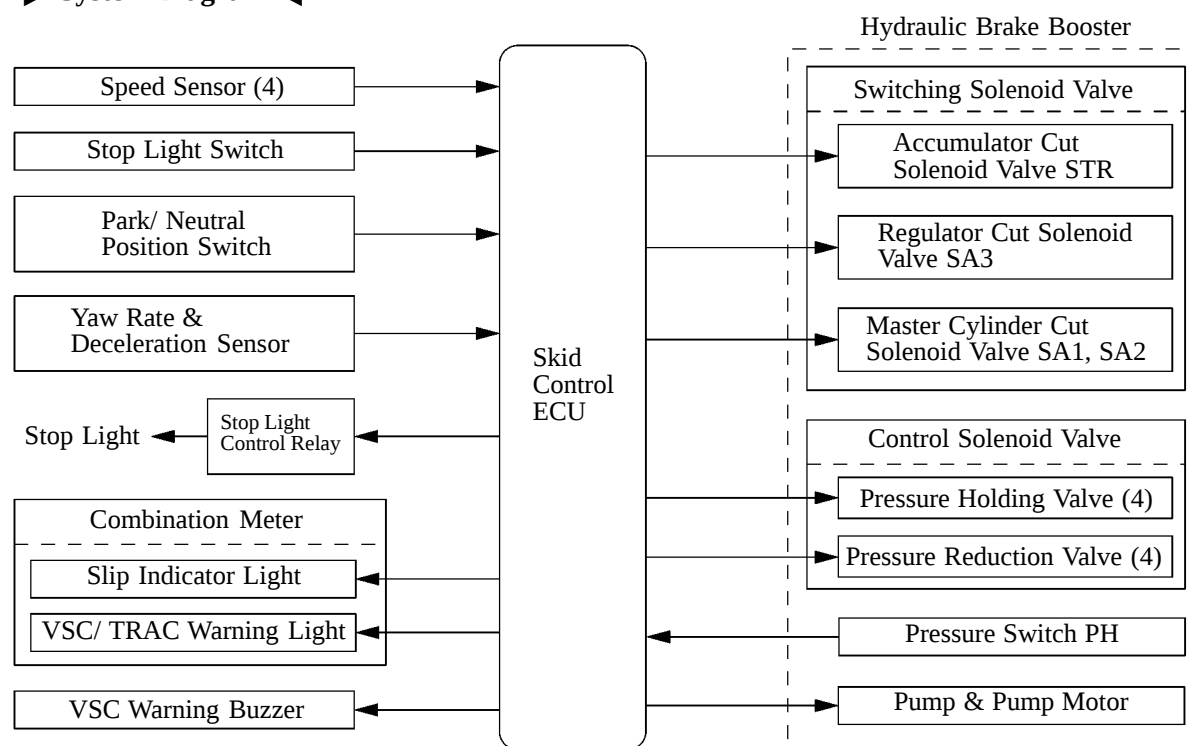


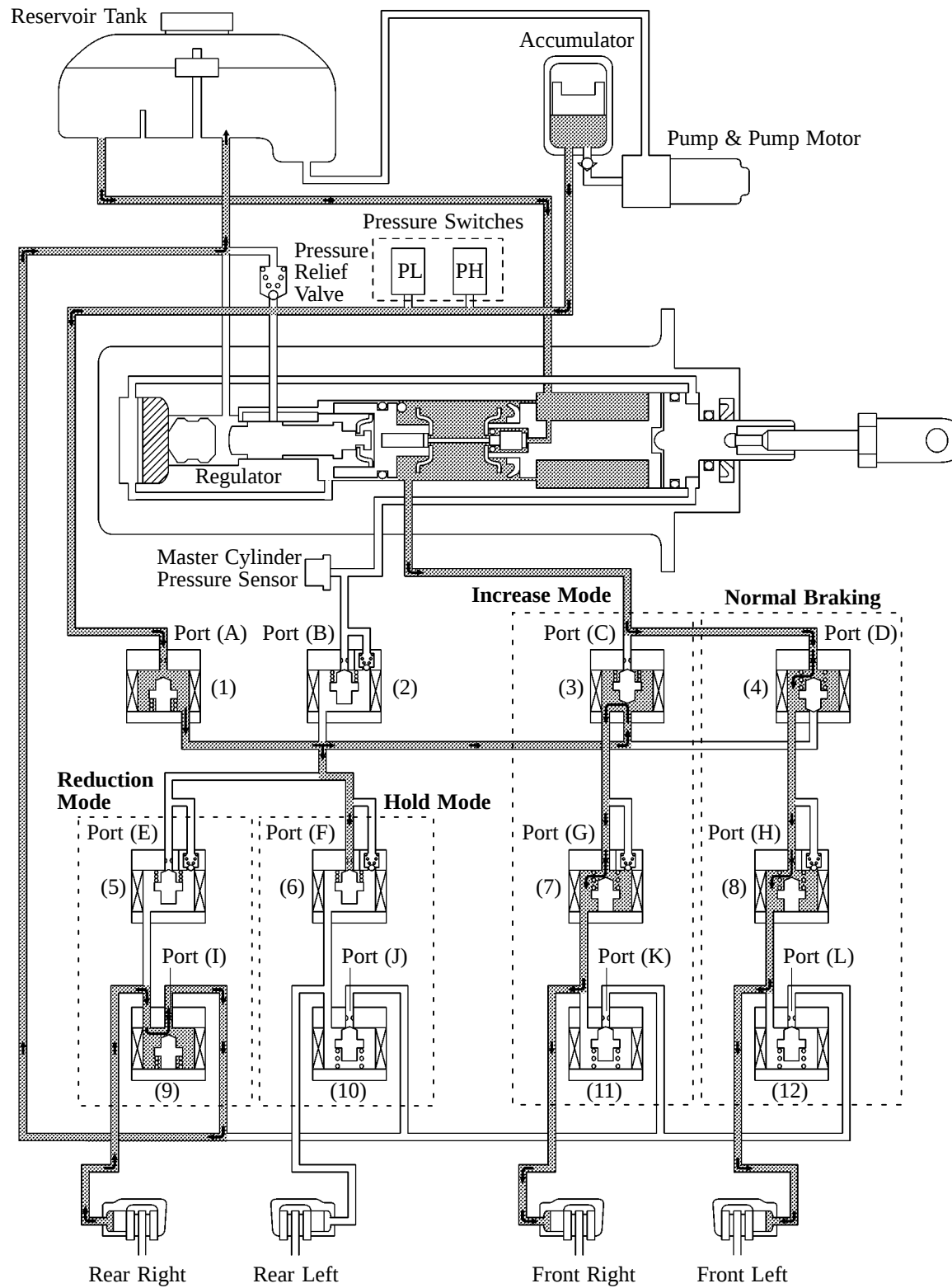
HAC Operation

Based on the information provided by various sensors, switches, and the ECM, the skid control ECU computes the backward movement of the vehicle that occurs when the vehicle is started off on a hill. Then, the skid control ECU controls the fluid pressure that is generated by the pump & pump motor and applies it by way of the solenoid valves to the brake wheel cylinder of each wheel in the following 3 modes: pressure reduction, pressure hold, and pressure increase modes.

- The skid control ECU determines the state of the backward movement of the vehicle while the driver is attempting to drive uphill, based on the speed sensors and the park/neutral position switch.
- This ECU determines the gradient of the hill, the acceleration state of the vehicle, the locked stat, and the direction of rotation of each wheel through the speed sensors and the yaw rate & deceleration sensor. Then, this ECU computes the amount of brake control that prevents the wheels from locking.
- During this operation, the skid control ECU outputs an HAC operation signal to the combination meter, causes the slip indicator light to blink, outputs signals to the stop light control relay, and turns ON the stop light.
- If the accumulator pressure drops during this operation, the skid control ECU receives the signals from the pressure switch PH and actuates the pump & pump motor to ensure the proper accumulator pressure.
- The HAC operates approximately 5 seconds at the maximum. At this time, skid control ECU informs the driver by the slow and intermittent sound of the VSC warning buzzer. After that, this ECU alerts the driver by using the quick and intermittent sound of the VSC warning buzzer, and gradually releases the brake hydraulic pressure in order to end the HAC operation.
- When the HAC is operating continuously while the vehicle is being driven on a slippery surface, the temperature of the brake actuator in the hydraulic brake booster increases. After a prescribed length of time elapses, the skid control ECU alerts the driver of this condition by causing the VSC/TRAC warning light to illuminate. Also, the HAC operation is momentarily interrupted to protect the brake actuator. When the temperature of the brake actuator decreases, the VSC/TRAC warning light turns OFF, and the HAC is automatically restored to an operating state.

► System Diagram ◀





Item			HAC not Activated	HAC Activated			
				Increase Mode	Hold Mode	Reduction Mode	
Switching Solenoid Valve	(1)	Accumulator Cut Solenoid Valve STR	OFF (Close)	ON* ¹ (Open)	←	←	
		Port (A)					
	(2)	Regulator Cut Solenoid Valve SA3	OFF (Open)	ON* ¹ (Close)	←	←	
		Port (B)					
	(3)	Master Cylinder Cut Solenoid Valve SA1	OFF (Open)	ON* ² (Close)	←	←	
		Port (C)					
	(4)	Master Cylinder Cut Solenoid Valve SA2	OFF (Open)	ON* ³ (Close)	←	←	
		Port (D)					
Control Solenoid Valve	Front Brake	(7), (8)	Pressure Holding Valve	OFF (Open)	←	ON (Close)	←
		(11), (12)	Pressure Reduction Valve	OFF (Close)	←	←	ON (Open)
		Wheel Cylinder Pressure		—	Increase	Hold	Reduction
	Rear Brake	(5), (6)	Pressure Holding Valve	OFF (Open)	←	ON (Close)	←
		(9), (10)	Pressure Reduction Valve	OFF (Close)	←	←	ON (Open)
		Wheel Cylinder Pressure		—	Increase	Hold	Reduction

*1: When either wheel is under brake control (HAC), STR and SA3 are ON.

*2: When the front right wheel is under brake control (HAC), SA1 is ON.

*3: When the front left wheel is under brake control (HAC), SA2 is ON.