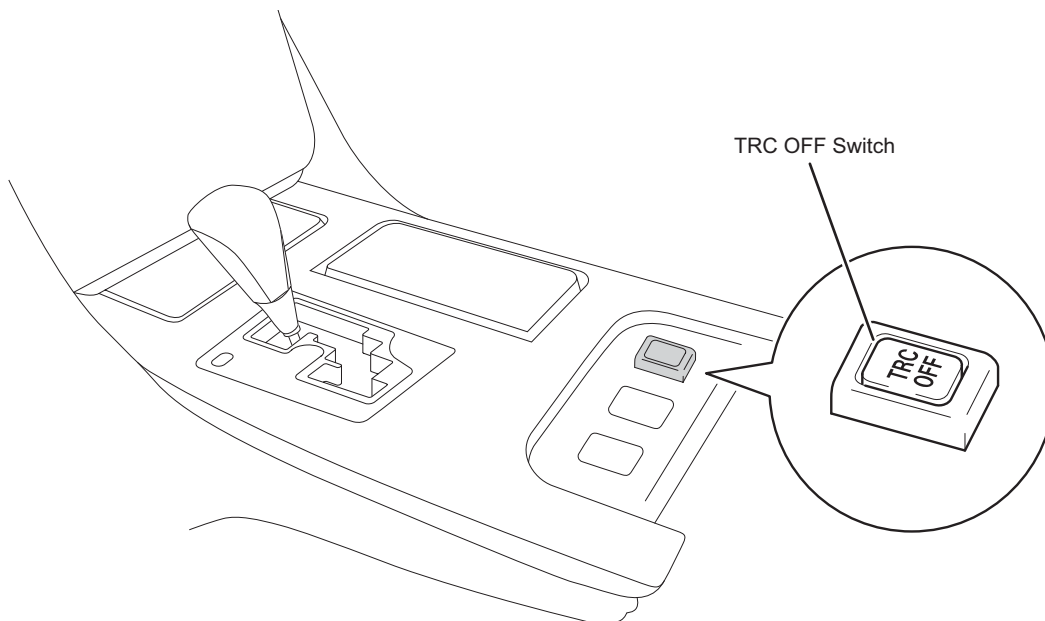


TRC OFF Switch

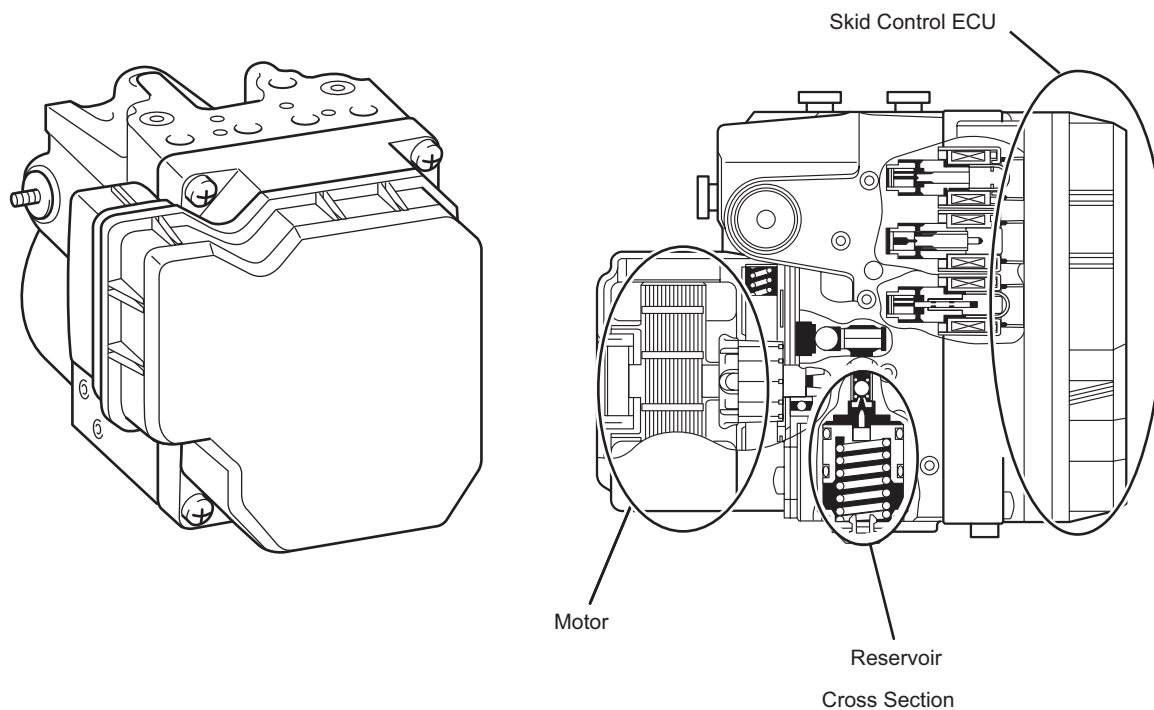
- A momentary switch is used and installed on the center console. The driver can set the operation of the TRC ON and OFF by pressing the TRC OFF switch. When the driver presses TRC turns the ignition switch from OFF to ON, the system switches automatically to the normal driving mode.



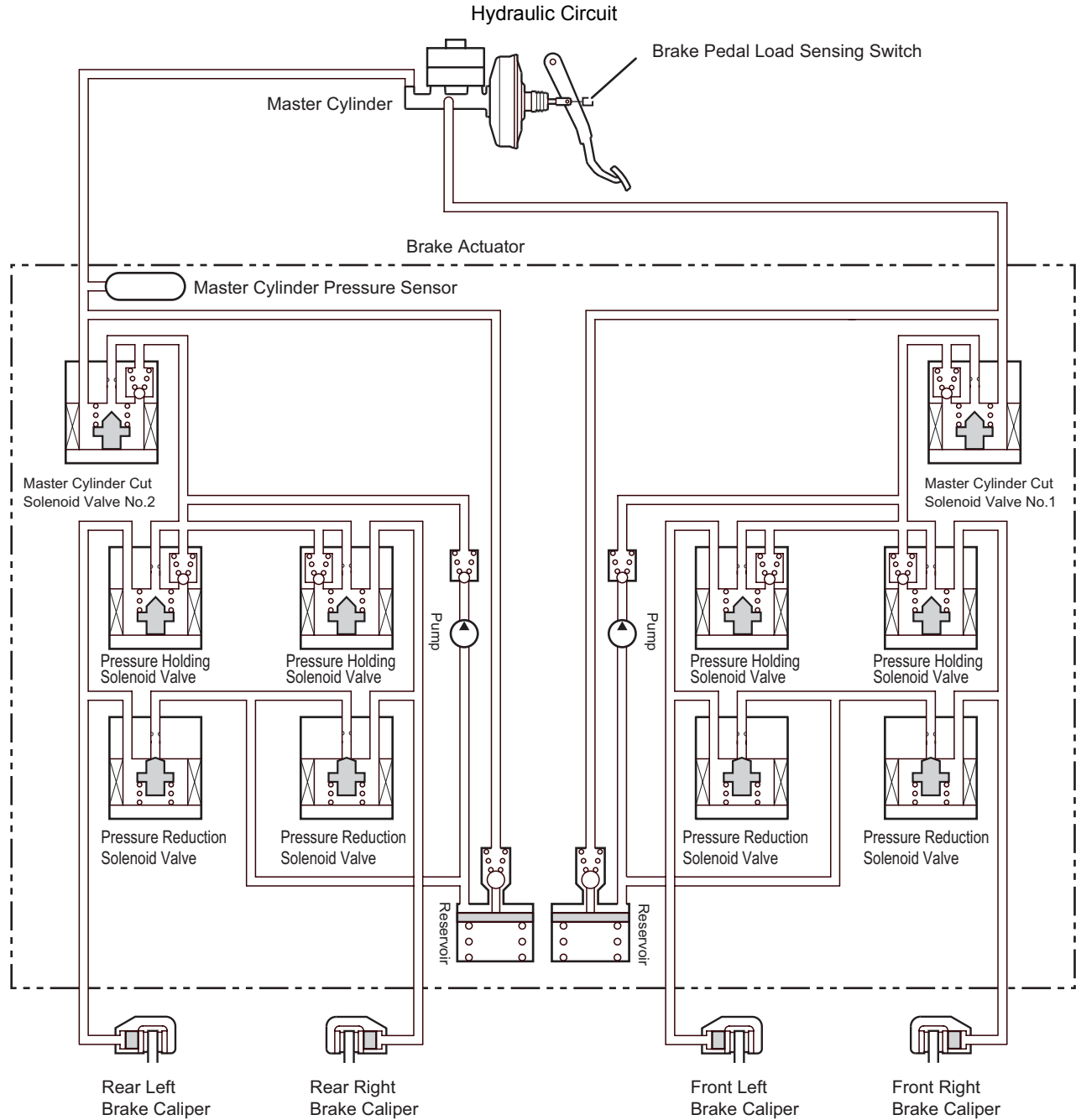
A4270019C

Brake Actuator

- The brake actuator consists of a master cylinder cut solenoid valve, pressure holding solenoid valve, pressure reduction solenoid valve, pump, and reservoir. The actuator adjusts the brake hydraulic pressure applied to the wheel cylinders. In addition, it is integrated with the skid control ECU to achieve a compact construction.



A4270127C



BR

Non-Operation (All Input Signals OFF)

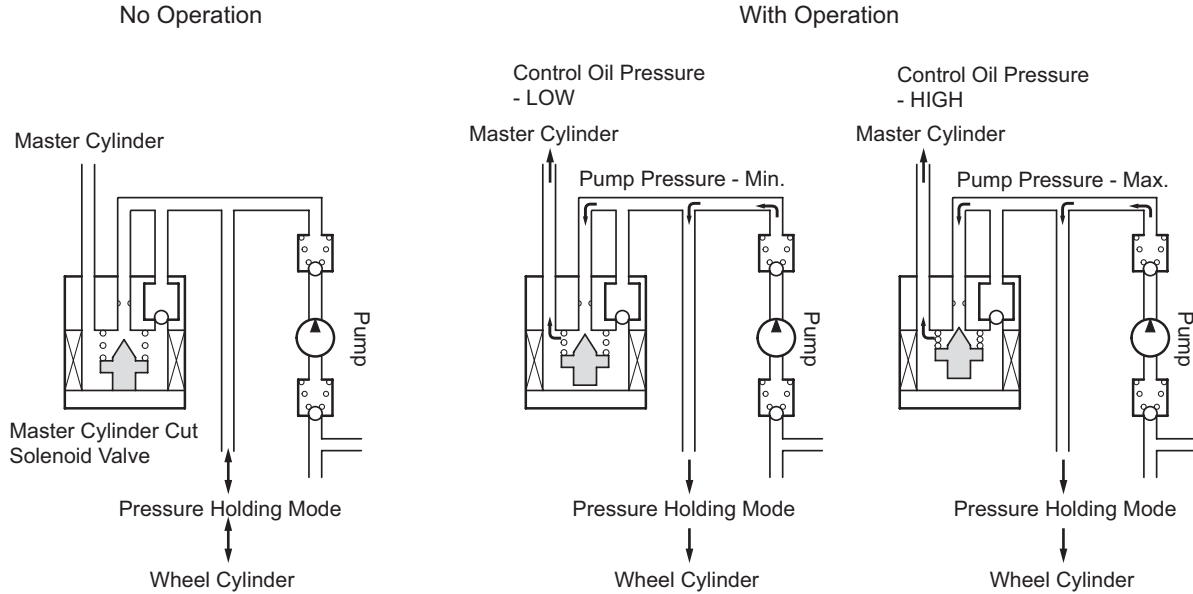
A4270128C

Pressure Holding and Reduction Solenoid Valves

- The skid control ECU outputs control signals to actuate the solenoid valves in order to switch the brake hydraulic pressure circuit between three modes: increasing, holding, and reduction.

Master Cylinder Cut Solenoid

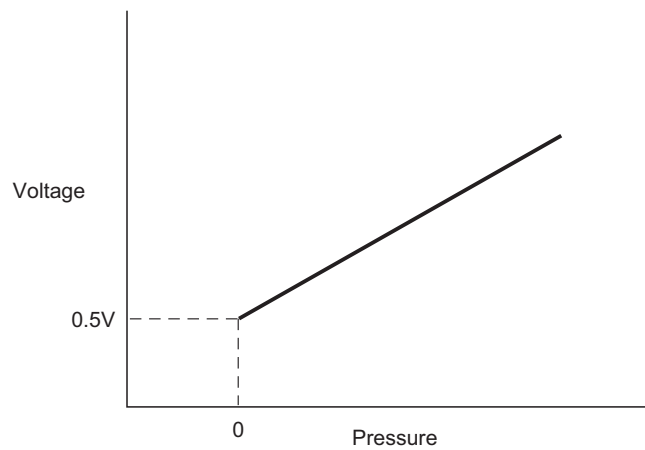
- The master cylinder cut solenoid uses a linear solenoid valve for smooth changes in the hydraulic pressure during brake assist control.
- The system controls the opening and closing of the valve in order to regulate the hydraulic pressure generated by the pump. Thus, it is able to generate a control hydraulic pressure in accordance with the operating conditions.



A4270129C

Master Cylinder Pressure Sensor

- The master cylinder pressure sensor, which is built into the brake actuator, outputs a master cylinder pressure signal to the skid control ECU.

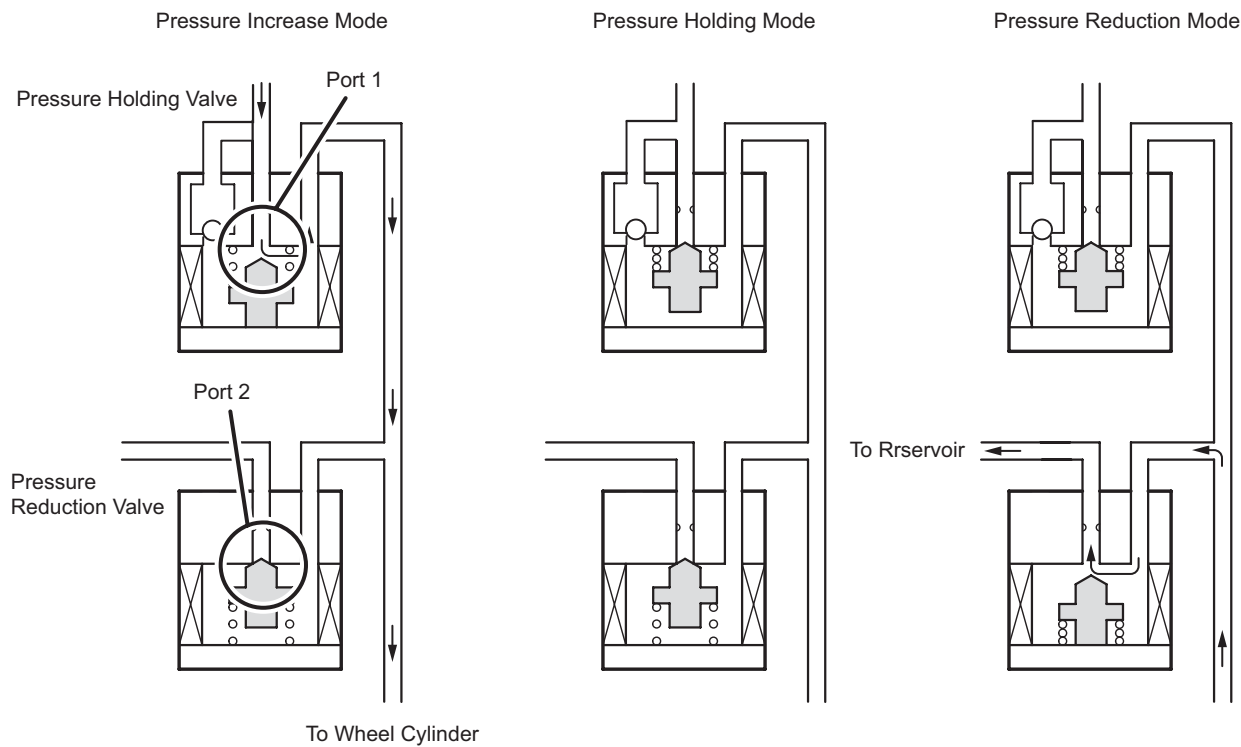


Output Characteristics

A4270130C

ABS with EBD Operation

- This system controls the hydraulic pressure of four wheels by operating the pressure holding and reduction solenoid valves, the pump, and the reservoir.



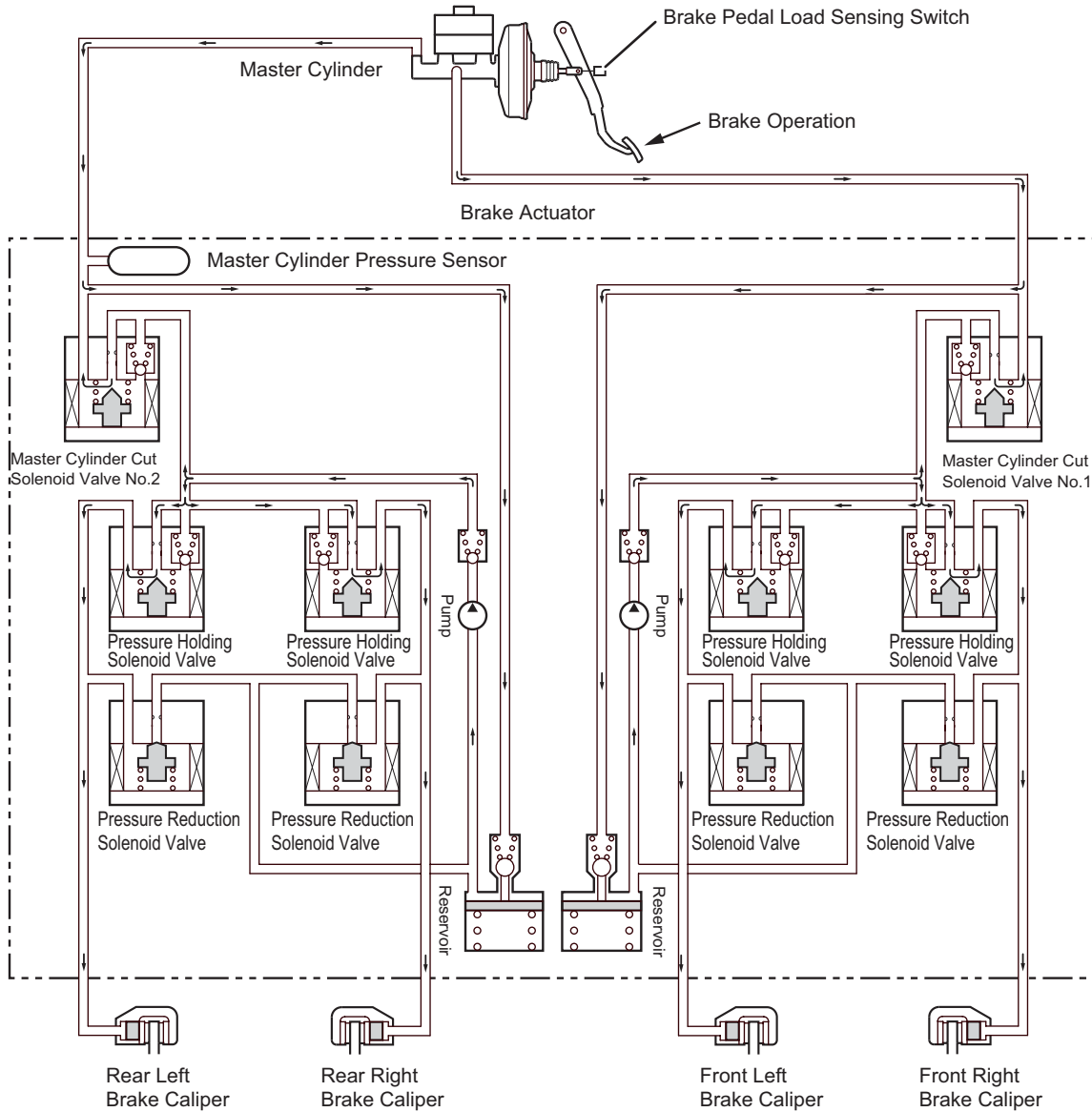
A4270131C

Operation

Not Activated	Normal Braking	—	—
Activated	Increase Mode	Holding Mode	Reduction Mode
Pressure Holding Valve	OFF	ON	←
Pressure Reduction Valve	OFF	←	ON
Port 1	Open	Close	←
Port 2	Close	←	Open
Wheel Cylinder Pressure	Increase	Hold	Reduction

Brake Assist Operation

- The brake assist control directs the hydraulic pressure generated by the pump in the brake actuator to the wheel cylinders, thus generating a hydraulic pressure that is higher than the master cylinder.

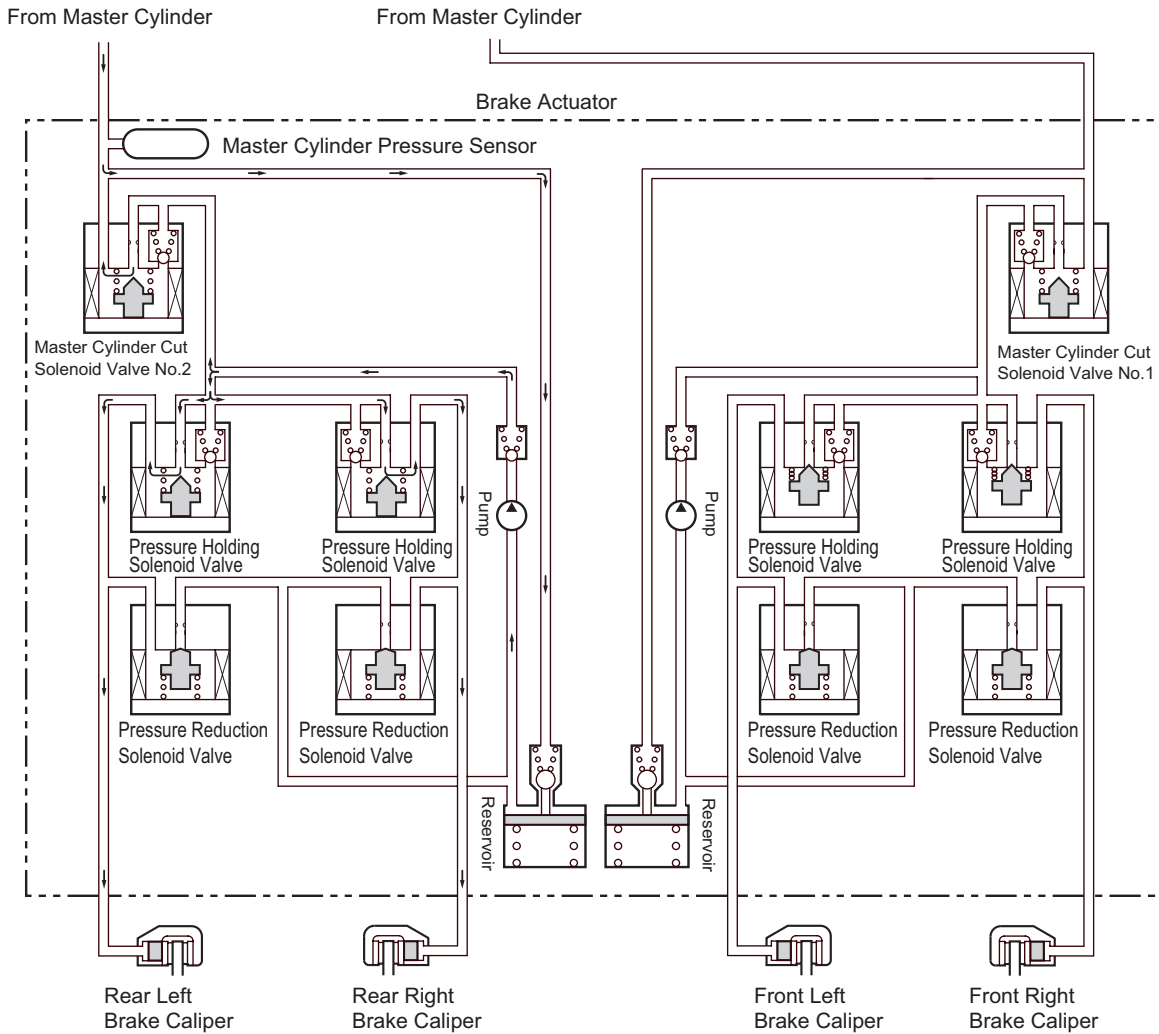


Brake Assist Operation

Item	Brake Assist Not Activated	Brake Assist Activated
Master Cylinder Cut Solenoid Valve No.1	OFF(Open)	ON(regulate pressure)
Master Cylinder Cut Solenoid Valve No.2	OFF(Open)	ON(regulate pressure)
Pressure Holding Valve	OFF(Open)	←
Pressure Reduction Valve	OFF(Close)	←
Wheel Cylinder Pressure	—	Boosts the hydraulic pressure higher than the master cylinder

TRAC Operation

- The TRC directs the hydraulic pressure generated by the pump in the brake actuator to the wheel cylinders, thus generating a hydraulic pressure that is higher than the master cylinder.



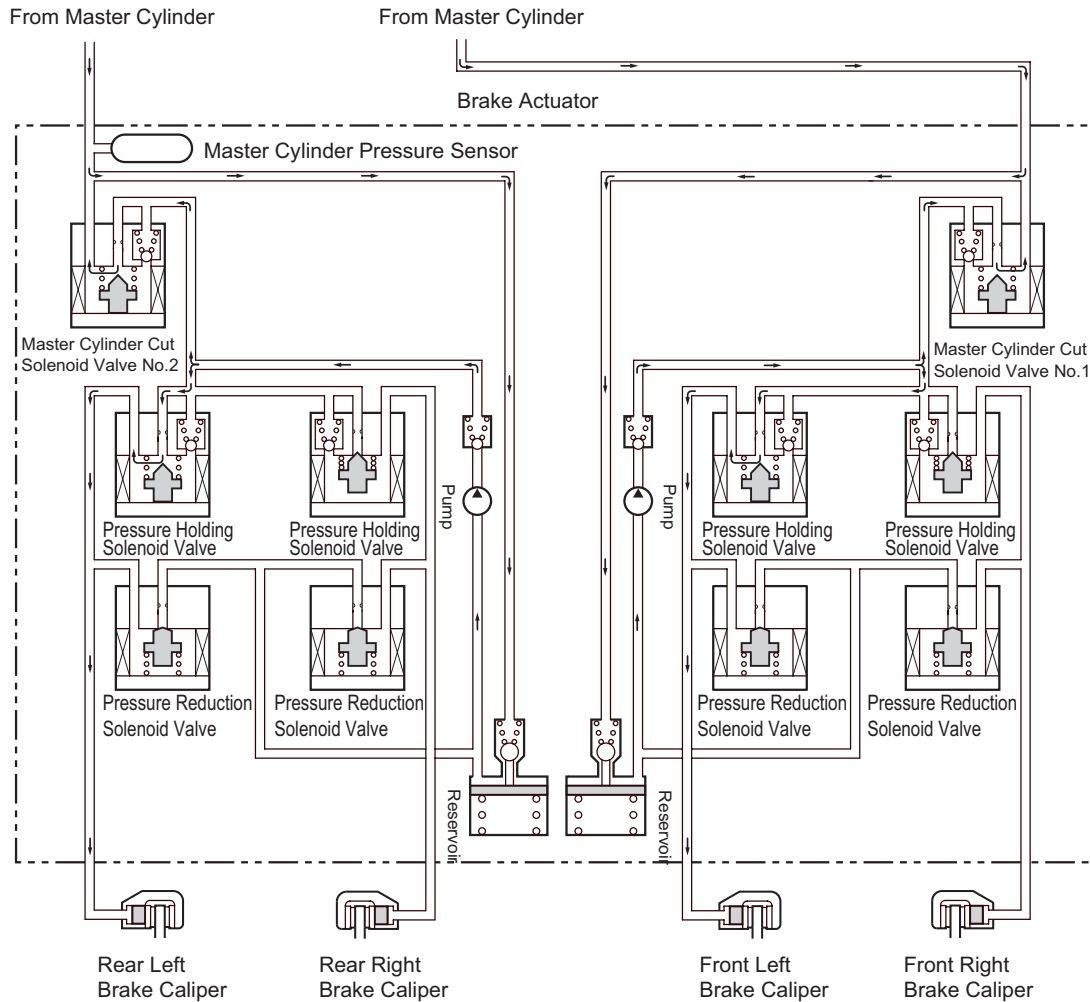
A4270133C

TRC Operation

Item		TRC Not Activated	TRC Activated		
			Increase Mode	Holding Mode	Reduction Mode
Master Cylinder Cut Solenoid Valve No.1		OFF(Open)	←	←	←
Master Cylinder Cut Solenoid Valve No.2		OFF(Open)	ON (regulate pressure)	←	←
Front Wheel	Pressure Holding Valve	OFF(Open)	←	←	←
	Pressure Reduction Valve	OFF(Close)	←	←	←
	Wheel Cylinder Pressure	—	—	—	—
Rear Wheel	Pressure Holding Valve	OFF(Open)	←	ON(Close)	←
	Pressure Reduction Valve	OFF(Close)	←	←	ON(Open)
	Wheel Cylinder Pressure	—	Increase	Hold	Reduction

Rear Wheel Sideslip Suppression Control

- This control directs the hydraulic pressure generated by the pump in the brake actuator to the wheel cylinders, and controls the brake hydraulic pressure to suppress the rear wheel or front wheel sideslip.
- The rear wheel sideslip suppression control applies the brakes of the outer front and rear wheels of the turn. The illustration shows the rear wheel sideslip suppression control of a vehicle making a right turn.



VSC Operation(Rear Wheel Sideslip Suppression Control)

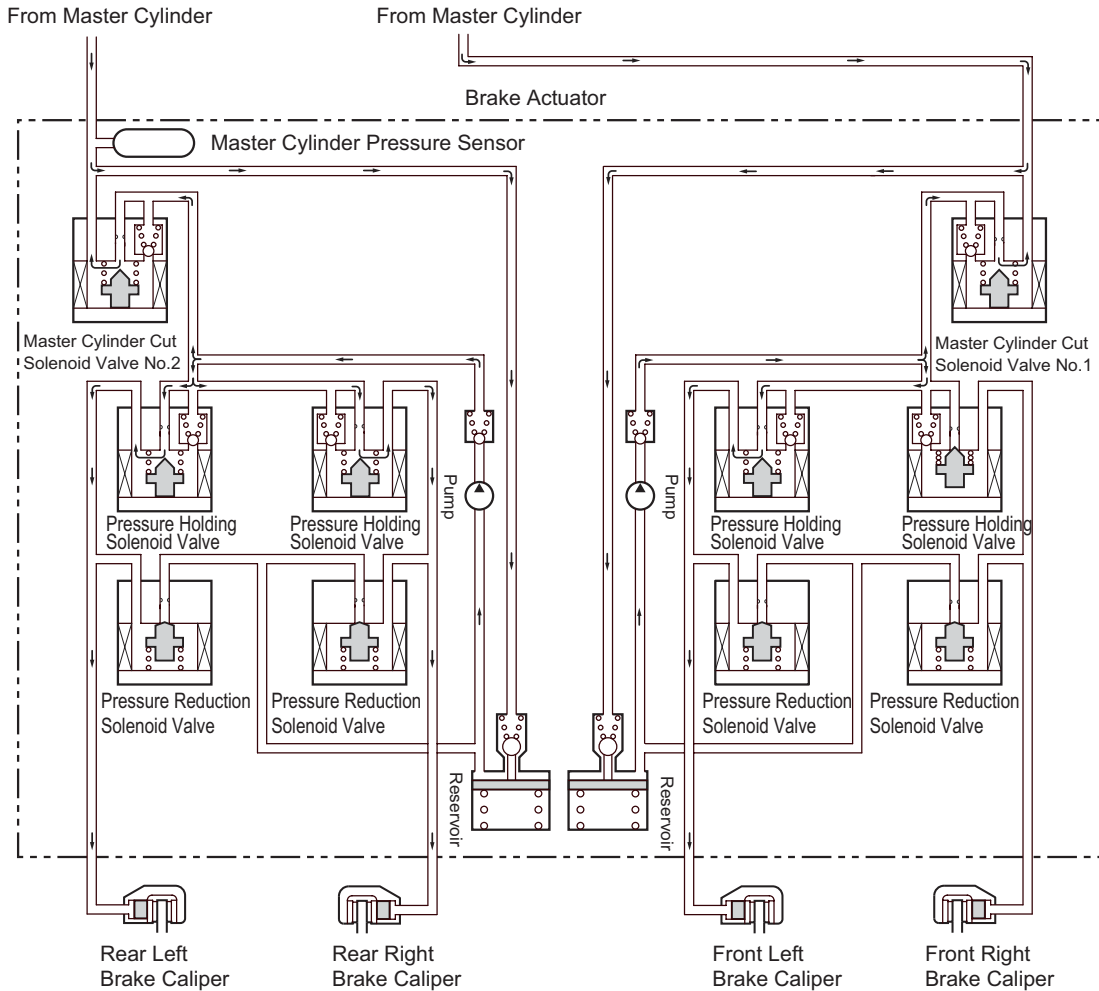
Item		VSC Not Activated	VSC Activated		
			Increase Mode	Holding Mode	Reduction Mode
Master Cylinder Cut Solenoid Valve No.1		OFF(Open)	ON (regulate pressure)	←	←
Master Cylinder Cut Solenoid Valve No.2		OFF(Open)	ON (regulate pressure)	←	←
Front Wheel	Pressure Holding Valve	OFF(Open)	←*	ON(Close)	←
	Pressure Reduction Valve	OFF(Close)	←	←	ON(Open)
	Wheel Cylinder Pressure	—	Increase	Hold	Reduction
Rear Wheel	Pressure Holding Valve	OFF(Open)	←*	ON(Close)	←
	Pressure Reduction Valve	OFF(Close)	←	←	ON(Open)
	Wheel Cylinder Pressure	—	Increase	Hold	Reduction

❖REFERENCE❖

* : The brake actuator turns the holding solenoid valve ON to close the passage to the non-control wheel.

Front Wheel Sideslip Suppression Control

- The VSC control directs the hydraulic pressure generated by the pump in the brake actuator to the wheel cylinders, and controls the brake hydraulic pressure to suppress the rear wheel or front wheel sideslip.
- The front wheel sideslip suppression control applies both rear brakes, as well as the outer front wheel brake of the turn as needed.

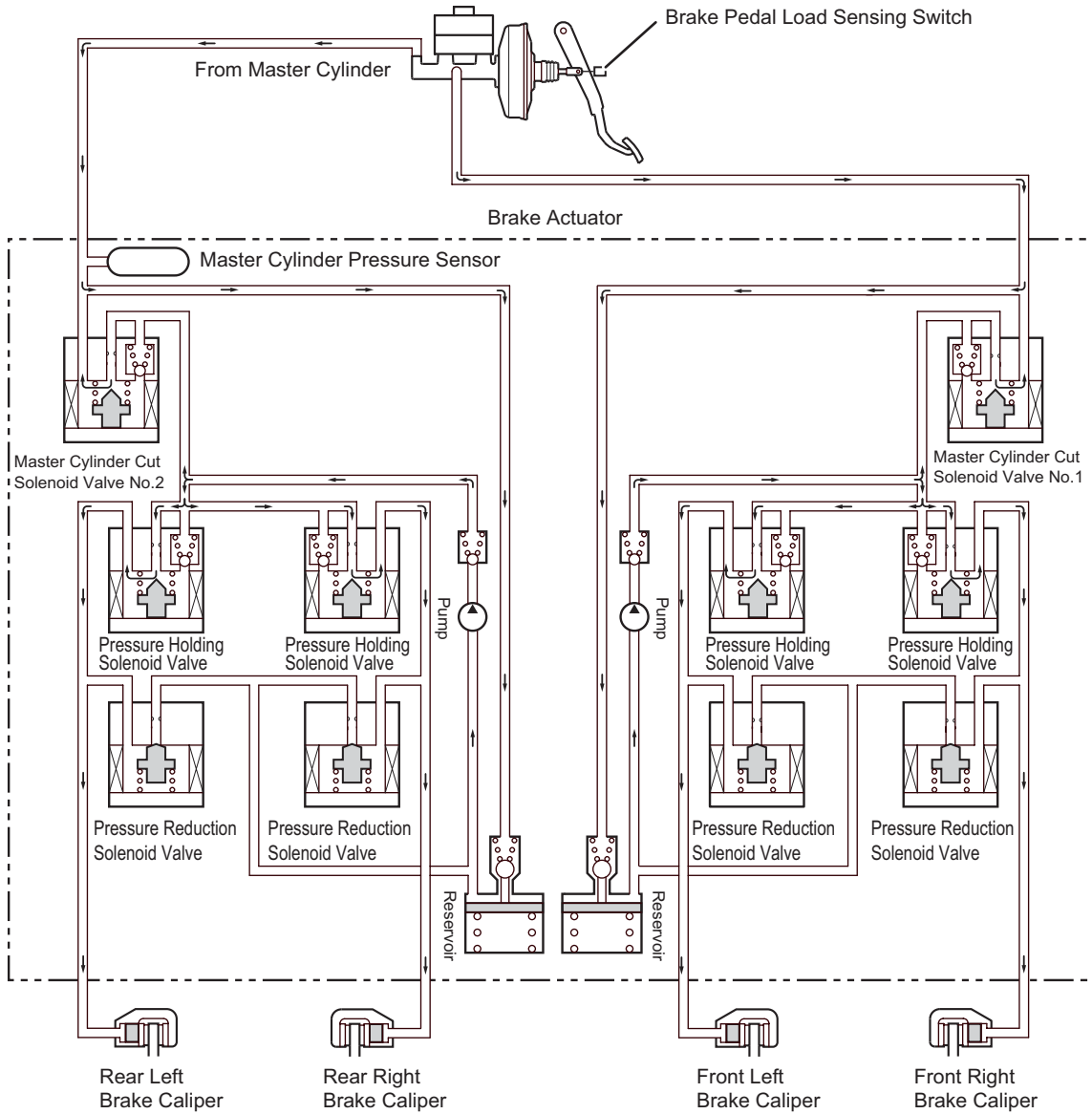


VSC Operation(Front Wheel Sideslip Suppression Control)

Item		VSC Not Activated	VSC Activated		
			Increase Mode	Holding Mode	Reduction Mode
Master Cylinder Cut Solenoid Valve No.1		OFF(Open)	ON (regulate pressure)	←	←
Master Cylinder Cut Solenoid Valve No.2		OFF(Open)	ON (regulate pressure)	←	←
Front Wheel	Pressure Holding Valve	OFF(Open)	←*	ON(Close)	←
	Pressure Reduction Valve	OFF(Close)	←	←	ON(Open)
	Wheel Cylinder Pressure	—	Increase	Hold	Reduction
Rear Wheel	Pressure Holding Valve	OFF(Open)	←	ON(Close)	←
	Pressure Reduction Valve	OFF(Close)	←	←	ON(Open)
	Wheel Cylinder Pressure	—	Increase	Hold	Reduction

Radar Cruise Control Brake Control

- This control directs the hydraulic pressure generated by the pump in the brake actuator to the wheel cylinders, and generates a braking force that is needed for the cruise control.

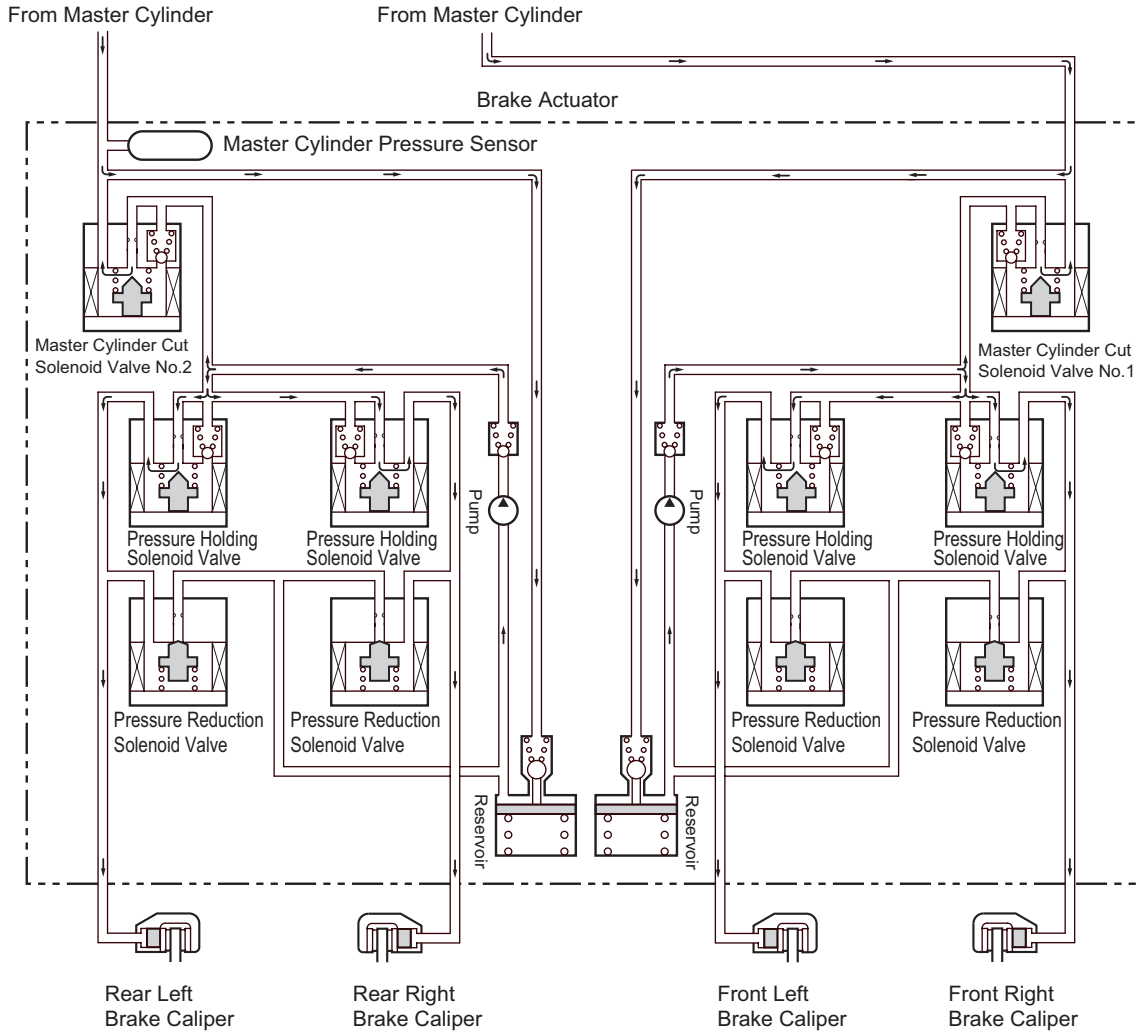


Radar Cruise Control Brake Operation

Item	Radar cruise control brake control Not Activated	Radar cruise control brake control Activated
Master Cylinder Cut Solenoid Valve No.1	OFF(Open)	ON(regulate pressure)
Master Cylinder Cut Solenoid Valve No.2	OFF(Open)	ON(regulate pressure)
Pressure Holding Valve	OFF(Open)	←
Pressure Reduction Valve	OFF(Close)	←
Wheel Cylinder Pressure	—	Increase

Hill Start Assist Control Brake Control

- This control directs the hydraulic pressure generated by the pump in the brake actuator to the wheel cylinders, and generates a brake force that is needed for the hill start assist control.



Hill Start Assist Brake Control Operation

Item		Hill Start Assist Brake Control Not Activated	Hill Start Assist Brake Control Activated		
			Increase Mode	Holding Mode	Reduction Mode
Master Cylinder Cut Solenoid Valve No.1		OFF(Open)	ON(regulate pressure)	←	←
Master Cylinder Cut Solenoid Valve No.2		OFF(Open)	ON(regulate pressure)	←	←
Front Wheel	Pressure Holding Valve	OFF(Open)	←*	ON(Close)	←
	Pressure Reduction Valve	OFF(Close)	←	←	ON(Open)
	Wheel Cylinder Pressure	—	Increase	Hold	Reduction
Rear Wheel	Pressure Holding Valve	OFF(Open)	←*	ON(Close)	←
	Pressure Reduction Valve	OFF(Close)	←	←	ON(Open)
	Wheel Cylinder Pressure	—	Increase	Hold	Reduction

❖REFERENCE❖

* : Turn the holding solenoid valve ON (closed) for the non-control wheel.