
POWER DOOR LOCK SYSTEM

id091400108200

Outline

- When the door lock switch or the front door key cylinder is operated to lock/unlock, all the doors lock/unlock.
- The rear body control module (RBCM) performs power door lock system fail-safe. (See REAR BODY CONTROL MODULE (RBCM).)

Function

Door lock-link switch interlock function (Without 2-step unlocking)

- When the driver's lock knob is locked/unlocked, all the doors lock/unlock.

Door lock switch interlock function (With 2-step unlocking)

- When the door lock switch is operated to lock/unlock, all the doors lock/unlock.

Door key interlock function

- When the front door key cylinder is operated to lock/unlock, all the doors lock/unlock.

Double locking function (With double locking)

- When all the doors and liftgate are closed and locked two times consecutively, the unlock operation for all door lock knobs is disabled.

2-step unlocking function (With 2-step unlocking)

- When an unlock operation is performed using the door key cylinder or the keyless entry remote transmitter, only the door lock on the driver-side door unlocks. In addition, when an unlock operation is performed, the door locks on all the doors unlock.

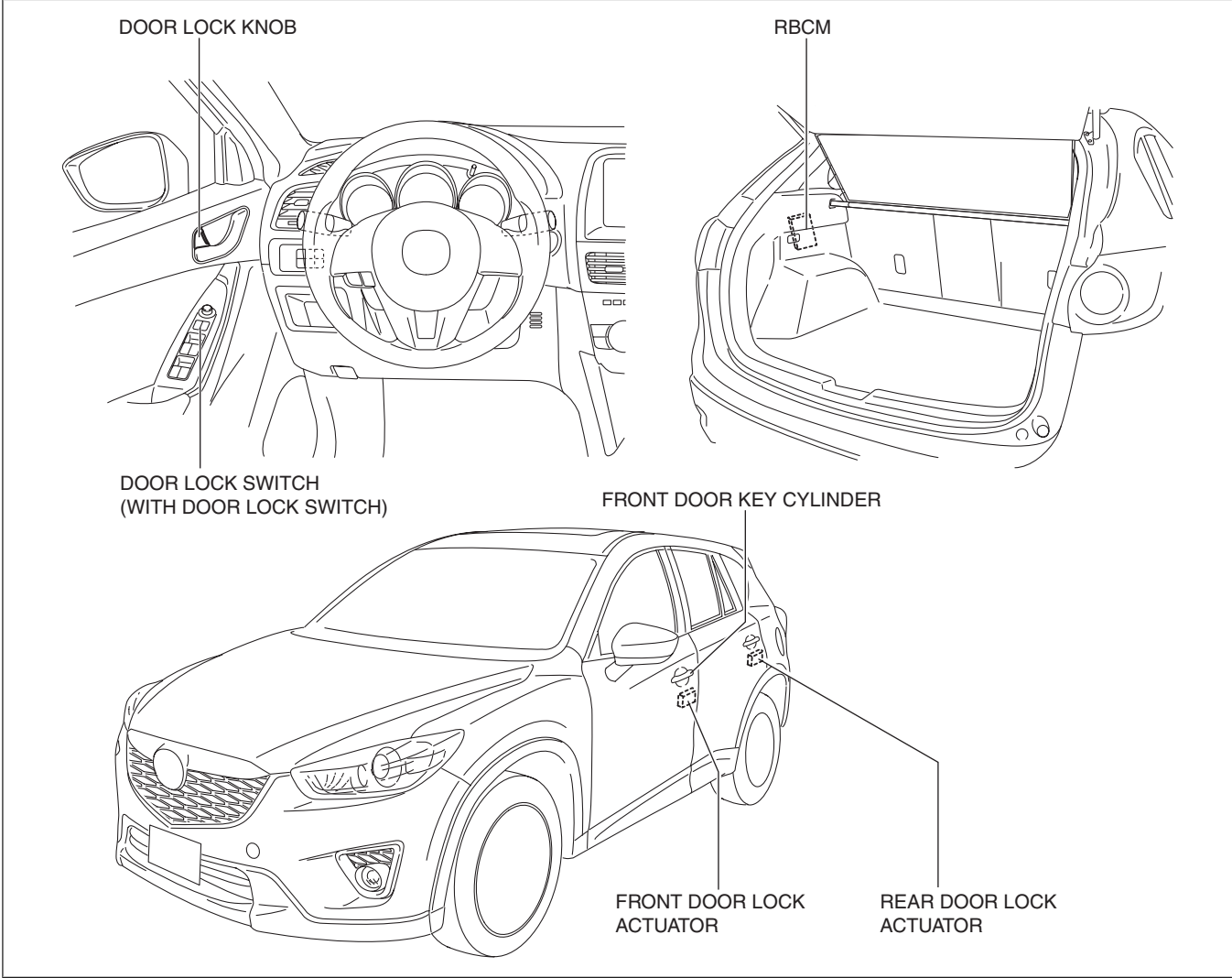
Collision detection unlock function (With 2-step unlocking)

- This function unlocks the doors in case of a collision to enhance rescue operation from outside the vehicle.

Auto door lock function (With 2-step unlocking)

- All doors automatically lock/unlock in conjunction with the vehicle speed and the operation of the selector lever (ATX) and the ignition switch.

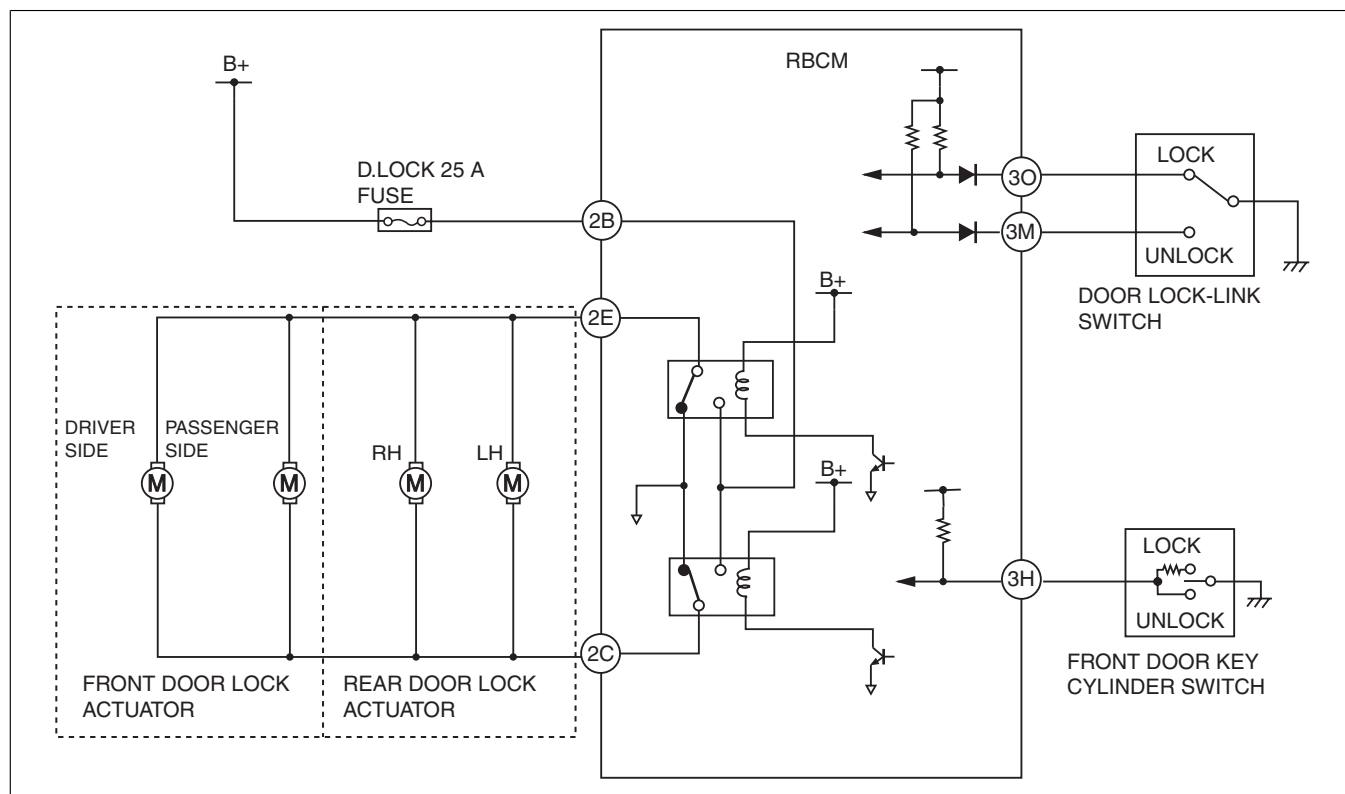
Structural View



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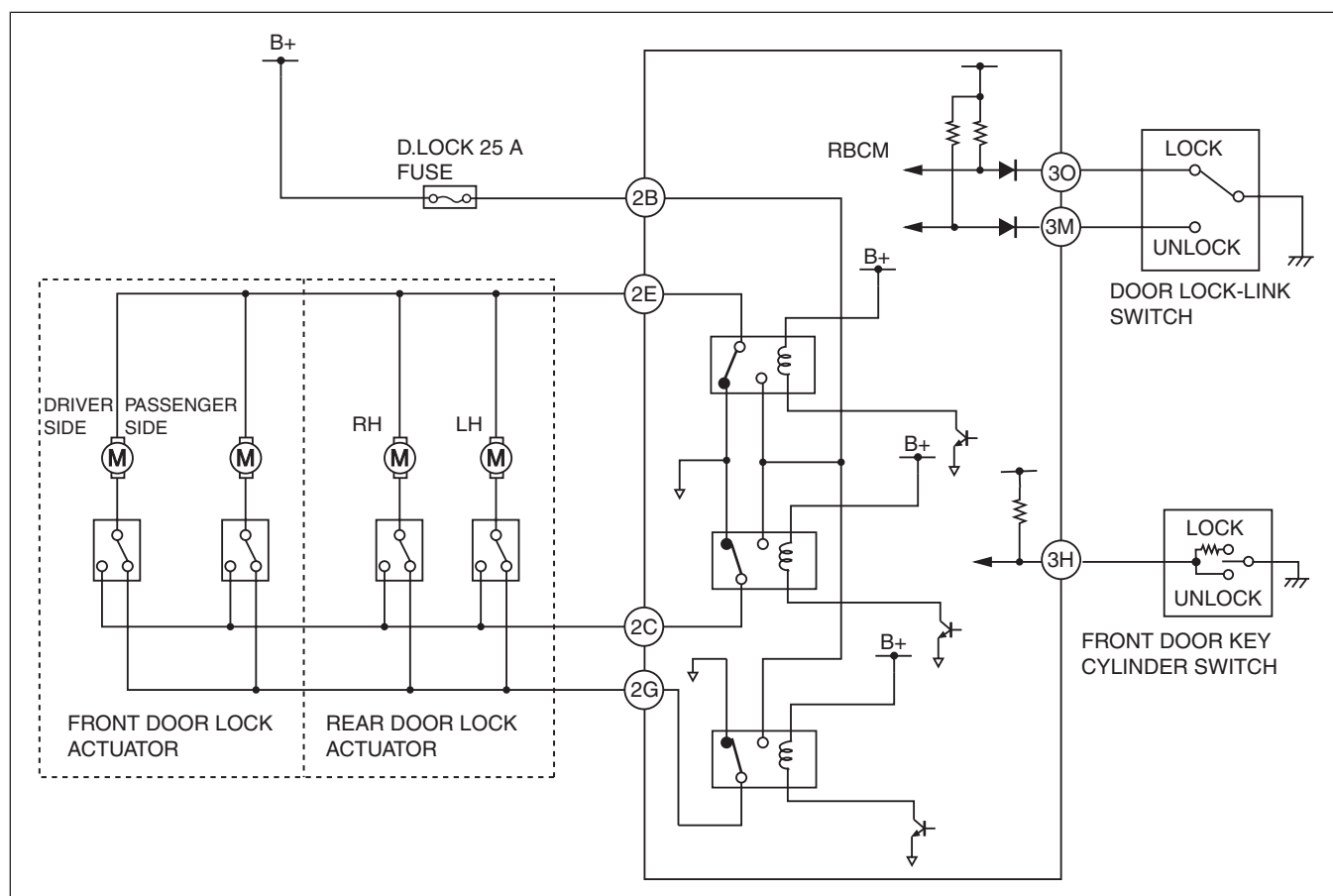
System Wiring Diagram

Without double locking / 2-step unlocking



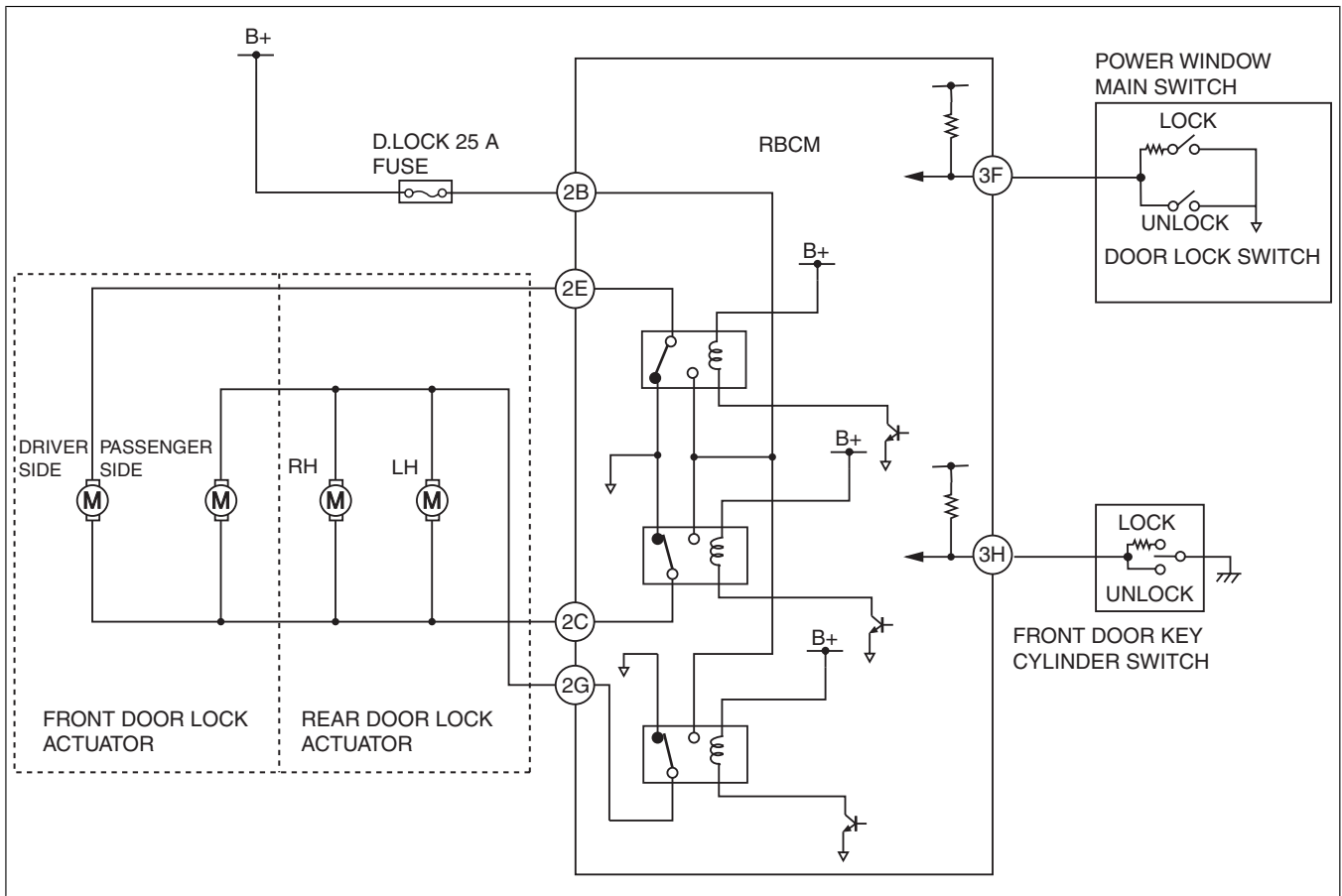
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With double locking



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With 2-step unlocking



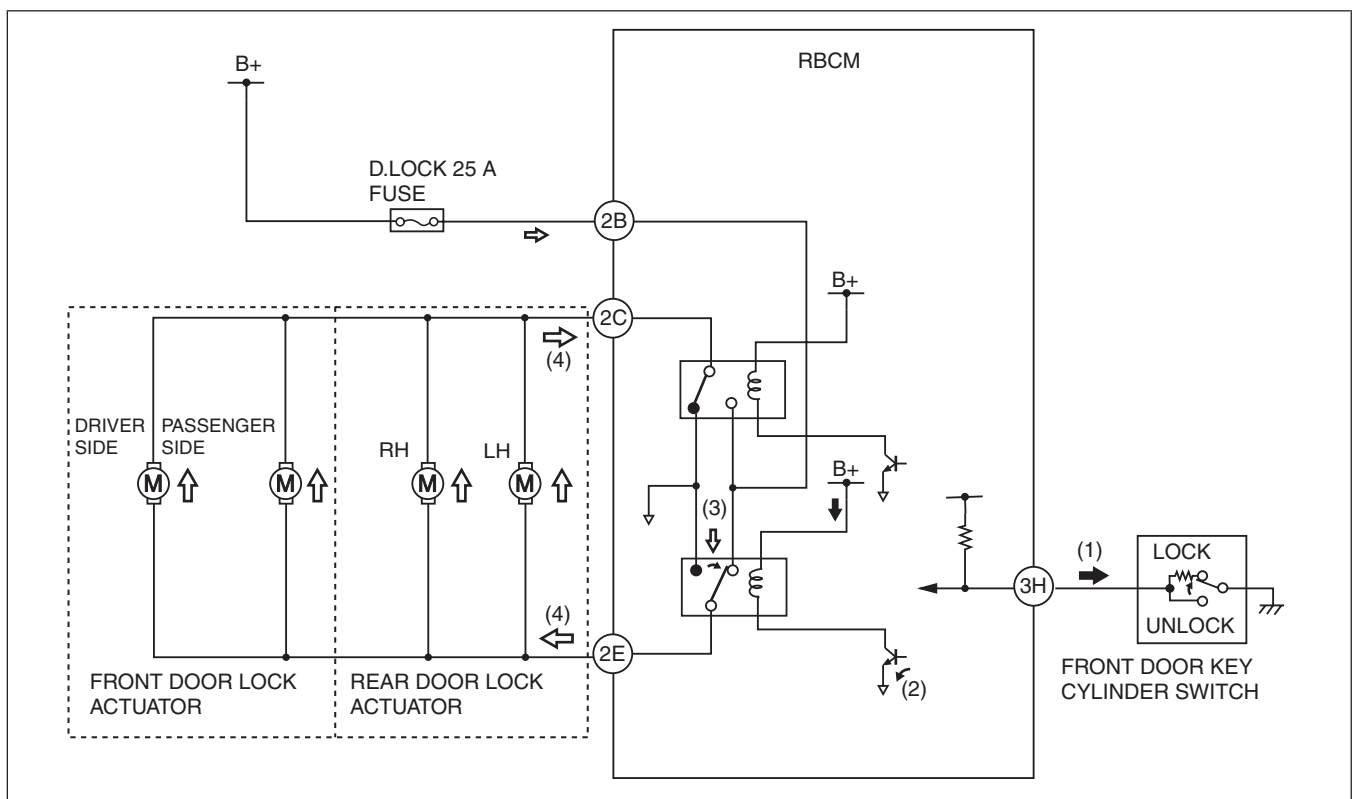
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Operation

- The power door lock system switches the lock/unlock of all door lock actuators in conjunction with the position of the front door key cylinder switch or door lock-link switch in the driver's door lock actuator.

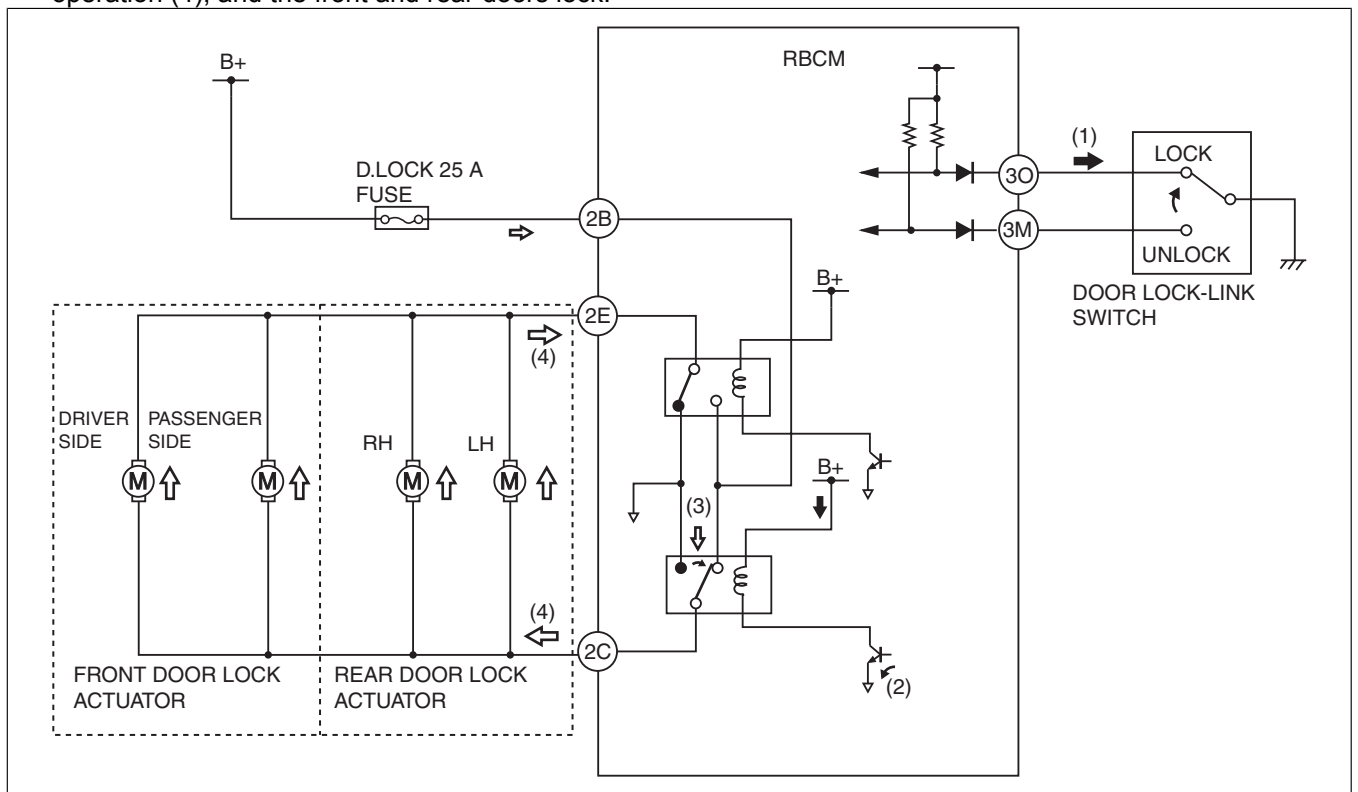
Lock operation using front door key cylinder

- When the key is inserted in the front door key cylinder and a lock operation is performed, the front door key cylinder switch switches to the lock side.
- When the rear body control module (RBCM) detects a front door key cylinder switch lock signal (1), it turns the transistor on (2), and turns the door lock relay (lock side) on.
- When the door lock relay (lock side) turns on (3), the front and rear door lock actuator motors perform a lock operation (4), and the front and rear doors lock.



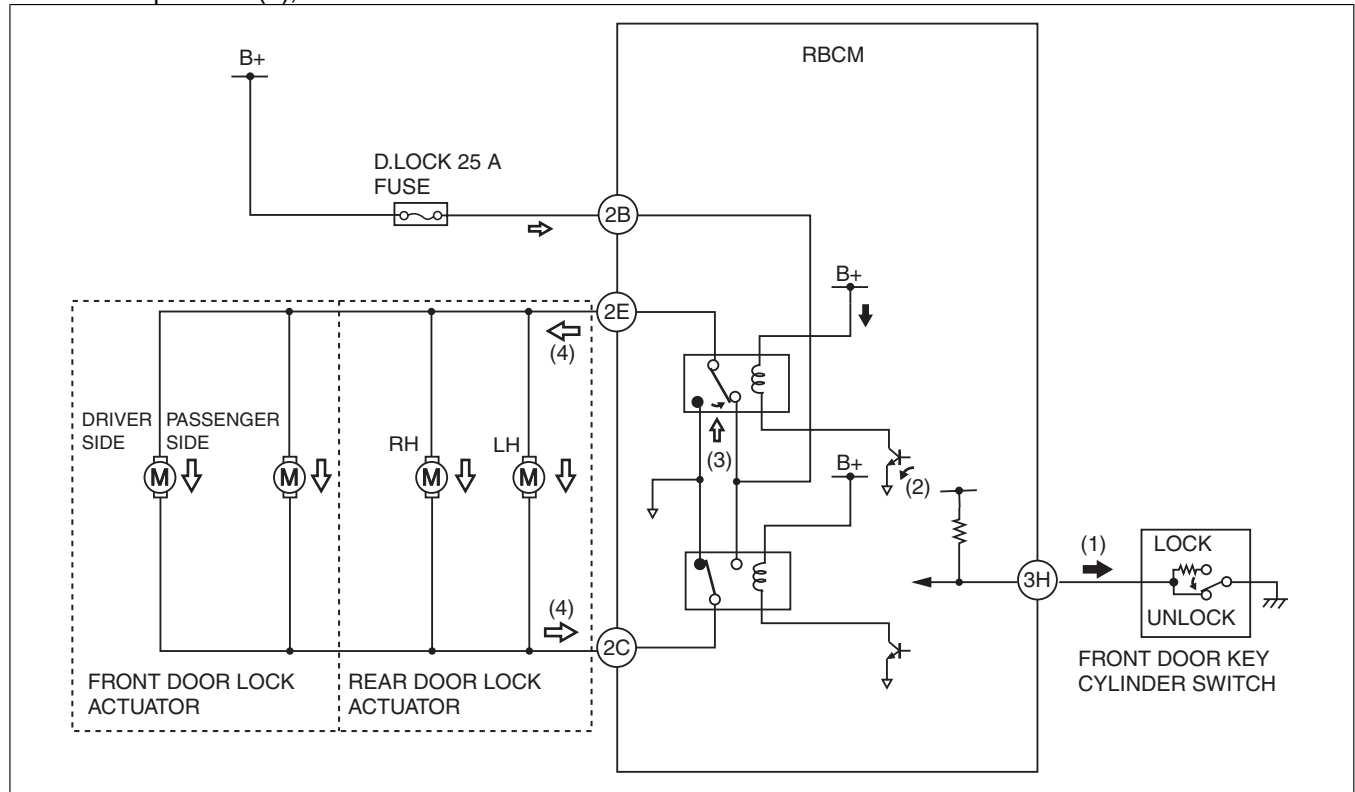
Lock operation using driver's door lock knob (Without 2-step unlocking)

1. When the driver's door lock knob is locked, the door lock-link switch switches to the lock side.
2. When the rear body control module (RBCM) detects a door lock-link switch lock signal (1), it turns on (2) the transistor, and turns on the door lock relay (lock side).
3. When the door lock relay (lock side) turns on (3), the front and rear door lock actuator motors perform a lock operation (4), and the front and rear doors lock.



Unlock operation using front door key cylinder (Without 2-step unlocking)

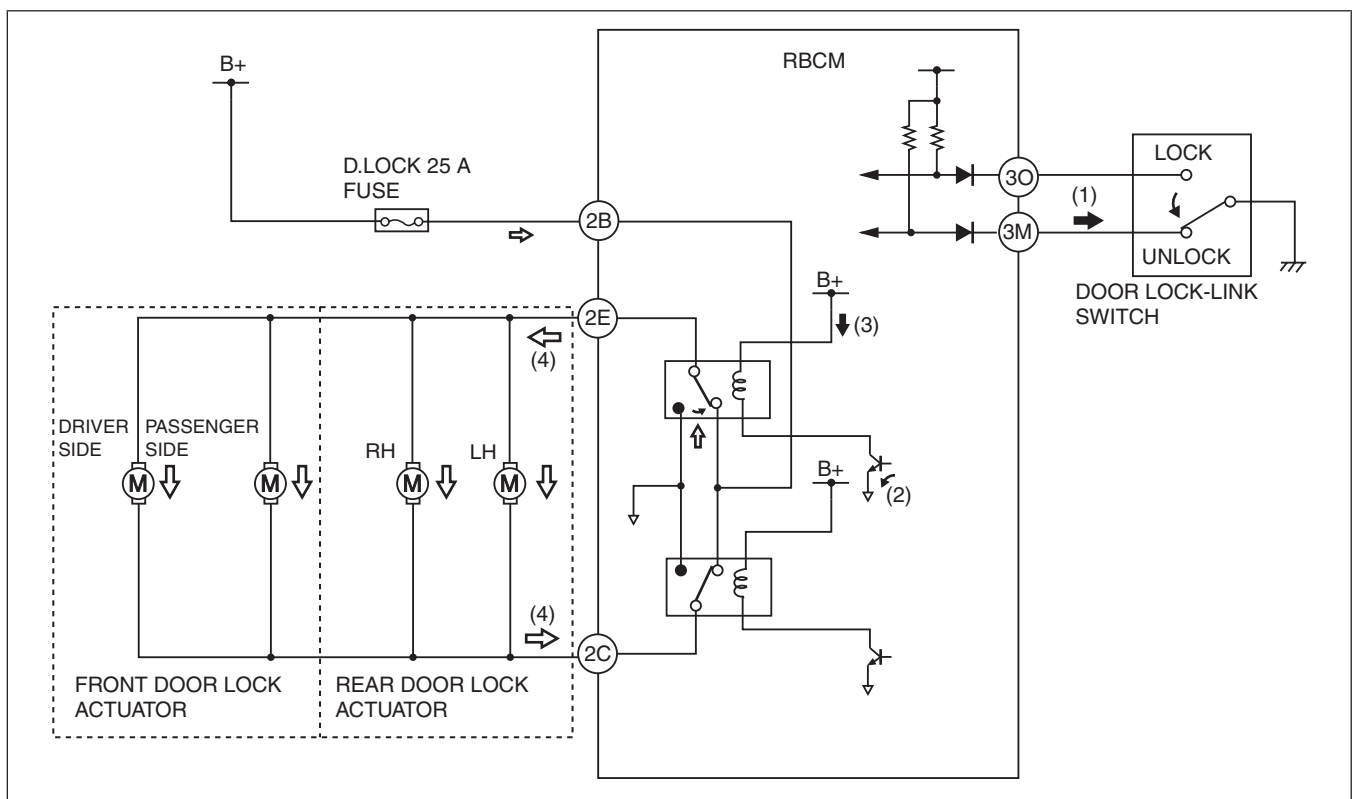
1. When the key is inserted in the front door key cylinder and an unlock operation is performed, the front door key cylinder switch switches to the unlock side.
2. When the rear body control module (RBCM) detects a front door key cylinder switch unlock signal (1), it turns the transistor on (2), and turns the door lock relay (unlock side) on.
3. When the door lock relay (unlock side) turns on (3), the front and rear door lock actuator motors perform an unlock operation (4), and the front and rear doors unlock.



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Unlock operation using the driver's door lock knob (Without 2-step unlocking)

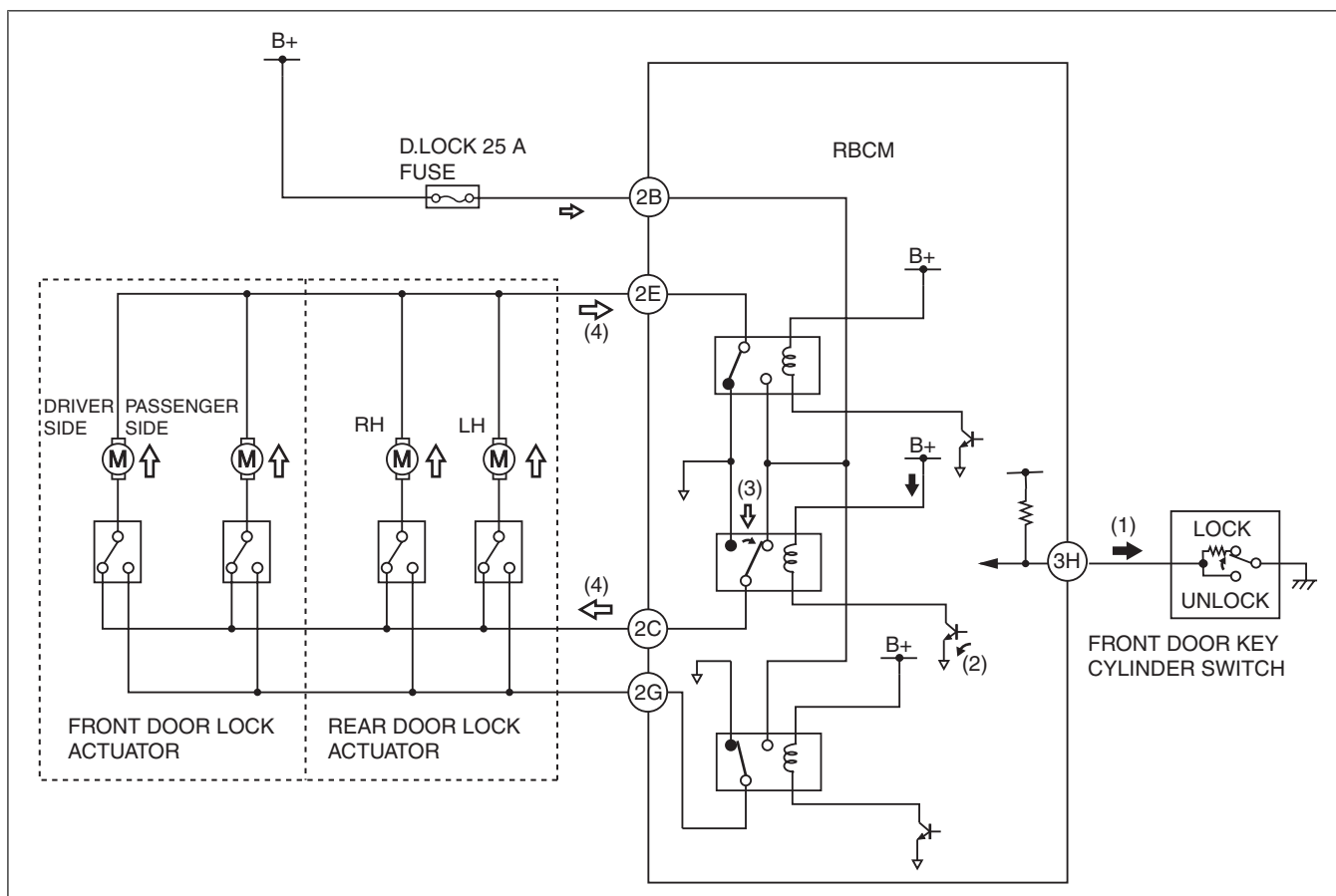
1. When the driver's door lock knob is unlocked, the door lock-link switch switches to the unlock side.
2. When the rear body control module (RBCM) detects a door lock-link switch unlock signal (1), it turns on (2) the transistor, and turns on the door lock relay (unlock side).
3. When the door lock relay (unlock side) turns on (3), the front and rear door lock actuator motors perform an unlock operation (4), and the front and rear doors unlock.



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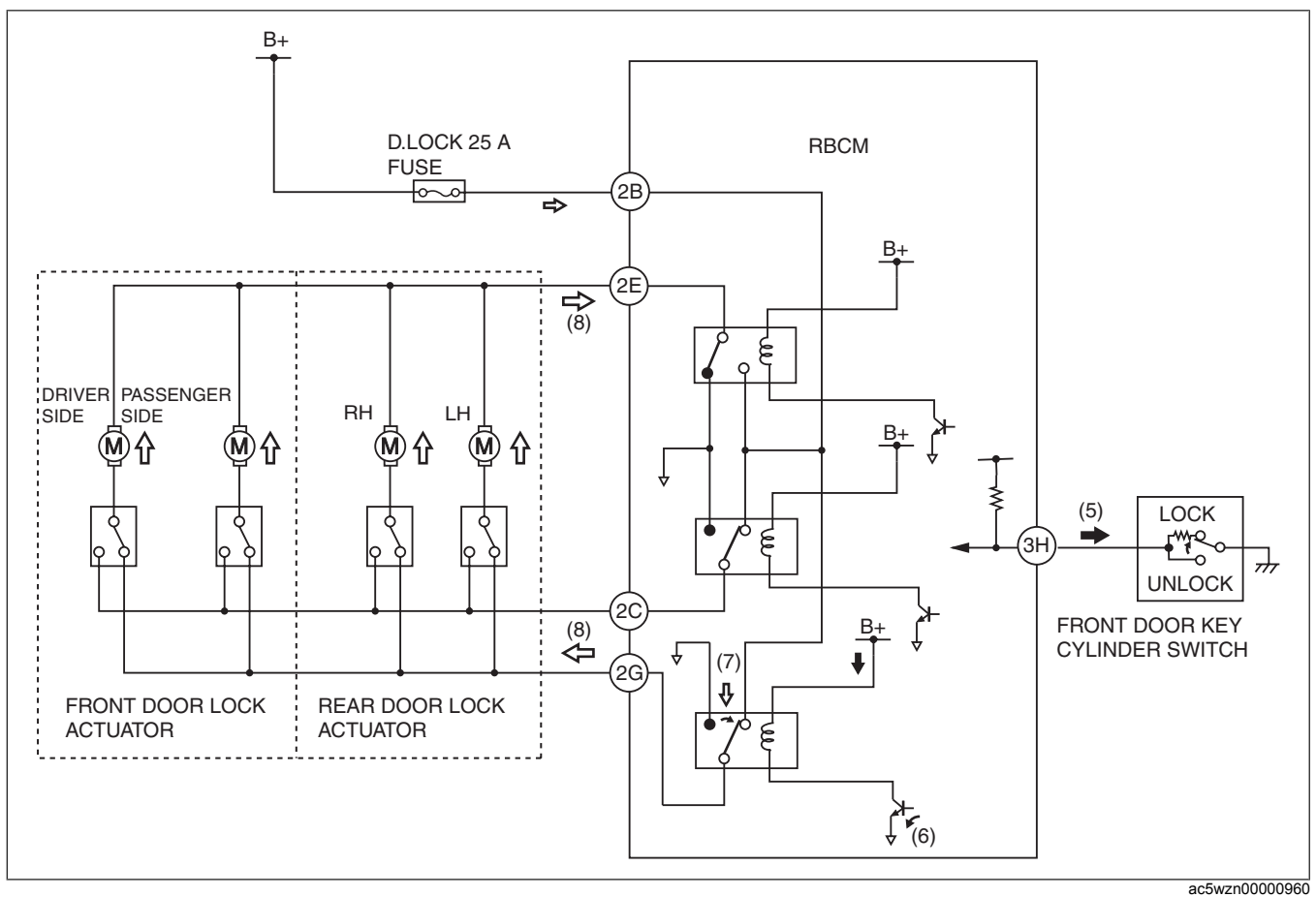
Double locking function (With double locking)

- When all the doors and liftgate are closed and locked two times consecutively, the unlock operation for all door lock knobs is disabled.
- When the key is inserted in the front door key cylinder and a lock operation is performed, the front door key cylinder switch switches to the lock side.
 - When the rear body control module (RBCM) detects a front door key cylinder switch lock signal (1), it turns the transistor on (2), and turns the door lock relay on.
 - When the door lock relay turns on (3), the front and rear door lock actuator motors perform a lock operation (4), and the front and rear doors lock.



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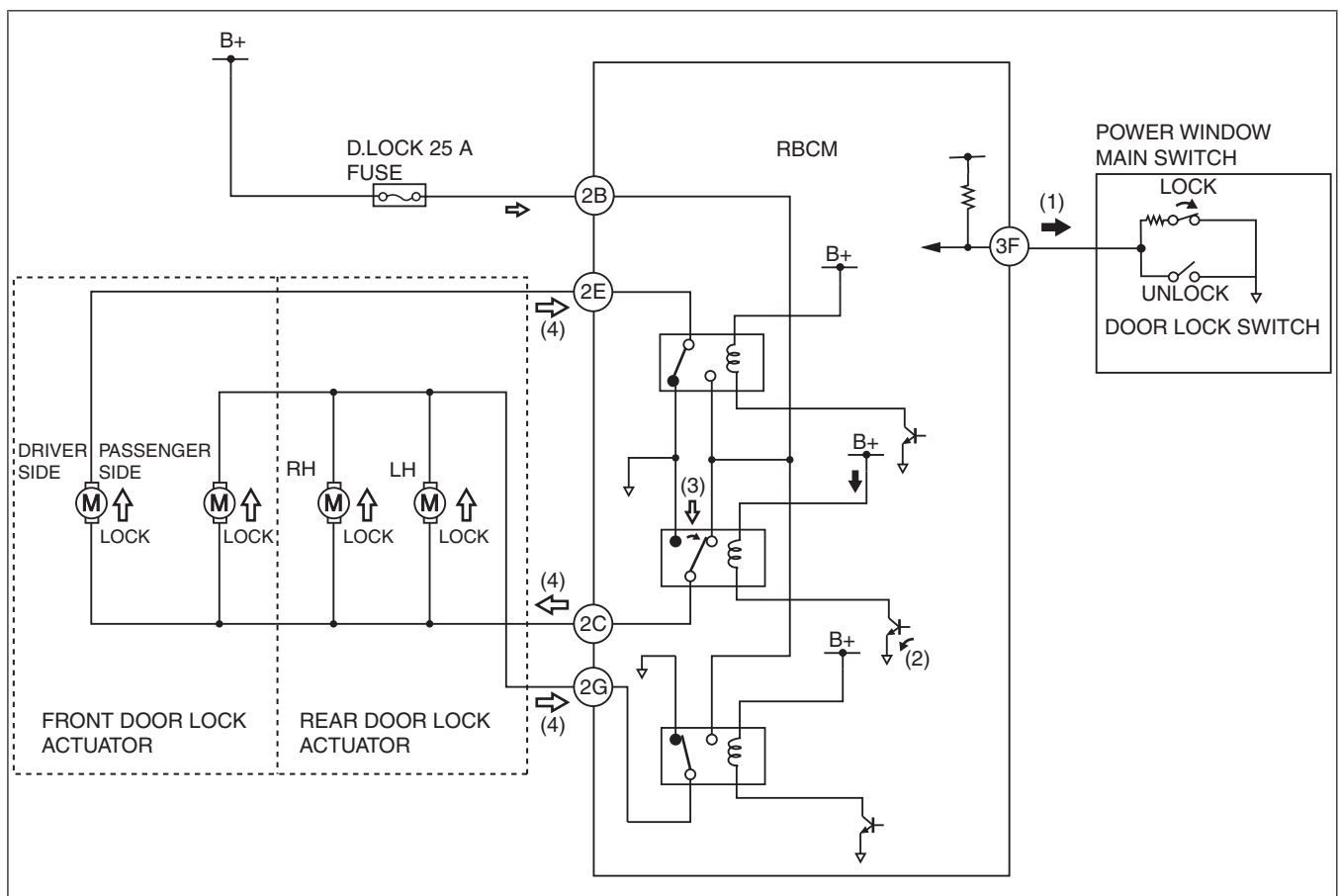
4. When a lock operation is re-performed within **approx. 3 s** after performing it once, the front door key cylinder switch switches to the lock side.
5. When the rear body control module (RBCM) detects a front door key cylinder switch lock signal (5), it turns the transistor on (6), and turns the double locking relay on.
6. When the double locking relay turns on (7), the front and rear door lock actuator motors perform a lock operation (8), and the connection of front and rear door knobs is disconnected. Therefore, the lock/unlock operation cannot be performed using the front and rear door lock knobs.



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Lock operation using door lock switch (With 2-step unlocking)

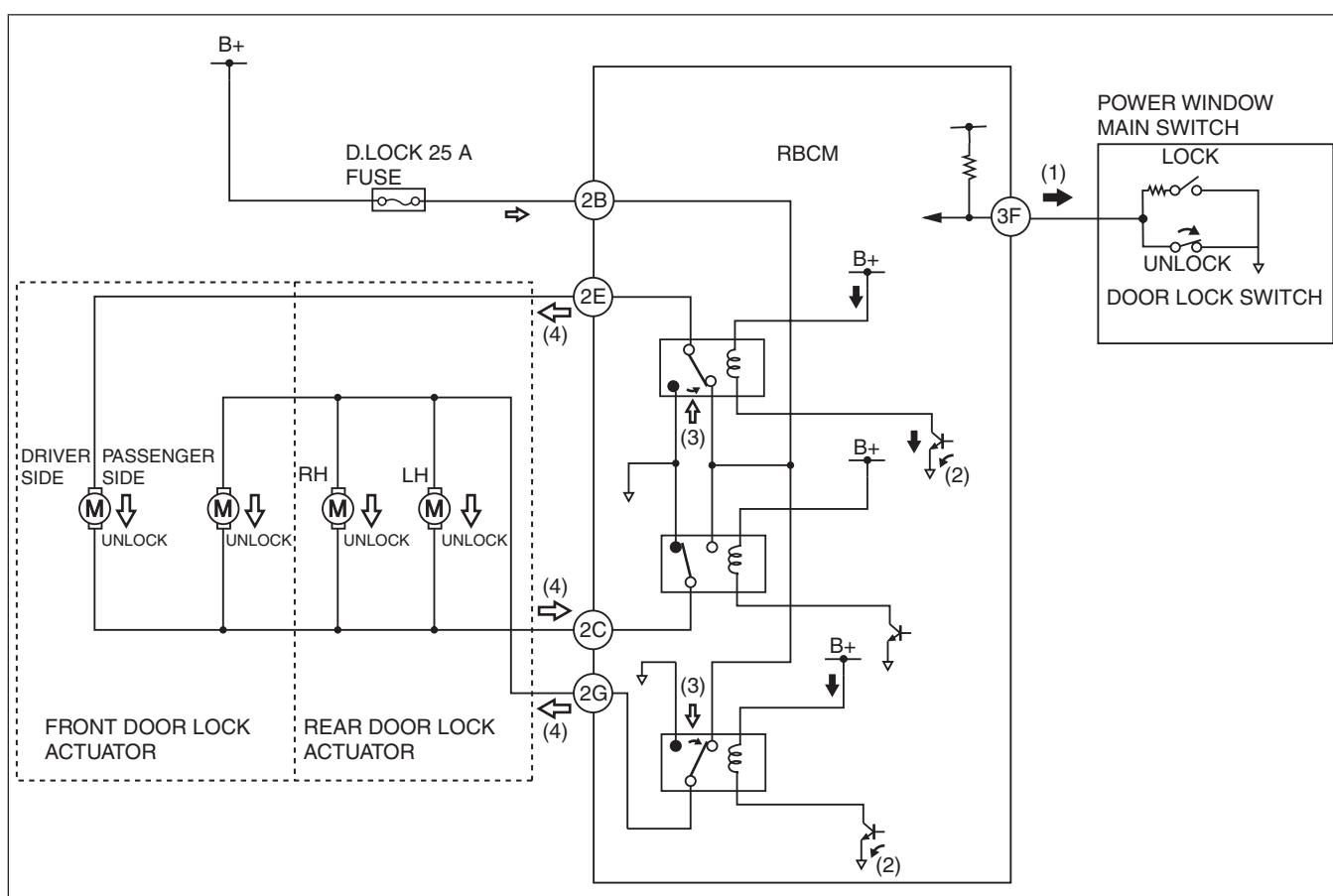
1. When the door lock switch is operated to lock, the door lock switch switches to the lock side.
2. When the rear body control module (RBCM) detects a door lock switch lock signal (1), it turns the transistor on (2), and turns the door lock relay (lock side) on.
3. When the door lock relay (lock side) turns on (3), the front and rear door lock actuator motors perform a lock operation (4), and the front and rear doors lock.



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Unlock operation using the door lock switch (With 2-step unlocking)

1. When the door lock switch is operated to unlock, the door lock switch switches to the unlock side.
2. When the rear body control module (RBCM) detects a door lock switch unlock signal (1), it turns the transistor on (2), and turns the door lock relay (unlock side) on.
3. When the door lock relay (unlock side) turns on (3), the front and rear door lock actuator motors perform an unlock operation (4), and the front and rear doors unlock.

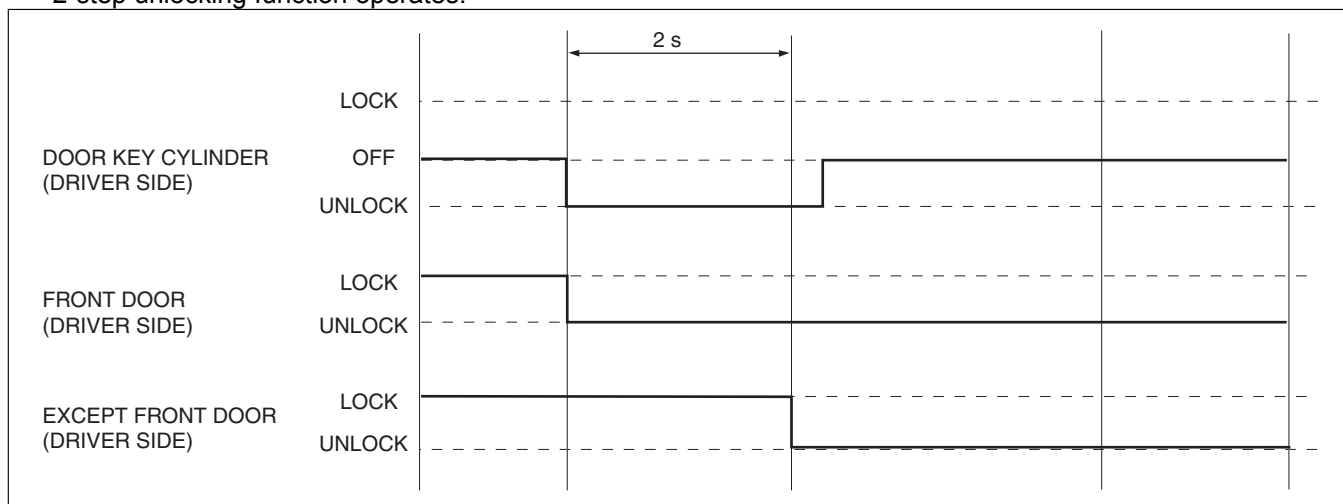


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2-step Unlocking Function Operation Using Door Key Cylinder (With 2-step unlocking)

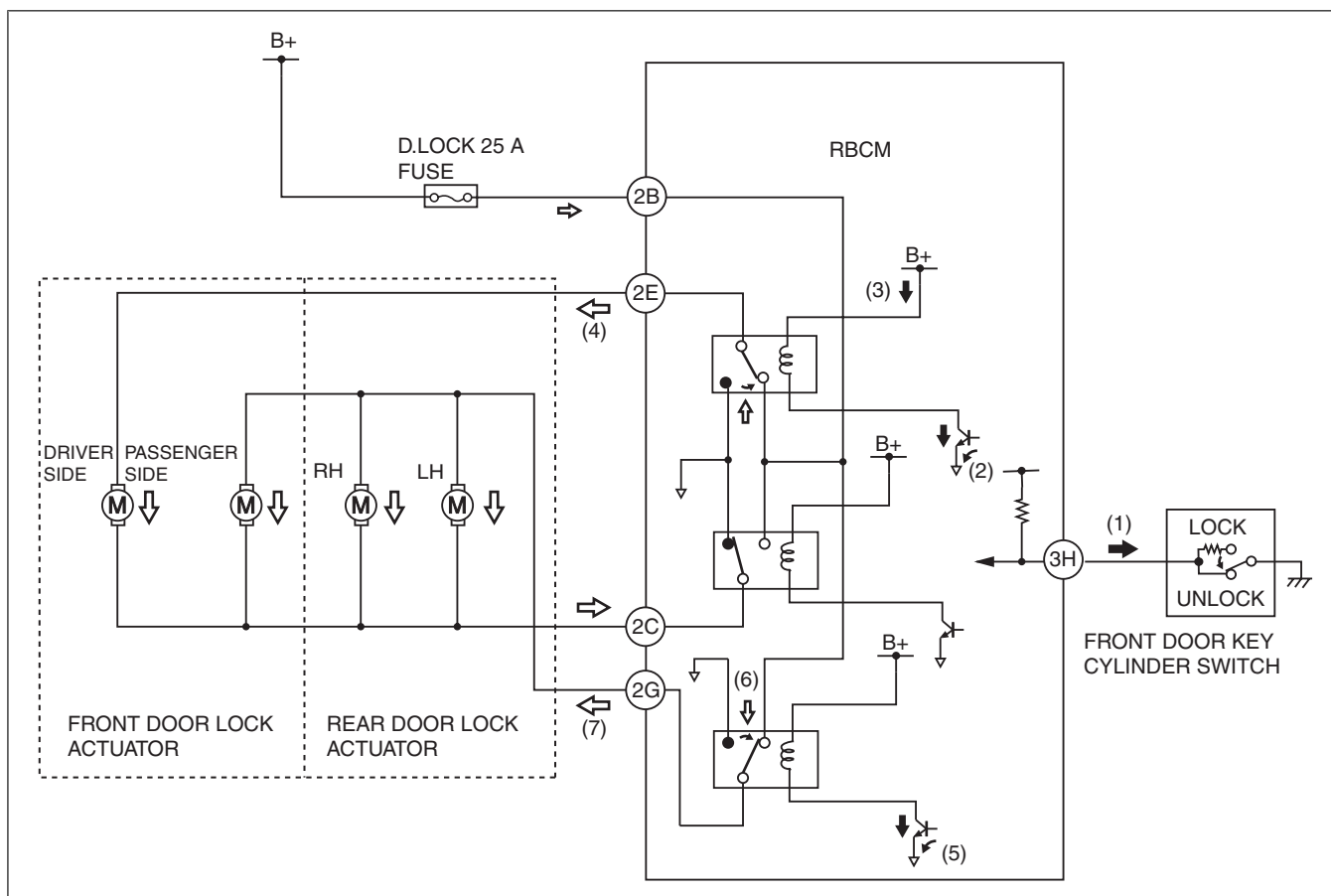
Timing chart of 2-step unlocking function operation using door key cylinder

- If the driver's door key cylinder switch is held in the unlock position for **approx. 2 s** with all the doors locked, the 2-step unlocking function operates.



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- When the driver's side key cylinder switch is unlocked (1), the rear body control module (RBCM) turns transistor on (2).
- When transistor turns on, door lock relay turns on (3), and the driver's side front door unlocks (4).
- When the rear body control module (RBCM) receives an unlock signal for **approx. 2 s**, it turns transistor on (5).
- When transistor turns on, 2-step unlocking relay turns on (6), then all doors unlock (7).

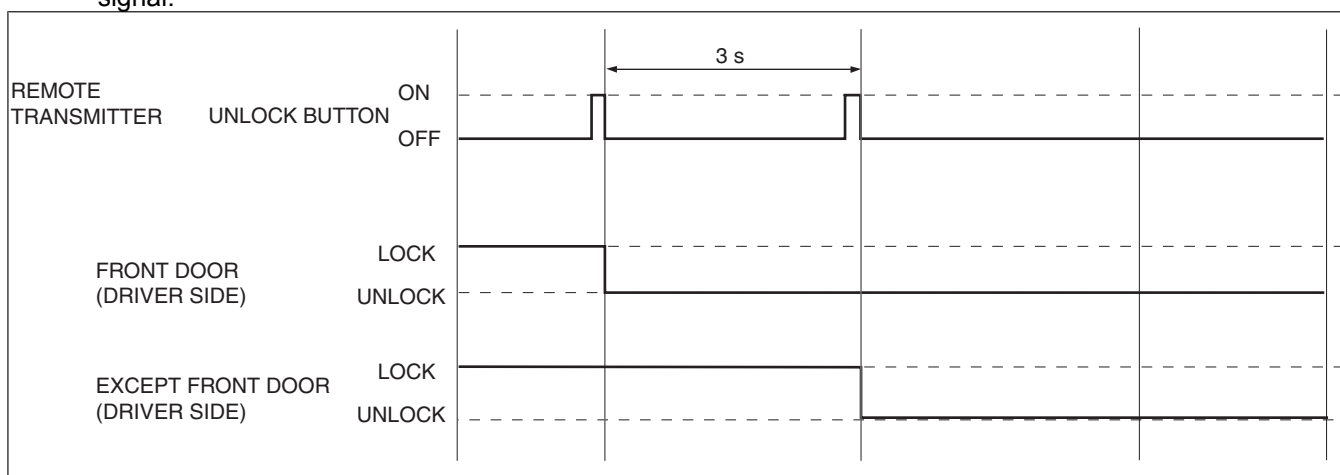


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2-step Unlocking Function Operation Using Keyless Entry Remote Transmitter (With 2-step unlocking)

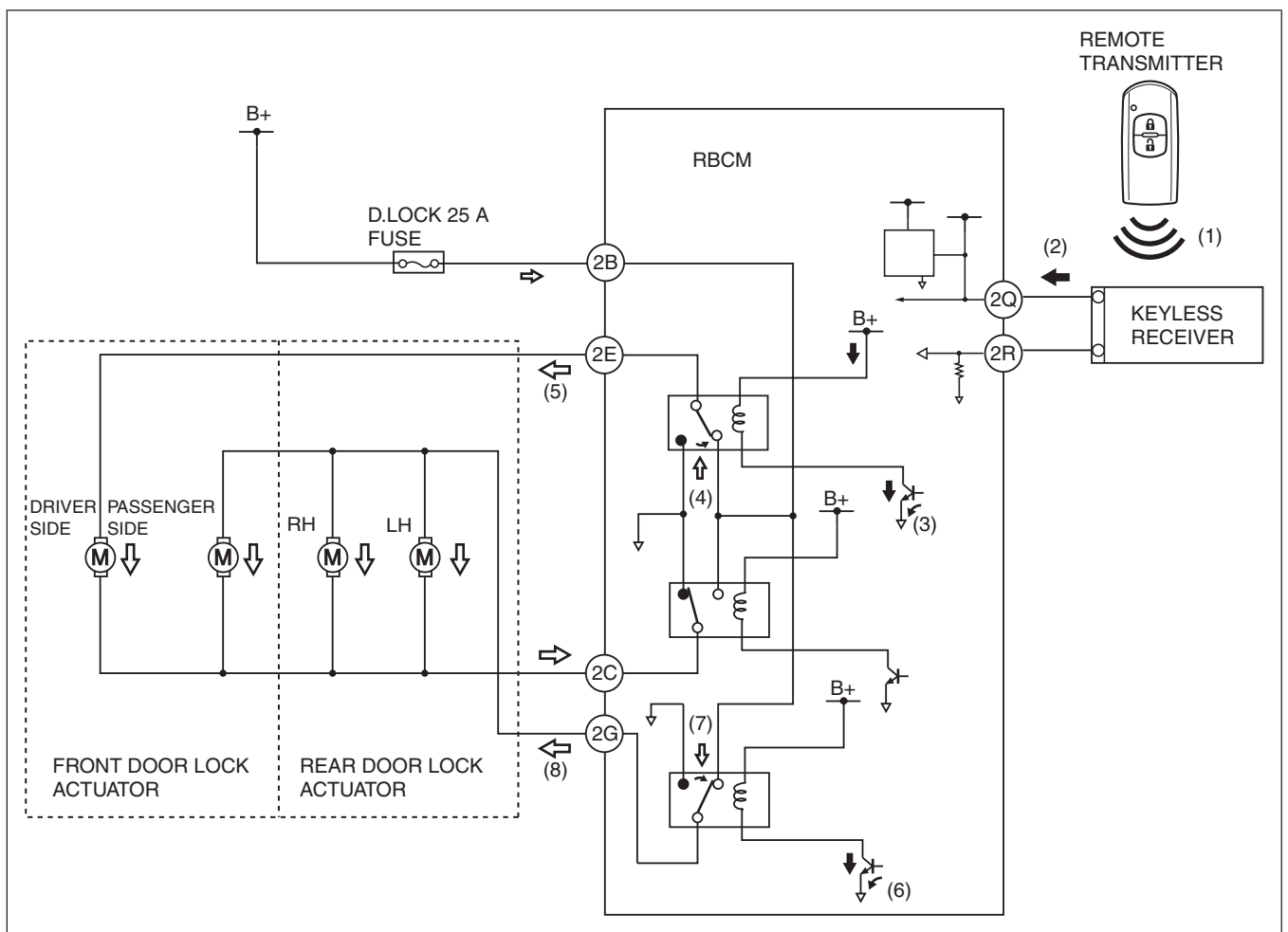
Timing chart of 2-step unlocking function operation using keyless entry remote transmitter

- If the following condition is met with all the doors locked, the 2-step unlocking function operates.
 - The rear body control module (RBCM) receives an unlock signal, and **within 3 s** it receives another unlock signal.



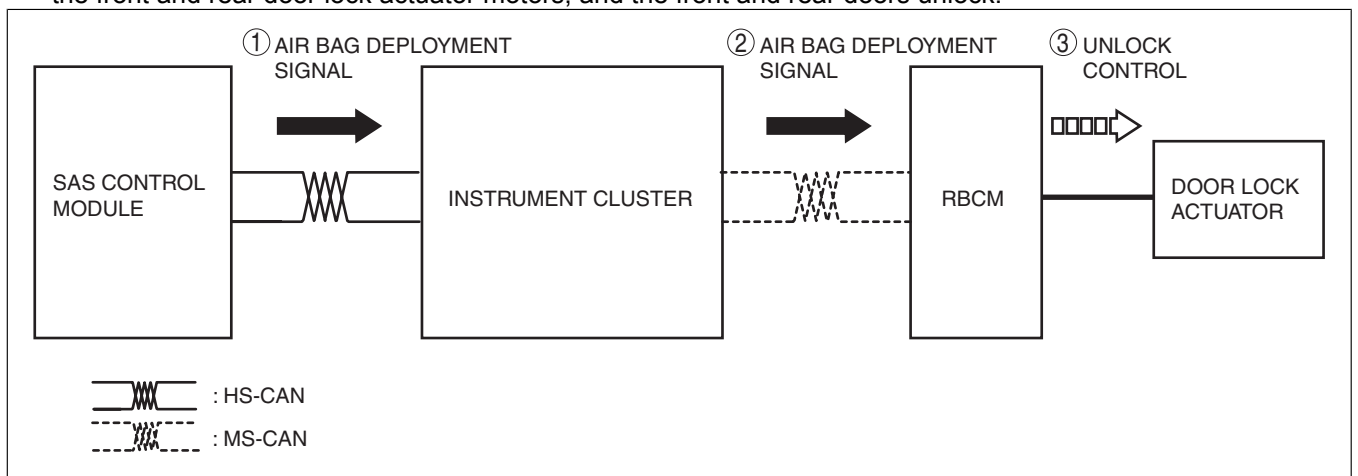
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- When the UNLOCK button on the keyless entry remote transmitter is operated, the keyless entry remote transmitter sends ID data and rolling code to the keyless receiver (1).
- The keyless receiver sends an unlock signal to the rear body control module (RBCM) (2).
- When the rear body control module (RBCM) receives the unlock signal, it turns transistor on (3).
- When transistor turns on, door lock relay turns on (4) and the driver's side front door unlocks (5).
- If the rear body control module (RBCM) receives another unlock signal **within 5 s after** it received the first unlock signal, it turns transistor on (6).
- When transistor turns on, 2-step unlocking relay turns on (7), then all doors unlock (8).



Collision detection unlock function operation (With 2-step unlocking)

1. When an air bag deploys, the SAS control module sends an air bag deployment signal to the instrument cluster as a CAN signal.
2. The instrument cluster sends the air bag deployment signal to the rear body control module (RBCM) as a CAN signal.
3. The rear body control module (RBCM) receives the air bag deployment signal and after approx. 6 s, it operates the front and rear door lock actuator motors, and the front and rear doors unlock.



Auto Door Lock Operation (With 2-step unlocking)

- The auto door lock system functions to automatically lock and unlock all the doors and the liftgate.
- The auto lock function automatically locks all the doors and the liftgate based on the vehicle speed or the selector lever range operation.

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- The auto unlock function unlocks all the doors and the liftgate based on the selector lever range or the operation of the ignition switch.

Note

- The auto door lock operation setting can be changed using the personalization function. (See SECURITY AND LOCKS PERSONALIZATION.)

Auto door lock operation based on vehicle speed

- When the vehicle speed reaches approx. 20 km/h {12 mph}, the rear body control module (RBCM) turns on the door lock relay based on the vehicle speed signal from the PCM (CAN signal), and locks all the doors and the liftgate.

Auto door lock operation based on shift position

- When the selector lever is shifted from the park (P) position to any other position, the rear body control module (RBCM) turns on the door lock relay based on the selector lever input signal from the TCM (CAN signal), and locks all the doors and the liftgate.

Auto Door Unlock Operation (With 2-step unlocking)

Auto door unlock operation based on shift position

- When the selector lever is shifted from any position other than the park (P) position to the park (P) position, the rear body control module (RBCM) turns on the driver-side door unlock relay and the door unlock relay based on the selector lever input signal from the TCM (CAN signal), and unlocks all the doors.

Auto door unlock operation based on ignition switch position

- If the engine is being started or the ignition switch is turned from the ON condition to off, the rear body control module (RBCM) turns on the driver-side door unlock relay and the door unlock relay and unlocks all the doors.