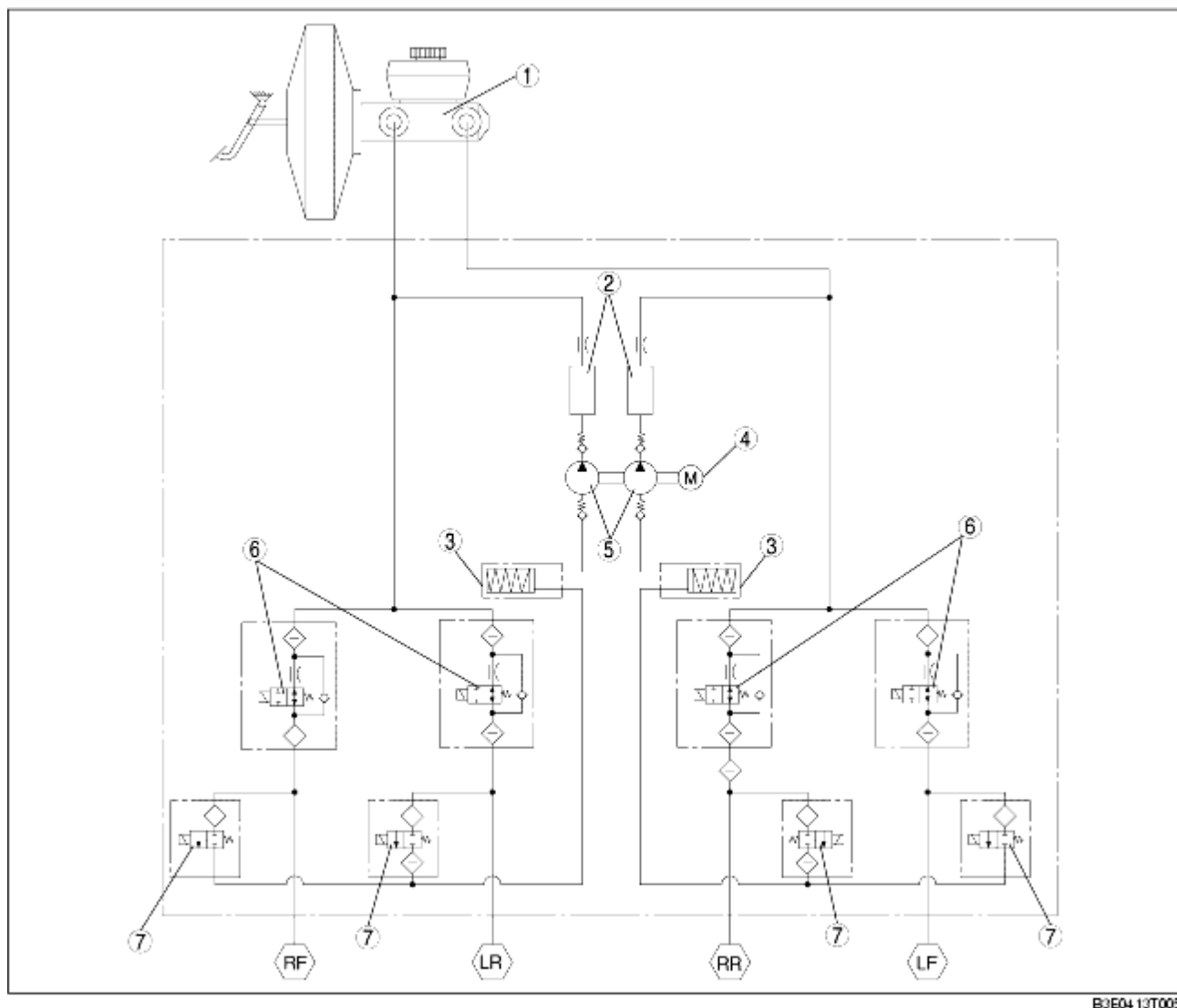
Construction

- The ABS HU mainly consists of the inlet/outlet solenoid valves, pump motor (pump) and reservoir.

Function Of Main Component Parts

Part name	Function
Inlet solenoid valve	• Adjusts the fluid pressure in each brake system according to ABS CM signals.
Outlet solenoid valve	• Adjusts the fluid pressure in each brake system according to ABS CM signals.
Reservoir	• Temporarily stores the brake fluid from the caliper piston to ensure smooth pressure reduction.
Pump	• Returns brake fluid stored in the reservoir back to the master cylinder.
Pump motor	• Operates the pump according to ABS CM signals.

Hydraulic Circuit Diagram



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1	Master cylinder
2	Damper chamber
3	Reservoir
4	Pump motor
5	Pump
6	Inlet solenoid valve
7	Outlet solenoid valve

Operation

During normal braking

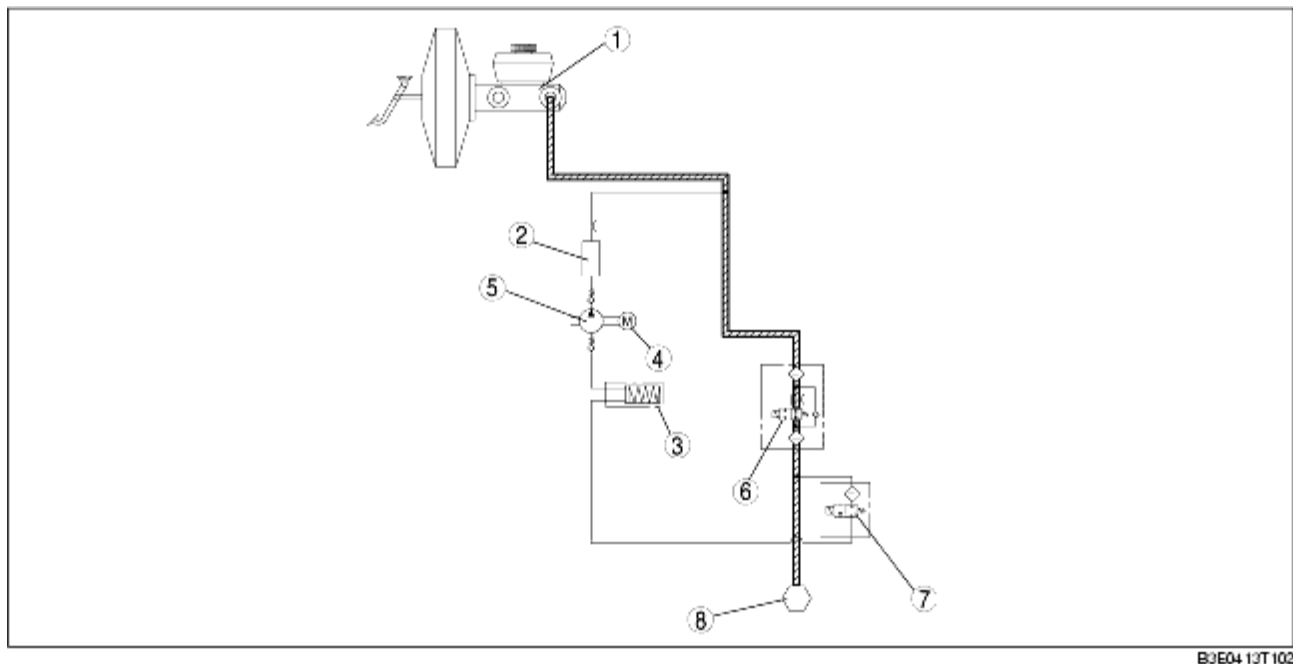
- During normal braking, the solenoid valves are not energized and all of them are off. When the brake pedal is depressed, brake fluid pressure is transmitted from the master cylinder, through the inlet solenoid valves, and then to the caliper piston. (The figure shows control for one front wheel only.)

Solenoid valve operation table

Inlet solenoid valve	Outlet solenoid valve	Pump motor,

LF	RF	LR	RR	LF	RF	LR	RR	pump
OFF (open)				OFF (closed)				Stopped

Hydraulic Circuit Diagram



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1	Master cylinder
2	Damper chamber
3	Reservoir
4	Pump motor
5	Pump
6	Inlet solenoid valve
7	Outlet solenoid valve
8	Caliper piston

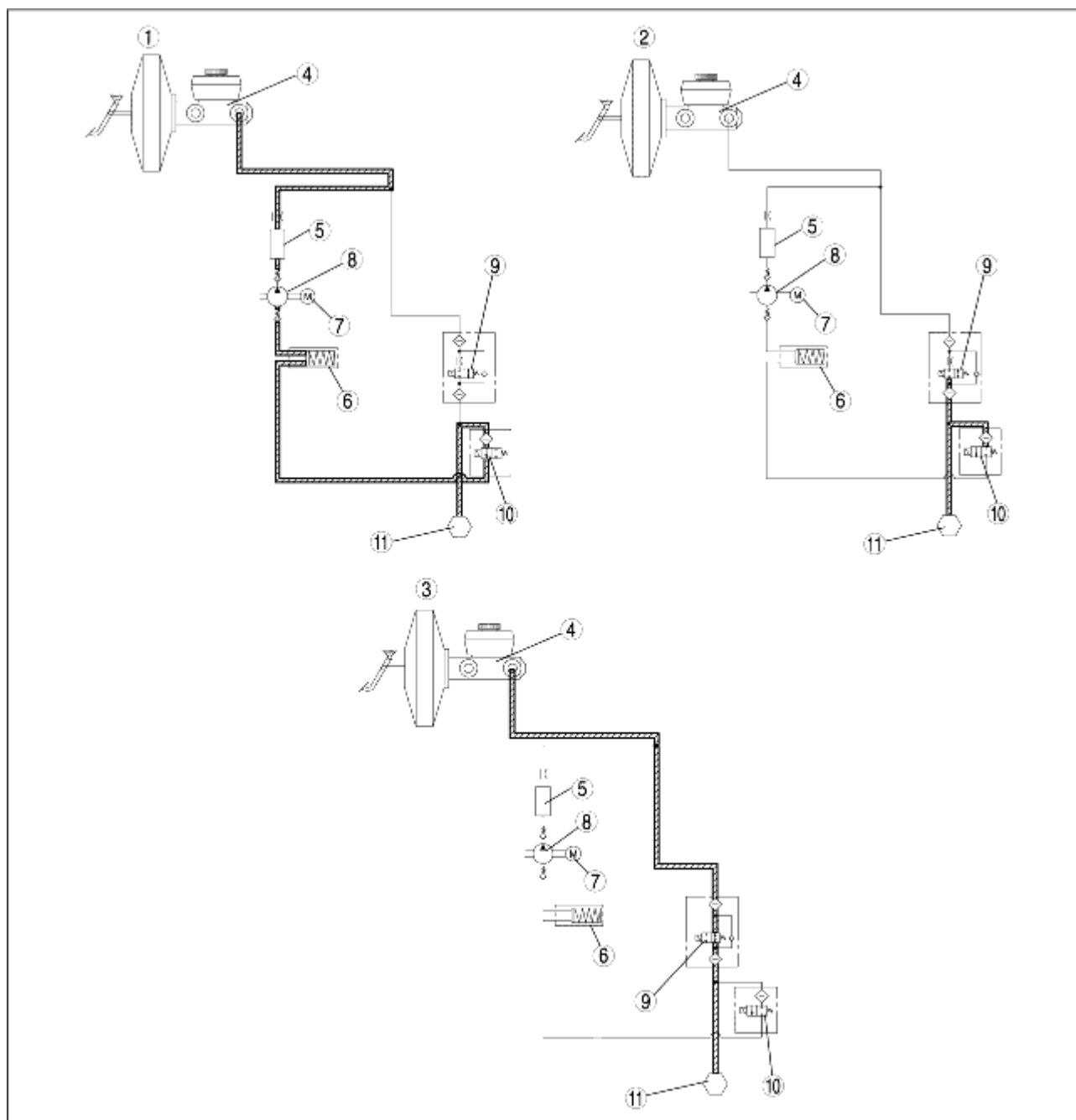
During ABS and EBD control

- When wheel lock-up is about to occur, the inlet and outlet solenoid valves are energized and controlled in three pressure modes (increase, maintain, or reduction), thereby adjusting brake fluid pressure. Brake fluid during pressure reduction is temporarily stored in the reservoir and afterwards the pump motor operates the pump to return the fluid to the master cylinder. (The figure shows control for one front wheel only.)

Solenoid valve operation table

	Inlet solenoid valve				Outlet solenoid valve				Pump motor, pump
	LF	RF	LR	RR	LF	RF	LR	RR	
During pressure increase mode	OFF (open)				OFF (closed)				Stopped
During pressure maintain mode	ON (closed)				OFF (closed)				Stopped
During pressure reduction mode	ON (closed)				ON (open)				Operation

Hydraulic Circuit Diagram



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1	During pressure reduction mode
2	During pressure maintain mode
3	During pressure increase mode
4	Master cylinder
5	Damper chamber
6	Reservoir
7	Pump motor
8	Pump
9	Inlet solenoid valve

10	Outlet solenoid valve
11	Caliper piston