
SECONDARY COLLISION REDUCTION (SCR)

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Purpose

- The Secondary Collision Reduction (SCR) is a part of the DSC system functions which operates the automatic brakes and flashes the hazard warning lights when the vehicle is hit while it is stopped and moved by the impact to avoid the occurrence of a secondary collision.

Warning

- **The secondary collision reduction (SCR) performs the brake control (SCR brake), however, it is not a system which guarantees collision prevention under all conditions. Because deceleration by the brake control (SCR brake) is limited.**

Note

- The secondary collision reduction (SCR) is a system for assisting driver operations. Accordingly, if the conditions for the secondary collision reduction (SCR) are met, or even when the secondary collision reduction (SCR) is operating, if the driver operates the steering wheel, accelerator pedal, and the brake pedal, the driver's operations take precedence and the secondary collision reduction (SCR) operation is canceled.

Function

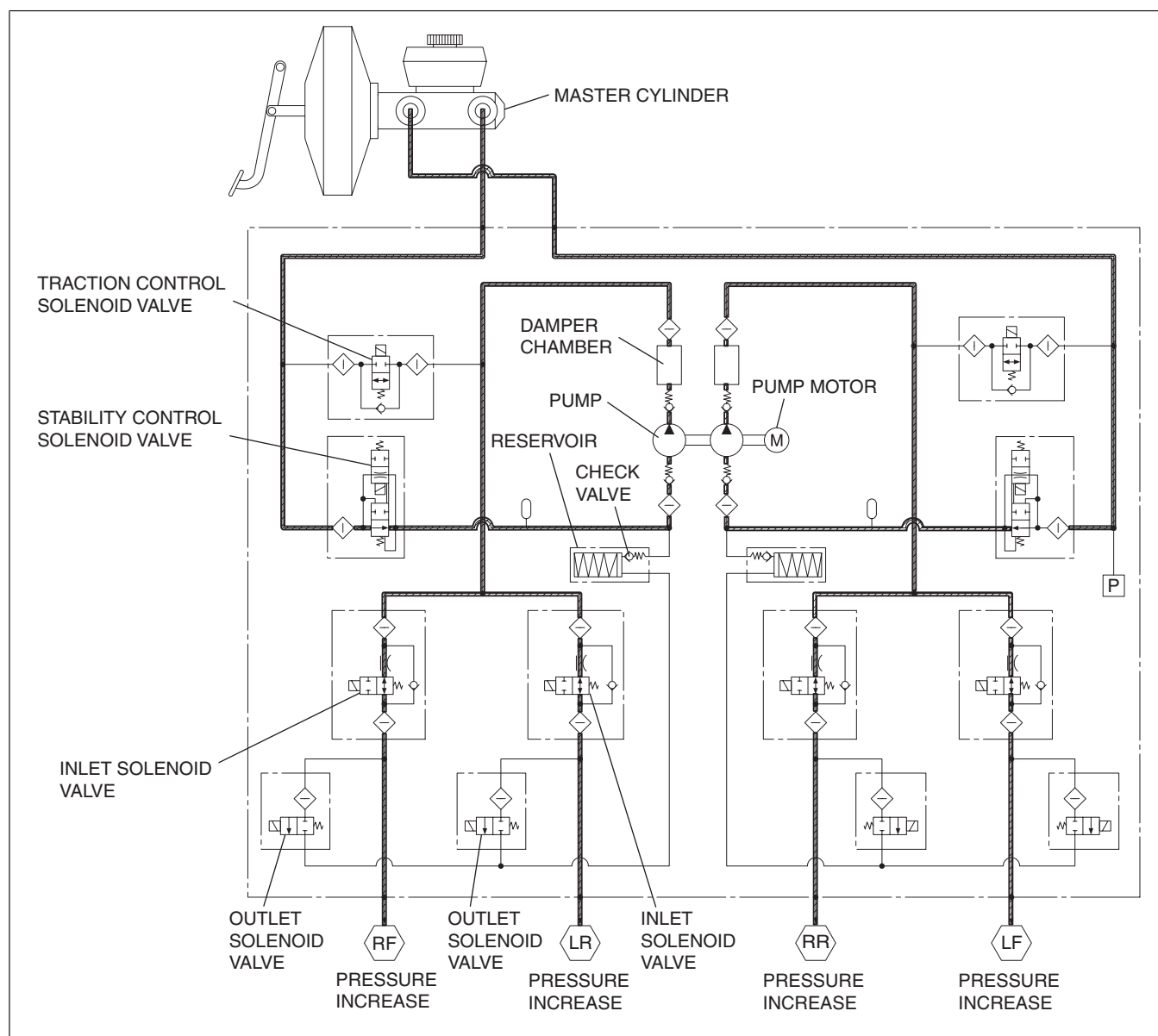
- The secondary collision reduction (SCR) functions are categorized as follows:
 - Hazard warning (SCR hazard) which flashes the hazard warning lights to warn surrounding vehicles when the vehicle is collision.
 - The hazard warning (SCR hazard) is equipped as standard.
 - Brake control (SCR brake) which operates the automatic brakes when the vehicle is hit while it is stopped and moved by the impact.
 - The brake control (SCR brake) is equipped along with smart city brake support (SCBS).

Construction

Solenoid valve operation table

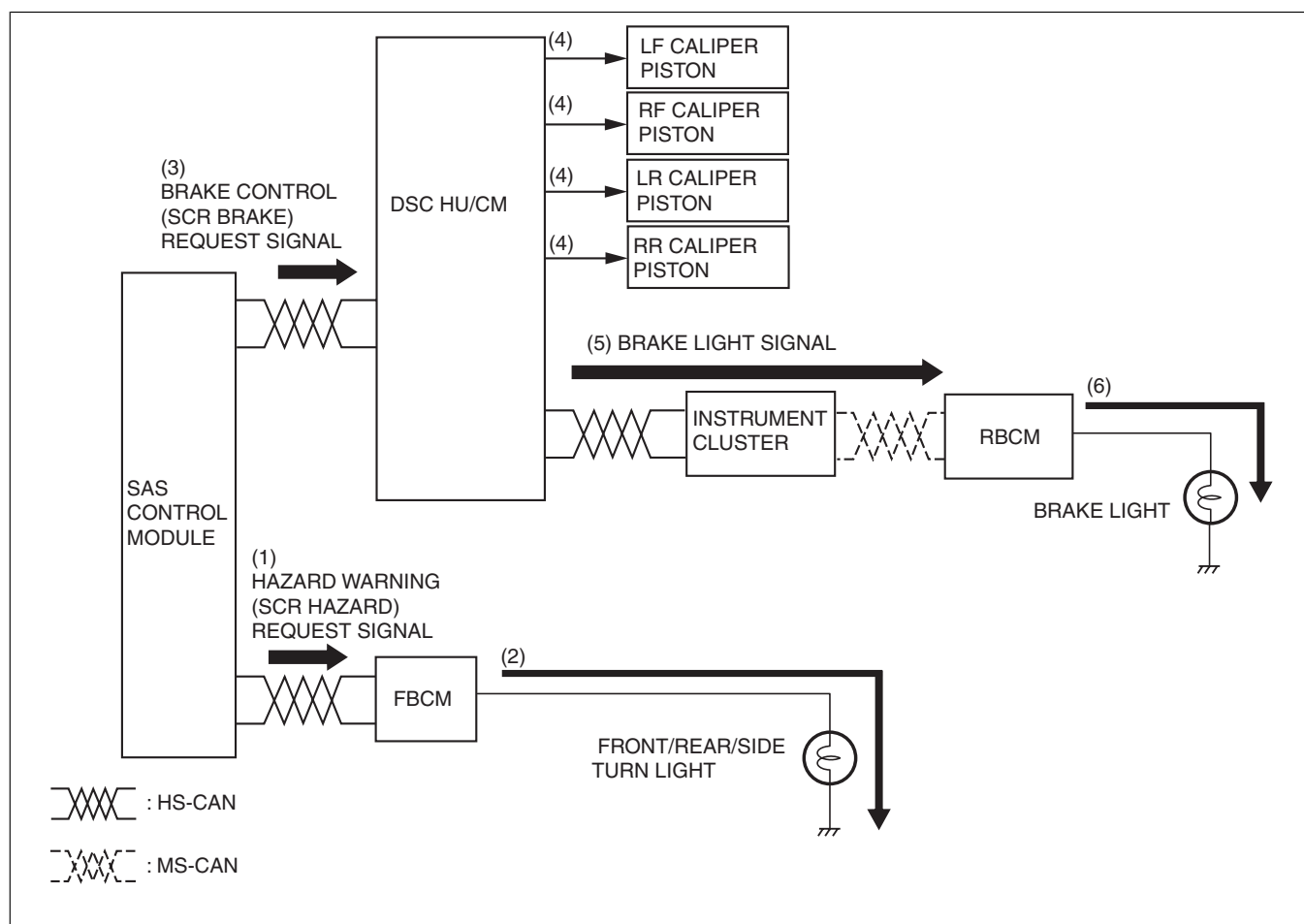
Traction control solenoid valve		Stability control solenoid valve		Inlet solenoid valve				Outlet solenoid valve				Pump motor, pump
LF—RR	RF—LR	LF—RR	RF—LR	LF	RF	LR	RR	LF	RF	LR	RR	
ON (close)		ON (open)		OFF (open)				OFF (close)				Operating

Hydraulic circuit diagram



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Block diagram



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Operation

Hazard warning (SCR hazard) operation

- The SAS control module detects a collision with another vehicle, it outputs a hazard warning (SCR hazard) request signal (1) to the front body control module (FBCM). The front body control module (FBCM) flashes the turn light (2) during a collision to caution the vehicles surrounding vehicle when it detects a certain amount of impact.
- While the hazard warning (SCR hazard) is operating, all the turn lights are flashed automatically. The system can be turned off by pressing the hazard warning light switch two times.

Brake control (SCR brake) operation

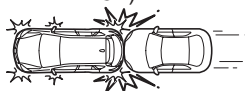
- Operation conditions (any of the following conditions must be met):
 - The selector lever is in the P position. (ATX)
 - The parking brake is applied.
 - The brake pedal is depressed. (the DSC HU/CM monitors the brake fluid pressure)
- When any of the operation conditions is met and the SAS control module detects a collision with another vehicle, it outputs a brake control (SCR brake) request signal (3) to the DSC HU/CM. (At the same time, it also outputs a hazard warning (SCR hazard) request signal to the front body control module (FBCM)).
- The DSC HU/CM energizes the traction control and the stability control solenoid valves to switch the hydraulic circuits, and at the same time, it operates the pump motor to activate the pump so that the brake fluid pressure is lead to the caliper piston and the automatic brakes are operated (4). At the same time, the DSC HU/CM outputs a brake light signal to the rear body control module (RBCM) (5).
- While the brake control (SCR brake) is operating, turns on the brake lights automatically (6).
- Cancel condition (any of the following conditions must be met):
 - The engine is stopped (the ignition is switched off).
 - Approx. 1.5 s has elapsed since the vehicle was stopped by the brake control (SCR brake).
 - The accelerator pedal opening angle exceeds approx. 20%.
 - Brake force greater than that generated by the brake control (SCR brake) is input via the brake pedal.

OPERATION SCENARIO (REAR COLLISION USED AS AN EXAMPLE)

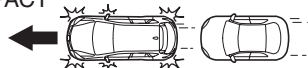
① THE VEHICLE IS STOPPED



② AFTER A COLLISION FROM THE REAR, THE HAZARD WARNING (SCR HAZARD) ACTIVATES (PRIMARY IMPACT)



③ THE BRAKE CONTROL (SCR BRAKE) OPERATES WITH THE LURCH FROM THE PRIMARY IMPACT



④ THE VEHICLE IS STOPPED



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Caution

- The secondary collision reduction (SCR) does not operate if the DSC system has a malfunction and the DSC control is inhibited.
- The secondary collision reduction (SCR) may not operate in the case of a low-speed collision in which the air bags do not deploy.
- The secondary collision reduction (SCR) may not operate if the vehicle speed exceeds approx. 50 km/h because of the first collision.
- The secondary collision reduction (SCR) does not operate if the components of the SAS control module and the DSC system are significantly damaged by the first collision.