

2007-08 BRAKES

VSA (Vehicle Stability Assist) System Components - TL

COMPONENT LOCATION INDEX

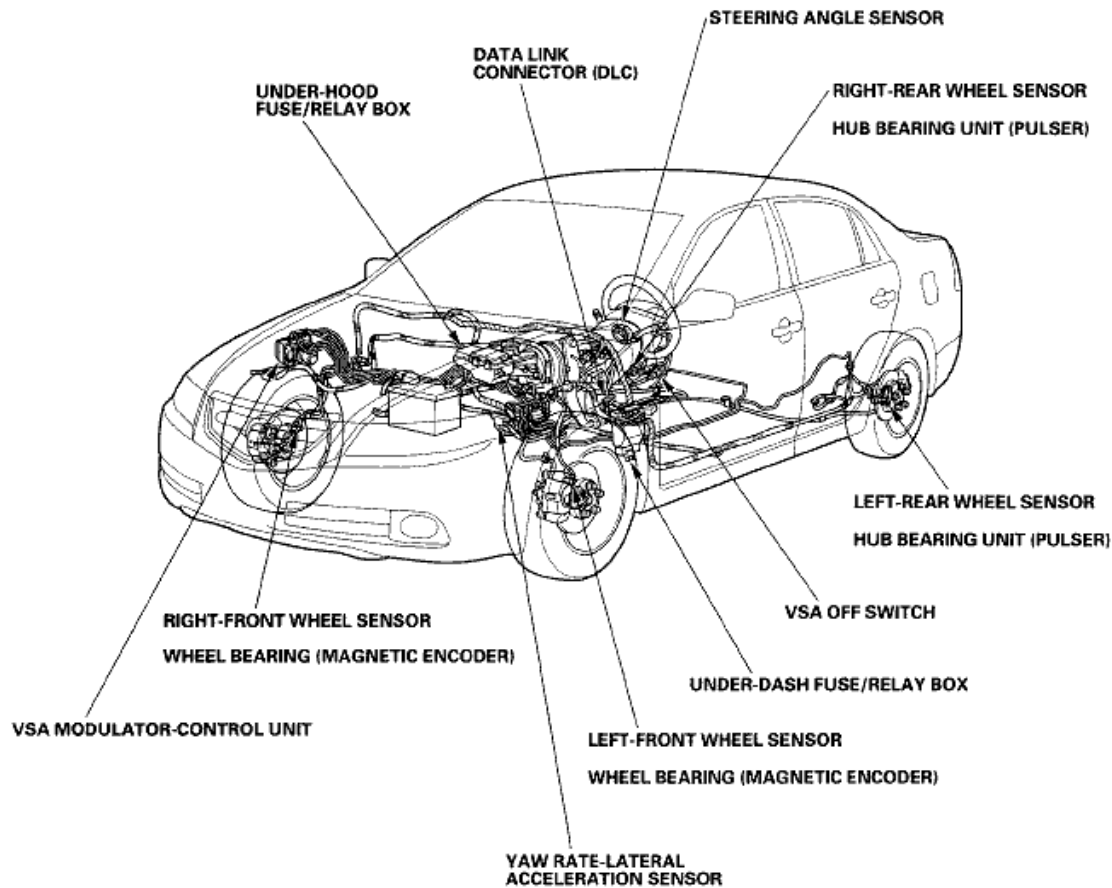


Fig. 1: Identifying VSA System Components Location
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

GENERAL TROUBLESHOOTING INFORMATION

SYSTEM INDICATOR

This system has four indicators:

- ABS indicator (A)
- Brake system indicator (B)
- VSA indicator (C)
- VSA activation indicator (D)

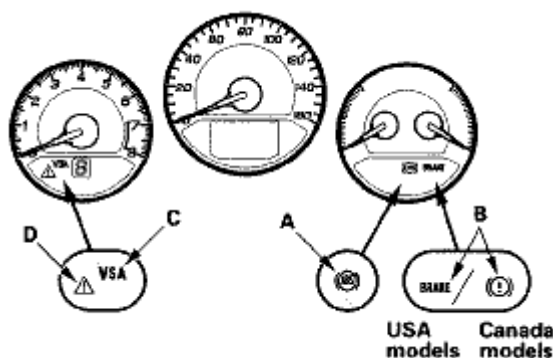


Fig. 2: Identifying ABS Indicator, Brake System Indicator, VSA Indicator And VSA Activation Indicator

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

When the system detects a problem, a DTC will be set and, depending upon the failure, the VSA modulator-control unit will determine which indicator(s) will be turned on. If the problem goes away (system returns to normal), the indicator(s) will be controlled in the following way depending upon the DTC that was set:

- The indicator(s) will come on and stay on when the ignition switch is ON (II).
- The indicator(s) will automatically go off.
- The indicator(s) will go off after the vehicle is driven.

ABS Indicator

The ABS indicator comes on when the ABS function is lost. The brakes still work like a conventional system.

Brake System Indicator

The brake system indicator comes on when the EBD function is lost, the parking brake is applied, and/or the brake fluid level is low.

NOTE: If two or more wheel sensors fail, the brake system indicator will come on.

VSA Indicator

The VSA indicator comes on when the VSA function is lost.

VSA Activation Indicator

The VSA activation indicator blinks when the VSA function is activating. The VSA activation indicator comes on, when the VSA is turned OFF by using the VSA OFF switch, or the VSA function is lost.

DIAGNOSTIC TROUBLE CODE (DTC)

- The memory can hold all DTCs. However, when the same DTC is detected more than once, the more

recent DTC is written over the earlier one. Therefore, when the same problem is detected repeatedly, it is memorized as a single DTC.

- The DTCs are indicated in the order they occur.
- The DTCs are memorized in the EEPROM. Therefore, the memorized DTCs cannot be erased by disconnecting the battery. Do the specified procedures to clear the DTCs.

SELF-DIAGNOSIS

- Self-diagnosis can be classified into two categories:
 - Initial diagnosis: Done right after the ignition switch is turned ON (II) and until the ABS and VSA indicators go off.
 - Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned OFF.
- When the system detects a problem, the VSA modulator-control unit shifts to fail-safe mode.

KICKBACK

The pump motor operates when the VSA modulator-control unit is functioning, and the fluid in the reservoir is forced out to the master cylinder, causing kickback at the brake pedal.

PUMP MOTOR

- The pump motor operates when the VSA modulator-control unit is functioning.
- The VSA modulator-control unit checks the pump motor operation one time after completing initial diagnosis during regular diagnosis when the vehicle is driven over 19 mph (30 km/h). You may hear the motor operate at this time, but it is normal.

BRAKE FLUID REPLACEMENT/AIR BLEEDING

Brake fluid replacement and air bleeding procedures are identical to the procedures used on vehicles without VSA system (see **BRAKE SYSTEM BLEEDING**).

HOW TO TROUBLESHOOT DTCS

The troubleshooting procedures assume that the cause of the problem is still present and the ABS and/or VSA indicator is still on. Following a troubleshooting procedure for a code that has been cleared but does not reset can result in incorrect diagnosis.

1. Question the client about the conditions when the problem occurred, and try to reproduce the same conditions for troubleshooting. Find out when the ABS and/or VSA indicator came on, such as during activation, after activation, when the vehicle was traveling at a certain speed, etc. If necessary, have the client demonstrate the concern.
2. When the ABS or VSA indicator does not come on during the test-drive, but troubleshooting is done based on the DTC, check for loose connectors, poor contact of the terminals, etc. before you start troubleshooting.
3. After troubleshooting, or repairs are done, clear the DTCs, and test-drive the vehicle under the same conditions that originally set the DTCs. Make sure the ABS and VSA indicators do not come on.
4. Check for other system DTCs which are connected via F-CAN, if there are DTCs that are related to F-CAN, the most likely cause was that the ignition switch was turned ON (II) with the VSA modulator-

control unit connector disconnected. Clear the DTCs. Check for PGM-FI and VSA codes, and troubleshoot those first.

INTERMITTENT FAILURES

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the indicator(s) of the system does not come on, check for loose connectors or terminal pins related to the circuit that you are troubleshooting. If the indicators were on, but then went out, the original problem may have been intermittent.

HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)

1. If the system indicators stay on, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

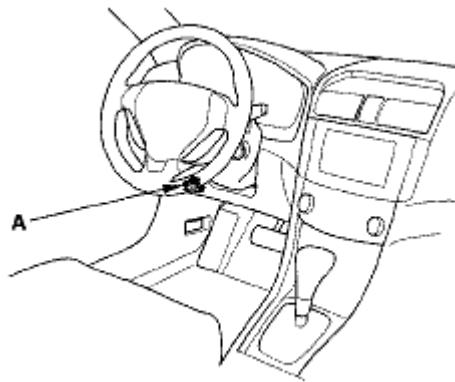


Fig. 3: Identifying Data Link Connector

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING (PART 2)**).
4. Check the diagnostic trouble code (DTC) and note it. Also check the on-board snapshot data, and download any data found. Then refer to the indicated DTC's troubleshooting, and do the appropriate troubleshooting procedure.

NOTE:

- The HDS communication will be stopped when the vehicle speed is at 31 mph (50 km/h) or more.
- The HDS can read the DTC, current data, and other system data.
- For specific operations, refer to the Help menu that came with the HDS.

HOW TO RETRIEVE DTCS

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) under the driver's side of the dashboard.
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't

troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING (PART 2)**).

4. Follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the **DTC TROUBLESHOOTING**.
5. Turn the ignition switch OFF.

HOW TO CLEAR DTCS

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) under the driver's side of the dashboard.
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING (PART 2)**).
4. Clear the DTC(s) by following the screen prompts on the HDS.
5. Turn the ignition switch OFF.

DTC TROUBLESHOOTING INDEX

DTC TROUBLESHOOTING INDEX

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator
11	<u>-13</u>	Right-front wheel sensor circuit malfunction	ON	ON/OFF ⁽¹⁾	ON	ON
12	<u>-11</u>	Right-front wheel sensor electrical noise or intermittent interruption	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-12</u>	Right-front wheel sensor short to the other sensor circuit	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-21</u>	Right-front wheel sensor installation error	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-22</u>	Right-front wheel sensor installation error (19 mph (30 km/h) or more)	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-23</u>	Right-front wheel sensor installation error (0 to 9 mph (0 to 15 km/h))	ON	ON/OFF ⁽¹⁾	ON	ON

13	<u>-13</u>	Left-front wheel sensor circuit malfunction	ON	ON/OFF ⁽¹⁾	ON	ON
14	<u>-11</u>	Left-front wheel sensor electrical noise or intermittent interruption	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-12</u>	Left-front wheel sensor short to the other sensor circuit	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-21</u>	Left-front wheel sensor installation error	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-22</u>	Left-front wheel sensor installation error (19 mph (30 km/h) or more)	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-23</u>	Left-front wheel sensor installation error (0 to 9 mph (0 to 15 km/h))	ON	ON/OFF ⁽¹⁾	ON	ON
15	<u>-13</u>	Right-rear wheel sensor circuit malfunction	ON	ON/OFF ⁽¹⁾	ON	ON
16	<u>-11</u>	Right-rear wheel sensor electrical noise or intermittent interruption	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-12</u>	Right-rear wheel sensor short to the other sensor circuit	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-21</u>	Right-rear wheel sensor installation error	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-22</u>	Right-rear wheel sensor installation error (19 mph (30 km/h) or more)	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-23</u>	Right-rear wheel sensor	ON	ON/OFF ⁽¹⁾	ON	ON

		installation error (0 to 9 mph (0 to 15 km/h))				
17	<u>-13</u>	Left-rear wheel sensor circuit malfunction	ON	ON/OFF ⁽¹⁾	ON	ON
18	<u>-11</u>	Left-rear wheel sensor electrical noise or intermittent interruption	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-12</u>	Left-rear wheel sensor short to the other sensor circuit	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-21</u>	Left-rear wheel sensor installation error	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-22</u>	Left-rear wheel sensor installation error (19 mph (30 km/h) or more)	ON	ON/OFF ⁽¹⁾	ON	ON
	<u>-23</u>	Left-rear wheel sensor installation error (0 to 9 mph (0 to 15 km/h))	ON	ON/OFF ⁽¹⁾	ON	ON
21	<u>-11</u>	Right-front magnetic encoder malfunction (pulse missing)	ON	ON/OFF ⁽¹⁾	ON	ON
22	<u>-11</u>	Left-front magnetic encoder malfunction (pulse missing)	ON	ON/OFF ⁽¹⁾	ON	ON
23	<u>-11</u>	Right-rear pulser malfunction (pulse missing)	ON	ON/OFF ⁽¹⁾	ON	ON
24	<u>-11</u>	Left-rear pulser malfunction (pulse missing)	ON	ON/OFF ⁽¹⁾	ON	ON
25	<u>-11</u>	Yaw rate sensor internal circuit malfunction (initial)	OFF	OFF	ON	ON

	<u>-12</u>	Yaw rate sensor internal circuit malfunction (open, short)	OFF	OFF	ON	ON
	<u>-21</u>	Yaw rate sensor neutral position malfunction	OFF	OFF	ON	ON
	<u>-22</u>	Yaw rate sensor stuck	OFF	OFF	ON	ON
	<u>-23</u>	Yaw rate sensor circuit intermittent interruption	OFF	OFF	ON	ON
	<u>-24</u>	Yaw rate sensor gain low	OFF	OFF	ON	ON
	<u>-25</u>	Yaw rate sensor gain high	OFF	OFF	ON	ON
26	<u>-11</u>	Lateral acceleration sensor internal circuit malfunction (initial)	OFF	OFF	ON	ON
	<u>-12</u>	Lateral acceleration sensor internal circuit malfunction (open, short)	OFF	OFF	ON	ON
	<u>-21</u>	Lateral acceleration sensor neutral position malfunction	OFF	OFF	ON	ON
	<u>-22</u>	Acceleration sensor stuck	OFF	OFF	ON	ON
	<u>-23</u>	Lateral acceleration sensor circuit intermittent interruption	OFF	OFF	ON	ON
	<u>-24</u>	Lateral acceleration sensor gain low	OFF	OFF	ON	ON
	<u>-25</u>	Lateral acceleration sensor gain high	OFF	OFF	ON	ON
27	<u>-11</u>	Steering angle sensor DIAG	OFF	OFF	ON	ON

		signal error (initial)				
	<u>-21</u>	Steering angle sensor stuck neutral position	OFF	OFF	ON	ON
	<u>-22</u>	Steering angle sensor stuck offset position	OFF	OFF	ON	ON
	<u>-23</u>	Steering angle sensor counter malfunction	OFF	OFF	ON	ON
	<u>-24</u>	Steering angle sensor exchange malfunction	OFF	OFF	ON	ON
	<u>-26</u>	Steering angle sensor DIAG signal error (main)	OFF	OFF	ON	ON
31	<u>-01</u>	ABS right-front inlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	<u>-21</u>	ABS right-front inlet solenoid valve malfunction (solenoid pulse)	ON	ON	ON	ON
	<u>-22</u>	ABS right-front inlet solenoid valve malfunction (solenoid speculative)	ON	ON	ON	ON
	<u>-23</u>	ABS right-front inlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
32	<u>-01</u>	ABS right-front outlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	<u>-21</u>	ABS right-front outlet solenoid	ON	ON	ON	ON

		valve malfunction (solenoid pulse)				
	<u>-22</u>	ABS right-front outlet solenoid valve malfunction (solenoid speculative)	ON	ON	ON	ON
	<u>-23</u>	ABS right-front outlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
33	<u>-01</u>	ABS left-front inlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	<u>-21</u>	ABS left-front inlet solenoid valve malfunction (solenoid pulse)	ON	ON	ON	ON
	<u>-22</u>	ABS left-front inlet solenoid valve malfunction (solenoid speculative)	ON	ON	ON	ON
	<u>-23</u>	ABS left-front inlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
34	<u>-01</u>	ABS left-front outlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	<u>-21</u>	ABS left-front outlet solenoid valve malfunction (solenoid pulse)	ON	ON	ON	ON
	<u>-22</u>	ABS left-front	ON	ON	ON	ON

		outlet solenoid valve malfunction (solenoid speculative)				
	<u>-23</u>	ABS left-front outlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
35	<u>-01</u>	ABS right-rear inlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	<u>-21</u>	ABS right-rear inlet solenoid valve malfunction (solenoid pulse)	ON	ON	ON	ON
	<u>-22</u>	ABS right-rear inlet solenoid valve malfunction (solenoid speculative)	ON	ON	ON	ON
	<u>-23</u>	ABS right-rear inlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
36	<u>-01</u>	ABS right-rear outlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	<u>-21</u>	ABS right-rear outlet solenoid valve malfunction (solenoid pulse)	ON	ON	ON	ON
	<u>-22</u>	ABS right-rear outlet solenoid valve malfunction (solenoid	ON	ON	ON	ON

		speculative)				
	<u>-23</u>	ABS right-rear outlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
37	<u>-01</u>	ABS left-rear inlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	<u>-21</u>	ABS left-rear inlet solenoid valve malfunction (solenoid pulse)	ON	ON	ON	ON
	<u>-22</u>	ABS left-rear inlet solenoid valve malfunction (solenoid speculative)	ON	ON	ON	ON
	<u>-23</u>	ABS left-rear inlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
38	<u>-01</u>	ABS left-rear outlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	<u>-21</u>	ABS left-rear outlet solenoid valve malfunction (solenoid pulse)	ON	ON	ON	ON
	<u>-22</u>	ABS left-rear outlet solenoid valve malfunction (solenoid speculative)	ON	ON	ON	ON
	<u>-23</u>	ABS left-rear outlet solenoid valve	ON	ON	ON	ON

		malfunction (solenoid stuck ON)				
41	<u>-21</u>	Right-front wheel lock	ON	ON/OFF ⁽¹⁾	ON	ON
42	<u>-21</u>	Left-front wheel lock	ON	ON/OFF ⁽¹⁾	ON	ON
43	<u>-21</u>	Right-rear wheel lock	ON	ON/OFF ⁽¹⁾	ON	ON
44	<u>-21</u>	Left-rear wheel lock	ON	ON/OFF ⁽¹⁾	ON	ON
51	<u>-11</u>	Motor lock	ON	OFF	ON	ON
	<u>-12</u>	Motor lock circuit malfunction	ON	OFF	ON	ON
	<u>-13</u>	Motor relay OFF malfunction	ON	OFF	ON	ON
52	<u>-12</u>	Motor stuck OFF	ON	OFF	ON	ON
53	<u>-01</u>	Motor relay stuck ON 1	ON	OFF	ON	ON
	<u>-12</u>	Motor relay stuck ON 2	ON	OFF	ON	ON
54	<u>-03</u>	Fail-safe relay 1 stuck ON	ON	ON	ON	ON
	<u>-04</u>	Fail-safe relay 1 stuck OFF (initial)	ON	ON	ON	ON
	<u>-21</u>	Fail-safe relay 1 stuck OFF (main)	ON	ON	ON	ON
56	<u>-01</u>	Initial VIG FET stuck OFF	ON	ON	ON	ON
	<u>-02</u>	Initial VIG FET stuck ON	ON	ON	ON	ON
	<u>-11</u>	VIG FET stuck OFF	ON	ON	ON	ON
61	<u>-01</u>	VSA modulator- control unit initial IG low voltage	ON	ON	ON	ON
	<u>-21</u>	VSA modulator- control unit power source low voltage 1	ON	ON	ON	ON
	<u>-22</u>	VSA modulator- control unit	ON	OFF	ON	ON

		power source low voltage 2				
	<u>-23</u>	VSA modulator- control unit power source low voltage 3	ON	ON	ON	ON
62	<u>-21</u>	VSA modulator- control unit IG high voltage	ON	ON	ON	ON
64	<u>-11</u>	Steering angle sensor power circuit short	OFF	OFF	ON	ON
	<u>-12</u>	Steering angle sensor power circuit open	OFF	OFF	ON	ON
65	<u>-21</u>	Brake fluid level stuck ON	OFF	OFF	ON	ON
66	<u>-11</u>	Pressure sensor (inside of VSA modulator- control unit) malfunction	OFF	OFF	ON	ON
	<u>-12</u>	Pressure sensor (inside of VSA modulator- control unit) malfunction	OFF	OFF	ON	ON
	<u>-13</u>	Pressure sensor (inside of VSA modulator- control unit) malfunction	OFF	OFF	ON	ON
	<u>-14</u>	Pressure sensor (inside of VSA modulator- control unit) malfunction	OFF	OFF	ON	ON
	<u>-15</u>	Pressure sensor (inside of VSA modulator- control unit) malfunction	OFF	OFF	ON	ON
	<u>-16</u>	Pressure sensor (inside of VSA modulator- control unit) malfunction	OFF	OFF	ON	ON
68	<u>-21</u>	Brake pedal position switch	OFF	OFF	ON	ON

71		stuck OFF				
	<u>-22</u>	Brake pedal position switch stuck ON	OFF	OFF	ON	ON
	<u>-21</u>	Right-front or left-rear different diameter tire malfunction	ON	ON	ON	ON
	<u>-22</u>	Left-front or right-rear different diameter tire malfunction	ON	ON	ON	ON
	<u>-23</u>	Right-front and right-rear different diameter tire malfunction	ON	ON	ON	ON
	<u>-24</u>	Left-front and left-rear different diameter tire malfunction	ON	ON	ON	ON
	<u>-25</u>	Right-front and left-front different diameter tire malfunction	ON	ON	ON	ON
	<u>-26</u>	Right-rear and left-rear different diameter tire malfunction	ON	ON	ON	ON
	<u>-27</u>	Right-front or left-rear different diameter tire malfunction	OFF	OFF	ON	ON
	<u>-28</u>	Left-front or right-rear different diameter tire malfunction	OFF	OFF	ON	ON
	<u>-29</u>	Right-front and right-rear different diameter tire malfunction	OFF	OFF	ON	ON

	<u>-2A</u>	Left-front and left-rear different diameter tire malfunction	OFF	OFF	ON	ON
	<u>-2B</u>	Right-front and left-front different diameter tire malfunction	OFF	OFF	ON	ON
	<u>-2C</u>	Right-rear and Left-rear different diameter tire malfunction	OFF	OFF	ON	ON
81	<u>-01</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
	<u>-02</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
	<u>-03</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
	<u>-05</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
	<u>-06</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
	<u>-07</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
	<u>-08</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON

<u>-11</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-12</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-13</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-14</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-21</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-22</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-23</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-31</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-32</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-33</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON

<u>-35</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-36</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-37</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-38</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-39</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-3A</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-3C</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-3D</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-3E</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-40</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON

<u>-41</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-42</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-51</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-52</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-53</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-54</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-55</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-56</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-57</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
<u>-58</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON

	<u>-59</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
	<u>-61</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
	<u>-71</u>	Central processing unit (CPU) internal circuit malfunction	ON	OFF	ON	ON
	<u>-80</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
83	<u>-13</u>	ECM/PCM communication error	OFF	OFF	ON	ON
	<u>-14</u>	ECM/PCM communication error	OFF	OFF	ON	ON
84	<u>-21</u>	VSA sensor neutral position not writing	OFF	OFF	ON	ON
86	<u>-01</u>	F-CAN bus-off malfunction	OFF	OFF	ON	ON
	<u>-11</u>	F-CAN communication with ECM/PCM malfunction	OFF	OFF	ON	ON
	<u>-21</u>	F-CAN communication with engine malfunction	OFF	OFF	ON	ON
	<u>-22</u>	F-CAN communication with engine malfunction	OFF	OFF	ON	ON
	<u>-23</u>	F-CAN communication with engine malfunction	OFF	OFF	ON	ON
	<u>-31</u>	F-CAN communication	OFF	OFF	ON	ON

		with gauge control module malfunction				
	<u>-41</u> ⁽²⁾	F-CAN communication with EAT malfunction	OFF	OFF	ON	ON
107	<u>-22</u>	Central processing unit (CPU) internal circuit malfunction	OFF	OFF	OFF	ON
108	<u>-21</u>	Steering angle sensor malfunction	OFF	OFF	OFF	ON
112	<u>-01</u>	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
121	<u>-01</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
	<u>-02</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
	<u>-11</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
	<u>-21</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
	<u>-24</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
122	<u>-01</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
	<u>-21</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
	<u>-22</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
	<u>-23</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
123	<u>-01</u>	VSA solenoid valve	ON	ON	ON	ON

		malfunction				
	<u>-02</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
	<u>-11</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
	<u>-21</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
	<u>-24</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
124	<u>-01</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
	<u>-21</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
	<u>-22</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
	<u>-23</u>	VSA solenoid valve malfunction	ON	ON	ON	ON
(1) Brake system indicator turns ON when two or more wheel sensors fail. (2) A/T						

SYMPTOM TROUBLESHOOTING INDEX

When the vehicle has one of these symptoms, check for a diagnostic trouble code (DTC) with the HDS. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

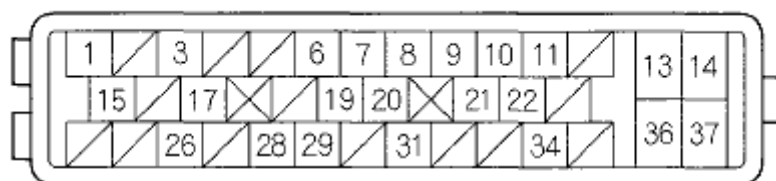
SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure
HDS does not communicate with the VSA modulator-control unit or the vehicle	Troubleshoot the DLC circuit (see <u>DLC CIRCUIT TROUBLESHOOTING (PART 2)</u>).
ABS indicator does not come on	- Do the gauge control module troubleshooting (see <u>SELF-DIAGNOSTIC FUNCTION</u>). - Substitute a known-good VSA modulator-control unit, then recheck. If it is OK, replace the original VSA modulator-control unit (see <u>VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION</u>).
	Symptom Troubleshooting (see <u>ABS INDICATOR OR VSA</u>).

ABS indicator or VSA indicator does not go off, and no DTCs are stored	<u>INDICATOR DOES NOT GO OFF, AND NO DTCS ARE STORED</u>). 2. Do the gauge control module troubleshooting (see <u>SELF-DIAGNOSTIC FUNCTION</u>).
Brake system indicator does not come on	1. Do the gauge control module troubleshooting (see <u>SELF-DIAGNOSTIC FUNCTION</u>). 2. Substitute a known-good VSA modulator-control unit, then recheck. If it is OK, replace the original VSA modulator-control unit (see <u>VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION</u>).
Brake system indicator does not go off, and no DTCs are stored	1. Symptom Troubleshooting (see <u>BRAKE SYSTEM INDICATOR DOES NOT GO OFF, AND NO DTCS ARE STORED</u>). 2. Do the gauge control module troubleshooting (see <u>SELF-DIAGNOSTIC FUNCTION</u>).
VSA indicator does not come on	1. Do the gauge control module troubleshooting (see <u>SELF-DIAGNOSTIC FUNCTION</u>). 2. Substitute a known-good VSA modulator-control unit, then recheck. If it is OK, replace the original VSA modulator-control unit (see <u>VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION</u>).
VSA activation indicator does not come on at start-up (bulb check)	1. Do the gauge control module troubleshooting (see <u>SELF-DIAGNOSTIC FUNCTION</u>). 2. Substitute a known-good VSA modulator-control unit, then recheck. If it is OK, replace the original VSA modulator-control unit (see <u>VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION</u>).
VSA activation indicator does not go off, and no DTCs are stored	1. Symptom Troubleshooting (see <u>VSA ACTIVATION INDICATOR DOES NOT GO OFF, AND NO DTCS ARE STORED</u>). 2. Do the gauge control module troubleshooting (see <u>SELF-DIAGNOSTIC FUNCTION</u>). 3. Substitute a known-good VSA modulator-control unit, then recheck. If it is OK, replace the original VSA modulator-control unit (see <u>VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION</u>).
ABS indicator, brake system indicator, and VSA indicator do not go off at the same time	1. Symptom Troubleshooting (see <u>ABS INDICATOR, BRAKE SYSTEM INDICATOR, AND VSA INDICATOR DO NOT GO OFF AT THE SAME TIME</u>). 2. Do the gauge control module troubleshooting (see <u>SELF-DIAGNOSTIC FUNCTION</u>).

SYSTEM DESCRIPTION

VSA MODULATOR-CONTROL UNIT INPUTS AND OUTPUTS FOR 37P CONNECTOR



Wire side of female terminals

Fig. 4: Identifying VSA Modulator-Control Unit 37P Connector Terminals
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

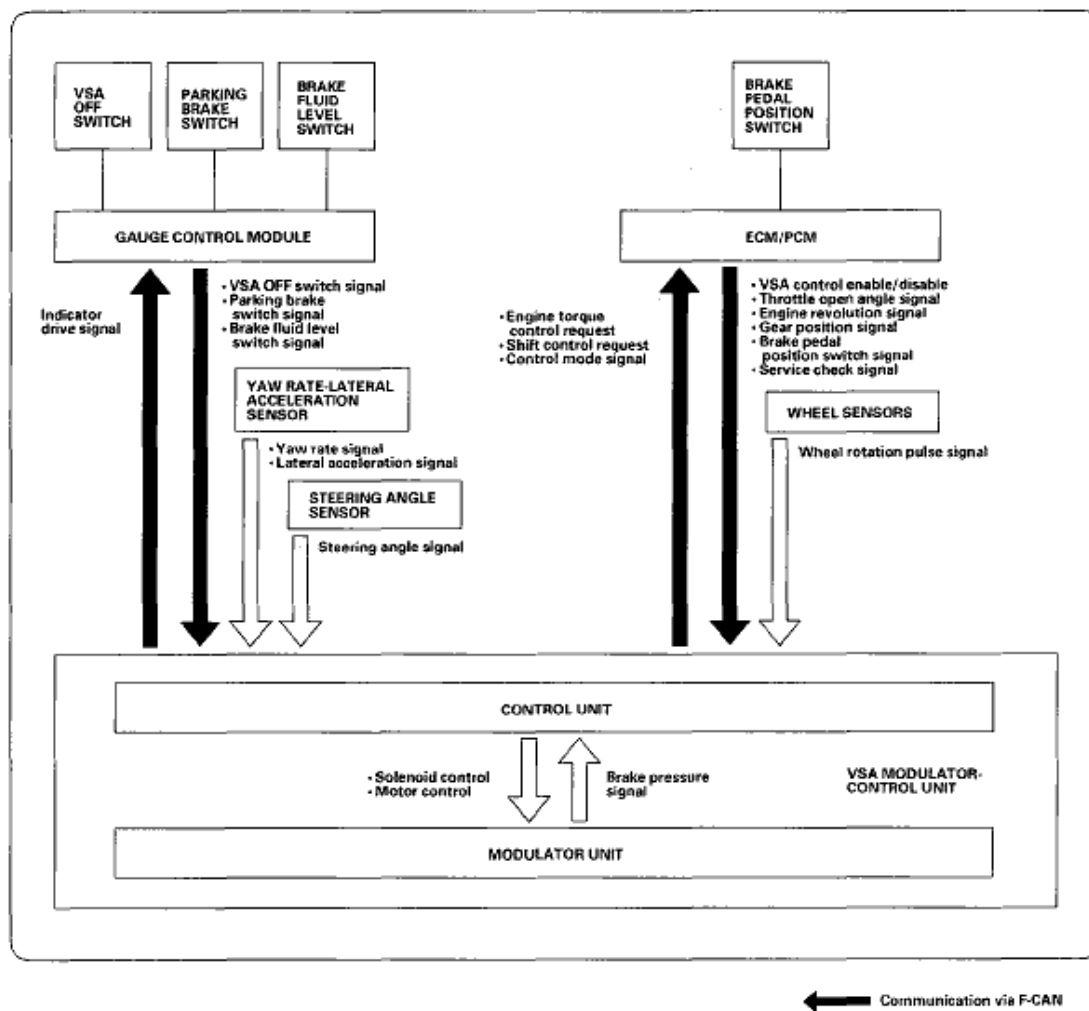
VSA MODULATOR-CONTROL UNIT 37P CONNECTOR TERMINALS REFERENCE

Terminal number	Wire color	Terminal sign	Description	Measurement (Disconnect the VSA modulator-control unit 37P connector)		
				Terminals	Conditions	Results
1	RED	CAN-L	F-CAN communication circuit	-	-	-
3	BLU/ RED	STR-D	Detects steering angle sensor signal	-	-	-
6	BLU	FR-GND	Detects right-front wheel sensor signal	-	-	-
7	RED	SVCC	Power source for the sensors	-	-	-
8	RED	RL-GND	Detects left-rear wheel sensor signal	-	-	-
9	GRN/ YEL	RR+B	Detects right-rear wheel sensor signal	-	-	-
10	YEL/ BLK	SGND	Ground for the sensors	-	-	-
11	BRN/ WHT	FL-GND	Detects left-front wheel sensor signal	-	-	-
13	WHT	FSR+B	Power source for the fail-safe relay	13-GND	At all times	Battery voltage
14	WHT/ RED	MR+B	Power source for the motor relay	14-GND	At all times	Battery voltage
15	WHT	CAN-H	F-CAN communication circuit	-	-	-
17	GRN/ WHT	STR-B	Detects steering angle sensor signal	-	-	-
19	GRN/ BLK	FR+B	Detects right-front wheel sensor signal	-	-	-
20	YEL/ RED	RL+B	Detects right-rear wheel sensor signal	-	-	-
21	BLU/ YEL	RR-GND	Detects right-rear wheel sensor signal	-	-	-
22	BLU/ WHT	FL+B	Detects left-front wheel sensor signal	-	-	-

26	LT BLU	K-LINE	Communication with HDS	-	-	-
28	BLK/ YEL	IG1	Power source for activating the system	28-GND	Ignition switch ON (II)	Battery voltage
29	GRN	GLAT	Detects lateral acceleration sensor signal	-	-	-
31	BLU/ BLK	YAW	Detects yaw rate sensor signal	-	-	-
34	BLU	STR-A	Detects steering angle sensor signal	-	-	-
36	BLK	GND	Ground for the VSA modulator-control unit	36-GND	At all times	Continuity
37	BLK	MR-GND	Ground for the pump motor	37-GND	At all times	Continuity

SYSTEM OUTLINE

This system is composed of the VSA modulator-control unit, the wheel sensors, the steering angle sensor, and the yaw rate-lateral acceleration sensor, and the system indicators in the gauge control module. The VSA modulator-control unit controls the ABS, EBD, TCS, VSA, and brake assist with the brake pressure of each wheel and reduces engine torque.



← Communication via F-CAN

Fig. 5: VSA System Diagram

Courtesy of AMERICAN HONDA MOTOR CO., INC.

ABS FEATURES

Anti-lock control

Without ABS, when the brake pedal is pressed while driving, the wheels sometimes lock before the vehicle comes to a stop. In such an event, the maneuverability of the vehicle is reduced if the front wheels are locked, and the stability of the vehicle is reduced if the rear wheels are locked, creating an extremely unstable condition. With ABS, the system precisely controls the slip rate of the wheels to ensure maximum grip force from the tires, and it thereby ensures maneuverability and stability of the vehicle. The ABS calculates the slip rate of the wheels based on the four wheel speeds, and then it controls the brake fluid pressure to reach the target slip rate.

Grip force of tire and road surface

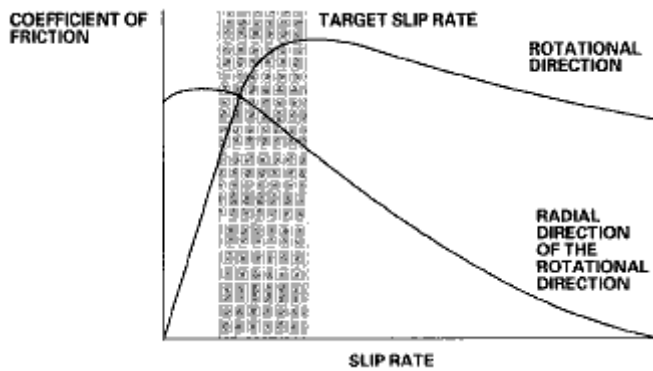


Fig. 6: Grip Force And Slip Rate Graph
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Main Control

The control unit detects the wheel speed based on the wheel sensor signals it received, then it calculates the vehicle speed based on the detected wheel speed. The control unit detects the vehicle speed during deceleration based on the wheel speeds.

The control unit calculates the slip rate of each wheel, and transmits the control signal to the modulator unit solenoid valve when the slip rate is high.

The hydraulic control has three modes: Pressure intensifying, pressure reducing, and pressure retaining.

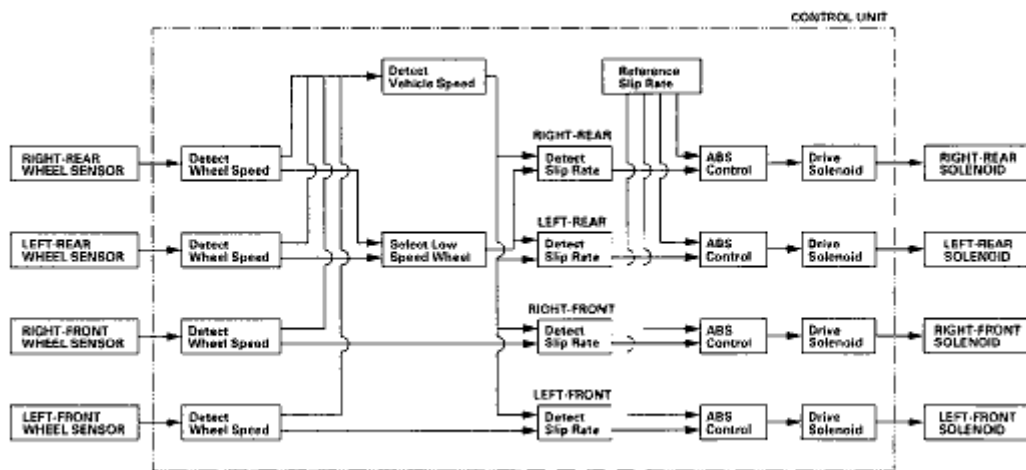


Fig. 7: Control Unit Function Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

EBD FEATURES

The electronic brake distribution (EBD) feature helps control vehicle braking by adjusting the rear brake force in accordance with the rear wheel load before the ABS operates. Based on the wheel sensor signals, the control unit uses the modulator to control the rear brakes individually. When the rear wheel speed is less than the front wheel speed, the VSA modulator-control unit retains the current rear brake fluid pressure by closing the inlet valve in the modulator. As the rear wheel speed increases and approaches the front wheel speed, the VSA modulator-control unit increases the rear brake fluid pressure by momentarily opening the inlet valve. This whole process is repeated very rapidly. While this is happening, kickback may be felt at the

brake pedal.

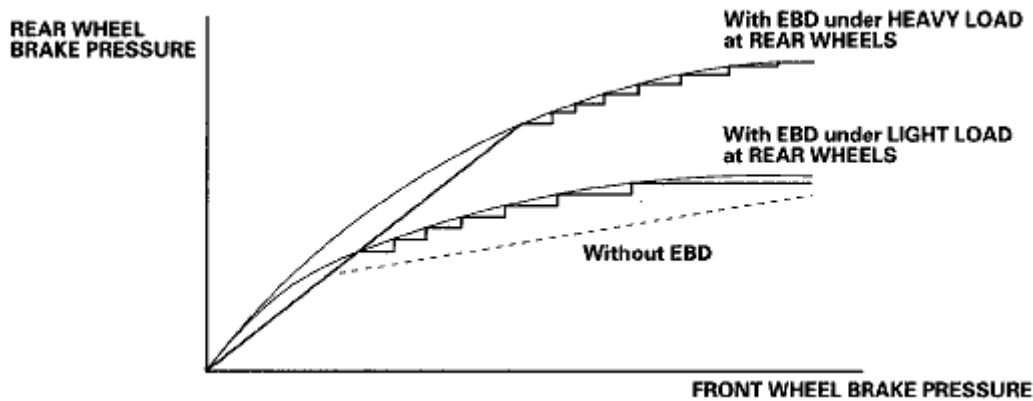


Fig. 8: Rear Wheel Brake Pressure Graph
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

TCS FEATURES

When a drive wheel loses traction on a slippery road surface and starts to spin, the VSA modulator-control unit applies brake pressure to the spinning wheel and sends an engine torque control request to the ECM/PCM to slow the spinning wheel and keep traction.

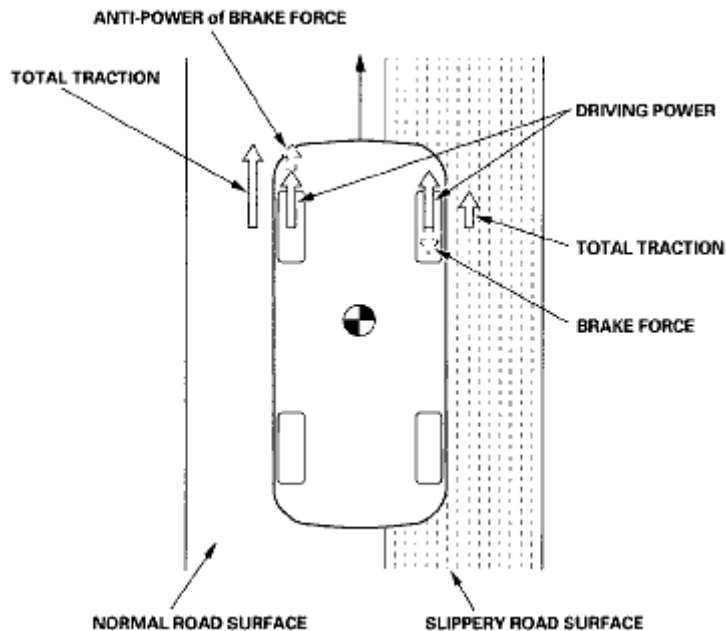


Fig. 9: System Description - TCS Features
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

VSA SYSTEM FEATURES

Oversteer control

Applies the brake to the front outside wheel

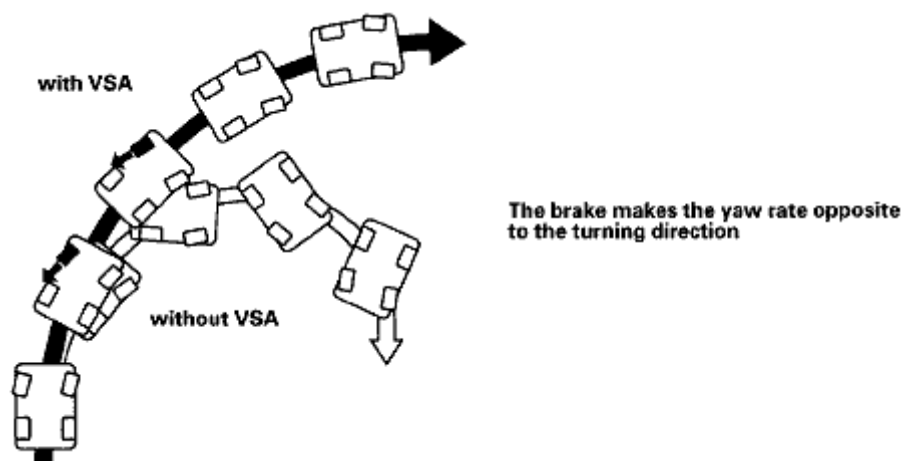


Fig. 10: System Description - VSA System Features (Oversteer Control)
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

Under steer control

- Applies the brake to the rear inside wheel
- Controls the engine torque when accelerating

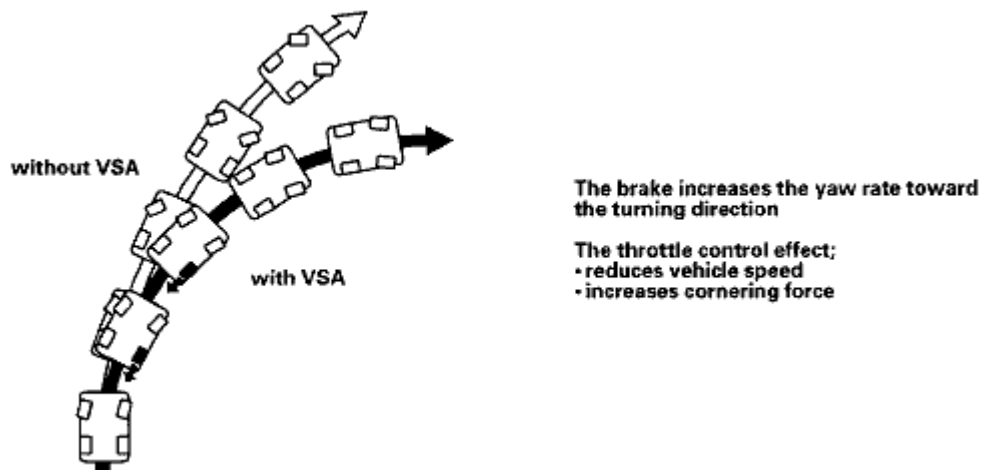


Fig. 11: System Description - VSA System Features (Under Steer Control)
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

BRAKE ASSIST FEATURES

Brake assist helps ensure that any driver can achieve the full braking potential of the vehicle by increasing brake system pressure in a panic situation, bringing the vehicle into a full ABS stop.

If during a panic stop the VSA modulator-control unit determines that the brake system pressure increases above a threshold in less than a certain amount of time, the VSA modulator-control unit engages brake assist.

Because the brake system pressure crossed the pressure threshold before the time threshold had expired, the VSA modulator-control unit goes into brake assist mode.

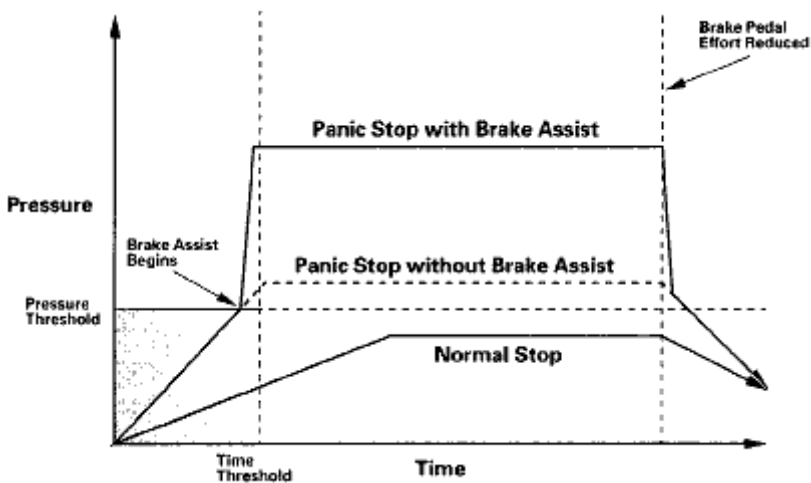


Fig. 12: Brake System Pressure Graph
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MODULATOR UNIT

The modulator unit consists of the inlet solenoid valve, the outlet solenoid valve, the VSA NO (normally open) solenoid valve, the VSA NC (normally closed) solenoid valve, the reservoir, the pump, the pump motor, and the damping chamber.

The hydraulic control has three modes at ABS action; pressure intensifying, pressure retaining, and pressure reducing. Pressure adding mode is combined at TCS, VSA, and brake assist action.

The hydraulic circuit is an independent four channel type; one channel for each wheel.

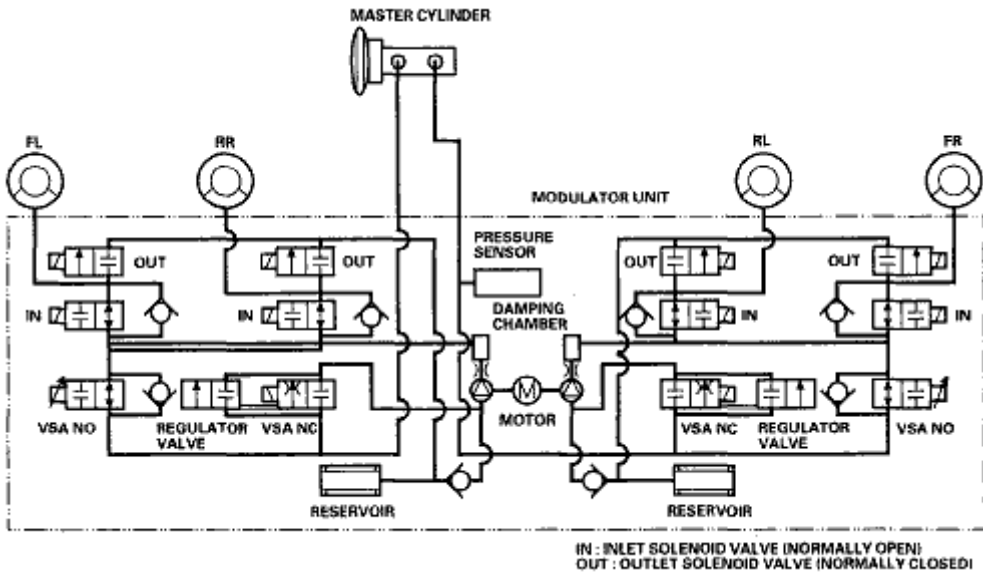


Fig. 13: Modulator Unit Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

HYDRAULIC CONTROL MODES DESCRIPTION CHART

	VSA	VSANC	Inlet	Outlet	
--	-----	-------	-------	--------	--

Mode	NO Valve	Valve	Solenoid Valve	Solenoid Valve	Brake Fluid
Pressure intensifying mode	open	closed	open	closed	Master cylinder fluid is pumped out to the caliper.
Pressure retaining mode	open	closed	closed	closed	Caliper fluid is retained by the inlet and outlet valves.
Pressure reducing mode	open	closed	closed	open	- Caliper fluid flows through the outlet valve to the reservoir. - The motor pumps the reservoir fluid through the damping chamber to the master cylinder (1).
Pressure adding mode	closed	open	open	closed	- Master cylinder fluid is pumped out by pump with the motor through VSA NC valve to the caliper. - Caliper fluid pressure exceed master cylinder pressure.
(1) The motor will continue running until the operation of the one anti-lock brake control is finished with the first pressure reducing mode.					

CIRCUIT DIAGRAM



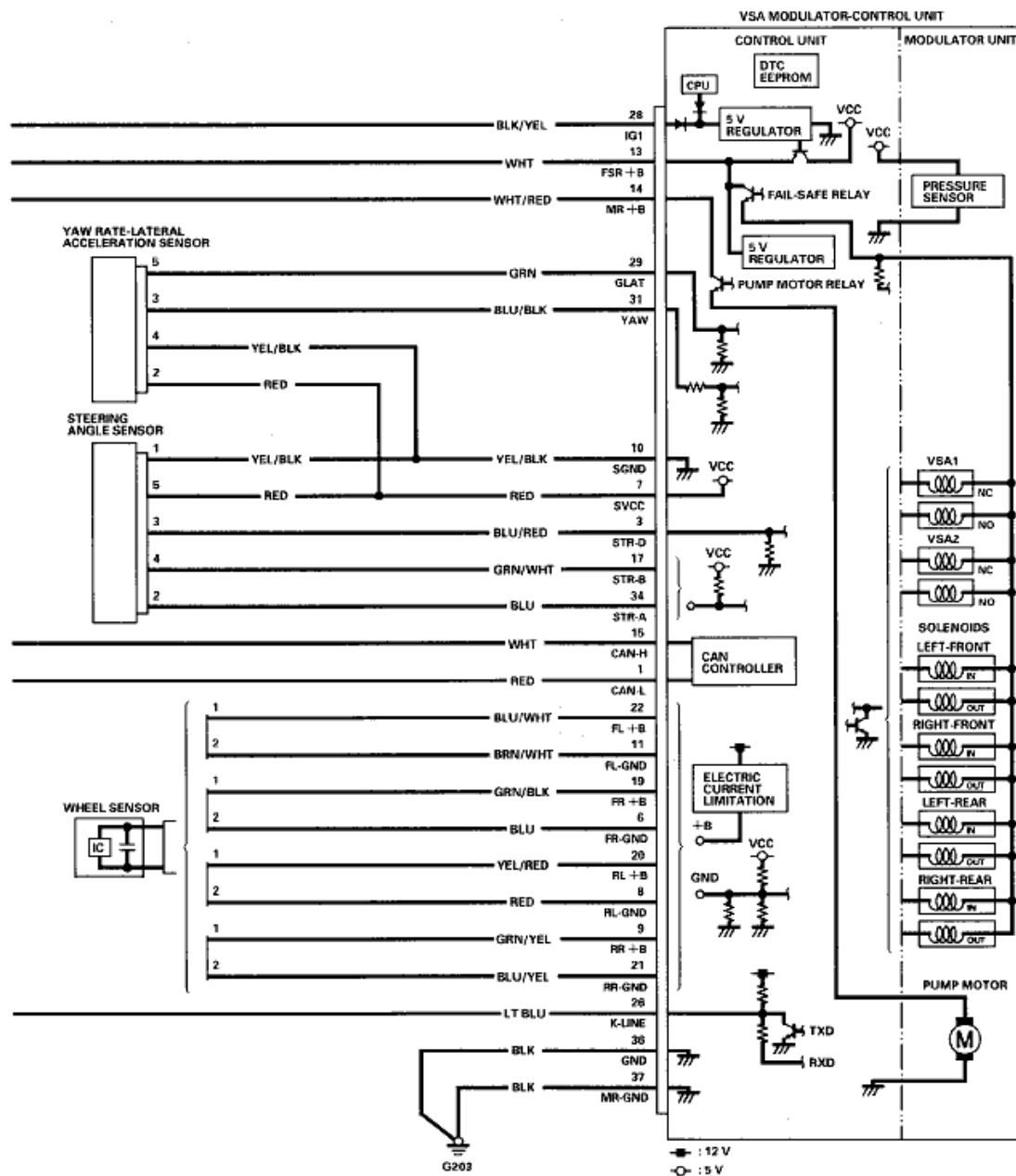
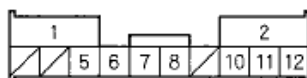
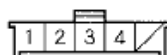
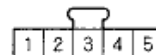
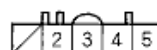
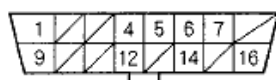


Fig. 15: VSA Modulator-Control Unit Circuit Diagram
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

**UNDER-HOOD FUSE/RELAY BOX
CONNECTOR C (2P)****BRAKE PEDAL POSITION
SWITCH 4P CONNECTOR****BRAKE FLUID LEVEL SWITCH
2P CONNECTOR****PARKING BRAKE SWITCH
1P CONNECTOR****UNDER-DASH FUSE/RELAY BOX
CONNECTOR C (12P)****GAUGE CONTROL MODULE CONNECTOR A (30P)****ECM/PCM CONNECTOR E (31P)****VSA OFF SWITCH
5P CONNECTOR****STEERING ANGLE SENSOR
5P CONNECTOR****VSA MODULATOR-CONTROL UNIT 37P CONNECTOR****YAW RATE-LATERAL
ACCELERATION SENSOR
5P CONNECTOR**

Wire side of female terminals

DATA LINK CONNECTOR (DLC)

Terminal side of female terminals

**WHEEL SENSOR
2P CONNECTOR**

Terminal side of male terminals

Fig. 16: Identifying VSA System Connectors

Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC 11-13: RIGHT-FRONT WHEEL SENSOR CIRCUIT MALFUNCTION; DTC 13-13: LEFT-FRONT WHEEL SENSOR CIRCUIT MALFUNCTION; DTC 15-13: RIGHT-REAR WHEEL SENSOR CIRCUIT MALFUNCTION; DTC 17-13: LEFT-REAR WHEEL SENSOR CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 11-13, 13-13, 15-13, and/or 17-13 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

5. Turn the ignition switch OFF.
6. Disconnect the VSA modulator-control unit 37P connector.
7. Check for continuity between the appropriate VSA modulator-control unit 37P connector wheel sensor +B and GND terminals (see table), then check for continuity between the same terminals and reverse the positive and negative tester probes.

DTC AND TERMINALS REFERENCE

DTC	VSA Modulator-control Unit 37P Connector Terminal No.	
11-13	No. 19	No. 6
13-13	No. 22	No. 11
15-13	No. 9	No. 21
17-13	No. 20	No. 8

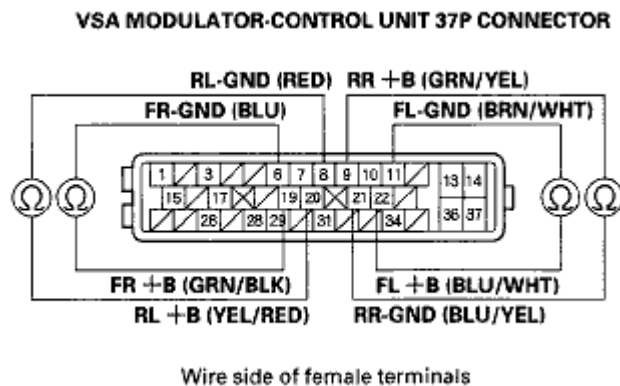


Fig. 17: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Terminals And GND Terminals

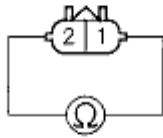
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity in both directions?

YES -Go to step 8.

NO -If there is no continuity in either direction, go to step 10. If there is continuity in only one direction, go to step 12.

8. Disconnect the appropriate wheel sensor 2P connector.
9. On the sensor side, check for continuity between appropriate wheel sensor 2P connector terminals No. 1 and No. 2, then check for continuity between the same terminals and reverse the positive and negative tester probes.

WHEEL SENSOR 2P CONNECTOR

Terminal side of female terminals

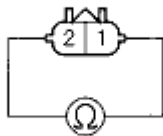
Fig. 18: Checking Continuity Between Wheel Sensor 2P Connector Terminals 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity in both directions?

YES -Replace the appropriate wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

NO -Repair short in the wires between the appropriate wheel sensor and the VSA modulator-control unit.

10. Disconnect the appropriate wheel sensor 2P connector.
11. On the sensor side, check for continuity between appropriate wheel sensor 2P connector terminals No. 1 and No. 2, then check for continuity between the same terminals and reverse the positive and negative tester probes.

WHEEL SENSOR 2P CONNECTOR

Terminal side of female terminals

Fig. 19: Checking Continuity Between Wheel Sensor 2P Connector Terminals 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity in only one direction?

YES -Repair open in the wire between the appropriate wheel sensor and the VSA modulator-control unit.

NO -Replace the appropriate wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

12. Check for continuity between body ground and the appropriate VSA modulator-control unit 37P connector terminal (see table).

DTC AND TERMINALS REFERENCE

--	--

DTC	VSA Modulator-control Unit 37P Connector Terminal No.	
11-13	No. 19	No. 6
13-13	No. 22	No. 11
15-13	No. 9	No. 21
17-13	No. 20	No. 8

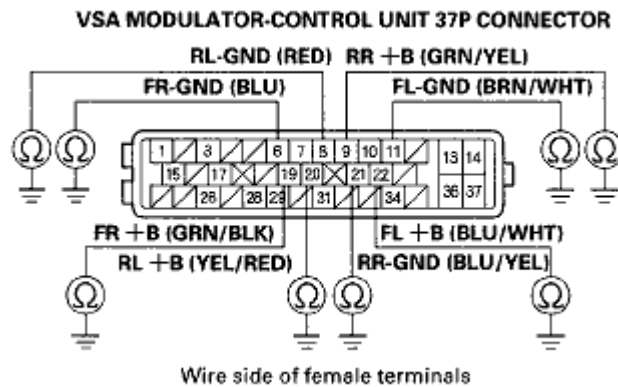


Fig. 20: Checking Continuity Between Body Ground And VSA Modulator-Control Unit 37P Connector Terminals

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

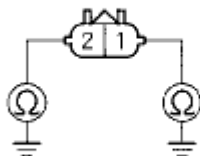
YES -Go to step 13.

NO -Go to step 15.

13. Disconnect the appropriate wheel sensor 2P connector.
14. On the sensor side, check for continuity between body ground and appropriate wheel sensor 2P connector terminal No. 1 and No. 2 individually.

NOTE: Check the wheel sensor while mounted on the vehicle.

WHEEL SENSOR 2P CONNECTOR



Terminal side of female terminals

Fig. 21: Checking Continuity Between Body Ground And Wheel Sensor 2P Connector Terminals 1 And 2

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the appropriate wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

NO -Repair short to body ground in the wire between the appropriate wheel sensor and the VSA modulator-control unit.

- 15. Turn the ignition switch ON (II).
- 16. Measure voltage between body ground and the appropriate VSA modulator-control unit 37P connector terminal (see table).

DTC AND TERMINALS REFERENCE

DTC	VSA Modulator-control Unit 37P Connector Terminal No.	
11-13	No. 19	No. 6
13-13	No. 22	No. 11
15-13	No. 9	No. 21
17-13	No. 20	No. 8

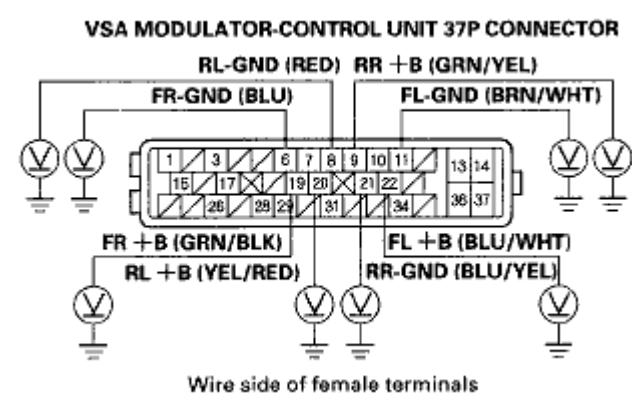


Fig. 22: Measuring Voltage Between Body Ground And VSA Modulator-Control Unit 37P Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or more?

YES -Repair short to power in the wire between the appropriate wheel sensor and the VSA modulator-control unit.

NO -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

DTC 12-11: RIGHT-FRONT WHEEL SENSOR ELECTRICAL NOISE OR INTERMITTENT INTERRUPTION; DTC 14-11: LEFT-FRONT WHEEL SENSOR ELECTRICAL NOISE OR INTERMITTENT INTERRUPTION; DTC 16-11: RIGHT-REAR WHEEL SENSOR ELECTRICAL NOISE OR INTERMITTENT INTERRUPTION; DTC 18-11: LEFT-REAR WHEEL SENSOR ELECTRICAL NOISE OR INTERMITTENT INTERRUPTION

NOTE: These DTCs may be caused by electrical interference. Check for aftermarket devices installed in the vehicle when these DTC are indicated.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.
4. Check for DTCs with the HDS.

Is DTC 12-11, 14-11, 16-11, and/or 18-11 indicated?

YES -If the DTC 12-12,14-12,16-12, or 18-12 is indicated at the same time, do the DTC 12-12, 14-12,16-12, or 18-12 troubleshooting (see **DTC 12-12: RIGHT-FRONT WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT; DTC 14-12: LEFT-FRONT WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT; DTC 16-12: RIGHT-REAR WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT; DTC 18-12: LEFT-REAR WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT**). If DTC 12-12,14-12,16-12 or 18-12 is not indicated, go to step 5.

NO -Troubleshoot the indicated DTC. If there are no DTCs indicated, there may be an intermittent failure; the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

5. Turn the ignition switch OFF.
6. Check that the appropriate wheel sensor/magnetic encoder/pulser is properly mounted and free of metal debris (see **WHEEL SENSOR REPLACEMENT**).

DTC AND WHEEL SENSOR REFERENCE

DTC	Appropriate Wheel Sensor
12-11	Right-front
14-11	Left-front
16-11	Right-rear
18-11	Left-rear

Is the wheel sensor installation OK?

YES -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -Reinstall the wheel sensor, and check the mounting position (see **WHEEL SENSOR REPLACEMENT**).

DTC 12-12: RIGHT-FRONT WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT; DTC 14-12: LEFT-FRONT WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT; DTC 16-12: RIGHT-REAR WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT; DTC 18-12: LEFT-REAR WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle. Drive the vehicle at 13 mph (20 km/h) or more, and go a distance of 328 ft

(100 m) or more.

NOTE: Drive the vehicle on the road, not on the lift.

4. Check for DTCs with the HDS.

Is DTC 12-12, 14-12, 16-12, and/or 18-12 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

5. Turn the ignition switch OFF.
6. Disconnect VSA modulator-control unit 37P connector.
7. Check for continuity between the appropriate VSA modulator-control unit 37P connector wheel sensor +B terminals (see table).

DTC AND TERMINALS REFERENCE

DTC	VSA Modulator-control Unit 37P Connector Terminal No.			
	Appropriate Terminal	Other Terminals		
12-12	No. 19	No. 22	No. 9	No. 20
14-12	No. 22	No. 19	No. 9	No. 20
16-12	No. 9	No. 19	No. 22	No. 20
18-12	No. 20	No. 19	No. 22	No. 9

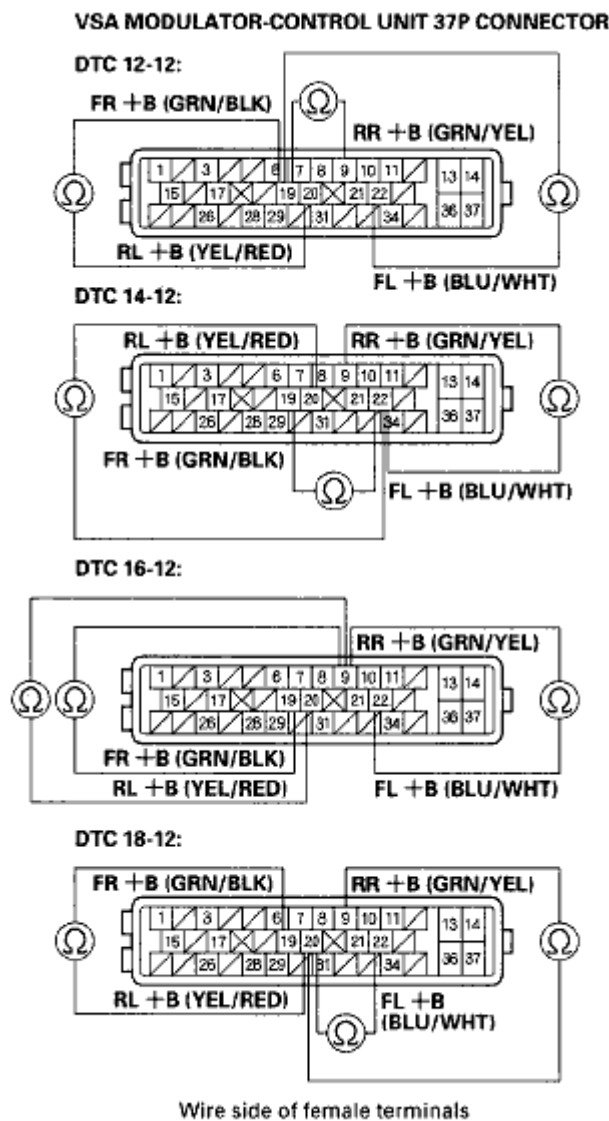


Fig. 23: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Wheel Sensor +B Terminals

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wires between the appropriate wheel sensor and the VSA modulator-control unit.

NO -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

DTC 12-21: RIGHT-FRONT WHEEL SENSOR INSTALLATION ERROR; DTC 14-21: LEFT-FRONT WHEEL SENSOR INSTALLATION ERROR; DTC 16-21: RIGHT-REAR WHEEL SENSOR INSTALLATION ERROR; DTC 18-21: LEFT-REAR WHEEL SENSOR INSTALLATION ERROR

1. Test-drive the vehicle. Drive the vehicle at 7 mph (10 km/h).

NOTE: Drive the vehicle on the road, not on the lift.

2. Check the RF, LF, RR, LR WHEEL SPD in the VSA DATA LIST with the HDS.

Are all four the same indicated value?

YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

NO -Go to step 3.

3. Turn the ignition switch OFF.
4. Check that the appropriate wheel sensor is properly mounted (see **WHEEL SENSOR REPLACEMENT**).

DTC AND WHEEL SENSOR REFERENCE

DTC	Appropriate Wheel Sensor
12-21	Right-front
14-21	Left-front
16-21	Right-rear
18-21	Left-rear

Is the wheel sensor installation OK?

YES -Replace the appropriate wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

NO -Reinstall the wheel sensor, and check the mounting position (see **WHEEL SENSOR REPLACEMENT**).

DTC 12-22: RIGHT-FRONT WHEEL SENSOR INSTALLATION ERROR (19 MPH (30 KM/H) OR MORE); DTC 14-22: LEFT-FRONT WHEEL SENSOR INSTALLATION ERROR (19 MPH (30 KM/H) OR MORE); DTC 16-22: RIGHT-REAR WHEEL SENSOR INSTALLATION ERROR (19 MPH (30 KM/H) OR MORE); DTC 18-22: LEFT-REAR WHEEL SENSOR INSTALLATION ERROR (19 MPH (30 KM/H) OR MORE)

1. Test-drive the vehicle. Drive the vehicle between 19 mph (30 km/h) and 31 mph (50 km/h) for 70 seconds or more.

NOTE: Drive the vehicle on the road, not on the lift.

2. Check the RF, LF, RR, LR WHEEL SPD in the VSA DATA LIST with the HDS.

Are all four the same indicated value?

YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

NO -Go to step 3.

3. Turn the ignition switch OFF.
4. Check that the appropriate wheel sensor is properly mounted (see **WHEEL SENSOR REPLACEMENT**).

DTC AND WHEEL SENSOR REFERENCE

DTC	Appropriate Wheel Sensor
12-22	Right-front
14-22	Left-front
16-22	Right-rear
18-22	Left-rear

Is the wheel sensor installation OK?

YES -Replace the appropriate wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

NO -Reinstall the wheel sensor, and check the mounting position (see **WHEEL SENSOR REPLACEMENT**).

DTC 12-23: RIGHT-FRONT WHEEL SENSOR INSTALLATION ERROR (0 TO 9 MPH (0 TO 15 KM/H)); DTC 14-23: LEFT-FRONT WHEEL SENSOR INSTALLATION ERROR (0 TO 9 MPH (0 TO 15 KM/H)); DTC 16-23: RIGHT-REAR WHEEL SENSOR INSTALLATION ERROR (0 TO 9 MPH (0 TO 15 KM/H)); DTC 18-23: LEFT-REAR WHEEL SENSOR INSTALLATION ERROR (0 TO 9 MPH (0 TO 15 KM/H))

1. Test-drive the vehicle. Drive the vehicle between 1 mph (1 km/h) and 9 mph (15 km/h) in a straight line.

NOTE: Drive the vehicle on the road, not on the lift.

2. Check the RF, LF, RR, LR WHEEL SPD in the VSA DATA LIST with the HDS.

Are all four the same indicated values?

YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

NO -Go to step 3.

3. Turn the ignition switch OFF.
4. Check that the appropriate wheel sensor is properly mounted (see **WHEEL SENSOR REPLACEMENT**).

DTC AND WHEEL SENSOR REFERENCE

DTC	Appropriate Wheel Sensor
12-23	Right-front

14-23	Left-front
16-23	Right-rear
18-23	Left-rear

Is the wheel sensor installation OK?

YES -Replace the appropriate wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

NO -Reinstall the wheel sensor, and check the mounting position (see **WHEEL SENSOR REPLACEMENT**).

DTC 21-11: RIGHT-FRONT MAGNETIC ENCODER MALFUNCTION (PULSE MISSING); DTC 22-11: LEFT-FRONT MAGNETIC ENCODER MALFUNCTION (PULSE MISSING); DTC 23-11: RIGHT-REAR PULSER MALFUNCTION (PULSE MISSING); DTC 24-11: LEFT-REAR PULSER MALFUNCTION (PULSE MISSING)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle. Drive the vehicle at 13 mph (20 km/h) or more, and go a distance of 328 ft (100 m) or more.

NOTE: **Drive the vehicle on the road, not on the lift.**

4. Check for DTCs with the HDS.

Is DTC 21-11 ,22-11, 23-11, and/or 24-11 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

5. Turn the ignition switch OFF.
6. Inspect the appropriate magnetic encoder, or pulser (see table).

DTC AND APPROPRIATE MAGNETIC ENCODER REFERENCE

DTC	Appropriate Magnetic Encoder (Front) or Pulser (Rear)	Note
21-11	Right-front	Remove the driveshaft outboard joint from the wheel hub (see <u>DRIVESHAFT INSPECTION</u>).
22-11	Left-front	
23-11	Right-rear	Remove the hub bearing unit (see <u>HUB REPLACEMENT</u>).
24-11	Left-rear	

Is the magnetic encoder surface, or the pulser gears OK?

YES -Replace the wheel bearing (front) or hub bearing unit (rear):

- Front: Replace the front wheel bearing (see **WHEEL BEARING REPLACEMENT**).
- Rear: Replace the rear hub bearing unit (see **HUB REPLACEMENT**).

NO -Clean off debris from the appropriate magnetic encoder surface on the wheel bearing or the pulser gears on the hub bearing unit, then go to step 1 and recheck. If the DTC is still present, replace the appropriate wheel bearing or hub bearing unit.

DTC 25-11: YAW RATE SENSOR INTERNAL CIRCUIT MALFUNCTION (INITIAL); DTC 25-12: YAW RATE SENSOR INTERNAL CIRCUIT MALFUNCTION (OPEN, SHORT)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

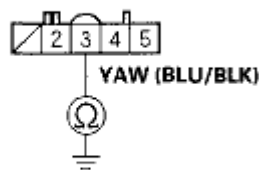
Is DTC 25-11 or 25-12 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals between the yaw rate-lateral acceleration sensor 5P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

5. Turn the ignition switch OFF.
6. Disconnect the yaw rate-lateral acceleration sensor 5P connector.
7. Disconnect the VSA modulator-control unit 37P connector.
8. Check for continuity between body ground and yaw rate-lateral acceleration sensor 5P connector terminal No. 3.

**YAW RATE-LATERAL ACCELERATION
SENSOR 5P CONNECTOR**



Wire side of female terminals

Fig. 24: Checking Continuity Between Body Ground And Yaw Rate-Lateral Acceleration Sensor Connector Terminal 3

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between the yaw rate-lateral acceleration sensor and the VSA modulator-control unit.

NO -Go to step 9.

9. Check for continuity between the VSA modulator-control unit 37P connector terminal and the yaw rate-lateral acceleration sensor 5P connector terminal individually.

SIGN AND TERMINALS REFERENCE

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	Yaw Rate-lateral Acceleration Sensor
SVCC	7	2
SGND	10	4
YAW	31	3

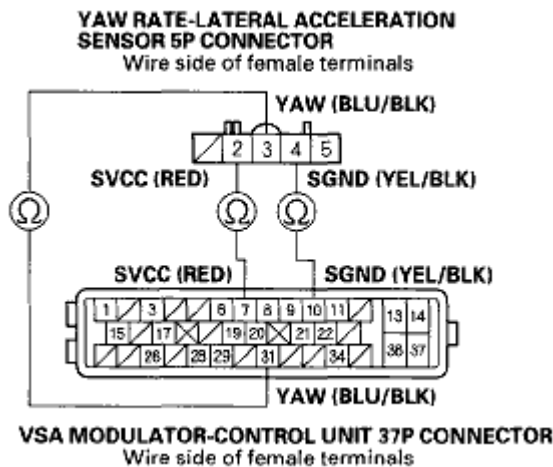


Fig. 25: Checking Continuity Between VSA Modulator-Control Unit And Yaw Rate-Lateral Acceleration Sensor Terminals

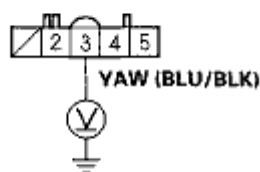
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 10.

NO -Repair open in the wire between the yaw rate-lateral acceleration sensor and the VSA modulator-control unit.

10. Turn the ignition switch ON (II).
11. Measure voltage between yaw rate-lateral acceleration sensor 5P connector terminal No. 3 and body ground.

**YAW RATE-LATERAL ACCELERATION
SENSOR 5P CONNECTOR**

Wire side of female terminals

Fig. 26: Measuring Voltage Between Yaw Rate-Lateral Acceleration Sensor Terminal 3 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or more?

YES -Repair short to power in the wire between the yaw rate-lateral acceleration sensor and the VSA modulator-control unit.

NO -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

DTC 25-21: YAW RATE SENSOR NEUTRAL POSITION MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
4. Turn the ignition switch OFF, then turn it ON (II) again.
5. Check for DTCs with the HDS.

Is DTC 25-21 indicated?

YES -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

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

DTC 25-22: YAW RATE SENSOR STUCK

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
4. Turn the ignition switch OFF.
5. Test-drive the vehicle. Drive the vehicle at 7 mph (10 km/h) or more.
6. Check for DTCs with the HDS.

Is DTC 25-22 indicated?

YES -Go to step 7.

NO -If any DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time.

7. Check the LATERAL ACCELERATION SENSOR and YAW RATE S in the VSA DATA LIST with the HDS.

Is there zero degrees indicated ?

YES -Go to step 8.

NO -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

8. Test-drive the vehicle. Check the YAW RATE S in the VSA DATA LIST with the HDS while driving in corners.

Does the indicated value change?

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

NO -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

DTC 25-23: YAW RATE SENSOR CIRCUIT INTERMITTENT INTERRUPTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
4. Turn the ignition switch OFF, then turn it ON (II) again.
5. Wait 10 seconds or more.
6. Check for DTCs with the HDS.

Is DTC 25-23 indicated?

YES -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

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

DTC 25-24: YAW RATE SENSOR GAIN LOW; DTC 25-25: YAW RATE SENSOR GAIN HIGH; DTC 26-24: LATERAL ACCELERATION SENSOR GAIN LOW; DTC 26-25: LATERAL ACCELERATION SENSOR GAIN HIGH

1. Turn the ignition switch ON (II).

2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
4. Test-drive the vehicle. Drive the vehicle at 10 mph (15 km/h) or more.
5. Check for DTCs with the HDS.

Is DTC 25-24, 25-25, 26-24, or 26-25 indicated?

YES -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

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

DTC 26-11: LATERAL ACCELERATION SENSOR INTERNAL CIRCUIT MALFUNCTION (INITIAL); DTC 26-12: LATERAL ACCELERATION SENSOR INTERNAL CIRCUIT MALFUNCTION (OPEN, SHORT)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

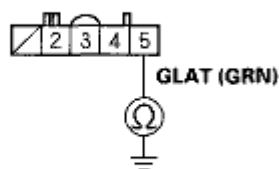
Is DTC 26-11 or 26-12 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals between the yaw rate-lateral acceleration sensor 5P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

5. Turn the ignition switch OFF.
6. Disconnect the yaw rate-lateral acceleration sensor 5P connector.
7. Disconnect the VSA modulator-control unit 37P connector.
8. Check for continuity between body ground and yaw rate-lateral acceleration sensor 5P connector terminal No. 5.

**YAW RATE-LATERAL ACCELERATION
SENSOR 5P CONNECTOR**



Wire side of female terminals

Fig. 27: Checking Continuity Between Body Ground And Yaw Rate-Lateral Acceleration Sensor Terminal 5

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between the yaw rate-lateral acceleration sensor and the VSA modulator-control unit.

NO -Go to step 9.

9. Check for continuity between the VSA modulator-control unit 37P connector terminal and the yaw rate-lateral acceleration sensor 5P connector terminal individually.

SIGN AND TERMINALS REFERENCE

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	Yaw Rate-lateral Acceleration Sensor
SVCC	7	2
SGND	10	4
GLAT	29	5

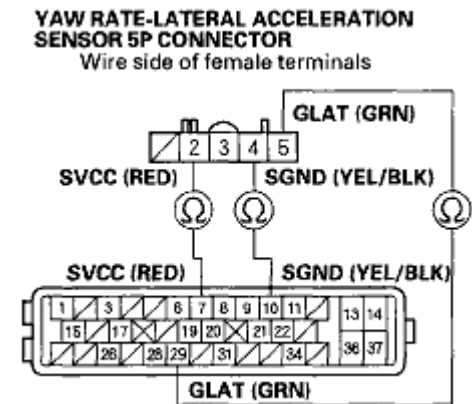


Fig. 28: Checking Continuity Between VSA Modulator-Control Unit And Yaw Rate-Lateral Acceleration Sensor Terminals

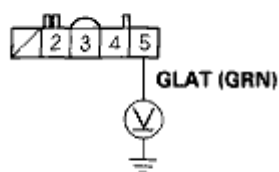
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 10.

NO -Repair open in the wire between the yaw rate-lateral acceleration sensor and the VSA modulator-control unit.

10. Turn the ignition switch ON (II).
11. Measure voltage between yaw rate-lateral acceleration sensor 5P connector terminal No. 5 and body ground.

**YAW RATE-LATERAL ACCELERATION
SENSOR 5P CONNECTOR**

Wire side of female terminals

Fig. 29: Measuring Voltage Between Yaw Rate-Lateral Acceleration Sensor Connector Terminal 5 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or more?

YES -Repair short to power in the wire between the yaw rate-lateral acceleration sensor and the VSA modulator-control unit.

NO -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

**DTC 26-21: LATERAL ACCELERATION SENSOR NEUTRAL POSITION MALFUNCTION;
DTC 26-23: LATERAL ACCELERATION SENSOR CIRCUIT INTERMITTENT INTERRUPTION**

NOTE: While doing this troubleshooting, avoid vibration or shaking of the vehicle.

1. Park the vehicle on a flat and level surface.
2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
5. Turn the ignition switch OFF, then turn it ON (II) again.
6. Wait 15 seconds or more.
7. Check for DTCs with the HDS.

Is DTC 26-21 or 26-23 indicated?

YES -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

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

DTC 26-22: ACCELERATION SENSOR STUCK

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS
3. Turn the ignition switch OFF, then turn it ON (II) again.

4. Check for DTCs with the HDS.

Is DTC 26-22 indicated?

YES -Go to step 5.

NO -If any DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time.

5. Check the LATERAL ACCELERATION SENSOR and YAW RATE S in the VSA DATA LIST with the HDS.

Is there zero degrees indicated?

YES -Go to step 6.

NO -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

6. Test-drive the vehicle. Check the YAW RATE S in the VSA DATA LIST with the HDS while driving in corners.

Does the indicated value change?

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

NO -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

DTC 27-11: STEERING ANGLE SENSOR DIAG SIGNAL ERROR (INITIAL); DTC 27-26: STEERING ANGLE SENSOR DIAG SIGNAL ERROR (MAIN)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 27-11 or 27-26 indicated?

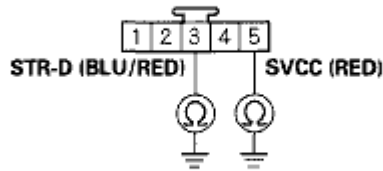
YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals between the steering angle sensor 5P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

5. Turn the ignition switch OFF.
6. Disconnect the steering angle sensor 5P connector.
7. Disconnect the yaw rate-lateral acceleration sensor 5P connector.
8. Disconnect the VSA modulator-control unit 37P connector.

9. Check for continuity between body ground and steering angle sensor 5P connector terminals No. 3 and No. 5 individually.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Fig. 30: Checking Continuity Between Body Ground And Steering Angle Sensor 5P Connector Terminal 3

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between the steering angle sensor and the VSA modulator-control unit.

NO -Go to step 10.

10. Check for continuity between the VSA modulator-control unit 37P connector terminal and the steering angle sensor 5P connector terminal individually.

SIGN AND TERMINALS REFERENCE

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	Steering Angle Sensor
STR-D	3	3
SVCC	7	5
SGND	10	1

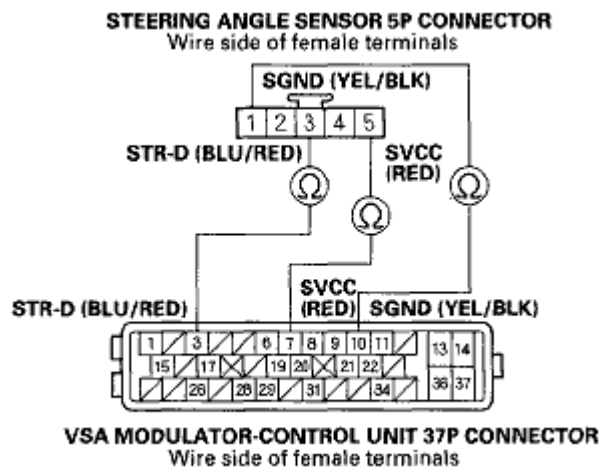
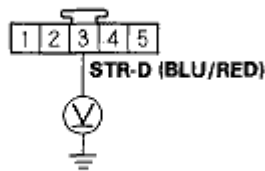


Fig. 31: Checking Continuity Between VSA Modulator-Control Unit And Steering Angle Sensor

Connector Terminals**Courtesy of AMERICAN HONDA MOTOR CO., INC.***Is there continuity?***YES** -Go to step 11.**NO** -Repair open in the wire between the steering angle sensor and the VSA modulator-control unit.

11. Turn the ignition switch ON (II).
12. Measure voltage between steering angle sensor 5P connector terminal No. 3 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR**Wire side of female terminals****Fig. 32: Measuring Voltage Between Steering Angle Sensor 5P Connector Terminal 3 And Body Ground****Courtesy of AMERICAN HONDA MOTOR CO., INC.***Is there 0.1 V or more?***YES** -Repair short to power in the wire between the steering angle sensor and the VSA modulator-control unit.**NO** -Replace the steering angle sensor (see **STEERING ANGLE SENSOR REPLACEMENT**).**DTC 27-21: STEERING ANGLE SENSOR STUCK NEUTRAL POSITION; DTC 27-22: STEERING ANGLE SENSOR STUCK OFFSET POSITION**

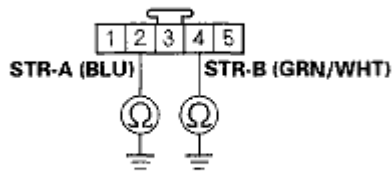
1. Turn the ignition switch ON (II).
2. Turn the steering wheel left and right 90 degrees or more. Check the STEERING ANGLE in the VSA DATA LIST with the HDS.

*Is there +90° or more, and -90° or less?***YES** -Intermittent failure, the system is OK at this time. Check for loose terminals between the steering angle sensor 5P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).**NO** -Go to step 3.

3. Turn the ignition switch OFF.

4. Disconnect the steering angle sensor 5P connector.
5. Disconnect the yaw rate-lateral acceleration sensor 5P connector.
6. Disconnect the VSA modulator-control unit 37P connector.
7. Check for continuity between body ground and steering angle sensor 5P connector terminal No. 2 and No. 4 individually.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Fig. 33: Checking Continuity Between Body Ground And Steering Angle Sensor 5P Connector Terminal 2

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between the steering angle sensor and the VSA modulator-control unit.

NO -Go to step 8.

8. Check for continuity between the VSA modulator-control unit 37P connector terminal and the steering angle sensor 5P connector terminal individually.

SIGN AND TERMINALS REFERENCE

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	Steering Angle Sensor
STR-A	34	2
STR-B	17	4
SVCC	7	5
SGND	10	1

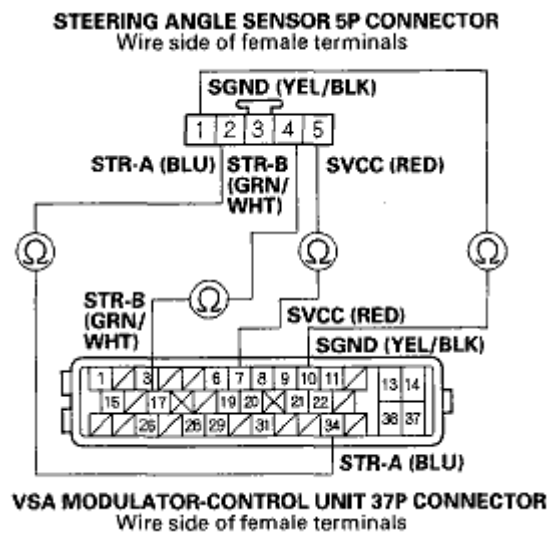


Fig. 34: Checking Continuity Between VSA Modulator-Control Unit And Steering Angle Sensor Connector Terminals

Courtesy of AMERICAN HONDA MOTOR CO., INC.

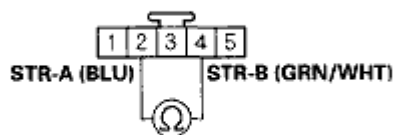
Is there continuity?

YES -Go to step 9.

NO -Repair open in the wire between the steering angle sensor and the VSA modulator-control unit.

9. Check for continuity between steering angle sensor 5P connector terminals No. 2 and No. 4.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Fig. 35: Checking Continuity Between Steering Angle Sensor 5P Connector Terminals No 2 And 4

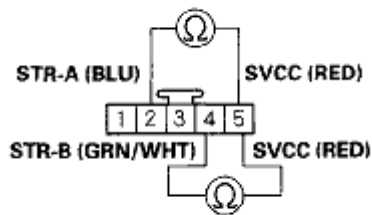
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wires between the steering angle sensor and the VSA modulator-control unit.

NO -Go to step 10.

10. Check for continuity between steering angle sensor 5P connector terminals No. 5 and No. 2, and No. 5 and No. 4 individually.

STEERING ANGLE SENSOR 5P CONNECTOR

Wire side of female terminals

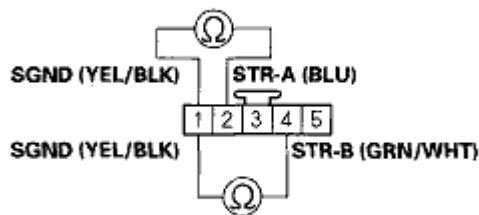
Fig. 36: Checking Continuity Between Steering Angle Sensor 5P Connector Terminals No 5 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wires between the steering angle sensor and the VSA modulator-control unit.

NO -Go to step 11.

11. Check for continuity between steering angle sensor 5P connector terminals No. 1 and No. 2, and No. 1 and No. 4 individually.

STEERING ANGLE SENSOR 5P CONNECTOR

Wire side of female terminals

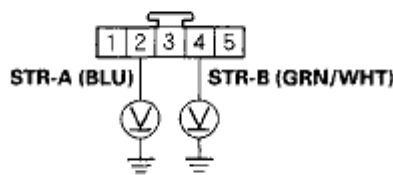
Fig. 37: Checking Continuity Between Steering Angle Sensor 5P Connector Terminals No 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wires between the steering angle sensor and the VSA modulator-control unit.

NO -Go to step 12.

12. Turn the ignition switch ON (II).
13. Measure voltage between body ground and steering angle sensor 5P connector terminals No. 2 and No. 4 individually.

STEERING ANGLE SENSOR 5P CONNECTOR

Wire side of female terminals

Fig. 38: Measuring Voltage Between Body Ground And Steering Angle Sensor 5P Connector Terminals No 2

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or more?

YES -Repair short to power in the wire between the steering angle sensor and the VSA modulator-control unit.

NO -Replace the steering angle sensor (see **STEERING ANGLE SENSOR REPLACEMENT**).

DTC 27-23: STEERING ANGLE SENSOR COUNTER MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Turn the steering wheel from lock to lock.
5. Check for DTCs with the HDS.

Is DTC 27-23 indicated?

YES -Replace the steering angle sensor (see **STEERING ANGLE SENSOR REPLACEMENT**).

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

DTC 27-24: STEERING ANGLE SENSOR EXCHANGE MALFUNCTION

1. Turn the ignition switch ON (II).
2. Turn the steering wheel one complete turn. Check the STEERING ANGLE in the VSA DATA LIST with the HDS.

Is there about 288 - 432°?

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

NO -Replace the steering angle sensor (see **STEERING ANGLE SENSOR REPLACEMENT**).

DTC 31-XX*: ABS RIGHT-FRONT INLET SOLENOID VALVE MALFUNCTION; DTC 32-XX*: ABS RIGHT-FRONT OUTLET SOLENOID VALVE MALFUNCTION; DTC 33-XX*: ABS LEFT-

FRONT INLET SOLENOID VALVE MALFUNCTION; DTC 34-XX*: ABS LEFT-FRONT OUTLET SOLENOID VALVE MALFUNCTION; DTC 35-XX*: ABS RIGHT-REAR INLET SOLENOID VALVE MALFUNCTION; DTC 36-XX*: ABS RIGHT-REAR OUTLET SOLENOID VALVE MALFUNCTION; DTC 37-XX*: ABS LEFT-REAR INLET SOLENOID VALVE MALFUNCTION; DTC 38-XX*: ABS LEFT-REAR OUTLET SOLENOID VALVE MALFUNCTION

* : Any two-character subcode (see table)

SUBCODES AND DTC REFERENCE

Subcode	Malfunction	Note (DTC)
01	Solenoid Initial Pulse	31-01, 32-01, 33-01, 34-01, 35-01, 36-01, 37-01, 38-01
21	Solenoid Pulse	31-21, 32-21, 33-21, 34-21, 35-21, 36-21, 37-21, 38-21
22	Solenoid Speculative	31-22, 32-22, 33-22, 34-22, 35-22, 36-22, 37-22, 38-22
23	Solenoid Stuck ON	31-23, 32-23, 33-23, 34-23, 35-23, 36-23, 37-23, 38-23

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 31-xx, 32-xx, 33-xx, 34-xx, 35-xx, 36-xx, 37-xx, or 38-xx indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

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

DTC 41-21: RIGHT-FRONT WHEEL LOCK; DTC 42-21: LEFT-FRONT WHEEL LOCK; DTC 43-21: RIGHT-REAR WHEEL LOCK; DTC 44-21: LEFT-REAR WHEEL LOCK

The DTCs may be indicated under these conditions:

- The vehicle goes into a spin.
 - The ABS or VSA continues to operate for a long time.
 - Snow build-up on the wheel sensor.
 - Misadjusted brake switch.
 - Contaminated brake fluid.
1. Raise the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
 2. Turn the appropriate wheel by hand.

DTC AND WHEEL SENSOR REFERENCE

DTC	Appropriate Wheel
41-21	Right-front
42-21	Left-front

43-21	Right-rear
44-21	Left-rear

Is there brake drag?

YES -Repair the brake drag.

NO -Go to step 3.

3. Check that the appropriate wheel sensor is properly mounted (see **WHEEL SENSOR REPLACEMENT**).

Is the wheel sensor installation OK?

YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**). If the vehicle continues to code, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Reinstall the wheel sensor, and check the mounting position (see **WHEEL SENSOR REPLACEMENT**).

DTC 51-11: MOTOR LOCK; DTC 51-13: MOTOR RELAY OFF MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Wait 5 seconds.
5. Operate SOLENOID in the VSA FUNCTION TEST five times with the HDS.
6. Check for DTCs with the HDS.

Is DTC 51-11 or 51-13 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

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

DTC 51-12: MOTOR LOCK CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check the DTCs with the HDS.

Is DTC 51-12 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

5. Turn the ignition switch OFF.
6. Check the No. 17 (30 A) fuse in the under-hood fuse/relay box.

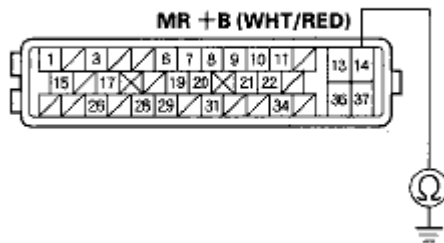
Is the fuse blown?

YES -Go to step 7.

NO -Reinstall the checked fuse, then go to step 9.

7. Disconnect the VSA modulator-control unit 37P connector.
8. Check for continuity between VSA modulator-control unit 37P connector terminal No. 14 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Fig. 39: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Terminal 14 And Body Ground

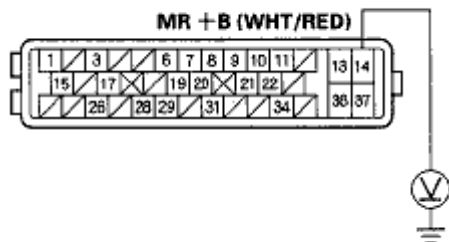
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between the No. 17 (30 A) fuse in the under-hood fuse/relay box and the VSA modulator-control unit.

NO -Install a new No. 17 (30 A) fuse in the under-hood fuse/relay box, then go to step 10.

9. Disconnect the VSA modulator-control unit 37P connector.
10. Measure voltage between VSA modulator-control unit 37P connector terminal No. 14 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR

Wire side of female terminals

Fig. 40: Measuring Voltage Between VSA Modulator-Control Unit 37P Connector Terminal 14 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -Repair open in the wire between the No. 17 (30 A) fuse in the under-hood fuse/relay box and the VSA modulator-control unit.

DTC 52-12: MOTOR STUCK OFF

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Operate each SOLENOID in the VSA FUNCTION TEST five times with the HDS.
5. Check for DTCs with the HDS.

Is DTC 52-12 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

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

DTC 53-01: MOTOR RELAY STUCK ON 1; DTC 53-12: MOTOR RELAY STUCK ON 2

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 53-01 or 53-12 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

5. Turn the ignition switch OFF.
6. Disconnect the VSA modulator-control unit 37P connector.
7. Check for continuity between VSA modulator-control unit 37P connector terminal No. 37 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR

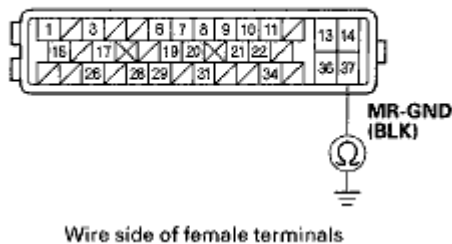


Fig. 41: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Terminal 37 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -Repair open in the wire between the VSA modulator-control unit and body ground (G203).

DTC 54-03: FAIL-SAFE RELAY 1 STUCK ON; DTC 54-04: FAIL-SAFE RELAY 1 STUCK OFF (INITIAL); DTC 54-21: FAIL-SAFE RELAY 1 STUCK OFF (MAIN)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 54-03, 54-04, or 54-21 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

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

DTC 56-01: INITIAL VIG FET STUCK OFF; DTC 56-02: INITIAL VIG FET STUCK ON; DTC 56-11: VIG FET STUCK OFF

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 56-01, 56-02, or 56-11 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

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

DTC 61-01: VSA MODULATOR-CONTROL UNIT INITIAL IG LOW VOLTAGE; DTC 61-21: VSA MODULATOR-CONTROL UNIT POWER SOURCE LOW VOLTAGE 1; DTC 61-22: VSA MODULATOR-CONTROL UNIT POWER SOURCE LOW VOLTAGE 2; DTC 61-23: VSA MODULATOR-CONTROL UNIT POWER SOURCE LOW VOLTAGE 3

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then start the engine.
4. Check for DTCs with the HDS.

Is DTC 61-01, 61-21, 61-22, or 61-23 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

5. Check and note BATTERY voltage in the VSA DATA LIST with the HDS. If the voltage listed is 0 V, go to step 8, otherwise go to step 6.
6. Using a voltmeter, measure and note the voltage between the battery terminals.

NOTE: **If the voltage is below 9.5 V, check the battery (see **BATTERY TEST**), and troubleshoot the alternator regulator circuit (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**).**

7. Compare the voltage noted in step 5 to the voltage in step 6.

Is the difference between the two voltage readings less than 3 V?

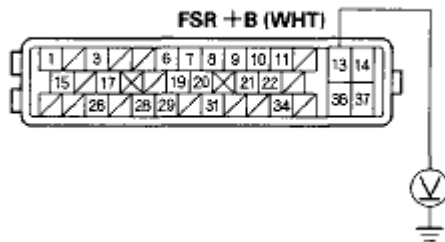
YES -Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**). If the code resets after clearing, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary,

substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

8. Turn the ignition switch OFF.
9. Disconnect the VSA modulator-control unit 37P connector.
10. Measure voltage between VSA modulator-control unit 37P connector terminal No. 13 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Fig. 42: Measuring Voltage Between VSA Modulator-Control Unit 37P Connector Terminal 13 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

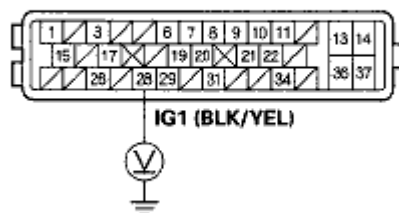
Is there battery voltage?

YES -Go to step 11.

NO -Repair open in the wire between the No. 18 (40 A) fuse in the under-hood fuse/relay box and the VSA modulator-control unit.

11. Turn the ignition switch ON (II).
12. Measure voltage between VSA modulator-control unit 37P connector terminal No. 28 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Fig. 43: Measuring Voltage Between VSA Modulator-Control Unit 37P Connector Terminal 28 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -Repair open in the wire between the No. 18 (15 A) fuse in the under-dash fuse/relay box and the VSA modulator-control unit.

DTC 62-21: VSA MODULATOR-CONTROL UNIT IG HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then start the engine.
4. Check for DTCs with the HDS.

Is DTC 62-21 indicated?

YES -Go to step 5.

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

5. Using a voltmeter, measure the voltage between the battery terminals. Compare the voltage measured at the battery with the voltage shown in the VSA DATA LIST with the HDS.

Is there a voltage difference of 3 V or more?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Check the battery (see **BATTERY TEST**), and troubleshoot the alternator regulator circuit (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**). Also check for loose terminals in the VSA modulator-control unit 37P connector. If it is OK, replace the known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

DTC 64-11: STEERING ANGLE SENSOR POWER CIRCUIT SHORT

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 64-11 indicated?

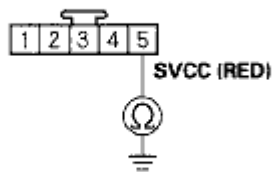
YES -Go to step 5.

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

5. Turn the ignition switch OFF.
6. Disconnect the steering angle sensor 5P connector.

7. Disconnect the yaw rate-lateral acceleration sensor 5P connector.
8. Disconnect the VSA modulator-control unit 37P connector.
9. Check for continuity between steering angle sensor 5P connector terminal No. 5 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Fig. 44: Checking Continuity Between Steering Angle Sensor 5P Connector Terminal 5 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between the steering angle sensor and the VSA modulator-control unit.

NO -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

DTC 64-12: STEERING ANGLE SENSOR POWER CIRCUIT OPEN

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 64-12 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals between the steering angle sensor 5P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

5. Turn the ignition switch OFF.
6. Disconnect the steering angle sensor 5P connector.
7. Disconnect the VSA modulator-control unit 37P connector.
8. Check for continuity between VSA modulator-control unit 37P connector terminal No. 7 and steering angle sensor 5P connector terminal No. 5.

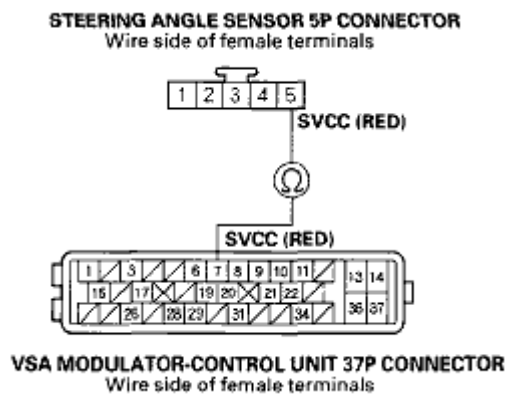


Fig. 45: Checking Continuity Between VSA Modulator-Control Unit Terminal And Steering Angle Sensor Terminal

Courtesy of AMERICAN HONDA MOTOR CO., INC.

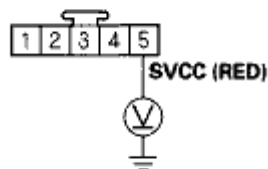
Is there continuity?

YES -Go to step 9.

NO -Repair open in the wire between the steering angle sensor and the VSA modulator-control unit.

9. Disconnect the yaw rate-lateral acceleration sensor 5P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between steering angle sensor 5P connector terminal No. 5 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Fig. 46: Measuring Voltage Between Steering Angle Sensor 5P Connector Terminal 5 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or more?

YES -Repair short to power in the wire between the steering angle sensor and the VSA modulator-control unit.

NO -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 65-21 indicated?

YES -Go to step 5.

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

5. Release the parking brake.
6. Turn the ignition switch OFF, then turn it ON (II) again.
7. Check the brake system indicator in the gauge control module.

Does the indicator come on then go off?

YES -Go to step 8.

NO -Go to step 9.

8. Check the FLUID LEVEL in the VSA DATA LIST with the HDS while moving the brake fluid reservoir tank float.

Does it indicate ON when the float is lowered and OFF when the float is raised?

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

NO -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

9. Check the brake fluid level in the master cylinder reservoir tank.

Is the brake fluid level OK ?

YES -Go to step 10.

NO -Do the brake pad inspection: Front (see **FRONT BRAKE PAD INSPECTION AND REPLACEMENT**), rear (see **REAR BRAKE PAD INSPECTION AND REPLACEMENT**), check for brake fluid leaks or replace worn pads, then go to step 1 and recheck.

10. Check the FLUID LEVEL in the VSA DATA LIST with the HDS while moving the brake fluid reservoir tank float.

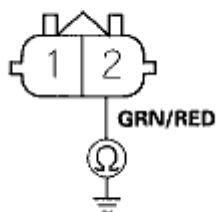
Does it indicate ON when the float is lowered and OFF when the float is raised?

YES -Go to step 11.

NO -Replace the brake fluid reservoir tank (brake fluid level switch is included) (see **MASTER**

CYLINDER INSPECTION).

11. Turn the ignition switch OFF.
12. Disconnect the gauge control module connector A (30P).
13. Disconnect the brake fluid level switch 2P connector.
14. Check for continuity between brake fluid level switch 2P connector terminal No. 2 and body ground.

BRAKE FLUID LEVEL SWITCH 2P CONNECTOR

Wire side of female terminals

Fig. 47: Checking Continuity Between Brake Fluid Level Switch 2P Connector Terminal 2 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between the gauge control module and the brake fluid level switch.

NO -Substitute a known-good gauge control module, then go to step 1 and recheck. If no DTCs are indicated, replace the original gauge control module (see **REWRITING THE ODO DATA ON A NEW GAUGE CONTROL MODULE**).

DTC 66-11: PRESSURE SENSOR (INSIDE OF VSA MODULATOR-CONTROL UNIT) MALFUNCTION; DTC 66-12: PRESSURE SENSOR (INSIDE OF VSA MODULATOR-CONTROL UNIT) MALFUNCTION; DTC 66-13: PRESSURE SENSOR (INSIDE OF VSA MODULATOR-CONTROL UNIT) MALFUNCTION; DTC 66-14: PRESSURE SENSOR (INSIDE OF VSA MODULATOR-CONTROL UNIT) MALFUNCTION; DTC 66-16: PRESSURE SENSOR (INSIDE OF VSA MODULATOR-CONTROL UNIT) MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 66-11, 66-12, 66-13, 66-14, or 66-16 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

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

DTC 66-15: PRESSURE SENSOR (INSIDE OF VSA MODULATOR-CONTROL UNIT) MALFUNCTION

1. Test-drive the vehicle.
2. Turn the ignition switch OFF.
3. Raise the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
4. Turn all four wheels by hand.

Is there brake drag ?

YES -Repair the brake drag.

NO -Go to step 5.

5. Turn the ignition switch ON (II).
6. Check the PRESSURE SWITCH in the VSA DATA LIST with the HDS while moving the brake pedal.

Does the indicated value change?

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

NO -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

DTC 68-21: BRAKE PEDAL POSITION SWITCH STUCK OFF

1. Turn the ignition switch ON (II).
2. Check the BRK PRESS in the VSA DATA LIST with the HDS. Do not press the brake pedal.

Is there 10 MPa or less?

YES -Go to step 3.

NO -Check for brake drag or a misadjusted brake pedal position switch. If they are normal, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

3. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS while moving the brake pedal.

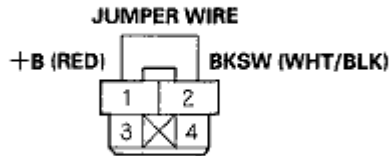
Does it indicate ON when the pedal is pressed, and OFF when the pedal is released?

YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the brake pedal position switch 4P connector, the ECM/PCM connector E (31P), and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

NO -Go to step 4.

4. Turn the ignition switch OFF.
5. Disconnect the brake pedal position switch 4P connector.
6. Connect brake pedal position switch 4P connector terminals No. 1 and No. 2 with a jumper wire.

BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

Fig. 48: Connecting Brake Pedal Position Switch 4P Connector Terminals 1 And 2 With Jumper Wire

Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Turn the ignition switch ON (II).
8. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS.

Does it indicate ON?

YES -Check the brake pedal position switch adjustment (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**). If OK, replace the brake pedal position switch.

NO -Go to step 9.

9. Disconnect the jumper wire.
10. Turn the ignition switch OFF.
11. Short the SCS line with the HDS.
12. Disconnect ECM/PCM connector E (31P).
13. Check for continuity between brake pedal position switch 4P connector terminal No. 2 and ECM/PCM connector E (31P) terminal No. 8.

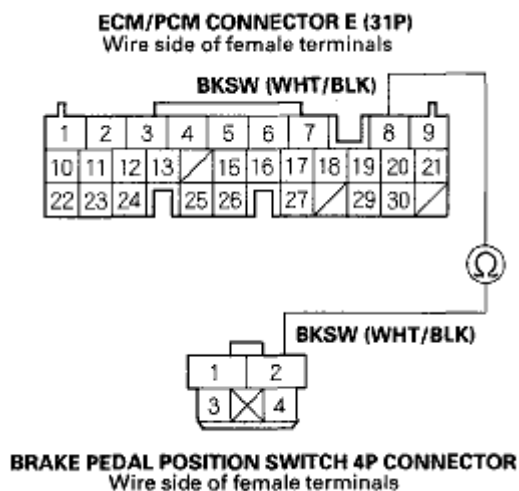


Fig. 49: Checking Continuity Between Brake Pedal Position Switch Terminal 2 And ECM/PCM Terminal 8

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good ECM/PCM, then go to step 1 and recheck. If DTCs are not indicated, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

NO -Repair open in the wire between the ECM/PCM and the brake pedal position switch.

DTC 68-22: BRAKE PEDAL POSITION SWITCH STUCK ON

1. Turn the ignition switch ON (II).
2. Check the BRK PRESS in the VSA DATA LIST with the HDS. Do not press the brake pedal.

Is there 10 MPa or more?

YES -Check the brake pedal height (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**). If the brake pedal height is OK, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Go to step 3.

3. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS while moving the brake pedal.

Does it indicate ON when the pedal is pressed, and OFF when the pedal is released?

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

NO -Go to step 4.

4. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS, and disconnect the brake pedal position switch 4P connector.

Does the indicator change from ON to OFF?

YES -Replace the brake pedal position switch (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).

NO -Go to step 5.

5. Turn the ignition switch OFF.
6. Short the SCS line with the HDS.
7. Disconnect ECM/PCM connector E (31P).
8. Turn the ignition switch ON (II).
9. Measure voltage between brake pedal position switch 4P connector terminal No. 2 and body ground.

BRAKE PEDAL POSITION SWITCH 4P CONNECTOR

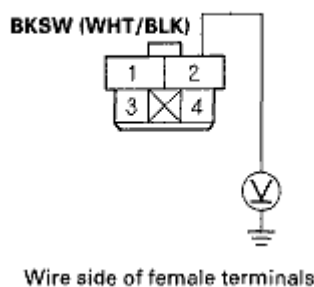


Fig. 50: Measuring Voltage Between Brake Pedal Position Switch 4P Connector Terminal 2 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or more?

YES -Repair short to power in the wire between the ECM/PCM and the brake pedal position switch.

NO -Substitute a known-good ECM/PCM, then go to step 1 and recheck. If DTCs are not indicated, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

**DTC 71-21: RIGHT-FRONT OR LEFT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-22: LEFT-FRONT OR RIGHT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-23: RIGHT-FRONT AND RIGHT-REAR DIFFERENT DIAMETER TIRE
MALFUNCTION; DTC 71-24: LEFT-FRONT AND LEFT-REAR DIFFERENT DIAMETER TIRE
MALFUNCTION; DTC 71-25: RIGHT-FRONT AND LEFT-FRONT DIFFERENT DIAMETER
TIRE MALFUNCTION; DTC 71-26: RIGHT-REAR AND LEFT-REAR DIFFERENT DIAMETER
TIRE MALFUNCTION; DTC 71-27: RIGHT-FRONT OR LEFT-REAR DIFFERENT DIAMETER
TIRE MALFUNCTION; DTC 71-28: LEFT-FRONT OR RIGHT-REAR DIFFERENT DIAMETER
TIRE MALFUNCTION; DTC 71-29: RIGHT-FRONT AND RIGHT-REAR DIFFERENT
DIAMETER TIRE MALFUNCTION; DTC 71-2A: LEFT-FRONT AND LEFT-REAR DIFFERENT
DIAMETER TIRE MALFUNCTION; DTC 71-2B: RIGHT-FRONT AND LEFT-FRONT
DIFFERENT DIAMETER TIRE MALFUNCTION; DTC 71-2C: RIGHT-REAR AND LEFT-REAR
DIFFERENT DIAMETER TIRE MALFUNCTION**

NOTE: The DTC will be indicated when the vehicle has a different diameter tire(s) compared to the other tire(s).

DTC REFERENCE

DTC	Sectional
71-21	Right-front or left-rear
71-22	Left-front or right-rear
71-23	Right-front and right-rear
71-24	Left-front and left-rear
71-25	Right-front and left-front
71-26	Right-rear and left-rear
71-27	Right-front or left-rear
71-28	Left-front or right-rear
71-29	Right-front and right-rear
71-2A	Left-front and left-rear
71-2B	Right-front and left-front
71-2C	Right-rear and left-rear

1. Check the tires for proper inflation (see **WHEEL ALIGNMENT**).
2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Turn the ignition switch OFF.
5. Test-drive the vehicle.
6. Check for DTCs with the HDS.

Is DTC 71-21, 71-22, 71-23, 71-24, 71-25, 71-26, 71-27, 71-28, 71-29, 71-2A, 71-2B, or 71-2C indicated?

YES -Replace tires as needed until all their diameters match (see **WHEEL ALIGNMENT**).

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

DTC 81-XX*: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION

* : Any two-character subcode (except these combinations: DTC 81-11, 81-3D, 81-3E, 81-51, 81-52, 81-53, 81-54, 81-55, 81-56, 81-57, 81-58, and 81-59)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 81-xx indicated?

YES -If the DTC 81-11, 81-3D, 81-3E, 81-51, 81-52, 81-53, 81-54, 81-55, 81-56, 81-57, 81-58, or 81-59 is indicated at the same time, do the DTC 81-11, 81-52, 81-54, 81-56, or 81-58 troubleshooting (see **DTC 81-11: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION**; **DTC 81-52: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION**; **DTC 81-54: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT**

MALFUNCTION; DTC 81-56: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-58: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION), DTC 81-51, 81-53, 81-55, or 81-57 troubleshooting (see **DTC 81-51: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-53: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-55: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-57: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION**), or DTC 81-3D, 81-3E, or 81-59 troubleshooting (see **DTC 81-3D: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-3E: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-59: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION**). If DTC 81-11, 81-3D, 81-3E, 81-51, 81-52, 81-53, 81-54, 81-55, 81-56, 81-57, 81-58, or 81-59 is not indicated. Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

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

DTC 81-11: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-52: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-54: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-56: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-58: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.
4. Check for DTCs with the HDS.

Is DTC 81-11, 81-52, 81-54, 81-56, or 81-58 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

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

DTC 81-51: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-53: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-55: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-57: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.
4. Check for DTCs with the HDS.

Is DTC 81-51, 81-53, 81-55, or 81-57 indicated?

YES -Go to step 5.

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

5. Turn the ignition switch OFF.
6. Disconnect the VSA modulator-control unit 37P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between body ground and the appropriate VSA modulator-control unit 37P connector terminals (see table).

DTC AND TERMINALS REFERENCE

DTC	VSA Modulator-control Unit 37P Connector Terminals No.
81-51	No. 19
81-53	No. 22
81-55	No. 9
81-57	No. 20

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR

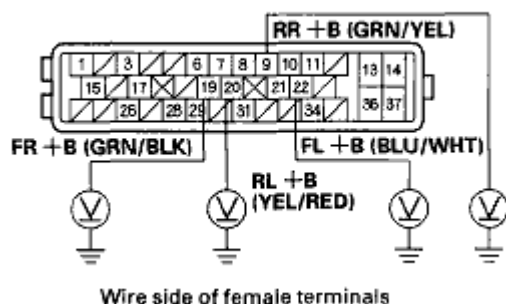


Fig. 51: Measuring Voltage Between Body Ground And VSA Modulator-Control Unit 37P Connector Terminals

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or more?

YES -Repair short to power in the wire between the appropriate wheel sensor and the VSA modulator-control unit.

NO -Replace the VSA modulator-control unit (see VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION).

**DTC 81-3D: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION;
DTC 81-3E: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC
81-59: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Turn the steering wheel from lock to lock.
5. Check for DTCs with the HDS.

Is DTC 81-3D, 81-3E, or 81-59 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

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

DTC 83-13: ECM/PCM COMMUNICATION ERROR; DTC 83-14: ECM/PCM COMMUNICATION ERROR

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.
4. Check for DTCs with the HDS.

Is DTC 83-13 or 83-14 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals between ECM/PCM connector E (31P) and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

5. Turn the ignition switch OFF.
6. Substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
7. Turn the ignition switch ON (II).
8. Clear the DTC with the HDS.
9. Test-drive the vehicle.
10. Check for DTCs with the HDS.

Is DTC 83-13 or 83-14 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

DTC 84-21: VSA SENSOR NEUTRAL POSITION NOT WRITING

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
4. Turn the ignition switch OFF, then turn it ON (II) again.
5. Check for DTCs with the HDS.

Is DTC 84-21 indicated?

YES -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary,

substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -The system is OK at this time.

DTC 86-01: F-CAN BUS-OFF MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 86-01 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals between the ECM/PCM connector E (31P) and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

5. Turn the ignition switch OFF.
6. Short the SCS line with the HDS.
7. Disconnect ECM/PCM connector E (31P).
8. Disconnect the HDS from the data link connector (DLC).
9. Disconnect the VSA modulator-control unit 37P connector, the gauge control module connector A (30P), SRS unit connector A (28P), AcuraLink unit (XM receiver) connector A (20P), TPMS control unit connector B (20P), and the navigation unit connector A (20P), if equipped.
10. Check for continuity between body ground and VSA modulator-control unit 37P connector terminals No. 1 and No. 15 individually.

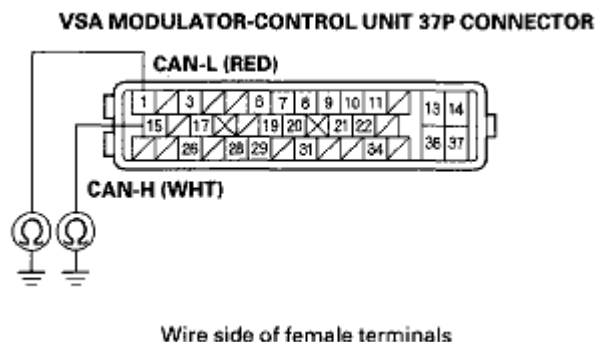


Fig. 52: Checking Continuity Between Body Ground And VSA Modulator-Control Unit 37P Connector Terminals 15

Courtesy of AMERICAN HONDA MOTOR CO., INC.

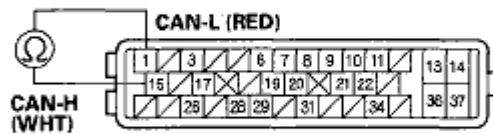
Is there continuity?

YES -Repair short to body ground on the appropriate wire.

NO -Go to step 11.

11. Check for continuity between VSA modulator-control unit 37P connector terminals No. 1 and No. 15.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Fig. 53: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Terminals No 1 And 15

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

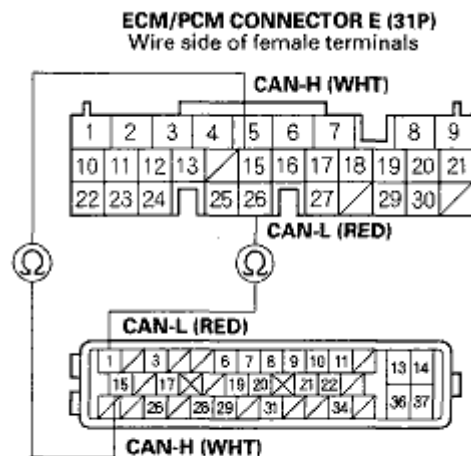
YES -Repair short in the wire between VSA modulator-control unit 37P connector terminals No. 1 (CAN-L line) and No. 15 (CAN-H line).

NO -Go to step 12.

12. Check for continuity between the VSA modulator-control unit 37P connector terminal and ECM/PCM connector E (31P) terminal (see table).

SIGN AND TERMINALS REFERENCE

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	ECM/PCM
CAN-L	1	26
CAN-H	15	15



VSA MODULATOR-CONTROL UNIT 37P CONNECTOR
Wire side of female terminals

Fig. 54: Checking Continuity Between VSA Modulator-Control Unit Terminals And ECM/PCM Terminals**Courtesy of AMERICAN HONDA MOTOR CO., INC.***Is there continuity?*

YES -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -Repair open in the wire between the ECM/PCM and the VSA modulator-control unit.

DTC 86-11: F-CAN COMMUNICATION WITH ECM/PCM MALFUNCTION; DTC 86-21: F-CAN COMMUNICATION WITH ENGINE MALFUNCTION; DTC 86-22: F-CAN COMMUNICATION WITH ENGINE MALFUNCTION; DTC 86-23: F-CAN COMMUNICATION WITH ENGINE MALFUNCTION; DTC 86-41: F-CAN COMMUNICATION WITH EAT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Test-drive the vehicle. Drive the vehicle at 7 mph (10 km/h) or more.
5. Check for DTCs with the HDS.

Is DTC 86-11, 86-21, 86-22, 86-23, and/or 86-41 indicated?

YES -If the DTC 86-01 is indicated at the same time, do the DTC 86-01 troubleshooting (see **DTC 86-01: F-CAN BUS-OFF MALFUNCTION**). If DTC 86-01 is not indicated, go to step 6.

NO -If any DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time. Check for loose terminals between the ECM/PCM connector E (31P) and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

6. Turn the ignition switch OFF.
7. Short the SCS line with the HDS.
8. Disconnect ECM/PCM connector E (31P).
9. Disconnect the VSA modulator-control unit 37P connector.
10. Check for continuity between the VSA modulator-control unit 37P connector terminal and ECM/PCM connector E (31P) terminal (see table).

SIGN AND TERMINALS REFERENCE

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	ECM/PCM
CAN-L	1	26
CAN-H	15	15

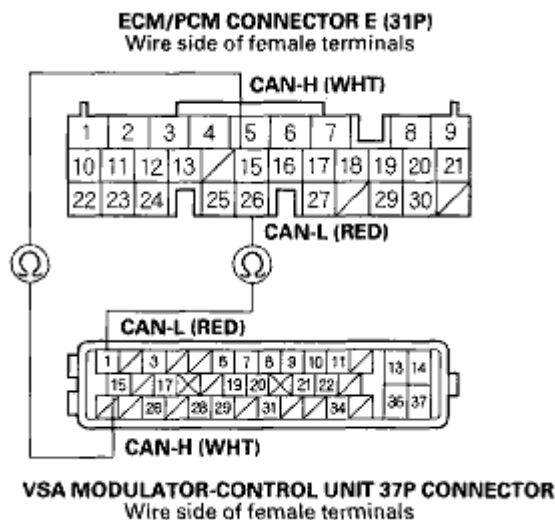


Fig. 55: Checking Continuity Between VSA Modulator-Control Unit Terminals And ECM/PCM Connector Terminals

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Check for loose terminals in the ECM/PCM connector E (31P) and the VSA modulator-control unit 37P connector. If necessary, substitute a known-good ECM/PCM, then go to step 1 and recheck. If no DTCs are indicated, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If DTCs are indicated, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Repair open in the wire between the ECM/PCM and the VSA modulator-control unit.

DTC 86-31: F-CAN COMMUNICATION WITH GAUGE CONTROL MODULE MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 86-31 indicated?

YES -If the DTC 86-01 is indicated at the same time, do the DTC 86-01 troubleshooting (see **DTC 86-01: F-CAN BUS-OFF MALFUNCTION**). If DTC 86-01 is not indicated, go to step 5.

NO -If any DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time. Check for loose terminals between the gauge control module A (30P) connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

5. Turn the ignition switch ON (II).

Do the gauge indicators come on?

YES -Go to step 6.

NO -Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**).

6. Turn the ignition switch OFF.
7. Disconnect the gauge control module connector A (30P).
8. Disconnect the VSA modulator-control unit 37P connector.
9. Check for continuity between the VSA modulator-control unit 37P connector terminal and gauge control module connector A (30P) terminal (see table).

SIGN AND TERMINALS REFERENCE

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	Gauge Control Module
CAN-L	1	14
CAN-H	15	13

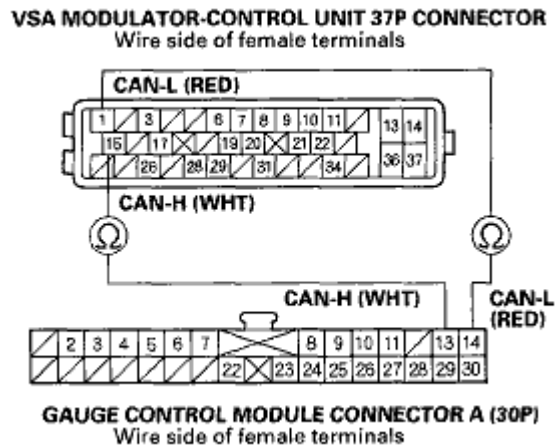


Fig. 56: Checking Continuity Between VSA Modulator-Control Unit Terminals And Gauge Control Module Terminals

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Check for loose terminals in the gauge control module connector A (30P). If necessary, substitute a known-good gauge control module, then go to step 1 and recheck. If no DTCs are indicated, replace the original gauge control module (see **REWRITING THE ODO DATA ON A NEW GAUGE CONTROL MODULE**). If DTC 86-31 resets, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Repair open in the wire between the gauge control module and the VSA modulator-control unit.

DTC 107-22: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION

1. Turn the ignition switch OFF to cool the VSA modulator-control unit, and wait 1 hour or more.
2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.

4. Turn the ignition switch OFF, then turn it ON (II) again.
5. Check for DTCs with the HDS.

Is DTC 107-22 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -The system is OK at this time.

DTC 108-21: STEERING ANGLE SENSOR MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
4. Test-drive the vehicle.
5. Check for DTCs with the HDS.

Is DTC 108-21 indicated?

YES -Go to step 6.

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

6. Turn the ignition switch OFF.
7. Substitute a known-good steering angle sensor (see **STEERING ANGLE SENSOR REPLACEMENT**).
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS.
10. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
11. Test-drive the vehicle.
12. Check for DTCs with the HDS.

Is DTC 108-21 indicated?

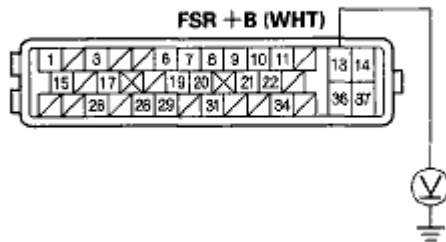
YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Replace the original steering angle sensor (see **STEERING ANGLE SENSOR REPLACEMENT**).

DTC 112-01: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.

3. Turn the ignition switch OFF.
4. Disconnect the VSA modulator-control unit 37P connector.
5. Measure voltage between VSA modulator-control unit 37P connector terminal No. 13 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR

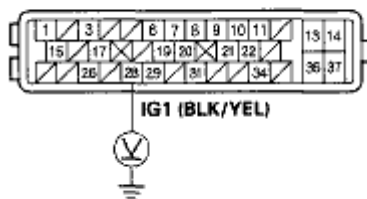
Wire side of female terminals

Fig. 57: Measuring Voltage Between VSA Modulator-Control Unit 37P Connector Terminal 13 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there battery voltage?***YES** -Go to step 6.**NO** -Check the battery (see **BATTERY TEST**), and troubleshoot the alternator regulator circuit (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**).

6. Measure voltage between VSA modulator-control unit 37P connector terminal No. 28 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR

Wire side of female terminals

Fig. 58: Measuring Voltage Between VSA Modulator-Control Unit 37P Connector Terminal 28 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there 0 V?***YES** -Go to step 7.**NO** -Repair short to power in the wire between the No. 18 (15 A) in the under-dash fuse/relay box and the VSA modulator-control unit.

- 7. Turn the ignition switch ON (II).
- 8. Measure voltage between VSA modulator-control unit 37P connector terminal No. 28 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR

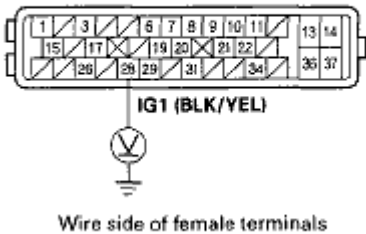


Fig. 59: Measuring Voltage Between VSA Modulator-Control Unit 37P Connector Terminal 28 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -Repair open in the wire between the No. 18 (15 A) fuse in the under-dash fuse/relay box and the VSA modulator-control unit.

DTC 121-XX*: VSA SOLENOID VALVE MALFUNCTION; DTC 122-XX*: VSA SOLENOID VALVE MALFUNCTION; DTC 123-XX*: VSA SOLENOID VALVE MALFUNCTION; DTC 124-XX*: VSA SOLENOID VALVE MALFUNCTION

* : Any two-character subcode (see table)

DTC AND VALVE REFERENCE

DTC		Sectional	Valve
121	-01	Right-front and left-rear	Regulator
	-02		
	-11		
	-21		
	-24		
122	-01		Suction
	-21		
	-22		
	-23		
123	-01		Regulator
	-02		
	-11		
	-21		

124	-24	Left-front and right-rear	Suction
	-01		
	-21		
	-22		
	-23		

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 121-xx, 122-xx, 123-xx, or 124-xx indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

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

SYMPTOM TROUBLESHOOTING

ABS INDICATOR OR VSA INDICATOR DOES NOT GO OFF, AND NO DTCS ARE STORED

1. Check for communication between the vehicle and the HDS.

Is there communication?

YES -Check for loose terminals in the gauge control module connector A (30P). If necessary, substitute a known-good gauge control module, then recheck. If it is OK, replace the original gauge control module (see **REWRITING THE ODO DATA ON A NEW GAUGE CONTROL MODULE**).

NO -If the HDS does not communicate with all systems of the vehicle, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING (PART 2)**). If the HDS does not communicate with only VSA, go to step 2.

2. Turn the ignition switch OFF.
3. Check the No. 18 (15 A) fuse in the under-dash fuse/ relay box.

Is the fuse blown?

YES -Install the new No. 18 (15 A) fuse, and recheck. If the fuse continues to blow, check for short to body ground in the wire between the No. 18 (15 A) fuse in the under-dash fuse/relay box and the VSA modulator-control unit. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -Reinstall the checked fuse, then go to step 4.

4. Disconnect the VSA modulator-control unit 37P connector.

5. Turn the ignition switch ON (II).
6. Measure voltage between VSA modulator-control unit 37P connector terminal No. 28 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR

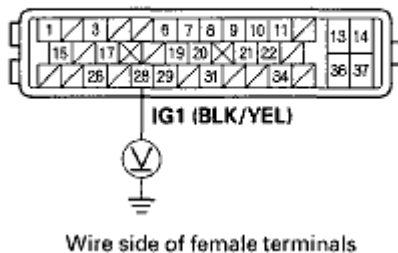


Fig. 60: Measuring Voltage Between VSA Modulator-Control Unit 37P Connector Terminal 28 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 7.

NO -Repair open in the wire between the No. 18 (15 A) fuse in the under-dash fuse/relay box and the VSA modulator-control unit.

7. Turn the ignition switch OFF.
8. Check for continuity between VSA modulator-control unit 37P terminal No. 36 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR

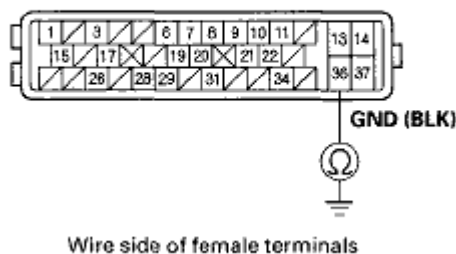


Fig. 61: Checking Continuity Between VSA Modulator-Control Unit 37P Terminal 36 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Check for loose terminals in the VSA modulator-control unit 37P connector, clean terminal G203 and recheck. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -Repair open in the wire between the VSA modulator-control unit and body ground (G203).

Brake system indicator does not go off, and no DTCs are stored

1. Release the parking brake.
2. Turn the ignition switch ON (II).
3. Check the brake system indicator for several seconds when the ignition switch is turned ON (II).

Does the indicator come on then go off?

YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the gauge control module connector A (30P) and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

NO -Go to step 4.

4. Check the BRAKE INDICATOR in the VSA DATA LIST with the HDS.

Does it indicate OFF?

YES -Go to step 5.

NO -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

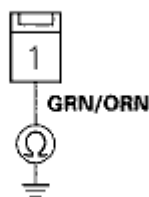
5. Turn the ignition switch OFF.
6. Disconnect the parking brake switch 1P connector.
7. Turn the ignition switch ON (II).

Does the brake system indicator go off?

YES -Replace the parking brake switch (see **PARKING BRAKE CABLE REPLACEMENT**).

NO -Go to step 8.

8. Turn the ignition switch OFF.
9. Disconnect the gauge control module connector A (30P).
10. Check for continuity between parking brake switch 1P connector terminal No. 1 and body ground.

PARKING BRAKE SWITCH 1P CONNECTOR

Terminal side of female terminals

Fig. 62: Checking Continuity Between Parking Brake Switch 1P Connector Terminal 1 And

Body Ground**Courtesy of AMERICAN HONDA MOTOR CO., INC.***Is there continuity?*

YES -Repair short to body ground in the wire between the gauge control module and the parking brake switch.

NO -Check for loose terminals in the gauge control module connector A (30P). If necessary, substitute a known-good gauge control module, then go to step 1 and recheck. If it is OK, replace the original gauge control module (see **REWRITING THE ODO DATA ON A NEW GAUGE CONTROL MODULE**).

VSA ACTIVATION INDICATOR DOES NOT GO OFF, AND NO DTCS ARE STORED

1. Turn the ignition switch ON (II).
2. Check the VSA activation indicator for several seconds when the ignition switch is turned ON (II).

Does the indicator come on then go off?

YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the VSA OFF switch 5P connector, gauge control module connector A (30P), and VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

NO -Go to step 3.

3. Check the VSA OFF SWITCH in the VSA DATA LIST with the HDS while pushing the VSA OFF switch.

Does the indicator change from ON (OFF) to OFF (ON)?

YES -Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**).

NO -Go to step 4.

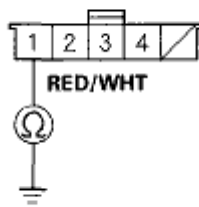
4. Turn the ignition switch OFF.
5. Check the VSA OFF switch (see **VSA OFF SWITCH TEST**).

Is the VSA OFF switch OK?

YES -Go to step 6.

NO -Replace the VSA OFF switch (see **VSA OFF SWITCH TEST**).

6. Disconnect the gauge control module connector A (30P).
7. Disconnect the VSA OFF switch 5P connector.
8. Check for continuity between VSA OFF switch 5P connector terminal No. 1 and body ground.

VSA OFF SWITCH 5P CONNECTOR

Wire side of female terminals

Fig. 63: Checking Continuity Between VSA OFF Switch 5P Connector Terminal 1 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between the gauge control module and the VSA OFF switch.

NO -Substitute a known-good VSA modulator-control unit, then go to step 1 and recheck. If it is OK, replace the original VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

ABS INDICATOR, BRAKE SYSTEM INDICATOR, AND VSA INDICATOR DO NOT GO OFF AT THE SAME TIME

NOTE: Check for gauge DTCs with the HDS (see **WIRE COLOR CODES**). If gauge DTCs are stored, troubleshoot those DTCs first.

1. Release the parking brake.
2. Turn the ignition switch ON (II).
3. Check the ABS indicator, brake system indicator and the VSA indicator for several seconds when the ignition switch is turned ON (II).

Do the indicators come on then go off?

YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the gauge control module connector A (30P) and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see **INTERMITTENT FAILURES**).

NO -Go to step 4.

4. Turn the ignition switch OFF.
5. Short the SCS line with the HDS.
6. Disconnect ECM/PCM connector E (31P).
7. Disconnect the HDS from the data link connector (DLC).
8. Disconnect the gauge control module connector A (30P).
9. Disconnect the VSA modulator-control unit 37P connector, SRS unit connector A (28P), AcuraLink

unit (XM receiver) connector A (20P), TPMS control unit connector B (20P), and the navigation control unit connector A (20P) if equipped.

10. Check for continuity between body ground and VSA modulator-control unit 37P connector terminals No. 1, and No. 15 individually.

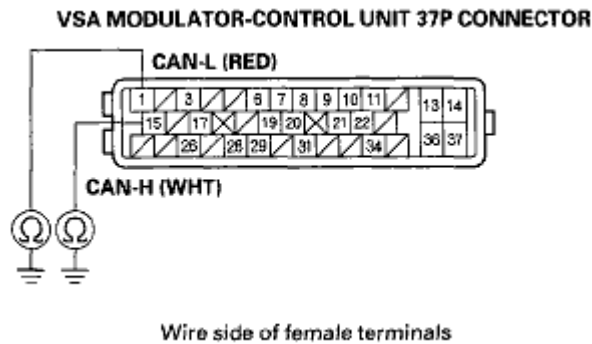


Fig. 64: Checking Continuity Between Body Ground And VSA Modulator-Control Unit 37P Connector Terminals 1

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground on the appropriate wire.

NO -Go to step 11.

11. Check for continuity between VSA modulator-control unit 37P connector terminals No. 1 and No. 15.

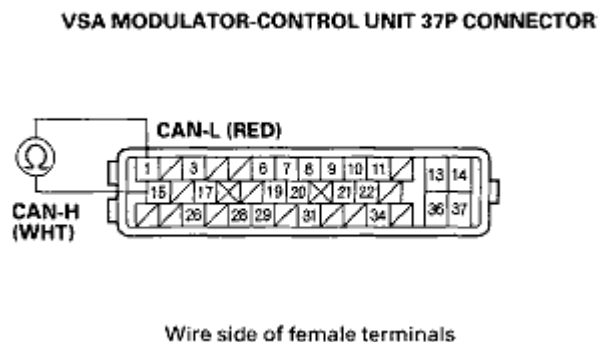


Fig. 65: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Terminals No 1 And 15

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair the short in the wire between VSA modulator-control unit 37P connector terminals No. 1 (CAN-L line) and No. 15 (CAN-H line).

NO -Go to step 12.

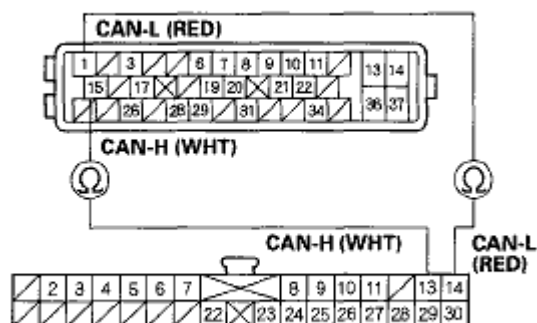
12. Check for continuity between VSA modulator-control unit 37P connector terminal and gauge control

module connector A (30P) terminal (see table).

SIGN AND TERMINALS REFERENCE

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	Gauge Control Module
CAN-L	1	14
CAN-H	15	13

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR
Wire side of female terminals



GAUGE CONTROL MODULE CONNECTOR A (30P)
Wire side of female terminals

Fig. 66: Checking Continuity Between VSA Modulator-Control Unit Terminals And Gauge Control Module Terminals

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Check for loose terminals in the gauge control module connector A (30P). If necessary, substitute a known-good gauge control module, then go to step 1 and recheck. If it is OK, replace the original gauge control module (see **REWRITING THE ODO DATA ON A NEW GAUGE CONTROL MODULE**). If DTCs are indicated, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Repair open in the wire between the gauge control module and the VSA modulator-control unit.

STEERING ANGLE SENSOR REPLACEMENT

NOTE: Do not damage or drop the combination switch as the steering angle sensor is sensitive to shock and vibration.

1. Remove the steering wheel (see **STEERING WHEEL REMOVAL**).
2. Remove the steering column covers and the cable reel (see **CABLE REEL REPLACEMENT**).
3. Remove the combination switch assembly (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
4. Remove the combination light switch (A) and the wiper/washer switch (B).

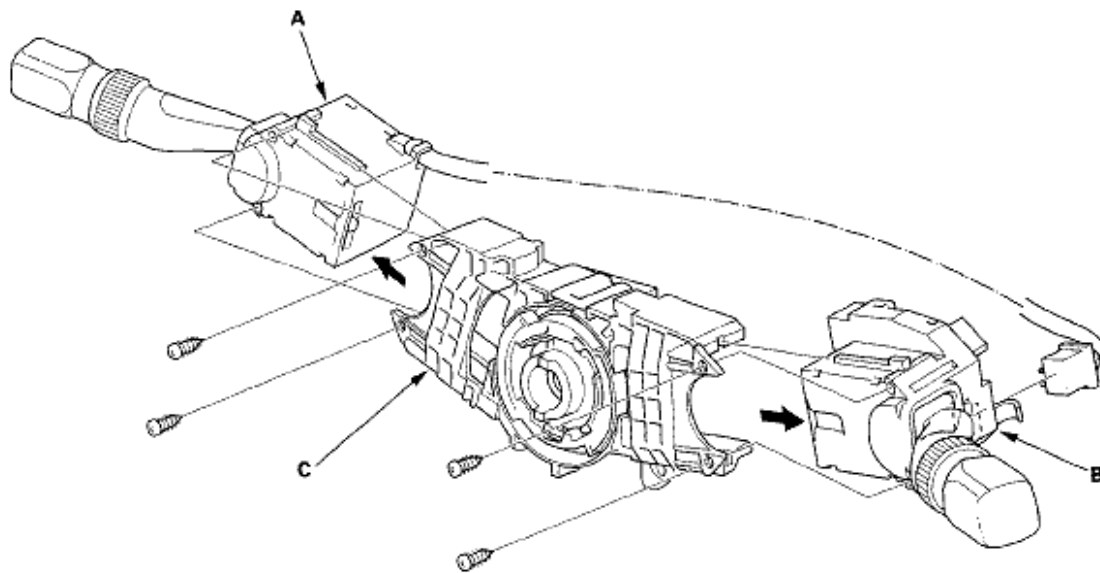


Fig. 67: Removing Combination Light Switch And Wiper/Washer Switch
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Replace the combination switch (C).
6. Install the combination switch in the reverse order of removal.

NOTE:

- Do not remove the steering angle sensor from the combination switch body.
- When installing the cable reel, set the turn signal cancelling sleeve position (see INSTALLATION).

YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT

NOTE:

- Do not damage or drop the sensor as it is sensitive.
- Do not use power tools.

1. Make sure the ignition switch is OFF.
2. Remove the center console panel (see CENTER CONSOLE PANEL REMOVAL/INSTALLATION).
3. Disconnect the sensor connector (A).

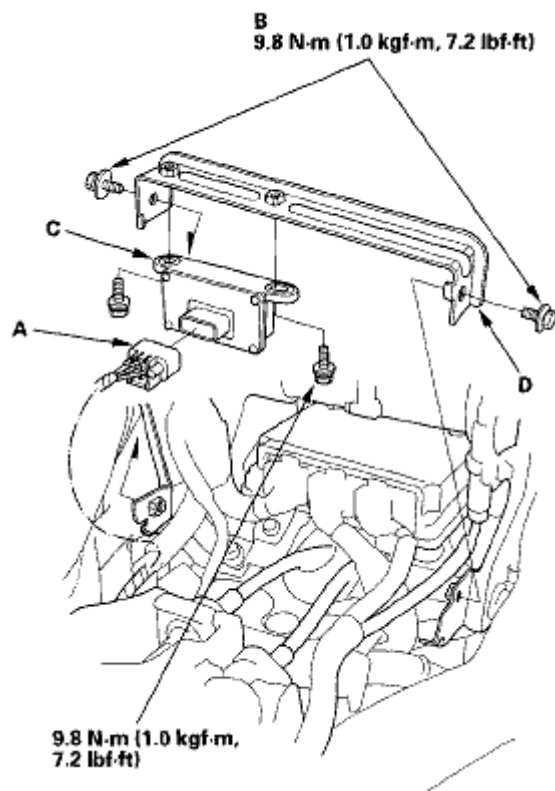


Fig. 68: Identifying Sensor Bracket Mounting Bolts And Yaw Rate-Lateral Acceleration Sensor With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the sensor bracket mounting bolts (B).
5. Remove the yaw rate-lateral acceleration sensor (C) with the bracket (D).
6. Remove the sensor from the bracket.
7. Install the yaw rate-lateral acceleration sensor in the reverse order of removal.
8. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).

VSA SENSOR NEUTRAL POSITION MEMORIZATION

NOTE: Do not press the brake pedal during this procedure.

1. Park the vehicle on a flat and level surface.
2. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) under the driver's side of the dashboard.

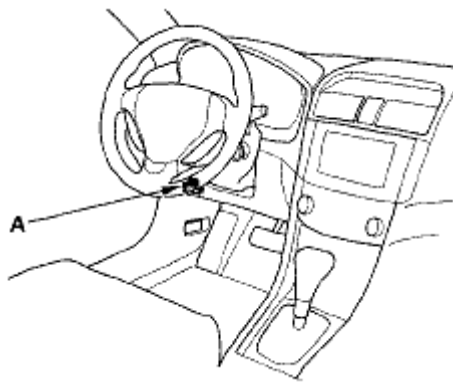


Fig. 69: Identifying Data Link Connector

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the ignition switch ON (II).
4. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING (PART 2)**).
5. Select VSA ADJUSTMENT with the HDS, and follow the screen prompts.

NOTE: See the HDS Help menu for specific instructions.

6. Turn the ignition switch OFF.

VSA OFF SWITCH TEST

1. Remove the driver's dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**), and disconnect the VSA OFF switch 5P connector.
2. Push out the VSA OFF switch (A) from the back of the dashboard lower cover (B).

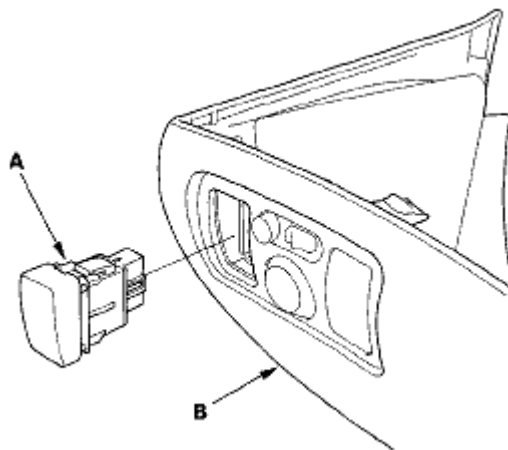
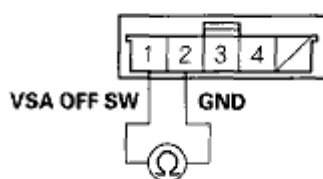


Fig. 70: Identifying VSA OFF Switch And Dashboard Lower Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

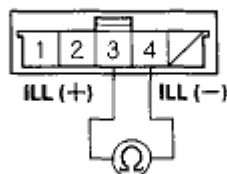
3. Check for continuity between VSA OFF switch 5P connector terminals No. 1 and No. 2. There should be continuity while the switch is pressed, and no continuity when the switch is released.

VSA OFF SWITCH 5P CONNECTOR

Terminal side of male terminals

Fig. 71: Checking Continuity Between VSA OFF Switch 5P Connector Terminals No 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Check for continuity between VSA OFF switch 5P connector terminals No. 3 and No. 4. There should be continuity at all times.

VSA OFF SWITCH 5P CONNECTOR

Terminal side of male terminals

Fig. 72: Checking Continuity Between VSA OFF Switch 5P Connector Terminals No 3 And 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION

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.
- Be careful not to damage or deform the brake lines during removal and installation.
- To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent material.

REMOVAL

1. Make sure the ignition switch is OFF.
2. Disconnect the VSA modulator-control unit 37P connector (A) by pushing the lock (B) and pulling down the lever (C); the connector disconnects itself.

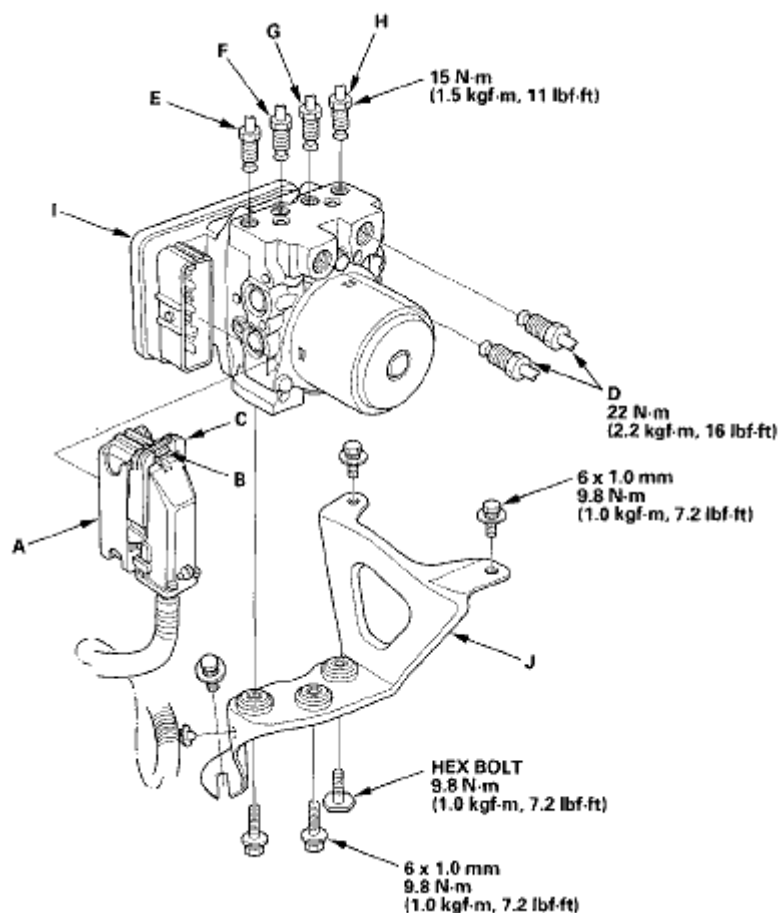


Fig. 73: Exploded View Of VSA Modulator-Control Unit With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the six brake lines from the VSA modulator-control unit.

NOTE: Brake lines are connected to the master cylinder (D) and to the right-front (E), the left-rear (F), the right-rear (G), and the left-front (H) brake systems.

4. Remove the VSA modulator-control unit (I) with the bracket (J) from the body.
5. Remove the VSA modulator-control unit from the bracket.

INSTALLATION

1. Install the VSA modulator-control unit on the bracket.
2. Install the bracket with the VSA modulator-control unit to the body.
3. Reconnect the six brake lines, then tighten the flare nuts to the specified torque.
4. Align the connecting surface of the VSA modulator-control unit 37P connector to the VSA modulator-control unit.
5. Pull up the lever of the VSA modulator-control unit 37P connector, then confirm the connector is fully seated.
6. Bleed the brake system (see **BRAKE SYSTEM BLEEDING**).

7. Perform VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
8. Start the engine, and check that the ABS and the VSA indicators go off.
9. Test-drive the vehicle, and check that the ABS, and the VSA indicators do not come on.

NOTE: If the brake pedal is spongy, there may be air trapped in the modulator and then induced into the normal brake system during modulation. Bleed the brake system again (see **BRAKE SYSTEM BLEEDING**).

WHEEL SENSOR REPLACEMENT

FRONT

1. Make sure the ignition switch is OFF.
2. Disconnect the wheel sensor connector (A).

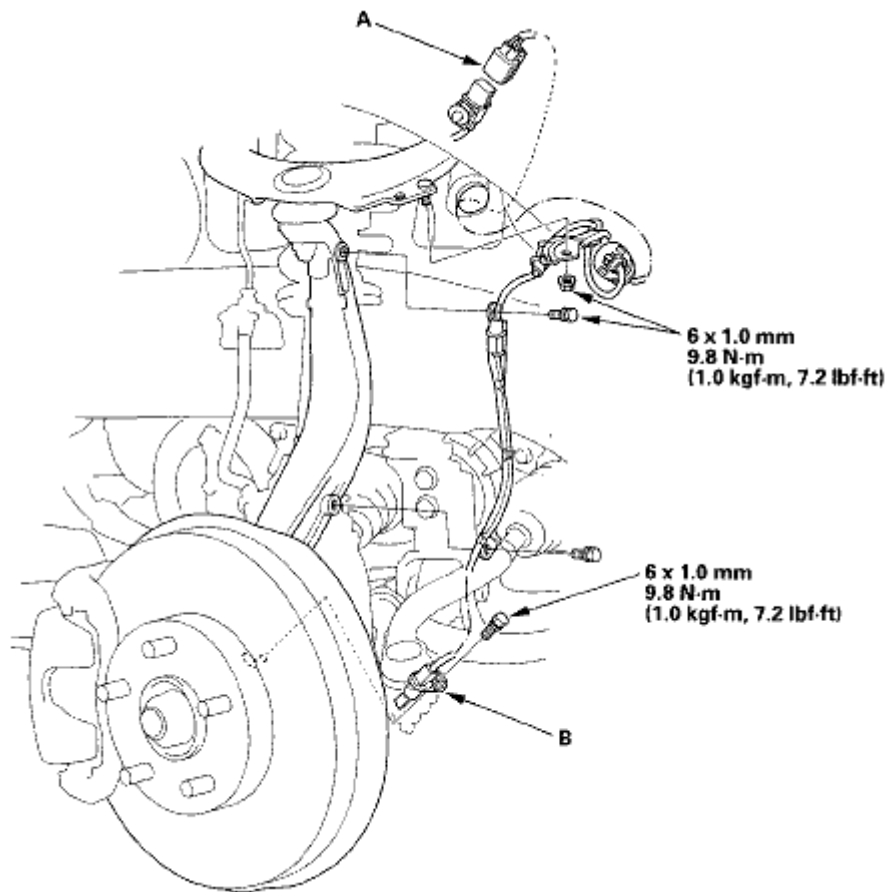


Fig. 74: Identifying Front Wheel Sensor And Front Wheel Sensor Connector With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the bolts, the nut, and the wheel sensor (B).
4. Install the wheel sensor in the reverse order of removal, and note these items:
 - Install the sensor carefully to avoid twisting the wires.

- If the wheel sensor comes in contact with the wheel bearing, it is faulty.
5. Start the engine, and check that the ABS and the VSA indicators go off.
 6. Test-drive the vehicle, and check that the ABS and the VSA indicators do not come on.

REAR

1. Make sure the ignition switch is OFF.
2. Disconnect the wheel sensor connector (A).

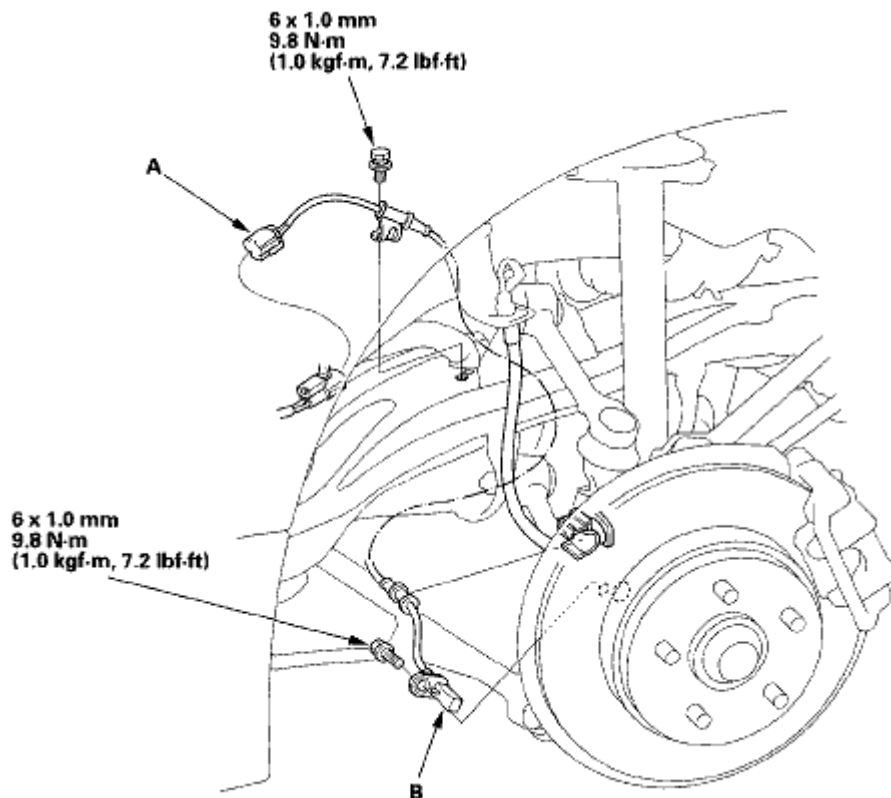


Fig. 75: Identifying Rear Wheel Sensor And Rear Wheel Sensor Connector With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Release from the clamp, and remove the clips, the bolt, and the wheel sensor (B).
4. Install the wheel sensor in the reverse order of removal, and note these items:
 - Install the sensor carefully to avoid twisting the wires.
 - If the wheel sensor comes in contact with the hub bearing unit, it is faulty.
5. Start the engine, and check that the ABS and the VSA indicators go off.
6. Test-drive the vehicle, and check that the ABS and the VSA indicators do not come on.