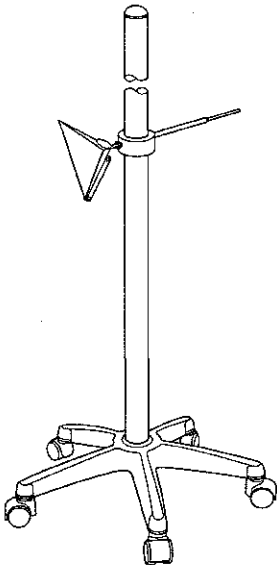


Driving Support

Special Tools

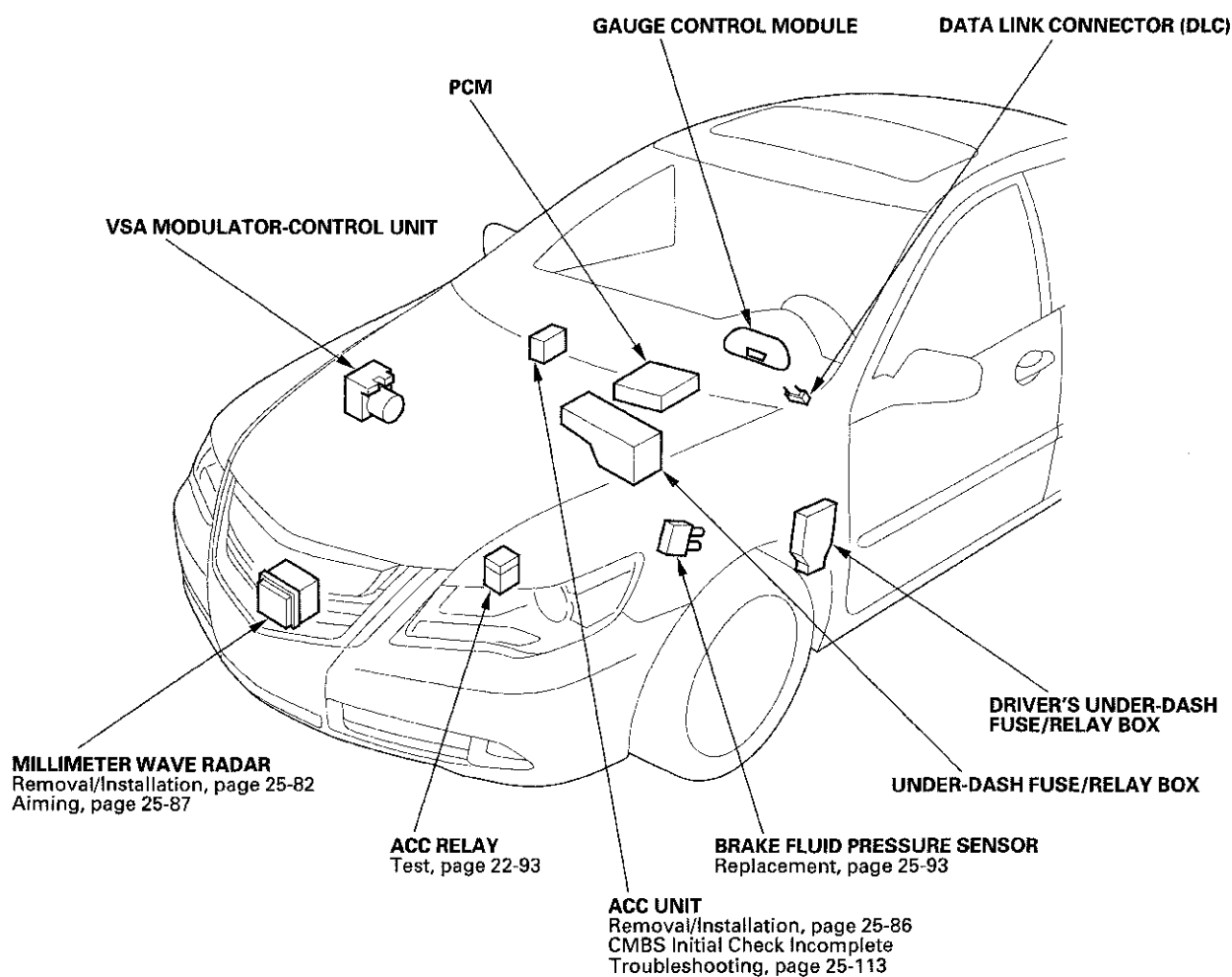
Ref. No.	Tool Number	Description	Qty
①	070AJ-SDA0101	Radar Aimer Set	1



Adaptive Cruise Control (ACC)



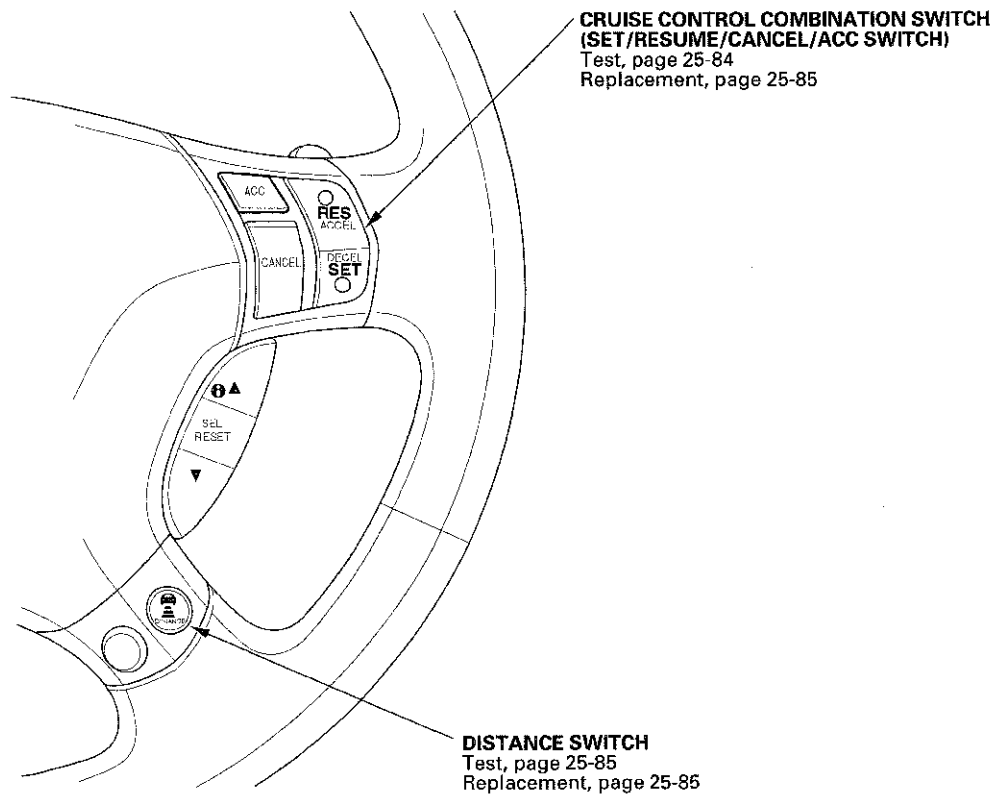
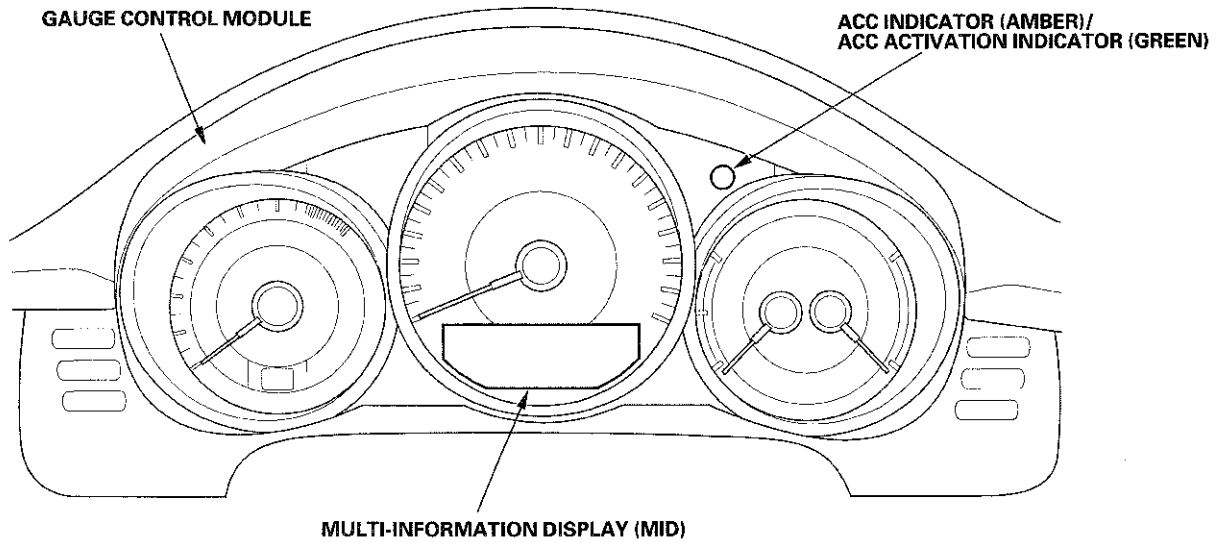
Component Location Index



(cont'd)

Adaptive Cruise Control (ACC)

Component Location Index (cont'd)





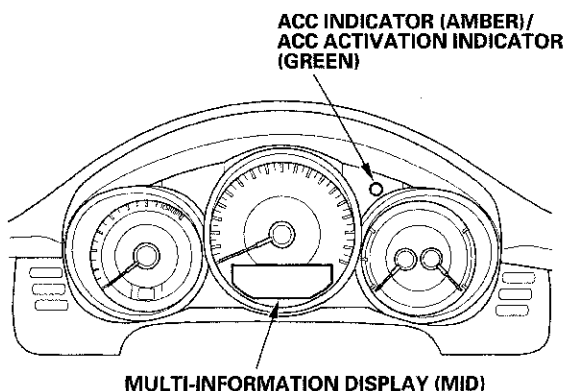
General Troubleshooting Information

Adaptive Cruise Control (ACC) Indicator (Amber)

When the ACC system is OK, the ACC indicator comes on for about 2 seconds after turning the ignition switch to ON (II), then it goes off.

When the ACC system detects a problem while in operation, the ACC system stops control, and the ACC indicator changes from green to amber and stays on.

NOTE: The ACC system is communicating with the PCM, the VSA system, and the gauge control module by F-CAN. If a connected unit malfunctions, the ACC system does not operate. In this case, both the ACC indicator and the connected unit indicator come on and stay on (except the gauge control module).



Adaptive Cruise Control (ACC) Indicator (Green)

If the ACC system is normal, the indicator comes on when the ACC switch is ON, and goes off when the ACC switch is OFF. If the ACC system malfunctions, the indicator color changes from green to amber, and stays on.

Self-diagnostic Function

The ACC system has a self-diagnostic function. If the self-diagnostic function detects a malfunction, the ACC system stops control, turns on the ACC indicator (Amber), and stores DTCs.

Multi-information Display (MID) Indication

If the ACC system is normal, the ACC indicates its operation on the multi-information display (MID) when the ACC switch is ON.

ACC Unit

The ACC unit uses input from the millimeter wave radar to control the vehicle's speed and brakes to maintain a constant distance between the vehicle and other moving vehicles directly ahead.

Millimeter Wave Radar

The millimeter wave radar recognizes the position of the moving vehicle ahead and detects the two vehicles speed differential.

The ACC unit receives this information from the millimeter wave radar.

The millimeter wave radar also detects its own errors, and it signals the ACC unit if an error is detected.

CAN Communication

The ACC unit is on the F-CAN, and it communicates with other units (AcuraLink, gauge control module, navigation, steering angle sensor, PCM, SH-AWD, SRS, and VSA) via the F-CAN.

If the ACC unit detects a communication error or a malfunction in another connected unit, the ACC system will not operate even though it is OK.

In this case, both the ACC indicator and the related unit indicator will come on and stay on.

Millimeter Wave Radar Aiming

If the millimeter wave radar is removed or replaced, do the millimeter wave radar aiming procedure. If the aiming is incomplete, the ACC indicator comes on.

(cont'd)

Adaptive Cruise Control (ACC)

General Troubleshooting Information (cont'd)

How to Troubleshoot DTCs

Check the DTCs with the HDS. Make a copy of the freeze data, then clear the DTC.

Before troubleshooting, check and note these items:

- Ask the client about the conditions when the problem occurred, and try to reproduce the same conditions for troubleshooting.
- If the symptom does not appear and the ACC indicator does not come on during the test-drive, but troubleshooting is done based on the DTC, check for poor connections or loose terminals at all connectors related to the circuit that you are troubleshooting.
- After the troubleshooting or repairs are done, clear the DTCs, and test-drive the vehicle under the same conditions as when the DTC was originally set. Make sure the ACC indicator does not come on.
- The ACC system sometimes stops control because of the environment (weather, road conditions, driving conditions, etc.). A DTC may be stored in these cases.

DTCs may be stored even when the system is normal:

ACC indicator does not go on

DTC 83: Millimeter Wave Radar Detection Unstable

Driving behind a target vehicle that caused unstable reception.

DTC 84: Target vehicle comes closer than the millimeter wave radar detecting limits

The target vehicle brakes suddenly, etc.

DTC 85: Extensive driving on a rough or winding road, or VSA system malfunction

DTC 86: Abnormal tire pressure

Abnormal tire pressure, flat tire.

DTC 87: Adaptive cruise control (ACC) brake control temporarily prohibited

ACC brake works continuously, or ACC brake control is temporarily prohibited by a communication line error detected between the ACC unit and VSA modulator-control unit.

DTC 88: Millimeter wave radar out of detection area

Millimeter wave radar temperature is too high, millimeter wave radar supply voltage is too low, or out of detection condition.

DTC 89: Front wheel spin

DTC 91: Vehicle skidded, spun out, or abrupt steering wheel movements

DTC 93: Front tire problem

Different diameter of tires, flat tire, or large air pressure differential.

DTC 94: Rear tire problem

Different diameter of tires, flat tire, or large air pressure differential.

DTC 95: Power supply voltage too high

DTC 96: Power supply voltage too low

DTC 99: Acceleration/deceleration abnormality

Detects acceleration or deceleration that is out of the normal system operating range.

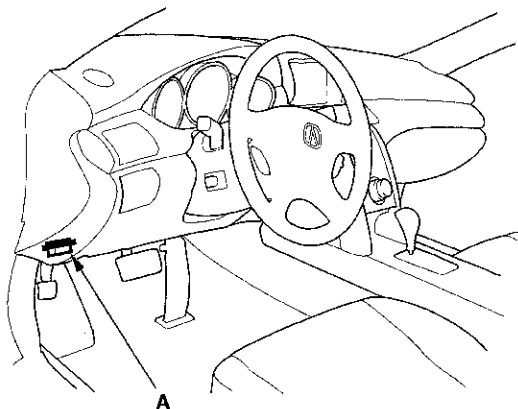
DTC 101: Rear wheel locked

Driving with the parking brake applied, or the parking brake stuck.



How to Retrieve DTCs

1. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) (A) under the left side of the dashboard.



2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the ACC unit. If it does not communicate, troubleshoot the DLC circuit (see page 11-211).
4. Follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the DTC Troubleshooting.

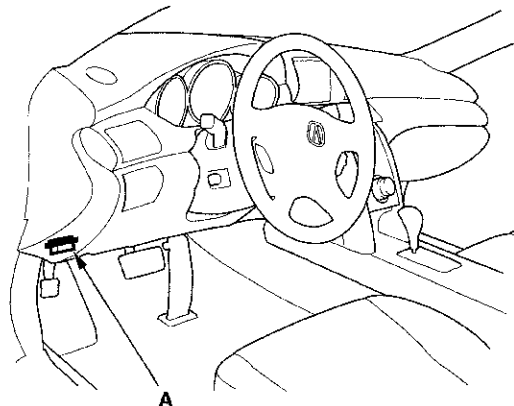
NOTE:

- See the HDS Help menu for specific instructions.
- Before troubleshooting, always verify that you have the latest version of the HDS software.

How to Clear DTCs

NOTE: You cannot clear the DTCs manually.

1. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) (A) under the left side of the dashboard.



2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the ACC unit. If it does not communicate, troubleshoot the DLC circuit (see page 11-211).
4. Clear the DTC(s) by following the screen prompts on the HDS.

NOTE: See the HDS Help menu for specific instructions.

Adaptive Cruise Control (ACC)

DTC Troubleshooting Index

DTC	Detection Item	Adaptive Cruise Control (ACC) Indicator	Page
10	Vehicle speed signal error	ON	(see page 25-20)
11	Left rear wheel speed sensor signal error	ON	(see page 25-20)
12	Right rear wheel speed sensor signal error	ON	(see page 25-20)
13	Left front wheel speed sensor signal error	ON	(see page 25-20)
14	Right front wheel speed sensor signal error	ON	(see page 25-20)
21	Yaw rate sensor error	ON	(see page 25-21)
22	Yaw rate sensor center position revision value error	ON	(see page 25-21)
23	Yaw rate sensor gain error	ON	(see page 25-21)
25	Yaw rate sensor stabilizing malfunction	ON	(see page 25-23)
30	Adaptive cruise control (ACC) relay circuit malfunction	ON	(see page 25-24)
43	Cal FL brake system malfunction	ON	(see page 25-30)
44	Cal FL brake fluid pressure sensor circuit open/short	ON	(see page 25-33)
45	Cal FL brake fluid pressure sensor center position error	ON	(see page 25-37)
46	Cal FL brake fluid pressure sensor malfunction	ON	(see page 25-41)
47	Cal FR brake system malfunction	ON	(see page 25-45)
48	Cal FR brake fluid pressure sensor circuit open/short	ON	(see page 25-47)
49	Cal FR brake fluid pressure sensor center position error	ON	(see page 25-51)
50	Cal FR brake fluid pressure sensor malfunction	ON	(see page 25-55)

NOTE: For CMBS DTCs, refer to the DTC troubleshooting index of the CMBS section.



DTC	Detection Item	Adaptive Cruise Control (ACC) Indicator	Page
60	Communication line error	ON	(see page 25-59)
61	Millimeter wave radar communication error	ON	(see page 25-60)
62	Millimeter wave radar sensor error	ON	(see page 25-62)
63	Millimeter wave radar aiming error	ON	(see page 25-63)
73	Variation failure of the PCM	—	(see page 25-64)
81	Engine control system (including PCM) malfunction	—	(see page 25-65)
83	Millimeter wave radar detection unstable	—	(see page 25-6)
84	Target vehicle comes closer than the millimeter wave radar detecting limits	—	(see page 25-6)
85	Extensive driving on a rough or winding road, or VSA system malfunction	—	(see page 25-6)
86	Abnormal tire pressure	—	(see page 25-6)
87	Adaptive cruise control (ACC) brake control temporarily prohibited	—	(see page 25-6)
88	Millimeter wave radar out of detection condition	—	(see page 25-6)
89	Front wheel spin	—	(see page 25-6)
90	A/T control system (including PCM) malfunction	—	(see page 25-65)
91	Vehicle skidded, spun out, or abrupt steering wheel movements	—	(see page 25-6)
92	VSA modulator-control unit malfunction	—	(see page 25-66)
93	Front tire problem	—	(see page 25-6)
94	Rear tire problem	—	(see page 25-6)
95	Power supply voltage too high	—	(see page 25-6)
96	Power supply voltage too low	—	(see page 25-6)
99	Acceleration/deceleration abnormality	—	(see page 25-6)

NOTE: For CMBS DTCs, refer to the DTC troubleshooting index of the CMBS section.

(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting Index (cont'd)

DTC	Detection Item	Adaptive Cruise Control (ACC) Indicator	Page
100	CMBS initial check incomplete	ON	(see page 25-113)
101	Left rear wheel locked	—	(see page 25-6)
105	Dust or dirt on the millimeter wave radar	—	(see page 25-66)
107	Millimeter wave radar aiming incomplete	ON	(see page 25-67)
110	Lost communication with the PCM (PGM-FI system)	—	(see page 25-68)
111	Lost communication with the PCM (A/T system)	—	(see page 25-68)
112	Lost communication with the VSA modulator-control unit	—	(see page 25-69)
113	Lost communication with the gauge control module	—	(see page 25-71)
115	Lost communication with the SH-AWD control unit	—	(see page 25-72)
120	Two or more aiming targets exist	—	Refer to the DTCs (if the aiming procedure is incomplete) (see page 25-92)
121	The width of the aiming target is out of specification	—	Refer to the DTCs (if the aiming procedure is incomplete) (see page 25-92)
122	The distance of the aiming target is out of specification	—	Refer to the DTCs (if the aiming procedure is incomplete) (see page 25-92)
123	The aiming target is moved	—	Refer to the DTCs (if the aiming procedure is incomplete) (see page 25-92)
124	The right and left position of the aiming target is out of specification	—	Refer to the DTCs (if the aiming procedure is incomplete) (see page 25-92)

NOTE: For CMBS DTCs, refer to the DTC troubleshooting index of the CMBS section.



Symptom Troubleshooting Index

NOTE: The adaptive cruise control system is cancelled when the VSA system is activated.

Symptom	Diagnostic procedure	Also check for
Vehicle speed can be set, but there is no adaptive cruise control (ACC) indication on the MID	Do the gauge control module self-diagnostic function (see page 22-396).	
Vehicle speed cannot be set when the SET switch is pressed (between 25 mph (40 km/h) and 90 mph (145 km/h))	1. Test the cruise control combination switch (see page 25-84). 2. Test the transmission range switch (see page 14-244). 3. Test the brake pedal position switch (see page 22-227). 4. Check for a short in the SCS line.	• Blown No. 4 (15 A) or No. 13 (15 A) fuse in the under-hood fuse/relay box • An open in the wire • A short in the wire • The system is in service mode
Vehicle speed does not decelerate or accelerate accordingly when the set/resume switch is pressed	Test the cruise control combination switch (see page 25-84).	A short in the wire
Set speed does not cancel when the shift lever is in position N	Test the transmission range switch (see page 14-244).	An open in the wire
Set speed does not cancel when the brake pedal is pressed	Test the brake pedal position switch (see page 22-227).	An open in the wire
Set speed does not cancel when the adaptive cruise control (ACC) switch is turned off	Test the cruise control combination switch (see page 25-84).	A short in the wire
Set distance cannot be adjusted with the distance switch	Test the distance switch (see page 25-85).	
Vehicle speed can be set, but vehicle speed decelerates	Check for DTCs in the PGM-FI system with the HDS (see page 11-3).	Faulty ETCS
Senses a vehicle driving in another lane	Do the adaptive cruise control (ACC) system check (see step 7 on page 25-74).	• Incorrect millimeter wave radar alignment • Wheel alignment
Does not sense the vehicle driving ahead	Do the adaptive cruise control (ACC) system check (see step 11 on page 25-75).	• Out of the performance limits • Wheel alignment • Undetectable environment • Dirty radar lens
Intermittently senses the vehicle driving ahead	Do the adaptive cruise control (ACC) system check (see step 12 on page 25-75).	• Incorrect millimeter wave radar alignment • Wheel alignment • Undetectable environment • Dirty radar lens
Adaptive cruise control (ACC) indicator (amber) does not come on	Symptom Troubleshooting (see page 25-79)	
Adaptive cruise control (ACC) indicator (amber) does not go off	Symptom Troubleshooting (see page 25-80)	
Adaptive cruise control (ACC) activation indicator (green) does not come on	Symptom Troubleshooting (see page 25-81)	
Adaptive cruise control (ACC) activation indicator (green) does not go off	Symptom Troubleshooting (see page 25-82)	

Adaptive Cruise Control (ACC)

System Description

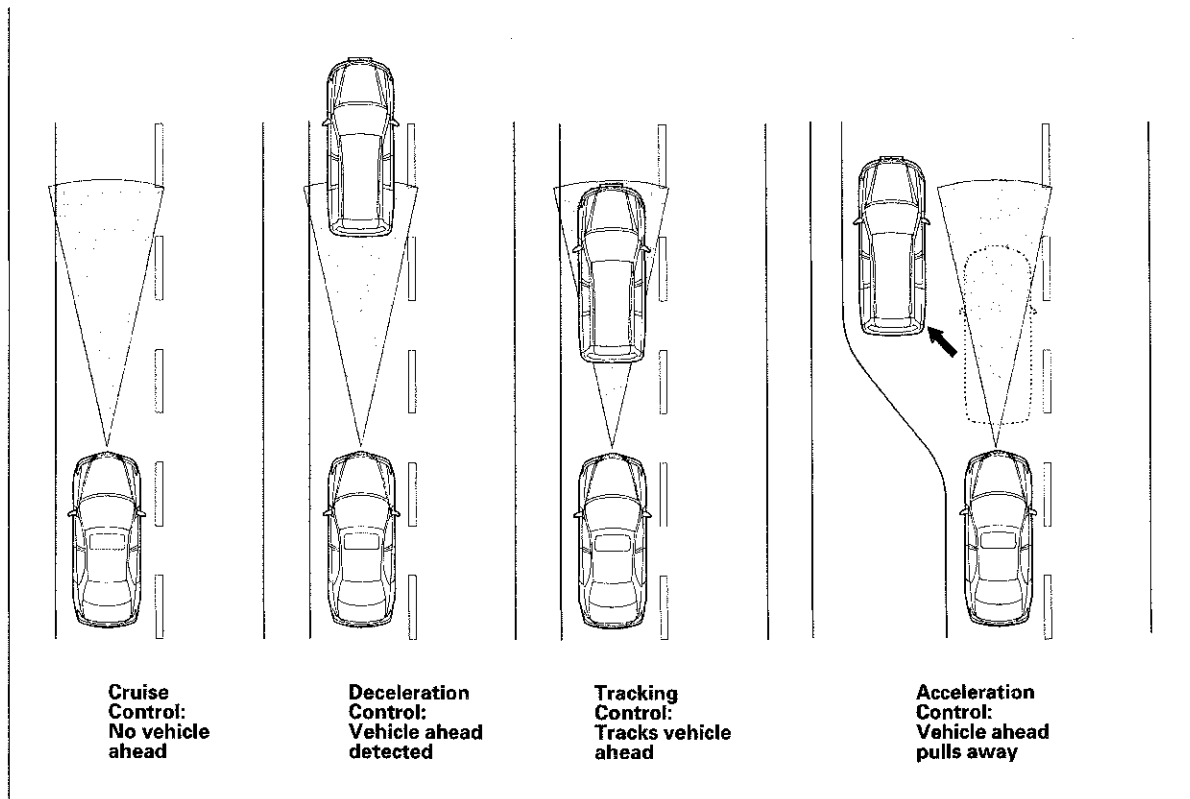
The adaptive cruise control (ACC) system automatically controls the vehicle speed, within the set speed, to maintain a safe distance to the vehicle ahead.

Operation Criteria

- When there is no vehicle ahead, the ACC maintains the set speed.
- When there is a vehicle ahead, the ACC maintains a set distance within the set speed.
- If the vehicle ahead pulls over out of the way, the ACC accelerates the vehicle to the set speed and maintains that speed.
- The ACC measures the distance from the vehicle ahead using the millimeter wave radar, and it determines if the target vehicle driving ahead is in the same lane by using inputs from the vehicle speed sensor and the yaw rate sensor.
- If the ACC detects a slow vehicle and the distance to the vehicle ahead is closing, the vehicle speed is reduced primarily by closing the throttle, and additional slowing is accomplished by using the brakes. If the vehicle ahead is too close, an alarm sounds.
- If a slower vehicle ahead accelerates, the throttle is opened to accelerate the vehicle (up to the set speed) to maintain the following distance.

Basic ACC Pattern

- Radar detection: Max. 0.06 mile (100 m) ahead in a 16 degree field of view
- Vehicle operating speed: 25–90 mph (40–145 km/h)



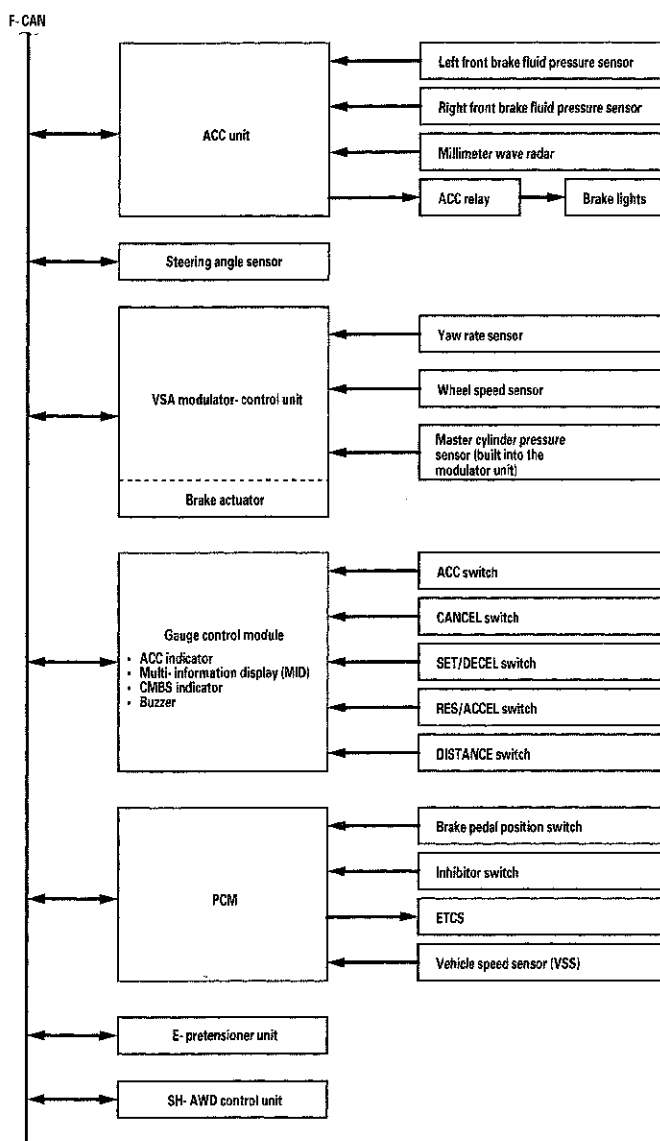


ACC Unit

The ACC unit obtains information from external sensors and switches that are connected to their respective control units.

ACC Operation Range:

- Setting speed range is 25—90 mph (20—145 km/h)
- Setting following distance from vehicle ahead is 1.0—2.0 seconds
- Maximum deceleration is 0.30 G



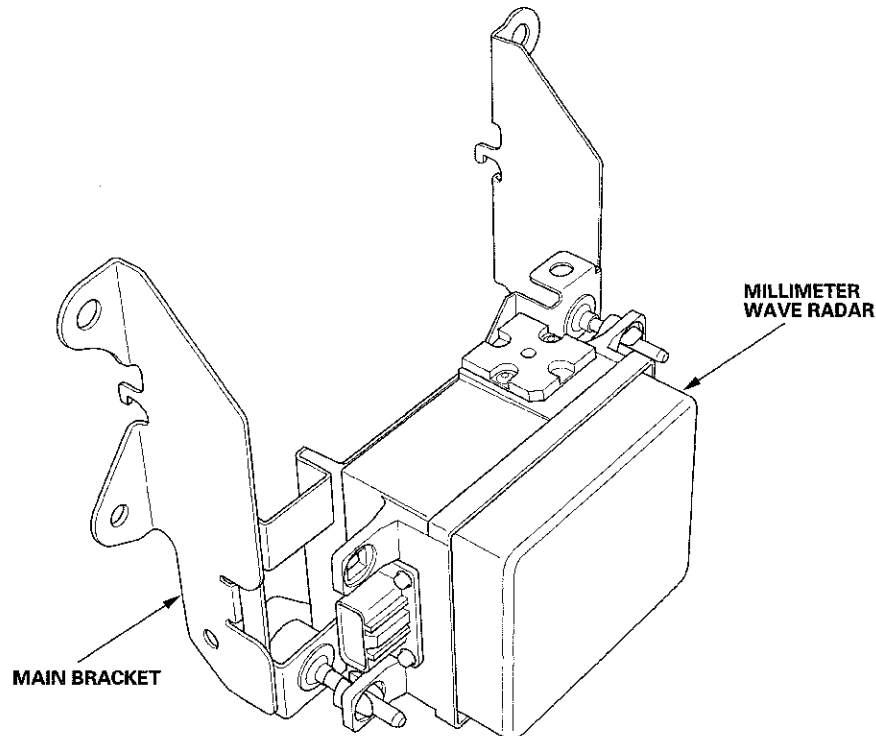
(cont'd)

Adaptive Cruise Control (ACC)

System Description (cont'd)

Millimeter Wave Radar

The millimeter wave radar is installed on the main bracket attached to the front bulkhead. The main bracket allows the radar angle to be adjusted ± 3 degrees vertically by moving the main bracket adjusters.



The millimeter wave radar has these functions:

Basic distance function

The millimeter wave radar radiates 76—77 GHz radar waves up to a range of 100 m (328 ft) ahead, 16 degrees horizontally, 3.9 degrees vertically, and it receives the reflected waves. In doing so, it can calculate the distance to the vehicle ahead, the relative speed (the difference in speed between the two vehicles), and its position. This data is sent to the ACC unit.

Aiming function

The millimeter wave radar has a horizontal auto-aiming function range of ± 3 degrees and is directed by ACC unit.

Self-diagnosis function

The millimeter wave radar has a self-diagnostic function, it sends this information to the ACC unit.

Sensitivity-lowering detection function

When the detecting performance of the radar is deteriorated by dirt, dust, or other contaminants, it signals the condition malfunction to the ACC unit until the performance is restored.

Adjuster-misalignment detection function

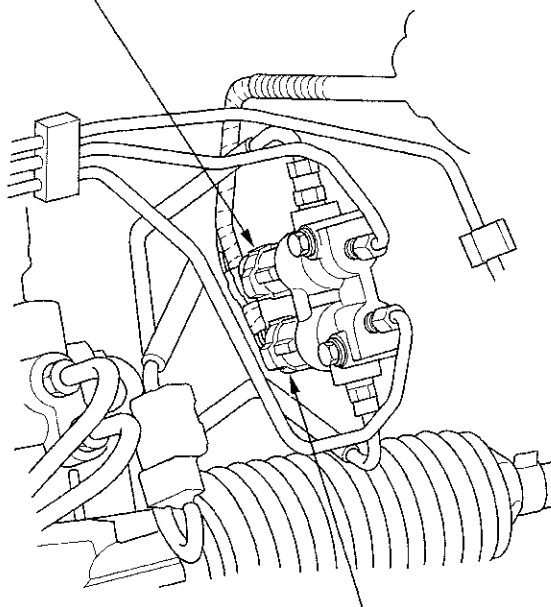
When more than ± 5 degrees of adjuster misalignment is detected while driving, it signals the condition to the ACC unit.



Brake Fluid Pressure Sensor

The brake fluid pressure sensors are installed in the right and left sides of the brake line 4-way joint. The brake fluid pressure is converted to a signal (voltage value) and is output to the ACC unit. The ACC unit is always monitoring the ACC brake operation and the brake pressure controlled by the signal sent from the brake fluid pressure sensor.

LEFT FRONT BRAKE FLUID PRESSURE SENSOR



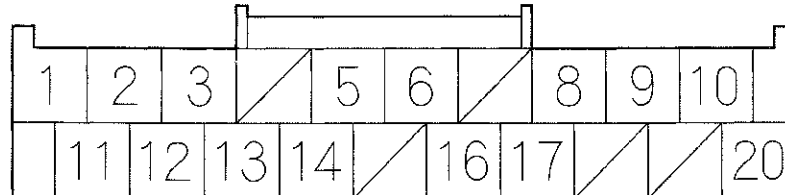
RIGHT FRONT BRAKE FLUID PRESSURE SENSOR

Adaptive Cruise Control (ACC)

System Description (cont'd)

Adaptive Cruise Control (ACC) Unit Inputs and Outputs

ACC UNIT 20P CONNECTOR



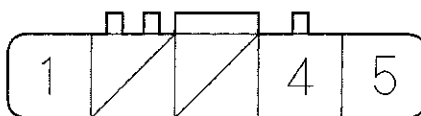
Wire side of female terminals

Terminal number	Wire color	Terminal sign	Terminal name	Description	Signal
1	RED	BRK DIAG	Brake diagnosis	Detects ACC relay	ACC brake operated or brake pedal pressed: battery voltage
2	BLU	IG1	Ignition signal	Detects ignition signal	Ignition switch ON (II): battery voltage Ignition switch LOCK (0): about 0 V
3	GRN	SG	Sensor ground	Brake fluid pressure sensor ground	—
5	RED	VCC	Voltage constant current	Provides brake fluid pressure sensor voltage	Ignition switch ON (II): about 5 V Ignition switch LOCK (0): about 0 V
6	BLU	PRESS FR	Pressure front right	Detects the brake fluid pressure signal of the right front brake caliper	Ignition switch ON (II): about 0.5—4.5 V Ignition switch LOCK (0): about 0 V
8	BLU	K-LINE	Data link	Sends and receives scan tool signal	—
9	BLK	PG	Power ground	Ground circuit for the ACC system	—
10	WHT	CANH	CAN High line	F-CAN communication (high) circuit	—
11	BLK	LG1	Logic ground 1	Ground circuit for the ACC system	—
12	BLK	LG2	Logic ground 2	Ground circuit for the ACC system	—
13	WHT	VBU	Back-up voltage	Provides DTC memory voltage	Battery voltage
14	PNK	PRESS FL	Pressure front left	Detects the brake fluid pressure signal of the left front brake caliper	Ignition switch ON (II): about 0.5—4.5 V Ignition switch LOCK (0): about 0 V
16	BLU	BRK LAMP	Brake light	Drives the ACC relay	Ignition switch ON (II): battery voltage Ignition switch LOCK (0): about 0 V
17	WHT	M/R TRX	Millimeter wave radar data link	Communicates with the millimeter wave radar	Ignition switch ON (II): battery voltage Ignition switch LOCK (0): about 0 V
20	RED	CANL	CAN Low line	F-CAN communication (low) circuit	—



Millimeter Wave Radar Inputs and Outputs

MILLIMETER WAVE RADAR 5P CONNECTOR

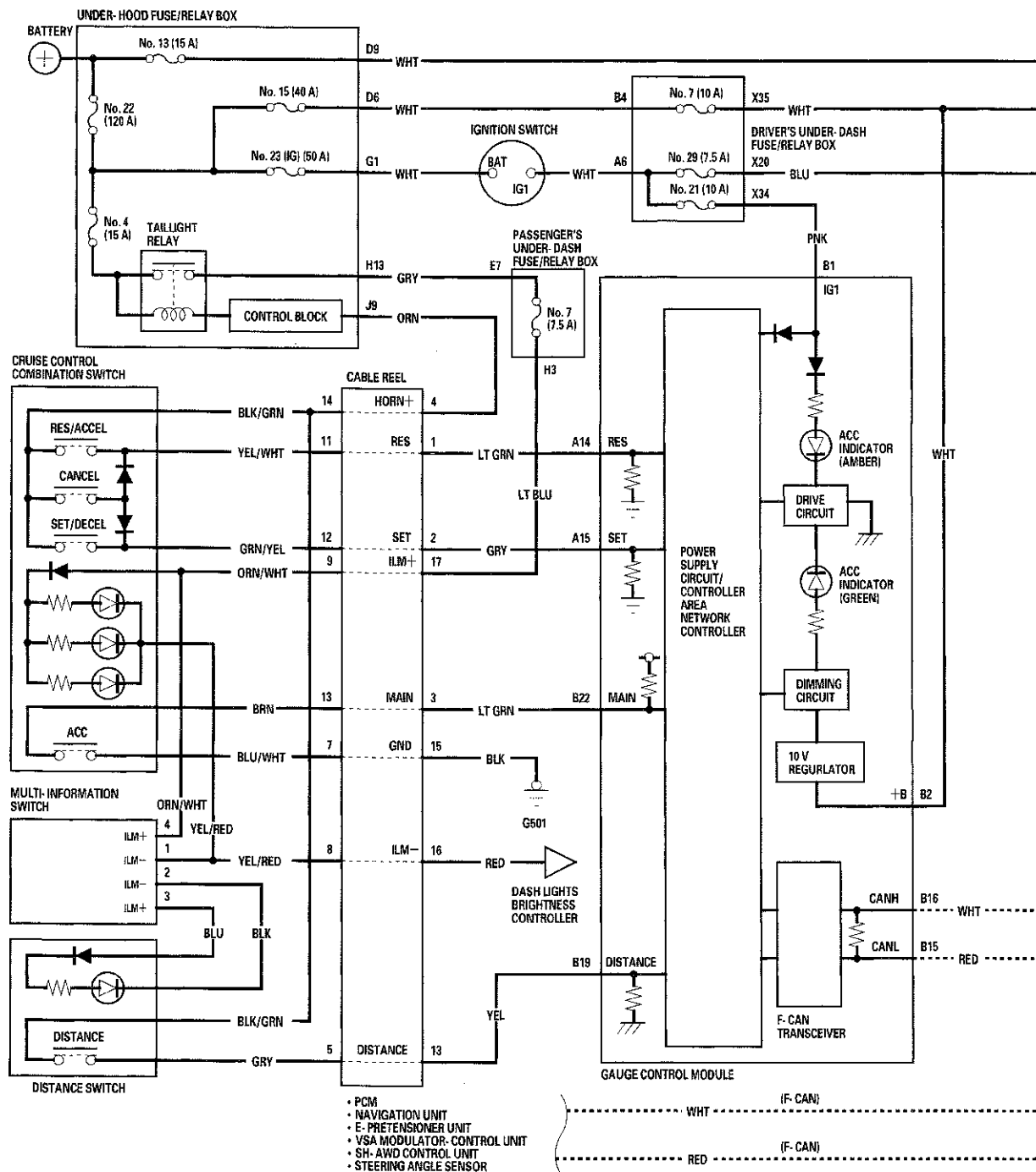


Wire side of female terminals

Terminal number	Wire color	Terminal sign	Terminal name	Description	Signal
1	BLU	IG1	Ignition signal	Power supply for millimeter wave radar	Ignition switch ON (II): battery voltage Ignition switch LOCK (0): about 0 V
4	BLK	GND	Ground	Ground for millimeter wave radar	
5	WHT	M/R TRX	Millimeter wave radar data link	Communicates with the ACC unit	Ignition switch ON (II): battery voltage Ignition switch LOCK (0): about 0 V

Adaptive Cruise Control (ACC)

Circuit Diagram



Adaptive Cruise Control (ACC)

DTC Troubleshooting

DTC 10: Vehicle Speed Signal Error

NOTE: If DTC 110 and DTC 111 are stored at the same time as DTC 10, troubleshoot DTC 110 and DTC 111 first, then recheck for DTC 10.

1. Check for PGM-FI system DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated PGM-FI system DTC(s). ■

NO—Go to step 2.

2. Check for VSA system DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated VSA system DTC(s). ■

NO—Go to step 3.

3. Clear the DTCs with the HDS.

4. Test-drive the vehicle at 9 mph (15 km/h) or more with the adaptive cruise control (ACC) activated, and watch the ACC indicator.

Does the ACC indicator come on?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

5. Check for DTCs with the HDS.

Is DTC 10 indicated?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Troubleshoot the indicated DTC(s). ■

DTC 11: Left Rear Wheel Speed Sensor Signal Error

DTC 12: Right Rear Wheel Speed Sensor Signal Error

DTC 13: Left Front Wheel Speed Sensor Signal Error

DTC 14: Right Front Wheel Speed Sensor Signal Error

NOTE: If DTC 112 is stored at the same time as DTC 11, 12, 13, or 14, troubleshoot DTC 112 first, then recheck for DTC 11, 12, 13, or 14.

1. Check for VSA system DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated VSA system DTC(s). ■

NO—Go to step 2.

2. Clear the DTCs with the HDS.

3. Test-drive the vehicle at 5 mph (8 km/h) or more with the adaptive cruise control (ACC) activated, and watch the ACC indicator.

Does the ACC indicator come on?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

4. Check for DTCs with the HDS.

Are DTC 11, 12, 13, or 14 indicated?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Troubleshoot the indicated DTC(s). ■



DTC 21: Yaw Rate Sensor Error

DTC 22: Yaw Rate Sensor Center Position Revision Value Error

NOTE: If DTC 112 is stored at the same time as DTC 21, troubleshoot DTC 112 first, then recheck for DTC 21 or DTC 22.

1. Check for VSA system DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated VSA system DTC(s). ■

NO—Go to step 2.

2. Clear the DTCs with the HDS.
3. Turn the ignition switch to ON (II).
4. Watch the adaptive cruise control (ACC) indicator.

Does the ACC indicator come on?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

5. Check for DTCs with the HDS.

Is DTC 21 or DTC 22 indicated?

YES—Go to step 6.

NO—Troubleshoot the indicated DTC(s). ■

6. Check the YAW RATE SENSOR with the HDS.

Is about 2.5 V indicated?

YES—The yaw rate sensor signal is OK, check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Go to the VSA system troubleshooting (see page 19-46). ■

DTC 23: Yaw Rate Sensor Gain Error

NOTE: If DTC 112 is stored at the same time as DTC 23, troubleshoot DTC 112 first, then recheck for DTC 23.

1. Check for VSA system DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated VSA system DTC(s). ■

NO—Go to step 2.

2. Clear the DTCs with the HDS.
3. Start the engine.

(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

4. Test-drive the vehicle at 11 mph (18 km/h) or more with the adaptive cruise control (ACC) activated, and watch the ACC indicator.

Does the ACC indicator come on?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

5. Check for DTCs with the HDS.

Is DTC 23 indicated?

YES—Go to step 6.

NO—Troubleshoot the indicated DTC(s). ■

6. Test-drive in a straight line at 12.4 mph (20 km/h) or more, and check the YAW RATE SENSOR with the HDS.

Is about 2.5 V indicated?

YES—Go to step 7.

NO—Go to the VSA system troubleshooting (see page 19-46). ■

7. Turn right at 12.4 mph (20 km/h) or more, and check the YAW RATE SENSOR with the HDS.

Does the voltage increase from 2.5 V?

YES—Go to step 8.

NO—Go to the VSA system troubleshooting (see page 19-46). ■

8. Turn left at 12.4 mph (20 km/h) or more, and check the YAW RATE SENSOR with the HDS.

Does the voltage decrease from 2.5 V?

YES—The yaw rate-lateral/longitudinal acceleration sensor signal is OK, check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Go to the VSA system troubleshooting (see page 19-46). ■



DTC 25: Yaw Rate Sensor Stabilizing Malfunction

NOTE: If DTC 112 is stored at the same time as DTC 25, troubleshoot DTC 112 first, then recheck for DTC 25.

1. Check for VSA system DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated VSA system DTC(s). ■

NO—Go to step 2.

2. Clear the DTCs with the HDS.
3. Test-drive the vehicle at 28 mph (45 km/h) or more with the adaptive cruise control (ACC) activated, and watch the ACC indicator.

Does the ACC indicator come on?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

4. Check for DTCs with the HDS.

Is DTC 25 indicated?

YES—Go to step 5.

NO—Troubleshoot the indicated DTC(s). ■

5. Test-drive the vehicle in a straight line with the ACC activated, check the YAW RATE SENSOR with the HDS.

Is about 2.5 V indicated?

YES—Go to step 6.

NO—Go to the VSA system troubleshooting (see page 19-46). ■

6. Turn right with the ACC activated, and check the YAW RATE SENSOR with the HDS.

Does the voltage increase from 2.5 V?

YES—Go to step 7.

NO—Go to the VSA system troubleshooting (see page 19-46). ■

7. Turn left with the ACC activated, and check the YAW RATE SENSOR with the HDS.

Does the voltage decrease from 2.5 V?

YES—The yaw rate-lateral/longitudinal acceleration sensor signal is OK, check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Go to the VSA system troubleshooting (see page 19-46). ■

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

DTC 30: Adaptive Cruise Control (ACC) Relay Circuit Malfunction

1. Check the brake lights without pressing the brake pedal.

Are the brake lights off?

YES—Go to step 10.

NO—Go to step 2.

2. Check the brake pedal height and adjust it (see page 19-6).

3. Check the brake lights without pressing the brake pedal.

Are the brake lights off?

YES—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

NO—Go to step 4.

4. Test the brake pedal position switch (see page 22-227).

Is the brake pedal position switch OK?

YES—Go to step 5.

NO—Adjust or replace the brake pedal position switch and recheck (see page 19-37). ■

5. Test the ACC relay (see page 22-93).

Is the relay OK?

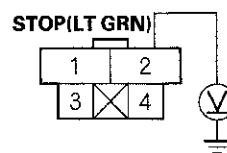
YES—Go to step 6.

NO—Replace the relay and recheck. ■

6. Disconnect the brake pedal position switch 4P connector.

7. Measure the voltage between brake pedal position switch 4P connector terminal No. 2 and body ground.

BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair a short to power in the wire. ■

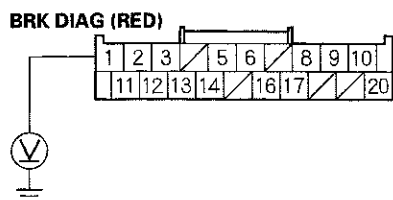
NO—Go to step 8.

8. Disconnect the ACC unit 20P connector.



9. Measure the voltage between ACC unit 20P connector terminal No. 1 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair a short to power in the wire between the ACC unit and the ACC relay, or between the ACC unit and the brake lights circuits. ■

NO—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

10. Clear the DTCs with the HDS.
11. Turn the ACC switch ON.
12. Check the brake lights with the brake pedal pressed.

Do the brake lights come on?

YES—Go to step 13.

NO—Go to step 37.

13. Check for DTCs with the HDS.

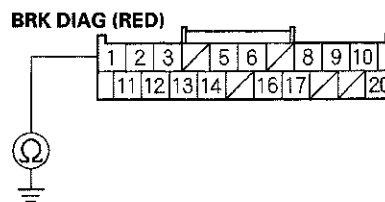
Is DTC 30 indicated?

YES—Go to step 14.

NO—Go to step 20.

14. Turn the ignition switch to LOCK (0).
15. Remove the ACC relay.
16. Disconnect the ACC unit 20P connector.
17. Disconnect the brake pedal position switch 4P connector.
18. Check for continuity between the ACC unit 20P connector No. 1 terminal and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between the ACC unit and the ACC relay. ■

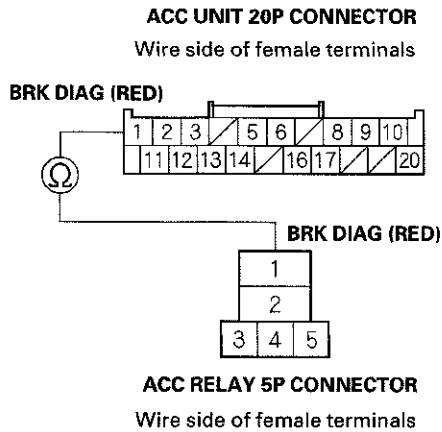
NO—Go to step 19.

(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

19. Check for continuity between ACC unit 20P connector terminal No. 1 and ACC relay 5P connector terminal No. 1.



Is there continuity?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Repair an open in the wire between the ACC unit and the ACC relay. ■

20. Test the ACC relay (see page 22-93).

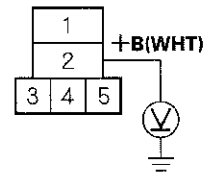
Is the relay OK?

YES—Go to step 21.

NO—Replace the relay and recheck. ■

21. Remove the ACC relay.
22. Measure the voltage between ACC relay 5P connector terminal No. 2 and body ground.

ACC RELAY 5P CONNECTOR



Is there battery voltage?

Is there battery voltage?

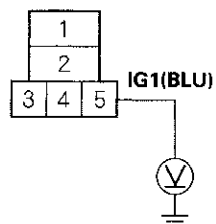
YES—Go to step 23.

NO—Repair an open in the wire between the No. 13 (15 A) fuse in the under-hood fuse/relay box and the ACC relay. ■



23. Turn the ignition switch to ON (II).
24. Measure the voltage between ACC relay 5P connector terminal No. 5 and body ground.

ACC RELAY 5P CONNECTOR



Wire side of female terminals

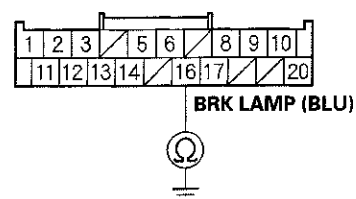
Is there battery voltage?

YES—Go to step 25.

NO—Repair an open in the wire between the No. 29 (7.5 A) fuse in the under-dash fuse/relay box and the ACC relay. ■

25. Turn the ignition switch to LOCK (0).
26. Disconnect the ACC unit 20P connector.
27. Check for continuity between ACC unit 20P connector terminal No. 16 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between the ACC unit and the ACC relay. ■

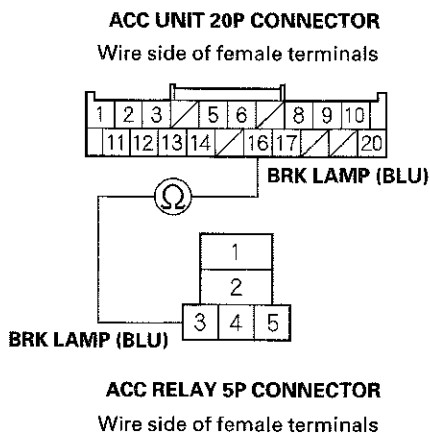
NO—Go to step 28.

(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

28. Check for continuity between ACC unit 20P connector terminal No. 16 and ACC relay 5P connector terminal No. 3.



Is there continuity?

YES—Go to step 29.

NO—Repair an open in the wire between the ACC unit and the ACC relay. ■

29. Install the ACC relay.
30. Reconnect the ACC unit 20P connector.
31. Clear the DTCs with the HDS.
32. Turn the ignition switch to LOCK (0).
33. Turn the ignition switch to ON (II) and the ACC switch ON.
34. Select ADAPTIVE CRUISE CONTROL (ACC) from the DRIVING SUPPORT menu, then enter ACC RELAY from the FUNCTION TEST menu.

35. Do the ACC relay function test with the HDS.

36. Check for DTCs with the HDS.

Is DTC 30 indicated?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

37. Check for the DTCs with the HDS.

Is DTC 30 indicated?

YES—Go to step 38.

NO—Go to step 44.

38. Test the ACC relay (see page 22-93).

Is the relay OK?

YES—Go to step 39.

NO—Replace the relay and recheck. ■

39. Remove the ACC relay.

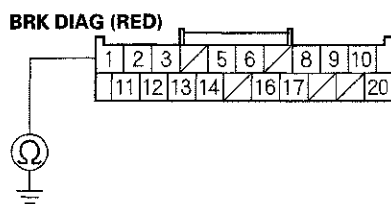
40. Disconnect the ACC unit 20P connector.

41. Disconnect each the brake light 3P connector and the high mount brake light 3P connector.



42. Check for continuity between ACC unit 20P connector terminal No. 1 and body ground.

ACC UNIT 20P CONNECTOR



Is there continuity?

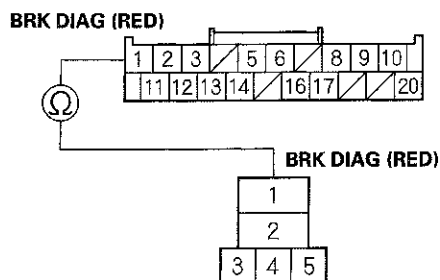
YES—Repair a short to ground in the wire between the ACC unit and the ACC relay. ■

NO—Go to step 43.

43. Check for continuity between ACC unit 20P connector terminal No. 1 and ACC relay 5P connector terminal No. 1.

ACC UNIT 20P CONNECTOR

Wire side of female terminals



ACC RELAY 5P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Repair an open in the wire between the ACC unit and the ACC relay. ■

(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

44. Check the brake lights with the brake pedal pressed.

Do the brake light come on?

YES—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

NO—Go to step 45.

45. Check the brake pedal height and adjust it (see page 19-6).

46. Test the brake pedal position switch (see page 22-227).

47. Check the brake lights with the brake pedal pressed.

Do the brake lights come on?

YES—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

NO—Repair an open in the BLK wire or poor ground (G701) (see page 22-50). ■

DTC 43: Cal FL Brake System Malfunction

NOTE: In this troubleshooting, you will operate the ADAPTIVE CRUISE CONTROL (ACC) BRAKE (brake actuator 3) continuously four or five times using the FUNCTION TEST with the HDS. During this operation, the VSA modulator-control unit may stop working. This means the VSA modulator-control unit has shut down to protect the system from overheating during continuous operation.

If the VSA modulator-control unit stops working, wait for a few minutes until the VSA modulator-control unit cools down, then restart the troubleshooting.

1. Check for VSA System DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated VSA system DTC(s). ■

NO—Go to step 2.

2. Start the engine, and turn the ACC switch ON.

3. Clear the DTCs with the HDS.

4. Select ADAPTIVE CRUISE CONTROL (ACC) from the DRIVING SUPPORT menu, then enter the FUNCTION TEST.

5. Activate BRAKE ACTUATOR 3 from the FUNCTION TEST menu.

6. Watch the ACC indicator.

Is the ACC indicator amber?

YES—Go to step 10.

NO—Go to step 7.



7. Activate BRAKE ACTUATOR 3 again.

8. While the brake actuator is operating, press the brake pedal.

9. Watch the ACC indicator.

Does the ACC indicator stay amber?

YES—Go to step 10.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

10. Check for DTCs with the HDS.

Is DTC 43 indicated?

YES—Go to step 11.

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

11. Turn the ignition switch to LOCK (0).

12. Press the brake pedal several times, and check the brake pedal travel.

Is the brake pedal travel OK?

YES—Go to step 13.

NO—Inspect the master cylinder (see page 19-20). ■

13. Check for brake fluid leaks (see page 19-21).

Are there any fluid leaks?

YES—Repair the brake fluid leak. ■

NO—Go to step 14.

14. Start the engine.

15. Check the brake switch signal (BRAKE SW (N.O.)) with the HDS.

Does the indication show ON when the brake pedal is pressed, and show OFF when the brake pedal is released?

YES—Go to step 17.

NO—Go to step 16.

16. Check for DTCs with the HDS.

Is DTC 60, 110, or 111 indicated?

YES—Troubleshoot the indicated DTC(s). ■

NO—Troubleshoot the brake pedal position switch signal circuit (see page 11-311). ■

(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

17. Turn the ACC switch ON.
18. Clear the DTCs with the HDS.
19. Select ADAPTIVE CRUISE CONTROL (ACC) from the DRIVING SUPPORT menu, then enter the FUNCTION TEST.
20. Activate BRAKE ACTUATOR 3 from the FUNCTION TEST.
21. Check for DTCs with the HDS.

Is DTC 43 indicated?

YES—Check the brake fluid pressure sensor (see page 25-93). If OK, go to step 22.

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

22. Without the brake pedal pressed, check the left front brake fluid pressure voltage (LF BRAKE P) with the HDS.

Is there about 0.5 V?

YES—Go to step 23.

NO—Go to step 26.

23. Test the brake booster (see page 19-20).
24. Press the brake pedal with about 314 N (32 kgf, 70.6 lbf) of pressure.
25. Check the left front brake fluid pressure voltage (LF BRAKE P) with the HDS.

Is there about 2.5 V?

YES—The left front brake fluid pressure signal is OK, check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Go to step 26.

26. Check for DTCs with the HDS.

Is DTC 43 indicated?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■



DTC 44: Cal FL Brake Fluid Pressure Sensor Circuit Open/Short

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to ON (II).
3. Watch the adaptive cruise control (ACC) indicator.

Does the ACC indicator stay off?

YES—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

NO—Go to step 4.

4. Check for DTCs with the HDS.

Is DTC 44 indicated?

YES—Go to step 5.

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

5. Check the left front brake fluid pressure voltage (LF BRAKE P) with the HDS.

Is there about 0.5 V?

YES—Go to step 6.

NO—Go to step 9.

6. Test the brake booster (see page 19-20).

7. Press the brake pedal with about 314 N (32 kgf, 70.6 lbf) of pressure.

8. Check the left front brake fluid pressure voltage (LF BRAKE P) with the HDS.

Is there about 2.5 V?

YES—The left front brake fluid pressure signal is OK, check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

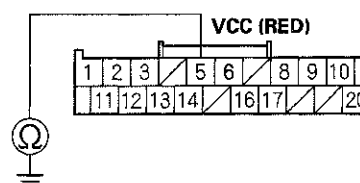
NO—Go to step 9.

9. Turn the ignition switch to LOCK (0).

10. Disconnect the ACC unit 20P connector.

11. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

NO—Go to step 12.

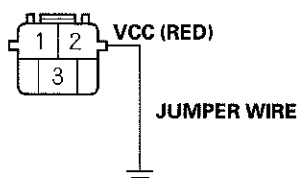
(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

12. Disconnect the left front brake fluid pressure sensor 3P connector.
13. Connect left front brake fluid pressure sensor 3P connector terminal No. 2 to body ground with a jumper wire.

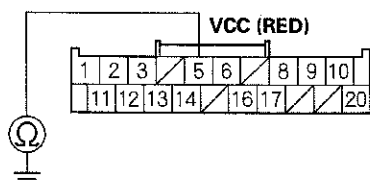
LEFT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

14. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

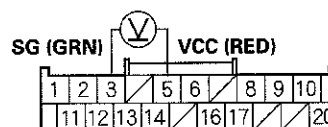
Is there continuity?

YES—Go to step 15.

NO—Repair an open in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

15. Remove the jumper wire from the left front brake fluid pressure sensor.
16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Measure the voltage between ACC unit 20P connector terminals No. 3 and No. 5.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there about 5V?

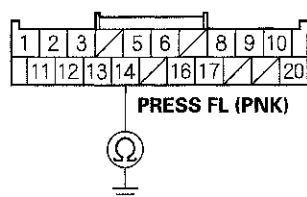
YES—Go to step 19.

NO—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■



19. Turn the ignition switch to LOCK (0).
20. Disconnect the ACC unit 20P connector.
21. Check for continuity between ACC unit 20P connector terminal No. 14 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

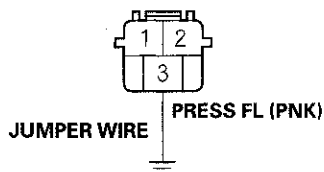
Is there continuity?

YES—Repair a short to ground in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

NO—Go to step 22.

22. Disconnect the left front brake fluid pressure sensor 3P connector.
23. Connect left front brake fluid pressure sensor 3P connector terminal No. 3 to body ground with a jumper wire.

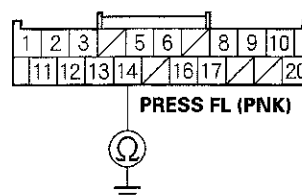
LEFT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

24. Check for continuity between ACC unit 20P connector terminal No. 14 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

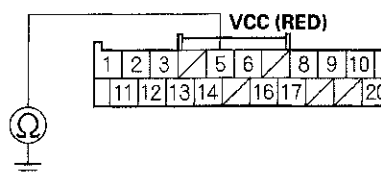
Is there continuity?

YES—Go to step 25.

NO—Repair an open in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

25. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between the PRESS FL line and the VCC line. ■

NO—Go to step 26.

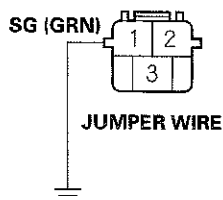
(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

26. Connect left front brake fluid pressure sensor 3P connector terminal No. 1 to body ground with a jumper wire.

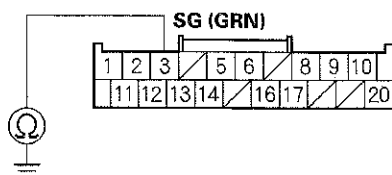
LEFT FRONT BRAKE FLUID
PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

27. Check for continuity between ACC unit 20P connector terminal No. 3 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 28.

NO—Repair an open in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

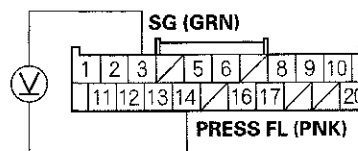
28. Remove the jumper wire from the left front brake fluid pressure sensor.

29. Reconnect all connectors.

30. Turn the ignition switch to ON (II).

31. Measure the voltage between ACC unit 20P connector terminals No. 3 and No. 14.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is the voltage between 0.4—0.6 V?

YES—Go to step 32.

NO—Replace the left front brake fluid pressure sensor. ■

32. Clear the DTCs with the HDS.

33. Watch the ACC indicator.

Does the ACC indicator stay off?

YES—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

NO—Go to step 34.

34. Check for DTCs with the HDS.

Is DTC 44 indicated?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■



DTC 45: Cal FL Brake Fluid Pressure Sensor Center Position Error

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to ON (II).
3. Watch the adaptive cruise control (ACC) indicator.

Does the ACC indicator stay off?

YES—Go to step 4.

NO—Go to step 5.

4. Press the brake pedal, and watch the ACC indicator.

Does the ACC indicator stay off?

YES—The system is OK at this time. Check for loose or poor connections. ■

NO—Go to step 5.

5. Check for DTCs with the HDS.

Is DTC 45 indicated?

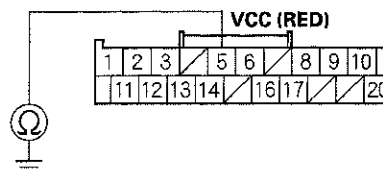
YES—Go to step 6.

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

6. Turn the ignition switch to LOCK (0).
7. Disconnect the ACC unit 20P connector.

8. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

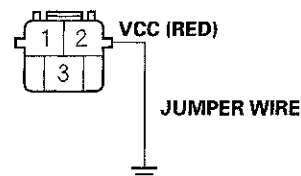
Is there continuity?

YES—Repair a short to ground in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

NO—Go to step 9.

9. Disconnect the left front brake fluid pressure sensor 3P connector.
10. Connect left front brake fluid pressure sensor 3P connector terminal No. 2 to body ground with a jumper wire.

LEFT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

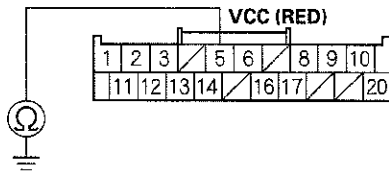
(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

11. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

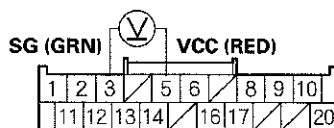
Is there continuity?

YES—Go to step 12.

NO—Repair an open in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

12. Remove the jumper wire from the left front brake fluid pressure sensor.
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Measure the voltage between ACC unit 20P connector terminals No. 3 and No. 5.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there about 5V?

YES—Go to step 16.

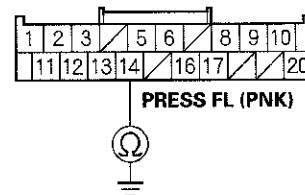
NO—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

16. Turn the ignition switch to LOCK (0).

17. Disconnect the ACC unit 20P connector.

18. Check for continuity between ACC unit 20P connector terminal No. 14 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

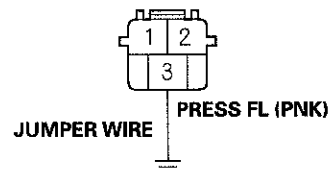
Is there continuity?

YES—Repair a short to ground in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

NO—Go to step 19.

19. Disconnect the left front brake fluid pressure sensor 3P connector.
20. Connect left front brake fluid pressure sensor 3P connector terminal No. 3 to body ground with a jumper wire.

LEFT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



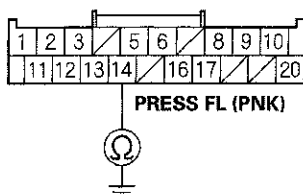
JUMPER WIRE

Wire side of female terminals



21. Check for continuity between ACC unit 20P connector terminal No. 14 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

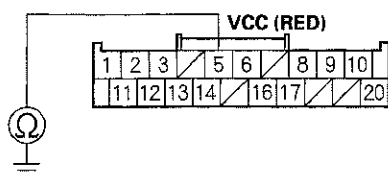
Is there continuity?

YES—Go to step 22.

NO—Repair an open in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

22. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

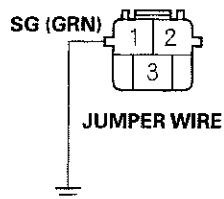
Is there continuity?

YES—Repair a short in the wire between the PRESS FL line and the VCC line. ■

NO—Go to step 23.

23. Connect left front brake fluid pressure sensor 3P connector terminal No. 1 to body ground with a jumper wire.

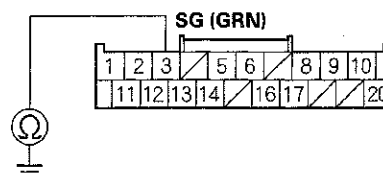
LEFT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

24. Check for continuity between ACC unit 20P connector terminal No. 3 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 25.

NO—Repair an open in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

25. Remove the jumper wire from the left front brake fluid pressure sensor.
26. Reconnect all connectors.
27. Turn the ignition switch to ON (II).

(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

28. Check the brake switch signal (BRAKE SW (N.O.)) with the HDS.

Does the indication show ON when the brake pedal is pressed, and show OFF when the brake pedal is released?

YES—Go to step 30.

NO—Go to step 29.

29. Check for DTCs with the HDS.

Is DTC 45 indicated?

YES—Go to step 31.

NO—Go to step 30.

30. Check for DTCs with the HDS.

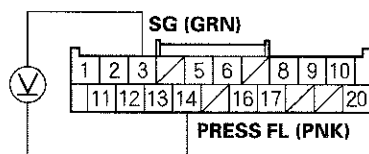
Is DTC 60, 110, or 111 indicated?

YES—Troubleshoot the indicated DTC(s). ■

NO—Troubleshoot the brake pedal position switch signal circuit (see page 11-311). ■

31. Measure the voltage between ACC unit 20P connector terminals No. 3 and No. 14.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is the voltage between 0.4–0.6 V?

YES—Go to step 32.

NO—Replace the left front brake fluid pressure sensor (see page 25-93). ■

32. Clear the DTCs with the HDS.

33. Watch the ACC indicator.

Does the ACC indicator stay off?

YES—The system is OK at this time. Check for loose or poor connections. ■

NO—Go to step 34.

34. Check for DTCs with the HDS.

Is DTC 45 indicated?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■



DTC 46: Cal FL Brake Fluid Pressure Sensor Malfunction

NOTE: In this troubleshooting, you will operate the ADAPTIVE CRUISE CONTROL (ACC) BRAKE (brake actuator 3) continuously four or five times using the FUNCTION TEST with the HDS. During this operation, the VSA modulator-control unit may stop working. This means the VSA modulator-control unit has shut down to protect the system from overheating during continuous operation.

If the VSA modulator-control unit stops working, wait for a few minutes until the VSA modulator-control unit cools down, then restart the troubleshooting.

1. Start the engine, and turn the ACC switch ON.
2. Clear the DTCs with the HDS.
3. Select ADAPTIVE CRUISE CONTROL (ACC) from the DRIVING SUPPORT menu, then enter the FUNCTION TEST.
4. Activate BRAKE ACTUATOR 3 from the FUNCTION TEST menu.
5. Watch the ACC indicator.

Is the ACC indicator amber?

YES—Go to step 9.

NO—Go to step 6.

6. Activate BRAKE ACTUATOR 3 again.
7. While the brake actuator is operating, press the brake pedal.
8. Watch the ACC indicator.

Does the ACC indicator stay amber?

YES—Go to step 9.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

9. Check for DTCs with the HDS.

Is DTC 46 indicated?

YES—Go to step 10.

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

10. Without the brake pedal pressed, check the left front brake fluid pressure voltage (LF BRAKE P) with the HDS.

Is there about 0.5 V?

YES—Go to step 11.

NO—Go to step 14.

11. Test the brake booster (see page 19-20).
12. Press the brake pedal with about 314 N (32 kgf, 70.6 lbf) of pressure.
13. Check the left front brake fluid pressure voltage (LF BRAKE P) with the HDS.

Is there about 2.5 V?

YES—The left front brake fluid pressure signal is OK, check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Go to step 14.

14. Turn the ignition switch to LOCK (0).
15. Disconnect the ACC unit 20P connector.

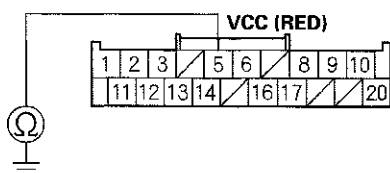
(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

16. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

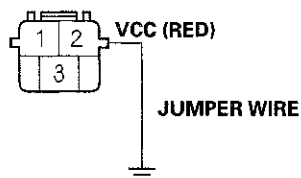
Is there continuity?

YES—Repair a short to ground in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

NO—Go to step 17.

17. Disconnect the left front brake fluid pressure sensor 3P connector.
18. Connect left front brake fluid pressure sensor 3P connector terminal No. 2 to body ground with a jumper wire.

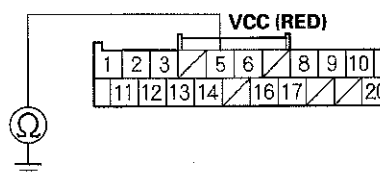
LEFT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

19. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

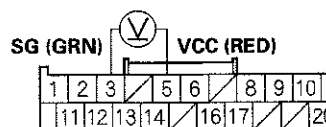
Is there continuity?

YES—Go to step 20.

NO—Repair an open in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

20. Remove the jumper wire from the left front brake fluid pressure sensor.
21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Measure the voltage between ACC unit 20P connector terminals No. 3 and No. 5.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there about 5 V?

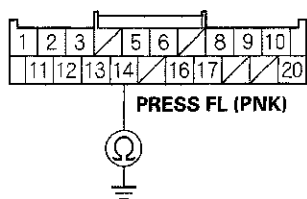
YES—Go to step 24.

NO—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■



24. Turn the ignition switch to LOCK (0).
25. Disconnect the ACC unit 20P connector.
26. Check for continuity between ACC unit 20P connector terminal No. 14 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

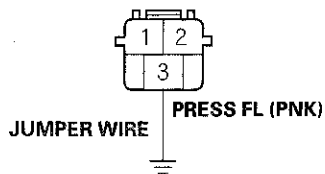
Is there continuity?

YES—Repair a short to ground in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

NO—Go to step 27.

27. Disconnect the left front brake fluid pressure sensor 3P connector.
28. Connect left front brake fluid pressure sensor 3P connector terminal No. 3 to body ground with a jumper wire.

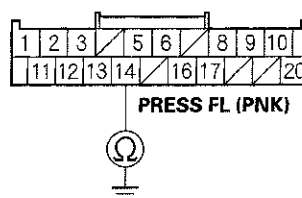
LEFT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

29. Check for continuity between ACC unit 20P connector terminal No. 14 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

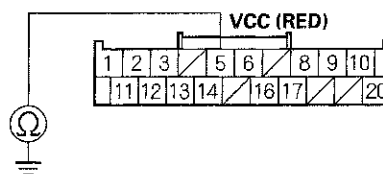
Is there continuity?

YES—Go to step 30.

NO—Repair an open in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

30. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between the PRESS FL line and the VCC line. ■

NO—Go to step 31.

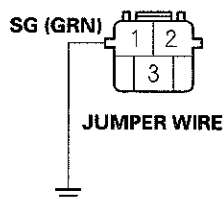
(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

31. Connect left front brake fluid pressure sensor 3P connector terminal No. 1 to body ground with a jumper wire.

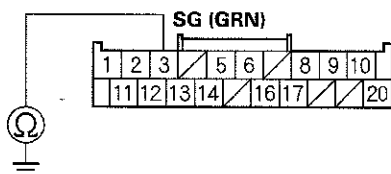
LEFT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

32. Check for continuity between ACC unit 20P connector terminal No. 3 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 33.

NO—Repair an open in the wire between the ACC unit and the left front brake fluid pressure sensor. ■

33. Remove the jumper wire from the left front brake fluid pressure sensor.

34. Reconnect all connectors.

35. Start the engine.

36. Check the brake switch signal (BRAKE SW (N.O.)) with the HDS.

Does the indication show ON when the brake pedal is pressed, and show OFF when the brake pedal is released?

YES—Go to step 38.

NO—Go to step 37.

37. Check for DTCs with the HDS.

Is DTC 60, 110, or 111 indicated?

YES—Troubleshoot the indicated DTC(s). ■

NO—Troubleshoot the brake pedal position switch signal circuit (see page 11-311). ■

38. Turn the ACC switch ON.

39. Clear the DTCs with the HDS.

40. Select ADAPTIVE CRUISE CONTROL (ACC) from the DRIVING SUPPORT menu, then enter the FUNCTION TEST.

41. Activate BRAKE ACTUATOR 3 from the FUNCTION TEST menu.

42. Check for DTCs with the HDS.

Is DTC 46 indicated?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Go to the VSA system troubleshooting (see page 19-46). ■



DTC 47: Cal FR Brake System Malfunction

NOTE: In this troubleshooting, you will operate the ADAPTIVE CRUISE CONTROL (ACC) BRAKE (brake actuator 3) continuously four or five times using the FUNCTION TEST with the HDS. During this operation, the VSA modulator-control unit may stop working. This means the VSA modulator-control unit has shut down to protect the system from overheating during continuous operation.

If the VSA modulator-control unit stops working, wait for a few minutes until the VSA modulator-control unit cools down, then restart the troubleshooting.

1. Check for VSA System DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated VSA system DTC(s). ■

NO—Go to step 2.

2. Start the engine, and turn the ACC switch ON.
3. Clear the DTCs with the HDS.
4. Select ADAPTIVE CRUISE CONTROL (ACC) from the DRIVING SUPPORT menu, then enter the FUNCTION TEST.
5. Activate BRAKE ACTUATOR 3 from the FUNCTION TEST menu.
6. Watch the ACC indicator.
Is the ACC indicator amber?
YES—Go to step 10.
NO—Go to step 7.
7. Activate BRAKE ACTUATOR 3 again.
8. While the brake actuator is operating, press the brake pedal.

9. Watch the ACC indicator.

Does the ACC indicator stay amber?

YES—Go to step 10.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

10. Check for DTCs with the HDS.

Is DTC 47 indicated?

YES—Go to step 11.

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

11. Turn the ignition switch to LOCK (0).
12. Press the brake pedal several times, and check the brake pedal travel.

Is the brake pedal travel OK?

YES—Go to step 13.

NO—Inspect the master cylinder (see page 19-20). ■

13. Check for brake fluid leaks (see page 19-21).

Are there any fluid leaks?

YES—Repair the brake fluid leak. ■

NO—Go to step 14.

14. Start the engine.
15. Check the brake switch signal (BRAKE SW (N.O.)) with the HDS.

Does the indication show ON when the brake pedal is pressed, and show OFF when the brake pedal is released?

YES—Go to step 17.

NO—Go to step 16.

(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

16. Check for DTCs with the HDS.

Is DTC 60, 110, or 111 indicated?

YES—Troubleshoot the indicated DTC(s). ■

NO—Troubleshoot the brake pedal position switch signal circuit (see page 11-311). ■

17. Turn the ACC switch ON.

18. Clear the DTCs with the HDS.

19. Select ADAPTIVE CRUISE CONTROL (ACC) from the DRIVING SUPPORT menu, then enter the FUNCTION TEST.

20. Activate BRAKE ACTUATOR 3 from the FUNCTION TEST.

21. Check for DTCs with the HDS.

Is DTC 47 indicated?

YES—Check the brake fluid pressure sensor (see page 25-93). If OK, go to step 22.

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

22. Without the brake pedal pressed, check the right front brake fluid pressure voltage (RF BRAKE P) with the HDS.

Is there about 0.5 V?

YES—Go to step 23.

NO—Go to step 26.

23. Test the brake booster (see page 19-20).

24. Press the brake pedal with about 314 N (32 kgf, 70.6 lbf) of pressure.

25. Check the right front brake fluid pressure voltage (RF BRAKE P) with the HDS.

Is there about 2.5 V?

YES—The right front brake fluid pressure signal is OK, check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Go to step 26.

26. Check for DTCs with the HDS.

Is DTC 47 indicated?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■



DTC 48: Cal FR Brake Fluid Pressure Sensor Circuit Open/Short

1. Clear the DTCs with the HDS.
2. Turn the ignition switch ON (II).
3. Watch the adaptive cruise control (ACC) indicator.

Does the ACC indicator stay off?

YES—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

NO—Go to step 4.

4. Check for DTCs with the HDS.

Is DTC 48 indicated?

YES—Go to step 5.

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

5. Check the right front brake fluid pressure voltage (RF BRAKE P) with the HDS.

Is there about 0.5 V?

YES—Go to step 6.

NO—Go to step 9.

6. Test the brake booster (see page 19-20).

7. Press the brake pedal with about 314 N (32 kgf, 70.6 lbf) of pressure.

8. Check the right front brake fluid pressure voltage (RF BRAKE P) with the HDS.

Is there about 2.5 V?

YES—The right front brake fluid pressure signal is OK, check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Go to step 9.

9. Turn the ignition switch to LOCK (0).

10. Disconnect the ACC unit 20P connector.

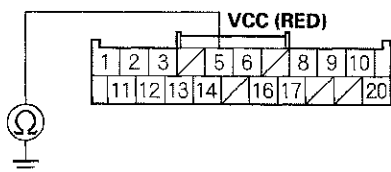
(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

11. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

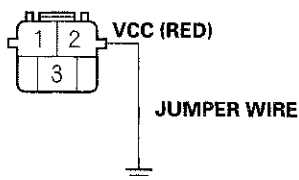
Is there continuity?

YES—Repair a short to ground in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

NO—Go to step 12.

12. Disconnect the right front brake fluid pressure sensor 3P connector.
13. Connect right front brake fluid pressure sensor 3P connector terminal No. 2 to body ground with a jumper wire.

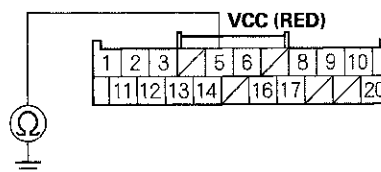
RIGHT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

14. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

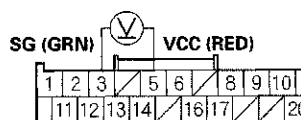
Is there continuity?

YES—Go to step 15.

NO—Repair an open in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

15. Remove the jumper wire from the right front brake fluid pressure sensor.
16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Measure the voltage between ACC unit 20P connector terminals No. 3 and No. 5.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there about 5 V?

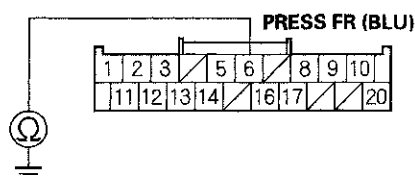
YES—Go to step 19.

NO—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■



19. Turn the ignition switch to LOCK (0).
20. Disconnect the ACC unit 20P connector.
21. Check for continuity between ACC unit 20P connector terminal No. 6 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

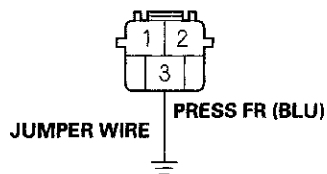
Is there continuity?

YES—Repair a short to ground in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

NO—Go to step 22.

22. Disconnect the right front brake fluid pressure sensor 3P connector.
23. Connect right front brake fluid pressure sensor 3P connector terminal No. 3 to body ground with a jumper wire.

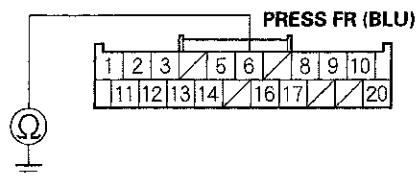
RIGHT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

24. Check for continuity between ACC unit 20P connector terminal No. 6 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

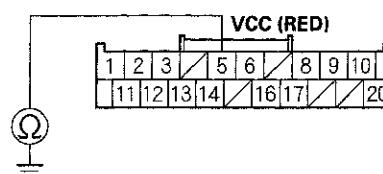
Is there continuity?

YES—Go to step 25.

NO—Repair an open in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

25. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between the PRESS FR line and VCC line. ■

NO—Go to step 26.

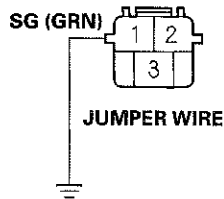
(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

26. Connect right front brake fluid pressure sensor 3P connector terminal No. 1 to body ground with a jumper wire.

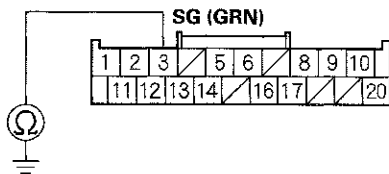
RIGHT FRONT BRAKE FLUID
PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

27. Check for continuity between ACC unit 20P connector terminal No. 3 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

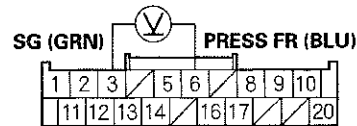
YES—Go to step 28.

NO—Repair an open in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

28. Remove the jumper wire from the right front brake fluid pressure sensor.
29. Reconnect all connectors.
30. Turn the ignition switch to ON (II).

31. Measure the voltage between ACC unit 20P connector terminals No. 3 and No. 6.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is the voltage between 0.4—0.6 V?

YES—Go to step 32.

NO—Replace the right front brake fluid pressure sensor. ■

32. Clear the DTCs with the HDS.

33. Watch the ACC indicator.

Does the ACC indicator stay off?

YES—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

NO—Go to step 34.

34. Check for DTCs with the HDS.

Is DTC 48 indicated?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■



DTC 49: Cal FR Brake Fluid Pressure Sensor Center Position Error

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to ON (II).
3. Watch the adaptive cruise control (ACC) indicator.

Does the ACC indicator stay off?

YES—Go to step 4.

NO—Go to step 5.

4. Press the brake pedal, and watch the ACC indicator.

Does the ACC indicator stay off?

YES—The system is OK at this time. Check for loose or poor connections. ■

NO—Go to step 5.

5. Check for DTCs with the HDS.

Is DTC 49 indicated?

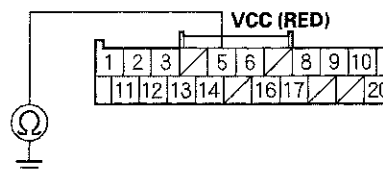
YES—Go to step 6.

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

6. Turn the ignition switch to LOCK (0).
7. Disconnect the ACC unit 20P connector.

8. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

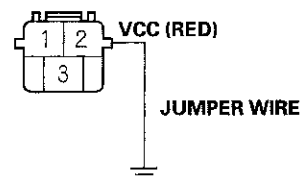
YES—Repair a short to ground in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

NO—Go to step 9.

9. Disconnect the right front brake fluid pressure sensor 3P connector.

10. Connect right front brake fluid pressure sensor 3P connector terminal No. 2 to body ground with a jumper wire.

RIGHT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

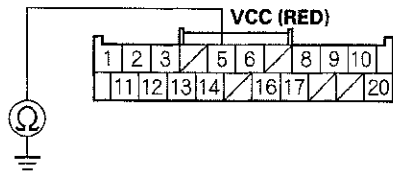
(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

11. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

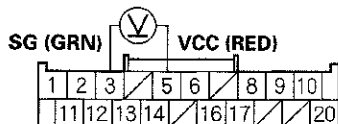
Is there continuity?

YES—Go to step 12.

NO—Repair an open in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

12. Remove the jumper wire from the right front brake fluid pressure sensor.
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Measure the voltage between ACC unit 20P connector terminals No. 3 and No. 5.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there about 5V?

YES—Go to step 16.

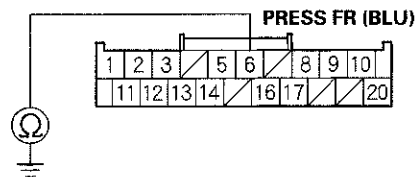
NO—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

16. Turn the ignition switch to LOCK (0).

17. Disconnect the ACC unit 20P connector.

18. Check for continuity between ACC unit 20P connector terminal No. 6 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

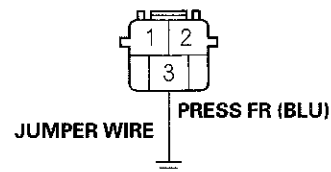
Is there continuity?

YES—Repair a short to ground in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

NO—Go to step 19.

19. Disconnect the right front brake fluid pressure sensor 3P connector.
20. Connect right front brake fluid pressure sensor 3P connector terminal No. 3 to body ground with a jumper wire.

RIGHT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR

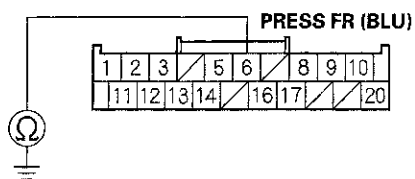


Wire side of female terminals



21. Check for continuity between ACC unit 20P connector terminal No. 6 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

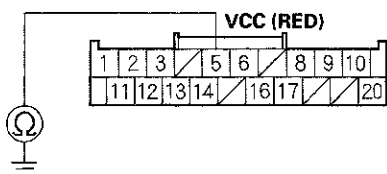
Is there continuity?

YES—Go to step 22.

NO—Repair an open in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

22. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

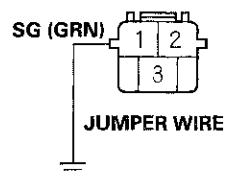
Is there continuity?

YES—Repair a short in the wire between the PRESS FR line and the VCC line. ■

NO—Go to step 23.

23. Connect right front brake fluid pressure sensor 3P connector terminal No. 1 to body ground with a jumper wire.

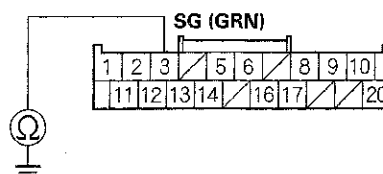
RIGHT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

24. Check for continuity between ACC unit 20P connector terminal No. 3 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 25.

NO—Repair an open in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

25. Remove the jumper wire from the right front brake fluid pressure sensor.
26. Reconnect all connectors.
27. Turn the ignition switch to ON (II).

(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

28. Check the brake switch signal (BRAKE SW (N. O.)) with the HDS.

Does the indication show ON when the brake pedal is pressed, and show OFF when the brake pedal is released?

YES—Go to step 30.

NO—Go to step 29.

29. Check for DTCs with the HDS.

Is DTC 49 indicated?

YES—Go to step 31.

NO—Go to step 30.

30. Check for DTCs with the HDS.

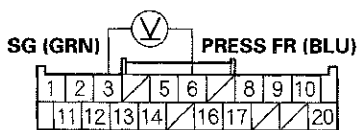
Is DTC 60, 110, or 111 indicated?

YES—Troubleshoot the indicated DTC(s). ■

NO—Troubleshoot the brake pedal position switch signal circuit (see page 11-311). ■

31. Measure the voltage between ACC unit 20P connector terminals No. 3 and No. 6.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is the voltage between 0.4—0.6 V?

YES—Go to step 32.

NO—Replace the right front brake fluid pressure sensor (see page 25-93). ■

32. Clear the DTCs with the HDS.

33. Watch the ACC indicator.

Does the ACC indicator stay off?

YES—The system is OK at this time. Check for loose or poor connections. ■

NO—Go to step 34.

34. Check for DTCs with the HDS.

Is DTC 49 indicated?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■



DTC 50: Cal FR Brake Fluid Pressure Sensor Malfunction

NOTE: In this troubleshooting, you will operate the ADAPTIVE CRUISE CONTROL (ACC) BRAKE (brake actuator 3) continuously four or five times using the FUNCTION TEST with the HDS. During this operation, the VSA modulator-control unit may stop working. This means the VSA modulator-control unit has shut down to protect the system from overheating during continuous operation.

If the VSA modulator-control unit stops working, wait for a few minutes until the VSA modulator-control unit cools down, then restart the troubleshooting.

1. Start the engine, and turn the ACC switch ON.
2. Clear the DTCs with the HDS.
3. Select ADAPTIVE CRUISE CONTROL (ACC) from the DRIVING SUPPORT menu, then enter the FUNCTION TEST.
4. Activate BRAKE ACTUATOR 3 from the FUNCTION TEST menu.

5. Watch the ACC indicator.

Is the ACC indicator amber?

YES—Go to step 9.

NO—Go to step 6.

6. Activate BRAKE ACTUATOR 3 again.
7. While the brake actuator is operating, press the brake pedal.
8. Watch the ACC indicator.

Does the ACC indicator stay amber?

YES—Go to step 9.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

9. Check for DTCs with the HDS.

Is DTC 50 indicated?

YES—Go to step 10.

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

10. Without the brake pedal pressed, check the right front brake fluid pressure voltage (RF BRAKE P) with the HDS.

Is there about 0.5 V?

YES—Go to step 11.

NO—Go to step 14.

11. Test the brake booster (see page 19-20).
12. Press the brake pedal with about 314 N (32 kgf, 70.6 lbf) of pressure.

(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

13. Check the right front brake fluid pressure voltage (RF BRAKE P) with the HDS.

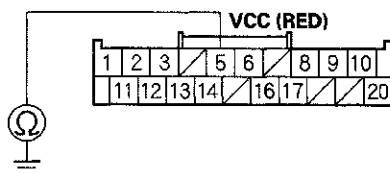
Is there about 2.5 V?

YES—The right front brake fluid pressure signal is OK, check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Go to step 14.

14. Turn the ignition switch to LOCK (0).
15. Disconnect the ACC unit 20P connector.
16. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

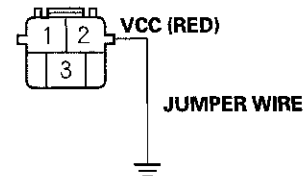
YES—Repair a short to ground in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

NO—Go to step 17.

17. Disconnect the right front brake fluid pressure sensor 3P connector.

18. Connect right front brake fluid pressure sensor 3P connector terminal No. 2 to body ground with a jumper wire.

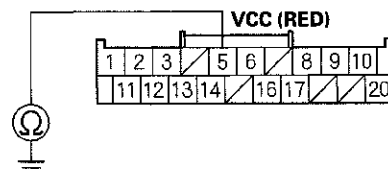
RIGHT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

19. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 20.

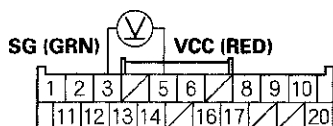
NO—Repair an open in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

20. Remove the jumper wire from the right front brake fluid pressure sensor.
21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).



23. Measure the voltage between ACC unit 20P connector terminals No. 3 and No. 5.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

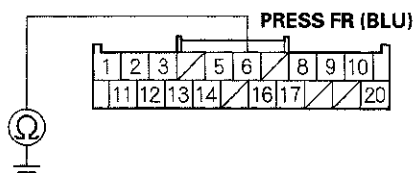
Is there about 5 V?

YES—Go to step 24.

NO—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

24. Turn the ignition switch to LOCK (0).
25. Disconnect the ACC unit 20P connector.
26. Check for continuity between ACC unit 20P connector terminal No. 6 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

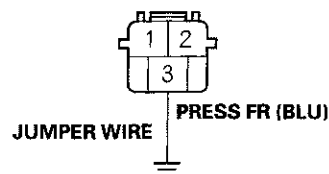
YES—Repair a short to ground in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

NO—Go to step 27.

27. Disconnect the right front brake fluid pressure sensor 3P connector.

28. Connect right front brake fluid pressure sensor 3P connector terminal No. 3 to body ground with a jumper wire.

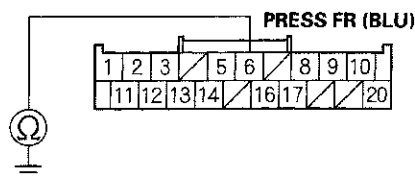
RIGHT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

29. Check for continuity between ACC unit 20P connector terminal No. 6 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 30.

NO—Repair an open in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

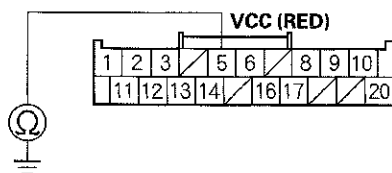
(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

30. Check for continuity between ACC unit 20P connector terminal No. 5 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

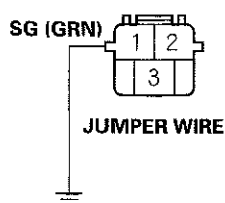
Is there continuity?

YES—Repair a short in the wire between the PRESS FR line and the VCC line. ■

NO—Go to step 31.

31. Connect right front brake fluid pressure sensor 3P connector terminal No. 1 to body ground with a jumper wire.

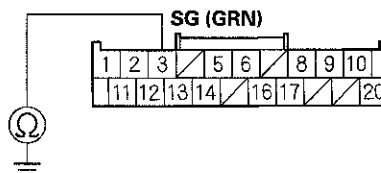
RIGHT FRONT BRAKE FLUID PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

32. Check for continuity between ACC unit 20P connector terminal No. 3 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 33.

NO—Repair an open in the wire between the ACC unit and the right front brake fluid pressure sensor. ■

33. Remove the jumper wire from the right front brake fluid pressure sensor.
34. Reconnect all connectors.
35. Start the engine.
36. Check the brake switch signal (BRAKE SW (N.O.)) with the HDS.

Does the indication show ON when the brake pedal is pressed, and show OFF when the brake pedal is released?

YES—Go to step 38.

NO—Go to step 37.



37. Check for DTCs with the HDS.

Is DTC 60, 110, or 111 indicated?

YES—Troubleshoot the indicated DTC(s). ■

NO—Troubleshoot the brake pedal position switch signal circuit (see page 11-311). ■

38. Turn the ACC switch ON.

39. Clear the DTCs with the HDS.

40. Select ADAPTIVE CRUISE CONTROL (ACC) from the DRIVING SUPPORT menu, then enter the FUNCTION TEST.

41. Activate BRAKE ACTUATOR 3 from the FUNCTION TEST menu.

42. Check for DTCs with the HDS.

Is DTC 50 indicated?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Go to the VSA system troubleshooting (see page 19-46). ■

DTC 60: Communication Line Error

1. Clear the DTCs with the HDS.

2. Turn the ignition switch to ON (II).

3. Turn the adaptive cruise control (ACC) switch ON.

4. Watch the ACC indicator.

Does the ACC indicator stay off?

YES—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

NO—Go to step 5.

5. Check for DTCs with the HDS.

Is DTC 60 indicated?

YES—Go to step 6.

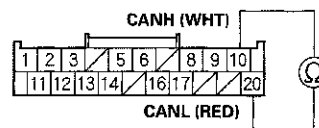
NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

6. Turn the ignition switch to LOCK (0).

7. Disconnect the ACC unit 20P connector.

8. Measure the resistance between ACC unit 20P connector terminals No. 10 and No. 20.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there about 60 Ω at room temperature?

YES—The F-CAN line is OK at this time, check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Repair an open in the wire between the ACC unit and the branch of the communication line (CANL line or CANH line.) ■

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

DTC 61: Millimeter Wave Radar Communication Error

1. Clear the DTC with the HDS.
2. Turn the ignition switch to ON (II).
3. Watch the adaptive cruise control (ACC) indicator and the CMBS indicator.

Do both indicators come on?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Check for DTCs with the HDS.

Is DTC 61 indicated?

YES—Go to step 5.

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

5. Turn the ignition switch to LOCK (0).
6. Check the No. 29 (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

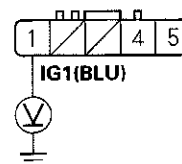
YES—Go to step 7.

NO—Replace the fuse and recheck. ■

7. Disconnect the millimeter wave radar 5P connector.
8. Turn the ignition switch to ON (II).

9. Measure the voltage between millimeter wave radar 5P connector terminal No. 1 and body ground.

MILLIMETER WAVE RADAR 5P CONNECTOR



Wire side of female terminals

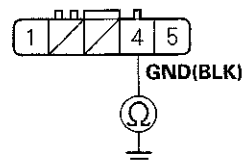
Is there battery voltage?

YES—Go to step 10.

NO—Repair an open in the wire between the millimeter wave radar and the No. 29 (7.5 A) fuse in the driver's under-dash fuse/relay box. ■

10. Turn the ignition switch to LOCK (0).
11. Check for continuity between millimeter wave radar 5P connector terminal No. 4 and body ground.

MILLIMETER WAVE RADAR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

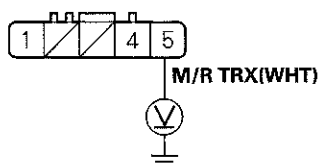
NO—Repair an open in the wire or poor ground (G401) (see page 22-30). ■

12. Turn the ignition switch to ON (II) and the ACC switch ON.



13. Measure the voltage between millimeter wave radar 5P connector terminal No. 5 and body ground.

MILLIMETER WAVE RADAR 5P CONNECTOR



Wire side of female terminals

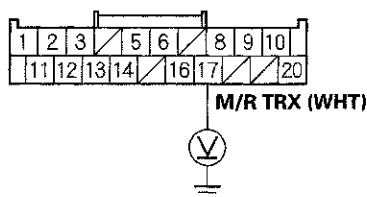
Is there battery voltage?

YES—Go to step 15.

NO—Go to step 14.

14. Measure the voltage between ACC unit 20P connector terminal No. 17 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

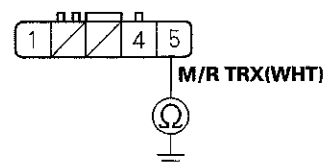
YES—Repair an open in the wire between the ACC unit and the millimeter wave radar. ■

NO—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86), then go to step 18.

15. Turn the ignition switch to LOCK (0).
16. Disconnect the ACC unit 20P connector.

17. Check for continuity between millimeter wave radar 5P connector terminal No. 5 and body ground.

MILLIMETER WAVE RADAR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between the ACC unit and the millimeter wave radar. ■

NO—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86), then go to step 18.

(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

18. Clear the DTCs with the HDS.

19. Turn the ignition switch to ON (II).

20. Watch the ACC indicator and CMBS indicator.

Do both indicators come on?

YES—Go to step 21.

NO—Intermittent failure, the system is OK at this time. ■

21. Check for DTCs with the HDS.

Is DTC 61 indicated?

YES—Check for loose or poor connections. If OK, replace the millimeter wave radar (see page 25-82). After replacement, do the millimeter wave radar aiming (see page 25-87). ■

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

DTC 62: Millimeter Wave Radar Sensor Error

1. Clear the DTCs with the HDS.

2. Turn the ignition switch to ON (II) and the adaptive cruise control (ACC) switch ON.

3. Watch the adaptive cruise control (ACC) indicator and the CMBS indicator.

Do both indicators come on?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Check for DTCs with the HDS.

Is DTC 62 indicated?

YES—Check for loose or poor connections. If OK, replace the millimeter wave radar (see page 25-82). After replacement, do the millimeter wave radar aiming (see page 25-87). ■

NO—Troubleshoot the indicated DTC(s). ■



DTC 63: Millimeter Wave Radar Aiming Error

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to ON (II).
3. Watch the adaptive cruise control (ACC) indicator and the CMBS indicator.

Do both indicators come on?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Check for DTCs with the HDS.

Is DTC 63 indicated?

YES—Go to step 5.

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

5. Remove the upper grille (see page 20-162).
6. Check the installation of the millimeter wave radar and the main bracket.

Is the installation OK?

YES—Go to step 7.

NO—Reinstall or replace the part that has a problem, then go to step 7.

7. Do the millimeter wave radar aiming procedure (see page 25-87).
8. Test-drive the vehicle at 25 mph (40 km/h) or more, and turn the ACC switch ON.
9. With the ACC activated, test-drive the vehicle on a straight road at 25 mph (40 km/h) or more for 5 minutes or more.

10. Watch the ACC indicator and CMBS indicator.

Do both indicators come on?

YES—Go to step 11.

NO—The system is OK at this time. ■

11. Check for DTCs with the HDS.

Is DTC 63 indicated?

YES—Check for loose or poor connections. If OK, replace the millimeter wave radar (see page 25-82). After replacement, do the millimeter wave radar aiming (see page 25-87). ■

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

DTC 73: Variation failure of the PCM

NOTE: When DTC 113 is also indicated, troubleshooting of DTC 113 should be done first (see page 25-71).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to ON (II).
3. Check for DTCs with the HDS.

Is DTC 73 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

4. Check for PGM-FI system DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated PGM-FI system DTC(s). ■

NO—Go to step 5.

5. Check for gauge control module DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated gauge control module DTC(s). ■

NO—Faulty ACC unit; replace the ACC unit (see page 25-86). ■



DTC 81: Engine Control System (Including PCM) Malfunction

1. Check for PGM-FI System DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated PGM-FI system DTC(s). ■

NO—Go to step 2.

2. Clear the DTCs with the HDS.
3. Test-drive the vehicle with the adaptive cruise control (ACC) activated.
4. Check for DTCs with the HDS.

Is DTC 81 indicated?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

DTC 90: A/T Control System (Including PCM) Malfunction

1. Check for A/T System DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated A/T system DTC(s). ■

NO—Go to step 2.

2. Clear the DTCs with the HDS.
3. Test-drive the vehicle with the adaptive cruise control (ACC) activated.
4. Check for DTCs with the HDS.

Is DTC 90 indicated?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

DTC 92: VSA Modulator-Control Unit Malfunction

1. Check for VSA System DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated VSA system DTC(s). ■

NO—Go to step 2.

2. Clear the DTCs with the HDS.
3. Test-drive the vehicle with the adaptive cruise control (ACC) activated.
4. Check for DTCs with the HDS.

Is DTC 92 indicated?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

DTC 105: Dust or Dirt on the Millimeter Wave Radar

NOTE: When driving on a road with little traffic and minimal reflecting objects for the millimeter wave radar, DTC 105 is stored temporally. Also DTC 105 is sometimes stored near overpasses and bodies of water. Check for dirt on the front surface of the millimeter wave radar.

1. Check for dust or dirt on the millimeter wave radar.

Is the surface dirty?

YES—Clean the millimeter wave radar, then recheck the system. ■

NO—Go to step 2.

2. Remove the upper grille (see page 20-162).
3. Check the installation of the emblem.

Is the emblem installed correctly?

YES—Intermittent failure, the system is OK at this time. ■

NO—Reinstall the emblem or the upper grille correctly. If damaged, replace it. ■



DTC 107: Millimeter Wave Radar Aiming Incomplete

NOTE: If the millimeter wave radar is removed or replaced, it is necessary to aim it, otherwise DTC 107 is stored even if the system is OK.

1. Turn the ignition switch to ON (II), and watch the adaptive cruise control (ACC) indicator.

Does the ACC indicator stay off?

YES—Intermittent failure, the system is OK at this time. ■

NO—Go to step 2.

2. Check for DTCs with the HDS.

Is DTC 107 indicated?

YES—If DTC 107 is indicated again after the aiming is complete, check for loose or poor connections. If OK, replace the millimeter wave radar (see page 25-82). ■

NO—Go to step 3.

3. Check for DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated DTC(s). ■

NO—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86), then go to step 4.

4. Check for DTCs with the HDS.

Is DTC 107 indicated?

YES—Check for loose or poor connections. If OK, replace the millimeter wave radar (see page 25-82). ■

NO—Troubleshoot the indicated DTC(s). If there are no DTCs, the system is OK at this time. ■

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

DTC 110: Lost Communication with the PCM (PGM-FI System)

DTC 111: Lost Communication with the PCM (A/T System)

1. Check for PGM-FI system DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated PGM-FI system DTC(s). ■

NO—Go to step 2.

2. Check the DTCs with the HDS.
3. Turn the ignition switch to ON (II) and the adaptive cruise control (ACC) switch ON.
4. Check for DTCs with the HDS.

Is DTC 110 or 111 indicated?

YES—Go to step 5.

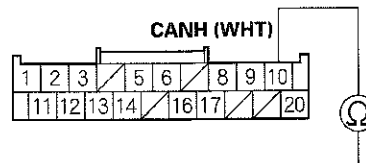
NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

5. Turn the ignition switch to LOCK (0).
6. Disconnect the ACC unit 20P connector.
7. Jump the SCS line with the HDS, then disconnect PCM connector E (31P) (see page 11-232).

8. Check for continuity between ACC unit 20P connector terminal No. 10 and PCM connector E (31P) terminal No. 15.

ACC UNIT 20P CONNECTOR

Wire side of female terminals



PCM CONNECTOR E (31P)

Wire side of female terminals



Is there continuity?

YES—Go to step 9.

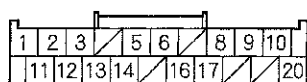
NO—Repair an open in the wire between the ACC unit and the branch of the F-CAN line (CANH). ■



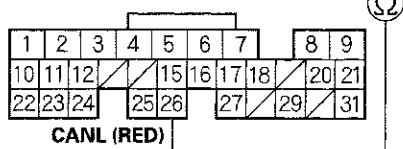
9. Check for continuity between ACC unit 20P connector terminal No. 20 and PCM connector E (31P) terminal No. 26.

ACC UNIT 20P CONNECTOR

Wire side of female terminals



CANL (RED)



CANL (RED)

PCM CONNECTOR E (31P)

Wire side of female terminals

Is there continuity?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Repair an open in the wire between the ACC unit and the branch of the F-CAN line (CANL). ■

DTC 112: Lost Communication with the VSA Modulator-Control Unit

1. Check for VSA system DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated VSA system DTC(s). ■

NO—Go to step 2.

2. Clear the DTCs with the HDS.

3. Turn the ignition switch to ON (II) and the adaptive cruise control (ACC) switch ON.

4. Check for DTCs with the HDS.

Is DTC 112 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

5. Turn the ignition switch to LOCK (0).

6. Disconnect the ACC unit 20P connector.

7. Disconnect the VSA modulator-control unit 47P connector.

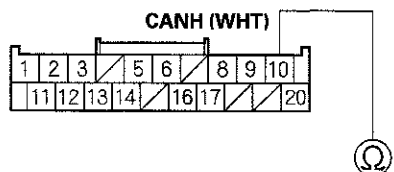
(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

8. Check for continuity between ACC unit 20P connector terminal No. 10 and VSA modulator-control unit 47P connector terminal No. 14.

ACC UNIT 20P CONNECTOR
Wire side of female terminals



VSA MODULATOR-CONTROL UNIT 47P CONNECTOR
Wire side of female terminals

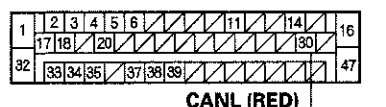
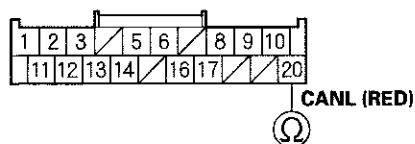
Is there continuity?

YES—Go to step 9.

NO—Repair an open in the wire between the ACC unit and the branch of the F-CAN line (CANH). ■

9. Check for continuity between ACC unit 20P connector terminal No. 20 and VSA modulator-control unit 47P connector terminal No. 30.

ACC UNIT 20P CONNECTOR
Wire side of female terminals



VSA MODULATOR-CONTROL UNIT 47P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Repair an open in the wire between the ACC unit and the branch of the F-CAN line (CANL). ■



DTC 113: Lost Communication with the Gauge Control Module

1. Check the gauge control module with the gauge control module self-diagnostic function.

Is the gauge control module OK?

YES—Go to step 2.

NO—Replace the gauge control module, and recheck. ■

2. Clear the DTCs with the HDS.
3. Turn the ignition switch to ON (II) and the adaptive cruise control (ACC) switch ON.
4. Check for DTCs with the HDS.

Is DTC 113 indicated?

YES—Go to step 5.

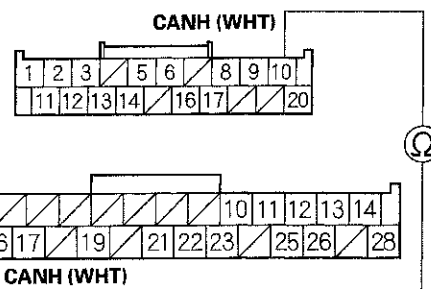
NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

5. Turn the ignition switch to LOCK (0).
6. Disconnect the ACC unit 20P connector.
7. Disconnect gauge control module connector B (28P).

8. Check for continuity between ACC unit 20P connector terminal No. 10 and gauge control module connector B (28P) terminal No. 16.

ACC UNIT 20P CONNECTOR

Wire side of female terminals



GAUGE CONTROL MODULE CONNECTOR B (28P)

Wire side of female terminals

Is there continuity?

YES—Go to step 9.

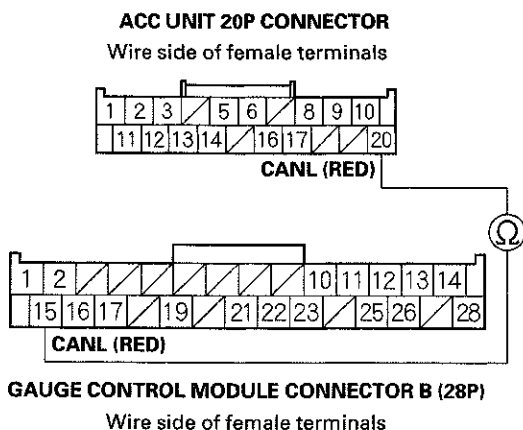
NO—Repair an open in the wire between the ACC unit and the branch of the F-CAN line (CANH). ■

(cont'd)

Adaptive Cruise Control (ACC)

DTC Troubleshooting (cont'd)

9. Check for continuity between ACC unit 20P connector terminal No. 20 and gauge control module connector B (28P) terminal No. 15.



Is there continuity?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Repair an open in the wire between the ACC unit and the branch of the F-CAN line (CANL). ■

DTC 115: Lost Communication with the SH-AWD Control Unit

1. Check for SH-AWD system DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated SH-AWD system DTC(s). ■

NO—Go to step 2.

2. Clear the DTCs with the HDS.

3. Turn the ignition switch to ON (II) and the adaptive cruise control (ACC) switch ON.

4. Check for DTCs with the HDS.

Is DTC 115 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

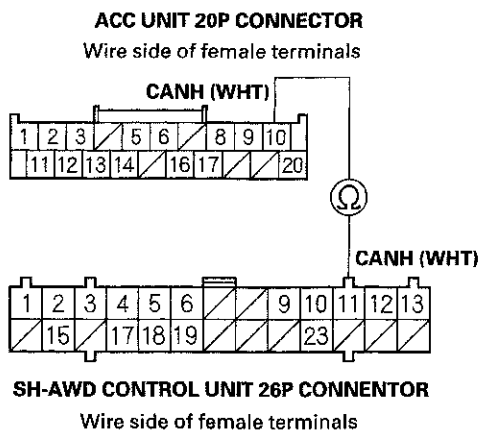
5. Turn the ignition switch to LOCK (0).

6. Disconnect the ACC unit 20P connector.

7. Disconnect the SH-AWD control unit 26P connector.



8. Check for continuity between ACC unit 20P connector terminal No. 10 and SH-AWD control unit 26P connector terminal No. 11.

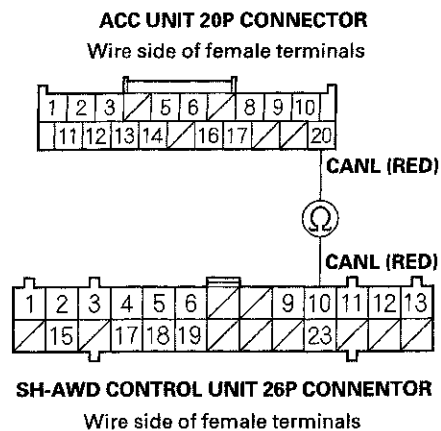


Is there continuity?

YES—Go to step 9.

NO—Repair an open in the wire between the ACC unit and the branch of the F-CAN line (CANH). ■

9. Check for continuity between ACC unit 20P connector terminal No. 20 and SH-AWD control unit 26P connector terminal No. 10.



Is there continuity?

YES—Check for loose or poor connections. If OK, replace the ACC unit (see page 25-86). ■

NO—Repair an open in the wire between the ACC unit and the branch of the F-CAN line (CANL). ■

Adaptive Cruise Control (ACC)

Adaptive Cruise Control (ACC) System Troubleshooting (No DTC Indication)

1. Check the No. 29 (7.5 A) fuse in the driver's under-dash fuse/relay box.

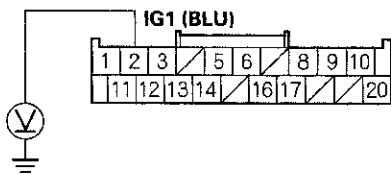
Is the fuse OK?

YES—Go to step 2.

NO—Check for a short in the wire between the No. 29 (7.5 A) fuse socket and the ACC unit. If OK, replace the fuse. ■

2. Disconnect the ACC unit 20P connector.
3. Turn the ignition switch to ON (II).
4. Measure the voltage between ACC unit 20P connector terminal No. 2 and body ground.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

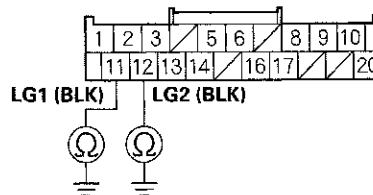
YES—Go to step 5.

NO—Repair an open in the wire between the No. 29 (7.5 A) fuse in the driver's under-dash fuse/relay box and the ACC unit. If the wire is OK, replace the under-dash fuse/relay box. ■

5. Turn the ignition switch to LOCK (0).

6. Check for continuity between body ground and the ACC unit 20P connector terminals No. 11 and No. 12 individually.

ACC UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—The system is OK at this time. Go to the appropriate step according to these symptoms:

- If the ACC system detects a vehicle driving in another lane, go to step 7.
- If the ACC system does not detect the vehicle driving ahead, go to step 11.
- If the ACC system does not detect the vehicle driving ahead consistently, go to step 21.

NO—Repair an open in the wire or poor ground (G401) (see page 22-30). ■

7. Check the vehicle's history for front end collision repairs.

Has the vehicle been repaired?

YES—Go to step 8.

NO—Go to step 9.



8. Check if the millimeter wave radar and the main bracket are installed correctly, and also check if the vehicle frame is straight.

Are all parts installed correctly?

YES—Do the millimeter wave radar aiming (see page 25-87). ■

NO—Reinstall the part correctly, or if damaged, replace the part, then aim the millimeter wave radar (see page 25-87). ■

9. Check the wheel alignment (see page 18-5).

Is the wheel alignment OK?

YES—Go to step 10.

NO—Adjust the wheel alignment. ■

10. Find out when the system has misdetections.

Do they occur within 20 minutes or less?

YES—Go to step 11.

NO—Explain to the client that system misdetections are sometimes caused by the environment (weather, road conditions, driving conditions, etc.). ■

11. Find out if the detection problem occurs only with certain types of vehicles (dirty vehicle, tall vehicle, motorcycle, or special vehicle).

Does it occur only with certain types of vehicles?

YES—Explain to the client that the system sometimes cannot detect certain vehicle types. ■

NO—Go to step 12.

12. Check for dirt, dust, or snow on the surface of the millimeter wave radar and the front radar cover.

Are the radar and front radar cover OK?

YES—Go to step 13.

NO—Clean the radar and the front radar cover. ■

13. Check if there was a heavy load in the trunk.

Was there a heavy load in the trunk?

YES—Remove the heavy load from the trunk. Advise the client that this problem may occur temporarily when hauling loads. ■

NO—Go to step 14.

14. Measure the front and rear vehicle ride height.

Is the vehicle ride height equal?

YES—Go to step 15.

NO—Adjust the wheel alignment (see page 18-5). ■

(cont'd)

Adaptive Cruise Control (ACC)

Adaptive Cruise Control (ACC) System Troubleshooting (No DTC Indication) (cont'd)

15. Find out if the detection problem occurs only on a particular road such as a winding road, an entrance of a corner, exit of a corner, a tight corner, or a bad road.

Does it occur only on a particular road?

YES—Explain to the client that the system sometimes cannot detect under certain road conditions. ■

NO—Go to step 16.

16. Find out if the detection problem occurs only under poor weather conditions such as fog, snow, heavy rain, or gusty winds.

Does it occur only under poor weather conditions?

YES—Explain to the client that the system sometimes cannot detect under poor weather conditions. ■

NO—Go to step 17.

17. Find out if the detection problem occurs only when the vehicle ahead drives under these conditions:

- driving in a zigzag line.
- merged into the lane suddenly.
- closing on a vehicle within 13 ft (4 m).

Does it occur only under certain driving conditions?

YES—Explain to the client that the system sometimes cannot detect under certain driving conditions. ■

NO—Go to step 18.

18. Find out if the detection problem occurs under all conditions.

Does it occur under all conditions?

YES—The millimeter wave radar vertical aiming is incorrect. Readjust the aiming. ■

NO—Go to step 19.

19. Confirm if the radar detects vehicles driving in another lane.

Does it detect vehicles in other lanes?

YES—The millimeter wave radar horizontal aiming is incorrect. Readjust the aiming. ■

NO—Go to step 20.

20. Confirm if the detection problem is caused by instability.

NOTE: If the cause of the misdetection or undetectable problems is unclear, it is possible that the problem was caused by many environmental conditions. Explain to the client that intermittent failures are sometimes caused by environmental conditions.

Is the vehicle unstable? (Compare it to a known-good, like vehicle.)

YES—Check the other components such as the yaw rate sensor or the wheel sensors, etc. ■

NO—The system is OK at this time. ■

21. Check for dirt, dust, or snow on the surface of the millimeter wave radar and the emblem.

Are the radar and the emblem OK?

YES—Go to step 22.

NO—Clean the radar and the emblem. ■

22. Check the vehicle's history for front end collision repairs.

Has the vehicle been repaired?

YES—Go to step 23.

NO—Go to step 24.



23. Check if the millimeter wave radar and the main bracket are installed correctly, and also check if the vehicle frame is straight.

Are all parts installed correctly?

YES—Aim the millimeter wave radar (see page 25-87). ■

NO—Reinstall the part correctly, or if damaged, replace the part, then aim the millimeter wave radar (see page 25-87). ■

24. Check if there was a heavy load in the trunk.

Was there a heavy load in the trunk?

YES—Remove the heavy load from the trunk. Advise the client that this problem may occur temporarily when hauling loads. ■

NO—Go to step 25.

25. Measure the front and rear vehicle ride height.

Is the vehicle ride height equal?

YES—Go to step 26.

NO—Adjust the wheel alignment (see page 18-5). ■

26. Find out if the detection problem occurs only with certain types of vehicles (dirty vehicle, tall vehicle, motorcycle, or special vehicle).

Does it occur only with certain types of vehicles?

YES—Explain to the client that the system sometimes cannot detect certain vehicle types. ■

NO—Go to step 27.

27. Find out if the detection problem occurs only on a particular road such as a winding road, an entrance of a corner, exit of a corner, a tight corner, or a bad road.

Does it occur only on a particular road?

YES—Explain to the client that the system sometimes cannot detect under certain road conditions. ■

NO—Go to step 28.

28. Find out if the detection problem occurs only under poor weather conditions such as fog, snow, heavy rain, or gusty winds.

Does it occur only under poor weather conditions?

YES—Explain to the client that the system sometimes cannot detect under poor weather conditions. ■

NO—Go to step 29.

(cont'd)

Adaptive Cruise Control (ACC)

Adaptive Cruise Control (ACC) System Troubleshooting (No DTC Indication) (cont'd)

29. Find out if the detection problem occurs only when the vehicle ahead drives under these conditions:

- driving in a zigzag line.
- merged into the lane suddenly.
- closing on a vehicle within 13 ft (4 m).

Does it occur only under certain driving conditions?

YES—Explain to the client that the system sometimes cannot detect under certain driving conditions. ■

NO—Go to step 30.

30. Find out if the detection problem occurs under all conditions.

Does it occur under all conditions?

YES—The millimeter wave radar vertical aiming is incorrect. Readjust the aiming. ■

NO—Go to step 31.

31. Confirm if the radar detects vehicles driving in another lane.

Does it detect vehicles in other lanes?

YES—The millimeter wave radar horizontal aiming is incorrect. Readjust the aiming. ■

NO—Go to step 32.

32. Confirm if the detection problem is caused by vehicle instability.

NOTE: If the cause of the misdetection or undetectable problems is unclear, it is possible that the problem was caused by many environmental conditions. Explain to the client that intermittent failures are sometimes caused by environmental conditions.

Is the vehicle unstable? (Compare it to a known-good, like vehicle.)

YES—Check the other components such as the yaw rate sensor or the wheel sensors, etc. ■

NO—The system is OK at this time. ■



Symptom Troubleshooting

Adaptive cruise control (ACC) indicator (amber) does not come on

1. Turn the ignition switch to ON (II).
2. Watch the following indicators in the gauge control module:

- Malfunction indicator lamp (MIL)
- Brake system light
- Charging light

Do the indicators come on?

YES—Go to the gauge control module self-diagnostic function (see page 22-396). ■

NO—Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Check the No. 21 (10 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

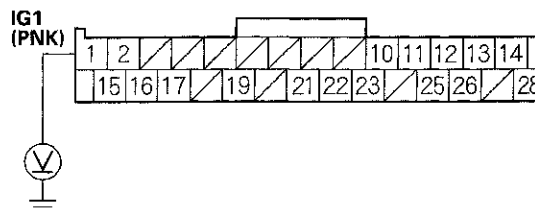
YES—Go to step 5.

NO—Check for a short in the wire between the No. 21 (10 A) fuse socket and the gauge control module. If OK, replace the fuse. ■

5. Disconnect gauge control module connector B (28P).
6. Turn the ignition switch to ON (II).

7. Measure the voltage between the gauge control module connector B (28P) terminal No. 1 and body ground.

GAUGE CONTROL MODULE CONNECTOR B (28P)



Wire side of female terminals

Is there battery voltage?

YES—Substitute a known-good gauge control module, and recheck. If the problem goes away, replace the original gauge control module (see page 22-419). ■

NO—Repair an open in the wire between the No. 21 (10 A) fuse in the driver's under-dash fuse/relay box and the gauge control module. If OK, replace the driver's under-dash fuse/relay box. ■

Adaptive Cruise Control (ACC)

Symptom Troubleshooting (cont'd)

Adaptive cruise control (ACC) indicator (amber) does not go off

1. Check for DTCs with the HDS.

Are any DTCs?

YES—Troubleshoot the indicated DTC(s). ■

NO—Go to step 2.

2. Start the engine, and wait for 2 seconds.

3. Watch the ACC indicator.

Does the ACC indicator go off?

YES—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

NO—Go to step 4.

4. Turn the ignition switch to LOCK (0).

5. Check for ACC system DTCs with the HDS.

Are any DTCs indicated?

YES—Troubleshoot the indicated DTC(s). ■

NO—Go to step 6.

6. Check for PGM-FI system DTCs with the HDS.

Is DTC U0104 indicated?

YES—Go to step 7.

NO—Go to the gauge control module self-diagnostic function (see page 22-396). ■

7. Check for VSA system DTCs with the HDS.

Is DTC 86 indicated?

YES—Go to step 8.

NO—Go to the gauge control module self-diagnostic function (see page 22-396). ■

8. Check for ACC system DTCs with the HDS.

Is DTC 107 indicated?

YES—Do the millimeter wave radar aiming (see page 25-87). ■

NO—Go to step 9.

9. Check for CMBS DTCs with the HDS.

Is DTC 100 indicated?

YES—Troubleshoot the indicated DTC. ■

NO—Go to the ACC system troubleshooting (No DTC indication) (see page 25-74). If OK, replace the ACC unit (see page 25-86). ■



Adaptive cruise control (ACC) activation indicator (green) does not come on

1. Do the gauge control module self-diagnostic function (see page 22-396).

Is the gauge control module OK?

YES—Go to step 2.

NO—Substitute a known-good gauge control module and recheck. If the problem goes away, replace the original gauge control module (see page 22-419). ■

2. Test the ACC switch (see page 25-84).

Is the switch OK?

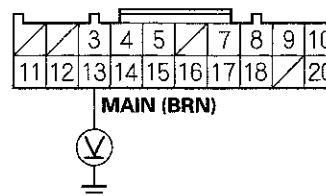
YES—Go to step 3.

NO—Replace the cruise control combination switch (see page 25-85). ■

3. Turn the ignition switch to ON (II).

4. Measure the voltage between the cruise control combination switch 20P connector terminal No. 13 and body ground.

CRUISE CONTROL COMBINATION SWITCH CONNECTOR (20P)



Wire side of female terminals

Is there about 5 V?

YES—Repair an open in the wire between the cruise control combination switch and body ground. ■

NO—Repair an open in the wire between the cruise control combination switch and the gauge control module. ■

Adaptive Cruise Control (ACC)

Symptom Troubleshooting (cont'd)

Adaptive cruise control (ACC) activation indicator (green) does not go off

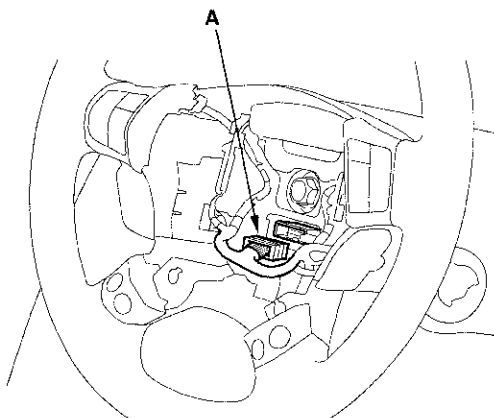
1. Do the gauge control module self-diagnostic function (see page 22-396).

Is the gauge control module OK?

YES—Go to step 2.

NO—Substitute a known-good gauge control module, and recheck. If the problem goes away, replace the original gauge control module (see page 22-419). ■

2. Remove the driver's airbag (see page 24-197).
3. Disconnect the 20P connector (A) from the cable reel.



4. Turn the ignition switch to ON (II).
5. Watch the ACC activation indicator.

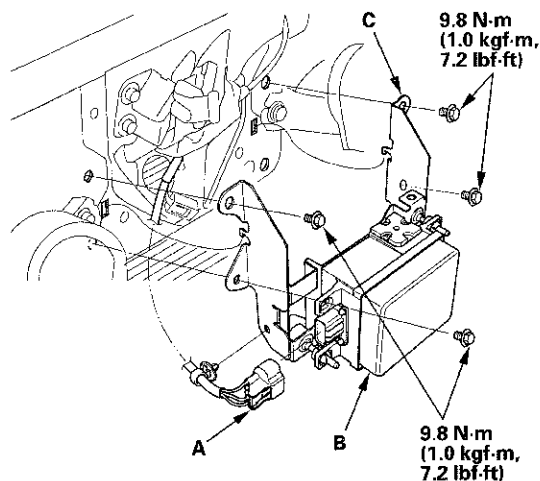
Does the ACC activation indicator go off?

YES—Test the cruise control combination switch (see page 25-84). ■

NO—Repair a short to ground in the wire between the cruise control combination switch and the gauge control module. ■

Millimeter Wave Radar Removal/Installation

1. Remove the upper grille (see page 20-162).
2. Disconnect the millimeter wave radar 5P connector (A) from the millimeter wave radar (B).



3. Remove the bolts and the millimeter wave radar.

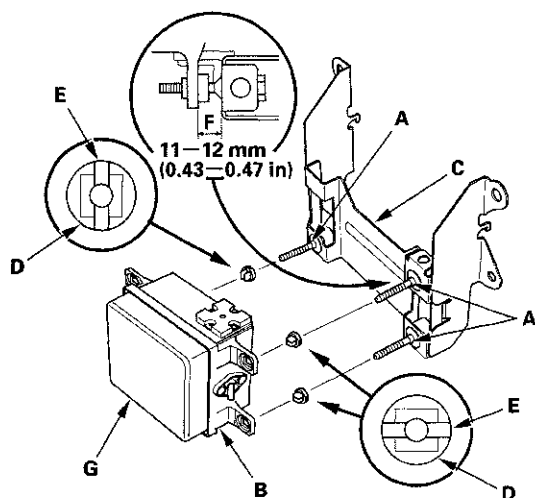
NOTE: Go to step 7 if it is not necessary to disassemble the millimeter wave radar from the main bracket (C).



4. Loosen the aiming bolts (A) a little at a time, and remove the millimeter wave radar (B) from the main bracket (C).

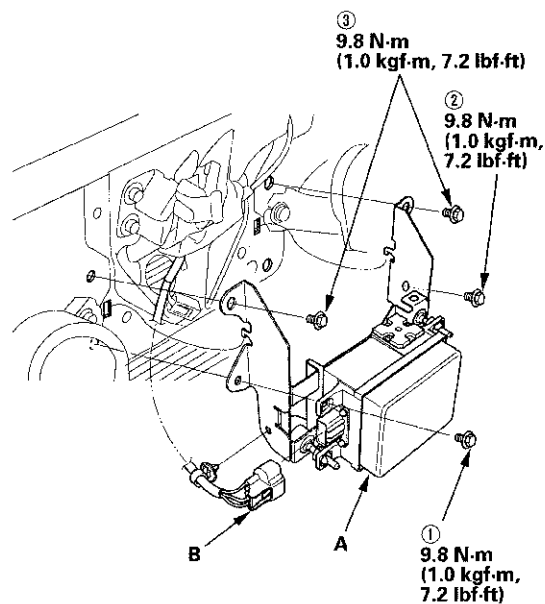
NOTE:

- Do not disassemble the millimeter wave radar.
- If you disassemble the main bracket, always use new screw grommets (D).



5. Install new screw grommets on the millimeter wave radar. Position the left side grommet grooves (E) horizontally, and position the right side grommet groove (E) vertically.
6. Tighten the main bracket bolts a little at a time until the clearance between the millimeter wave radar and the main bracket is 0.43—0.47 in (11—12 mm) (F). Make sure the millimeter wave radar is parallel with the main bracket.
7. Clean the surface of the millimeter wave radar (G).

8. Install the millimeter wave radar (A), then tighten the bolts in the numbered sequence shown.

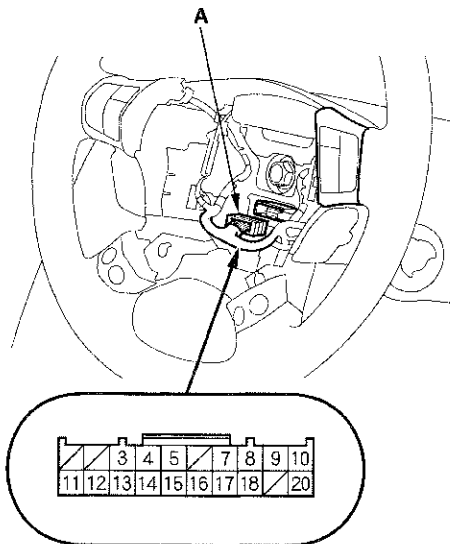


9. Connect the 5P connector (B) to the millimeter wave radar.
10. Install the upper grille (see page 20-162).
11. Do the millimeter wave radar aiming (see page 25-87).

Adaptive Cruise Control (ACC)

Cruise Control Combination Switch Test

- 1. Remove the driver's airbag (see page 24-197).
- 2. Disconnect the 20P connector (A) from the cable reel.



- 3. Check for continuity between the terminals in each switch position according to the table.

Terminal	7	13	14	11	12
Position					
ACC (PRESSED: ON)	○	○			
ACC (RELEASED: OFF)					
Set/decel (PRESSED)			○	○	○
Resume/accel (PRESSED)			○	○	○
Cancel (PRESSED)			○	○	○

- 4. If the continuity is not as specified, replace the cruise control combination switch.

- 5. Use a diode tester between the terminals in each switch position according to the table.

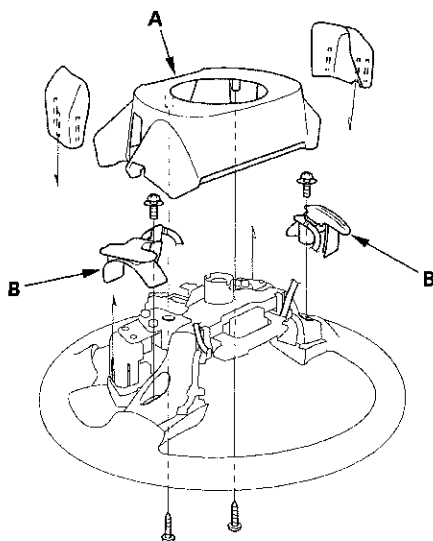
Terminal	9	8
	○	○

- 6. If the diode test is not as specified, replace the cruise control combination switch (see page 25-85).

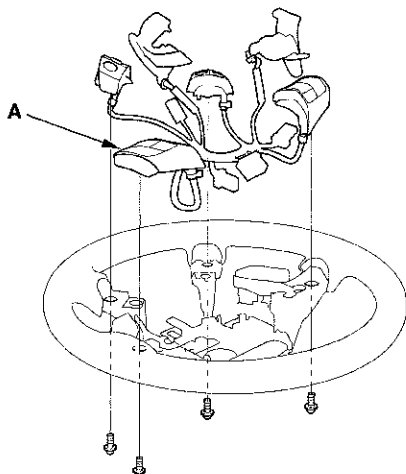


Cruise Control Combination Switch Replacement

1. Remove the steering wheel (see page 17-22).
2. Remove the steering wheel rear cover (A) and the paddle shift switches (B).



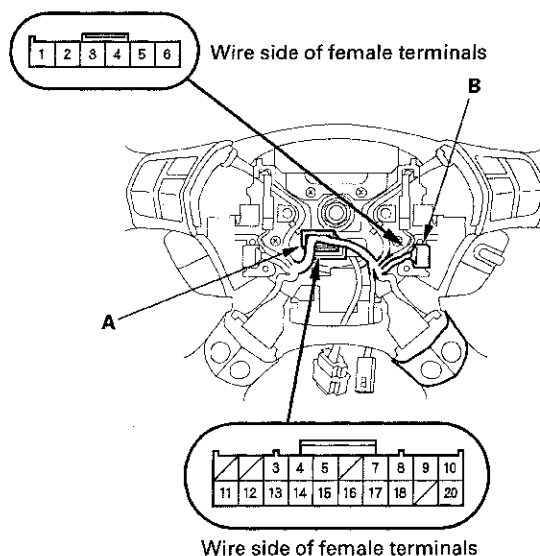
3. Remove the cruise control combination switch assembly (A).



4. Install the parts in the reverse order of removal.

Distance Switch Test

1. Remove the driver's airbag (see page 24-197).
2. Disconnect the 20P connector (A) from the cable reel, and the 6P connector (B) from the multi-information switch.



3. Check for continuity between the 20P connector terminals in each switch position according to the table.

Terminal	5	14
Position		
Distance switch (PRESSED: ON)	○	○
Distance switch (RELEASED: OFF)		

4. If the continuity is not as specified, replace the cruise control combination switch (see page 25-85).

(cont'd)

Adaptive Cruise Control (ACC)

Distance Switch Test (cont'd)

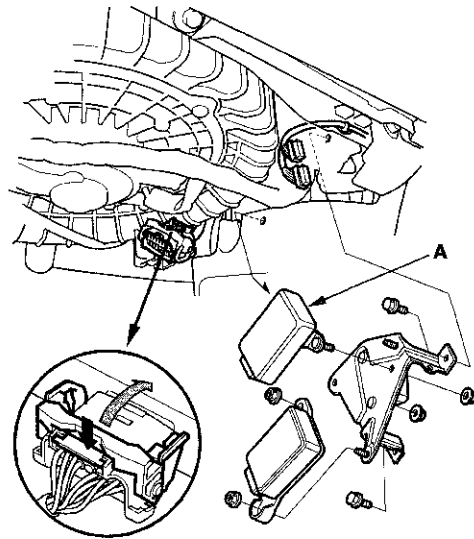
5. Use a diode tester between the 6P connector terminals in each switch position according to the table.

Terminal	3		2
	○	▶ —  — ○	○

6. If the diode test is not as specified, replace the cruise control combination switch (see page 25-85).

Adaptive Cruise Control (ACC) Unit Removal/Installation

1. Remove the glove box (see page 20-103).
2. Remove the passenger's under-dash fuse/relay box (see page 22-89).
3. Remove the bolts from the bracket that holds the HandsFreeLink control unit, the throttle actuator control module, and the ACC unit (A).



4. Disconnect the connectors from the control units.
5. Remove the ACC unit from the bracket.
6. Install the unit in the reverse order of removal.

NOTE: If a new ACC unit is installed, do the CMBS initial check (DTC 100) (see page 25-113).



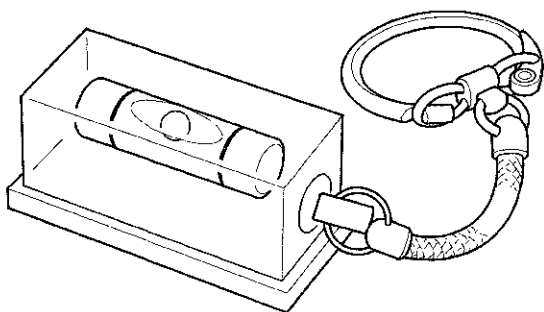
Millimeter Wave Radar Aiming

Special Tools Required

Radar aimer set 070AJ-SDA0101

Prepare the items shown:

- HDS
- Level (commercially available)



- Tape measure and scale
- Felt-tip pen
- Tape

NOTE: If the millimeter wave radar is removed or replaced, or if a millimeter wave radar aiming error occurs, aim the millimeter wave radar. Incomplete aiming, an aiming error, or dust or dirt on the radar surface causes the adaptive cruise control (ACC) indicator to come on.

- Millimeter wave radar aiming incomplete: DTC 107
- Millimeter wave radar aiming error: DTC 63
- Millimeter wave radar or front radar cover surface is contaminated with dust, dirt, ice, or snow: DTC 105

Before Aiming:

- Aiming the millimeter wave radar requires the HDS.
- Clean the surface of the millimeter wave radar.
- Make sure the vehicle has no aftermarket suspension.
- Make sure all the tire sizes are correct and that their pressure are correct.
- Make sure the fuel tank is full.
- Remove all baggage from the vehicle except the spare tire and the tool kit.
- Make sure the steering wheel is straight ahead, and do not turn it after setting the vehicle.
- Shift transmission lever into P, and apply the parking brake.
- Make sure the upper grille and the front bumper are installed correctly.
- Park the vehicle on level ground in a wide open space to avoid misadjustments caused by reflecting objects. The space needs to be 32.8 ft (10 m) in front, 13.1 ft (4 m) in width and 4.9 ft (1.5 m) in height.
- If NO TARGET is not indicated even when there are no objects for 33 ft (10 m) in front vehicle, check for reflecting objects in front of the vehicle.

NOTE: When the millimeter wave radar is adjusted on ground that has more than 1 degree of horizontal slope (drainage slope), the vertical aiming cannot be adjusted correctly. Check the levelness of the ground, and adjust the angle of millimeter wave radar to be parallel to that of the ground, lay a ruler (at least 12") or other flat straight object on the ground and put the level on top to confirm the levelness of the ground.

(cont'd)

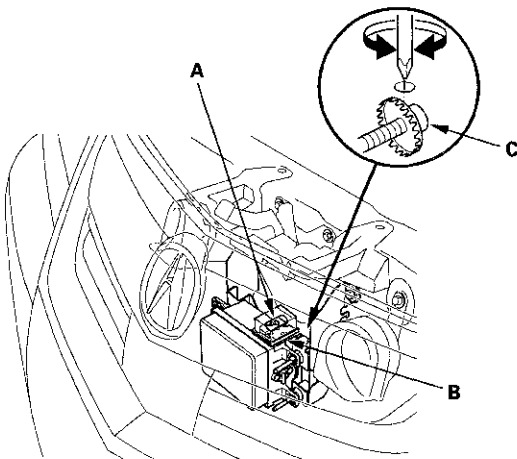
Adaptive Cruise Control (ACC)

Millimeter Wave Radar Aiming (cont'd)

Vertical Aiming

NOTE: When the millimeter wave radar is adjusted on ground that has more than 1 degree of horizontal slope (drainage slope), the vertical aiming cannot be adjusted correctly. Check the levelness of the ground, and adjust the angle of millimeter wave radar to be parallel to that of the ground, lay a ruler (at least 12") or other flat straight object on the ground and put the level on top to confirm the levelness of the ground.

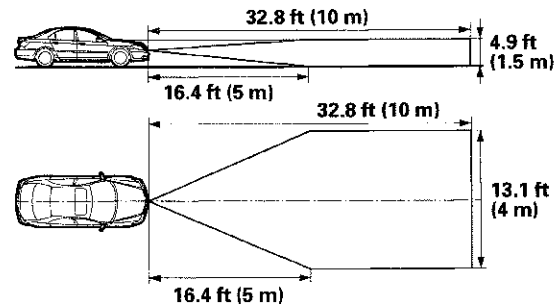
1. Remove the upper grille cover (see page 20-162).
2. Put the level (A) (commercially available) on the aiming pad (B) of the millimeter wave radar.



3. Turn the vertical adjusting bolt (C) on the driver's side with a screwdriver, and adjust the angle of millimeter wave radar so that the air bubble in the level is centered.

Horizontal Aiming

1. Park the vehicle on level ground with at least this much open space around it: 32.8 ft (10 m) in front, 13.1 ft (4 m) in width, and 4.9 ft (1.5 m) in height.



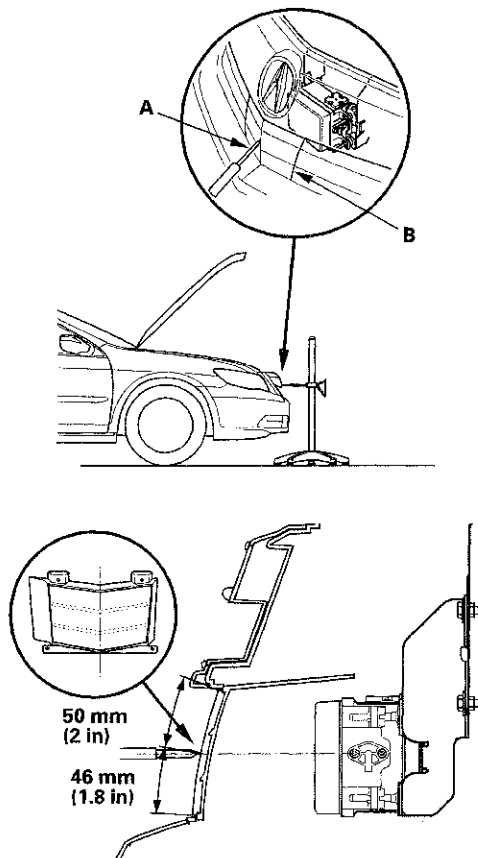
2. Make sure there are no reflecting objects or anything in this range.
3. Check the tire pressures, and adjust the pressures to the specified value if need.
4. Put a person or an object equivalent to the driver's weight in the driver's seat.



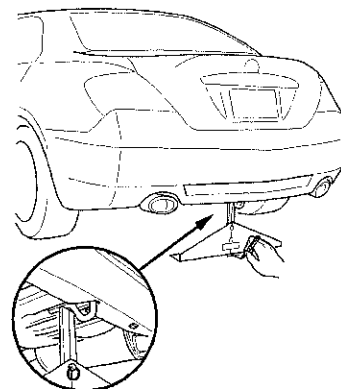
Setting the Distance between the Target and the Vehicle

NOTE: When marking on the floor, use suitable tape to mark the exact locations.

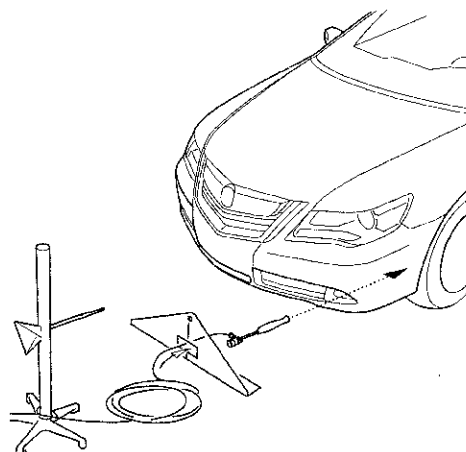
5. Adjust the tip of the height rod (A) on the target to the center of the front radar cover (B).



6. Place the centering stand under the rear tow hook, then mark the floor at the centerline of the tool.



7. At the front of the vehicle, slide the gas strut holder and the cord through the slot in the centering stand, then slide the strut to the rear of the vehicle.

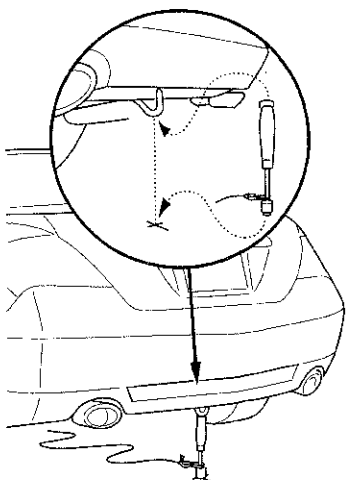


(cont'd)

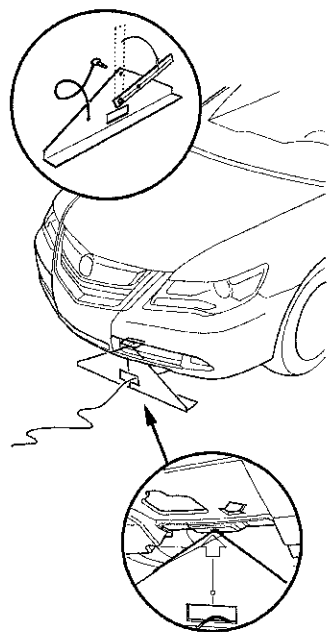
Adaptive Cruise Control (ACC)

Millimeter Wave Radar Aiming (cont'd)

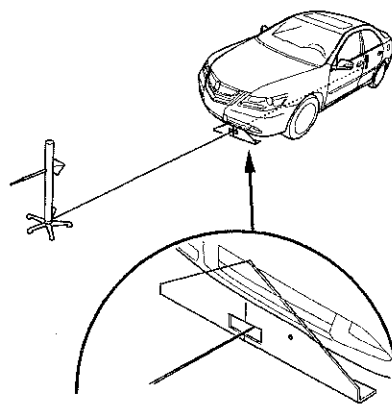
8. Position the gas strut holder between the rear tow hook and the mark on the floor.



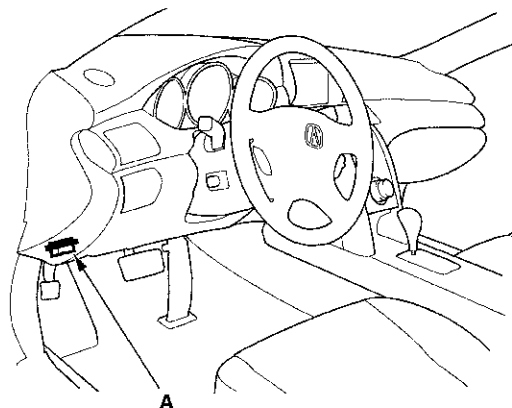
9. Place the centering stand under the hole in the front lift pad.



10. With the target and the height rod aligned with the cord, move the target out in front of the vehicle until the cord is fully extended (16.5 ft, 5 m). Position the cord at the centerline of the centering stand.



11. Contact the HDS to the data link connector (A).





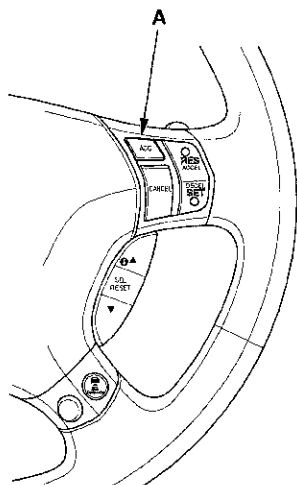
12. Turn the ignition switch to ON (II).

13. Check for DTCs with the HDS.

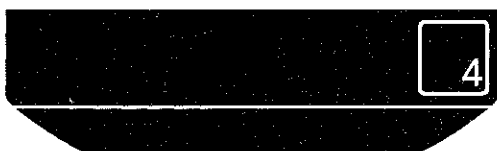
NOTE: If DTC 61 or DTC 62 is indicated, troubleshoot the indicated DTC first.

14. Start the engine.

15. Turn the ACC switch (A) ON.



16. Select ADAPTIVE CRUISE CONTROL (ACC) from DRIVING SUPPORT menu. Select RADAR AIMING from ADJUSTMENT menu, the MID will indicate the number "4" on its display for 2 seconds then display "NO TARGET".



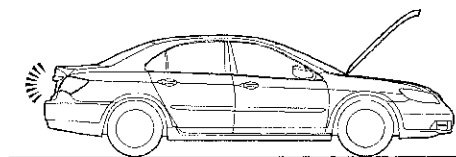
17. Make sure the MID indicates "NO TARGET" on its display.

NOTE: When the radar is aimed correctly the MID indicates "NO TARGET". If this is not indicated there is an unwanted radar reflection in front of the vehicle in the range of the radar.



18. Confirm the result of the horizontal auto aiming following the onscreen instructions of the HDS.

NOTE: The result of all auto aiming can be confirmed by the HDS, by the figure and words displayed on the MID, or by the brake lights illuminating. When the figure is not in the range, 100 ± 2 or a tone is sounded by the vehicle when the aiming point is out of specification, or when the brake lights do not come on, the auto aiming is not completed correctly. If DTC 120, 121, 122, 123, or 124 is indicated, the aiming target is not set correctly. Reset the aiming target.



19. After adjustment, confirm the MID display and the brake lights illuminating, and finalize the horizontal aiming (End the aiming process on the HDS).

20. After aiming, clear the DTCs with the HDS.

(cont'd)

Adaptive Cruise Control (ACC)

Millimeter Wave Radar Aiming (cont'd)

DTCs (if the aiming is incomplete)

NOTE: If the aiming is incomplete, the MID indicates a DTC. The ACC unit does not store the DTC, and you cannot read the DTCs with the HDS, so note the DTC before cycling the ignition key.

DTC indication (on the MID)	Cause	How to solve
DTC 120	Two or more aiming targets exist.	Remove all reflective objects except the correct special tools, and repeat the aiming procedure.
DTC 121	The width of the aiming target is out of specification.	Use the genuine aiming target, and repeat the aiming procedure.
DTC 122	The distance of the aiming target is out of specification.	Set the distance to the aiming target 16.0—16.7 ft (4.9—5.1 m), and repeat the aiming procedure.
DTC 123	The aiming target is moved.	Do the aiming procedure again.
DTC 124	The right and left position of the aiming target is out of specification.	Reset the aiming target at the correct position, and repeat the aiming procedure.

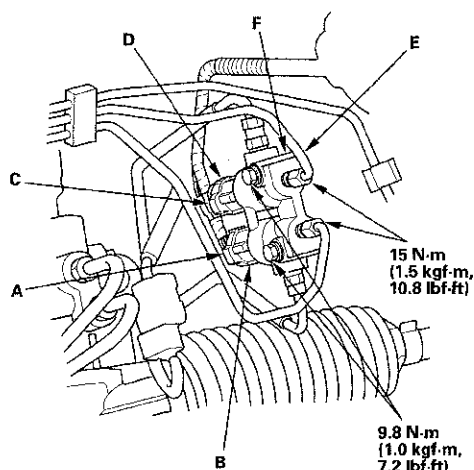


Brake Fluid Pressure Sensor Replacement

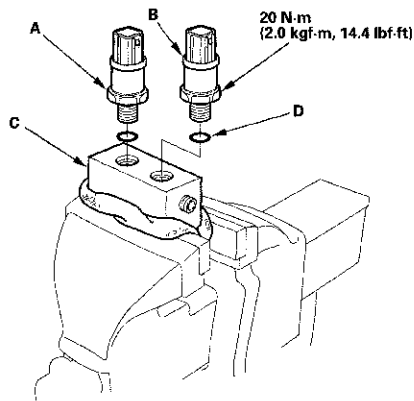
NOTE:

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with rags or shop towels.
- Do not twist the brake hose and line when removed.

1. Drain the brake fluid.
2. Disconnect the 3P connector (BLU) (A) from the right front brake fluid pressure sensor (B).



3. Disconnect the 3P connector (GRY) (C) from the left front brake fluid pressure sensor (D).
4. Remove the brake lines (E) from the 4-way joint (F).
5. Remove the brake 4-way joint.
6. Remove the right (A) and left (B) front brake fluid pressure sensors from the brake 4-way joint (C).



7. Install the parts in the reverse order of removal with new O-rings (D).

NOTE: Make sure the connector colors and pressure sensor locations are correct.

8. After installation, refill the brake fluid, and bleed the brake system (see page 19-9).

9. Do these checks:

- Check the brake hose and line joint for leaks, and tighten if necessary.
- Check the brake hoses for interference and twisting.

10. Connect the HDS to the data link connector.
11. Turn the ignition switch ON (II).
12. Turn the adaptive cruise control (ACC) switch ON.
13. Clear the DTCs with the HDS.
14. Select ADAPTIVE CRUISE CONTROL (ACC) from ACC/CMBS menu, then enter FUNCTION TEST.
15. Activate BRAKE ACTUATOR 3 from the FUNCTION TEST.

NOTE: BRAKE ACTUATOR 3 operates the adaptive cruise control brake in this order (pressurization—stop—pressurization—stop). It takes about 6 seconds.

16. Check for DTCs with the HDS.

- If there is a DTC, go to the indicated DTCs troubleshooting.
- If there is no DTC, the brake fluid pressure sensor replacement is complete.