VEHICLE ROLL PREVENTION FUNCTION

id041500104400

Purpose/Function

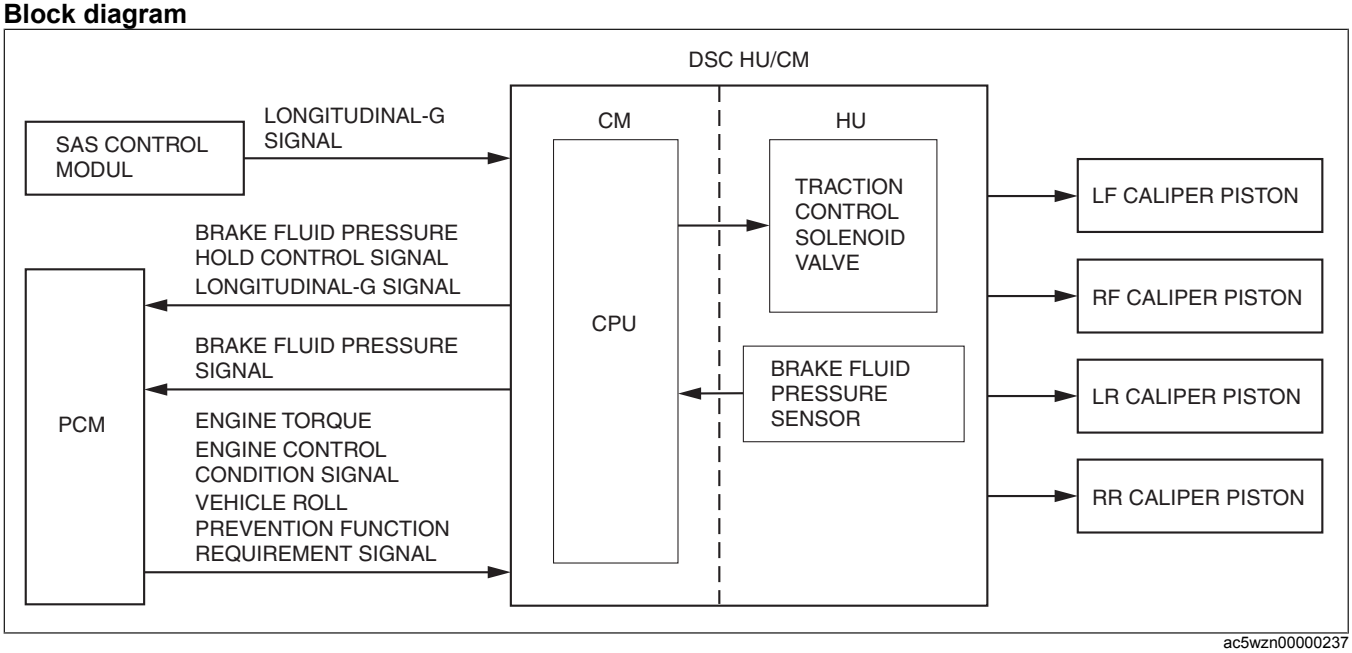
- The Vehicle roll prevention function is equipped on vehicles with i-stop. The vehicle roll prevention function prevents the vehicle from moving when it is stopped on a slope and the foot is released from the brake pedal while the i-stop (engine stop control) is operating. However, if the i-stop control (engine stop control) is not implemented, the vehicle roll prevention function does not operate.
- For details on i-stop, refer to the “i-stop control”. (See i-stop CONTROL [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See i-stop CONTROL [SKYACTIV-D 2.2].)

Note

- The vehicle roll prevention function is a control available only on ATX vehicles.
- The vehicle roll prevention function does not operate when the vehicle is stopped on a slope of **approx. 12% or more**.

Construction

Block diagram



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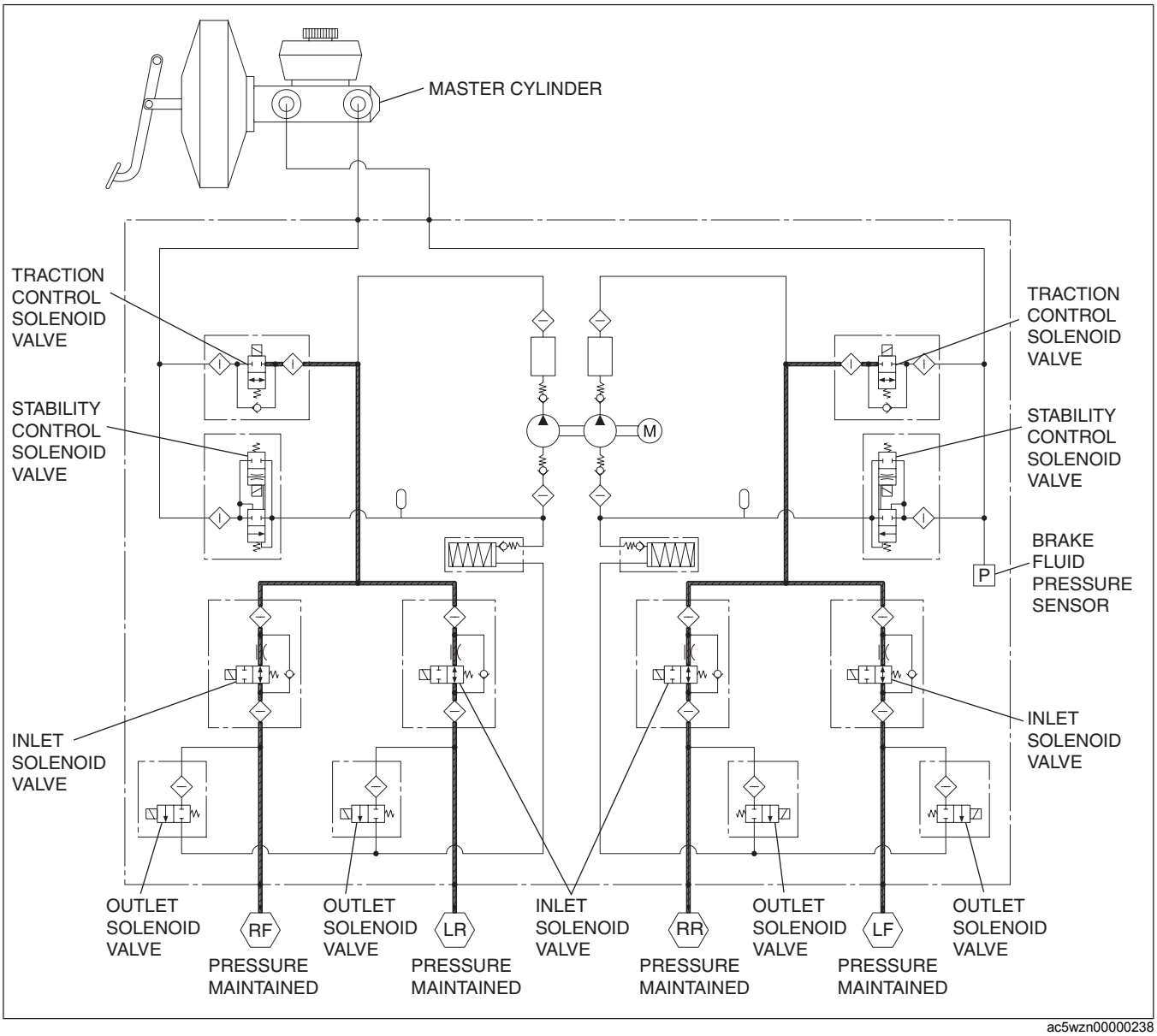
Operation

- The vehicle roll prevention function maintains brake fluid pressure to maintain vehicle stop condition while i-stop (engine stop control) is operating.
- The vehicle roll prevention function decreases brake fluid pressure according to road slope and engine torque for smooth startability while i-stop (engine restart control) is operating.
- The vehicle roll prevention function controls the traction control solenoid valve in the DSC HU/CM to maintain or decrease brake fluid pressure by the following signals sent from the PCM and the SAS control module.
  - — signals sent from the PCM:
    - Vehicle roll prevention function control request signal
    - Engine control condition signal
    - Engine torque signal
  - — signal sent from the SAS control module:
    - longitudinal-G signal
- The vehicle roll prevention function controls as follows according to the i-stop control condition:
  i-stop (engine stop control)
  - — When the DSC HU/CM receives the vehicle roll prevention function control request signal from the PCM, controls the brake fluid pressure hold control (traction control solenoid valve is energized and hydraulic circuit is closed) and maintains the brake fluid pressure while the vehicle is stopped.

Hydraulic circuit diagram



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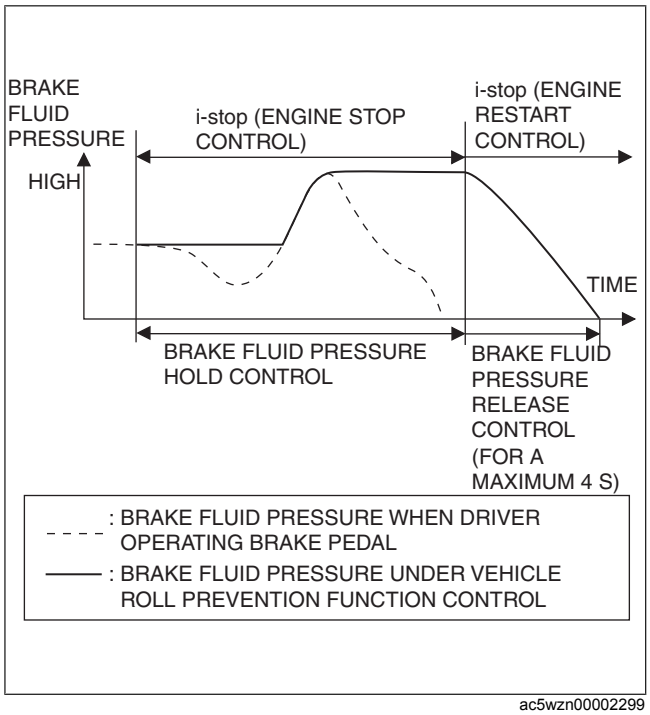
— If the driver depresses the brake pedal and the brake fluid pressure increases, the increased brake fluid pressure is maintained.
— The DSC HU/CM sends hold control signal to the PCM.

i-stop (engine restart control)

— The DSC HU/CM operates brake fluid pressure release control (maintained fluid pressure is controlled by changing energization amount to traction control solenoid valve) according to the engine torque signal sent from the PCM and the longitudinal-G signal from the SAS control module.
— When the engine torque signal sent from the PCM exceeds the specification after the engine restarts, the brake fluid pressure decreases. The time for decreasing changes depending on road slope and the time for decreasing becomes longer than on level road (for a maximum of **4 s**). In addition, when the accelerator pedal is depressed, the time for decreasing becomes shorter.



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