

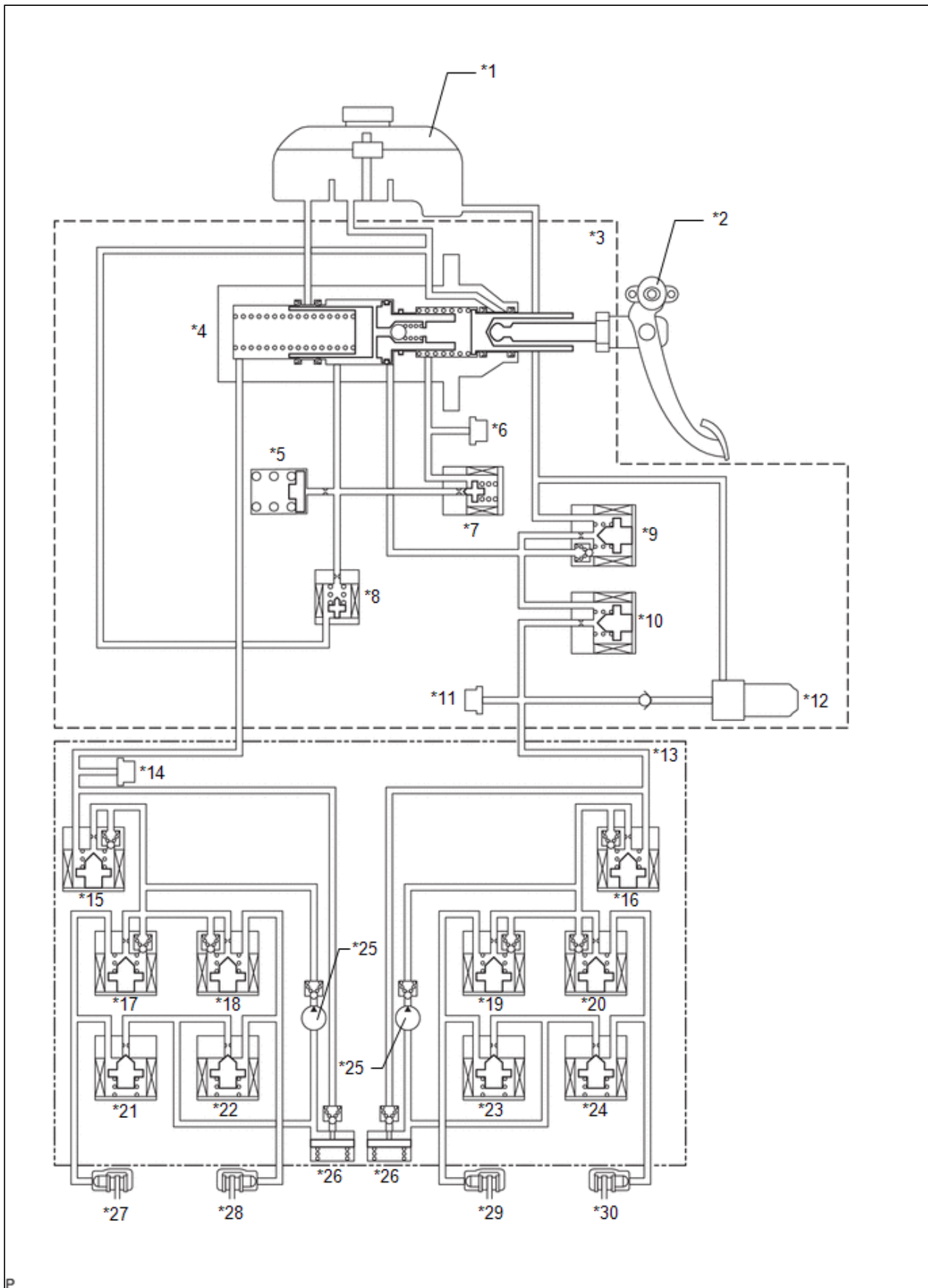
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Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: BRAKE CONTROL SYSTEM: BRAKE CONTROL; 2023 - 2024 MY Prius Prime [12/2022 -]		

BRAKE CONTROL

CONSTRUCTION

- (a) The brake control system consists of the linear solenoid valve (SLM1, SLM2, SM1, SM2), gap hold valve (SGH), stroke simulator cut valve (SSA), pressure holding solenoid valve (SFRH, SRLH, SRRH, SFLH), pressure reduction solenoid valve (SFRR, SRLR, SRRR, SFLR), etc., and controls the brake fluid pressure in each wheel cylinder.

Brake Fluid Hydraulic Circuit Diagram



*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (PsrV)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

(b) For each condition, the open/closed state of each valve is as follows.

(1) Brake Booster with Master Cylinder Assembly

Condition of each solenoid valve during Master Cylinder Pressure Control

		PRESSURE CONTROL: ACTIVATED		PRESSURE CONTROL: NOT ACTIVATED
		LINEAR CONTROL MODE	HOLDING MODE*1	
Solenoid valve	SLM1	ON (Linear control)	OFF (Open)	OFF (Open)
	SLM2	ON (Linear control)	ON (Close)	OFF (Open)
	SGH	ON (Open)		ON (Open)
	SSA	ON (Close)		ON (Close)
Pump		ON (Discharge control)*2	OFF	OFF

*1: Available only with the vehicle stationary.
*2: May be switched into OFF during reducing pressure.

HINT:

- The solenoid valve controls the brake fluid pressure by continually opening and closing the valve in accordance with the operating conditions.

(2) Brake Actuator Assembly

Condition of each solenoid valve during Line Pressure Control (Linear Solenoid Valve (SM1, SM2))

		PRESSURE CONTROL: ACTIVATED		PRESSURE CONTROL: NOT ACTIVATED
		LINEAR CONTROL MODE	HOLDING MODE	
Solenoid valve	SM1	ON (Linear control)	OFF (Open)	OFF (Open)
	SM2	ON (Linear Control)	OFF (Open)	OFF (Open)
Pump		ON	OFF	OFF

HINT:

- The solenoid valve controls the brake fluid pressure by continually opening and closing the valve in accordance with the operating conditions.

Condition of each solenoid valve during Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)

		PRESSURE CONTROL: ACTIVATED			PRESSURE CONTROL: NOT ACTIVATED
		INCREASING MODE	HOLDING MODE	REDUCTION MODE	
Solenoid valve	SFRH	OFF (Open)	ON (Close)	ON (Close)	OFF (Open)
	SFLH	OFF (Open)	ON (Close)	ON (Close)	OFF (Open)
	SRRH	OFF (Open)	ON (Close)	ON (Close)	OFF (Open)
	SRLH	OFF (Open)	ON (Close)	ON (Close)	OFF (Open)
	SFRR	OFF (Close)	OFF (Close)	ON (Open)	OFF (Close)
	SFLR	OFF (Close)	OFF (Close)	ON (Open)	OFF (Close)
	SRRR	OFF (Close)	OFF (Close)	ON (Open)	OFF (Close)
	SRLR	OFF (Close)	OFF (Close)	ON (Open)	OFF (Close)
Pump	ON (Pumping Fluid from Reservoir)			OFF	

HINT:

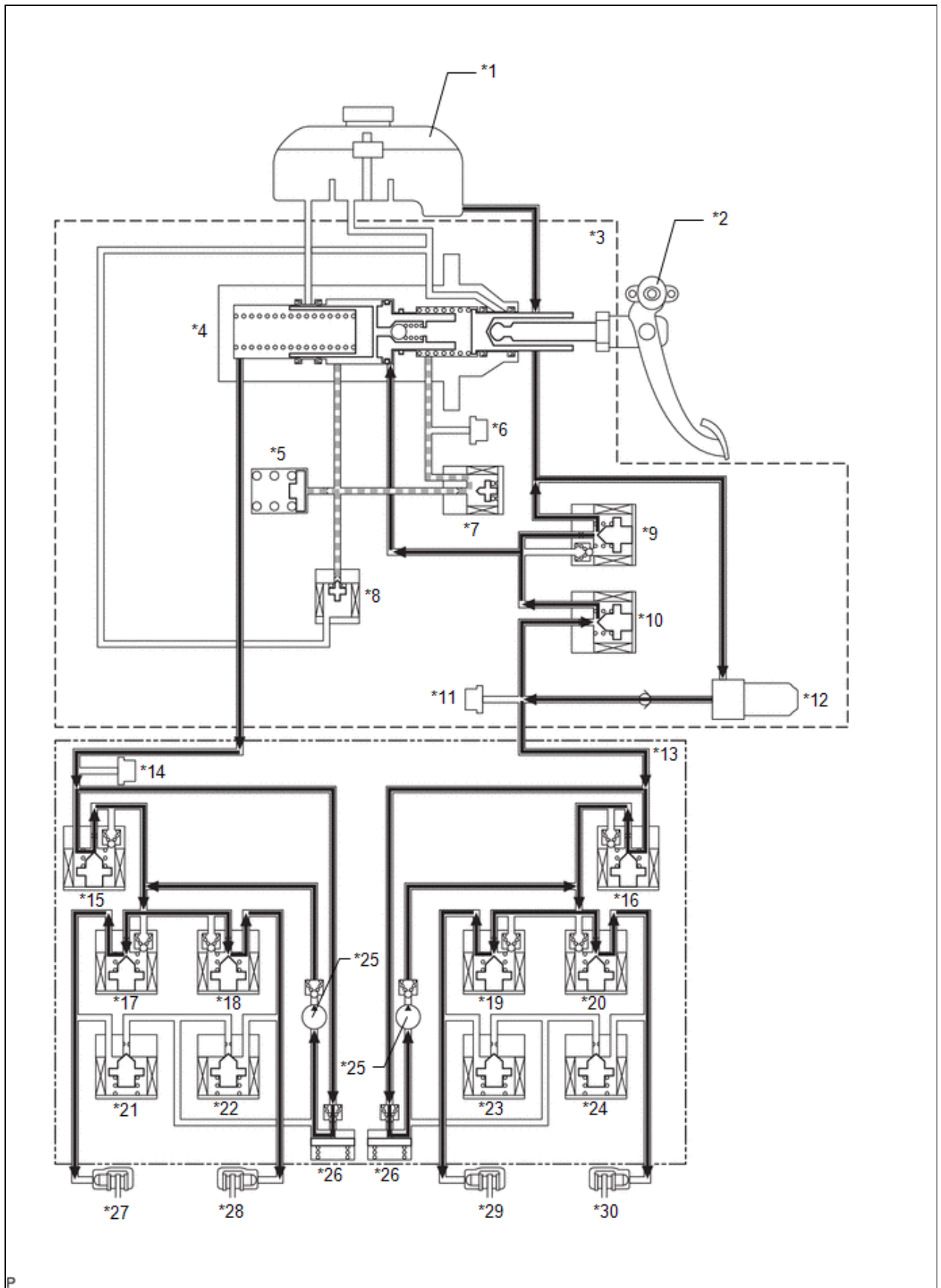
- The solenoid valve controls the brake fluid pressure by continually opening and closing the valve in accordance with the operating conditions.

OPERATION

(a) During Normal Operation

- During normal braking, the stroke simulator cut valve (SSA) is closed and the gap hold valve (SGH) is opened. At this time, the brake fluid pressure is generated by linear solenoid valve control according to the target wheel cylinder pressure. The pressure generated by the brake booster with master cylinder assembly together with the pressure generated by the brake actuator assembly is optimally adjusted to create a braking force based on the brake pedal depression amount.

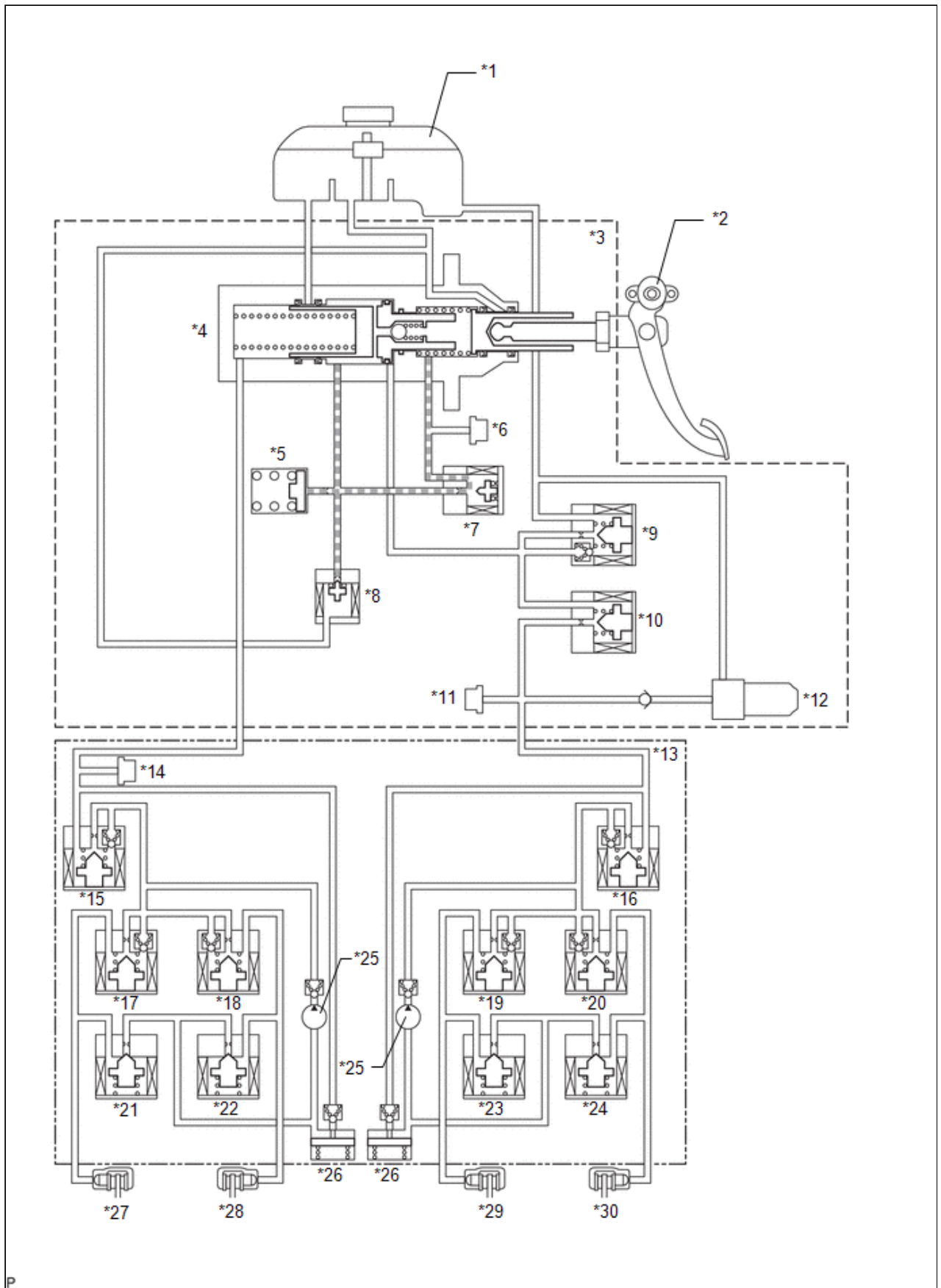
Brake Fluid Diagram during Normal Operation (When Increasing Pressure)



*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (Psrsv)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

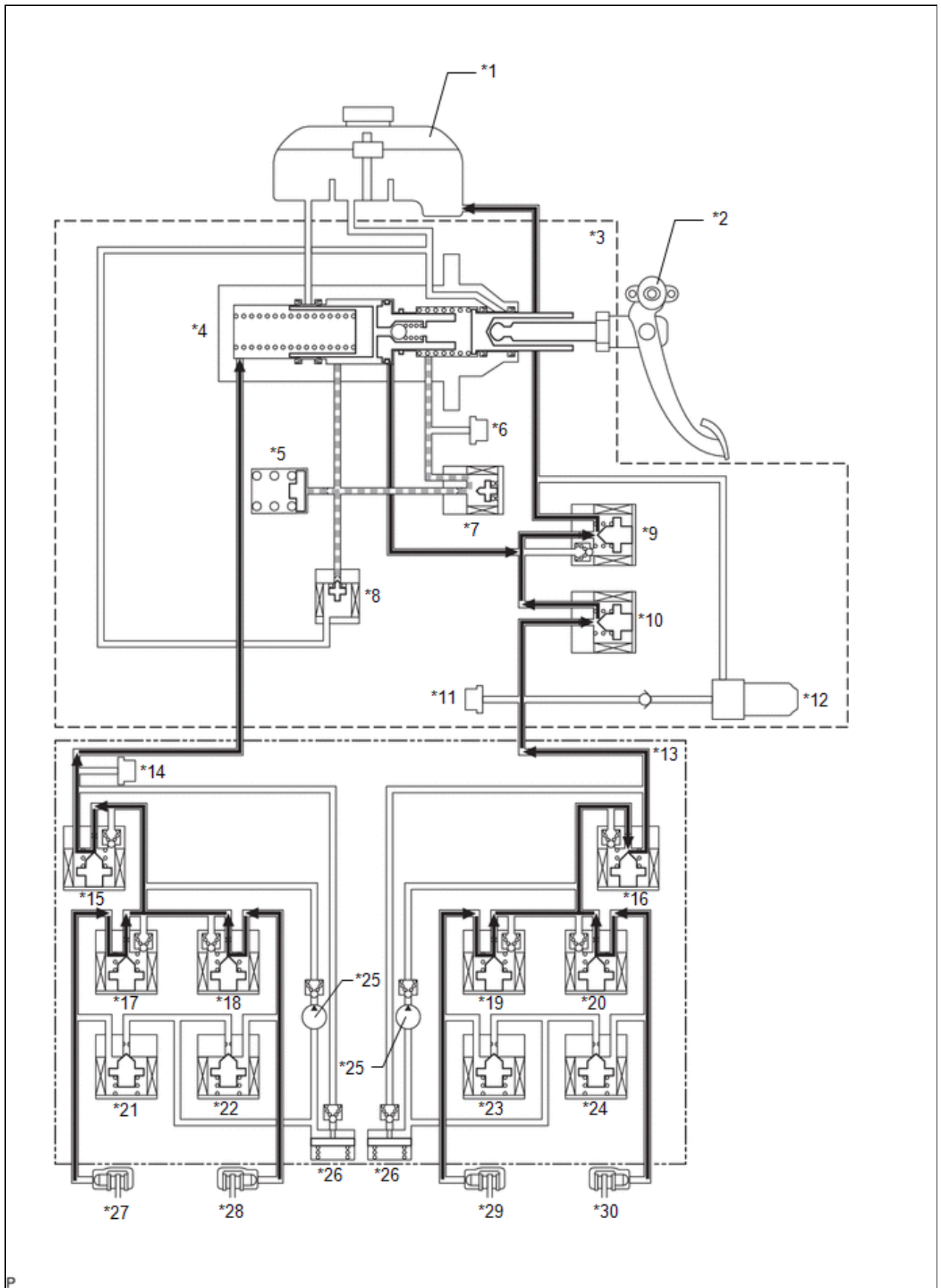
Brake Fluid Circuit Diagram during Normal Operation (When Holding Pressure)



*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (Psrsv)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

Brake Fluid Circuit Diagram during Normal Operation (When Decreasing Pressure)



*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

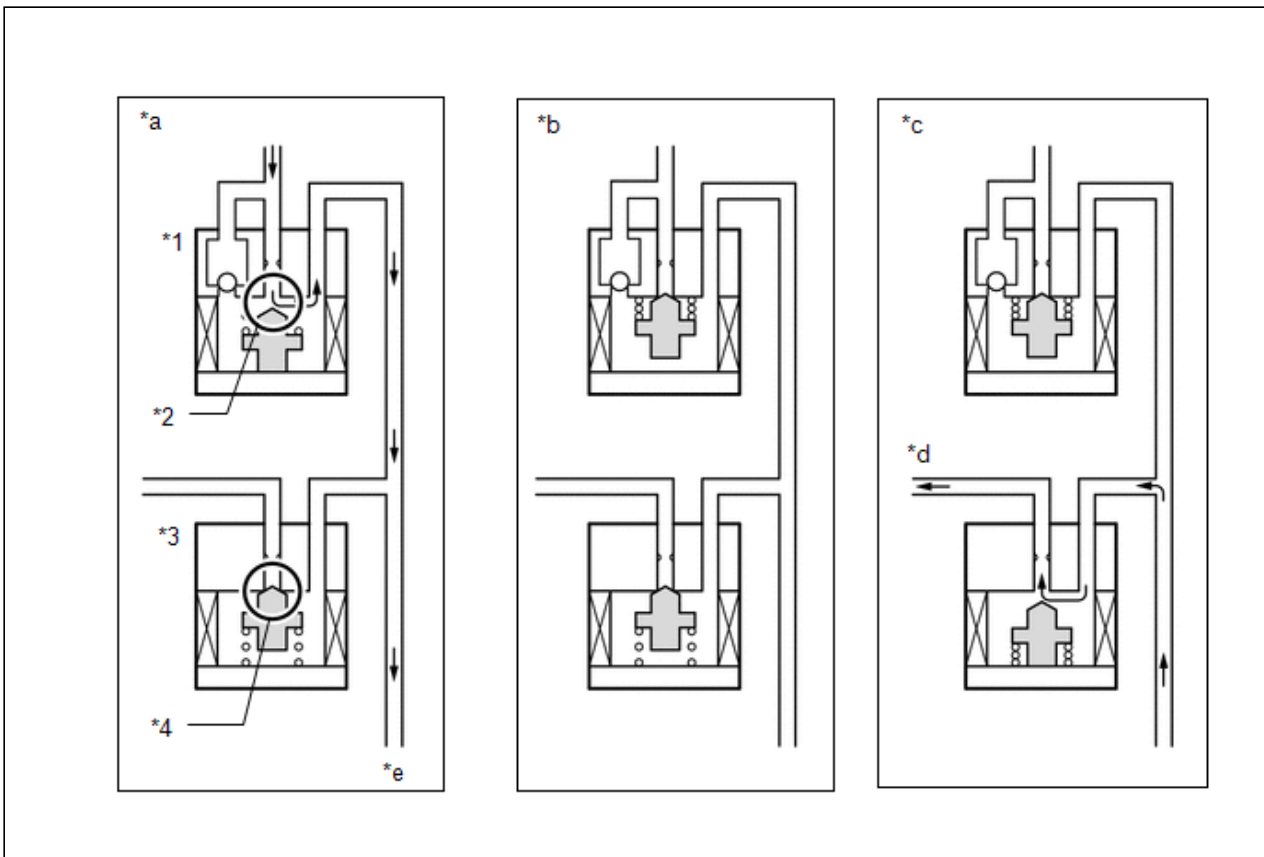
*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (Psrv)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

Normal Brake Control Operation

Master Cylinder Pressure Control	Activate
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM1, SM2))	Activate
Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)	Not Activate

(b) ABS and EBD

1. The ABS and EBD controls the pump, pressure holding solenoid valve and pressure reduction solenoid valve to control the brake fluid pressure of each wheel cylinder.



*1	Pressure Holding Solenoid Valve	*2	Port 1
*3	Pressure Reduction Solenoid Valve	*4	Port 2
*a	Pressure Increase Mode	*b	Pressure Hold Mode
*c	Pressure Decrease Mode	*d	To Reservoir
*e	To Wheel Cylinder	-	-

ABS Control Operation

Master Cylinder Pressure Control	Activate
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM1, SM2))	Not Activate
Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)	Activate

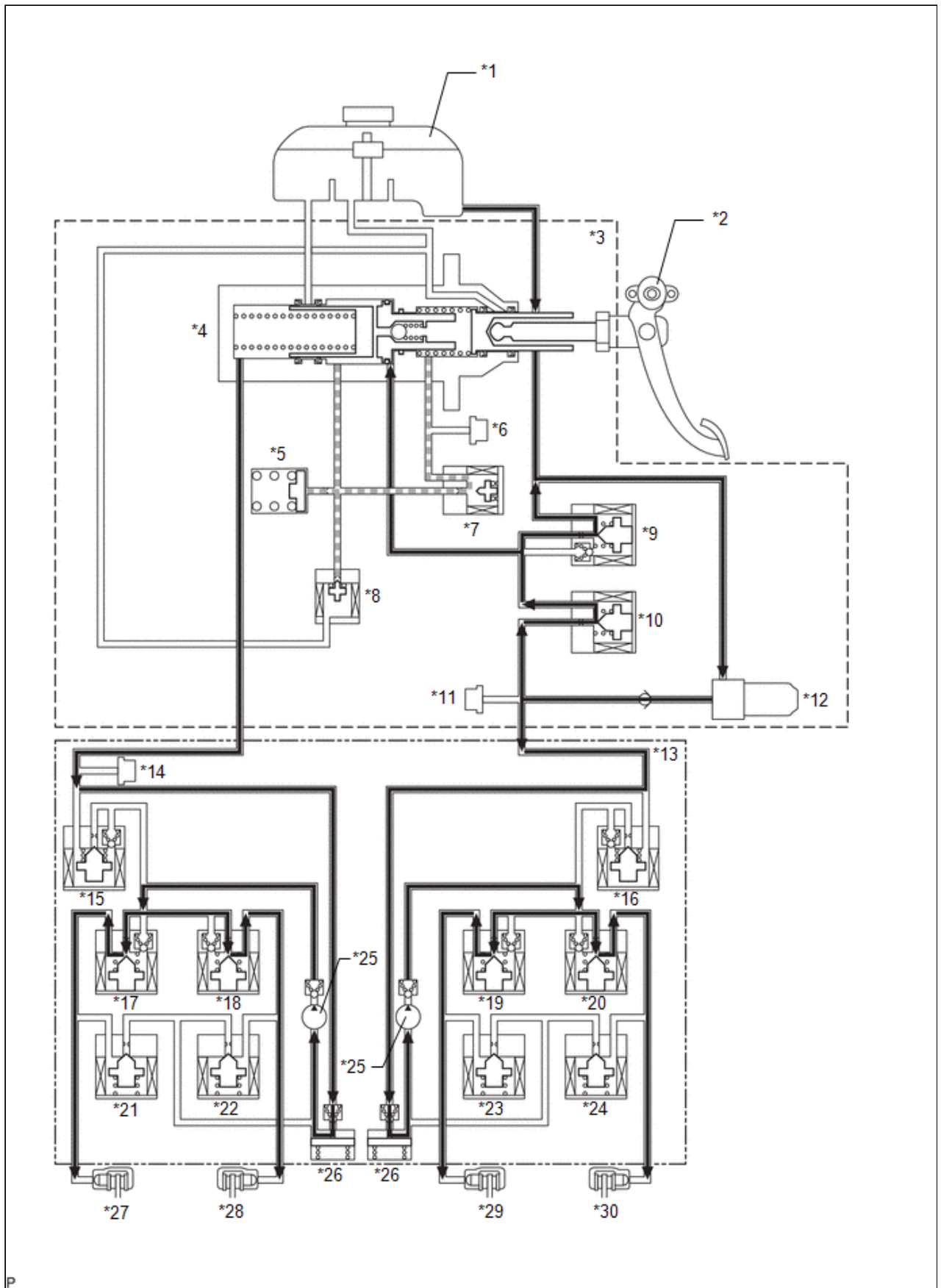
EBD Control Operation

Master Cylinder Pressure Control	Activate
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM1, SM2))	Not Activate
Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)	Activate

(c) Brake Assist

1. When brake assist is operating, the brake fluid pressure generated by the brake booster with master cylinder assembly is supplied to the brake actuator assembly. Based on the supplied pressure, by adjusting the brake fluid pressure using the pump motor in the brake actuator assembly, a brake fluid pressure higher than that generated by the driver depressing the brake pedal is directed to each wheel cylinder.

Brake Assist Control Operation



*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (Psrsv)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

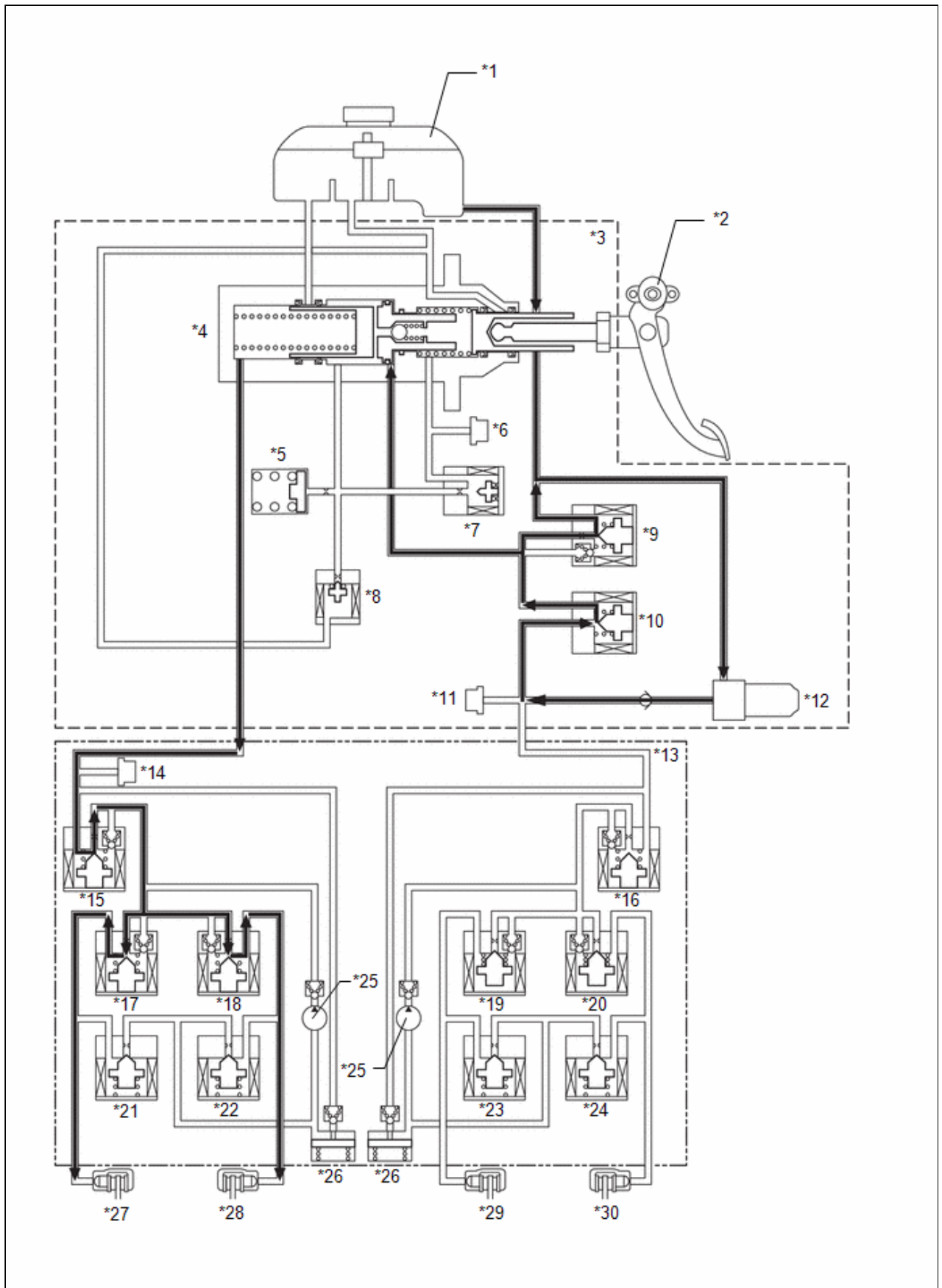
Brake Assist Control Operation

Master Cylinder Pressure Control	Activate
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM1, SM2))	Activate
Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)	Activate

(d) TRAC

1. When TRAC is operating, pressurized brake fluid is supplied by the brake booster with master cylinder assembly to the wheel cylinder of each drive wheel to apply the brakes to suppress slippage of the wheels due to engine torque.
2. The following illustration shows the operation during pressure increase mode.

TRAC Control Operation (2WD Models)



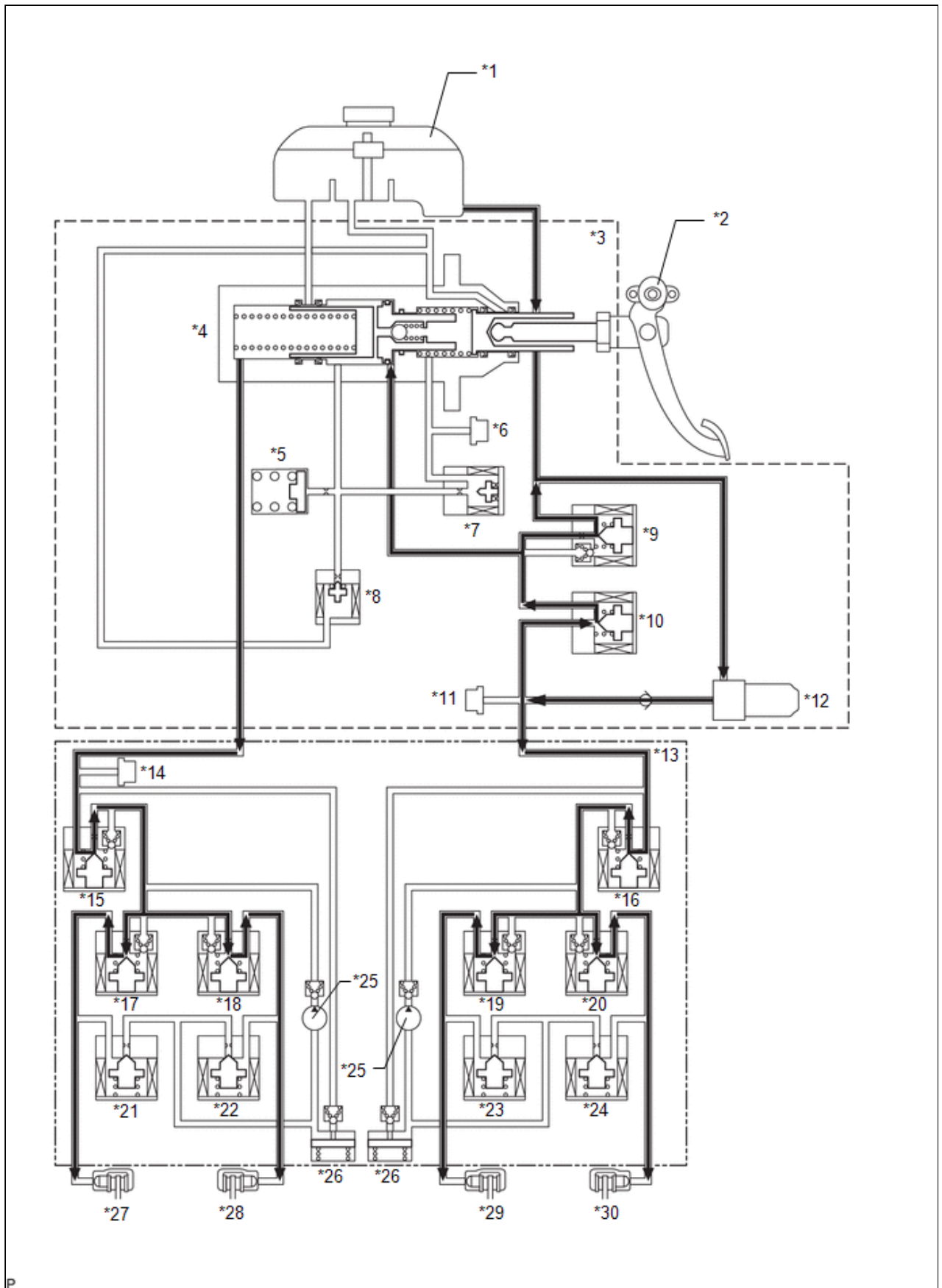
*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (PsrV)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

TRAC Control Operation (2WD Models)

Master Cylinder Pressure Control	Activate
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM1, SM2))	Not Activate
Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)	Activate

TRAC Control Operation (AWD Models)



*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (Psrv)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

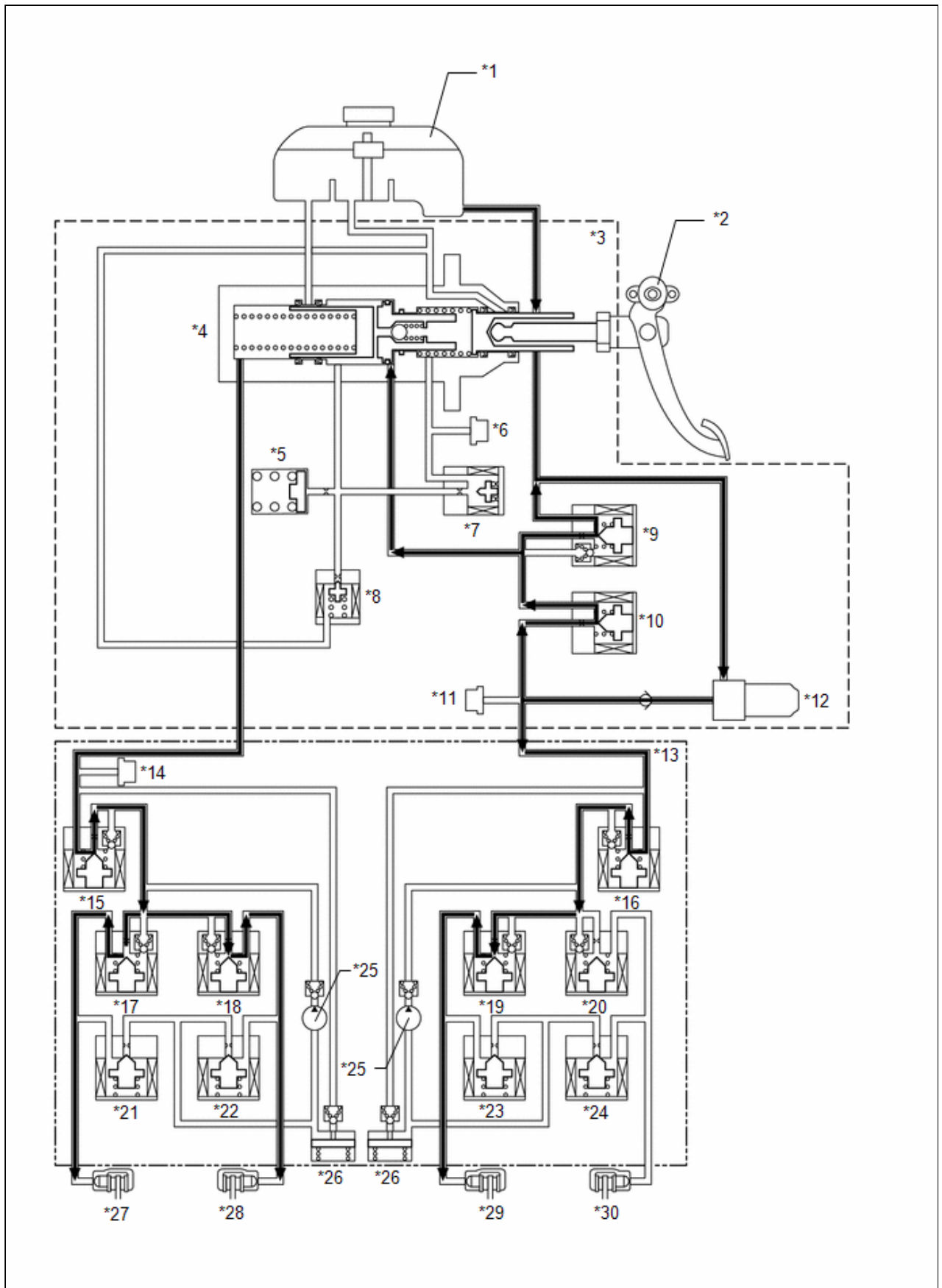
TRAC Control Operation (AWD Models)

Master Cylinder Pressure Control	Activate
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM1, SM2))	Not Activate
Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)	Activate

(e) VSC

1. When VSC is operating, pressurized brake fluid is supplied by the brake booster with master cylinder assembly to the wheel cylinder of each wheel, and lateral slippage of the front and rear wheels is suppressed by controlling the brake fluid pressure.
2. Both of the following illustrations show the operation during pressure increase mode when the driver is not depressing the brake pedal while cornering to the right.

VSC Control Operation (During Understeer)



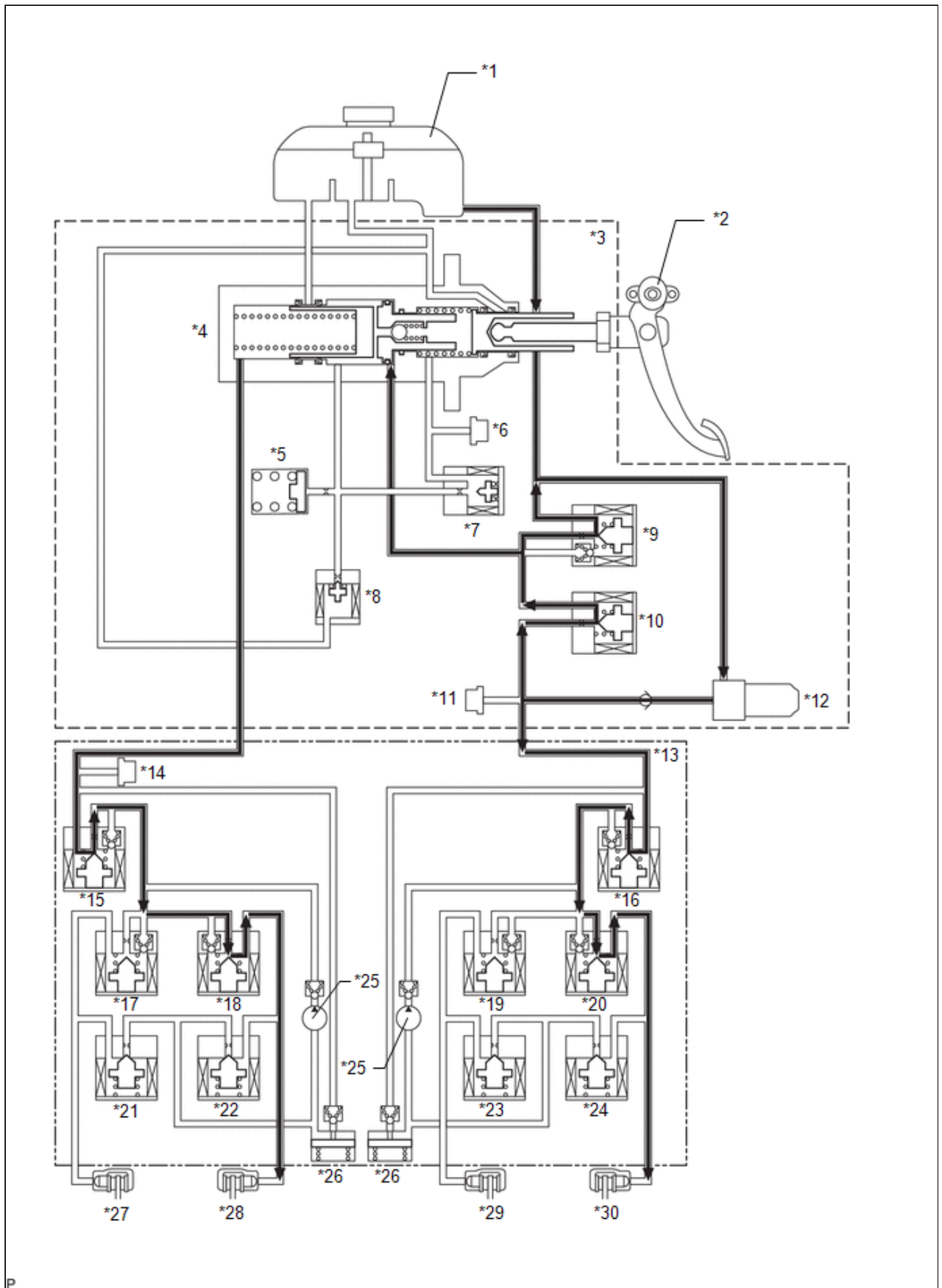
*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (PsrV)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

VSC Control Operation (During Understeer)

Master Cylinder Pressure Control	Activate
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM1, SM2))	Not Activate
Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)	Activate

VSC Control Operation (During Oversteer)



*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (Psrv)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

VSC Control Operation (During Oversteer)

Master Cylinder Pressure Control	Activate
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM1, SM2))	Not Activate
Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)	Activate

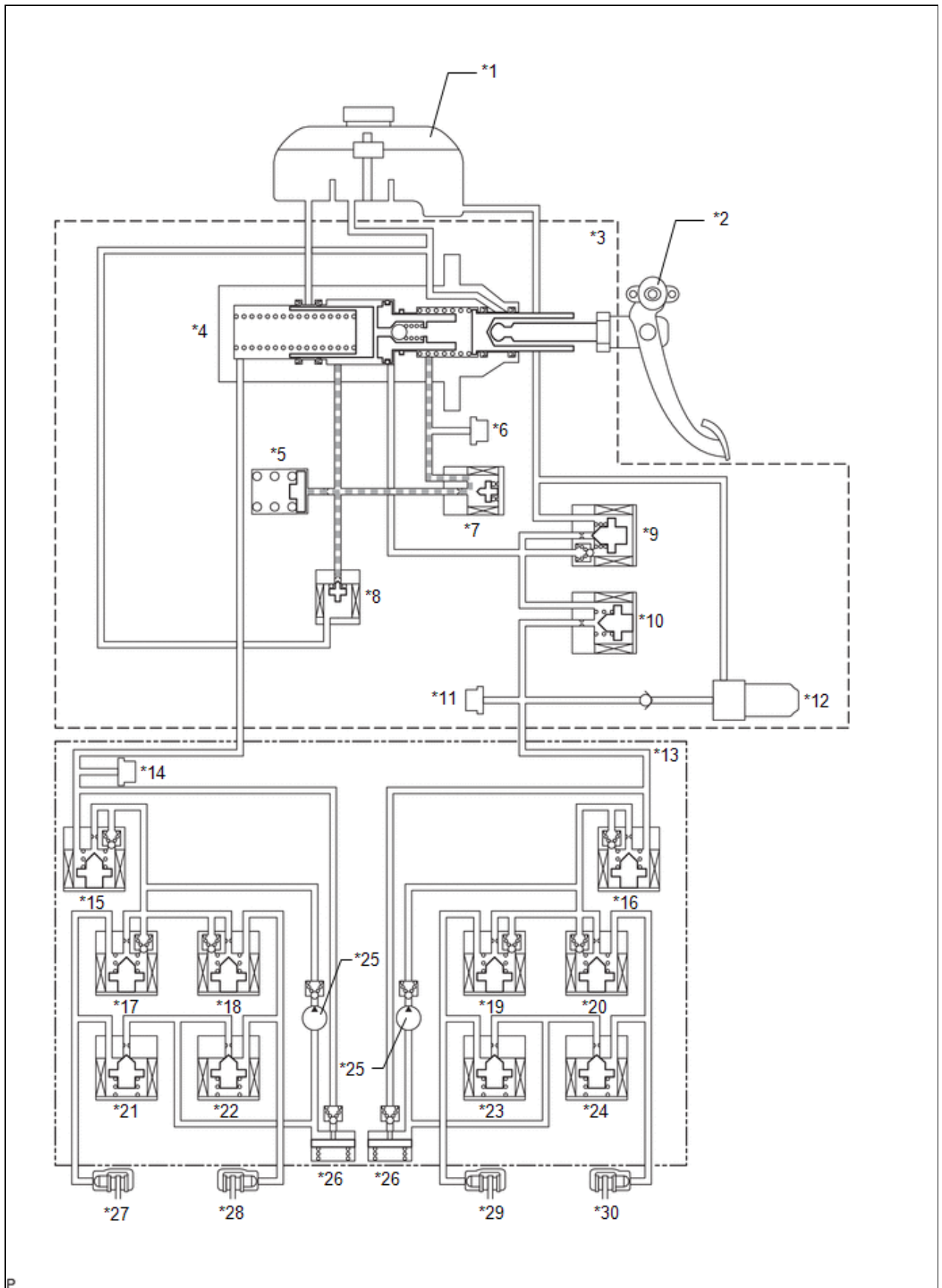
(f) Active Cornering Assist (ACA)

1. When Active Cornering Assist (ACA) is operating, pressurized brake fluid is supplied by the brake booster with master cylinder assembly to the wheel cylinder of each wheel, and understeer (lateral slippage of the front wheels) is suppressed by controlling the brake fluid pressure.
2. The brake control of Active Cornering Assist (ACA) is the same as that used by VSC to suppress understeer.

(g) Hill-start Assist Control

1. After the driver operates the brakes, the pressure holding valve is closed to maintain a certain amount of the generated brake fluid pressure in each wheel cylinder to perform hill-start assist control.
2. The following illustration shows the operation during pressure hold mode.

Hill-start Assist Control Operation



*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (PsrV)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

Hill-start Assist Control Operation

Master Cylinder Pressure Control	Not Activate
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM1, SM2))	Activate
Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)	Not Activate

(h) Brake Hold

1. The operation of the solenoid valves under the brake hold is the same as the operation of the hill-start assist control.

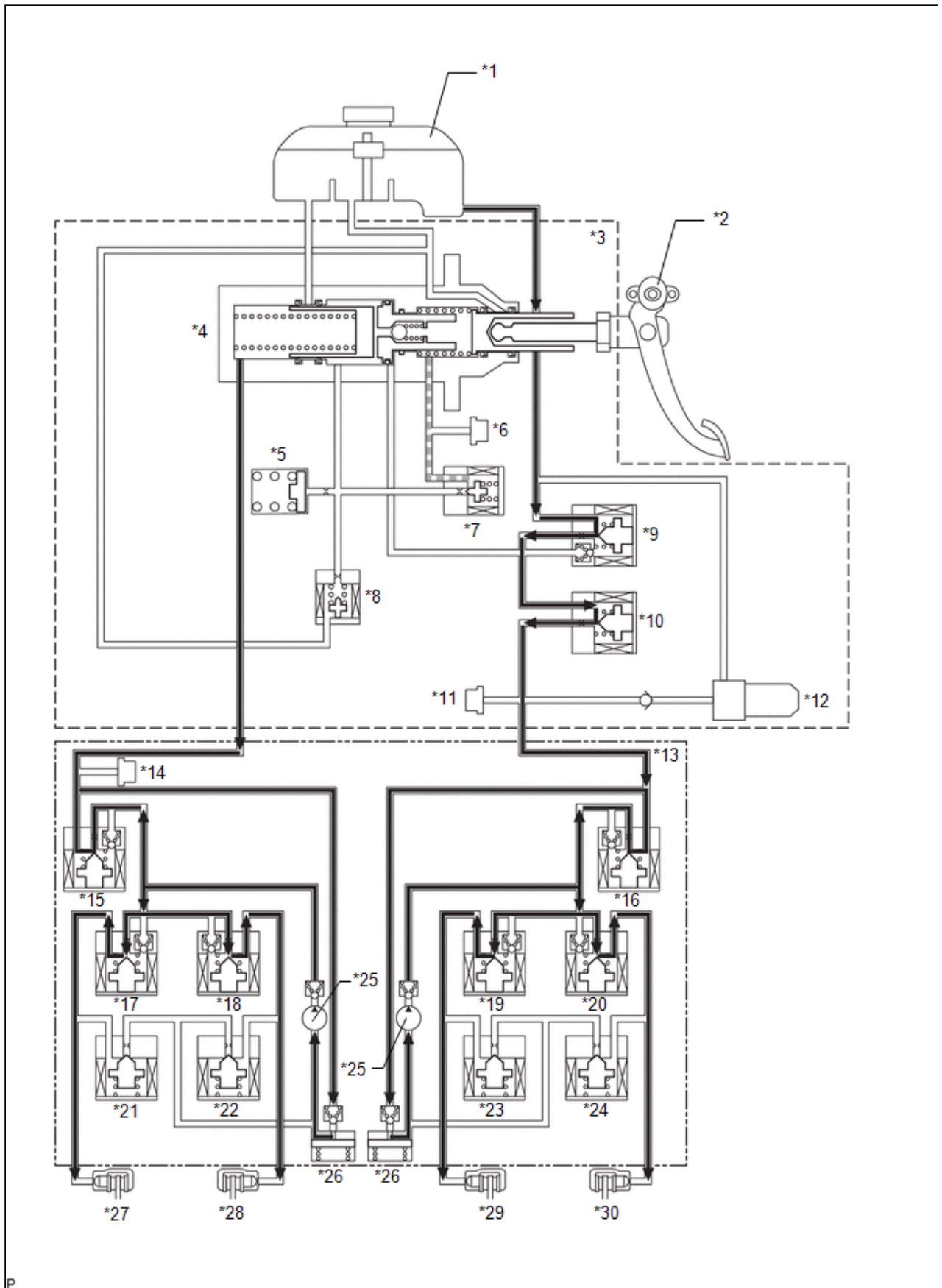
(i) Enhanced-VSC

1. The operation of the solenoid valves under the steering cooperative control is the same as the TRAC or VSC operation.

(j) Control during Malfunction of Brake Booster with Master Cylinder Assembly

1. When the operation of the brake booster with master cylinder assembly has stopped due to malfunction, etc., the stroke simulator cut valve (SSA) is opened, and the gap hold valve (SGH) is closed. In this way, the brake fluid pressure generated in the master cylinder is supplied to the front system. The supplied brake fluid pressure is regulated by the brake actuator assembly and supplied to each wheel cylinder.
2. The following illustration shows the operation during pressure increase mode.

Control during Malfunction of Brake Booster with Master Cylinder Assembly



*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (Psrsv)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

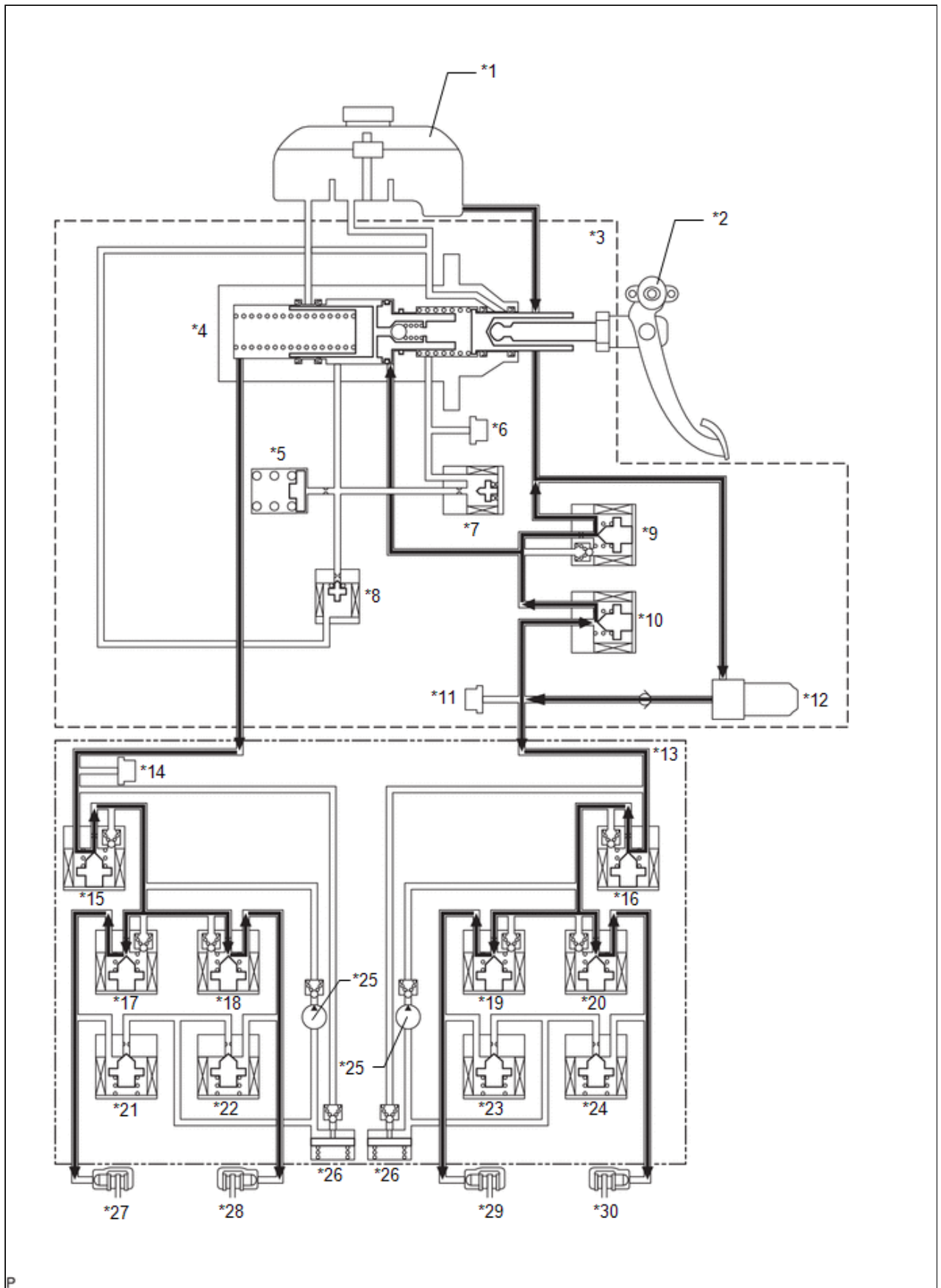
Control during Malfunction of Brake Booster with Master Cylinder Assembly

Master Cylinder Pressure Control	Malfunction
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM1, SM2))	Activate
Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)	Activate

(k) Control during Brake Actuator Assembly Malfunction

1. When the operation of the brake actuator assembly has stopped due to malfunction, etc., boost amount is controlled by the pump and motor and linear solenoid valve (SLM1, SLM2) of the brake booster with master cylinder assembly, supplying the brake fluid pressure to each wheel cylinder.
2. The following illustration shows the operation during pressure increase mode.

Control during Brake Actuator Assembly Malfunction



*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (PsrV)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

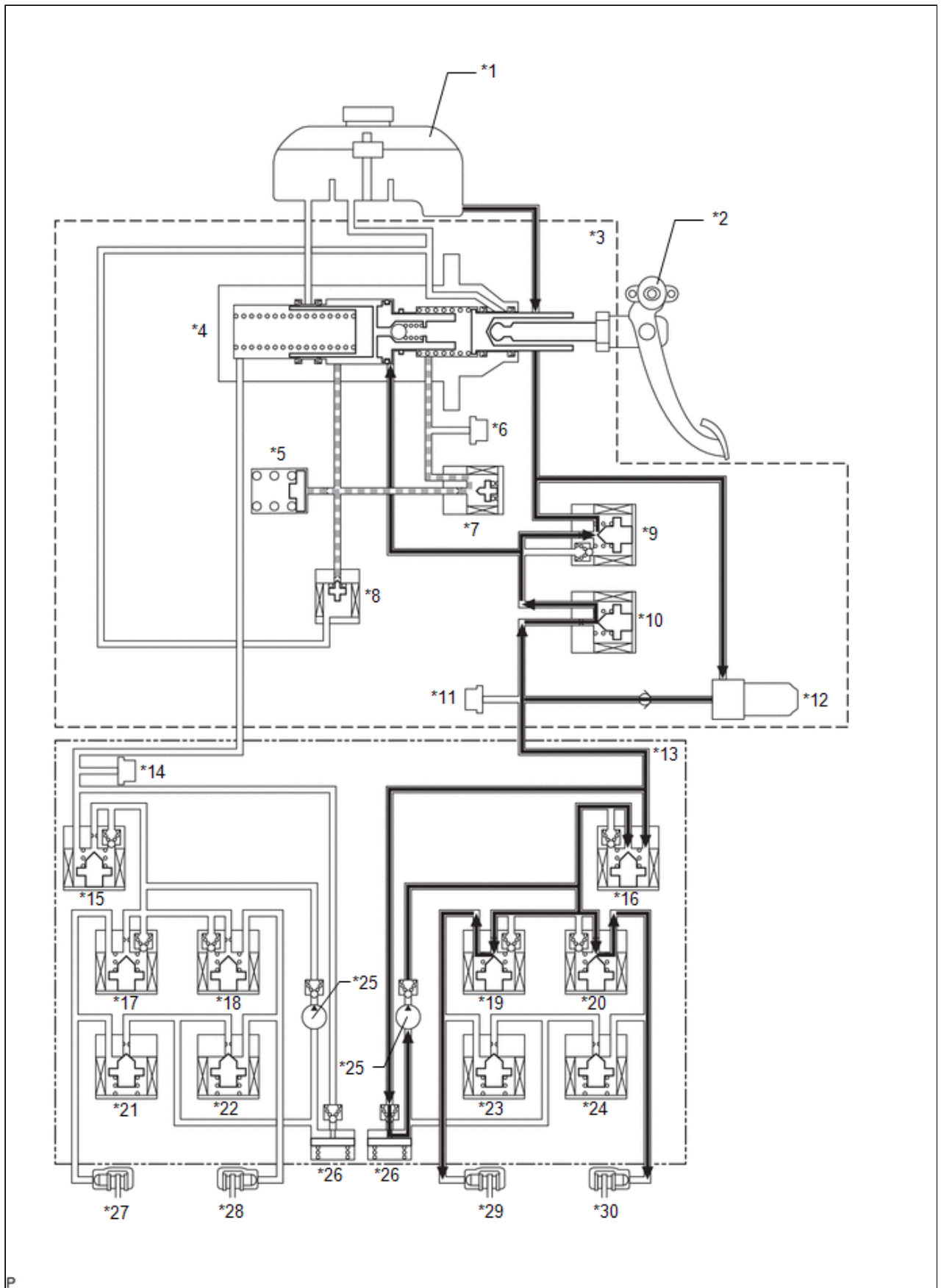
Control during Brake Actuator Assembly Malfunction

Master Cylinder Pressure Control	Activate
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM1, SM2))	Malfunction
Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)	Malfunction

(I) Control during Malfunction in One Circuit

1. When there is a fault in the front system, the stroke simulator cut valve (SSA) is closed and the gap hold valve (SGH) is opened, and the brake fluid pressure generated by the pump and motor is regulated by the linear solenoid valve and directed to the wheel cylinders of the rear system to operate the brakes.
2. When there is a fault in the rear system, the stroke simulator cut valve (SSA) is opened, and the gap hold valve (SGH) is closed. In this way, the brake fluid pressure generated in the master cylinder is supplied to the front system. The supplied brake fluid pressure is regulated by the brake actuator assembly and directed to each wheel cylinder to operate the brakes.
3. The following illustration shows the operation during pressure increase mode.

Control during Front Circuit Malfunction



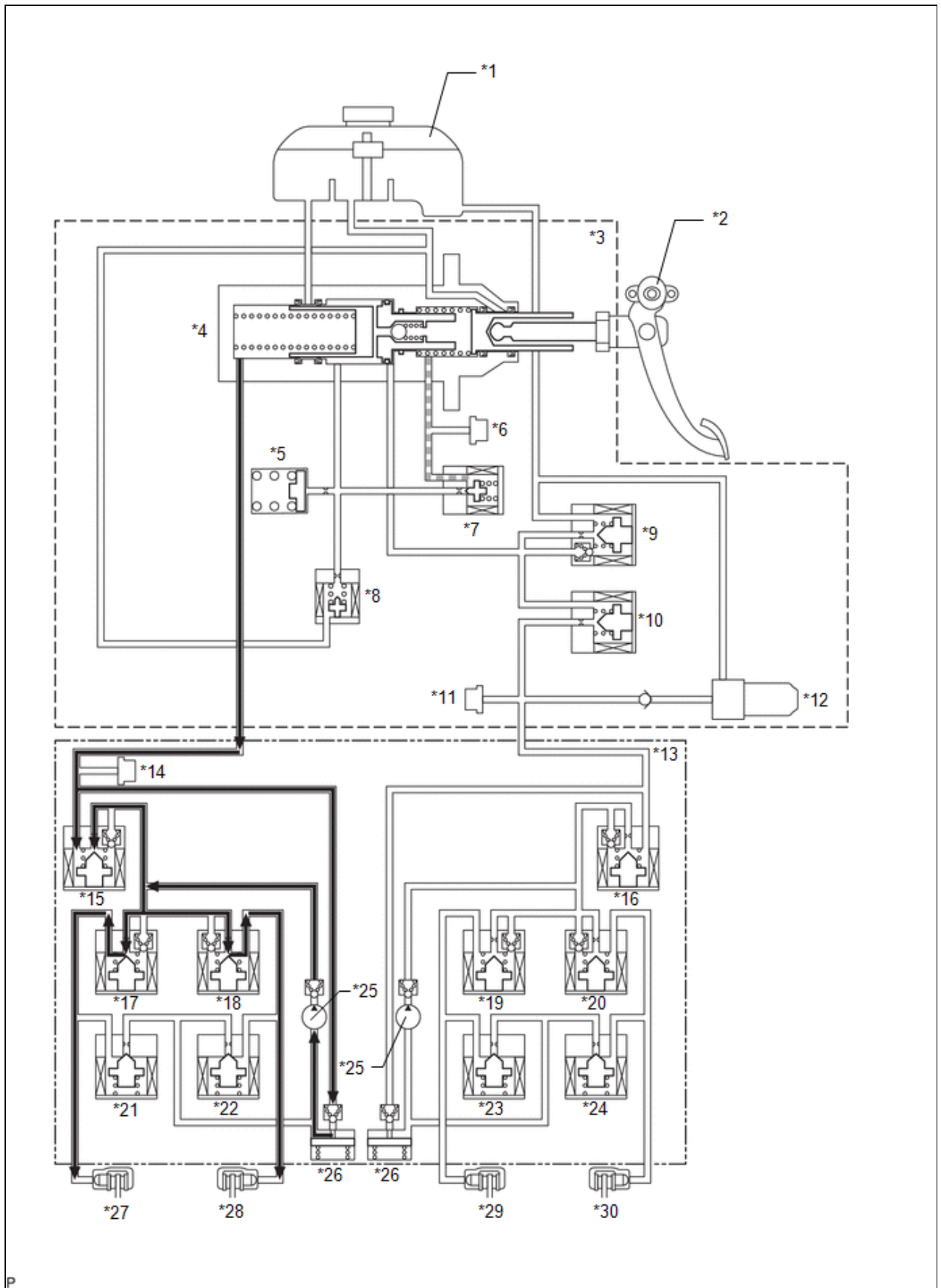
*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (PsrV)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

Control during Front Circuit Malfunction

Master Cylinder Pressure Control	Activate
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM1))	Malfunction
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM2))	Activate
Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)	Activate

Control during Rear Circuit Malfunction



*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (Psrsv)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

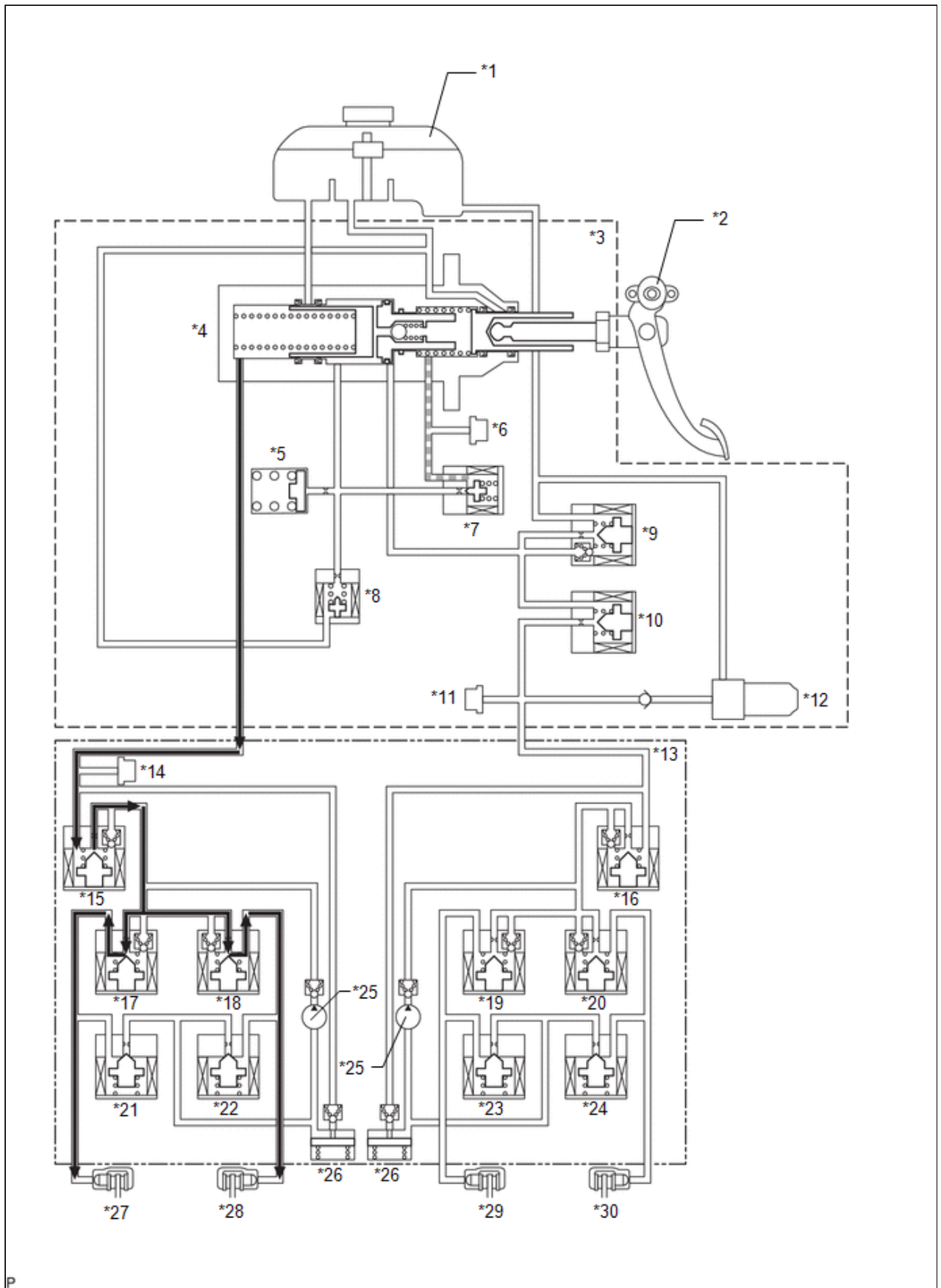
Control during Rear Circuit Malfunction

Master Cylinder Pressure Control	Not Activate
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM1))	Activate
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM2))	Malfunction
Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)	Activate

(m) Control during Power Supply Malfunction

1. The stroke simulator cut valve (SSA) is opened and gap hold valve (SGH) is closed. With this, pressure generated in the master cylinder chambers by the depression of the brake pedal by the driver is applied to each wheel cylinder.
2. The following illustration shows the operation during pressure increase mode.

Control during Power Supply Malfunction



*1	Brake Master Cylinder Reservoir Assembly	*2	Brake Pedal Stroke Sensor Assembly
*3	Brake Booster with Master Cylinder Assembly	*4	Master Cylinder

*5	Stroke Simulator	*6	Stroke Simulator Pressure Sensor (Pgap)
*7	Gap Hold Valve (SGH)	*8	Stroke Simulator Cut Valve (SSA)
*9	Linear Solenoid Valve (SLM2)	*10	Linear Solenoid Valve (SLM1)
*11	Servo Pressure Sensor (Psrv)	*12	Pump and Motor
*13	Brake Actuator Assembly	*14	Master Cylinder Pressure Sensor (Pmc)
*15	Linear Solenoid Valve (SM1)	*16	Linear Solenoid Valve (SM2)
*17	Pressure Holding Solenoid Valve (SFRH)	*18	Pressure Holding Solenoid Valve (SFLH)
*19	Pressure Holding Solenoid Valve (SRRH)	*20	Pressure Holding Solenoid Valve (SRLH)
*21	Pressure Reduction Solenoid Valve (SFRR)	*22	Pressure Reduction Solenoid Valve (SFLR)
*23	Pressure Reduction Solenoid Valve (SRRR)	*24	Pressure Reduction Solenoid Valve (SRLR)
*25	Pump	*26	Reservoir
*27	Front Brake RH	*28	Front Brake LH
*29	Rear Brake RH	*30	Rear Brake LH

Control during Power Supply Malfunction

Master Cylinder Pressure Control	Not Activate
Wheel Cylinder Pressure Control (Linear Solenoid Valve (SM1, SM2))	Not Activate
Wheel Cylinder Pressure Control (Pressure Holding Solenoid Valve and Pressure Reduction Solenoid Valve)	Not Activate

