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## 1996 NISSAN Patrol SWB OEM Service and Repair Workshop Manual

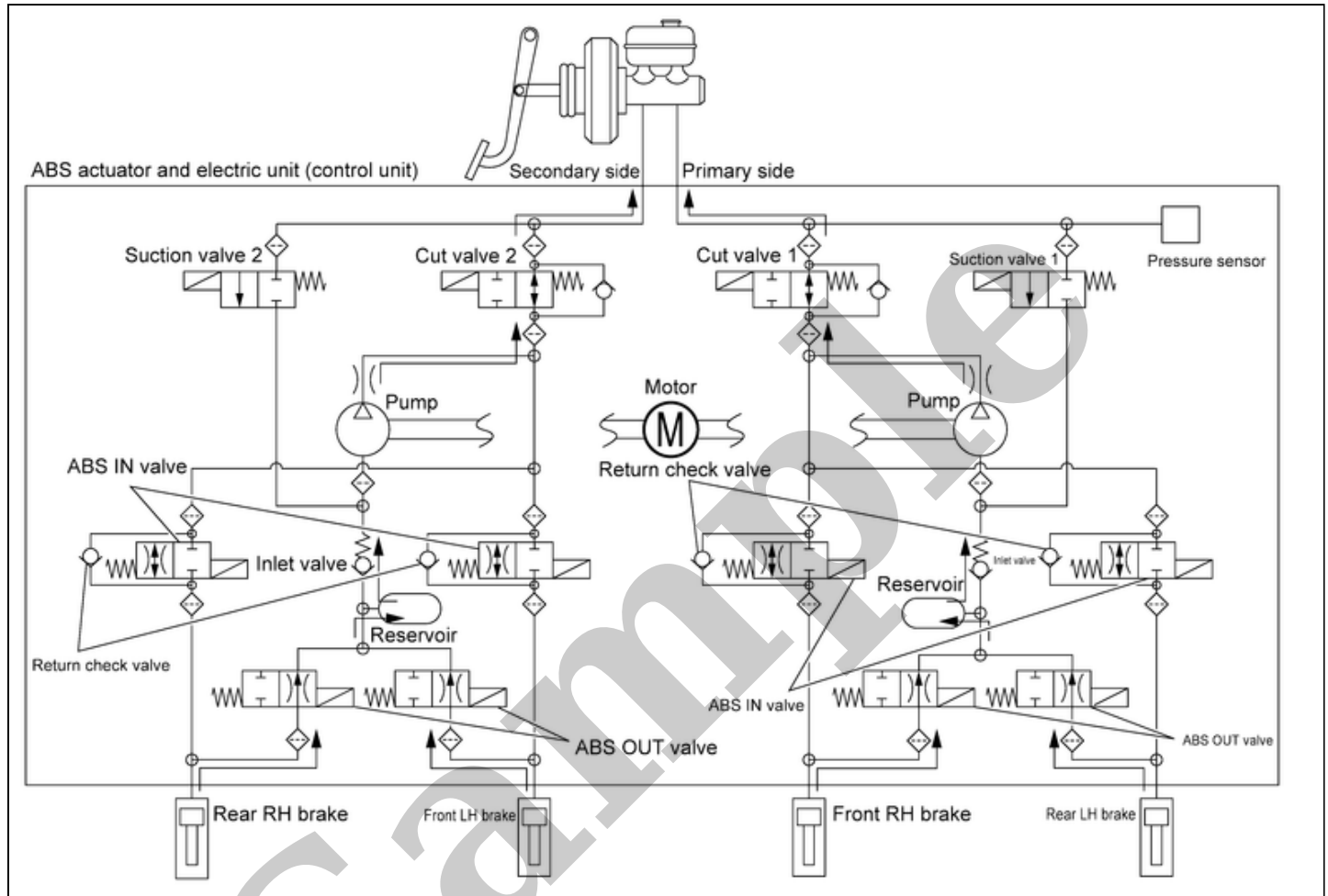
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- Since the ABS IN valve and the ABS OUT valve are closed, the rear RH brake, electrically-driven intelligent brake unit, and reservoir are blocked. This maintains fluid pressure applied on the rear RH brake.

During pressure rear LH brake holds

- Since the ABS IN valve and the ABS OUT valve are closed, the rear LH brake, electrically-driven intelligent brake unit, and reservoir are blocked. This maintains fluid pressure applied on the rear LH brake.

## When ABS Function is in Operation (During Pressure Decreases)



SIEMD-7262715-07-000382424

Name	Not activated	During pressure decreases
Cut valve 1	Power supply is not supplied (open)	Power supply is not supplied (open)
Cut valve 2	Power supply is not supplied (open)	Power supply is not supplied (open)
Suction valve 1	Power supply is not supplied (close)	Power supply is not supplied (close)
Suction valve 2	Power supply is not supplied (close)	Power supply is not supplied (close)
ABS IN valve	Power supply is not supplied (open)	Power supply is supplied (close)
ABS OUT valve	Power supply is not supplied (close)	Power supply is supplied (open)
Each brake (fluid pressure)	—	Pressure decreases

During pressure front RH brake decreased

- Since the ABS IN valve is closed and the ABS OUT valve is opened, fluid pressure applied on the front RH brake is supplied to the reservoir through the ABS OUT valve. This fluid pressure decreases when sent to the electrically-driven intelligent brake unit through the cut valve 1 by the pump.

During pressure front LH brake decreased

- Since the ABS IN valve is closed and the ABS OUT valve is opened, fluid pressure applied on the front LH brake is supplied to the reservoir through the ABS OUT valve. This fluid pressure decreases when sent to the electrically-driven intelligent brake unit through the cut valve 2 by the pump.

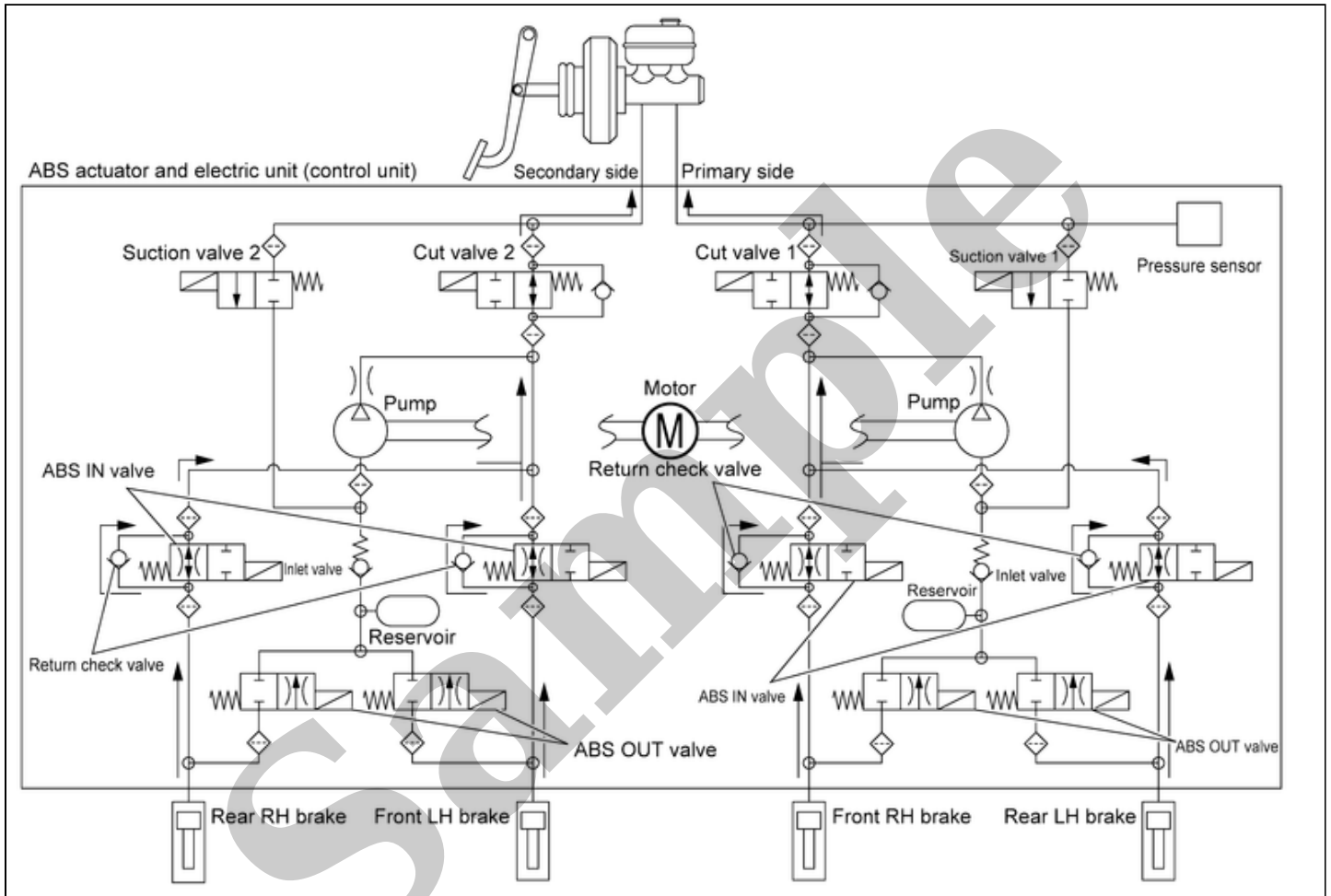
During pressure rear RH brake decreased

- Since the ABS IN valve is closed and the ABS OUT valve is opened, fluid pressure applied on the rear RH brake is supplied to the reservoir through the ABS OUT valve. This fluid pressure decreases when sent to the electrically-driven intelligent brake unit through the cut valve 2 by the pump.

During pressure rear LH brake decreased

- Since the ABS IN valve is closed and the ABS OUT valve is opened, fluid pressure applied on the rear LH brake is supplied to the reservoir through the ABS OUT valve. This fluid pressure decreases when sent to the electrically-driven intelligent brake unit through the cut valve 1 by the pump.

## When Brake Release



SIEMD-7262715-09-000382425

Name	Not activated	During brake release
Cut valve 1	Power supply is not supplied (open)	Power supply is not supplied (open)
Cut valve 2	Power supply is not supplied (open)	Power supply is not supplied (open)
Suction valve 1	Power supply is not supplied (close)	Power supply is not supplied (close)
Suction valve 2	Power supply is not supplied (close)	Power supply is not supplied (close)
ABS IN valve	Power supply is not supplied (open)	Power supply is not supplied (open)
ABS OUT valve	Power supply is not supplied (close)	Power supply is not supplied (close)
Each brake (fluid pressure)	—	Pressure decreases

During pressure front RH brake release

- Brake fluid is supplied to the front RH brake through the ABS IN valve and the cut valve 1, and returns to the electrically-driven intelligent brake unit.

During pressure front LH brake release

- Brake fluid is supplied to the front LH brake through the ABS IN valve and the cut valve 2, and returns to the electrically-driven intelligent brake unit.

During pressure rear RH brake release

- Brake fluid is supplied to the rear RH brake through the ABS IN valve and the cut valve 2, and returns to the electrically-driven intelligent brake unit.

During pressure rear LH brake release

- Brake fluid is supplied to the rear LH brake through the ABS IN valve and the cut valve 1, and returns to the electrically-driven intelligent brake unit.

## Component Parts and Function

Component parts	Function
Pump	<ul style="list-style-type: none"> <li>• Returns the brake fluid reserved in reservoir to electrically-driven intelligent brake unit by reducing pressure.</li> <li>• Pressure the brake fluid and send.</li> </ul>
Motor	Activates the pump according to signals from electric unit (control unit).
Cut valve 1 Cut valve 2	Shuts off the brake line from electrically-driven intelligent brake unit to each brake.
Suction valve 1 Suction valve 2	Opens the brake line from electrically-driven intelligent brake unit to pump.
ABS IN valve	Switches the fluid pressure line to increase or hold according.
ABS OUT valve	Switches the fluid pressure line to increase, hold or decrease according.
Check valve	Brake fluid does not back flow.
Return check valve	Returns the brake fluid from each brake to electrically-driven intelligent brake unit by bypassing orifice of each valve when brake is released.
Reservoir	Temporarily reserves the brake fluid drained from each brake, so that pressure efficiently decreases when decreasing pressure of each brake.
Pressure sensor	Detects the brake fluid pressure and transmits signal to electric unit (control unit).

## CONDITION FOR TURN ON THE WARNING LAMP

Turns ON when power switch ON and OFF when the system is normal, for bulb check purposes.

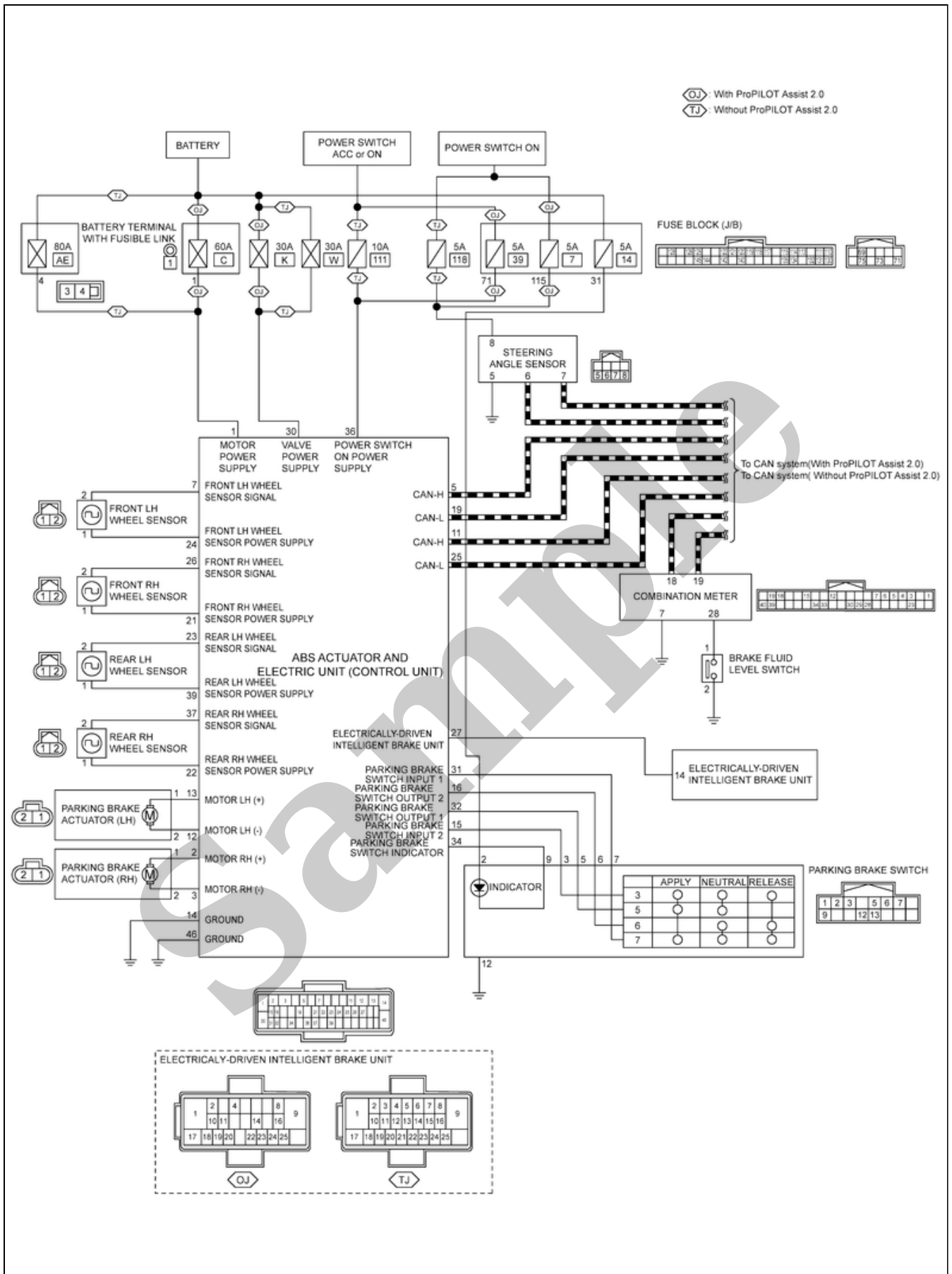
Condition (status)	ABS warning lamp	Brake warning lamp	VDC warning lamp	Brake system warning lamp
Power switch OFF (Auto ACC function OFF)	OFF	OFF	OFF	OFF
For several seconds after the power switch is ON	ON	ON	ON	ON
Several seconds after power switch is ON (before vehicle to READY, system is in normal operation)	OFF	OFF	OFF	OFF
Set the vehicle to READY (system is in normal operation)	OFF	OFF	OFF	OFF
When brake fluid is less than the specified level (brake fluid level switch ON)	OFF	ON	ON	OFF
VDC function is malfunctioning	OFF	OFF	ON	OFF
TCS function is malfunctioning	OFF	OFF	ON	OFF

Condition (status)	ABS warning lamp	Brake warning lamp	VDC warning lamp	Brake system warning lamp
ABS function is malfunctioning	ON	OFF	ON	OFF
EBD function is malfunctioning	ON	ON	ON	OFF
hill start assist function is malfunctioning	OFF	OFF	ON	OFF
Brake limited slip differential (BLSD) function is malfunctioning	OFF	OFF	ON	OFF
Brake assist function is malfunctioning	OFF	OFF	ON	OFF
Brake force distribution function is malfunctioning	OFF	OFF	ON	OFF
Cooperative regenerative brake function is malfunctioning	OFF	OFF	ON	ON
VDC function is operating	OFF	OFF	Blinking	OFF
TCS function is operating	OFF	OFF	Blinking	OFF
ABS function is operating	OFF	OFF	OFF	OFF
EBD function is operating	OFF	OFF	OFF	OFF
hill start assist function is operating	OFF	OFF	OFF	OFF
Brake limited slip differential (BLSD) function is operating	OFF	OFF	Blinking	OFF
Brake assist function is operating	OFF	OFF	OFF	OFF
Brake force distribution function is operating	OFF	OFF	OFF	OFF
regenerative brake function is operating	OFF	OFF	OFF	OFF

## CONDITION FOR TURN ON THE INDICATOR LAMP

Turns ON when power switch ON and OFF when the system is normal, for bulb check purposes.

Condition (status)	VDC OFF indicator lamp
Power switch OFF (Auto ACC function OFF)	OFF
For several seconds after the power switch is ON	ON
Several seconds after power switch is ON (system is in normal operation)	OFF
Set the vehicle to READY (system is in normal operation)	OFF
When VDC operation status is OFF	ON



## VDC FUNCTION, TCS FUNCTION, ABS FUNCTION, EBD FUNCTION, HILL START ASSIST FUNCTION, BRAKE LIMITED SLIP DIFFERENTIAL (BLSD) FUNCTION, BRAKE ASSIST FUNCTION, BRAKE FORCE DISTRIBUTION FUNCTION

VDC warning lamp in combination meter turn ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC function, TCS function, hill start assist function, brake limited slip differential (BLSD) function, brake assist function, brake force distribution function and cooperative regenerative brake function. The vehicle status becomes the same as models without VDC function, TCS function, hill start assist function, brake limited slip differential (BLSD) function, brake assist function, brake force distribution function and cooperative regenerative brake function. However, ABS function and EBD function are operated normally.

### ABS FUNCTION

ABS warning lamp and VDC warning lamp in combination meter turn ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC function, TCS function, ABS function, hill start assist function, brake limited slip differential (BLSD) function, brake assist function, brake force distribution function and cooperative regenerative brake function. The vehicle status becomes the same as models without VDC function, TCS function, ABS function, hill start assist function, brake limited slip differential (BLSD) function, brake assist function, brake force distribution function and cooperative regenerative brake function. However, EBD function is operated normally.



#### NOTE:

**ABS self-diagnosis sound may be heard the same as in the normal condition, because self-diagnosis is performed when power switch ON and when vehicle initially starts.**

### EBD FUNCTION

ABS warning lamp, brake warning lamp and VDC warning lamp in combination meter turn ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC function, TCS function, ABS function, EBD function, hill start assist function, brake limited slip differential (BLSD) function, brake assist function, brake force distribution function and cooperative regenerative brake function. The vehicle status becomes the same as models without VDC function, TCS function, ABS function, EBD function, hill start assist function, brake limited slip differential (BLSD) function, brake assist function, brake force distribution function and cooperative regenerative brake function.

### ELECTRIC PARKING BRAKE FUNCTION

- Electric parking brake warning lamp or electric parking brake indicator lamp in combination meter ON when a malfunction occurs in system.
- When parking brake switch is pulled/pushed during system malfunction, electric parking brake warning lamp blinks and electric parking brake indicator lamp turns ON when electric parking brake function cannot be operated. It restricts braking and release operations of electric parking brake function.



#### NOTE:

**The parking brake can be mechanically released.**

DTC	Fail-safe condition
C1040-63	Normal control
C1040-64	
C1040-92	

DTC	Fail-safe condition
C1041-55	
C1042-04	<p>The following functions are suspended.</p> <ul style="list-style-type: none"> <li>• VDC function</li> <li>• TCS function</li> <li>• ABS function</li> <li>• EBD function</li> <li>• hill start assist function</li> <li>• Brake limited slip differential (BLSD) function</li> <li>• Brake assist function</li> <li>• Brake force distribution function</li> <li>• Cooperative regenerative brake function</li> <li>• Electric parking brake function</li> </ul>
C1043-04	
C1046-04	
C1047-04	
C1048-04	
C1048-11	
C1048-92	
C1049-04	
C104A-04	
C104B-04	
C104C-04	
C104D-04	
C104E-04	
C104F-04	
C1050-04	
C1051-04	
C1051-13	
C1051-1C	
C1055-49	<p>The following functions are suspended.</p> <ul style="list-style-type: none"> <li>• VDC function</li> <li>• TCS function</li> <li>• hill start assist function</li> <li>• Brake limited slip differential (BLSD) function</li> <li>• Brake assist function</li> <li>• Brake force distribution function</li> <li>• Cooperative regenerative brake function</li> <li>• Electric parking brake function</li> </ul>
C1056-13	Normal control
C1056-16	<p>The following functions are suspended.</p> <ul style="list-style-type: none"> <li>• VDC function</li> <li>• TCS function</li> <li>• ABS function</li> <li>• EBD function</li> <li>• hill start assist function</li> <li>• Brake limited slip differential (BLSD) function</li> <li>• Brake assist function</li> </ul>
C1056-17	
C1058-01	



DTC	Fail-safe condition
	<ul style="list-style-type: none"> <li>• Brake force distribution function</li> <li>• Cooperative regenerative brake function</li> <li>• Electric parking brake function</li> </ul>
C1058-04	<p>The following functions are suspended.</p> <ul style="list-style-type: none"> <li>• VDC function</li> <li>• TCS function</li> <li>• ABS function</li> <li>• EBD function</li> <li>• hill start assist function</li> <li>• Brake limited slip differential (BLSD) function</li> <li>• Brake assist function</li> <li>• Brake force distribution function</li> <li>• Cooperative regenerative brake function</li> </ul>
C1058-42	<p>The following functions are suspended.</p> <ul style="list-style-type: none"> <li>• VDC function</li> </ul>
C1058-44	<ul style="list-style-type: none"> <li>• TCS function</li> </ul>
C1058-49	<ul style="list-style-type: none"> <li>• ABS function</li> <li>• EBD function</li> </ul>
C1058-51	<ul style="list-style-type: none"> <li>• hill start assist function</li> </ul>
C1058-92	<ul style="list-style-type: none"> <li>• Brake limited slip differential (BLSD) function</li> <li>• Brake assist function</li> </ul>
C1059-92	<ul style="list-style-type: none"> <li>• Brake force distribution function</li> <li>• Cooperative regenerative brake function</li> </ul>
C105A-92	<ul style="list-style-type: none"> <li>• Electric parking brake function</li> </ul>
C105B-96	<p>The following functions are suspended.</p> <ul style="list-style-type: none"> <li>• Cooperative regenerative brake function</li> </ul>
C105C-92	<p>The following functions are suspended.</p> <ul style="list-style-type: none"> <li>• Electric parking brake function</li> </ul>
C105D-7B	<p>The following functions are suspended.</p> <ul style="list-style-type: none"> <li>• VDC function</li> <li>• TCS function</li> <li>• hill start assist function</li> <li>• Brake limited slip differential (BLSD) function</li> <li>• Brake assist function</li> </ul>

DTC	Fail-safe condition
	<ul style="list-style-type: none"> <li>• Brake force distribution function</li> </ul>
C105E-92	The following functions are suspended.
C105E-93	<ul style="list-style-type: none"> <li>• Cooperative regenerative brake function</li> </ul>
C105F-85	Normal control
C105F-92	
C1061-02	The following functions are suspended.
C1061-07	<ul style="list-style-type: none"> <li>• VDC function</li> </ul>
C1061-09	<ul style="list-style-type: none"> <li>• TCS function</li> </ul>
C1061-11	<ul style="list-style-type: none"> <li>• ABS function</li> </ul>
C1061-12	<ul style="list-style-type: none"> <li>• EBD function</li> </ul>
C1061-13	<ul style="list-style-type: none"> <li>• hill start assist function</li> </ul>
C1061-1C	<ul style="list-style-type: none"> <li>• Brake limited slip differential (BLSD) function</li> </ul>
C1061-38	<ul style="list-style-type: none"> <li>• Brake assist function</li> </ul>
C1061-4A	<ul style="list-style-type: none"> <li>• Brake force distribution function</li> </ul>
C1061-64	<ul style="list-style-type: none"> <li>• Cooperative regenerative brake function</li> </ul>
C1061-92	<ul style="list-style-type: none"> <li>• Electric parking brake function</li> </ul>
C1063-02	
C1063-07	
C1063-09	
C1063-11	
C1063-12	
C1063-13	
C1063-1C	
C1063-38	
C1063-4A	
C1063-64	
C1063-92	
C1065-02	
C1065-07	
C1065-09	
C1065-11	
C1065-12	
C1065-13	
C1065-1C	
C1065-38	
C1065-4A	
C1065-64	
C1065-92	
C1067-02	