

## 13. Diagnostics with Phenomenon

### A: DIAGNOSTIC PROCEDURE WITH PHENOMENON

#### 1. ADAPTIVE CRUISE CONTROL, CONVENTIONAL CRUISE CONTROL

Phenomenon	Check Item	Reference
1 Cruise control main switch is not turned to ON. (CRUISE indicator light does not illuminate.) Or cruise control is cancelled without operating the cruise control command switch.	(1) Read the cancel code of the ECM.	Perform the diagnosis according to displayed cancel code.<Ref. to ES(diag)-87, ECM, LIST, List of Cancel Code.> If not displayed, go to (2).
	(2) Perform the real-time diagnosis. Check the input signal of cruise control system.	<Ref. to ES(diag)-41, Real-time Diagnosis.> When normal, go to (4). When abnormal, go to (3).
	(3) Check the cruise control command switch.	<Ref. to ES(diag)-76, CHECK CRUISE CONTROL COMMAND SWITCH, Diagnostics with Phenomenon.>
	(4) Check the CRUISE indicator.	<Ref. to ES(diag)-75, CHECK ADAPTIVE CRUISE CONTROL INDICATOR LIGHT/CONSTANT SPEED CRUISE CONTROL INDICATOR LIGHT AND CRUISE SET INDICATOR LIGHT, Diagnostics with Phenomenon.>
2 Cruise control cannot be set. Or cruise control is cancelled without releasing operation. NOTE: <ul style="list-style-type: none"><li>Do not turn the ignition switch to OFF after the cruise control is deactivated.</li><li>Do not operate the cruise control command switch after the cruise control is deactivated.</li></ul> If the above is performed, the cancel code the ECM will be cleared.	(1) Read the cancel code of the ECM.	Perform the diagnosis according to displayed cancel code.<Ref. to ES(diag)-82, List of Cancel Code.> If not displayed, go to (2).
	(2) Perform the real-time diagnosis. Check the input signal of cruise control system.	<Ref. to ES(diag)-41, Real-time Diagnosis.> When normal, go to (6). When abnormal, go to the relevant items for (3), (4), (5).
	(3) Check the cruise control command switch.	<Ref. to ES(diag)-76, CHECK CRUISE CONTROL COMMAND SWITCH, Diagnostics with Phenomenon.>
	(4) Check stop light switch and brake switch.	<Ref. to BR-66, Brake Pedal.> <Ref. to CC(diag)-17, 12, Diagnostic Procedure with Cancel Code.>
	(5) Check the neutral position switch.	<Ref. to CC(diag)-21, 14, Diagnostic Procedure with Cancel Code.> <Ref. to CC(diag)-26, 62, Diagnostic Procedure with Cancel Code.>
	(6) Check vehicle speed sensor.	<Ref. to CC(diag)-25, 22, Diagnostic Procedure with Cancel Code.>
3 SET indicator does not illuminate.	Check the SET indicator.	<Ref. to ES(diag)-75, CHECK ADAPTIVE CRUISE CONTROL INDICATOR LIGHT/CONSTANT SPEED CRUISE CONTROL INDICATOR LIGHT AND CRUISE SET INDICATOR LIGHT, Diagnostics with Phenomenon.>
4 Vehicle speed is not held within set speed $\pm 3$ km/h ( $\pm 2$ MPH) on a level road.	Check the vehicle speed sensor.	<Ref. to CC(diag)-25, 22, Diagnostic Procedure with Cancel Code.>
5 Vehicle speed does not increase or does not return to set speed after RES/+ switch has been pressed.	(1) Perform the real-time diagnosis. Check the input signal of cruise control system.	<Ref. to ES(diag)-41, Real-time Diagnosis.> When abnormal, go to (2).
	(2) Check the RES/+ switch.	<Ref. to ES(diag)-76, CHECK CRUISE CONTROL COMMAND SWITCH, Diagnostics with Phenomenon.>

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Phenomenon	Check Item	Reference
6 Vehicle speed does not decrease after SET/- switch has been pressed.	(1) Perform the real-time diagnosis. Check the input signal of cruise control system.	<Ref. to ES(diag)-41, Real-time Diagnosis.> When abnormal, go to (2).
	(2) Check the SET/- switch.	<Ref. to ES(diag)-76, CHECK CRUISE CONTROL COMMAND SWITCH, Diagnostics with Phenomenon.>
7 Cruise control is not released after CANCEL switch has been pressed.	(1) Perform the real-time diagnosis. Check the input signal of cruise control system.	<Ref. to ES(diag)-41, Real-time Diagnosis.> When abnormal, go to (2).
	(2) Check the CANCEL switch.	<Ref. to ES(diag)-76, CHECK CRUISE CONTROL COMMAND SWITCH, Diagnostics with Phenomenon.>
8 Vehicle distance does not change, even after vehicle distance switch is pressed.	(1) Perform the real-time diagnosis. Check the input signal of cruise control system.	<Ref. to ES(diag)-41, Real-time Diagnosis.> When abnormal, go to (2).
	(2) Check the vehicle distance switch.	<Ref. to ES(diag)-76, CHECK CRUISE CONTROL COMMAND SWITCH, Diagnostics with Phenomenon.>
9 Cruise control is not released after brake pedal has been depressed.	(1) Perform the real-time diagnosis. Check the input signal of cruise control system.	<Ref. to ES(diag)-41, Real-time Diagnosis.> When abnormal, go to (2).
	(2) Check stop light switch and brake switch.	<Ref. to CC(diag)-17, 12, Diagnostic Procedure with Cancel Code.> <Ref. to BR-71, INSTALLATION, Stop Light Switch.>
10 Cruise control is not released after shifting to the neutral position.	(1) Perform the real-time diagnosis. Check the input signal of cruise control system.	<Ref. to ES(diag)-41, Real-time Diagnosis.> When abnormal, go to (2).
	(2) Check the neutral position switch.	<Ref. to CC(diag)-21, 14, Diagnostic Procedure with Cancel Code.>
11 Acceleration or deceleration does not occur according to the preceding vehicle. The preceding vehicle is difficult to be detected. Braking force is weaker than usual. Alarm for requiring more brake pedal force does not sound.	(1) Using CHECK LIST (ADAPTIVE CRUISE CONTROL), check the condition and respond to it. 1) Is this applied to the condition that the use of adaptive cruise control is not desired? 2) Is this applied to the object or condition that is hard to be recognized by the stereo camera? 3) Is this applied to the driving condition that the preceding vehicle cannot be recognized or the vehicle on the next lane or the object on the roadside may be recognized by mistake? 4) Is this applied to the condition that brake force may become poor? 5) Is this applied to the condition that the alarm for requiring more brake pedal force does not sound even in a short vehicle distance?	<Ref. to ES(diag)-68, CHECK LIST (ADAPTIVE CRUISE CONTROL), DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.> When there is a relevant item in the check list, it can be the cause of malfunction. Eliminate the cause, and check that the malfunction has been improved. If not solved, go to (2).
	(2) Check the windshield glass and dashboard.	<Ref. to ES(diag)-8, WINDSHIELD GLASS AND DASHBOARD, INSPECTION, General Description.> When normal, go to (3).
	(3) Check the front wiper.	<Ref. to ES(diag)-12, FRONT WIPER, INSPECTION, General Description.> When normal, go to (4).
	(4) Check the stereo camera.	<Ref. to ES(diag)-13, STEREO CAMERA, INSPECTION, General Description.> When normal, go to (5).
	(5) Bleed air from brake system.	<Ref. to BR-60, BRAKE LINE, PROCEDURE, Air Bleeding.> Go to (6).
	(6) Check the optical axis of the stereo camera.	Adjust the optical axis of the stereo camera.<Ref. to ES(diag)-43, PROCEDURE, Camera Adjustment, Inspection.>

## 2. PRE-COLLISION BRAKE, AT RAPID START PREVENTION CONTROL

Phenomenon	Check Item	Reference
1 Pre-collision brake does not operate. Or the pre-collision brake operates, but the vehicle cannot stop safely before collision. Or the pre-collision brake is released automatically. Or the pre-collision brake assist does not operate.	(1) Check that the pre-collision brake OFF indicator light goes off.  (2) Using check list (pre-collision brake), check the following and respond to it. 1) Is this applied to the condition that the pre-collision brake does not operate, or there is a high possibility that the vehicle cannot stop safely before collision with the pre-collision brake? 2) Is this applied to the condition that there is a high possibility that the pre-collision brake does not operate due to the recognition status of the stereo camera? 3) Is this applied to the condition that the system does not operate correctly and the turning OFF of the pre-collision brake is desired? 4) Is this applied to the condition that the pre-collision brake OFF indicator light illuminates?	If this indicator light illuminates, the operation is not performed.  <Ref. to ES(diag)-70, CHECK LIST (PRE-COLLISION BRAKE), DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.> When there is a relevant item in the check list, it can be the cause of malfunction. Eliminate the cause, and check that the malfunction has been improved. If not solved, the stereo camera may be malfunctioning.
2 Pre-collision brake operates improperly. Or the pre-collision brake is not released. Or the pre-collision brake assist operates improperly.	(1) Using check list (pre-collision brake), check the following and respond to it. 1) Is this applied to the condition that the turning OFF of the pre-collision brake is desired? 2) Is this applied to the condition that the pre-collision brake may operate?	<Ref. to ES(diag)-70, CHECK LIST (PRE-COLLISION BRAKE), DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.> When there is a relevant item in the check list, it can be the cause of malfunction. Eliminate the cause, and check that the malfunction has been improved. If not solved, the stereo camera may be malfunctioning.
3 Pre-collision brake OFF indicator light does not go off. Or the pre-collision brake OFF indicator light illuminates automatically.	(1) Check that this failure occurs during engine start.  (2) Using the SSM, check that the system is not in the HALT condition with the cancel code.  (3) Check the pre-collision brake OFF switch.	Light illumination for a while after the engine start is a normal.  If the cancel code is displayed, check the diagnosis contents from the List of Cancel Code, and perform the corresponding operations. <Ref. to ES(diag)-82, List of Cancel Code.> If the cancel code is not displayed, go to (3).  <Ref. to ES(diag)-107, DTC B28B0 STEREO CAMERA ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
4 Pre-collision brake OFF indicator light does not illuminate. Or the pre-collision brake OFF indicator light goes off automatically.	(1) Check that this failure occurs during engine start.  (2) Check the pre-collision brake OFF switch.	Even if the pre-collision brake is turned off, it is turned on again when the engine switch is turned off and the engine has restarted.  <Ref. to ES(diag)-107, DTC B28B0 STEREO CAMERA ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
5 AT rapid start prevention control does not operate. Or the AT rapid start prevention control is released automatically.	(1) Check that the pre-collision brake OFF indicator light goes off.  (2) Using check list (at rapid start prevention control), check the following and respond to it. 1) Is this applied to the condition that the AT rapid start prevention control may not operate? 2) Is this applied to the condition that the pre-collision brake OFF indicator light illuminates?	If this indicator light illuminates, the operation is not performed.  <Ref. to ES(diag)-73, CHECK LIST (AT RAPID START PREVENTION CONTROL), DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.> When there is a relevant item in the check list, it can be the cause of malfunction. Eliminate the cause, and check that the malfunction has been improved. If not solved, the stereo camera may be malfunctioning.

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6 AT rapid start prevention control operates improperly. Or the AT rapid start prevention control is not released.	(1) Using check list (at rapid start prevention control), check the following and respond to it. 1) Is this applied to the condition that the turning OFF of the AT rapid start prevention control is desired? 2) Is this applied to the condition that the AT rapid start prevention control may operate?	<Ref. to ES(diag)-73, CHECK LIST (AT RAPID START PREVENTION CONTROL), DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.> When there is a relevant item in the check list, it can be the cause of malfunction. Eliminate the cause, and check that the malfunction has been improved. If not solved, the stereo camera may be malfunctioning.

## 3. LANE DEPARTURE WARNING, SWAY WARNING, FORWARD VEHICLE'S START MONITORING FUNCTION

Phenomenon	Check Item	Reference
1 Lane departure warning does not operate. Or the lane departure warning is released automatically.	(1) Check that the lane departure warning OFF indicator light goes off.  (2) Using check list (lane departure warning, sway warning, forward vehicle's start monitoring function), check the following and respond to it. 1) Is this applied to the condition that the lane departure warning does not operate or is difficult to operate? 2) Is this applied to the condition that the lane departure warning OFF indicator light illuminates?	<Ref. to ES(diag)-74, CHECK LIST (LANE DEPARTURE WARNING, SWAY WARNING, FORWARD VEHICLE'S START MONITORING FUNCTION), DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.> When there is a relevant item in the check list, it can be the cause of malfunction. Eliminate the cause, and check that the malfunction has been improved. If not solved, the stereo camera may be malfunctioning.
2 Lane departure warning operates improperly. Or the lane departure warning is not released.	(1) Using check list (lane departure warning, sway warning, forward vehicle's start monitoring function), check the following and respond to it. 1) Is this applied to the condition that the vehicle lane is recognized erroneously and the lane departure warning may operate?	<Ref. to ES(diag)-74, CHECK LIST (LANE DEPARTURE WARNING, SWAY WARNING, FORWARD VEHICLE'S START MONITORING FUNCTION), DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.> When there is a relevant item in the check list, it can be the cause of malfunction. Eliminate the cause, and check that the malfunction has been improved. If not solved, the stereo camera may be malfunctioning.
3 Lane departure warning OFF indicator light does not go off. Or the lane departure warning OFF indicator light illuminates automatically.	(1) Check that this failure occurs during engine start.  (2) Using the SSM, check that the system is not in the HALT condition with the cancel code.  (3) Check the lane departure warning OFF indicator light.	Light illumination for a while after the engine start is a normal. Even if the engine switch is turned off and the engine is restarted, the status before the engine switch off is maintained.  If the cancel code is displayed, check the diagnosis contents from the List of Cancel Code, and perform the corresponding operations. <Ref. to ES(diag)-82, List of Cancel Code.> If the cancel code is not displayed, go to (3).  <Ref. to ES(diag)-107, DTC B28B0 STEREO CAMERA ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
4 Lane departure warning OFF indicator light does not illuminate. Or the lane departure warning OFF indicator light goes off automatically.	(1) Check the lane departure warning OFF indicator light.	<Ref. to ES(diag)-107, DTC B28B0 STEREO CAMERA ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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Phenomenon	Check Item	Reference
5 Sway warning does not operate. Or the sway warning is released automatically.	(1) Check that the lane departure warning OFF indicator light goes off.  (2) Using CHECK LIST (LANE DEPARTURE WARNING, SWAY WARNING, FORWARD VEHICLE'S START MONITORING FUNCTION), check the following and respond to it. 1) Is this applied to the condition that the sway warning may not operate? 2) Is this applied to the condition that the lane departure warning OFF indicator light illuminates?	If this indicator light illuminates, the operation is not performed.  <Ref. to ES(diag)-74, CHECK LIST (LANE DEPARTURE WARNING, SWAY WARNING, FORWARD VEHICLE'S START MONITORING FUNCTION), DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.> When there is a relevant item in the check list, it can be the cause of malfunction. Eliminate the cause, and check that the malfunction has been improved. If not solved, the stereo camera may be malfunctioning.
6 Sway warning operates improperly. Or the sway warning is not released.	(1) Using CHECK LIST (LANE DEPARTURE WARNING, SWAY WARNING, FORWARD VEHICLE'S START MONITORING FUNCTION), check the following and respond to it. 1) Is this applied to the condition that the sway warning may operate improperly?	<Ref. to ES(diag)-74, CHECK LIST (LANE DEPARTURE WARNING, SWAY WARNING, FORWARD VEHICLE'S START MONITORING FUNCTION), DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.> When there is a relevant item in the check list, it can be the cause of malfunction. Eliminate the cause, and check that the malfunction has been improved. If not solved, the stereo camera may be malfunctioning.
7 Forward vehicle's start monitoring function does not operate. Or the forward vehicle's start monitoring function is released automatically.	(1) Using CHECK LIST (LANE DEPARTURE WARNING, SWAY WARNING, FORWARD VEHICLE'S START MONITORING FUNCTION), check the following and respond to it. 1) Is this applied to the condition that the forward vehicle's start monitoring function does not operate even when the preceding vehicle has already started?	<Ref. to ES(diag)-74, CHECK LIST (LANE DEPARTURE WARNING, SWAY WARNING, FORWARD VEHICLE'S START MONITORING FUNCTION), DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.> When there is a relevant item in the check list, it can be the cause of malfunction. Eliminate the cause, and check that the malfunction has been improved. If not solved, the stereo camera may be malfunctioning.
8 Forward vehicle's start monitoring function operates improperly. Or the forward vehicle's start monitoring function is not released.	(1) Using CHECK LIST (LANE DEPARTURE WARNING, SWAY WARNING, FORWARD VEHICLE'S START MONITORING FUNCTION), check the following and respond to it. 1) Is this applied to the condition that the forward vehicle's start monitoring function operates even when the preceding vehicle has not yet started?	<Ref. to ES(diag)-74, CHECK LIST (LANE DEPARTURE WARNING, SWAY WARNING, FORWARD VEHICLE'S START MONITORING FUNCTION), DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.> When there is a relevant item in the check list, it can be the cause of malfunction. Eliminate the cause, and check that the malfunction has been improved. If not solved, the stereo camera may be malfunctioning.

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## 4. CHECK LIST (ADAPTIVE CRUISE CONTROL)

Item Name		Yes/No
<b>[1]: When the vehicle does not accelerate or decelerate according to the preceding vehicle, or when it is difficult to detect the preceding vehicle.</b>		
1	Check that the following are applied to the condition that the use of adaptive cruise control is not desired.	
1	Tire pressure is not correct.	Yes No
2	The vehicle is equipped with the temporary spare tire.	Yes No
3	The vehicle is equipped with worn tire or tires with excessive wear difference.	Yes No
4	The vehicle is equipped with the tires out of specification.	Yes No
5	The suspension has been modified.	Yes No
6	The vehicle is equipped with the tire chain.	Yes No
7	Headlight is dirty or the optical axis is deviated. (The vehicle cannot correctly emit the headlight beam against the object and recognize it.)	Yes No
8	The driving of own vehicle is unstable due to an accident or failure.	Yes No
9	The brake warning light illuminates.	Yes No
10	Vehicle is tilted by the heavy load.	Yes No
11	Passenger capacity is exceeded.	Yes No
12	The vehicle is towing the trailer or other vehicle.	Yes No
13	The vehicle drives on the general road (other than limited highway). (Depending on the road environment (complicated roads etc.), the vehicle may not be able to drive according to the traffic condition, which may lead to the traffic accident.)	Yes No
14	The vehicle drives on the sharp bend.	Yes No
15	The vehicle drives on the slippery roads such as icy road or snow-covered road. (Tires can spin, losing the vehicle control.)	Yes No
16	The vehicle drives under the traffic condition that the certain vehicle distance is difficult to be maintained due to frequent acceleration and deceleration. (The vehicle may not be able to drive according to the traffic condition.)	Yes No
17	There is a steep downhill. (The vehicle may drive at higher speed than the set vehicle speed.)	Yes No
18	The vehicle performs adaptive driving while recognizing the preceding vehicle on the steep downhills. (Brake can be overheated.)	Yes No
19	The vehicle drives on the road with repeated steep uphills and downhills or crossover. (The vehicle may not be able to recognize the preceding vehicle or may recognize the road surface, and appropriate control may not be performed.)	Yes No
20	The vehicle is entering the interchange, service area, parking area, junction or tollgate. (The vehicle may not be able to recognize the preceding vehicle.)	Yes No
21	When the surrounding brightness (such as inlet and outlet of a tunnel) suddenly changes.	Yes No
22	There are water, snow or sandy dust raised by the preceding vehicle or oncoming vehicle, or sand or smoke blown in the wind, or moisture in front of own vehicle. (The vehicle may not be able to recognize the preceding vehicle or may recognize the water, and appropriate control may not be performed.)	Yes No
23	The windshield glass is covered with fog, snow, dirt, frost or sandy dust.	Yes No
24	The raindrops, water drops or dirt on the windshield glass are not wiped off sufficiently. (The vehicle may not be able to recognize the preceding vehicle, and appropriate control may not be performed.)	Yes No
25	Canoes etc. loaded on the roof block the visibility of the stereo camera.	Yes No

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Item Name		Yes/No	
2	Check that the following are applied to the object or condition that is hard to be recognized by the stereo camera.		
1	That was a vehicle with large speed difference (low-speed driving vehicle, stopping vehicle, oncoming vehicle).	Yes	No
2	That was a cutting-in vehicle.	Yes	No
3	That was a motorcycle, bicycle, pedestrian or animal, etc.	Yes	No
4	It was dim in the evening or in the morning.	Yes	No
5	The headlight did not illuminate during nighttime hours or inside the tunnel.	Yes	No
6	The tail light of the preceding vehicle did not illuminate during nighttime hours or inside the tunnel.	Yes	No
7	The vehicle was exposed to the intense light (backlight such as sunlight or headlight high-beam light) from the front of the vehicle.	Yes	No
8	The rearmost surface of the preceding vehicle was small, low or uneven. That was a truck equipped with an unloaded platform without gate, a vehicle that the luggage was protruding from the rear end of the vehicle, a vehicle of special shape (carrier car, side car, etc.) or a vehicle with low vehicle height.	Yes	No
9	There was an object extremely close to the bumper of the own vehicle.	Yes	No
3	Check that the following are applied to the driving condition that the preceding vehicle cannot be recognized or the vehicle on the next lane or the object on the roadside may be recognized by mistake.		
1	The vehicle began adaptive cruise control from the condition that the vehicle distance was short immediately after the preceding vehicle was cut in.	Yes	No
2	The vehicle drives on the curve, outlet and inlet of the curve, or the road with many curves in succession. (Recognition may not be performed properly, because the preceding vehicle is out of recognition area.)	Yes	No
3	The position against the preceding vehicle deviated laterally.	Yes	No
4	There were some objects just near the road side.	Yes	No
5	The speed difference against the preceding vehicle was large.	Yes	No
6	Other vehicle cut ahead of the own vehicle.	Yes	No
7	The vehicle distance was extremely short.	Yes	No
8	The own vehicle swayed in the vehicle lane.	Yes	No
9	The road surface was uneven due to roll or unpaved track.	Yes	No
10	The vehicle drove on the narrow lane because of the lane closure or construction work.	Yes	No
11	The driving of own vehicle was unstable due to an accident or failure.	Yes	No
12	The own vehicle was loaded with the extremely heavy load in the luggage compartment or on the rear seat.	Yes	No
<b>[2]: When braking force is weaker than usual.</b>			
1	Check that the following are applied to the condition that brake force may become poor.		
1	The vehicle status (loading amount, passenger, etc.) was inappropriate.	Yes	No
2	The road surface was very steep, slippery, sharp turn, or uneven.	Yes	No
3	The service maintenance condition of the vehicle (brake system, tire wear, tire pressure, spare tire, etc.) was inappropriate.	Yes	No
4	The brake was cold at low ambient temperature or immediately after the driving had started.	Yes	No
5	The symptom occurred between immediately after engine started and after a while the vehicle started driving (Completion of warming up operation can be used as an indication.).	Yes	No
6	The brake force becomes poor due to the overheating of the brake on the downhills.	Yes	No
7	The brake force becomes poor because of the wet brake after driving onto the puddle or washing the vehicle.	Yes	No
<b>[3]: When the alarm for requiring more brake pedal force does not sound.</b>			
1	Check that the following are applied to the condition that the alarm for requiring more brake pedal force does not sound even in a short vehicle distance.		
1	The speed difference between own vehicle and preceding vehicle (when the vehicle speed of the own vehicle was approximately the same as that of the preceding vehicle) was small.	Yes	No
2	The vehicle speed of the preceding vehicle was faster than that of the own vehicle (when the vehicle distance was getting longer).	Yes	No
3	Other vehicle cut in extremely close to the own vehicle.	Yes	No
4	The preceding vehicle decelerated abruptly.	Yes	No
5	There are many continuous uphills and downhills.	Yes	No

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## 5. CHECK LIST (PRE-COLLISION BRAKE)

Item Name		Yes/No	
<b>[1]: When pre-collision brake did not operate, or when vehicle could not stop safely before collision in spite of pre-collision brake operation.</b>			
1	Check that the following are applied to the condition that the pre-collision brake does not operate, or there is a high possibility that the vehicle cannot stop safely before collision in spite of pre-collision brake operation.	Yes	No
1	The following conditions occurred. Vehicle speed difference in the preceding was small. Vehicle distance was long. Lateral deviation was large (offset amount).	Yes	No
2	The vehicle status (loading amount, number of passenger, etc.) was inappropriate.	Yes	No
3	The road surface was very steep, slippery, sharp turn, or uneven.	Yes	No
4	There was problem for the frontal visibility (rain, snow, fog, smoke, etc.).	Yes	No
5	The objects were livestock, animals, guardrail, telephone pole, tree, fence, wall, etc.	Yes	No
6	The object was motorcycle, bicycle, or pedestrian. However, the system could not recognize the object due to surrounding brightness, motion, posture, and/or angle.	Yes	No
7	Crash avoidance operation (accelerator pedal, brake pedal, steering wheel, etc.) was performed.	Yes	No
8	The service maintenance condition of the vehicle (brake system, tire wear, tire pressure, spare tire, etc.) was inappropriate.	Yes	No
9	The vehicle is towing the trailer or other vehicle.	Yes	No
10	The brake was cold at low ambient temperature or immediately after the driving had started.	Yes	No
11	The brake force becomes poor due to the overheating of the brake on the downhills.	Yes	No
12	The brake force becomes poor because of the wet brake after driving onto the puddle or washing the vehicle.	Yes	No

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2	Check that the following are applied to the condition that there is a high possibility that the pre-collision brake does not operate depending on the recognition status of the stereo camera.	
1	It was bad weather (heavy rain, snowstorm, dense fog).	Yes No
2	The field of view was insufficient due to water, snow or sandy dust raised by the preceding vehicle or oncoming vehicle, or the moisture, sand or smoke blown in the wind.	Yes No
3	The headlight did not illuminate during nighttime hours or inside the tunnel.	Yes No
4	The tail light of the preceding vehicle did not illuminate during nighttime hours or inside the tunnel.	Yes No
5	The vehicle approached the motorcycle, bicycle or pedestrian in the night.	Yes No
6	It was dark in the evening or in the morning.	Yes No
7	The rearmost surface of the preceding vehicle was small, low or uneven. That was a truck equipped with an unloaded platform without gate, a vehicle that the luggage was protruding from the rear end of the vehicle, a vehicle of special shape (carrier car, side car, etc.) or a vehicle with low vehicle height.	Yes No
8	There was a wall in front of the stopping vehicle.	Yes No
9	There was an object close to the vehicle.	Yes No
10	That was a vehicle stopped sideways.	Yes No
11	That was a vehicle which was oncoming or driving in reverse.	Yes No
12	The object was small seen from the stereo camera. (small animals, infants, person squatting down or lying down)	Yes No
13	The preceding vehicle made a sharp turn, or performed abrupt acceleration or deceleration.	Yes No
14	Other vehicle, motorcycle, bicycle or pedestrian existed extremely close to the bumper of the own vehicle.	Yes No
15	The speed difference was 5 km/h (3.1 MPH) or less. (The control is performed in close distance. Depending on the objects shape and size, the rear end surface may be outside the camera visibility area.)	Yes No
16	Other vehicle, motorcycle, bicycle or pedestrian cut in from the side or jumped in front of the own vehicle.	Yes No
17	The own vehicle changed the vehicle lane, and followed the preceding vehicle right behind.	Yes No
18	The vehicle was exposed to the intense light (backlight such as sunlight or headlight high-beam light) from the front of the vehicle.	Yes No
19	The windshield glass was covered with fog, snow, dirt, frost or sandy dust.	Yes No
20	The windshield glass has not yet been wiped off sufficiently during or after the use of the window washer.	Yes No
21	The recognition of the object was imperfect due to the raindrop or droplet of the window washer or the wiper blade blocking the visibility of the stereo camera.	Yes No
22	Canoes etc. loaded on the roof blocked the visibility of the stereo camera.	Yes No
23	Other vehicle, motorcycle, bicycle or pedestrian existed out of the illuminating area of the headlight.	Yes No
24	The vehicle drove on the sharp turn, steep uphills or steep downhills.	Yes No
25	The road surface was uneven due to roll or unpaved track.	Yes No
26	The vehicle passed through the outlet or inlet of a tunnel.	Yes No
27	The object was fence or wall.	Yes No
28	The object was a plate of glass, mirror wall or door.	Yes No
3	Check that the following are applied to the condition that the system does not operate correctly and the turning OFF of the pre-collision brake is desired.	
1	Tire pressure is not correct.	Yes No
2	The vehicle is equipped with the temporary spare tire.	Yes No
3	The vehicle is equipped with worn tire or tires with excessive wear difference.	Yes No
4	The vehicle is equipped with the tires out of specification.	Yes No
5	The suspension has been modified.	Yes No
6	The vehicle is equipped with the tire chain.	Yes No
7	Headlight is dirty or the optical axis is deviated. (The vehicle cannot correctly emit the headlight beam against the object and recognize it.)	Yes No
8	The driving status of own vehicle is unstable due to an accident or failure.	Yes No
9	The brake warning light illuminates.	Yes No
10	Vehicle is tilted by the heavy load. Or, passenger capacity is exceeded.	Yes No

# Diagnostics with Phenomenon

## EyeSight (DIAGNOSTICS)

Item Name		Yes/No	
4	Check that the following are applied to the condition that the pre-collision brake OFF indicator light illuminates. (When the pre-collision brake OFF indicator light illuminates, the pre-collision brake does not operate.)		
1	The pre-collision brake is turned off, using the pre-collision brake OFF switch.	Yes	No
2	The VDC operation is stopped by pressing the VDC OFF switch.	Yes	No
3	Approximately for 7 seconds after the engine has started.	Yes	No
4	EyeSight is malfunctioning.	Yes	No
5	EyeSight is stopped temporarily.	Yes	No
<b>[2]: When pre-collision brake operated improperly.</b>			
1	Check that the following are applied to the condition that the turning OFF of the pre-collision brake is desired.		
1	The vehicle is towed.	Yes	No
2	The vehicle is loaded on the carrier car.	Yes	No
3	The chassis dynamometer or free roller is used.	Yes	No
4	The vehicle is lifted up, engine is started and the tire is spun.	Yes	No
5	The vehicle passes through the banners, flags, drooping branches or grass while making contact with them.	Yes	No
6	The vehicle performs sporty driving on the circuit.	Yes	No
7	When the vehicle uses the movable type car wash machine.	Yes	No
2	Check that the following are applied to the condition that the pre-collision brake may operate.		
1	The vehicle passes through the ETC gate at a speed exceeding the specification.	Yes	No
2	The vehicle drives close to the preceding vehicle.	Yes	No
3	The vehicle drives on the place where the road surface gradient changed suddenly.	Yes	No
4	The vehicle passes through the moisture or mass of smoke.	Yes	No
5	When the exhaust gas emitted from the preceding vehicle is visible clearly at cold weather.	Yes	No
6	There is an obstacle on the curve or crossing.	Yes	No
7	The vehicle passes through close to other vehicle or obstacle.	Yes	No
8	The vehicle parks close to the wall in front or to other vehicle.	Yes	No

## 6. CHECK LIST (AT RAPID START PREVENTION CONTROL)

Item Name		Yes/No
<b>[1]: When AT rapid start prevention control did not operate.</b>		
1	Check that the following are applied to the condition that the AT rapid start prevention control may not operate.	
1	Did the following conditions occur? 1: Distance from the front object is long. 2: Vehicle speed difference is small. 3: Lateral deviation is large (offset amount).	Yes No
2	It was bad weather (heavy rain, snowstorm, dense fog).	Yes No
3	The visibility was insufficient due to sand or smoke blown in the air.	Yes No
4	The vehicle approached the object in the evening, in the morning or in the night.	Yes No
5	The vehicle approached the object in the dark place (e.g. closed-in parking lot).	Yes No
6	The height of the object was low. (low wall, low guardrail, vehicle with low height etc.)	Yes No
7	The object was small seen from the stereo camera. (small animals, infants, person squatting down or lying down)	Yes No
8	The object or rearmost area of the preceding vehicle (trailer, etc.) was small. Or the vehicle approached them too close. (The system triggers the operation by recognizing the area other than the rearmost section, resulting in insufficient control.)	Yes No
9	The object such as other vehicle, motorcycle, bicycle or pedestrian cut in from the side or jumped in front of the own vehicle.	Yes No
10	The own vehicle changed the vehicle lane when it started, and approached right behind the object.	Yes No
11	The vehicle was exposed to the intense light (backlight such as sunlight or headlight high-beam light) from the front of the vehicle.	Yes No
12	The windshield glass was covered with fog, snow, dirt, frost or sandy dust.	Yes No
13	The windshield glass has not yet been wiped off sufficiently during or after the use of the window washer.	Yes No
14	The recognition of the object was imperfect due to the raindrop or droplet of the window washer or the wiper blade blocking the visibility of the stereo camera.	Yes No
15	Canoes etc. loaded on the roof blocked the visibility of the stereo camera.	Yes No
16	The object existed out of the illuminating area of the headlight.	Yes No
17	The vehicle drove on the sharp turn, steep uphills or steep downhills.	Yes No
18	The object was a fence or wall with even pattern (striped pattern or bricks) or unpatterned surface.	Yes No
19	The object was a plate of glass, mirror wall or door.	Yes No
20	Crash avoidance operation (accelerator pedal, brake pedal, steering wheel, etc.) was performed.	Yes No
2	Check that the following are applied to the condition that the pre-collision brake OFF indicator light illuminates. (When the pre-collision brake OFF indicator light illuminates, the AT rapid start prevention control does not operate.)	
1	The pre-collision brake was turned off, using the pre-collision brake OFF switch.	Yes No
2	The VDC operation is stopped by pressing the VDC OFF switch.	Yes No
3	Approximately for 7 seconds after the engine has started.	Yes No
4	EyeSight is malfunctioning.	Yes No
5	EyeSight is stopped temporarily.	Yes No
<b>[2]: When AT rapid start prevention control operated improperly.</b>		
1	Check that the following are applied to the condition that the releasing of the AT rapid start prevention control is desired.	
1	The vehicle is towed.	Yes No
2	The vehicle is loaded on the carrier car.	Yes No
3	The chassis dynamometer or free roller is used.	Yes No
4	The vehicle is lifted up, engine is started and the tire is spun.	Yes No
5	The vehicle passes through the banners, flags, drooping branches or grass while making contact with them.	Yes No
6	The vehicle performs sporty driving on the circuit.	Yes No

# Diagnostics with Phenomenon

EyeSight (DIAGNOSTICS)

Item Name			Yes/No
2 Check that the following are applied to the condition that the AT rapid start prevention control may operate.			
1	The vehicle passes through the ETC gate at a speed exceeding the specification.	Yes	No
2	The vehicle drives close to the preceding vehicle.	Yes	No
3	The vehicle drives on the place where the road surface gradient changed suddenly.	Yes	No
4	The vehicle passes through the moisture or mass of smoke.	Yes	No
5	There is an obstacle on the curve or crossing.	Yes	No
6	The vehicle passes through close to other vehicle or obstacle.	Yes	No
7	The vehicle parks close to the wall in front or to other vehicle.	Yes	No

## 7. CHECK LIST (LANE DEPARTURE WARNING, SWAY WARNING, FORWARD VEHICLE'S START MONITORING FUNCTION)

Item name			Yes/No
<b>[1]: When the lane departure warning did not operate.</b>			
1 Check that the following are applied to the condition that the lane departure warning does not operate or is difficult to operate.			
1	The lane departure warning is turned off.	Yes	No
2	The vehicle speed of the own vehicle is approximately less than 50 km/h (31 MPH).	Yes	No
3	That was approximately 7 seconds period after the lane departure warning had occurred once.	Yes	No
4	The steering wheel was turned fully or rapidly.	Yes	No
5	The brake pedal is depressed.	Yes	No
6	The vehicle is accelerated by depressing the accelerator pedal.	Yes	No
7	The vehicle distance from the preceding vehicle is short.	Yes	No
8	That was approximately 7 seconds period while the turn signal indicator was operating or after the lever was returned.	Yes	No
9	The vehicle has not returned inside the vehicle lane after the operation of the lane departure warning.	Yes	No
10	The width of the vehicle lane is narrow.	Yes	No
11	The vehicle lane is difficult to be recognized seen from the stereo camera. (Lane line (white line, etc.) does not exist or is fading out. Or the color of the lane line is very similar to that of the road surface, and difficult to be seen. Or the width of the lane line is very thin.)	Yes	No
12	The preceding vehicle performed crash avoidance action to avoid the obstacle, and the own vehicle performed steering operation after the preceding vehicle.	Yes	No
2 Check that the following are applied to the condition that the lane departure warning OFF indicator light illuminates. (When the lane departure warning OFF indicator light illuminates, the lane departure warning does not operate.)			
1	The lane departure warning is turned off, using the lane departure warning OFF switch.	Yes	No
2	The VDC operation is stopped by pressing the VDC OFF switch.	Yes	No
3	Approximately for 7 seconds after the engine has started.	Yes	No
4	EyeSight is malfunctioning.	Yes	No
5	EyeSight is stopped temporarily.	Yes	No
<b>[2]: When the lane departure warning malfunctioned.</b>			
1 Check that the following are applied to the condition that the vehicle lane is recognized erroneously and the lane departure warning may operate.			
1	There was the tire track on the wet road or snow-covered road.	Yes	No
2	There was the boundary line between snow-covered area and asphalt or on the trace of road repair.	Yes	No
3	There was the double vehicle lane.	Yes	No
4	The shadow of the guardrail was detected by mistake.	Yes	No

# Diagnostics with Phenomenon

EyeSight (DIAGNOSTICS)

Item name		Yes/No	
<b>[3]: When the sway warning did not operate.</b>			
1	Check that the following are applied to the condition that the sway warning may not operate.		
1	The vehicle drove on the road with many curves in succession.	Yes	No
2	The vehicle speed changed greatly.	Yes	No
3	That was immediately after the vehicle lane had changed.	Yes	No
4	The vehicle lane was difficult to be recognized seen from the stereo camera. (Lane line (white line, etc.) does not exist or is fading out. Or the color of the lane line is very similar to that of the road surface, and difficult to be seen. Or the width of the lane line is very thin.)	Yes	No
5	That was immediately after the sway had begun.	Yes	No
2	Check that the following are applied to the condition that the lane departure warning OFF indicator light illuminates. (When the lane departure warning OFF indicator light illuminates, the sway warning does not operate.)		
1	The lane departure warning is turned off, using the lane departure warning OFF switch.	Yes	No
2	The VDC operation is stopped by pressing the VDC OFF switch.	Yes	No
3	Approximately for 7 seconds after the engine has started.	Yes	No
4	EyeSight is malfunctioning.	Yes	No
5	EyeSight is stopped temporarily.	Yes	No
<b>[4]: When the sway warning malfunctioned.</b>			
1	Check that the following are applied to the condition that the sway warning may operate.		
1	That was after the sway had stopped.	Yes	No
2	The driver lost concentration on driving the vehicle due to fatigue or looking away.	Yes	No
<b>[5]: When the forward vehicle's start monitoring function did not operate or when it malfunctioned.</b>			
1	Check that the following are applied to the condition that the forward vehicle's start monitoring function does not operate even when the preceding vehicle has already started, or the forward vehicle's start monitoring function operates even when the preceding vehicle has not yet started.		
1	The motorcycle cut in the space between the own vehicle and the stopped preceding vehicle.	Yes	No
2	The vehicle could not recognize the preceding vehicle properly due to the weather condition or road shape.	Yes	No
3	The stereo camera lost sight of the preceding vehicle.	Yes	No
4	The driver did not depress the brake pedal with select lever in D, M or N range. (At this time, forward vehicle's start monitoring function does not operate.)	Yes	No
5	The forward vehicle's start monitoring function was turned OFF, using the customize function.	Yes	No

## B: CHECK ADAPTIVE CRUISE CONTROL INDICATOR LIGHT/CONSTANT SPEED CRUISE CONTROL INDICATOR LIGHT AND CRUISE SET INDICATOR LIGHT

### TROUBLE SYMPTOM:

Adaptive cruise control or conventional cruise control can be set, but adaptive cruise control indicator light/constant speed cruise control indicator light and cruise SET indicator light do not illuminate.

Step	Check	Yes	No
1 <b>CHECK ADAPTIVE CRUISE CONTROL INDICATOR LIGHT/CONSTANT SPEED CRUISE CONTROL INDICATOR LIGHT AND CRUISE SET INDICATOR LIGHT.</b> Check the combination meter. <Ref. to IDI(diag)-19, OPERATION, System Operation Check Mode.>	Does adaptive cruise control indicator light/constant speed cruise control indicator light and cruise SET indicator light illuminate?	Go to step 2.	Replace the meter case assembly. <Ref. to IDI-18, Combination Meter.>
2 <b>CHECK LAN SYSTEM.</b> Perform the diagnosis for LAN system. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>	Is a DTC of the LAN system detected?	Perform the diagnosis according to DTC for LAN system.	Replace the ECM. <Ref. to FU(H4DO)-91, REMOVAL, Engine Control Module (ECM).>

# Diagnostics with Phenomenon

EyeSight (DIAGNOSTICS)

## C: CHECK CRUISE CONTROL COMMAND SWITCH

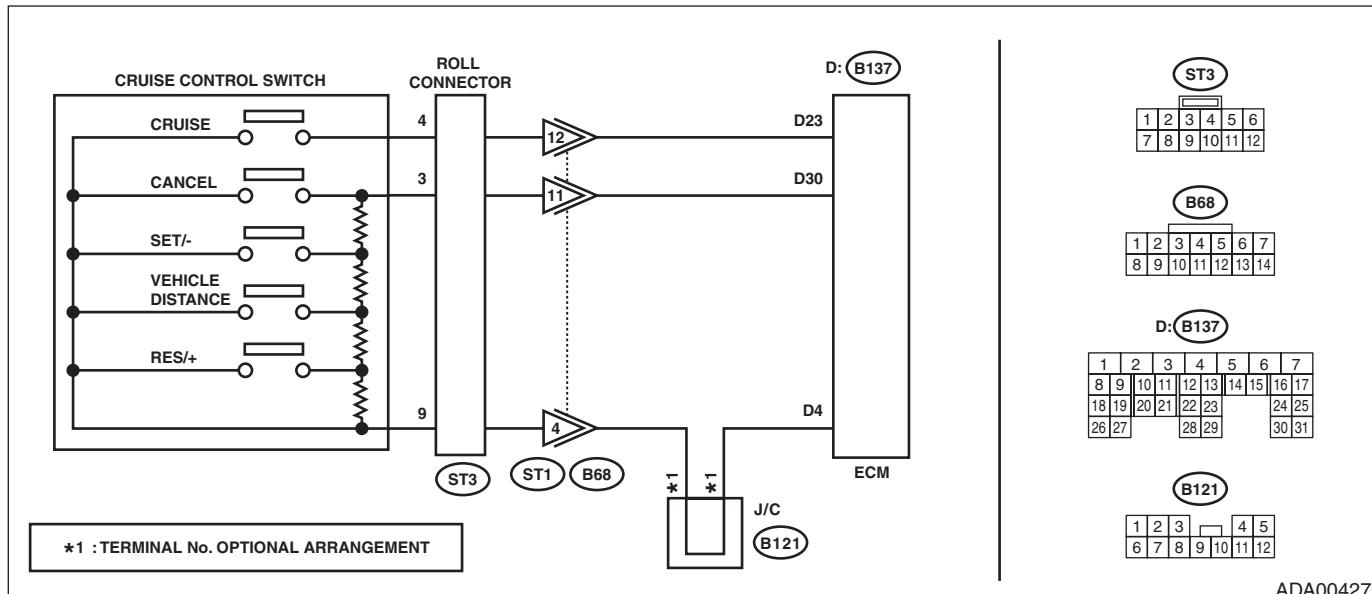
### TROUBLE SYMPTOM:

- Cruise control cannot be set. (Cancelled immediately.)
- Cruise control cannot be released.

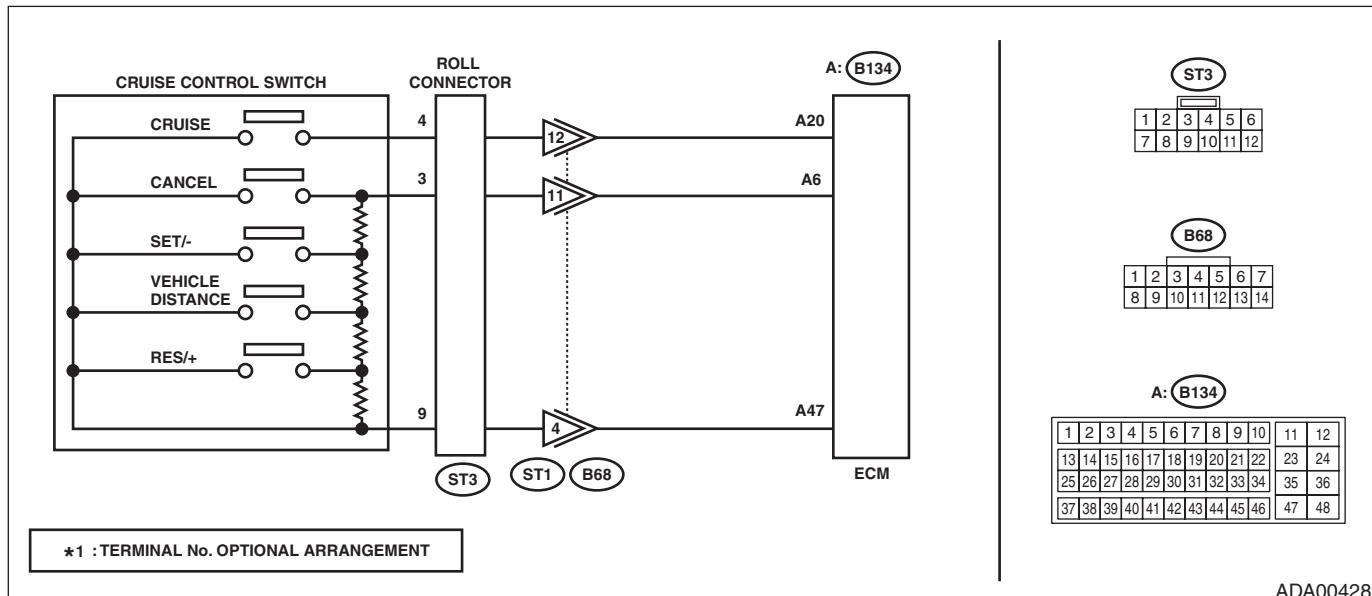
### WIRING DIAGRAM:

EyeSight System<Ref. to WI-232, WIRING DIAGRAM, EyeSight System.>

- Non-turbo model



- Turbo model



# Diagnostics with Phenomenon

EyeSight (DIAGNOSTICS)

Step	Check	Yes	No
1 <b>CHECK CRUISE CONTROL COMMAND SWITCH CIRCUIT.</b> 1) Remove the driver's airbag module.<Ref. to AB-39, REMOVAL, Driver's Airbag Module.> 2) Disconnect the harness connector of cruise control command switch. 3) Turn the ignition switch to ON. 4) Measure the voltage between harness connector terminal and chassis ground. <i>Connector &amp; terminal</i> (ST3) No. 4 (+) — Chassis ground (-): (ST3) No. 3 (+) — Chassis ground (-):	Is the voltage 5 V or more?	Go to step 2.	Check the harness between cruise control command switch and ECM, and the steering roll connector for open or short circuit, or for poor contact.
2 <b>CHECK CRUISE CONTROL COMMAND SWITCH CIRCUIT.</b> 1) Turn the ignition switch to OFF. 2) Remove the cruise control command switch.<Ref. to CC-7, REMOVAL, Cruise Control Command Switch.> 3) Measure the resistance between harness connector terminal and chassis ground. <i>Connector &amp; terminal</i> (ST3) No. 9 — Chassis ground:	Is the resistance less than 10 $\Omega$ ?	Go to step 3.	Check for open circuit between cruise control command switch and chassis ground.
3 <b>CHECK CRUISE CONTROL COMMAND SWITCH.</b> Check the cruise control command switch.<Ref. to CC-10, INSPECTION, Cruise Control Command Switch.>	Is the cruise control command switch normal?	Replace the ECM.<Ref. to FU(H4DO)-91, REMOVAL, Engine Control Module (ECM).>	Replace the cruise control command switch.