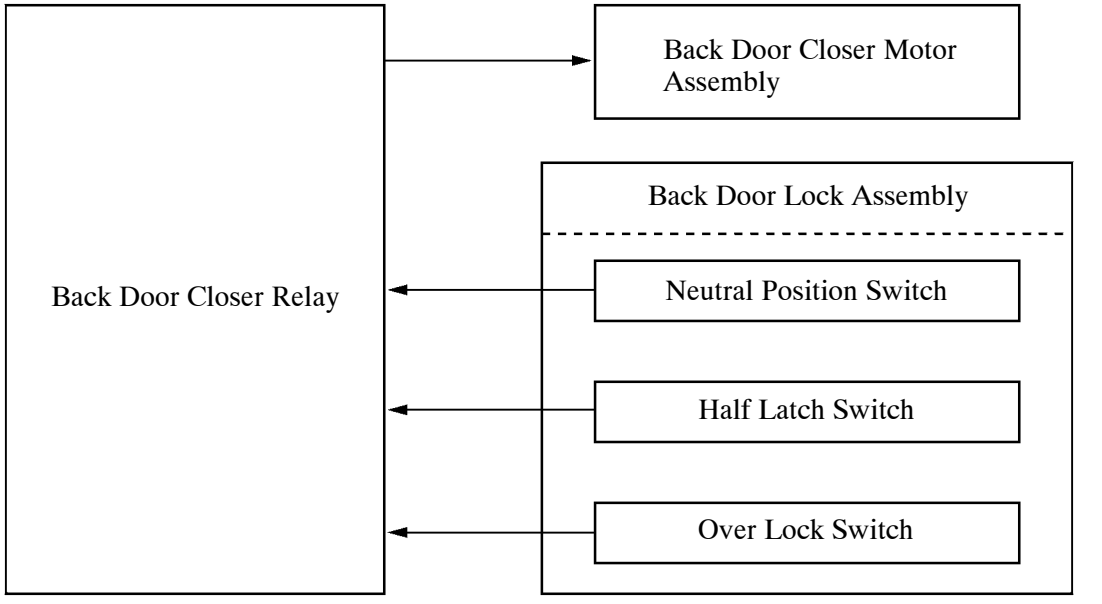
BACK DOOR

■ BACK DOOR CLOSER SYSTEM

1. General

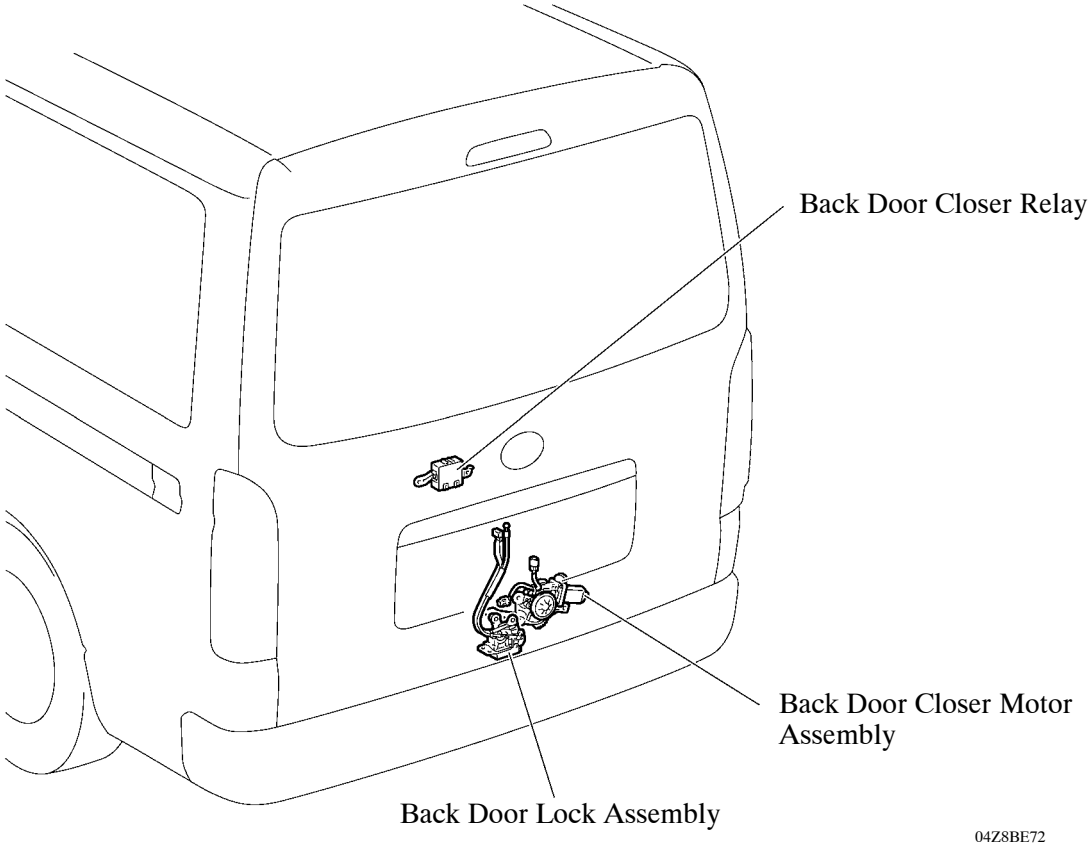
- When the back door closer system detects that the back door is ajar, it automatically actuates the motor to fully close the back door.
- This system is controlled by the back door closer relay.
- While the back door closer is in operation, if it stops in mid-course due to some reasons such as if a foreign object is pinched between the back door and the bumper and the back door cannot be opened, you can open/close the back door by operating it from the vehicle interior.

▶ System Diagram ◀



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2. Layout of Main Components



3. Function of Main Components

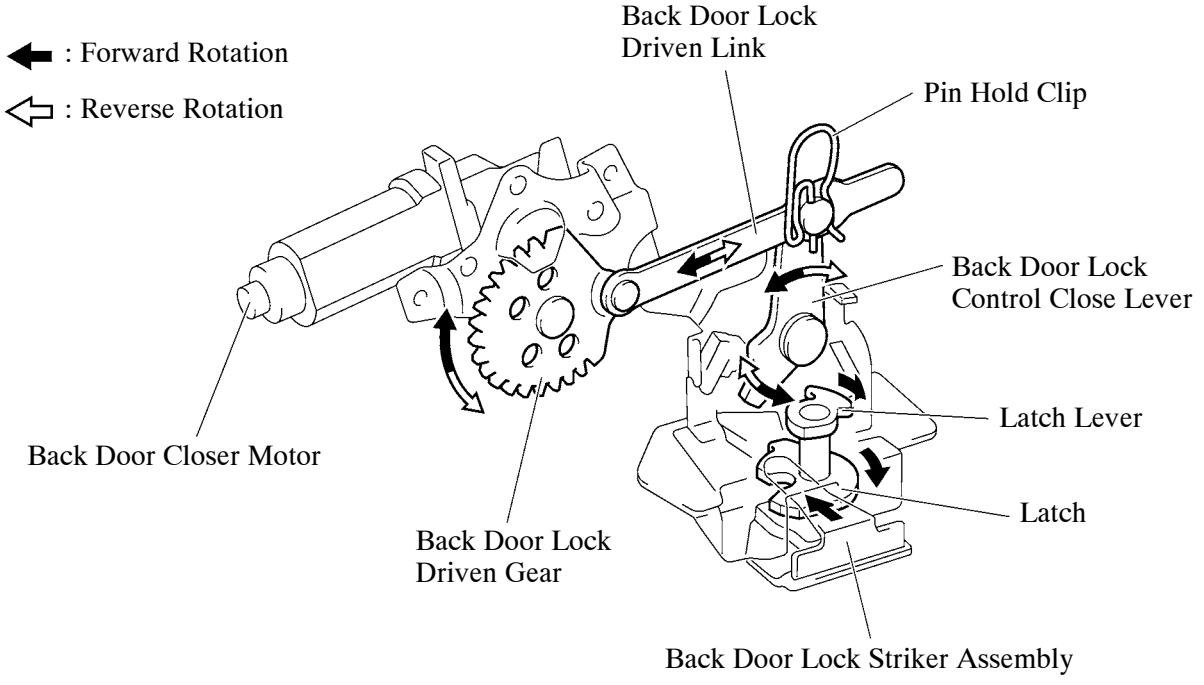
The functions of the main components described below:

Components	Function
Back Door Lock Assembly	● A position detection switch has been installed to detect the status of the back door lock assembly. ● Engages the latch of the back door by rotating the back door closer motor in forward direction.
Back Door Closer Motor Assembly	Drives the latch of the back door lock assembly by rotating the back door closer motor in either forward or reverse direction.
Back Door Closer Relay	Detects the status of the back door with each position detection switch installed in the back door lock assembly. If it detects that the back door is ajar, it controls the back door closer.

4. Back Door Lock Assembly

General

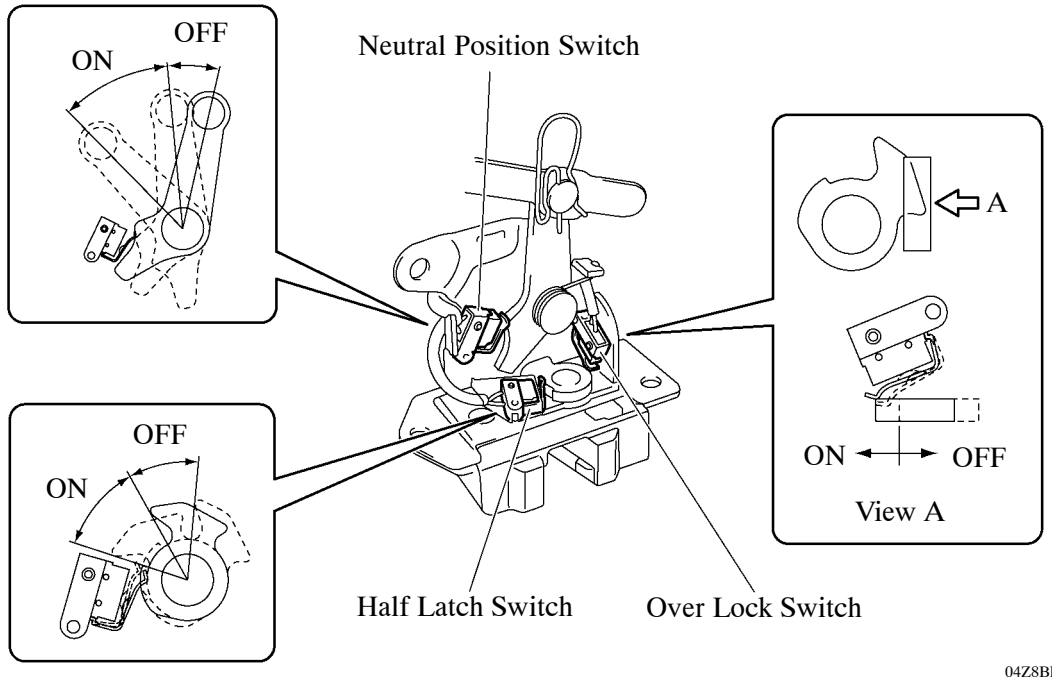
- The back door lock assembly consists of 3 position detection switches (neutral position switch, half latch switch, over lock switch), latch lever, latch and back door lock control close lever.
- The back door lock assembly is driven by the back door closer motor which is controlled by the back door closer relay.
- The back door closer relay determines the status of the back door based on the signals sent from the 3 position detection switches (neutral position switch, half latch switch, over lock switch) attached to the back door lock assembly to rotate the back door closer motor in either forward or reverse direction.



▶ Position Detection Switch ◀

The position detection switch performs the following function

Components	Function
Neutral Position Switch	This is a switch to detect the initial position of the back door lock close control lever. It turns on when the back door closer motor starts to rotate in forward direction. It turns off when the back door closer motor stops its reverse rotation and the back door lock close control lever returns to its initial position.
Half Latch Switch	This is a switch to detect if the back door is ajar. It turns off when the back door is ajar or fully closed. It turns on when the back door is fully open.
Over Lock Switch	This is a switch to detect if the back door has been pulled in to its fully closed position. It turns on when the back door has been pulled in to its fully closed position by the forward rotation of the back door closer motor. It turns off when the back door closer motor starts to rotate in reverse direction.



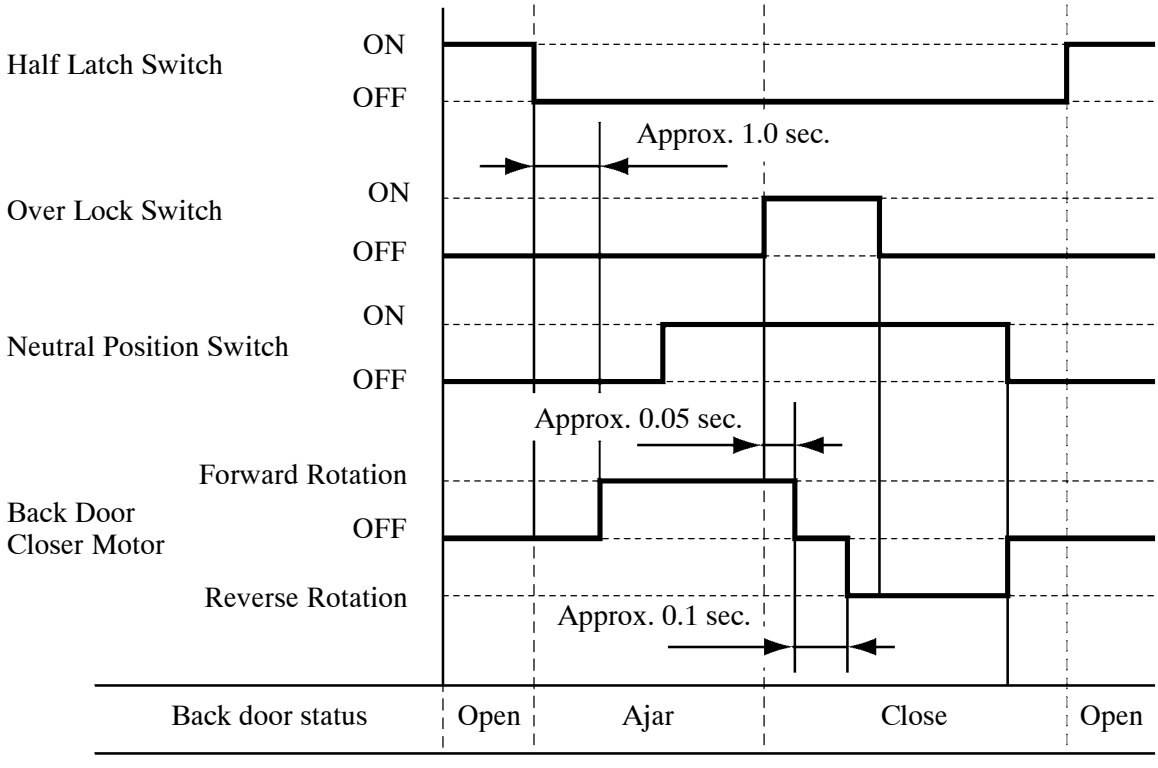
5. Closer Operation

Forward Rotation Control

- If the back door becomes from open to ajar, the half latch switch turns from on to off. If the back door closer relay detects that the half latch switch has been turned off at least 1 second, the back door closer motor is rotated in forward direction.
- The neutral position switch turns on when the back door closer motor starts to rotate in forward direction.
- When the back door closes fully due to forward rotation of the back door closer motor, the over lock switch turns from off to on. If the back door closer relay detects that the over lock switch has been turned on at least 0.05 seconds, the back door closer motor stops.

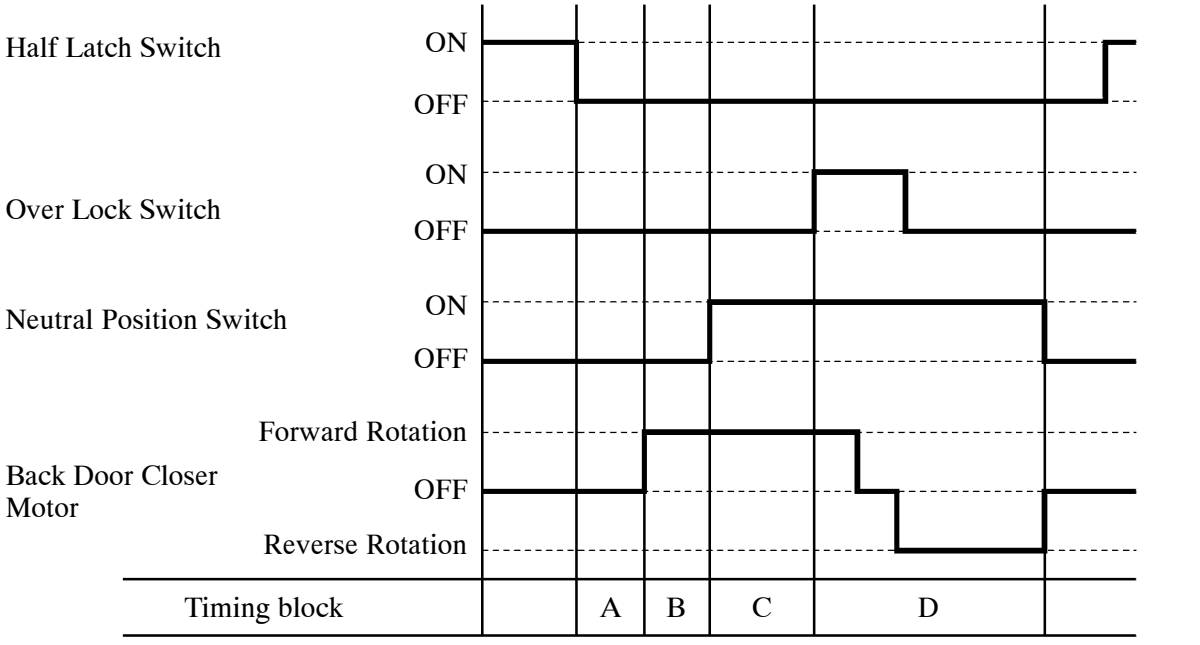
Reverse Rotation Control

- When 0.1 seconds have elapsed after the forward rotation of the back door closer motor has been stopped, the back door closer relay starts to operate so that the back door closer motor rotates in reverse direction to return the back door lock close control lever to its initial position.
- When the back door closer motor starts to rotate in reverse direction and the back door closer relay detects that the neutral position switch has been turned from on to off, the back door closer motor stops and the operation is complete.



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Control when the back door is opened (the half latch switch is turned on) while the back door closer is in operation



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Timing block	Description of operation
Section A	After the half latch switch is turned off, you can open the back door because 1 second has not elapsed yet and the back door closer motor is stopped (immediately before the start of operation) and is still in stand-by mode.
Section B	Although the back door closer motor starts to rotate in forward direction, you can open the back door because the neutral position switch is turned off (almost initial position) and is stopped.
Section C	The back door closer motor is started to rotate in forward direction. Therefore, the neutral position switch is turned on and you cannot open the back door until the back door closer motor starts to rotate in reverse direction and the neutral position switch turns from on to off.
Section D	The back door closer motor continues reverse rotation, and then it stops due to that the neutral position switch is turned from on to off. This allows you to open the back door.

6. Motor Overtime

Overtime when rotating in forward

- If the back door closer relay has failed to detect the turning from off to on of the over lock switch after 5 seconds have elapsed when the back door closer motor starts to rotate in forward direction, the forward rotation of the back door closer motor stops due to overtime and the motor starts to rotate in reverse direction.
- If the back door closer motor stops 20 times consecutively due to forward rotation overtime, the back door closer relay prohibits the operation of the back door closer.

Overtime when rotating in reverse

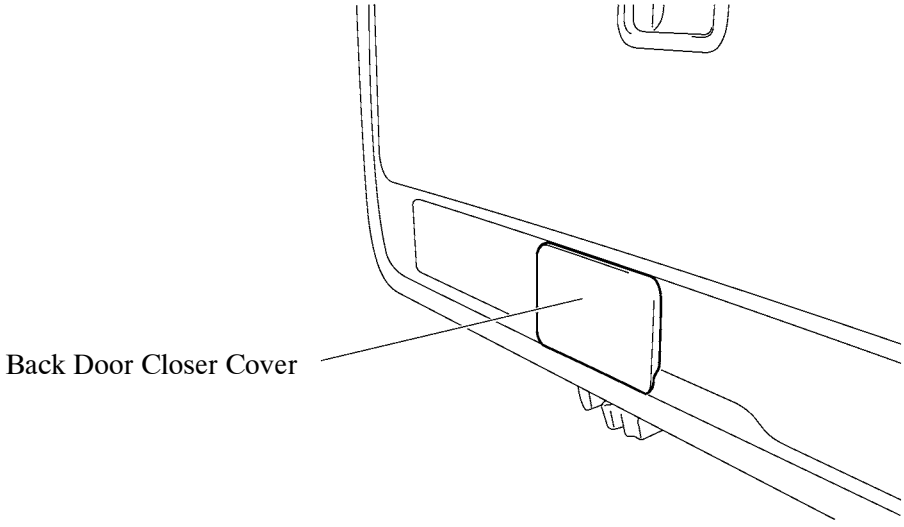
- If the back door closer relay has failed to detect the turning from on to off of the neutral position switch after 5 seconds have elapsed when the back door closer motor starts to rotate in reverse direction, the reverse rotation of the back door closer motor stops due to overtime.
- If the back door closer motor stops 20 times consecutively due to reverse rotation overtime, the back door closer relay prohibits the operation of the back door closer.

Resetting the back door closer relay while the operation is stopped due to overtime

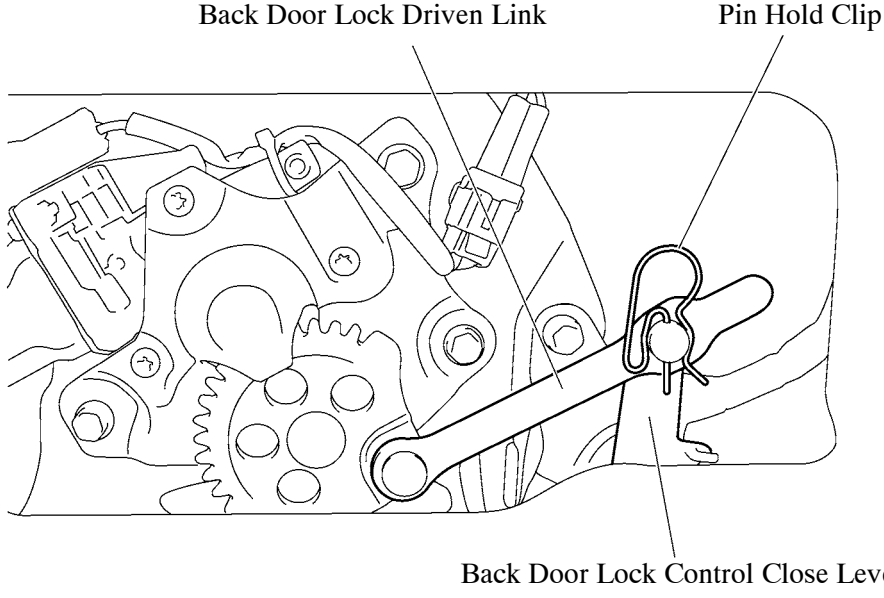
- If the back door closer relay prohibits the operation of the back door closer due to the detection of overtime, you can reset the back door closer relay by disconnecting the power supply to it to resume normal operation.

7. Open/close operations when the operation of the back door closer system has been stopped

- If the back door closer system has been stopped in mid-course due to some reasons, the back door will no longer be opened because the back door lock control close lever prevents the latch from being operated. In this case, you can open/close the back door by removing the back door closer cover from under the back door, removing the pin hold clip and separating the back door lock control driven link and the back door lock control close lever.



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