2003-06 BRAKES

VSA (Vehicle Stability Assist) System Components - MDX

COMPONENT LOCATION INDEX

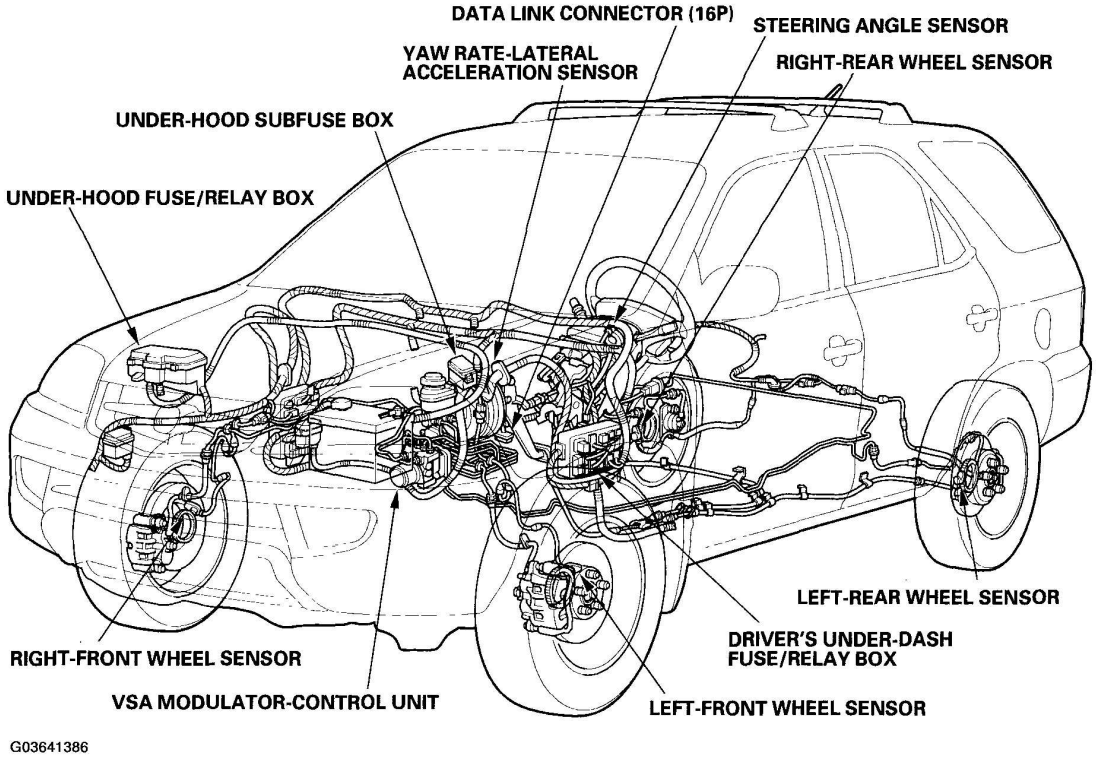


Fig. 1: Component Location Index
Courtesy of AMERICAN HONDA MOTOR CO., INC.

GENERAL TROUBLESHOOTING INFORMATION

SYSTEM INDICATOR

This system has four indicators: ABS indicator (A) VSA indicator (B) VSA activation indicator (C) and brake system indicator (D). When the system detects a problem, it illuminates the appropriate indicators. Depending on the failure, the control unit determines which indicators are turned on.

- When ABS function is lost:

  ABS indicator, VSA indicator, and VSA activation indicator turn on.

- When VSA function is lost:

ABS indicator, VSA indicator, and VSA activation indicator turn on.

- When all functions are lost:

  All four indicators turn on.

- When the gauge assembly detects F-CAN circuit problem:

  ABS indicator, VSA indicator, and brake system indicator turn on.

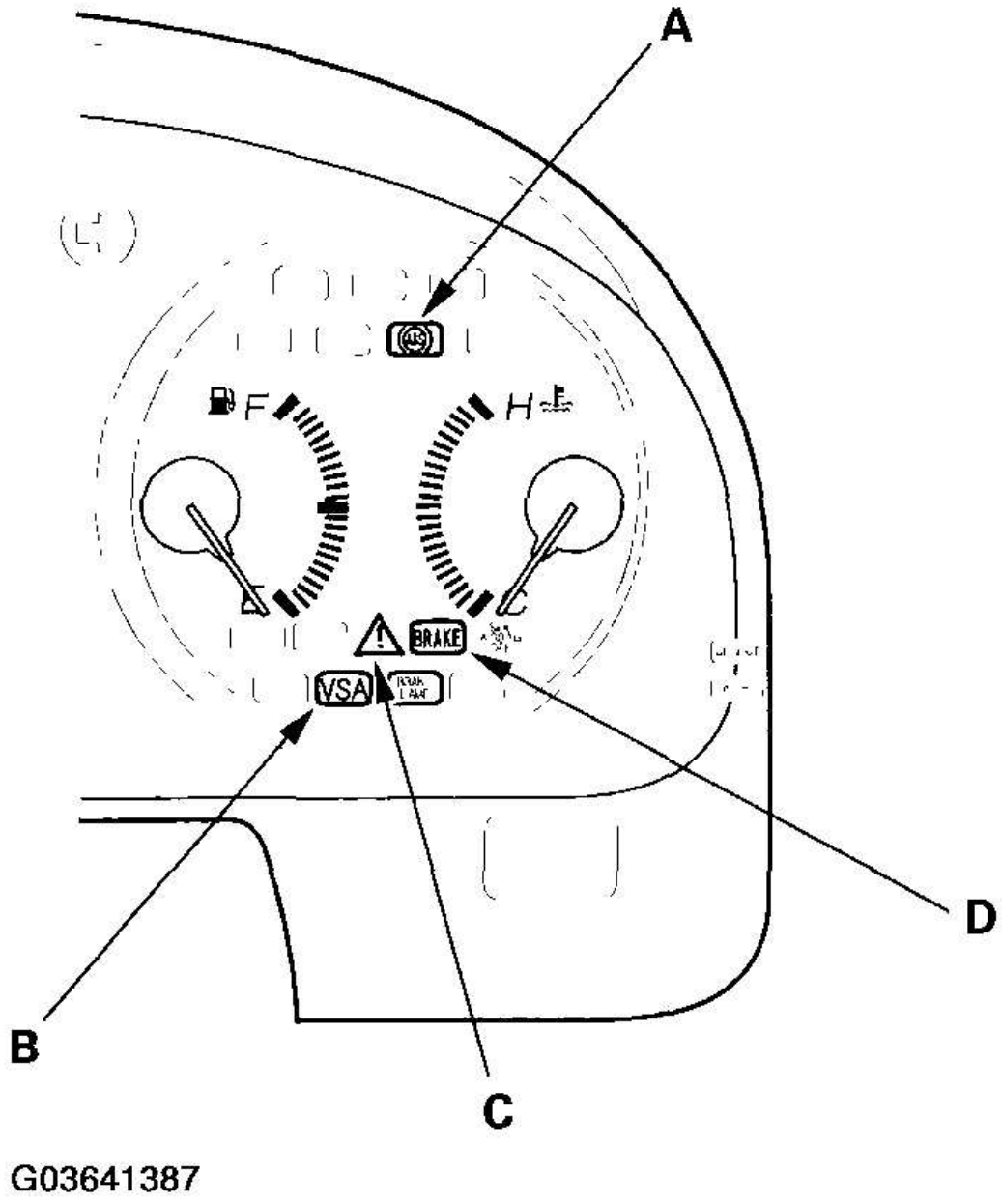


Fig. 2: Identifying System Indicator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ABS/VSA INDICATOR

- If the system is OK, the ABS and VSA indicators will go off 2 seconds after turning the ignition switch

ON (II).

- The ABS and VSA indicators come on when the control unit detects a problem in the system. However, even though the system is operating properly, the activation indicator may come on under these conditions:

  Only the drive wheel rotates.

  One drive wheel is stuck.

  The vehicle goes into a spin.

  The ABS or VSA continues to operate for a long time.

  The vehicle is subjected to an electrical signal disturbance.

To determine the actual cause of the problem, question the customer about the problem, taking the above conditions into consideration.

- When a problem is detected and the ABS indicator comes on, but not the VSA indicator, there are cases when the indicator stays on until the ignition switch is turned OFF, and cases when the indicator goes off automatically when the system returns to normal.
  - DTC 61 or 62:

    The ABS and VSA indicators go off automatically when the system returns to normal.

  - DTC 11, 13, 15, 17, 31, 32, 33, 34, 35, 36, 37, 38, 53, 54, 71, 81, 112, 121, 122, 123 or 124:

    The ABS and VSA indicators stay on until the ignition switch is turned OFF whether or not the system returns to normal.

  - DTC 12, 14, 16, 18, 21, 22, 23, 24, 41, 42, 43, 44, 51 or 52:

    The ABS indicator stays on until the system returns to normal after the vehicle is driven.

  - DTC 64, 65, 66, 68, 83, 84 or 86:

    The ABS and VSA indicators stay on until the ignition switch is turned OFF whether or not the system returns to normal.

DIAGNOSTIC TROUBLE CODE (DTC)

- The memory can hold any number of 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 ascending number order, not in the order they occur.
- The DTCs are memorized in the EEPROM (non-volatile memory). Therefore, the memorized DTCs cannot be canceled 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 or VSA indicator goes 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 ABS or VSA 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 ABS or VSA is functioning.
- The VSA modulator-control unit checks the pump motor operating during initial diagnosis when the vehicle is driven over 10 mph (15 km/h) the first time after the ignition switch is turned ON (II). 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 not equipped with VSA (see **BRAKE SYSTEM BLEEDING**). To ease bleeding, start with the front wheels.

HOW TO TROUBLESHOOT DTCS

The troubleshooting flowchart procedures assume that the cause of the problem is still present and the ABS and/or VSA indicator is still on. Following the flowchart when the ABS and/or VSA indicator does not come on can result in incorrect diagnosis.

The connector illustrations show the female terminal connectors with a single outline and the male terminal connectors with a double outline.

INTERMITTENT FAILURES

1. Question the customer 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 control, after control, when vehicle speed was at a certain speed, etc.
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.

HOW TO RETRIEVE DTCS

HDS (Honda Diagnostic System) Method

1. With the ignition switch OFF, connect the HDS to the 16P data link connector (DLC) (A) under the left side of the driver's dashboard.

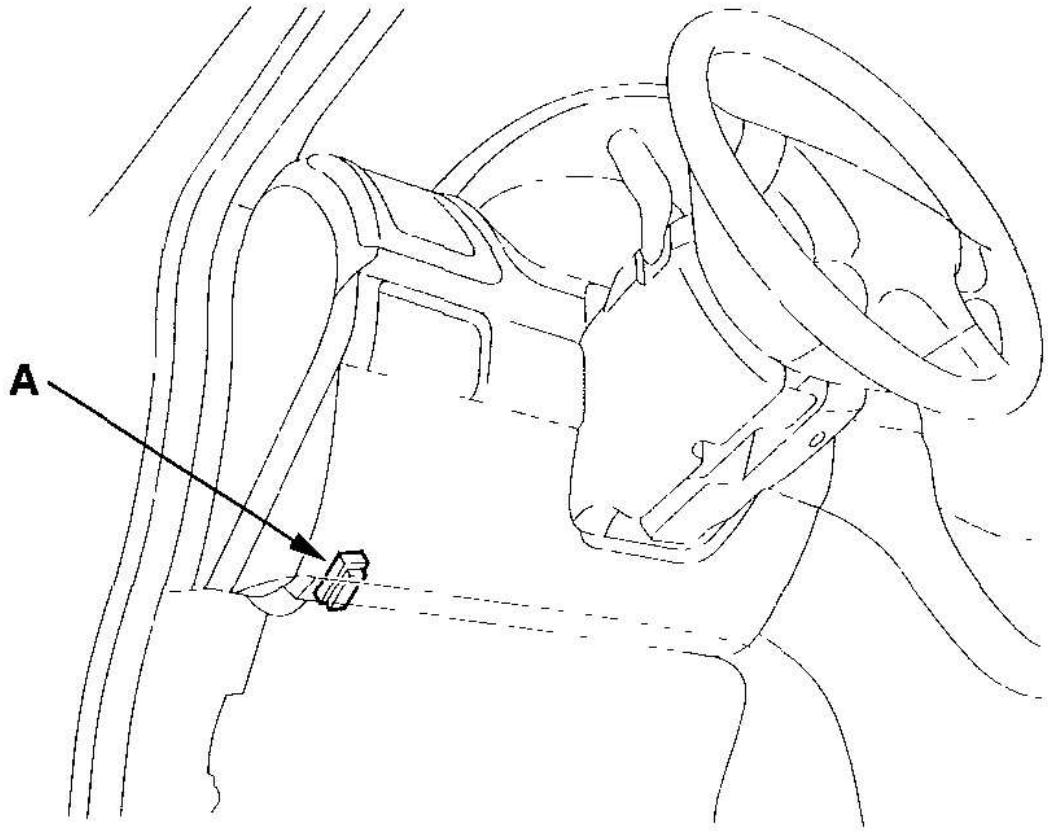


Fig. 3: Identifying 16P Data Link Connector (DLC) (A) Under Left Side Of Driver's Dashboard
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II) and follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the DTC Troubleshooting.

NOTE: See the HDS Help menu for specific instructions.

HOW TO CLEAR DTCS

NOTE: You cannot clear the DTCs manually.

HDS (Honda Diagnostic System) Method

1. With the ignition switch OFF, connect the HDS to the 16P data link connector (DLC) (A) under the left side of the driver's dashboard.

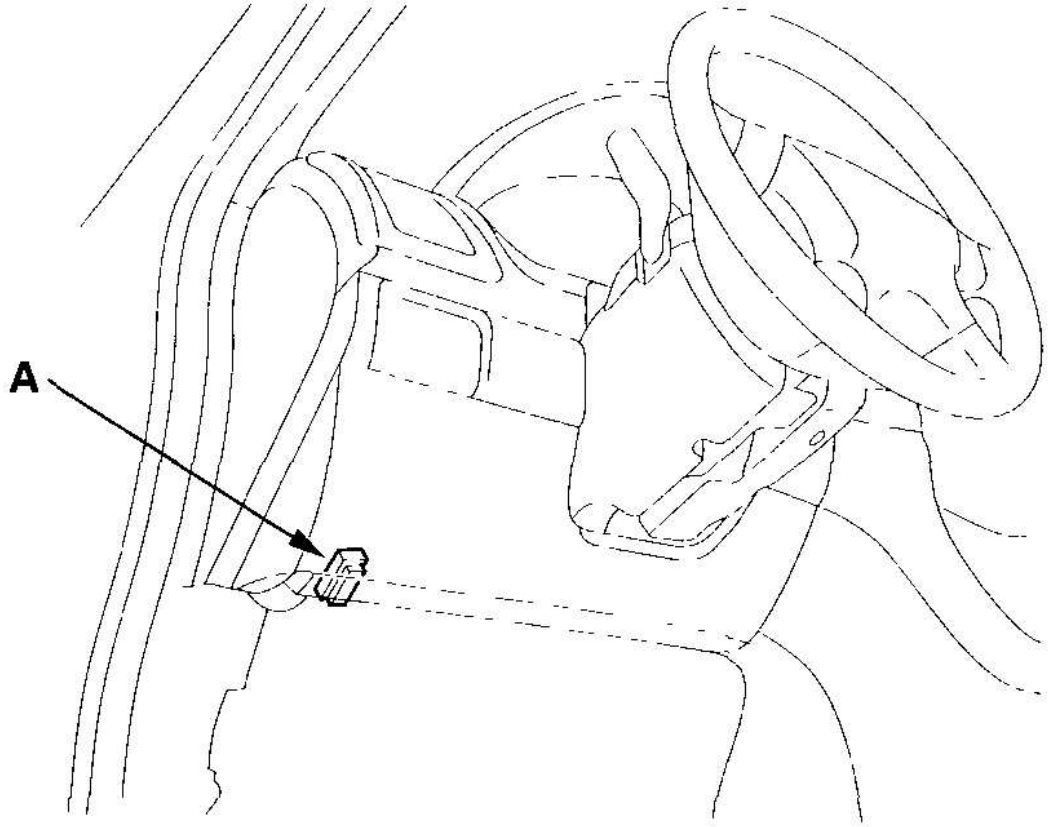


Fig. 4: Identifying 16P Data Link Connector (DLC) (A) Under Left Side Of Driver's Dashboard
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II) and clear the DTC(s) by following the screen prompts on the HDS.

NOTE: See the HDS Help menu for specific instructions.

3. If the VSA activation indicator remains on, but the VSA and ABS indicator are off, do the VSA sensors neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).

DTC TROUBLESHOOTING INDEX

DTC TROUBLESHOOTING INDEX

DTC	Detection Item
11	Right-front wheel sensor (short to power/short to body ground/open)
12	Right-front wheel sensor (electrical noise/intermittent interruption)
13	Left-front wheel sensor (short to power/short to body ground/open)
14	Left-front wheel sensor (electrical noise/intermittent interruption)
15	Right-rear wheel sensor (short to power/short to body ground/open)
16	Right-rear wheel sensor (electrical noise/intermittent interruption)
17	Left-rear wheel sensor (short to power/short to body ground/open)
18	Left-rear wheel sensor (electrical noise/intermittent interruption)
21	Right-front pulser
22	Left-front pulser
23	Right-rear pulser
24	Left-rear pulser
25	Yaw rate sensor
26	Lateral acceleration sensor
27	Steering angle sensor
28	Longitude acceleration sensor
31	ABS solenoid
32	ABS solenoid
33	ABS solenoid
34	ABS solenoid
35	ABS solenoid
36	ABS solenoid
37	ABS solenoid
38	ABS solenoid
41	Right-front wheel lock
42	Left-front wheel lock
43	Right-rear wheel lock
44	Left-rear wheel lock
51	Motor lock
52	Motor stuck OFF
53	Motor stuck ON
54	Fail-safe relay
61	Low +B-FSR voltage
62	High +B-FSR voltage
64	Sensor power voltage
65	Brake fluid level
66	VSA pressure sensor (Inside of VSA modulator-control unit)
68	Brake pedal position switch
71	Different diameter tire

81	Central Processing Unit (CPU)
83	PCM
84	VSA sensors neutral position
86	F-CAN communication
107	TCS operation
108	VSA operation
112	Internal power source stuck OFF
121	VSA solenoid
122	VSA solenoid
123	VSA solenoid
124	VSA solenoid

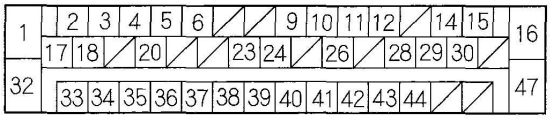
SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure	Also check for
ABS indicator does not come on	Symptom Troubleshooting (see **ABS INDICATOR DOES NOT COME ON**)	
ABS indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see **ABS INDICATOR DOES NOT GO OFF, AND NO DTCS ARE STORED**)	
Brake system indicator does not come on (check bulb operation with parking brake)	Symptom Troubleshooting (see **BRAKE SYSTEM INDICATOR DOES NOT COME ON (CHECK BULB OPERATION WITH PARKING BRAKE)**)	
Brake system indicator does not go off	Symptom Troubleshooting (see **BRAKE SYSTEM INDICATOR DOES NOT GO OFF**)	
VSA indicator does not come on	Symptom Troubleshooting (see **VSA INDICATOR DOES NOT COME ON**)	
VSA indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see **VSA INDICATOR DOES NOT GO OFF, AND NO DTCS ARE STORED**)	
VSA activation indicator does not come on at start-up (bulb check)	Symptom Troubleshooting (see **VSA ACTIVATION INDICATOR DOES NOT COME ON AT START-UP (BULB CHECK)**)	
VSA activation indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see **VSA ACTIVATION INDICATOR DOES NOT GO OFF, AND NO DTCS ARE STORED**)	

SYSTEM DESCRIPTION

VSA MODULATOR-CONTROL UNIT INPUTS AND OUTPUTS FOR 47P CONNECTOR



Wire side of female terminals

Terminal number	Wire color	Terminal sign	Description	Measurement (With the VSA modulator-control unit 47P connector connected)			
				Terminal	Conditions		Voltage
1	WHT/GRN	+B-FSR	Power source for the fail-safe relay	1—GND	At all times		Battery voltage
2	PNK	RLS (−)	Detects left-rear wheel sensor signal	2—3	Wheel: Spin wheel at 1 turn/second		AC: 0.053 V or above (Reference) Oscilloscope 0.15 V peak-to-peak or above
3	PNK/BLK	RLS (+)					
4	BRN/BLK	FLS (−)	Detects left-front wheel sensor signal	4—20			
5	BLU/YEL	RRS (−)	Detects right-rear wheel sensor signal	5—6			
6	GRN/YEL	RRS (+)			Stopped		0.25—1.15 V
9	GRY/YEL	RLP	Outputs left-rear wheel speed signal	——	——		——
10	YEL/BLK	ACT	Drives VSA activation indicator	10—GND	Ignition switch ON (II)		Battery voltage
11	GRY	DIAG-K	Communications with HDS	——	——		——
12	BLU/WHT	ABS	Drives ABS Indicator	12—GND	ABS indicator	ON	4—6 V
						OFF	Below 1.0 V
14	WHT	CAN-H	CAN communication circuit	14—GND	Ignition switch ON (II)		2.5 V
15	WHT/BLK	STOP	Detects brake pedal position switch signal	15—GND	Brake pedal	Pressed	Battery voltage
						Released	Below 1.0 V
16	WHT	+B-MR	Power source for the motor relay	16—GND	At all times		Battery voltage
17	GRN/BLK	FRS (+)	Detects right-front wheel sensor signal	17—18	Wheel: Spin wheel at 1 turn/second		AC: 0.053 V or above (Reference) Oscilloscope 0.15 V peak-to-peak or above
18	GRN	FRS (−)					
20	GRN/BLU	FLS (+)	Detects left-front wheel sensor signal	4—20	Stopped		0.25—1.15 V
23	BRN	SCS	Detects service check signal (use for DTC indication)	——	——		——
24	PNK/BLK	VSA	Drives VSA indicator	24—GND	VSA indicator	ON	4—6 V
						OFF	Below 1.0 V
26	LT GRN	FRP	Outputs right-front wheel sensor signal	——	——		——
28	RED/YEL	STR-A	Detects steering angle sensor signal	28—GND	Ignition switch ON (II), turn steering wheel very slowly		1—4 V Alternately
29	BLU/ORN	STR-D	Detects steering angle sensor signal	29—GND	Ignition switch ON (II), steering wheel in straight ahead position, then turned off at center.		1 V on center 4 V off center
30	RED	CAN-L	CAN communication circuit	30—GND	Ignition switch ON (II)		2.5 V

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Fig. 5: Identifying VSA Modulator-Control Unit Inputs And Outputs For 47P Connector (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Terminal number	Wire color	Terminal sign	Description	Measurement (With the VSA modulator-control unit 47P connector connected)		
				Terminal	Conditions	Voltage
32	BLK	GND	Ground for the VSA modulator-control unit	32—GND	—	0.1 V or less
33	GRY	SGND	Ground for the sensors	33—GND	Ignition switch ON (II)	0.1 V or less
34	GRN/WHT	YAW	Detects yaw rate sensor signal	—	Ignition switch ON (II)	2.5 V
35	YEL/BLK	SVCC	Power source for the sensors	35—GND	Ignition switch ON (II)	5 V
36	BRN/YEL	EBD	Drives brake system indicator	36—GND	Ignition switch ON (II)	Battery voltage
37	RED/WHT	GLAT	Detects lateral acceleration sensor signal	—	Ignition switch ON (II)	2.5 V
38	GRN/WHT	IG1	Power source for activating the system	38—GND	Ignition switch ON (II)	Battery voltage
39	GRN/RED	GLON	Detects longitude acceleration sensor signal	—	Ignition switch ON (II)	2.5 V
40	GRN/BLU	BFL	Detects brake fluid level switch signal	40—GND	Brake fluid level: High	Battery voltage
					Brake fluid level: Low	Below 1.0 V
41	GRY/RED	RRP	Outputs right-rear wheel sensor signal	—	—	—
42	WHT/RED	FLP	Outputs left-front wheel sensor signal	—	—	—
43	YEL/RED	STR-B	Detects steering angle sensor signal	43—GND	Ignition switch ON (II), turn steering wheel very slowly	1—4 V Alternately
44	RED/WHT	VSA OFF SW	Detects VSA off switch signal	—	—	—
47	BLK	MR-GND	Ground for the pump motor	47—GND	Under all conditions	0.1 V or less

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Fig. 6: Identifying VSA Modulator-Control Unit Inputs And Outputs For 47P Connector (2 Of 2) Courtesy of AMERICAN HONDA MOTOR CO., INC.

ABS Features

When the brake pedal is pressed while driving, the wheels can 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. The ABS 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 vehicle speed and the wheel speed, then it controls the brake fluid pressure to reach the target slip rate.

Grip Force of Tire and Road Surface

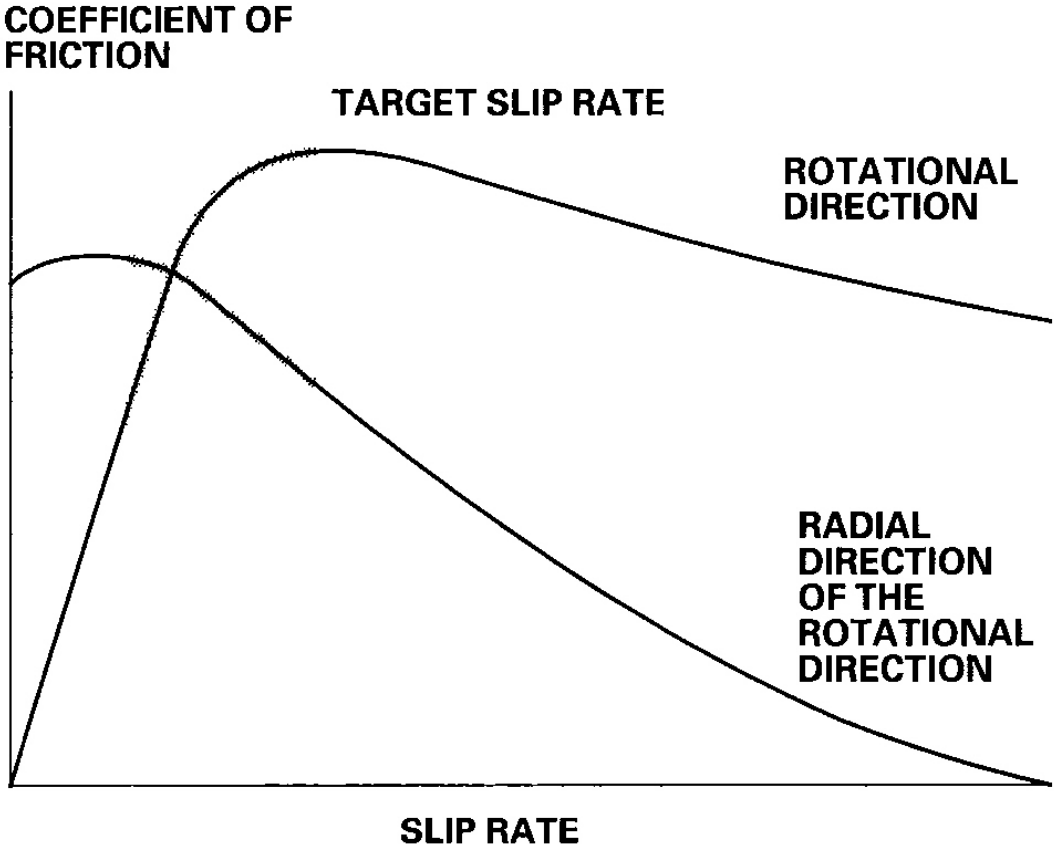


Fig. 7: Grip Force Of Tire And Road Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TCS Features

The TCS provides low-speed traction. When a drive wheel loses traction on a slippery road surface and starts to spin, the VSA modulator-control unit applies brake pressure to slow the spinning wheel. At that time, the VSA modulator-control unit sends a traction control signal to the PCM, to reduce engine power.

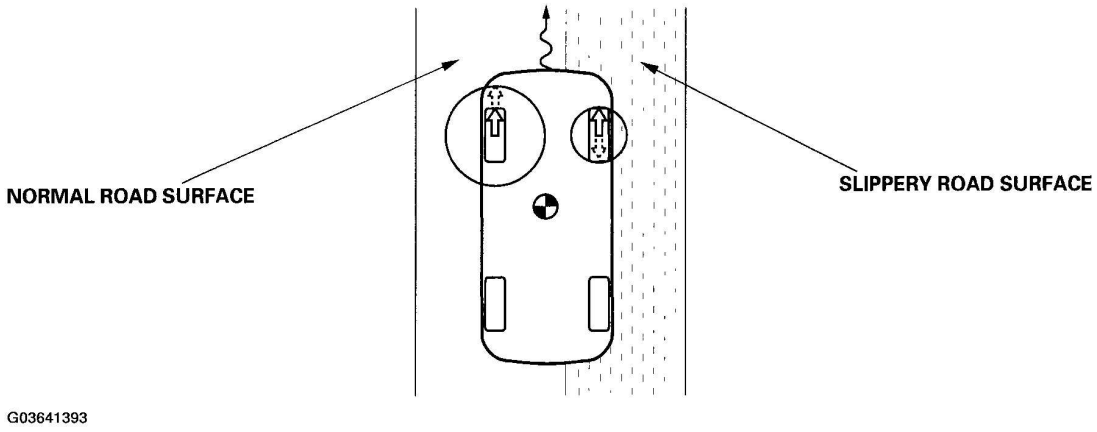


Fig. 8: Identifying TCS Features
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VSA FEATURES

Oversteer control

Applies the brake to the front and rear outside wheels.

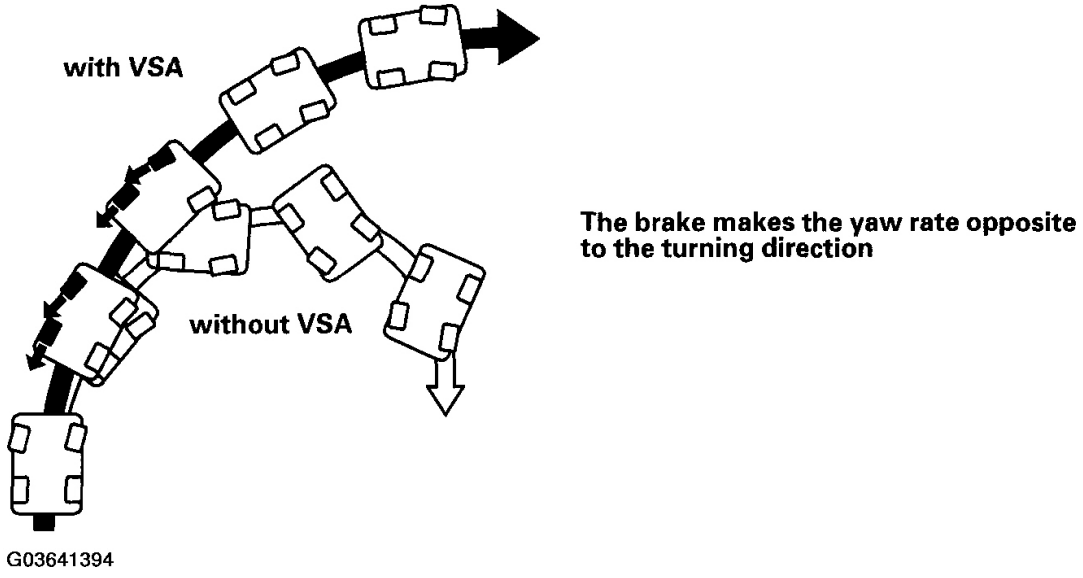


Fig. 9: Identifying Oversteer Control
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Understeer control (in acceleration)

- Applies the brake to the front and rear inside wheels.
- Cuts the engine torque by controlling the throttle via the PCM.

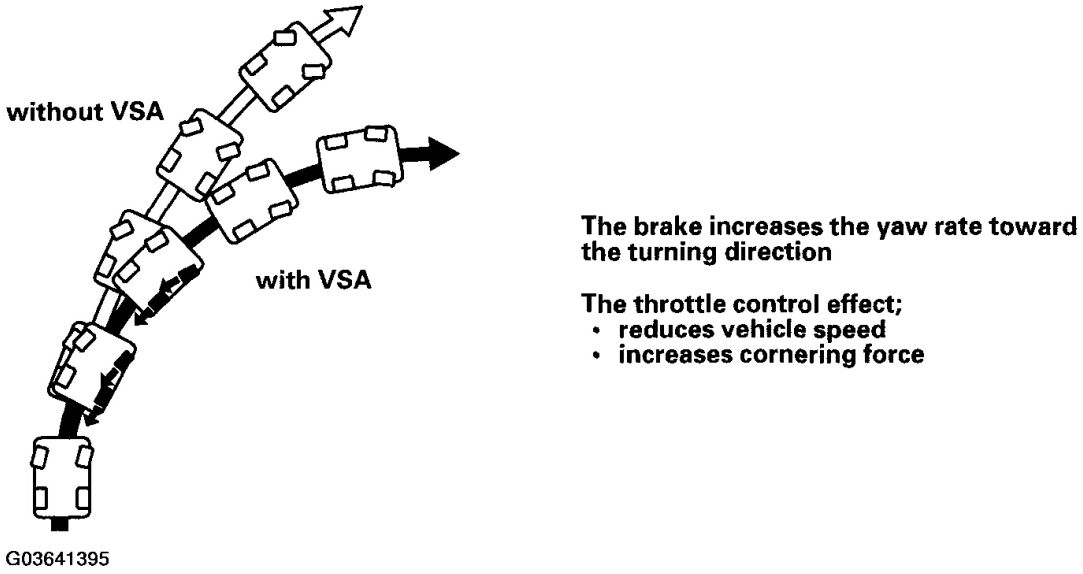


Fig. 10: Identifying Understeer Control (In Acceleration)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VSA MODULATOR-CONTROL UNIT

The VSA modulator-control unit consists of the inlet solenoid valve, outlet solenoid valve, VSA normally open (NO) solenoid valve, VSA normally closed (NC) solenoid valve, reservoir, pump, pump motor, and the damping chamber. The modulator controls the caliper fluid pressure directly. It is a circulating-type modulator because the brake fluid circulates through the caliper, the reservoir, and the master cylinder.

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

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

ABS CONTROL

Pressure intensifying mode

VSA NO valve open, VSA NC valve closed, inlet valve open, outlet valve closed.

Master cylinder fluid is pumped out to the caliper.

Pump motor

When starting the pressure reducing mode, the pump motor is ON. When stopping ABS operation, the pump motor is OFF.

The reservoir fluid is pumped out by the pump, through the damping chamber, to the master cylinder.

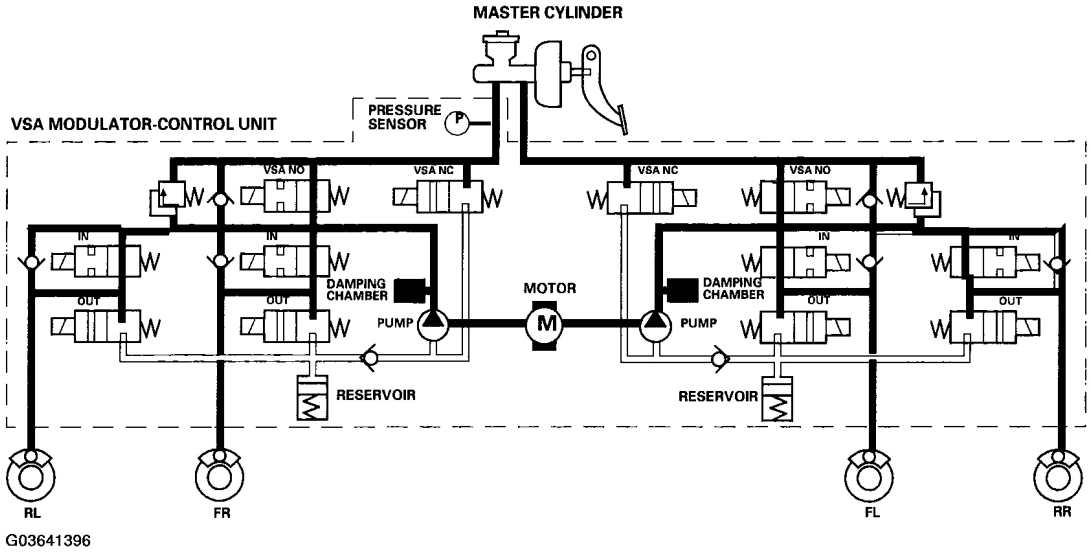


Fig. 11: Identifying Pump Motor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Pressure retaining mode

VSA NO valve open, VSA NC valve closed, inlet valve closed, outlet valve closed.

Caliper fluid is retained by the inlet valve and outlet valve.

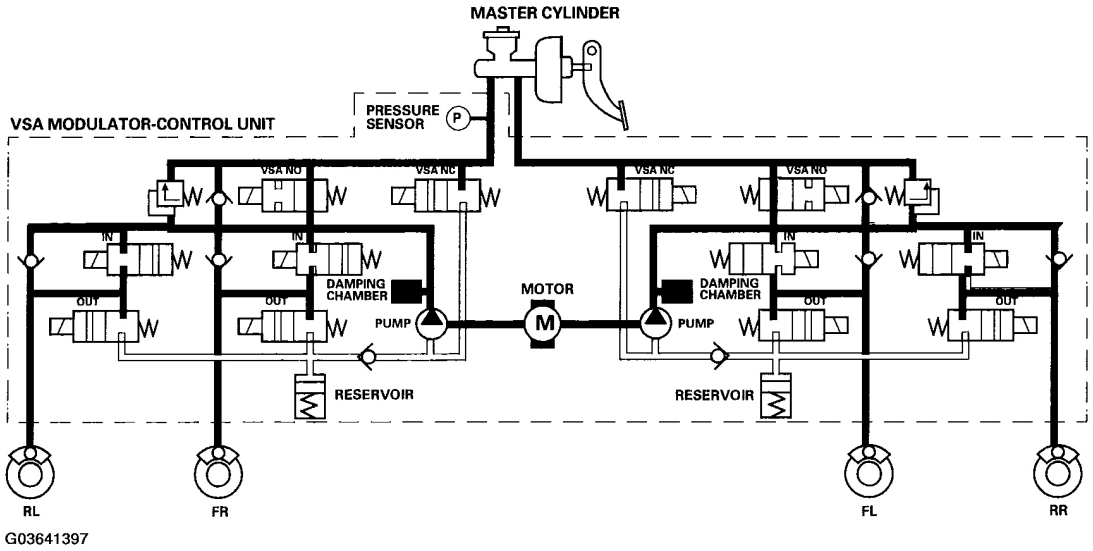


Fig. 12: Identifying Pressure Retaining Mode
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Pressure reducing mode

VSA NO valve open, VSA NC valve closed, inlet valve closed, outlet valve open.

Caliper fluid flows through the outlet valve to the reservoir.

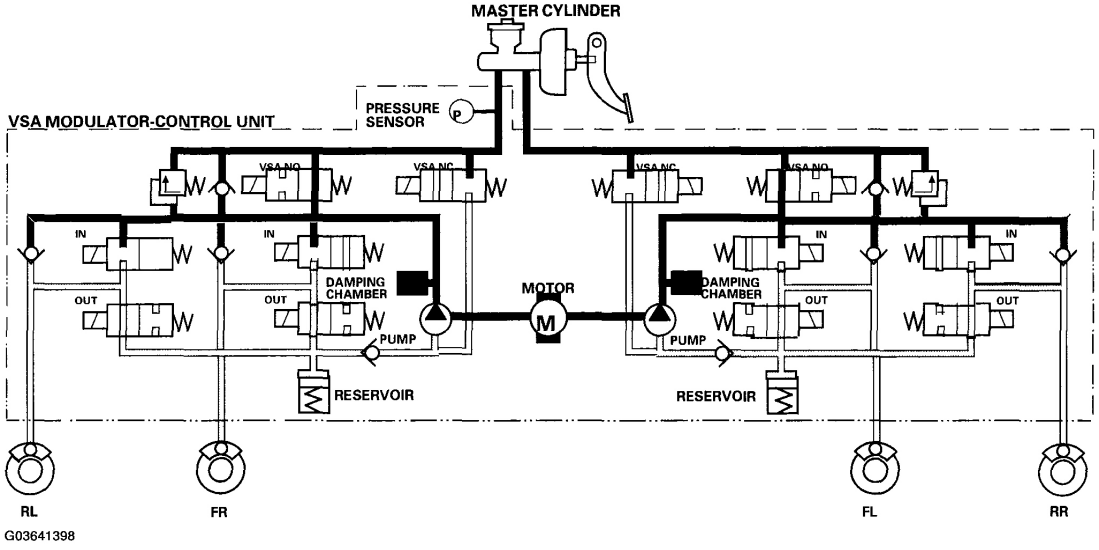


Fig. 13: Identifying Pressure Reducing Mode
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TCS CONTROL

Pressure intensifying mode

VSA NO valve closed, VSA NC valve open, inlet valve open, outlet valve closed, pump motor ON.

The reservoir and master cylinder fluid is pumped out by the pump, through the damping chamber, to the front caliper.

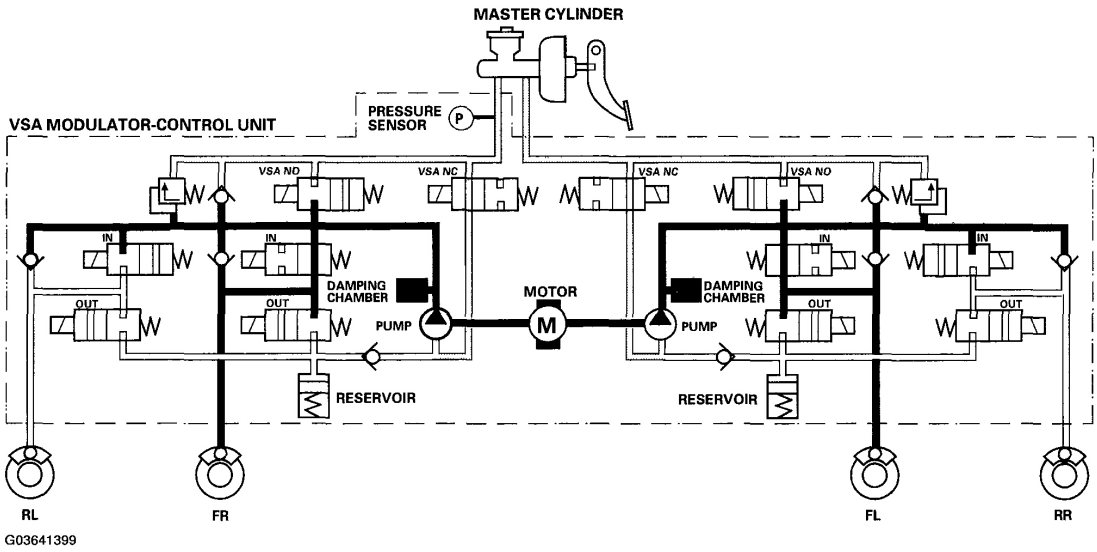


Fig. 14: Identifying Pressure Intensifying Mode
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Pressure retaining mode

VSA NO valve closed, VSA NC valve open, inlet valve closed, outlet valve closed, pump motor ON.

Front caliper fluid is retained by the inlet valve and outlet valve.

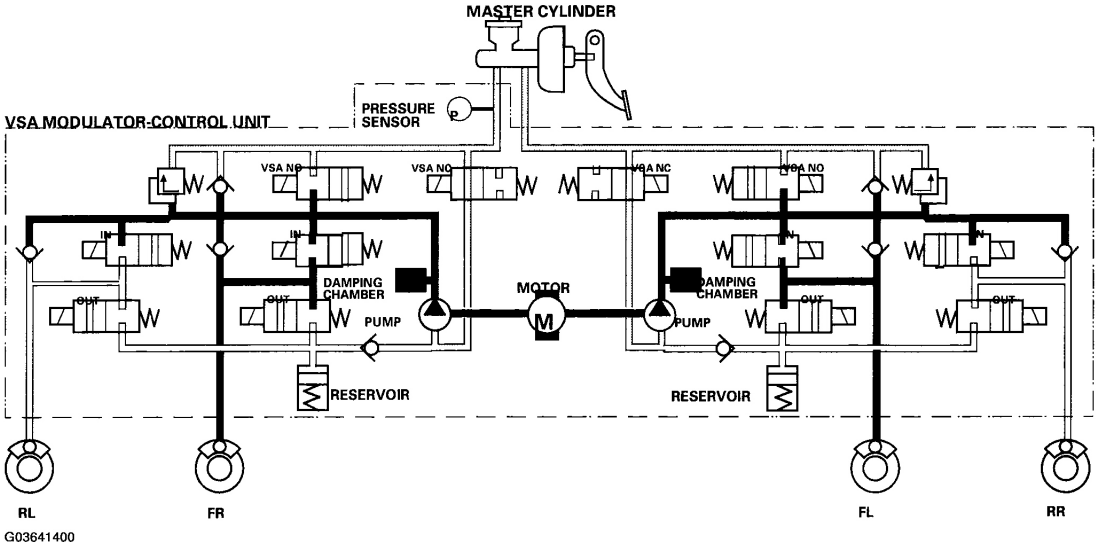


Fig. 15: Identifying Pressure Retaining Mode
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Pressure reducing mode

VSA NO valve closed, VSA NC valve open, inlet valve closed, outlet valve open, pump motor ON.

Caliper fluid flows through the outlet valve to the reservoir.

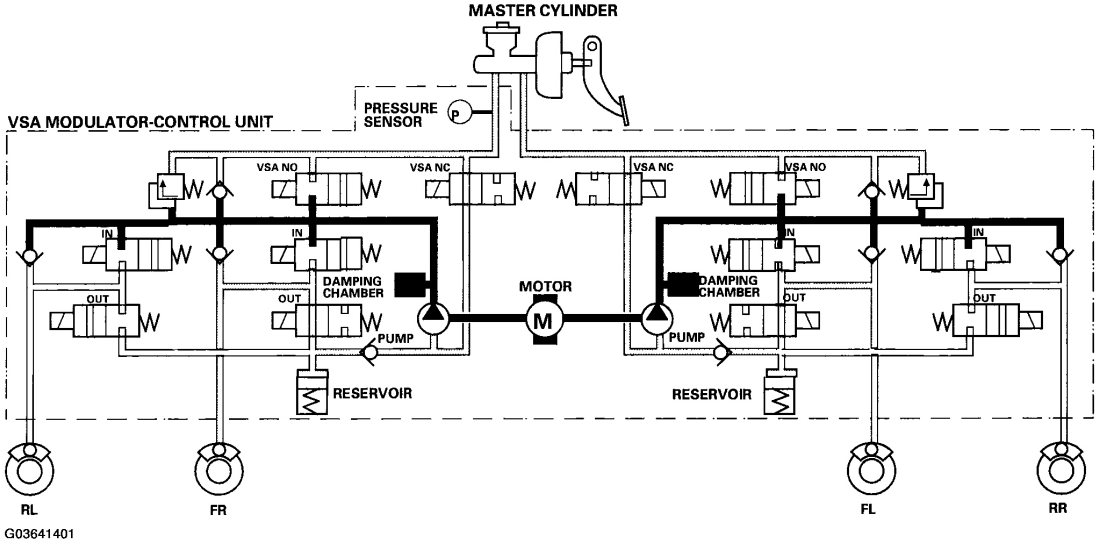


Fig. 16: Identifying Pressure Reducing Mode
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VSA CONTROL

Pressure intensifying mode

VSA NO valve closed, VSA NC valve open, inlet valve open, outlet valve closed, pump motor ON.

The reservoir and master cylinder fluid is pumped out by the pump, through the damping chamber, to the front and rear calipers.

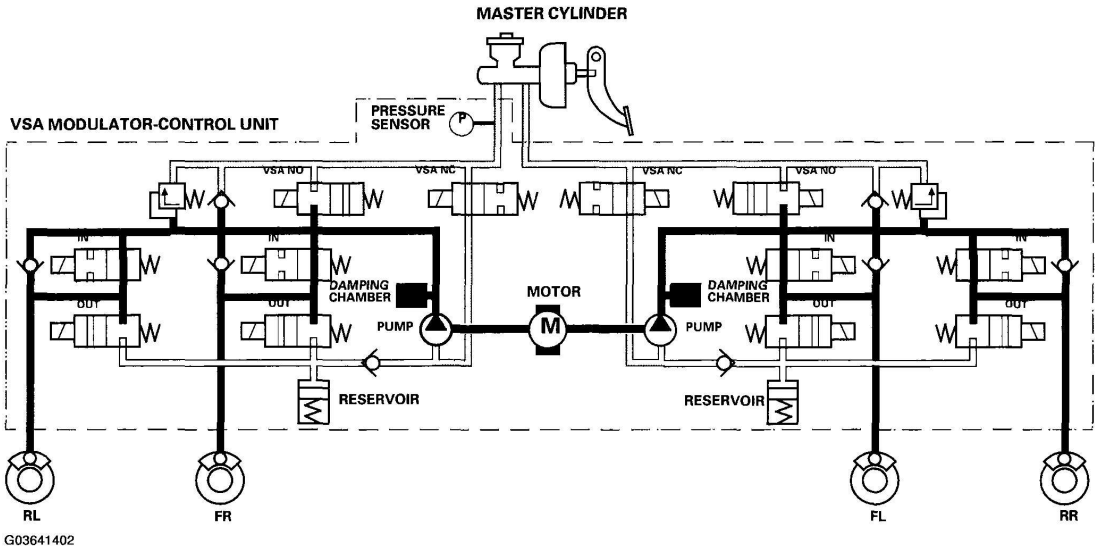


Fig. 17: Identifying Pressure Intensifying Mode
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Pressure retaining mode

VSA NO valve closed, VSA NC valve open, inlet valve closed, outlet valve closed, pump motor ON.

Front and rear caliper fluid is retained by the inlet valve and outlet valve.

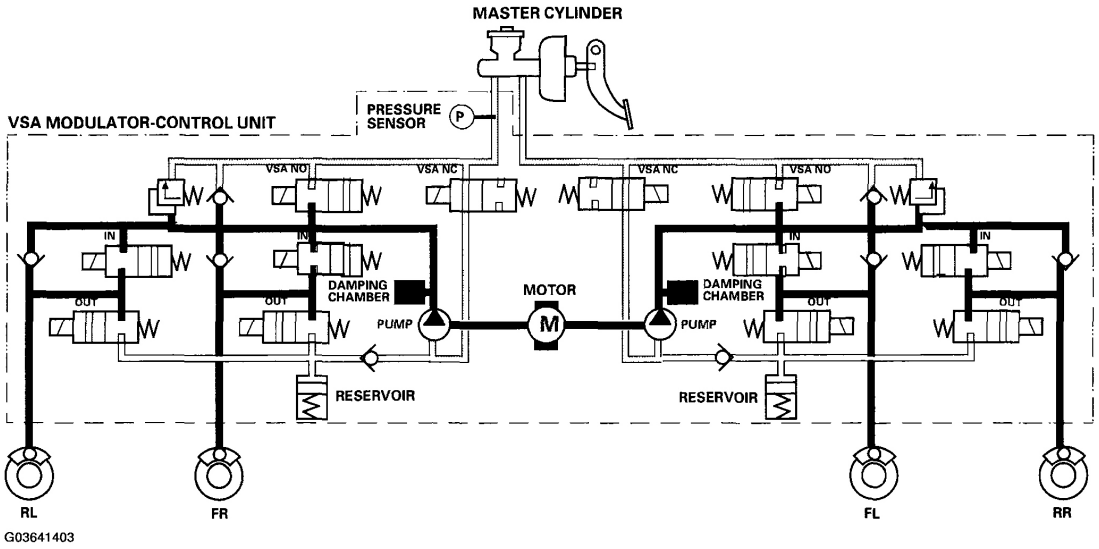


Fig. 18: Identifying Pressure Retaining Mode
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Pressure reducing mode

VSA NO valve closed, VSA NC valve open, inlet valve closed, outlet valve open, pump motor ON.

Caliper fluid flows through the outlet valve to the reservoir.

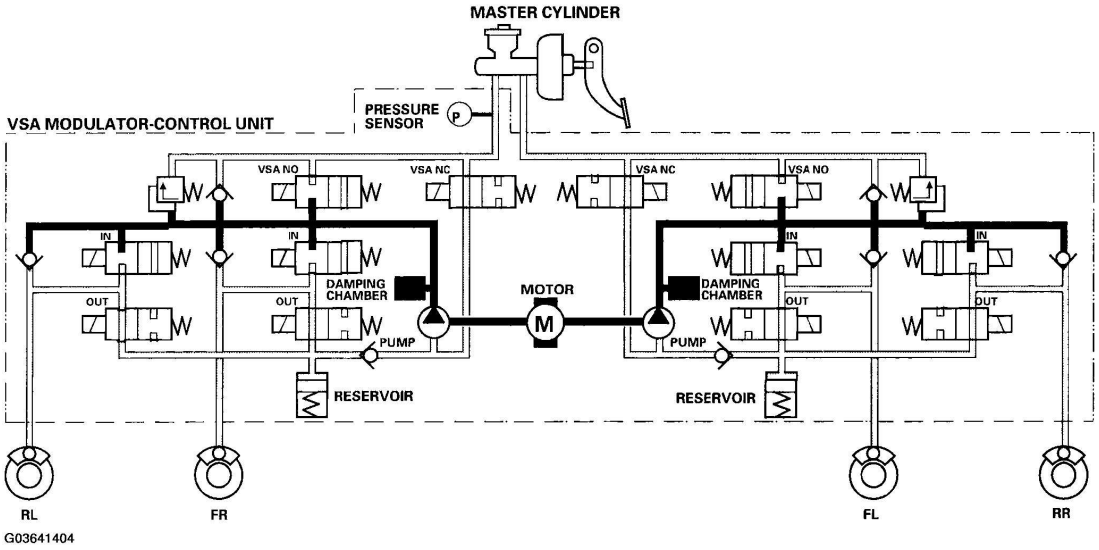


Fig. 19: Identifying Pressure Reducing Mode
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT DIAGRAM

'03 model

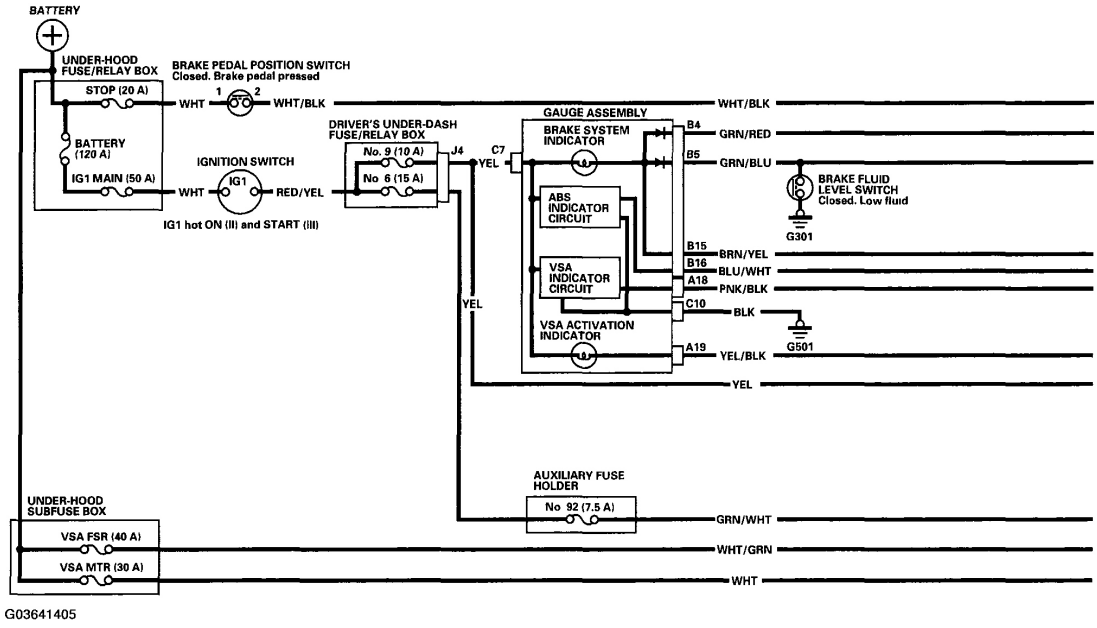


Fig. 20: Circuit Diagram 03 Mode (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

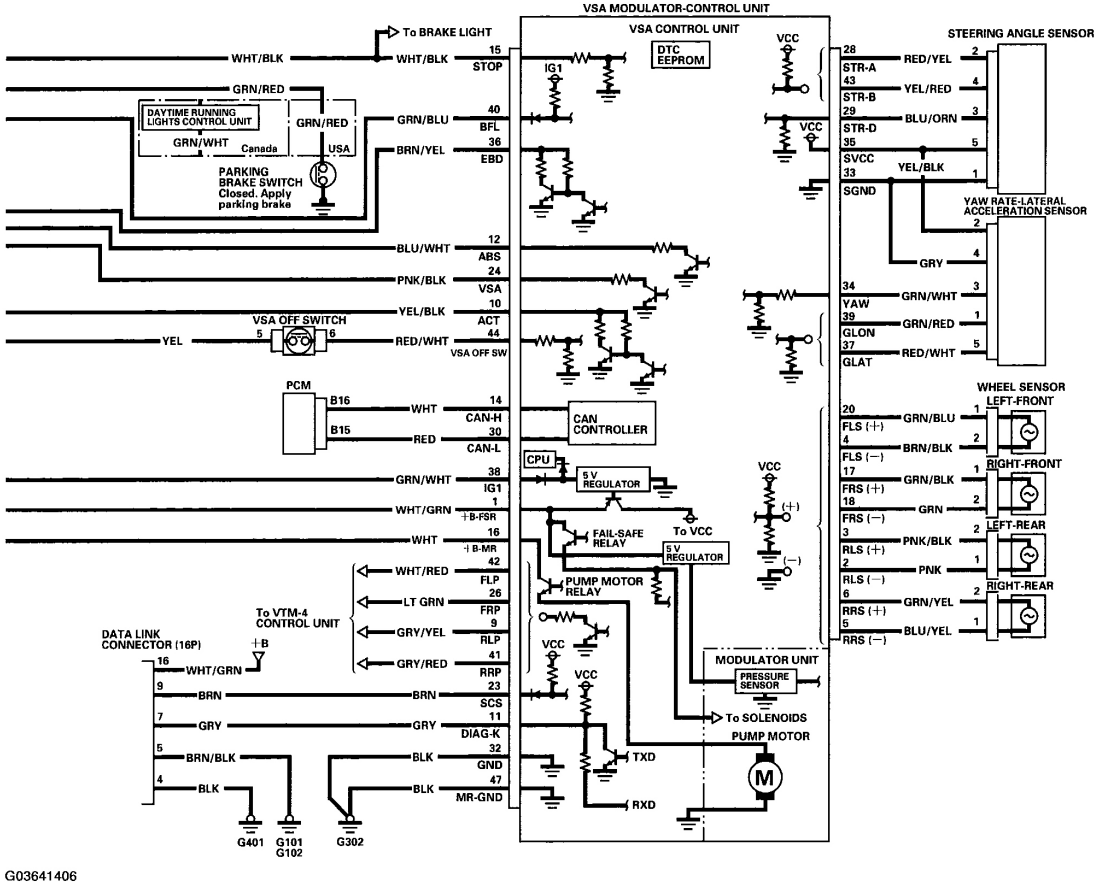


Fig. 21: Circuit Diagram 03 Mode (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

'04-06 models

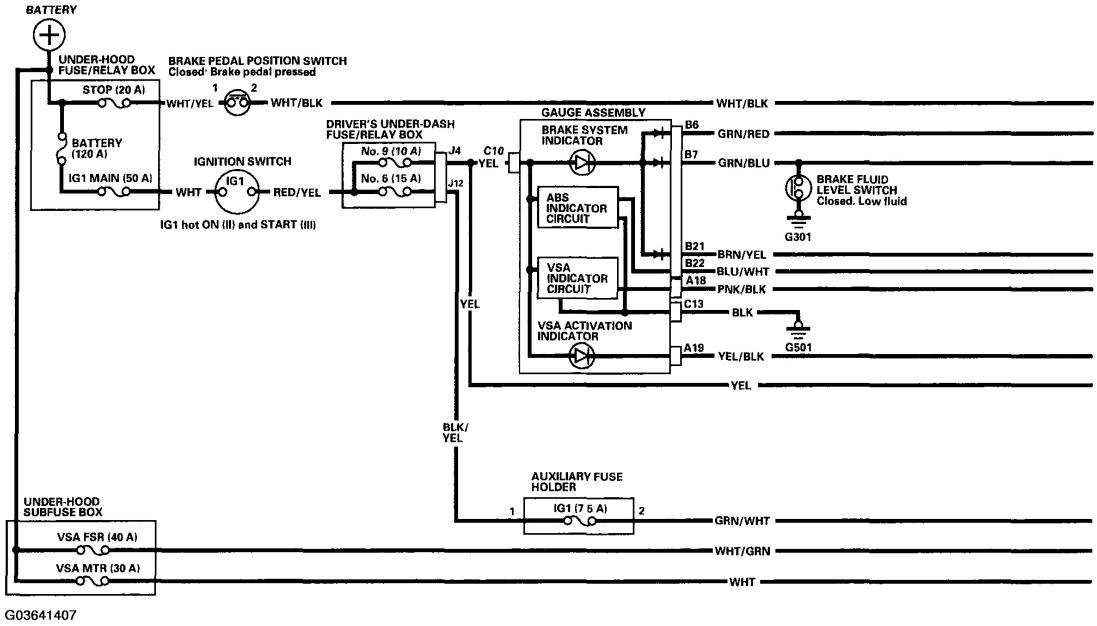


Fig. 22: Circuit Diagram 04-06 Mode (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

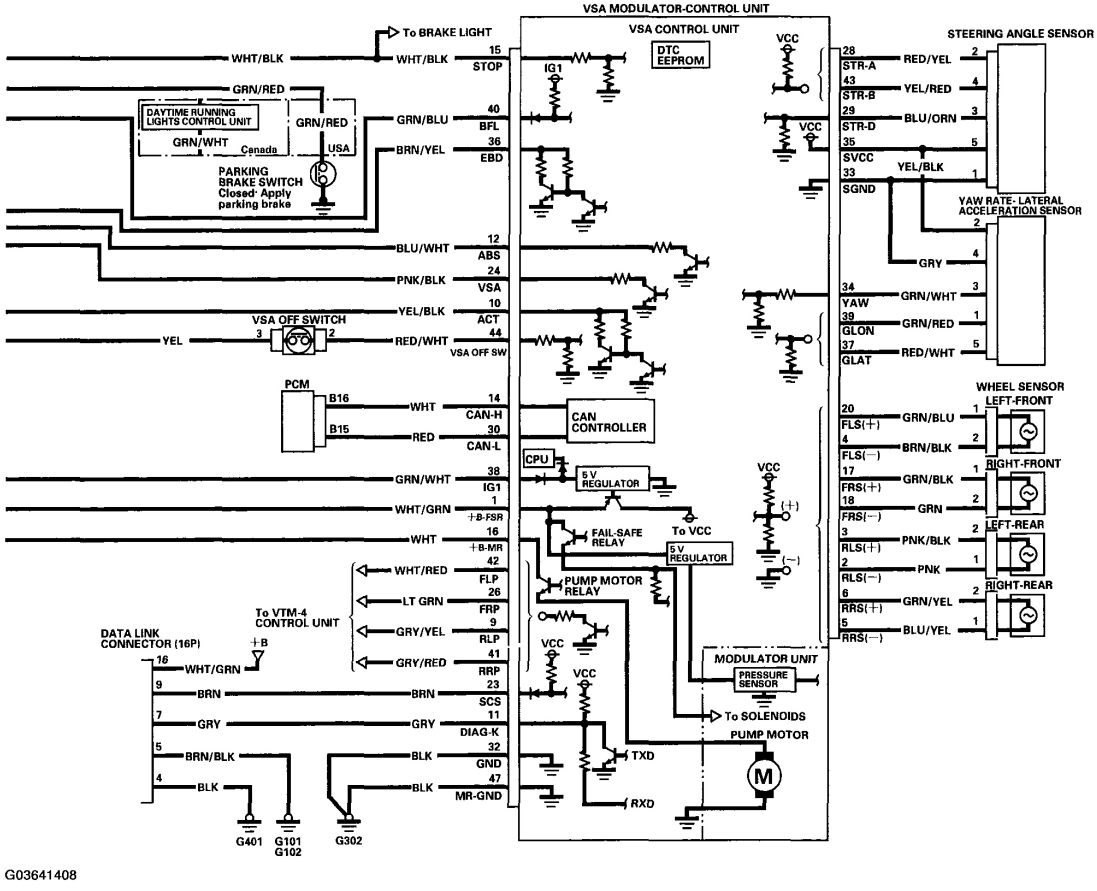
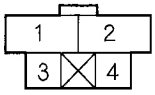


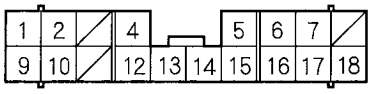
Fig. 23: Circuit Diagram 04-06 Mode (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

'03 model

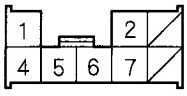
BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



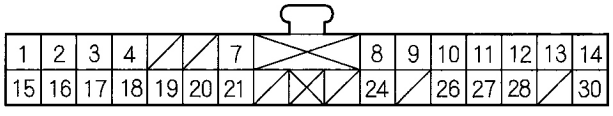
DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR J (18P)



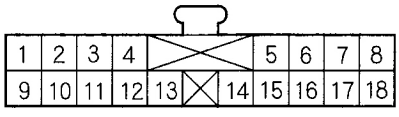
VSA OFF SWITCH 8P CONNECTOR



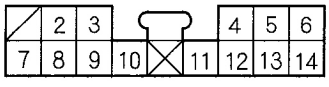
GAUGE ASSEMBLY CONNECTORS
CONNECTOR A (30P)



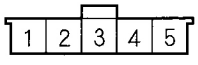
CONNECTOR B (18P)



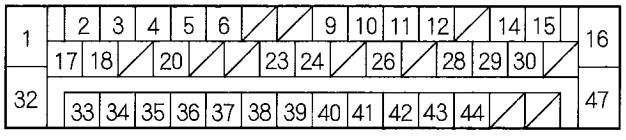
CONNECTOR C (14P)



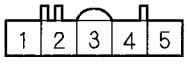
STEERING ANGLE SENSOR 5P CONNECTOR



VSA MODULATOR-CONTROL UNIT 47P CONNECTOR

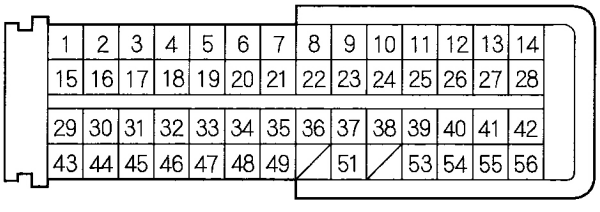


YAW RATE-LATERAL ACCELERATION SENSOR 5P CONNECTOR

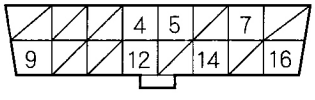


Wire side of female terminals

PCM CONNECTOR B (56P)



DATA LINK CONNECTOR (16P)



Terminal side of female terminals

WHEEL SENSOR 2P CONNECTOR

FRONT

Terminal side of male terminals

REAR

Wire side of female terminals

G03641409

Fig. 24: Circuit Diagram 03 Mode (Wire Side Of Female Terminal) (1 Of 2)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

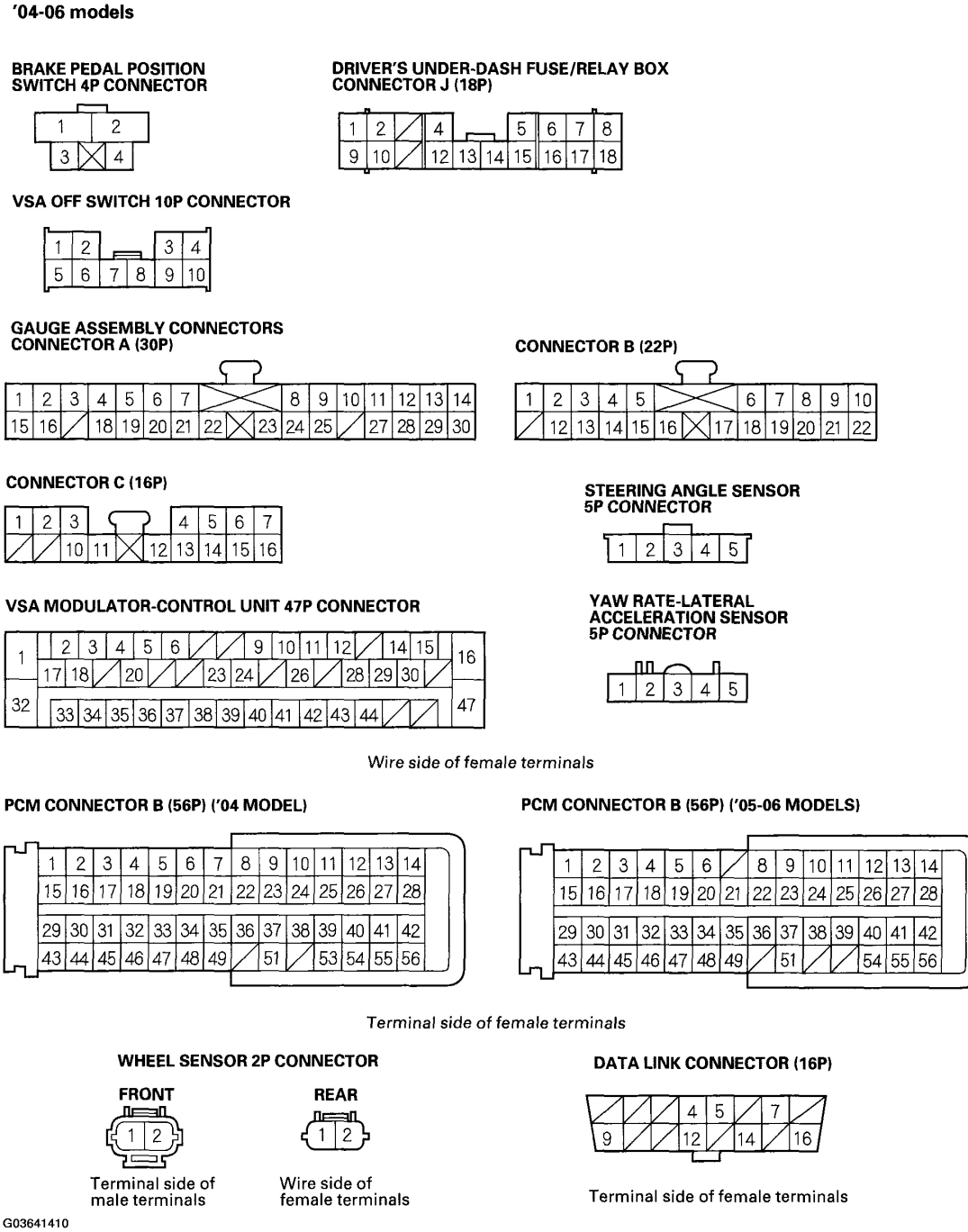


Fig. 25: Circuit Diagram 03 Mode (Wire Side Of Female Terminal) (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC 11, 13, 15, 17: WHEEL SENSOR (SHORT TO POWER/SHORT TO BODY GROUND/OPEN)

1. Clear the DTC (see **HOW TO CLEAR DTCS**).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

   Does the VSA or ABS indicator come on?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for loose or poor connections (see **INTERMITTENT FAILURES**).
5. Disconnect the VSA modulator-control unit 47P connector.
6. Start the engine.
7. Measure the voltage between the appropriate wheel sensor (+) circuit terminal of the VSA modulator-control unit 47P connector and body ground (see table).

DTC	Appropriate Terminal
11 (Right-front)	No. 17: FRS (+)
13 (Left-front)	No. 20: FLS (+)
15 (Right-rear)	No. 6: RRS (+)
17 (Left-rear)	No. 3: RLS (+)

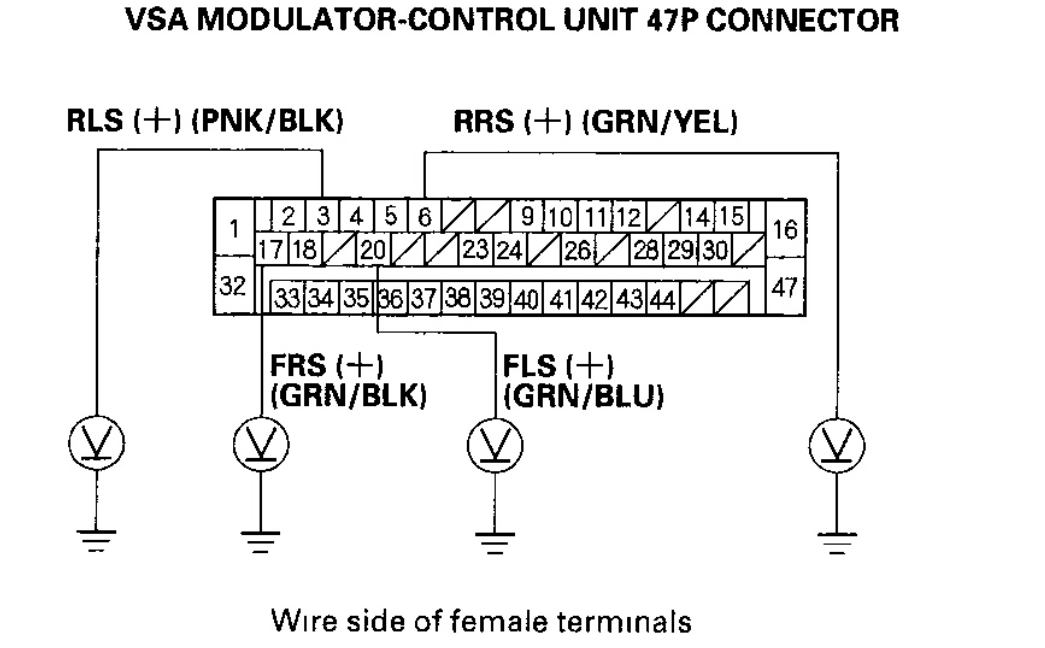


Fig. 26: Appropriate Terminal Specification (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 1 V or more?

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

NO - Go to step 8.

8. Turn the ignition switch OFF.
9. Check for continuity between the appropriate wheel sensor (+) circuit terminal of the VSA modulator-control unit 47P connector and body ground (see table).

DTC	Appropriate Terminal
11 (Right-front)	No. 17: FRS (+)
13 (Left-front)	No. 20: FLS (+)
15 (Right-rear)	No. 6: RRS (+)
17 (Left-rear)	No. 3: RLS (+)

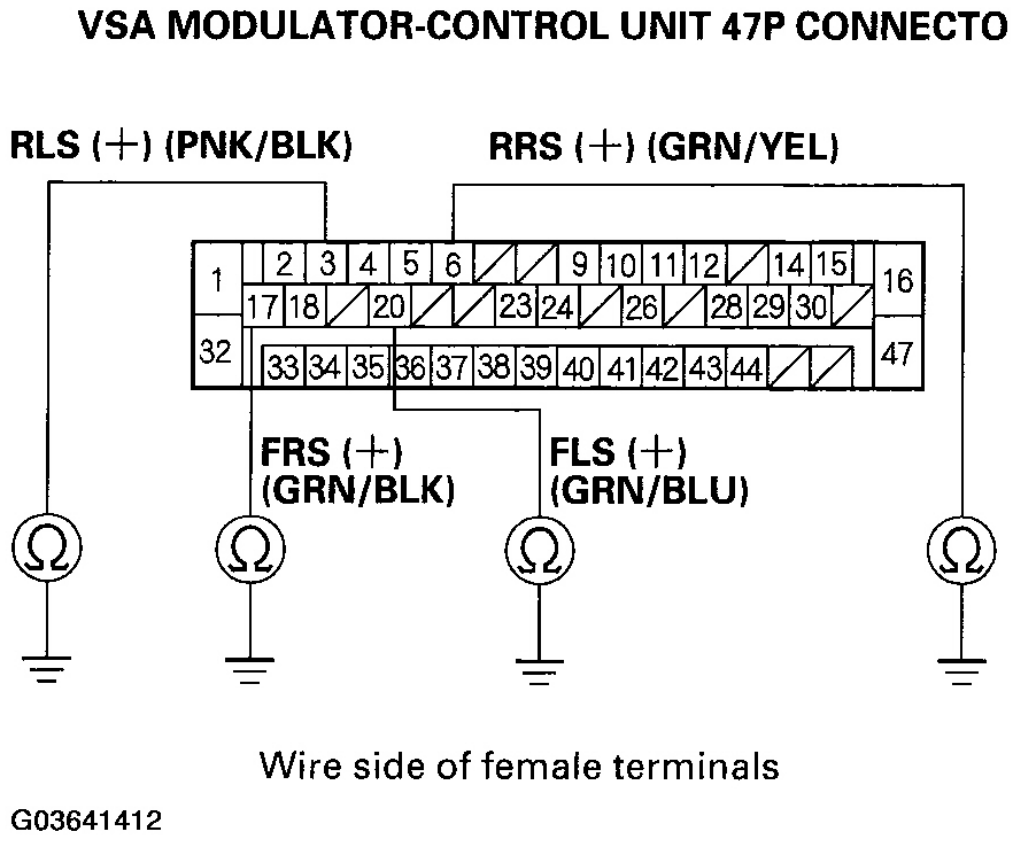


Fig. 27: Appropriate Terminal Specification (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 10.
NO - Go to step 11 .

10. Disconnect the harness 2P connector from the appropriate wheel sensor, then check for continuity between the (+) and (-) terminals of the harness-side connector and body ground.

Is there continuity?

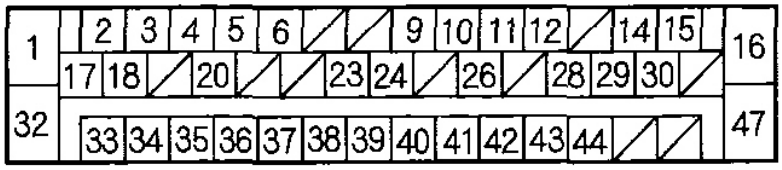
YES - Repair short to body ground in the (+) or (-) circuit wire between the VSA modulator-control unit and the wheel sensor.

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

11. Check the resistance between the appropriate wheel sensor (+) and (-) circuit terminals of the VSA modulator-control unit 47P connector (see table).

DTC	Appropriate Terminal	
	(+) Side	(−) Side
11 (Right-front)	No. 17: FRS (+)	No. 18: FRS (−)
13 (Left-front)	No. 20: FLS (+)	No. 4: FLS (−)
15 (Right-rear)	No. 6: RRS (+)	No. 5: RRS (−)
17 (Left-rear)	No. 3: RLS (+)	No. 2: RLS (−)

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

G03641413

Fig. 28: Checking Resistance Between Appropriate Wheel Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 450 - 2,000 ohm?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - Go to step 12.

12. Disconnect the harness 2P connector from the appropriate wheel sensor, and check the resistance between the (+) and (-) terminals of the wheel sensor.

Is there 450 - 2,000 ohm?

YES - Repair open in the (+) or (-) circuit wire, or short between the (+) circuit wire and the (-) circuit wire between the VSA modulator-control unit and the wheel sensor.

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

DTC 12, 14, 16, 18: WHEEL SENSOR (ELECTRICAL NOISE/INTERMITTENT INTERRUPTION)

NOTE: If the ABS indicator comes on because of electrical noise, the indicator goes off when you test-drive the vehicle at 19 mph (30 km/h).

1. Check the appropriate wheel sensor and pulser for damage and proper air gap (see **WHEEL SENSOR INSPECTION**).

WHEEL SENSOR SPECIFICATION

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

Are they OK?

YES - Go to step 2.

NO - Reinstall or replace the appropriate wheel sensor or pulser.

2. Disconnect the VSA modulator-control unit 47P connector.
3. Check for continuity between the appropriate wheel sensor (+) circuit terminal and other wheel sensor (+) circuit terminal (see table).

DTC	Appropriate Terminal	Other Terminal		
12	No. 17: FRS (+)	No. 20	No. 6	No. 3
14	No. 20: FLS (+)	No. 17	No. 6	No. 3
16	No. 6: RRS (+)	No. 17	No. 20	No. 3
18	No. 3: RLS (+)	No. 17	No. 20	No. 3

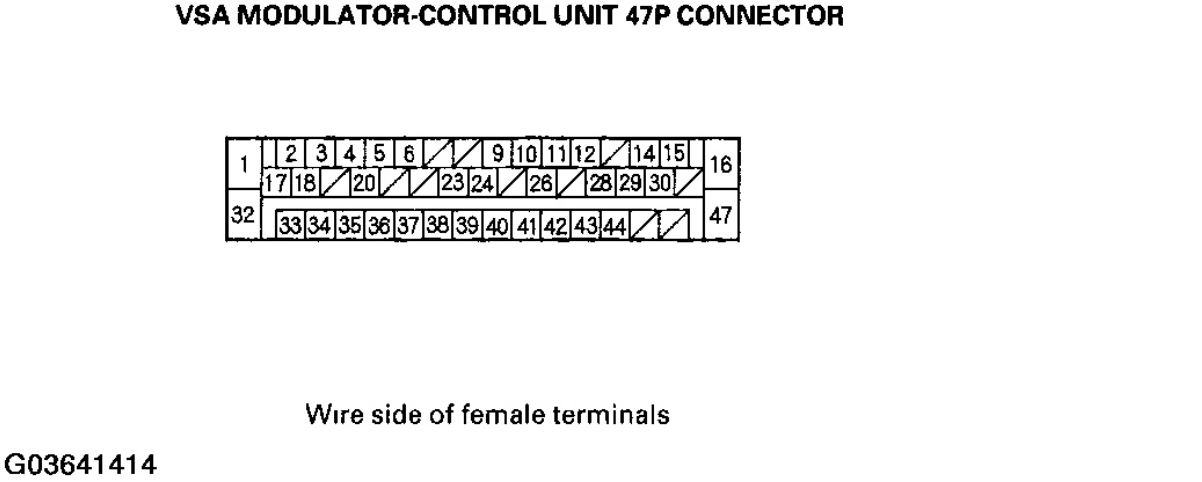


Fig. 29: Checking For Continuity Between Appropriate Wheel Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the appropriate wheel sensor and the other wheel sensor.
NO - Go to step 4.

4. Substitute a known-good wheel sensor for the appropriate wheel sensor (see table).

WHEEL SENSOR SPECIFICATION

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

5. Clear the DTC (see **HOW TO CLEAR DTCS**).
6. Disconnect the HDS from the 16P DLC.
7. Turn the ignition switch OFF, then turn it ON (II) again. Test-drive the vehicle at 19 mph (30 km/h) or more.

Does the ABS indicator come on?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - Replace the original wheel sensor (see **WHEEL SENSOR INSPECTION**).

DTC 21, 22, 23, 24: PULSER

1. Clear the DTC, (see **HOW TO CLEAR DTCS**) and disconnect the HDS.
2. Test-drive the vehicle at 19 mph (30 km/h) or more.

Does the ABS indicator come on, and are DTCs 21, 22, 23, 24 indicated?

YES - Go to step 3.

NO - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

3. Check the appropriate wheel sensor and pulser for damage and proper air gap (see **WHEEL SENSOR INSPECTION**).

WHEEL SENSOR SPECIFICATION

DTC	Appropriate Wheel Sensor
21	Right-front
22	Left-front
23	Right-rear
24	Left-rear

Is the encoder OK?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - Replace the appropriate pulser.

DTC 25: YAW RATE SENSOR

1. Clear the DTC, and disconnect the HDS. (see **HOW TO CLEAR DTCS**).
2. Turn the ignition switch OFF, then turn it ON (II) again.
3. Test-drive the vehicle around a number of corners.

4. Verify the DTC.

   Is DTC 27 or 64 indicated?

   YES - Do the appropriate troubleshooting for the DTC.

   NO - Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the VSA modulator-control unit 47P connector, steering angle sensor 5P connector, and yaw rate-lateral acceleration sensor 5P connector.
7. Turn the ignition switch ON (II).
8. Measure the voltage between body ground and the VSA modulator-control unit 47P connector terminal No. 33, No. 34, and No. 35 individually.

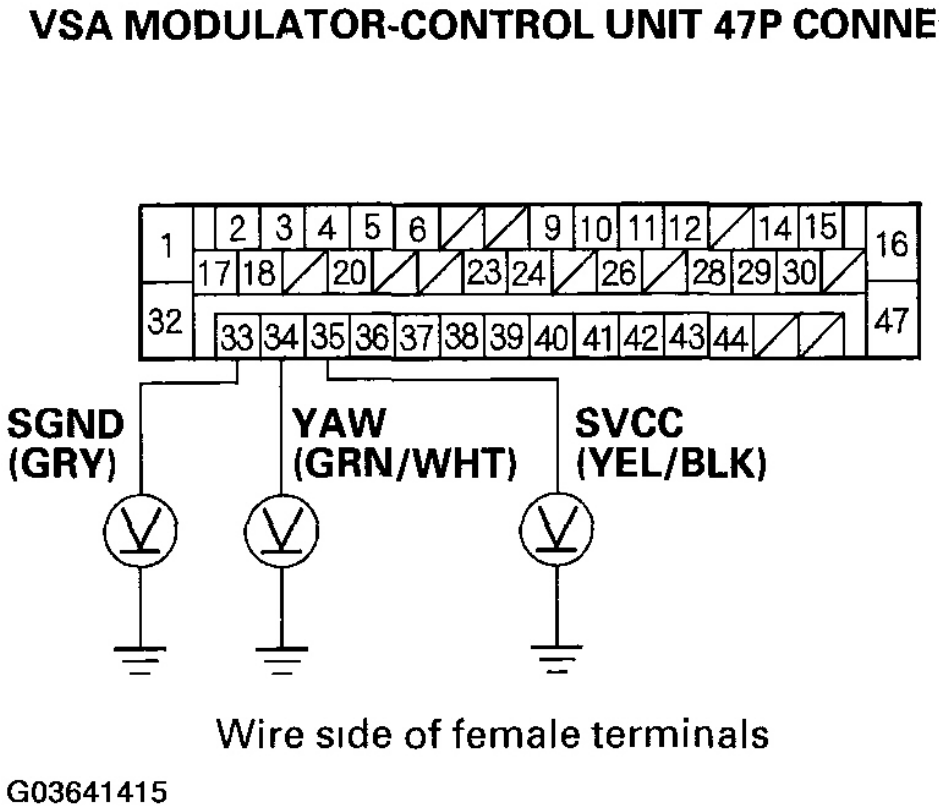


Fig. 30: Measuring Voltage Between Body Ground And VSA Modulator-Control Unit 47P Connector Terminal (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or more?

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

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Check for continuity between body ground and the VSA modulator-control unit 47P connector terminal No. 33, No. 34, and No. 35 individually.

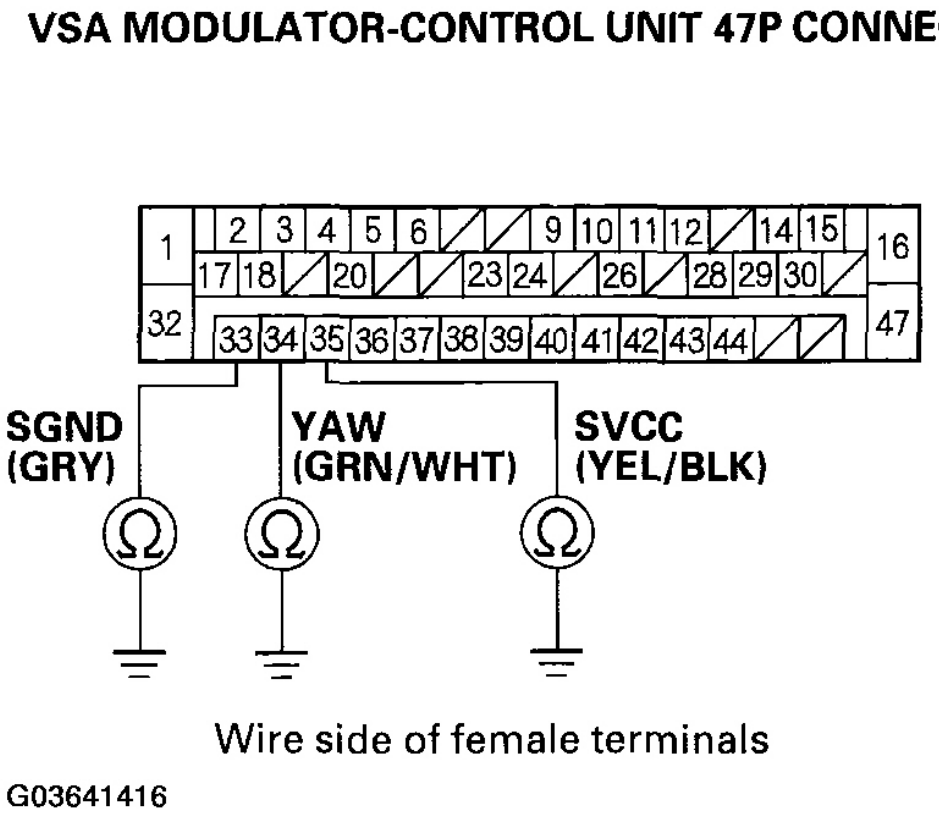


Fig. 31: Measuring Voltage Between Body Ground And VSA Modulator-Control Unit 47P Connector Terminal (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

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

NO - Go to step 11.

11. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 35 and yaw rate-lateral acceleration sensor 5P connector terminal No. 2.

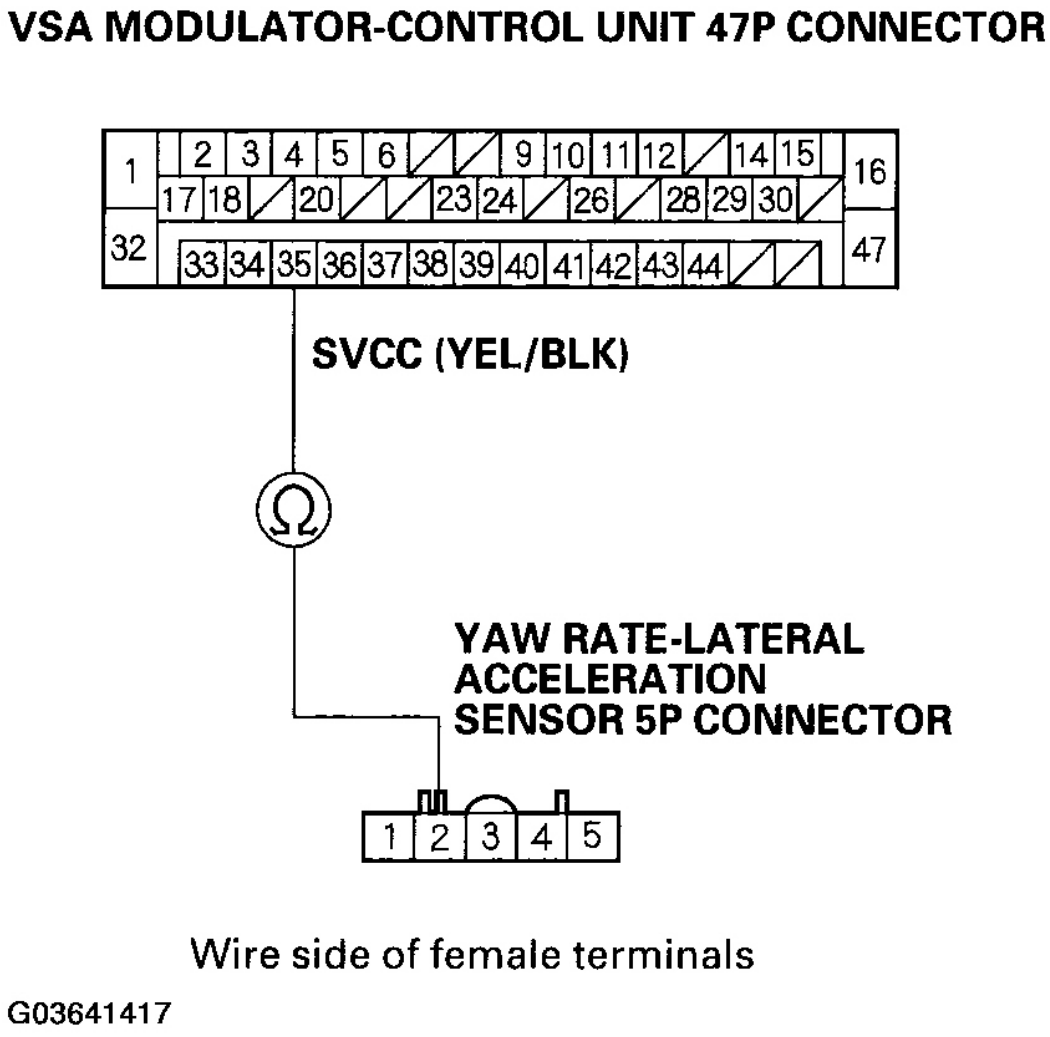


Fig. 32: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 12.

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

12. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 33 and yaw rate-lateral acceleration sensor 5P connector terminal No. 4.

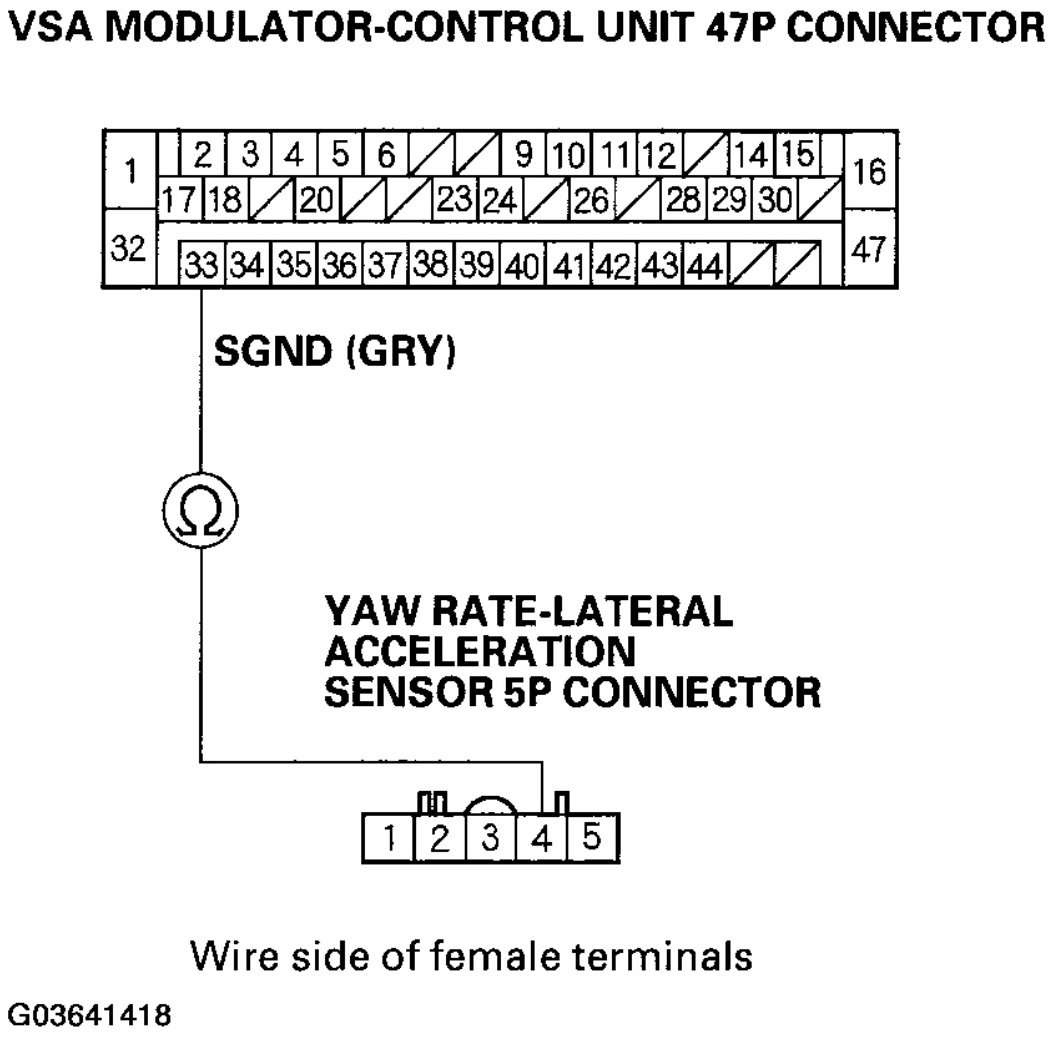


Fig. 33: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

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

13. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 34 and yaw rate-lateral acceleration sensor 5P connector terminal No. 3.

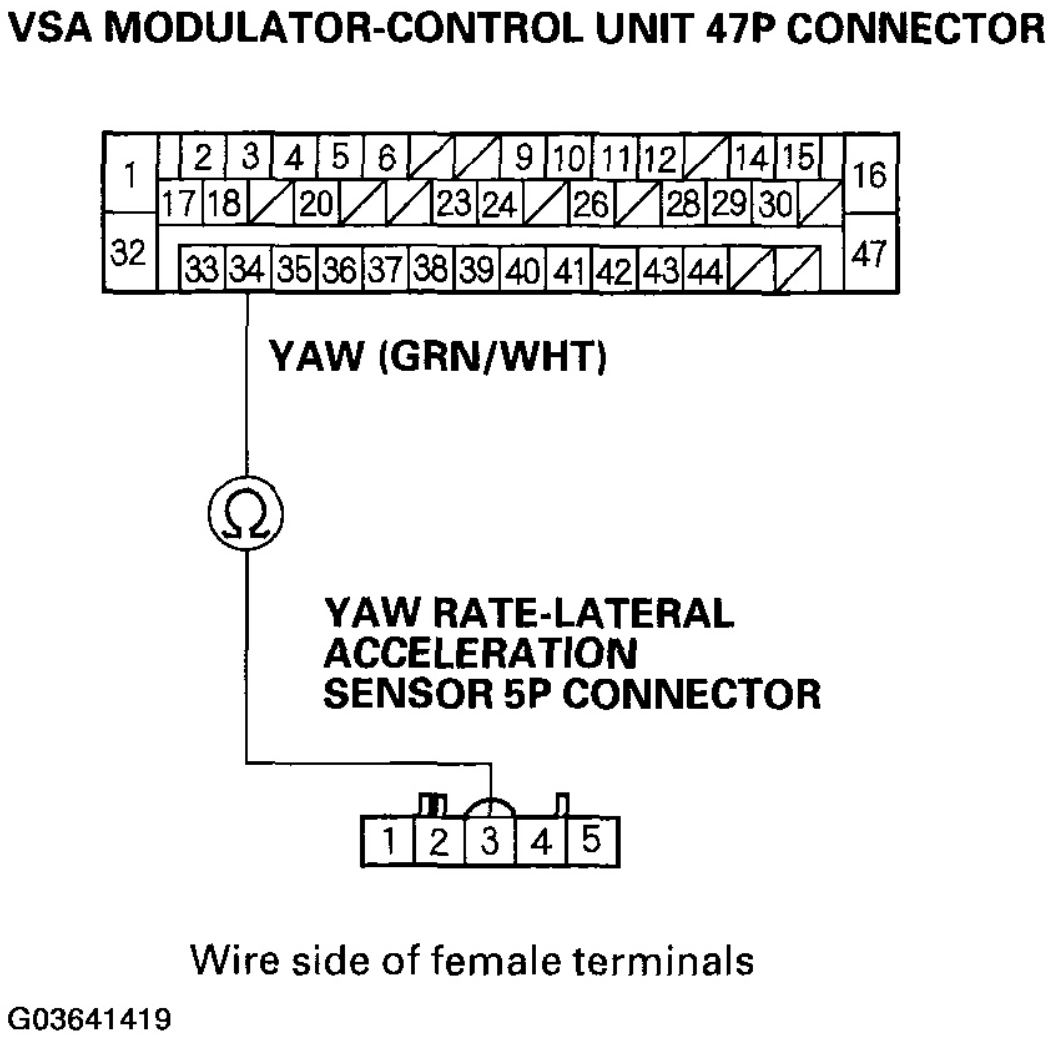


Fig. 34: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 14.

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

14. Reconnect the VSA modulator-control unit 47P connector, and turn the ignition switch ON (II).
15. Check for voltage between body ground and the VSA modulator-control unit 47P connector terminals No. 32 and No. 47 individually.

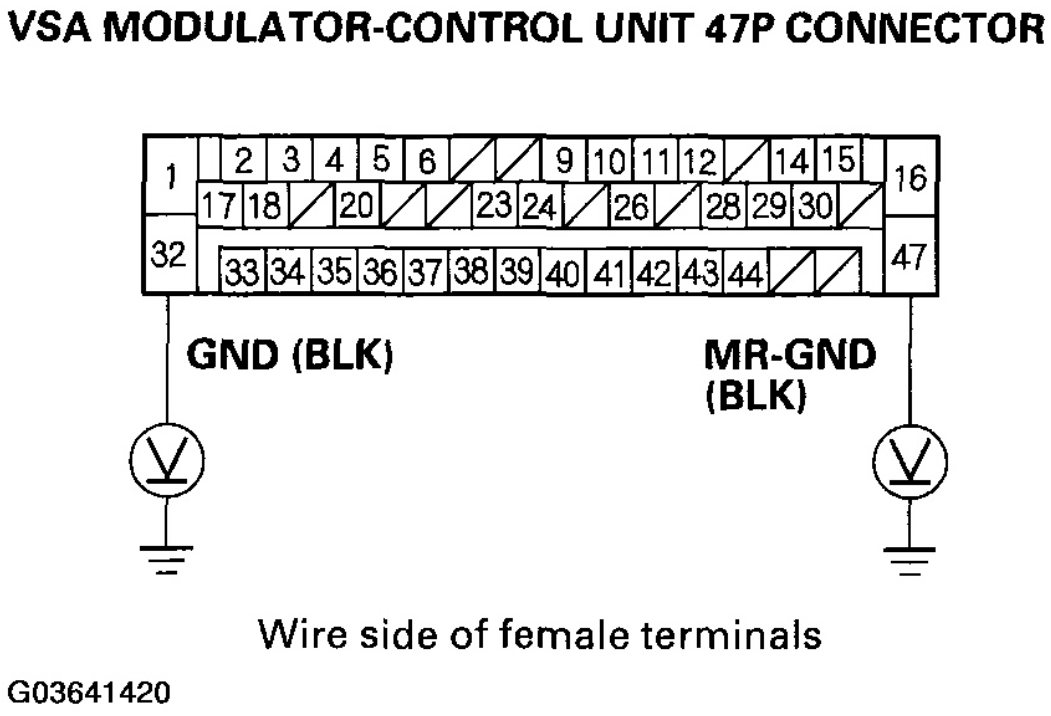


Fig. 35: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES - Go to step 16.

NO - Repair open in the wire between the VSA modulator-control unit and G302. If the wire is OK, check for a poor connection at G302.

16. Substitute a known-good yaw rate-lateral acceleration sensor.
17. Reconnect all of the disconnected connectors.
18. Clear the DTC (see **HOW TO CLEAR DTCS**).
19. Disconnect the HDS from the 16P DLC.
20. Turn the ignition switch OFF, then turn it ON (II) again.
21. Test-drive the vehicle around a number of corners.
22. Verify the DTC.

Is DTC 25 indicated?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary,

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

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

DTC 26: LATERAL ACCELERATION SENSOR

1. Clear the DTC, and disconnect the HDS (see **HOW TO CLEAR DTCS**).
2. Turn the ignition switch OFF, then turn it ON (II) again.
3. Test-drive the vehicle around a number of corners.
4. Verify the DTC.

   Is DTC 64 indicated?

   YES - Do the appropriate troubleshooting for the DTC.

   NO - Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the VSA modulator-control unit 47P connector, steering angle sensor 5P connector, and yaw rate-lateral acceleration sensor 5P connector.
7. Turn the ignition switch ON (II).
8. Measure the voltage between body ground and the VSA modulator-control unit 47P connector terminal No. 33, No. 35, and No. 37 individually.

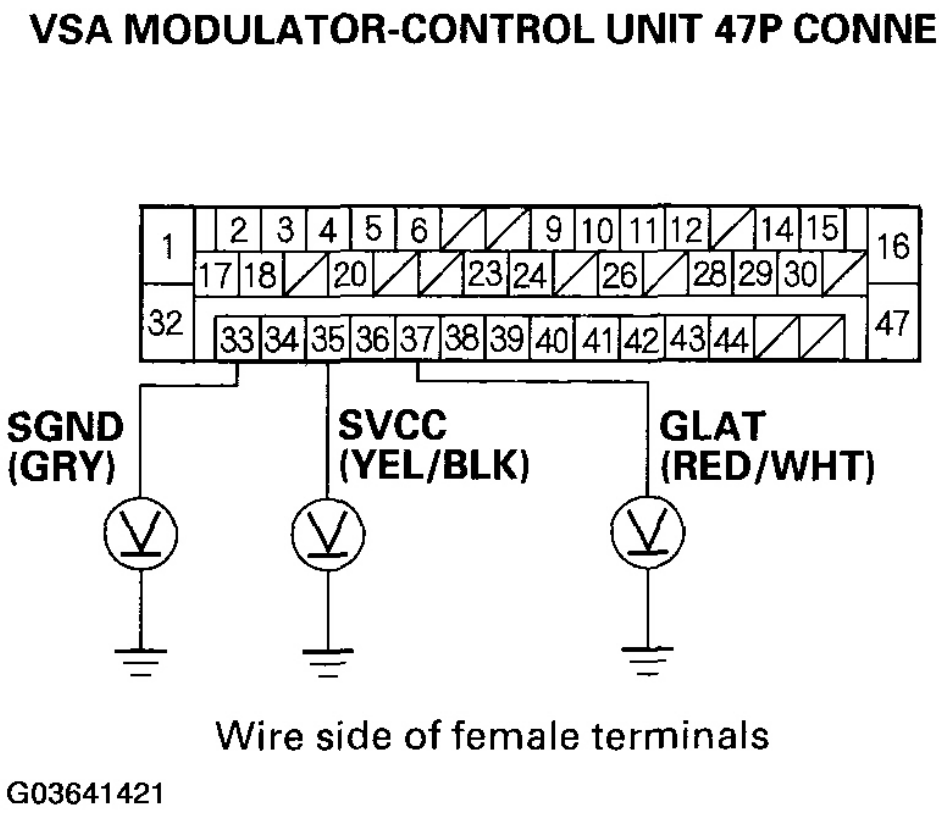


Fig. 36: Measuring Voltage Between Body Ground And VSA Modulator-Control Unit 47P Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or more?

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

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Check for continuity between body ground and the VSA modulator-control unit 47P connector terminal No. 33, No. 35, and No. 37 individually.

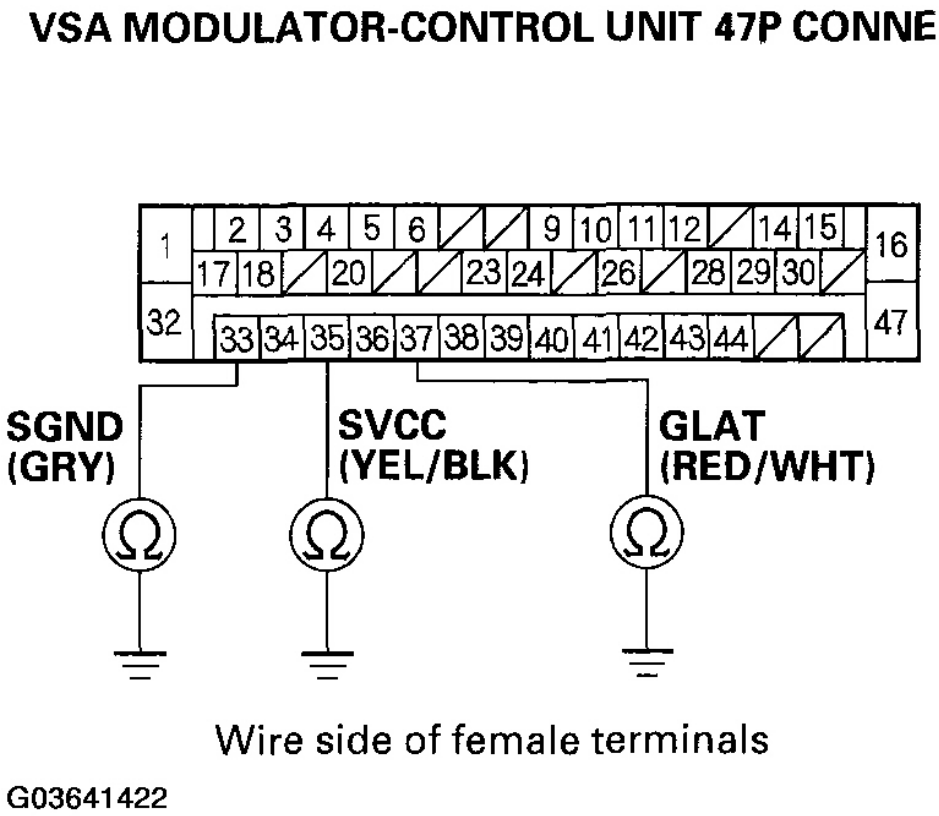


Fig. 37: Checking For Continuity Between Body Ground And VSA Modulator-Control Unit 47P Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

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

NO - Go to step 11.

11. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 35 and yaw rate-lateral acceleration sensor 5P connector terminal No. 2.

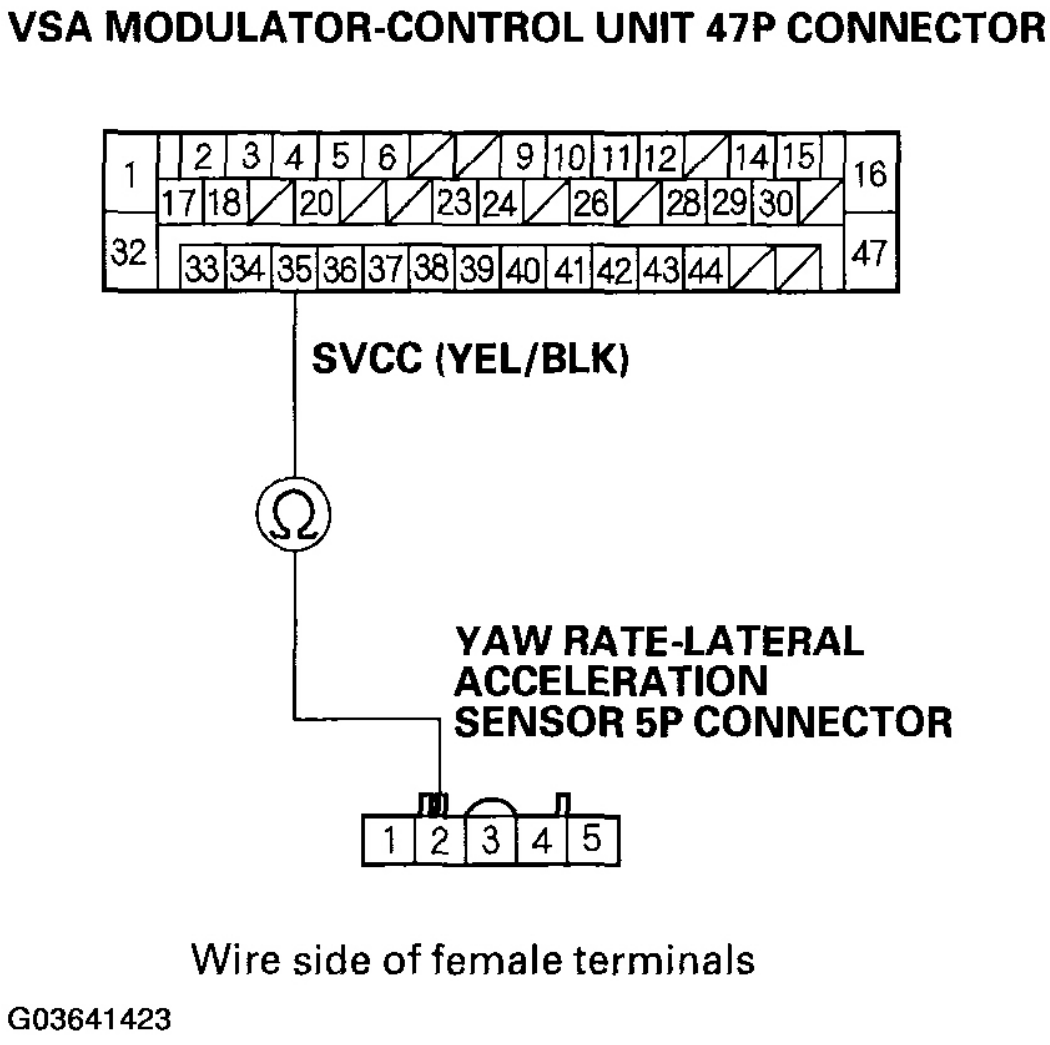


Fig. 38: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal No. 35
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 12.

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

12. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 33 and yaw rate-lateral acceleration sensor 5P connector terminal No. 4.

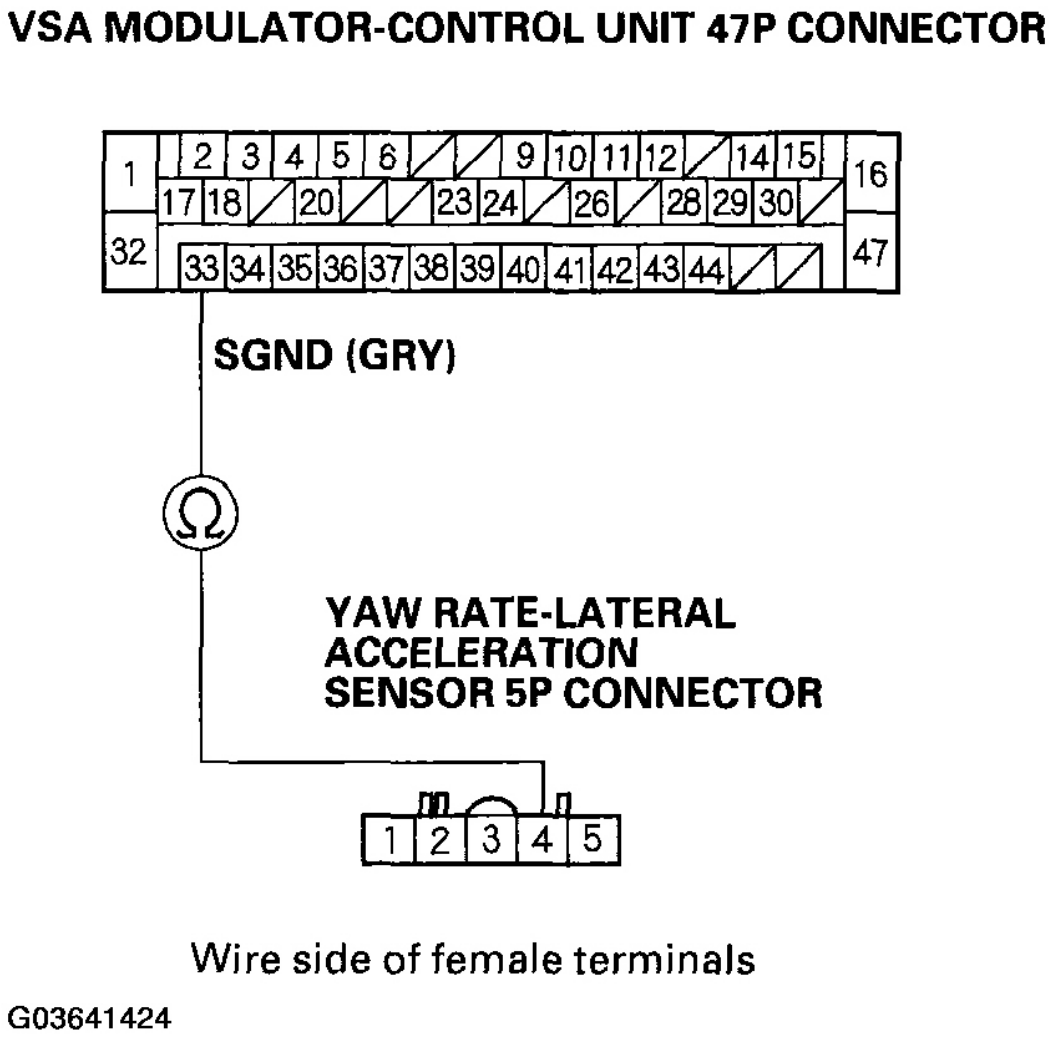


Fig. 39: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal No. 33
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

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

13. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 37 and yaw rate-lateral acceleration sensor 5P connector terminal No. 5.

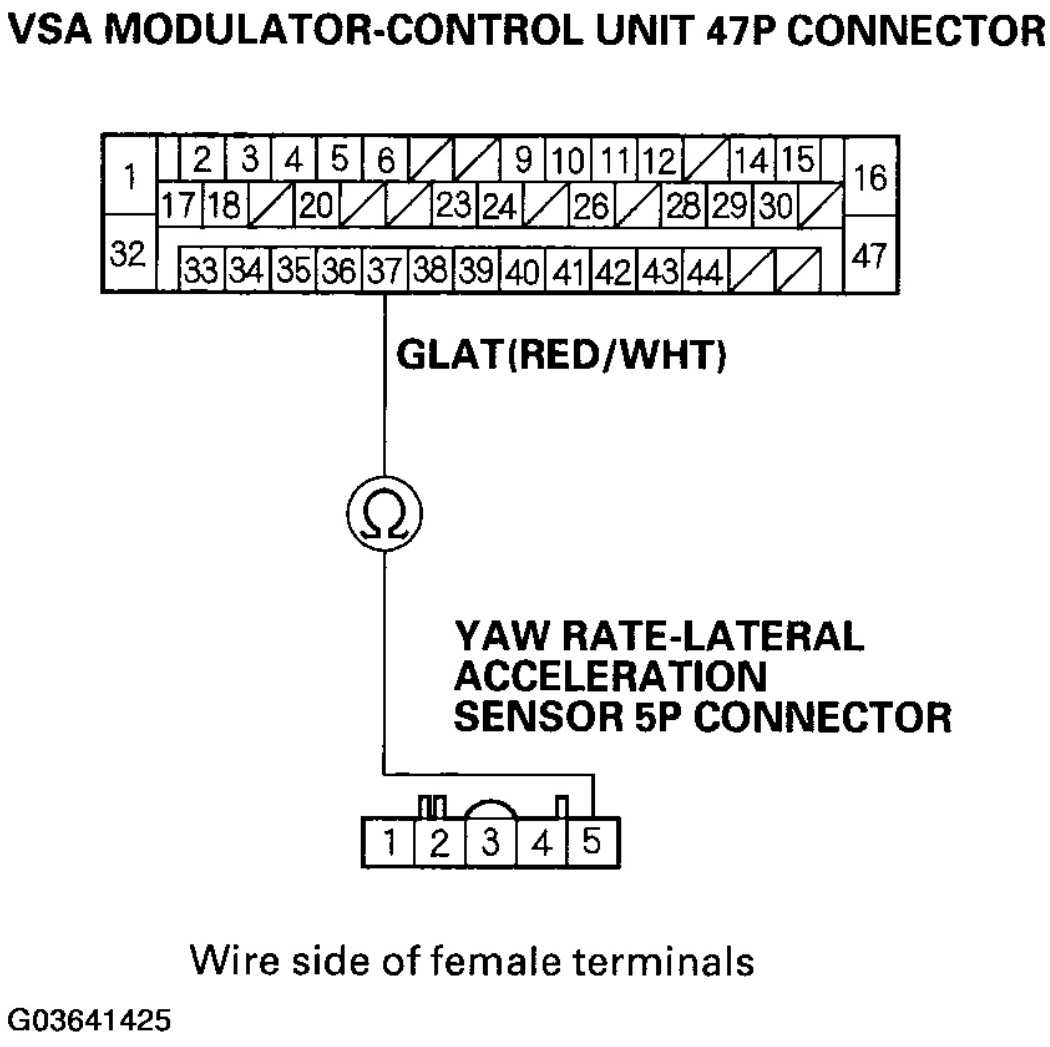


Fig. 40: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal No. 37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 14.

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

14. Reconnect the VSA modulator-control unit 47P connector, and turn the ignition switch ON (II).
15. Check for voltage between body ground and the VSA modulator-control unit 47P connector terminals No. 32 and No. 47 individually.

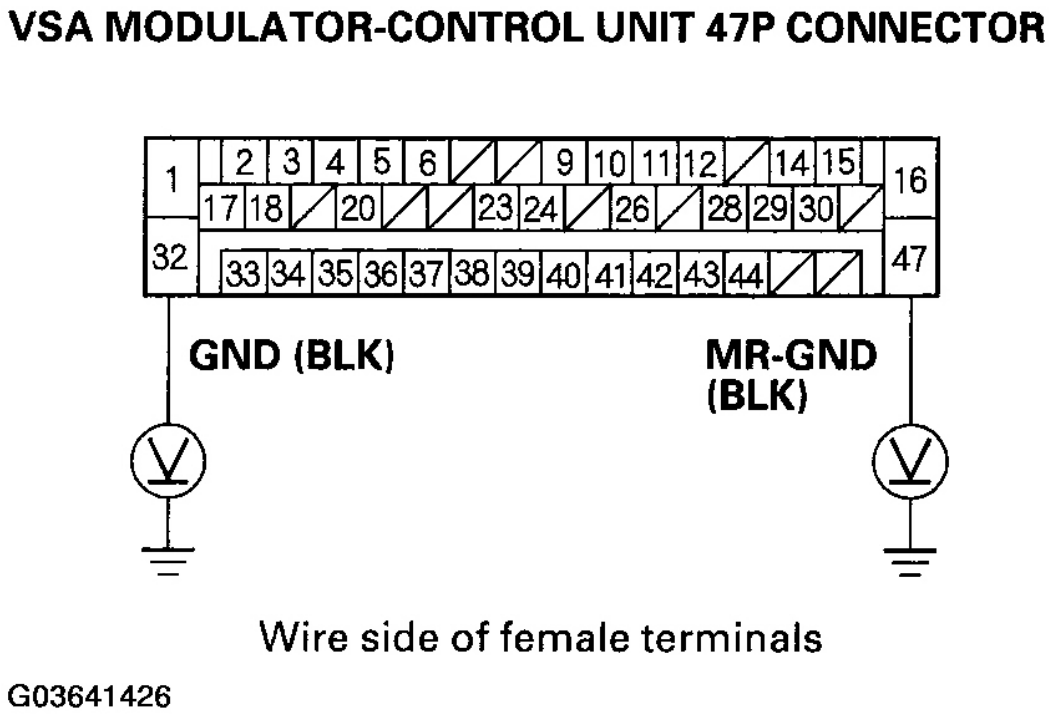


Fig. 41: Checking For Voltage Between Body Ground And VSA Modulator-Control Unit 47P Connector Terminals No. 32 And No. 47
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES - Go to step 16.

NO - Repair open in the wire between the VSA modulator-control unit and G302. If the wire is OK, check for a poor connection at G302.

16. Substitute a known-good yaw rate-lateral acceleration sensor.
17. Reconnect all of the disconnected connectors.
18. Clear the DTC (see **HOW TO CLEAR DTCS**).
19. Disconnect the HDS from the 16P DLC.
20. Turn the ignition switch OFF, then turn it ON (II) again.
21. Test-drive the vehicle around a number of corners.
22. Verify the DTC.

Is DTC 26 indicated?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary,

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

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

DTC 27: STEERING ANGLE SENSOR

1. Clear the DTC, and disconnect the HDS (see **HOW TO CLEAR DTCS**).
2. Turn the ignition switch OFF, then turn it ON (II) again.
3. Test-drive the vehicle around a number of corners.
4. Verify the DTC.

   Is DTC 64 indicated?

   YES - Do the appropriate troubleshooting for the DTC.

   NO - Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the VSA modulator-control unit 47P connector, steering angle sensor 5P connector, and yaw rate-lateral acceleration sensor 5P connector.
7. Turn the ignition switch ON (II).
8. Measure the voltage between body ground and the VSA modulator-control unit 47P connector terminal No. 33, and No. 35 individually.

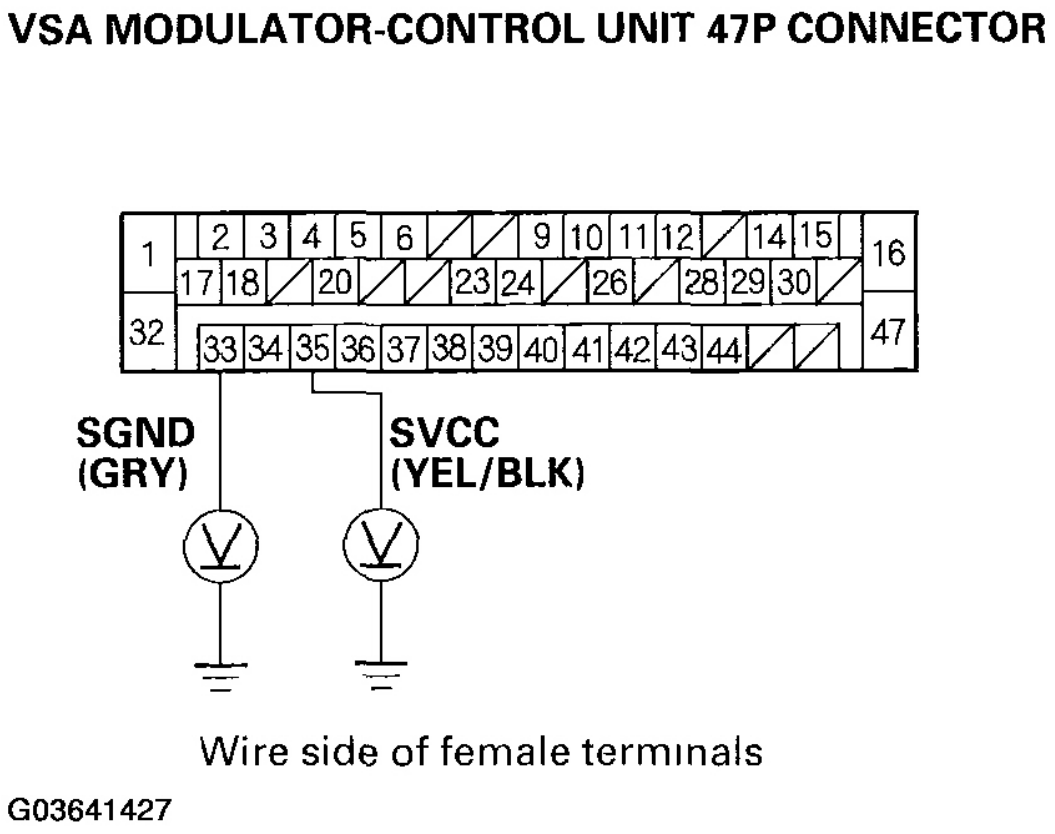


Fig. 42: Measuring Voltage Between Body Ground And VSA Modulator-Control Unit 47P Connector Terminal No. 33 And No. 35
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or more?

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

NO - Go to step 9.

9. Measure the voltage between body ground and the VSA modulator-control unit 47P connector terminal No. 28, No. 29, and No. 43 individually.

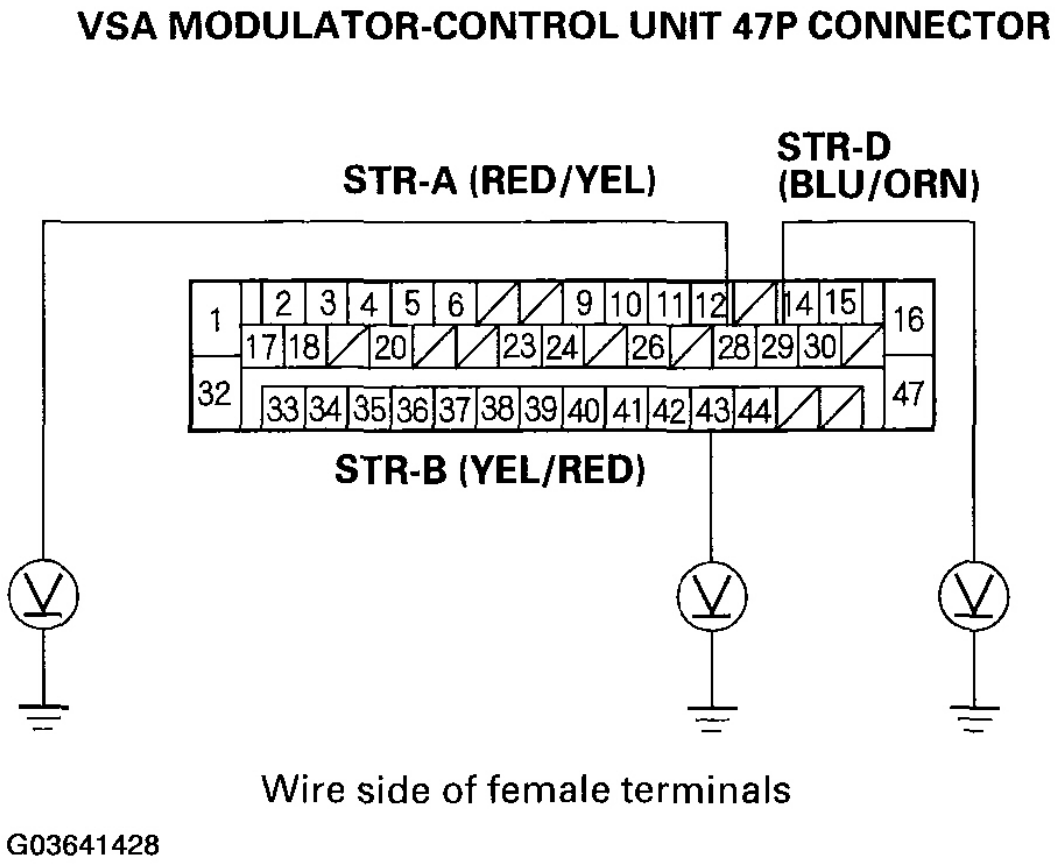


Fig. 43: Measuring Voltage Between Body Ground And VSA Modulator-Control Unit 47P Connector Terminal No. 28, No. 29 And No. 43
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or more?

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

NO - Go to step 10.

10. Turn the ignition switch OFF.
11. Check for continuity between body ground and the VSA modulator-control unit 47P connector terminal No. 33, and No. 35 individually.

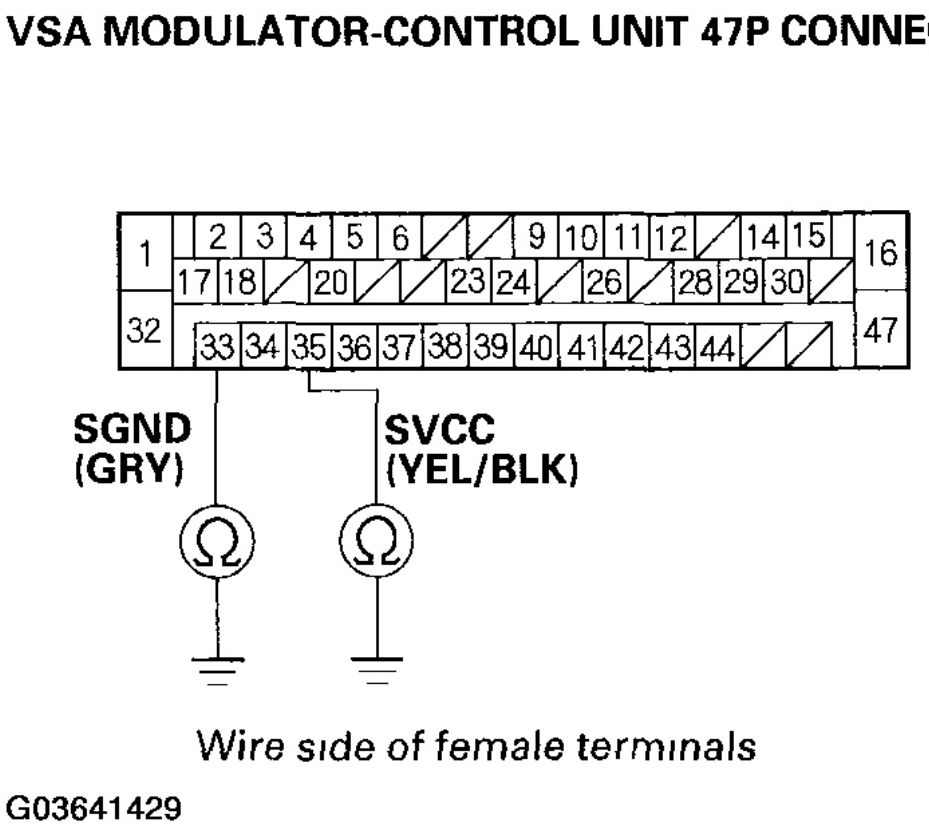


Fig. 44: Checking For Continuity Between Body Ground And VSA Modulator-Control Unit 47P Connector Terminal No. 33 And No. 35
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

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

NO - Go to step 12.

12. Check for continuity between body ground and the VSA modulator-control unit 47P connector terminal No. 28, No. 29, and No. 43 individually.

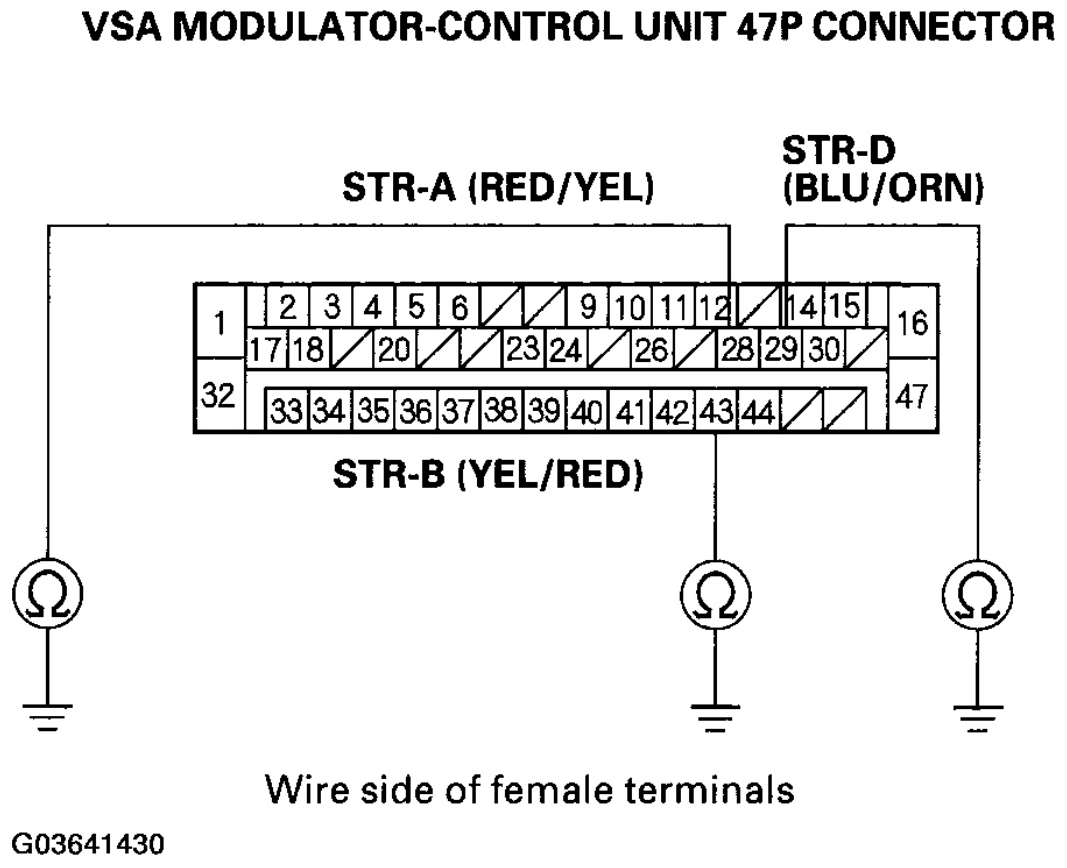


Fig. 45: Checking For Continuity Between Body Ground And VSA Modulator-Control Unit 47P Connector Terminal No. 28, No. 29 And No. 43
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

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

NO - Go to step 13.

13. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 33, No. 35 and steering angle sensor 5P connector terminal No. 1, No. 5 individually.

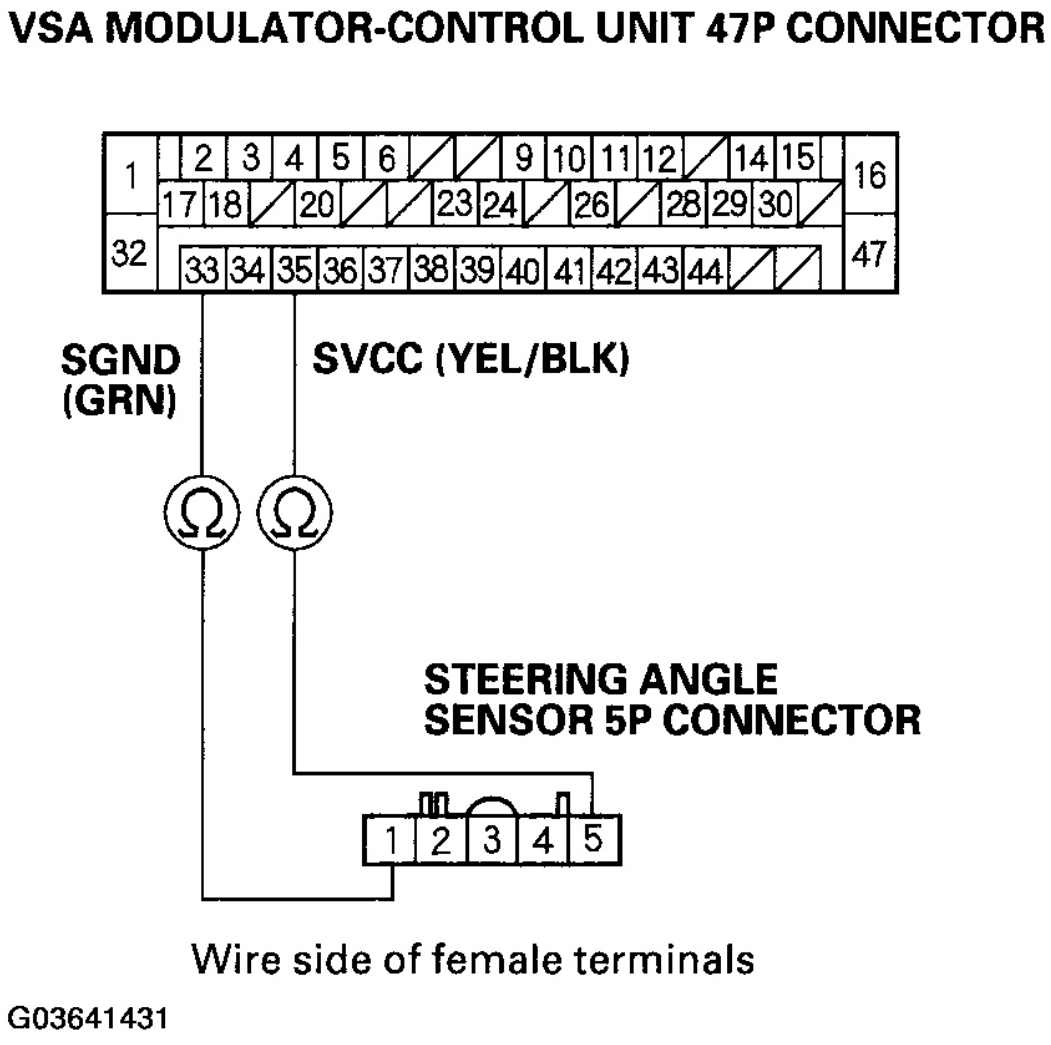


Fig. 46: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal No. 33, No. 35
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 14.

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

14. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 28, No. 29, No. 43 and steering angle sensor 5P connector terminal No. 2, No. 3, No. 4 individually.

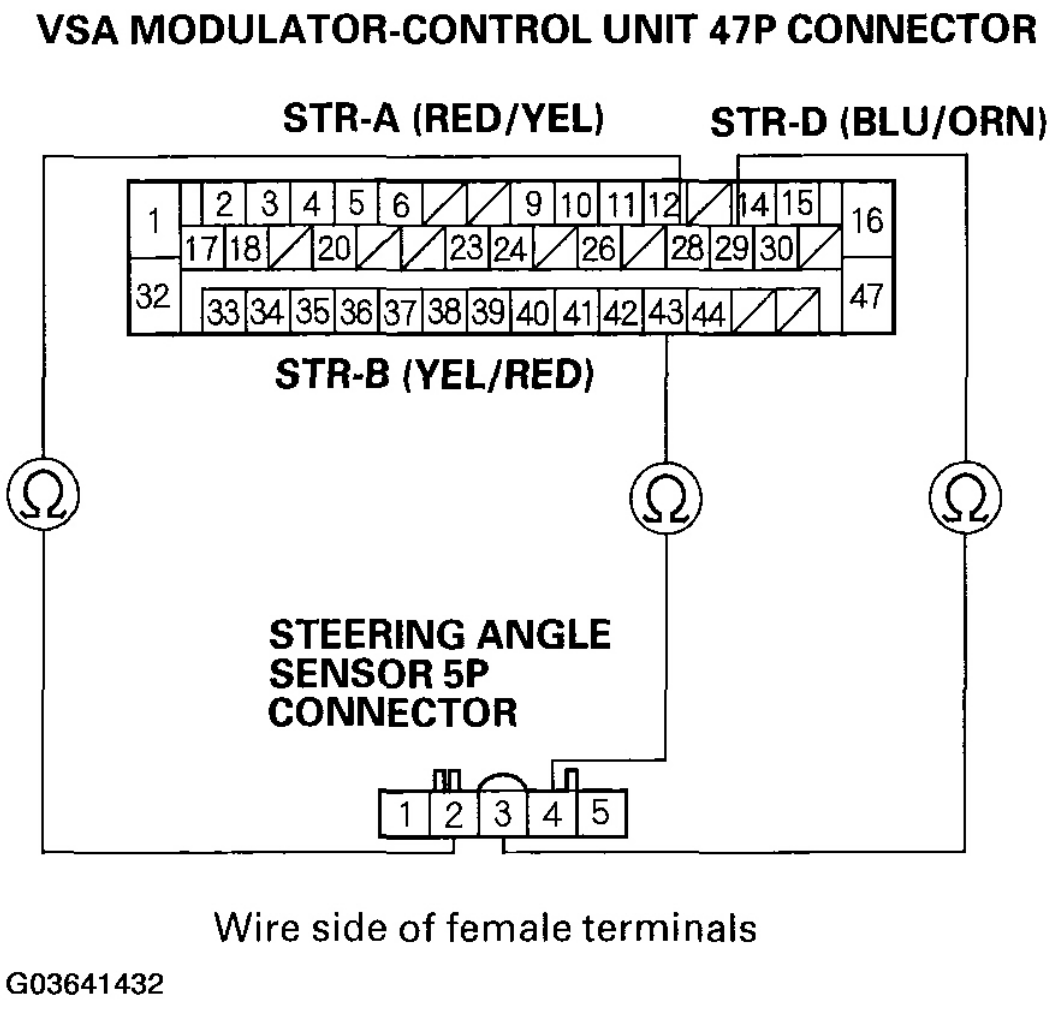


Fig. 47: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal No. 28, No. 29, No. 43
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 15.

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

15. Substitute a known-good steering angle sensor.
16. Reconnect all of the disconnected connectors.
17. Clear the DTC (see **HOW TO CLEAR DTCS**).
18. Disconnect the HDS from the 16P DLC.

19. Turn the ignition switch OFF, then turn it ON (II) again.
20. Test-drive the vehicle around a number of corners.
21. Verify the DTC.

Is DTC 27 indicated?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

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

DTC 28: LONGITUDE ACCELERATION SENSOR

1. Clear the DTC, and disconnect the HDS (see **HOW TO CLEAR DTCS**).
2. Turn the ignition switch OFF, then turn it ON (II) again.
3. Test-drive the vehicle around a number of corners.
4. Verify the DTC.

Is DTC 64 indicated?

YES - Do the appropriate troubleshooting for the DTC.

NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the VSA modulator-control unit 47P connector, steering angle sensor 5P connector, and yaw rate-lateral acceleration sensor 5P connector.
7. Turn the ignition switch ON (II).
8. Measure the voltage between body ground and the VSA modulator-control unit 47P connector terminal No. 33, No. 35, and No. 39 individually.

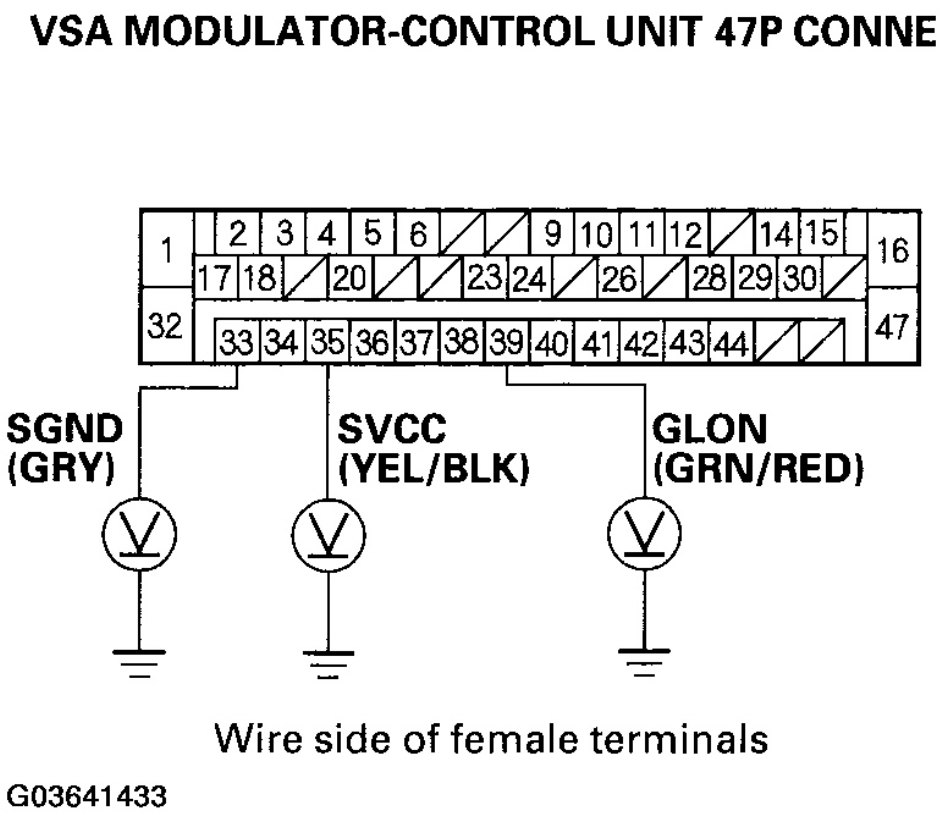


Fig. 48: Measuring Voltage Between Body Ground And VSA Modulator-Control Unit 47P Connector Terminal No. 33, No. 35 And No. 39
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or more?

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

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Check for continuity between body ground and the VSA modulator-control unit 47P connector terminal No. 33, No. 35, and No. 39 individually.

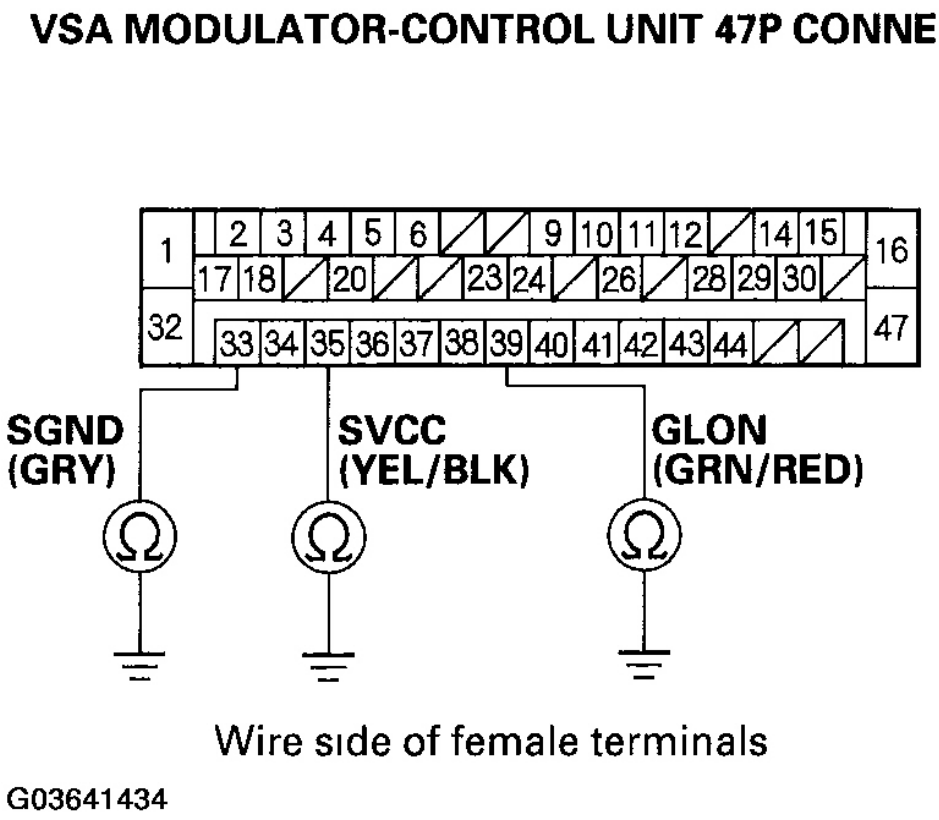


Fig. 49: Checking For Continuity Between Body Ground And VSA Modulator-Control Unit 47P Connector Terminal No. 33, No. 35 And No. 39
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

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

NO - Go to step 11.

11. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 35 and yaw rate-lateral acceleration sensor 5P connector terminal No. 2.

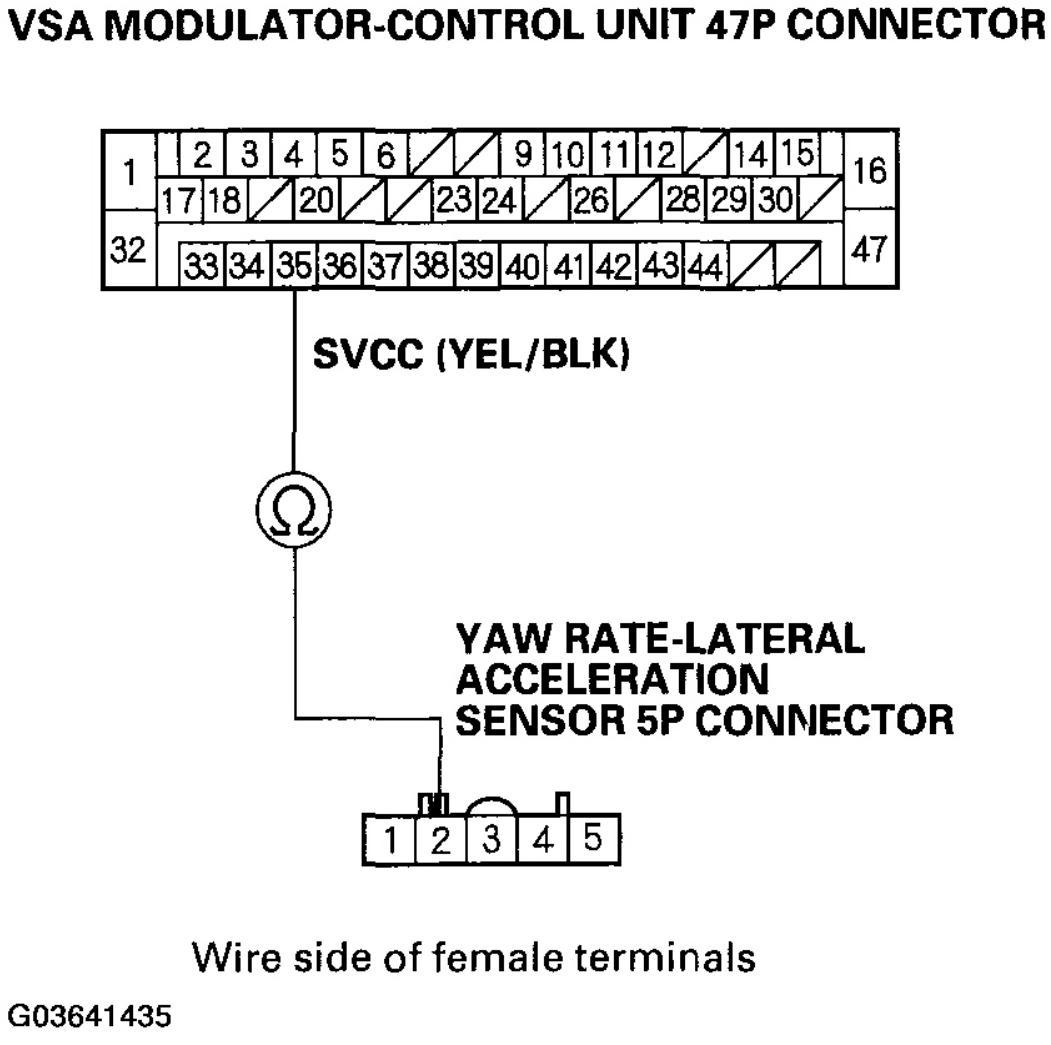


Fig. 50: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal No. 35
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 12.

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

12. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 33 and yaw rate-lateral acceleration sensor 5P connector terminal No. 4.

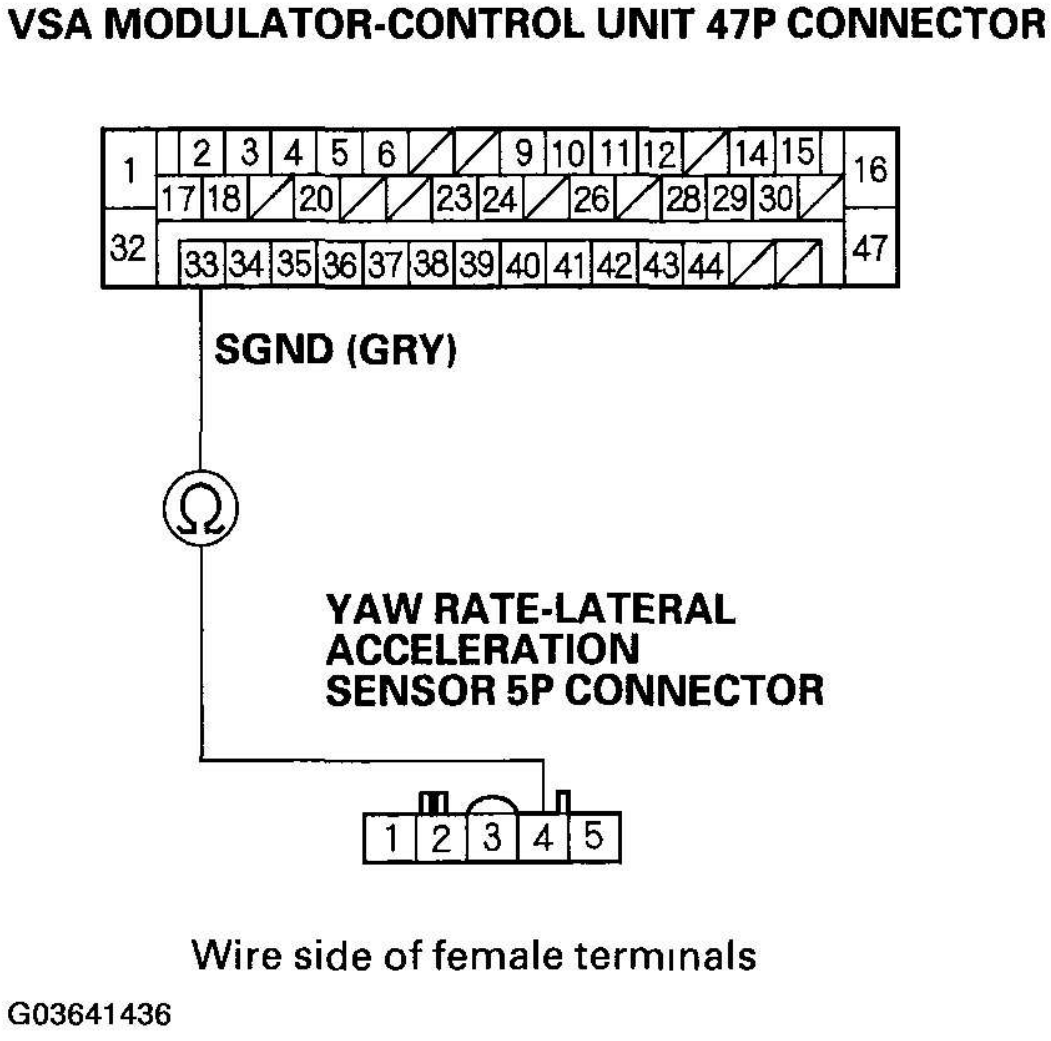


Fig. 51: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal No. 33
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

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

13. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 39 and yaw rate-lateral acceleration sensor 5P connector terminal No. 1.

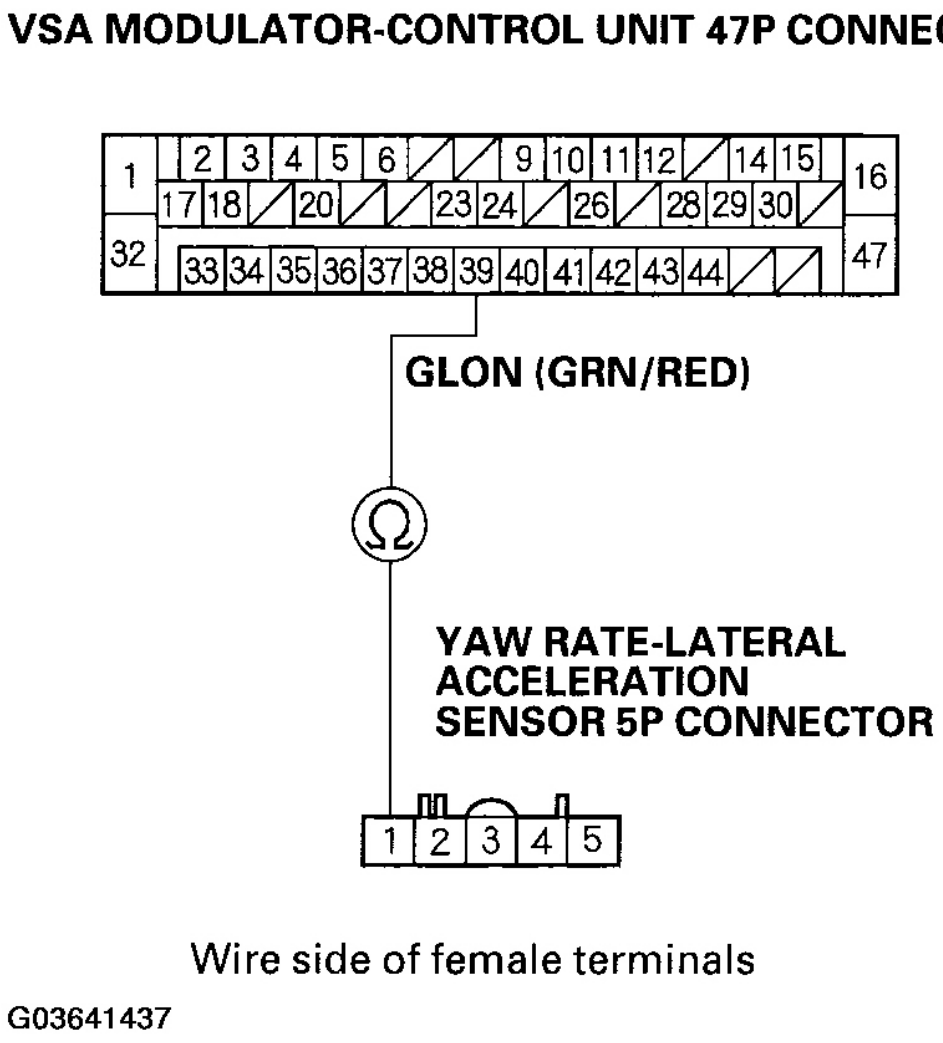


Fig. 52: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal No. 39
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 14.

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

14. Reconnect the VSA modulator-control unit 47P connector, and turn the ignition switch ON (II).
15. Check for voltage between body ground and the VSA modulator-control unit 47P connector terminals No. 32 and No. 47 individually.

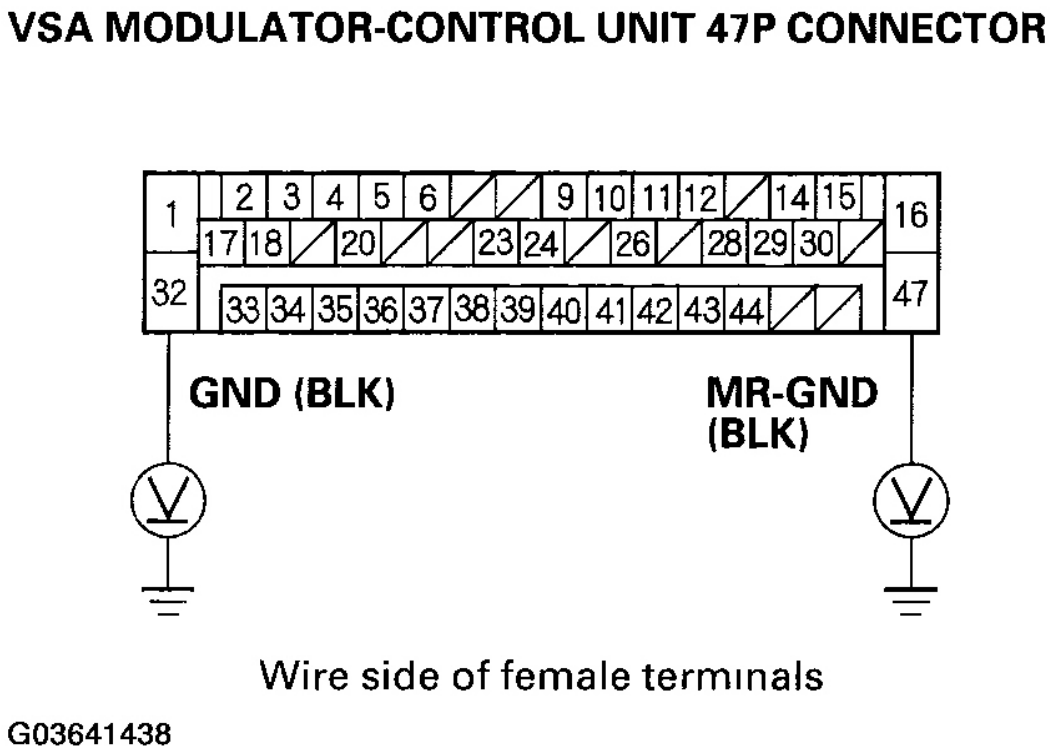


Fig. 53: Checking For Voltage Between Body Ground And VSA Modulator-Control Unit 47P Connector Terminals No. 32 And No. 47
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES - Go to step 16.

NO - Repair open in the wire between the VSA modulator-control unit and G302. If the wire is OK, check for a poor connection at G302.

16. Substitute a known-good yaw rate-lateral acceleration sensor.
17. Reconnect all of the disconnected connectors.
18. Clear the DTC (see **HOW TO CLEAR DTCS**).
19. Disconnect the HDS from the 16P DLC.
20. Turn the ignition switch OFF, then turn it ON (II) again.
21. Test-drive the vehicle around a number of corners.
22. Verify the DTC.

Is DTC 28 indicated?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

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

DTC 31, 32, 33, 34, 35, 36, 37, 38: ABS

Solenoid

1. Clear the DTC (see **HOW TO CLEAR DTCS**).
2. Turn the ignition switch ON (II).
3. Verify the DTC.

Does the ABS indicator come on, and are DTCs 31, 32, 33, 34, 35, 36, 37, 38 indicated?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

DTC 41, 42, 43, 44: WHEEL LOCK

1. Test-drive the vehicle, and check for brake drag by duplicating city driving of speeds over 30 mph (50 km/h). Use the brakes often.

Do the brakes drag?

YES - Repair the brake drag.

NO - Go to step 2.

2. Check the installation of the appropriate wheel sensor and pulser for damage and proper air gap (see table).

WHEEL SENSOR SPECIFICATION

DTC	Appropriate Wheel Sensor
41	Right-front
42	Left-front
43	Right-rear
44	Left-rear

Is it correct?

YES - If the DTC does not reappear, the most probable cause for the DTC is that the vehicle might have lost traction in poor weather and spun around.

NO - Reinstall the wheel sensor or pulser correctly, or replace it if necessary.

DTC 51: MOTOR LOCK; DTC 52: MOTOR STUCK OFF

1. Clear the DTC (see **HOW TO CLEAR DTCS**).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

   Does the VSA or ABS indicator come on?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for loose or poor connections (see **INTERMITTENT FAILURES** .
5. Check the VSA MTR (30 A) fuse in the underhood subfuse box.

   Is the fuse OK?

   YES - Reinstall the fuse, and go to step 6.

   NO - Replace the fuse, and recheck.
6. Disconnect the VSA modulator-control unit 47P connector.
7. Measure the voltage between the VSA modulator-control unit 47P connector terminal No. 16 and body ground.

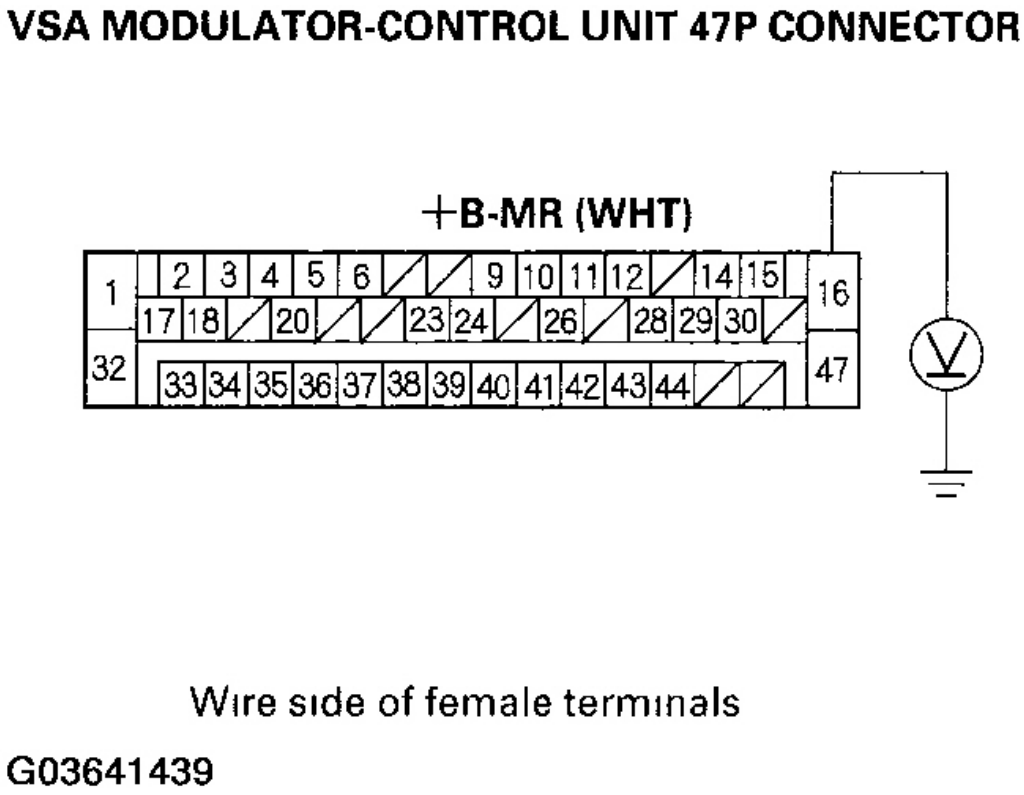


Fig. 54: Measuring Voltage Between VSA Modulator-Control Unit 47P Connector Terminal No. 16
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 8.

NO - Repair open in the wire between the VSA MTR (30 A) fuse and the VSA modulator-control unit.

8. Reconnect the VSA modulator-control unit 47P connector, and turn the ignition switch ON (II).
9. Check for voltage between the VSA modulator-control unit 47P connector terminal No. 47 and body ground.

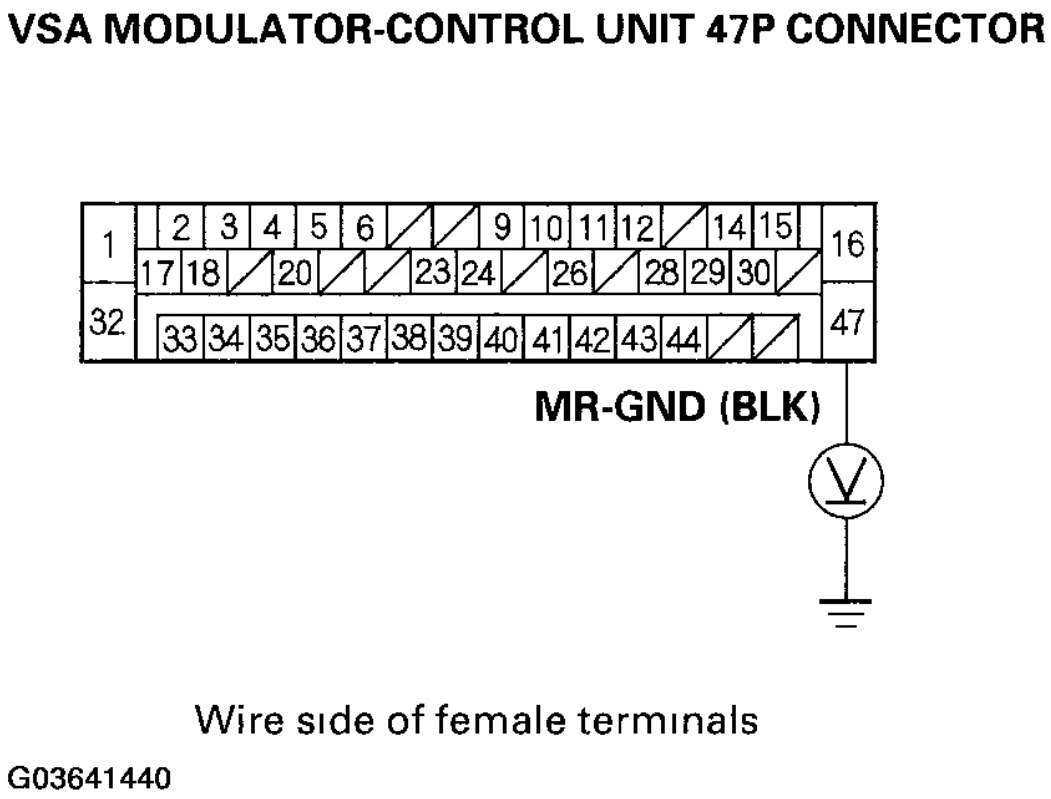


Fig. 55: Checking For Voltage Between VSA Modulator-Control Unit 47P Connector Terminal No. 47
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES - Go to step 10.

NO - Repair open in the wire between the VSA modulator-control unit and body ground (G302).

10. Reconnect the VSA modulator-control unit 47P connector.
11. Clear the DTC (see **HOW TO CLEAR DTCS**) and disconnect the HDS.
12. Test-drive the vehicle at 10 mph (15 km/h) or more.

Does the ABS indicator come on, and is DTC 51 or DTC 52 indicated?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

DTC 53: MOTOR STUCK ON

1. Turn the ignition switch ON (II).
2. Measure voltage between the VSA modulator-control unit 47P connector terminal No. 47 and body ground.

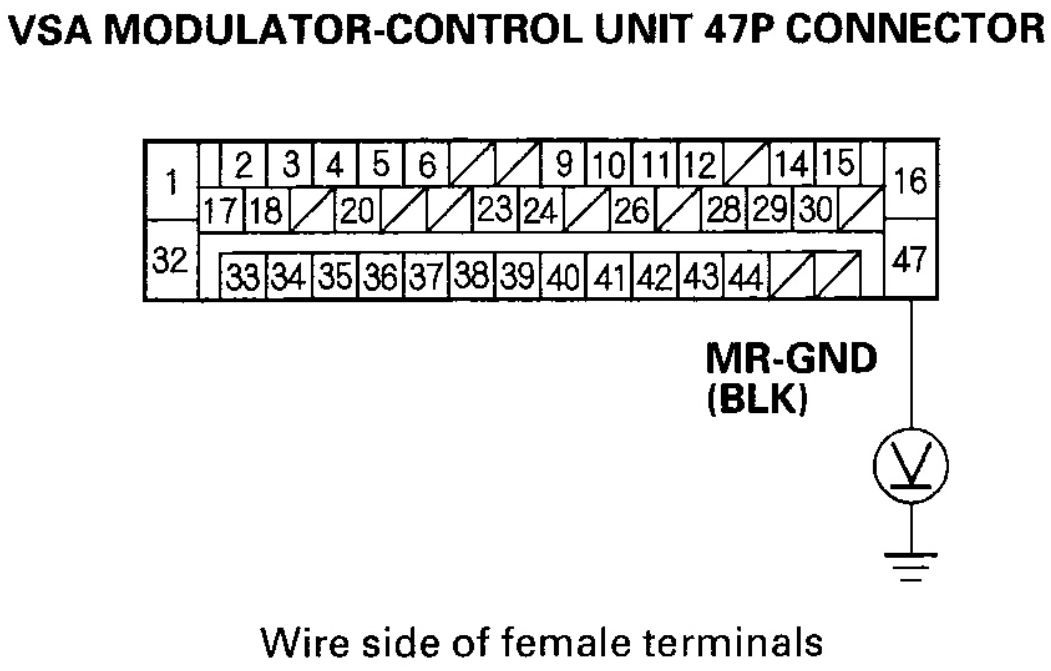


Fig. 56: Measuring Voltage Between VSA Modulator-Control Unit 47P Connector Terminal No. 47 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES - Go to step 3.

NO - Repair open or high resistance in the wire between the VSA modulator-control unit and body ground (G302).

3. Clear the DTC (see **HOW TO CLEAR DTCS**).
4. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 53 indicated?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary,

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

NO - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

DTC 54: FAIL-SAFE RELAY

1. Disconnect the VSA modulator-control unit 47P connector.
2. Measure resistance between the VSA modulator-control unit 47P connector terminal No. 47 and body ground.

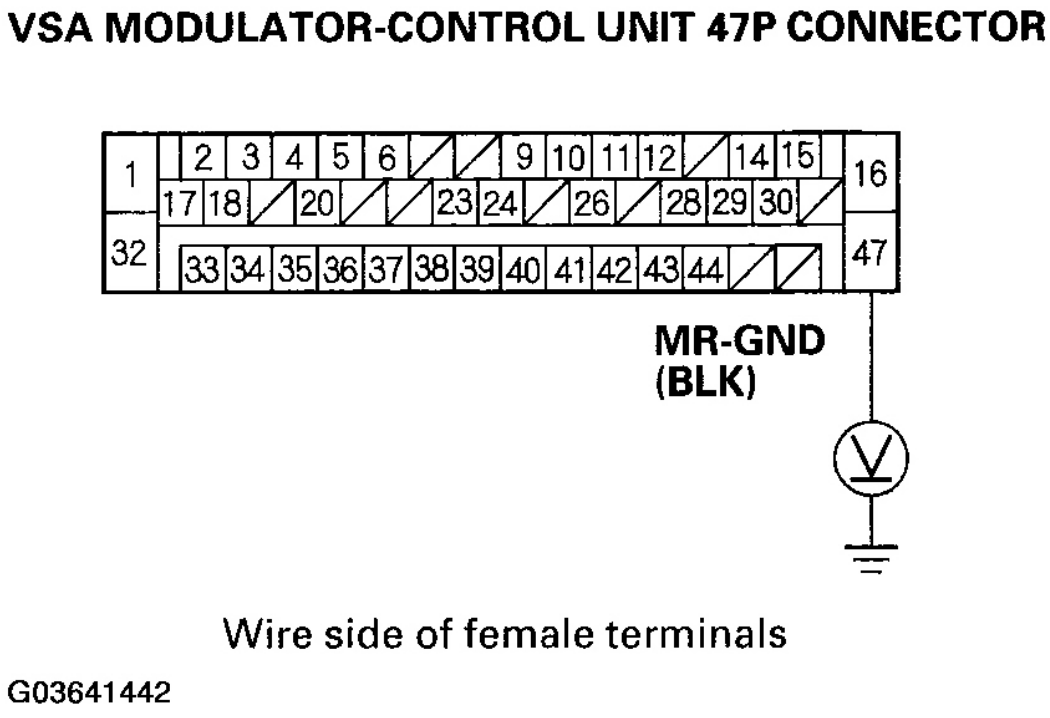


Fig. 57: Measuring Resistance Between VSA Modulator-Control Unit 47P Connector Terminal No. 47 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or less?

YES - Go to step 3.

NO - Repair open or high resistance in the wire between the VSA modulator-control unit and body ground (G302).

3. Reconnect the VSA modulator-control unit 47P connector.
4. Clear the DTC (see **HOW TO CLEAR DTCS**).

5. Test-drive the vehicle.

   Does the ABS indicator come on, and is DTC 54 indicated?

   YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

   NO - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

DTC 61,62: HIGH/LOW-FSR VOLTAGE

1. Clear the DTC, and disconnect the HDS (see **HOW TO CLEAR DTCS**).
2. Turn the ignition switch ON (II).

   Does the ABS indicator come on?

   YES - Go to step 3.

   NO - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .
3. Verify the DTC.

   Is DTC 61 or 62 indicated?

   YES - Check the charging system.

   NO - Do the appropriate troubleshooting for the DTC.

DTC 64: SENSOR POWER VOLTAGE

1. Disconnect the VSA modulator-control unit 47P connector, steering angle sensor 5P connector, and yaw rate-lateral acceleration sensor 5P connector.
2. Start the engine.
3. Measure the voltage between the VSA modulator-control unit 47P connector terminal No. 35 and body ground.

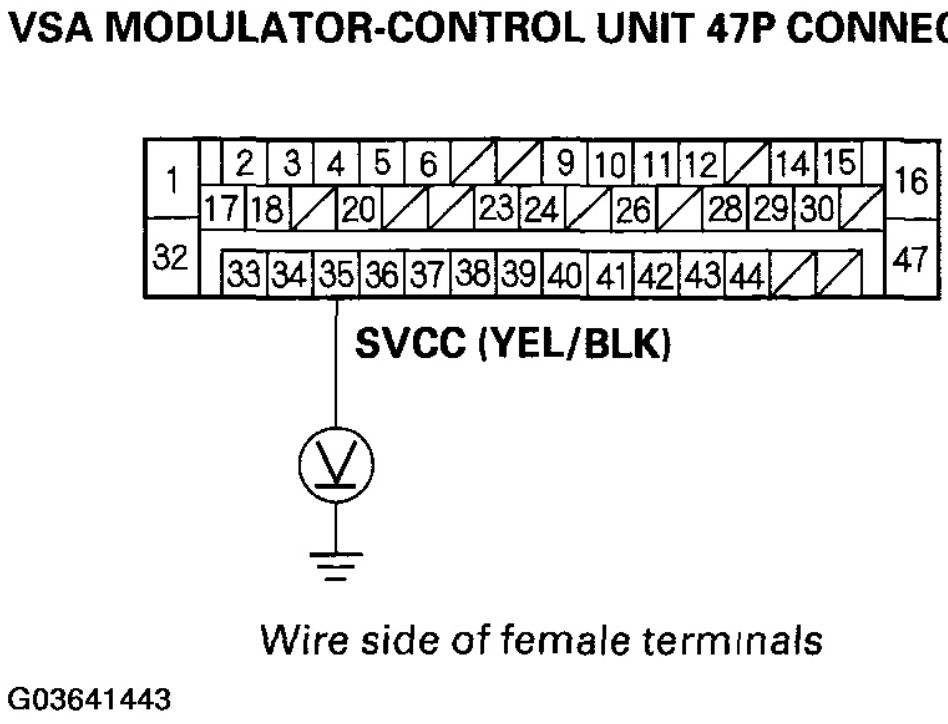


Fig. 58: Measuring Voltage Between VSA Modulator-Control Unit 47P Connector Terminal No. 35 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or more?

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

NO - Go to step 4.

4. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 35 and body ground.

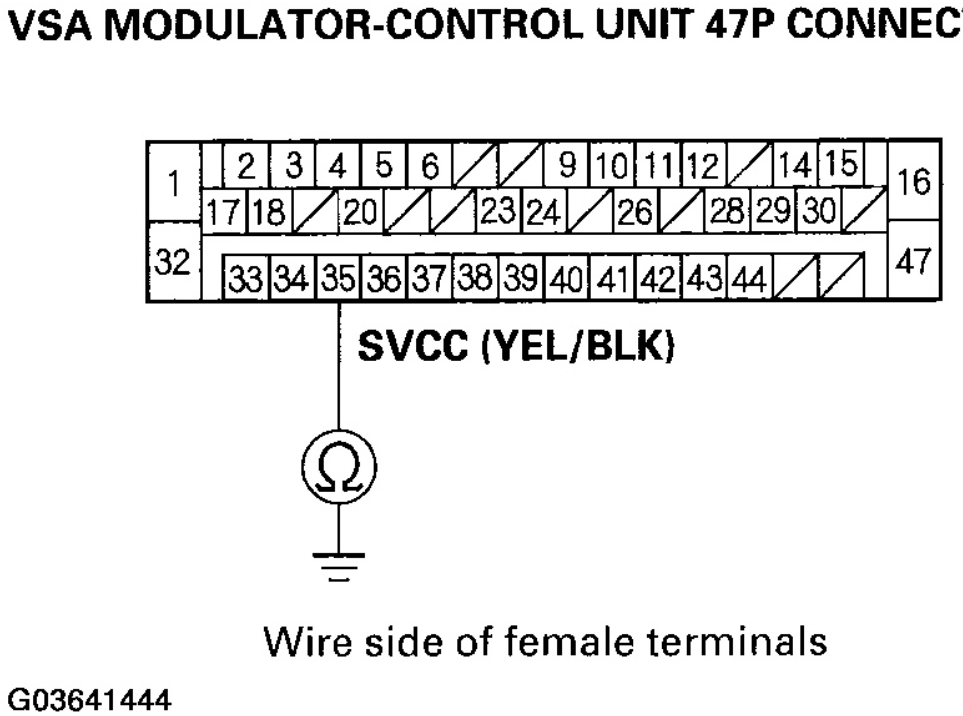


Fig. 59: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal No. 35 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

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

NO - Go to step 5.

5. Clear the DTC (see **HOW TO CLEAR DTCS**).
6. Disconnect the HDS from the 16P DLC.
7. Turn the ignition switch OFF, then turn it ON (II) again.
8. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 64 indicated?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - Intermittent failure, the system is OK at this time. Check connections at the VSA modulator-

control unit 47P connector and G302.

DTC 65: BRAKE FLUID LEVEL

1. Check the brake fluid level.

   Is the level correct?

   YES - Go to step 2.

   NO - Refill the brake fluid, and recheck. Determine the cause of the low brake fluid (leaks, worn brake linings, etc.) and repair as necessary.
2. Check the brake fluid level switch.

   Is the switch OK?

   YES - Check for short on the GRN/BLU wire from the VSA modulator-control unit 47P connector and the brake fluid level switch. If OK, check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

   NO - Replace the brake fluid level switch.

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

1. Clear the DTC (see **HOW TO CLEAR DTCS**).
2. Remove the HDS from the 16P DLC.
3. Test-drive the vehicle.

   Does the ABS indicator come on, and is DTC 66 indicated?

   YES - Go to step 4.

   NO - The system is OK at this time. Refer to **GENERAL TROUBLESHOOTING INFORMATION** .
4. Do the VSA sensors neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
5. Clear the DTC (see **HOW TO CLEAR DTCS**).
6. Disconnect the HDS from the 16P DLC.
7. Test-drive the vehicle.

   Does the ABS indicator come on, and is DTC 66 indicated?

   YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

   NO - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

DTC 68: BRAKE PEDAL POSITION SWITCH

1. Clear the DTC (see **HOW TO CLEAR DTCS**).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

   Does the VSA or ABS indicator come on?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for loose or poor connections (see **INTERMITTENT FAILURES** .
5. Check the brake lights.

   Do the brake lights work?

   YES - Go to step 6.

   NO - Repair the brake light circuit.
6. Measure the voltage between the VSA modulator-control unit 47P connector terminal No. 15 and body ground.

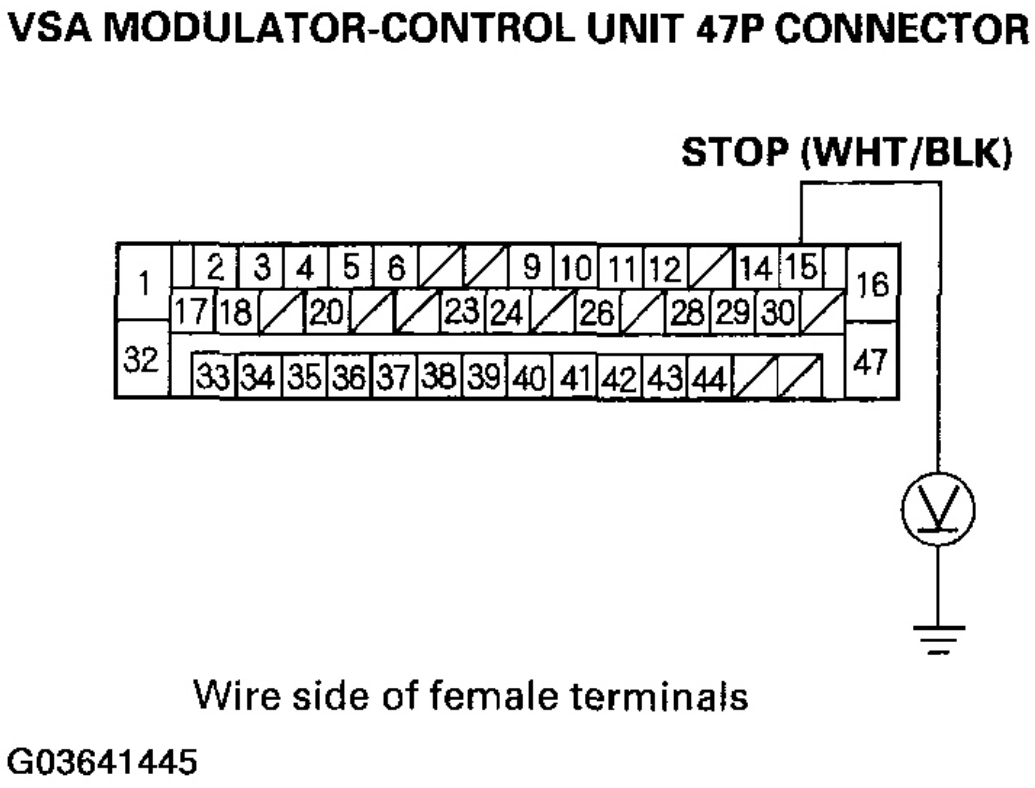


Fig. 60: Measuring Voltage Between VSA Modulator-Control Unit 47P Connector Terminal No. 15 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage when the brake pedal is pressed and less than 0.1 V when it is released?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - Check for open between the brake pedal position switch and the VSA modulator-control unit 47P connector No. 15 or a misadjusted brake pedal position switch.

DTC 71: DIFFERENT DIAMETER TIRE

1. Clear the DTC, and disconnect the HDS (see **HOW TO CLEAR DTCS**).
2. Turn the ignition switch OFF, then turn it ON (II) again.
3. Test-drive the vehicle.

Does the VSA indicator come on, and is DTC 71 indicated?

YES - Go to step 4.

NO - Intermittent failure; confirm that tire inflation is set to door jamb sticker specification. The vehicle is OK at this time. Refer to **INTERMITTENT FAILURES** .

4. Check that all four tires are the specified size and are inflated to the proper specification per door jamb sticker specification.

   Are all four tires the correct size and properly inflated?

   YES - Go to step 5.

   NO - Install the correct tires or set the tires to the correct inflation and retest.
5. With the car on level ground, mark the front tires with a small spot of grease. Roll the car until each of the tires makes two grease spots on the floor.
6. Measure and record the distance between the two grease spots. Wipe up the grease spots, then repeat steps 5 and 6 with the rear tires.

   Is the distance between the shortest and the longest measurement more than 10%?

   YES - Replace the tire/tires that is smaller or larger than the others.

   NO - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

DTC 81: CENTRAL PROCESSING UNIT (CPU)

1. Check for other DTCs.

   Is another DTC indicated?

   YES - Do the appropriate troubleshooting for the DTC.

   NO - Go to step 2.
2. Clear the DTC (see **HOW TO CLEAR DTCS**).
3. Disconnect the HDS from the 16P DLC.
4. Turn the ignition switch OFF, then turn it ON (II) again.
5. Test-drive the vehicle.

   Does the ABS indicator come on, and is DTC 81 indicated?

   YES - Go to step 6.

   NO - Intermittent failure; the vehicle is OK at this time. Refer to **INTERMITTENT FAILURES** .
6. Disconnect the VSA modulator-control unit 47P connector, steering angle sensor 5P connector, and yaw rate-lateral acceleration sensor 5P connector.
7. Start the engine.

8. Measure the voltage between the VSA modulator-control unit 47P connector terminal No. 35 and body ground.

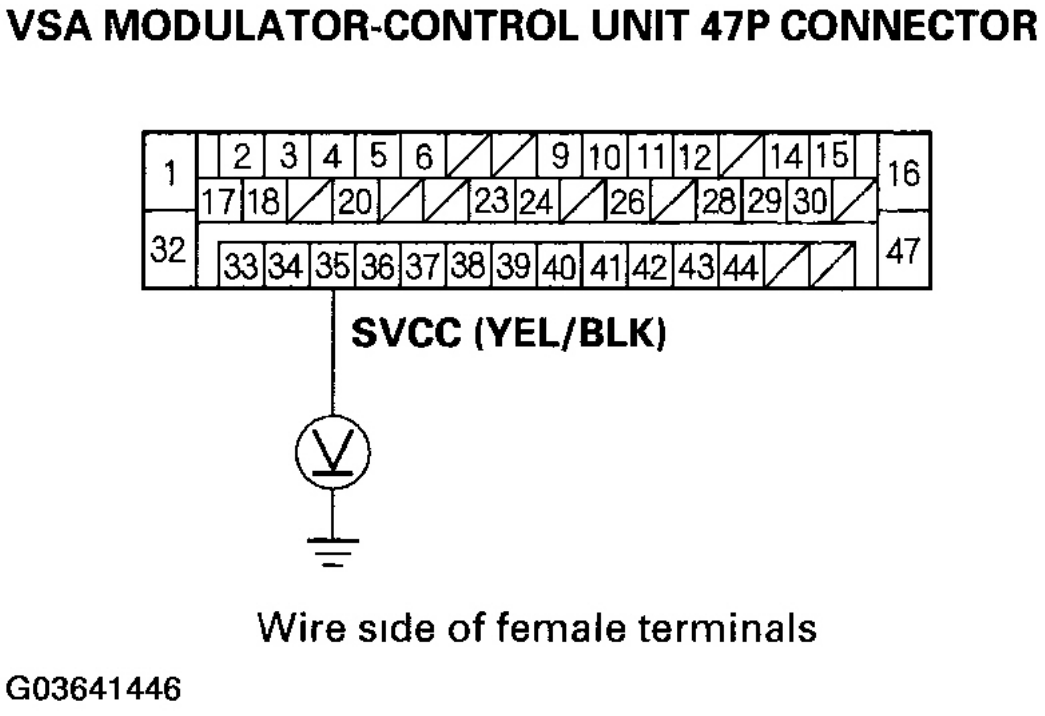


Fig. 61: Measuring Voltage Between VSA Modulator-Control Unit 47P Connector Terminal No. 35 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V or more?

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

NO - Go to step 9.

9. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 35 and body ground.

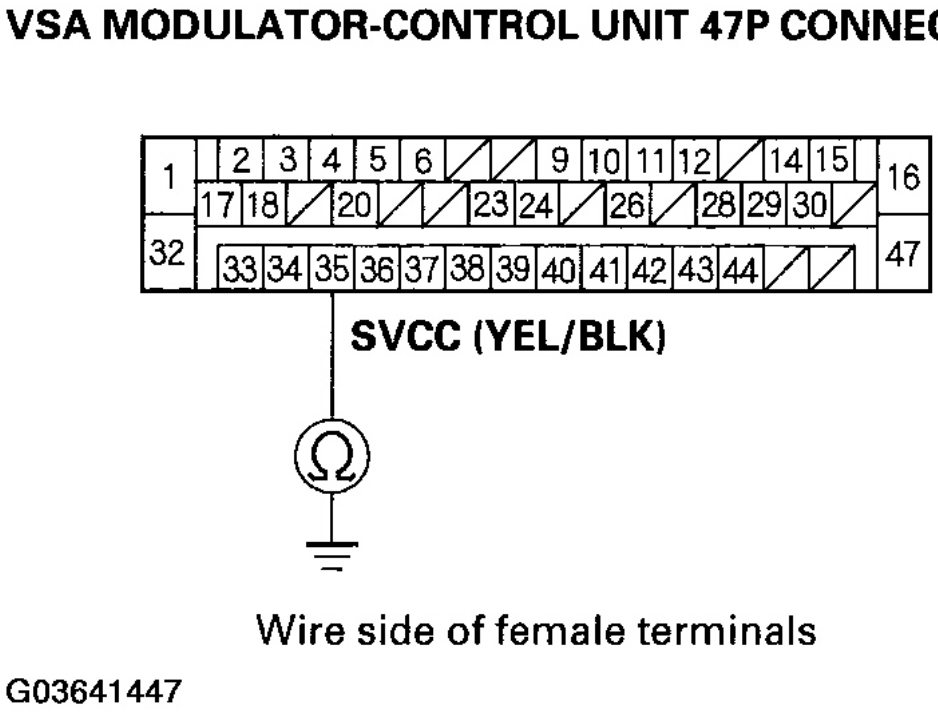


Fig. 62: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal No. 35 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

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

NO - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

DTC 83: PCM

1. Check the DTC.

   Is DTC 86 indicated?

   YES - Do the troubleshooting for DTC 86.

   NO - Go to step 2.
2. Clear the DTC (see **HOW TO CLEAR DTCS**).

3. Test-drive the vehicle.

   Do the VSA and VSA activation indicators come on, and is DTC 83 indicated?

   YES - Go to step 4.
   NO - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .
4. Check the PGM-FI system.

   Does the MIL indicator come on or is PGM-FI's DTC indicated?

   YES - Do the applicable troubleshooting for PGM-FI DTC.
   NO - Go to step 5.
5. Check the gear position.

   Does the D5 indicator come on while neutral position (N) selected or is PCM's DTC indicated?

   YES - Do the applicable troubleshooting for PCM DTC.
   NO - Check for loose terminals at the PCM connectors, and go to step 6.
6. Clear the DTC (see **HOW TO CLEAR DTCS**).
7. Test-drive the vehicle.

   Is DTC 83 indicated? and no PCM's DTC?

   YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.
   NO - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

DTC 84: VSA SENSORS NEUTRAL POSITION

1. Clear the DTC (see **HOW TO CLEAR DTCS**).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

   Does the VSA indicator come on, and is DTC 84 indicated?

   YES - Go to step 5.
   NO - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .
5. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
6. Clear the DTC (see **HOW TO CLEAR DTCS**).

7. Disconnect the HDS from the 16P DLC.
8. Turn the ignition switch OFF, then turn it ON (II) again.
9. Test-drive the vehicle.

Does the VSA indicator come on, and is DTC 84 indicated?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

DTC 86: F-CAN COMMUNICATION

1. Clear the DTC (see **HOW TO CLEAR DTCS**).
2. Turn the ignition switch OFF, then turn it ON (II) again.

Is DTC 86 indicated?

YES - Go to step 3.

NO - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

3. Start and run the engine for at least 5 seconds, then turn the engine off.
4. Check for DTCs by selecting the ABS, TCS, VSA DTCs MENU (DTCs) from the HDS.

Is DTC 86 indicated?

YES - Go to step 5.

NO - Intermittent failure, the F-CAN communication line is OK at this time. Refer to **INTERMITTENT FAILURES** .

5. Check for DTCs in the PCM.

Are any DTCs indicated?

YES - Troubleshoot the PCM DTCs.

NO - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit and recheck (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

DTC 107: TCS OPERATION, DTC 108: VSA OPERATION

NOTE: The VSA indicators do not come on by memorizing the DTC 107 or 108.

1. Clear the DTC (see **HOW TO CLEAR DTCS**).
2. Test-drive the vehicle.

Does the VSA indicator come on, and is DTC 107 or 108 indicated?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - Intermittent failure; the vehicle is OK at this time. Refer to **INTERMITTENT FAILURES** .

DTC 112: INTERNAL POWER SOURCE STUCK OFF

NOTE: If the battery cable was disconnected three times with the ignition switch ON (II) this DTC may be stored.

1. Check for other DTCs.

   Is another DTC indicated?

   YES - Do the appropriate troubleshooting for the DTC.

   NO - Go to step 2.
2. Clear the DTC (see **HOW TO CLEAR DTCS**).
3. Disconnect the HDS from the 16P DLC.
4. Turn the ignition switch OFF, then turn it ON (II) again.
5. Test-drive the vehicle.

   Does the ABS indicator come on, and is DTC 112 indicated?

   YES - Go to step 6.

   NO - Intermittent failure; the vehicle is OK at this time. Refer to **INTERMITTENT FAILURES** .
6. Inspect G302 for a clean and tight connection.

   Is G302 clean and properly connected?

   YES - Go to step 7.

   NO - Repair the connection at G302.
7. Turn the ignition switch ON (II).
8. Check for voltage between body ground and VSA modulator-control unit 47P connector terminals No. 32 and No. 47 individually.

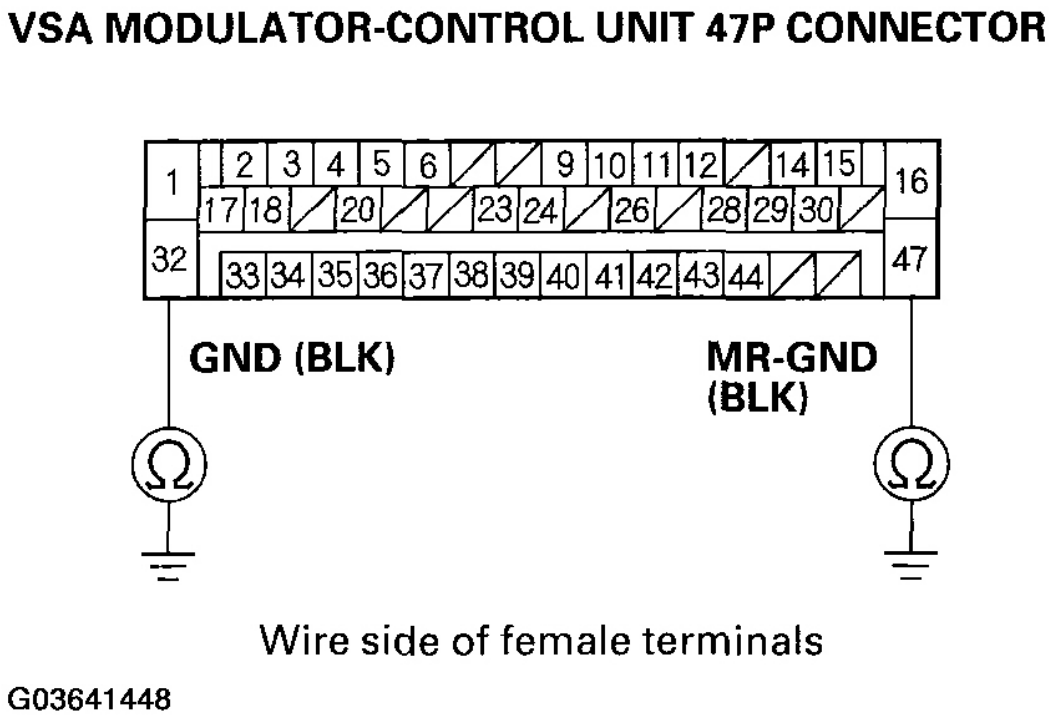


Fig. 63: Checking For Voltage Between Body Ground And VSA Modulator-Control Unit 47P Connector Terminals No. 32 And No. 47
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - Repair open in the wire between the VSA modulator-control unit and G302.

DTC 121, 122, 123, 124: VSA SOLENOID

1. Clear the DTC (see **HOW TO CLEAR DTCS**).
2. Test-drive the vehicle.

Does the VSA indicator come on, and is DTC 121, 122, 123 or 124 indicated?

YES - Check for loose terminal in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - Intermittent failure; the system is OK at this time. Refer to **INTERMITTENT FAILURES** .

SYMPTOM TROUBLESHOOTING

ABS INDICATOR DOES NOT COME ON

1. Turn the ignition switch ON (II) and watch the ABS indicator.

   Does the ABS indicator come on for several seconds?

   YES - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

   NO - Go to step 2.
2. Apply the parking brake.

   Does the brake system indicator come on?

   YES - Go to step 3.

   NO - Repair open in the indicator power source circuit from fuse No. 9 (10 A) in the driver's underdash fuse/relay box.
3. Turn the ignition switch OFF.
4. Disconnect the VSA modulator-control unit 47P connector.
5. Turn the ignition switch ON (II).

   Does the ABS indicator come on?

   YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

   NO - Go to step 6.
6. Turn the ignition switch OFF.
7. Remove the gauge assembly (see **GAUGE ASSEMBLY REPLACEMENT**).
8. Disconnect the gauge assembly connector B (18P) ('03 model) or B (22P) ('04-06 models).
9. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 12 and body ground.

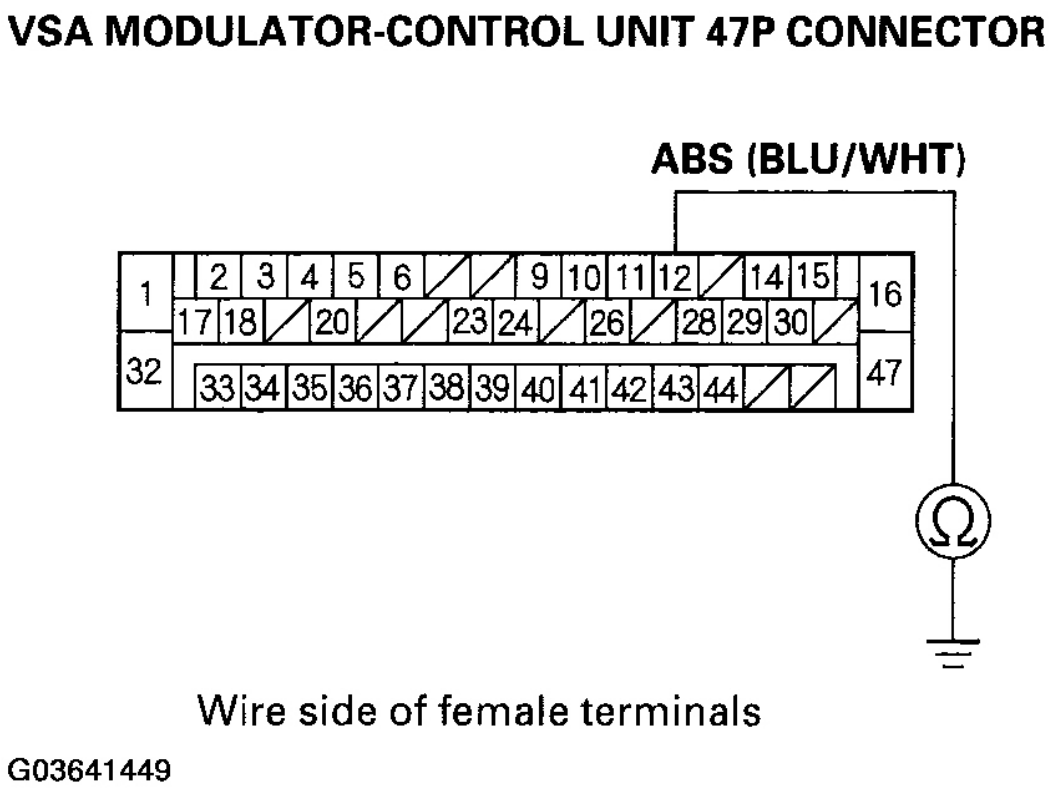


Fig. 64: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal No. 12 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short to ground in the wire between the VSA modulator-control unit and the gauge assembly connector B (18P) ('03 model) or gauge assembly connector B (22P) ('04-06 models).

NO - Go to step 10.

10. Reconnect gauge assembly connector B (18P) ('03 model) or gauge assembly connector B (22P) ('04-06 models).
11. Turn the ignition switch ON (II).
12. Check for voltage between the gauge assembly connector C (14P) terminal No. 10 and body ground ('03 model) or gauge assembly connector C (16P) terminal No. 13 and body ground ('04-06 models).

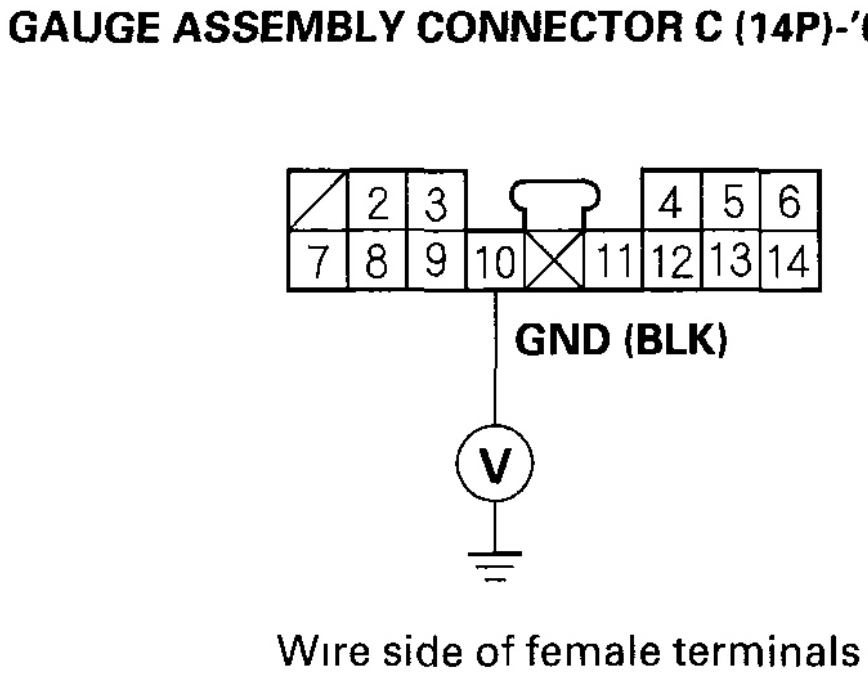


Fig. 65: Checking For Voltage Between Gauge Assembly Connector C (14P) Terminal No. 10 And Body Ground (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

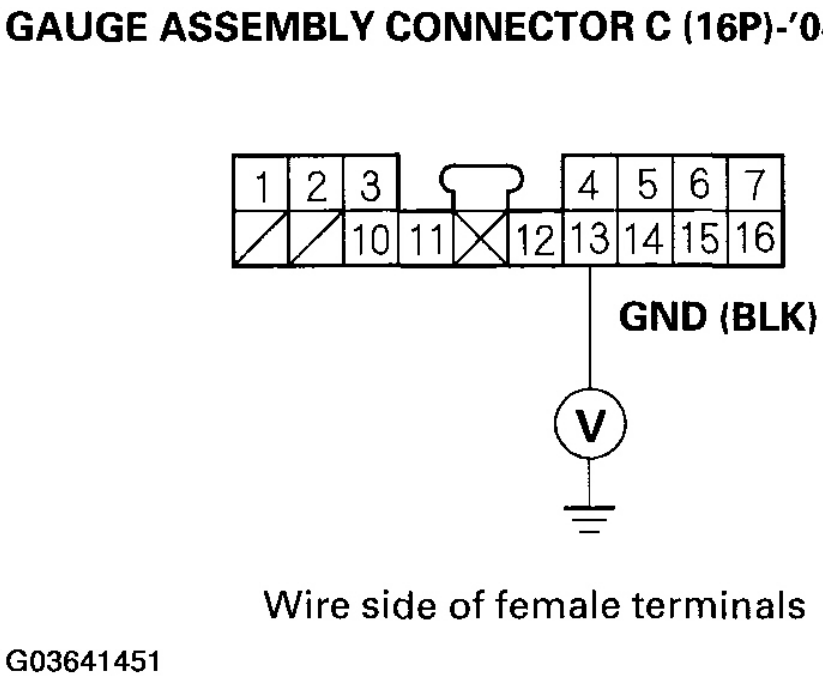


Fig. 66: Checking For Voltage Between Gauge Assembly Connector C (14P) Terminal No. 10 And Body Ground (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES - Check for loose connections at the gauge assembly. If OK, replace the gauge assembly (see **GAUGE ASSEMBLY REPLACEMENT**).

NO - Repair open between the gauge assembly and body ground (G501).

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

1. Check the VSA FSR (40 A) fuse in the underhood subfuse box.

   Is the fuse OK?

   YES - Reinstall the fuse, and go to step 2.

   NO - Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).
2. Check the No. 6(15 A) fuse in the underdash fuse/relay box and No. 92 (7.5 A) ('03 model) or IG1 (7.5 A) ('04-06 models) fuse in the auxiliary fuse holder.

Are the fuses OK?

YES - Reinstall the fuse, and go to step 3.

NO - Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

3. Turn the ignition switch OFF.
4. Disconnect the VSA modulator-control unit 47P connector.
5. Measure the voltage between the VSA modulator-control unit 47P connector terminal No. 1 and body ground.

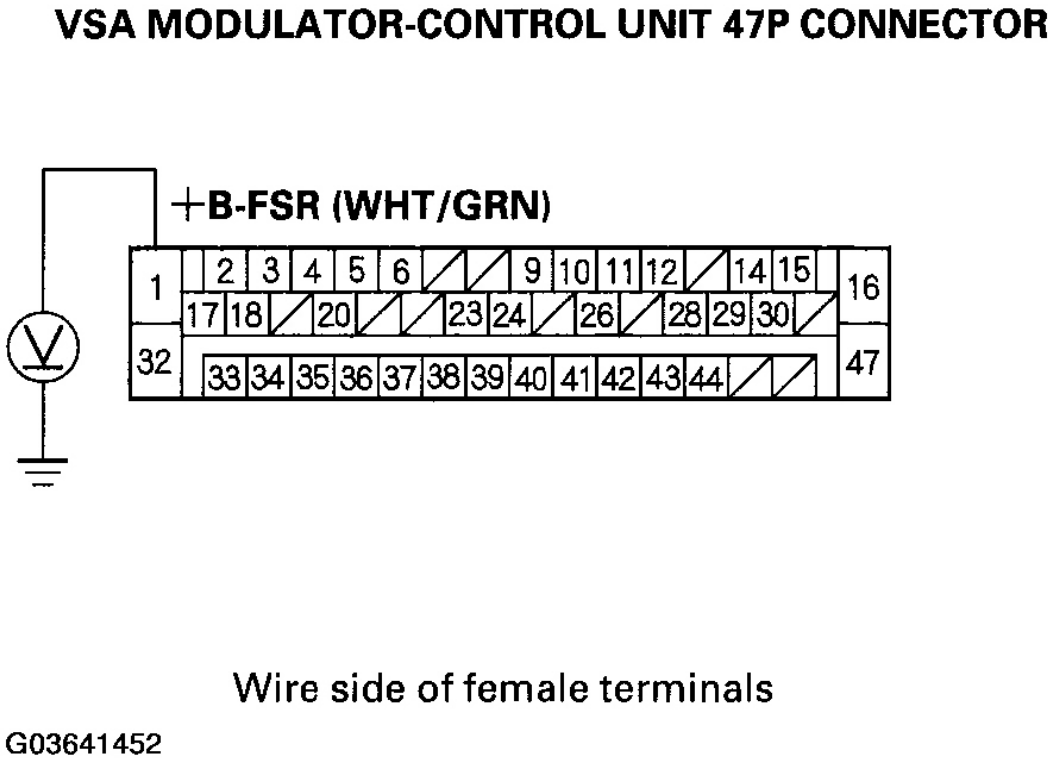


Fig. 67: Measuring Voltage Between VSA Modulator-Control Unit 47P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 6.

NO - Repair open in the wire between the VSA FSR (40 A) fuse and the VSA modulator-control unit.

6. Turn the ignition switch ON (II).
7. Measure the voltage between the VSA modulator-control unit 47P connector terminal No. 38 and body ground.

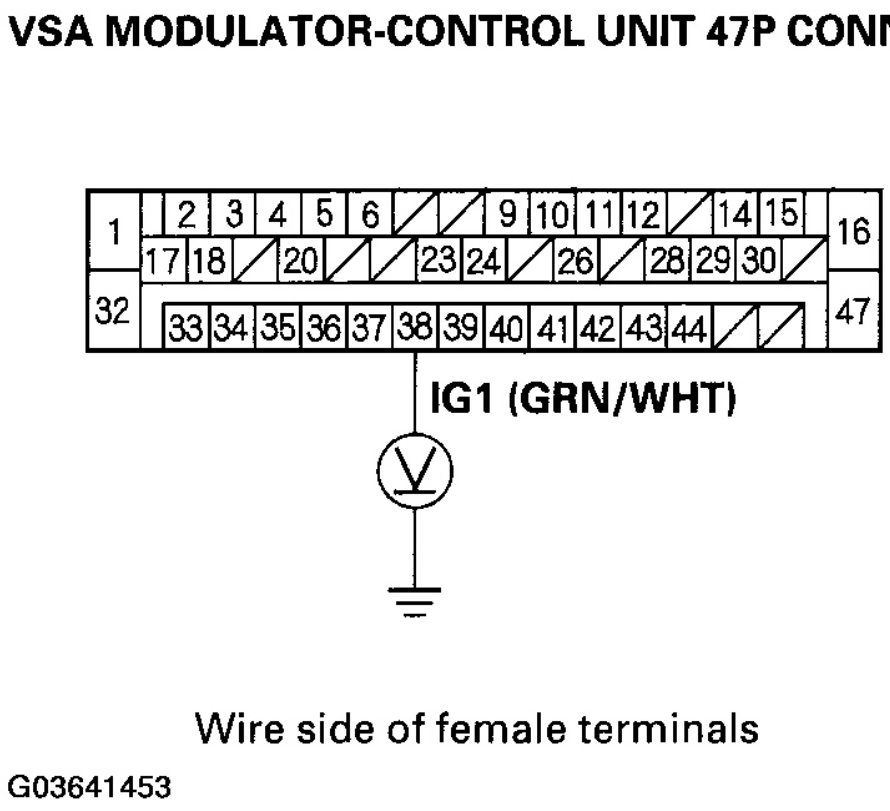


Fig. 68: Measuring Voltage Between VSA Modulator-Control Unit 47P Connector Terminal No. 38 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 8.

NO - Repair open in the wire between the following fuses and the VSA modulator-control unit:

- '03 model: No. 92 (7.5 A) fuse in the auxiliary fuse holder
- '04-06 models: IG1 (7.5 A) fuse in the auxiliary fuse holder

8. Check for voltage between the VSA modulator-control unit 47P connector terminal No. 32 and body ground.

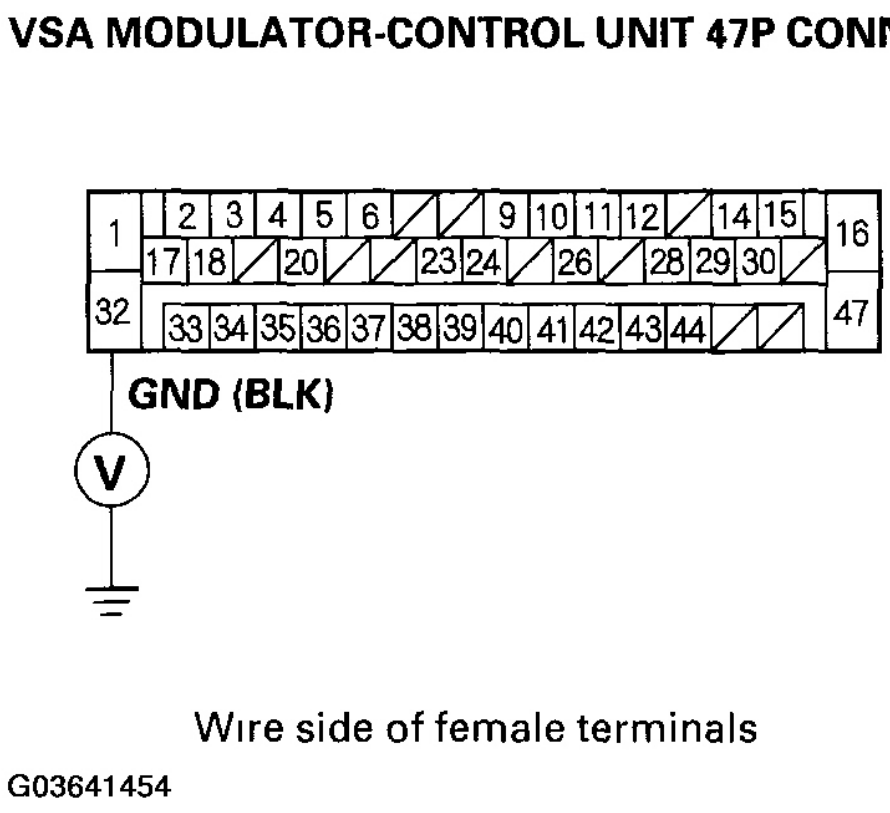


Fig. 69: Checking For Voltage Between VSA Modulator-Control Unit 47P Connector Terminal No. 32 And Body Ground (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES - Go to step 9.
NO - Repair open in the wire between the VSA modulator-control unit and body ground (G302).

10. Connect VSA modulator-control unit 47P connector terminal No. 12 and body ground with a jumper wire, and turn the ignition switch ON (II).

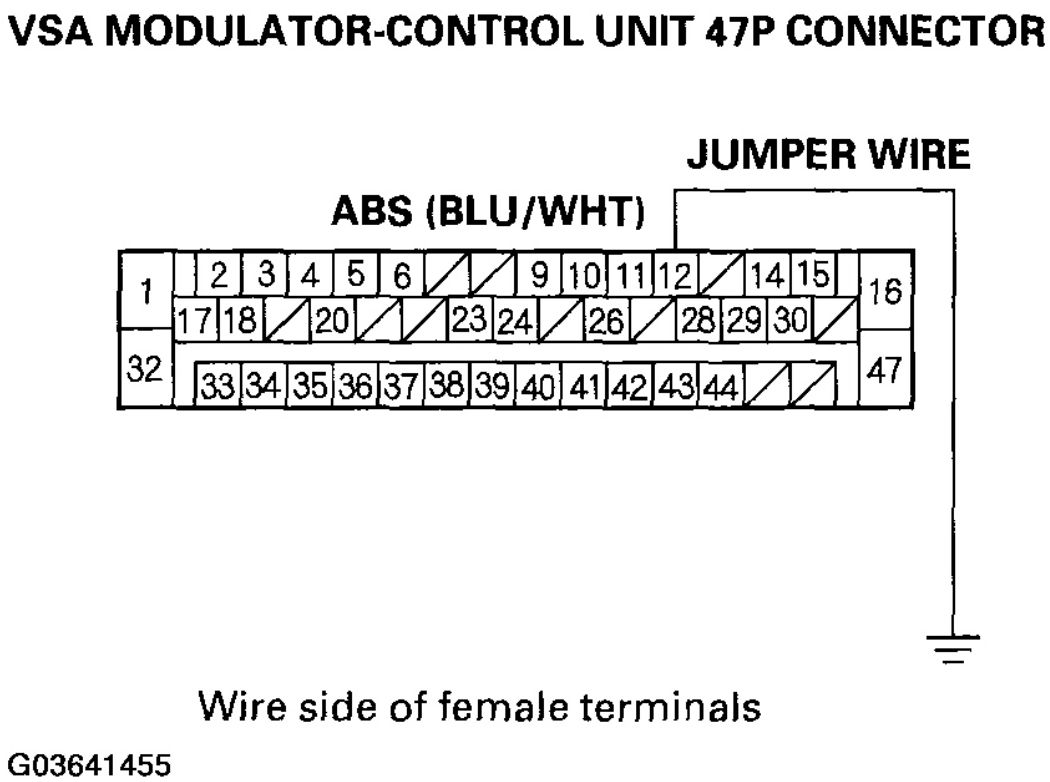


Fig. 70: Checking For Voltage Between VSA Modulator-Control Unit 47P Connector Terminal No. 32 And Body Ground (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Does the ABS indicator go off?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - Check for open in the wire between VSA modulator-control unit 47P connector terminal No. 12 and the ABS indicator.

BRAKE SYSTEM INDICATOR DOES NOT COME ON (CHECK BULB OPERATION WITH PARKING BRAKE)

1. With the parking brake applied, turn the ignition switch ON (II) and watch the brake system indicator.

Does the brake system indicator come on?

YES - Go to step 3 .

NO - Go to step 2.

2. Turn the ignition switch OFF then ON (II) again.

Does the ABS indicator come on for several seconds?

YES - Replace the gauge assembly (see **GAUGE ASSEMBLY REPLACEMENT**).

NO - Repair open in the indicator power source circuit (No. 9 (10 A) fuse in the driver's underdash fuse/relay box). If necessary, substitute a known-good gauge assembly, and recheck.

3. Turn the ignition switch OFF.
4. Release the parking brake.
5. Turn the ignition switch ON (II).

Does the brake system indicator come on for several seconds?

YES - Go to step 6.

NO - Check for loose terminals in the gauge assembly connectors. If necessary, substitute a known-good gauge assembly (see **GAUGE ASSEMBLY REPLACEMENT**) and recheck.

6. Apply the parking brake.

Does the brake system indicator come on?

YES - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

NO - Go to step 7.

7. Turn the ignition switch OFF.
8. Disconnect the parking brake switch connector (see **PARKING BRAKE SWITCH TEST**).
9. Turn the ignition switch ON (II).
10. Measure the voltage between the parking brake switch connector terminal and body ground.

Is there battery voltage?

YES - Replace the parking brake switch (see **PARKING BRAKE SWITCH TEST**).

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Remove the gauge assembly (see **GAUGE ASSEMBLY REPLACEMENT**).
13. Connect the gauge assembly connector B (18P) terminal No. 4 and body ground ('03 model) or gauge assembly connector B (22P) terminal No. 6 and body ground ('04-06 models) with a jumper wire.

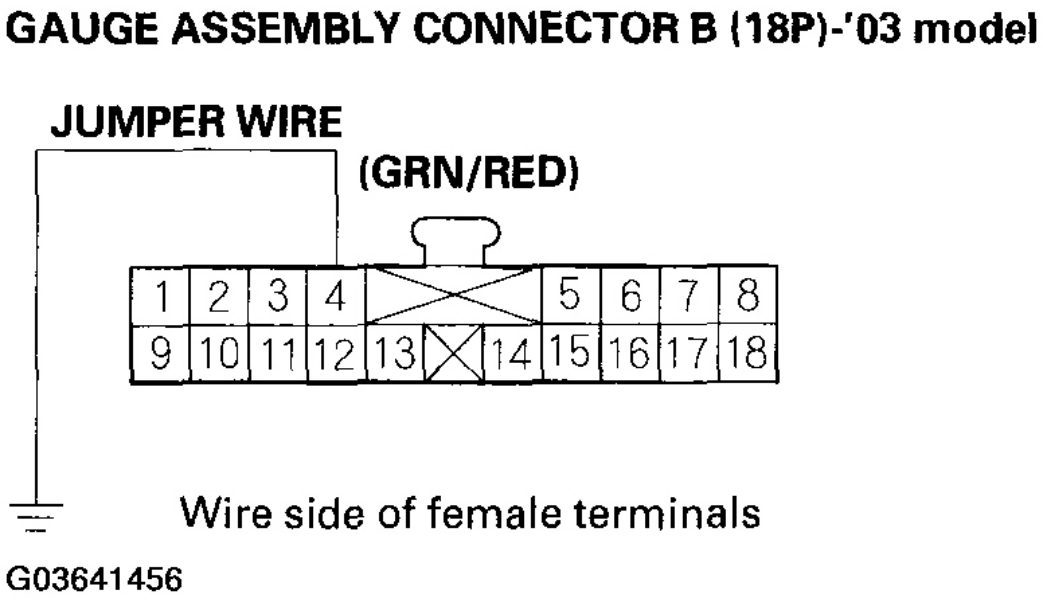


Fig. 71: Connecting Gauge Assembly Connector B (18P) Terminal (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

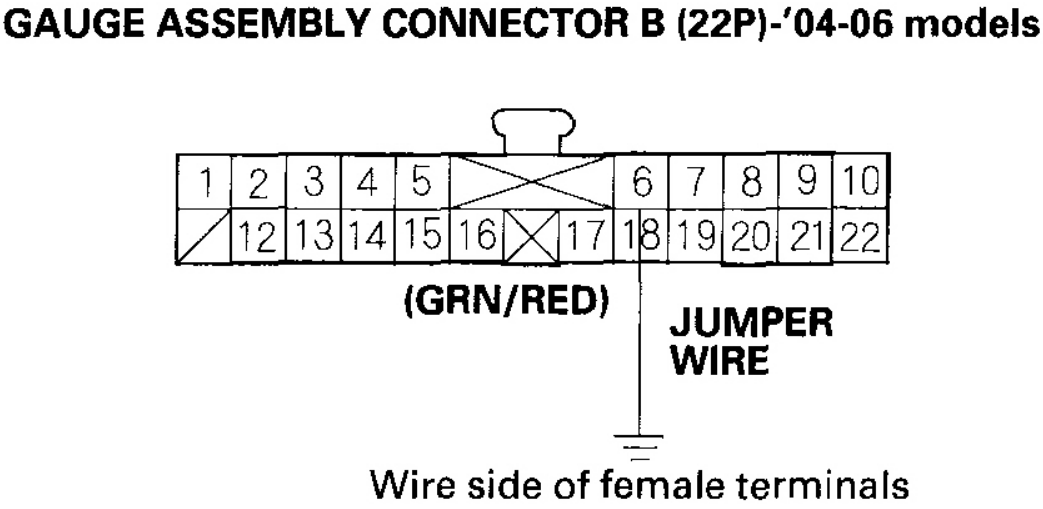


Fig. 72: Connecting Gauge Assembly Connector B (18P) Terminal (2 Of 2)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Turn the ignition switch ON (II).

Does the brake system indicator come on and stay on?

YES - Repair open in the wire between the gauge assembly connector B and the parking brake switch.

NO - Replace the gauge assembly (see **GAUGE ASSEMBLY REPLACEMENT**).

BRAKE SYSTEM INDICATOR DOES NOT GO OFF

1. Turn the ignition switch ON (II).
2. Release the parking brake.

Does the brake system indicator go off after several seconds?

YES - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

NO - Go to step 3.

3. Check the brake fluid level (see **BRAKE SYSTEM BLEEDING**).

Is the level OK?

YES - Go to step 4.

NO - Refill the brake fluid, and recheck. Determine the cause of the low brake fluid (leaks, worn brake linings, etc.) and repair as necessary.

4. Check the ABS indicator.

Does the ABS indicator stay on?

YES - Read the DTC (see **HOW TO CLEAR DTCS**) and do the applicable troubleshooting for the DTC.

NO - Check the brake system indicator circuit:

- Short to body ground between the gauge assembly and the parking brake switch.
- Short to body ground between the gauge assembly and the brake fluid level switch.
- Parking brake switch stuck ON.
- Brake fluid level switch stuck ON.
- Faulty gauge assembly.

VSA INDICATOR DOES NOT COME ON

1. Turn the ignition switch ON (II) and watch the VSA indicator.

Does the VSA indicator come on for several seconds?

YES - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

NO - Go to step 2.

2. Apply the parking brake.

Does the brake system indicator come on?

YES - Go to step 3.

NO - Repair open in the indicator power source circuit No. 9 (10 A) fuse in the driver's underdash fuse/relay box.

3. Turn the ignition switch OFF.
4. Disconnect the VSA modulator-control unit 47P connector.
5. Turn the ignition switch ON (II).

Does VSA indicator come on?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Remove the gauge assembly (see **GAUGE ASSEMBLY REPLACEMENT**).
8. Disconnect the gauge assembly connector B (18P) ('03 model) or B (22P) ('04-06 models).
9. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 24 and body ground.

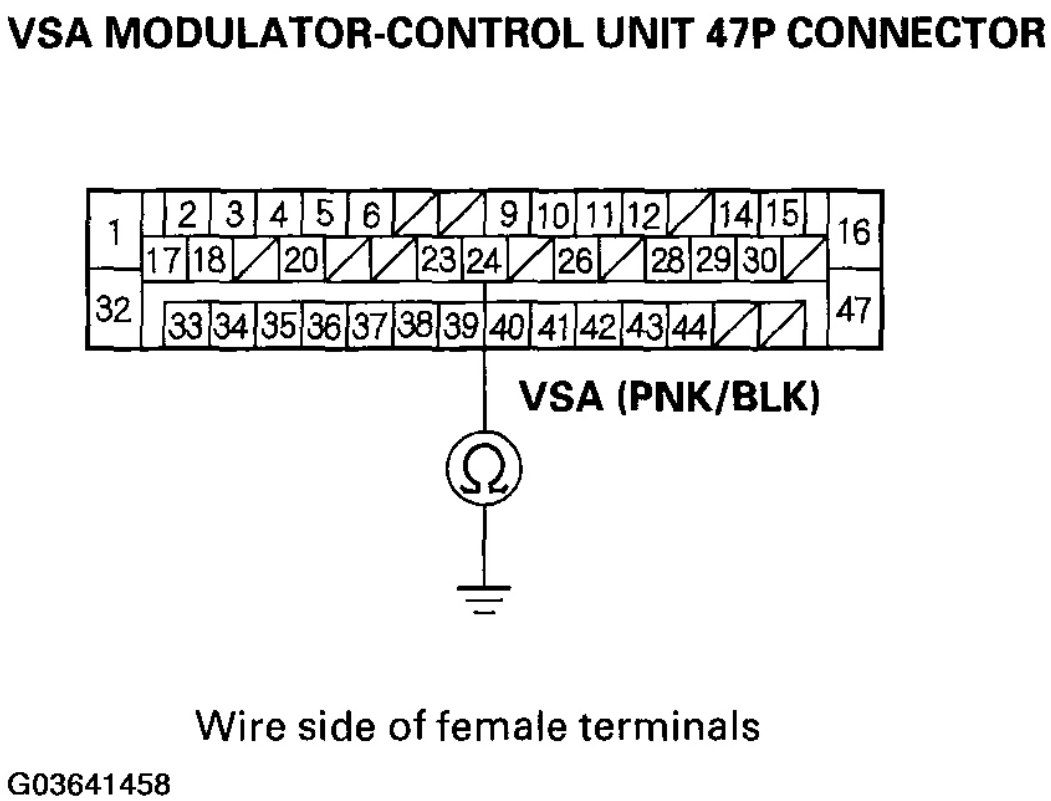


Fig. 73: Checking For Continuity Between VSA Modulator-Control Unit 47P Connector Terminal No. 24 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short to ground in the wire between the VSA modulator-control unit and the gauge assembly connector B (18P) ('03 model) or gauge assembly connector B (22P) ('04-06 models).

NO - Go to step 10.

10. Turn the ignition switch ON (II).
11. Check for voltage between the gauge assembly connector C (14P) terminal No. 10 and body ground ('03 model) or gauge assembly connector C (16P) terminal No. 13 and body ground ('04-06 models).

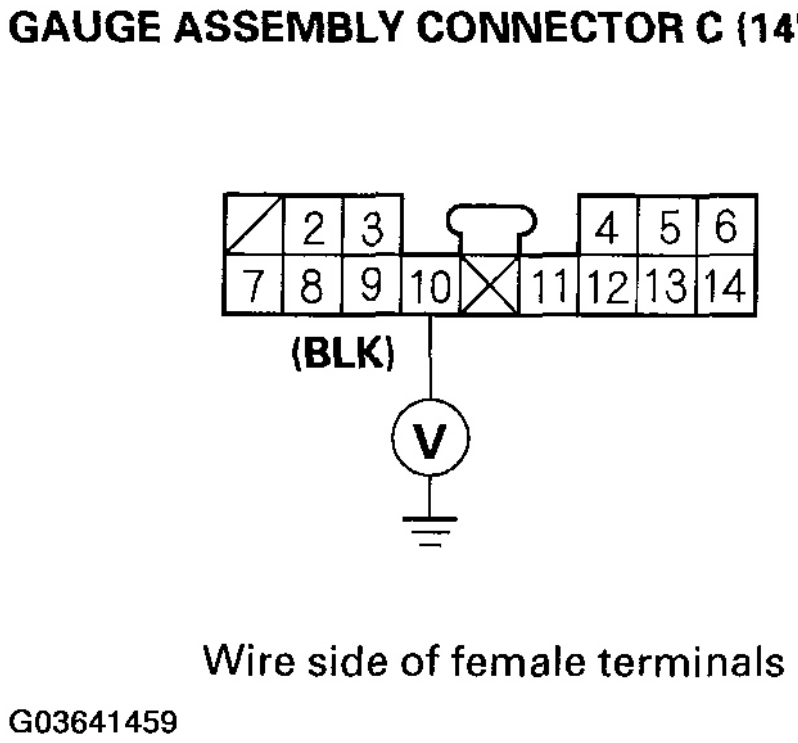


Fig. 74: Checking Voltage Between Gauge Assembly Connector C (14P) Terminal (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

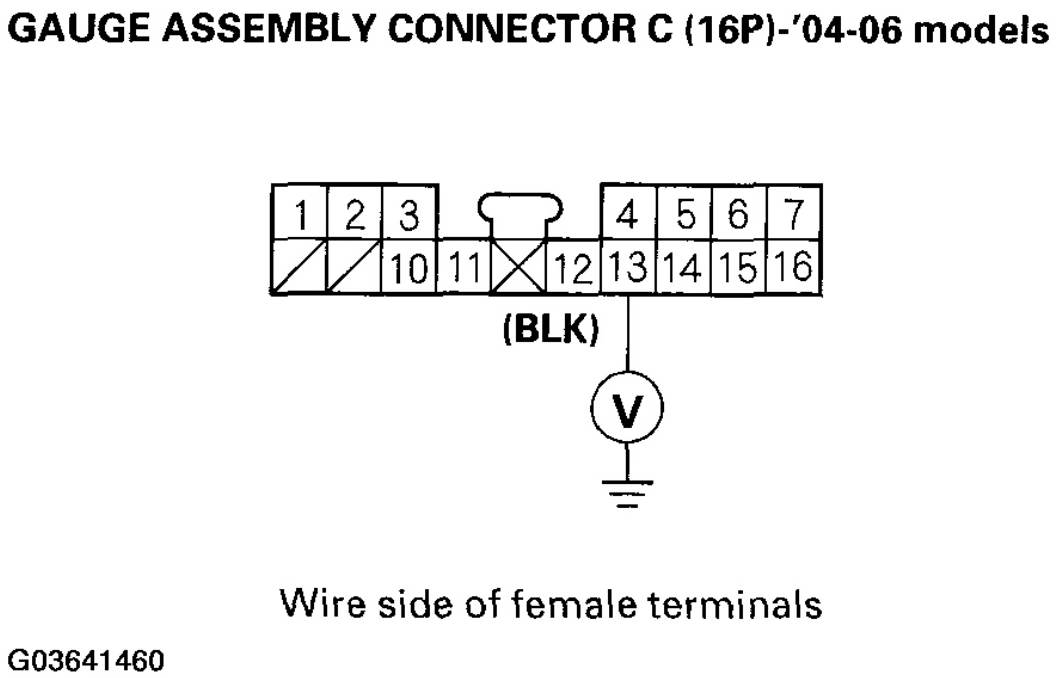


Fig. 75: Checking Voltage Between Gauge Assembly Connector C (14P) Terminal (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES - Check for loose connections at the gauge assembly. If OK, replace the gauge assembly (see **GAUGE ASSEMBLY REPLACEMENT**).

NO - Repair open in the wire between the gauge assembly connector C and body ground (G501).

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

1. Check the VSA FSR (40 A) fuse in the underhood subfuse/relay box.

   Is the fuse OK?

   YES - Reinstall the fuse, and go to step 2.

   NO - Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).
2. Check the No. 6 (15 A) fuse in the underdash fuse/relay box and No. 92 (7.5 A) ('03 model) or IG1 (7.5 A) ('04-06 models) fuse in the auxiliary fuse holder.

Are the fuses OK?

YES - Reinstall the fuse, and go to step 3.

NO - Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

3. Turn the ignition switch OFF.
4. Disconnect the VSA modulator-control unit 47P connector.
5. Measure the voltage between the VSA modulator-control unit 47P connector terminal No. 1 and body ground.

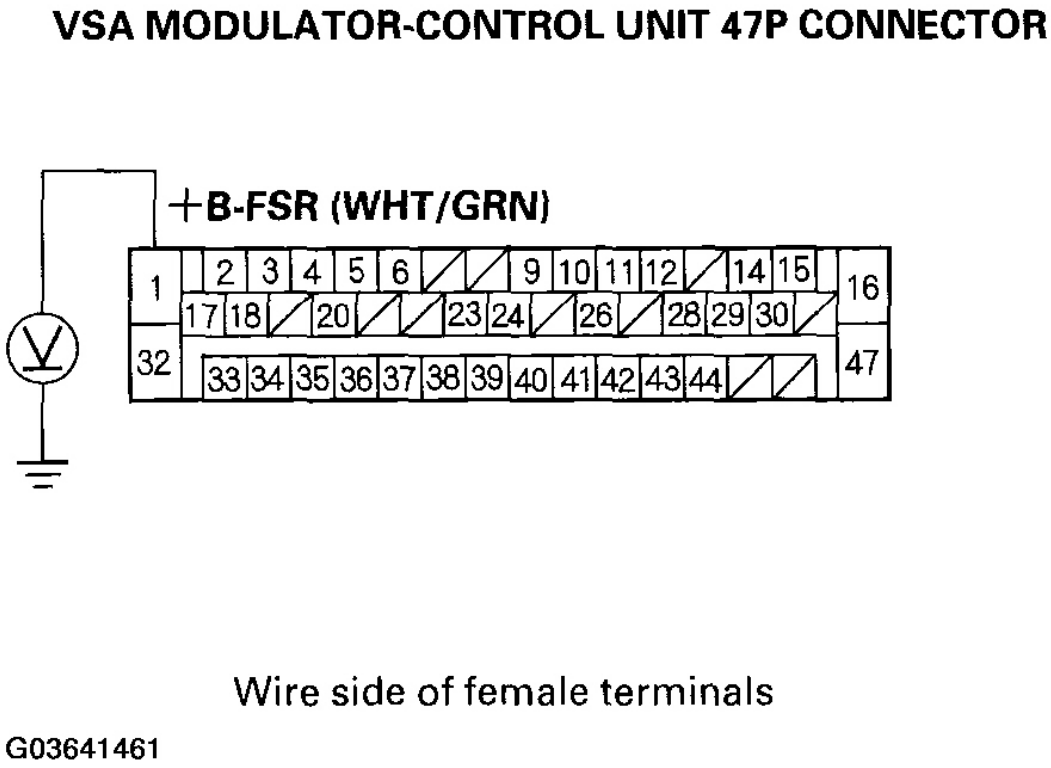


Fig. 76: Measuring Voltage Between VSA Modulator-Control Unit 47P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 6.

NO - Repair open in the wire between the VSA FSR (40 A) fuse and the VSA modulator-control unit.

6. Turn the ignition switch ON (II).
7. Measure the voltage between the VSA modulator-control unit 47P connector terminal No. 38 and body ground.

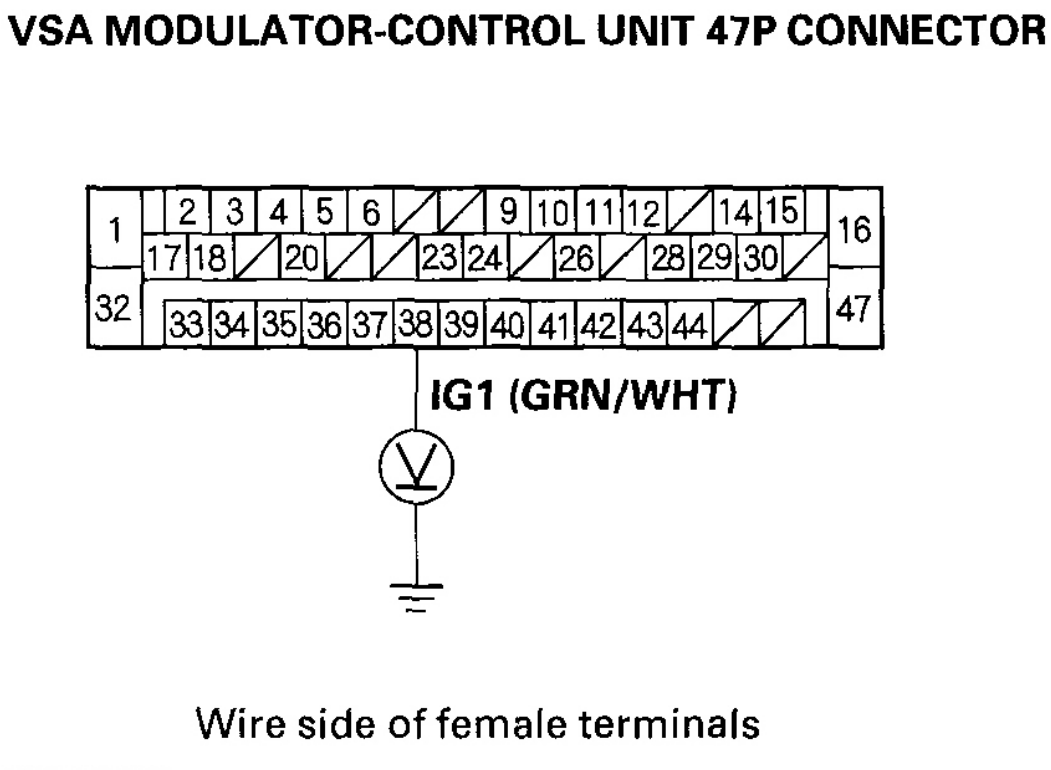


Fig. 77: Measuring Voltage Between VSA Modulator-Control Unit 47P Connector Terminal No. 38 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 8.

NO - Repair open in the wire between the following fuses and the VSA modulator-control unit:

- '03 model: No. 92 (7.5 A) fuse in the auxiliary fuse holder
- '04-06 models: IG1 (7.5 A) fuse in the auxiliary fuse holder

8. Turn the ignition switch OFF.
9. Reconnect the VSA modulator-control unit 47P connector, and turn the ignition switch ON (II).
10. Check for voltage between the VSA modulator-control unit 47P connector terminal No. 32 and body ground.

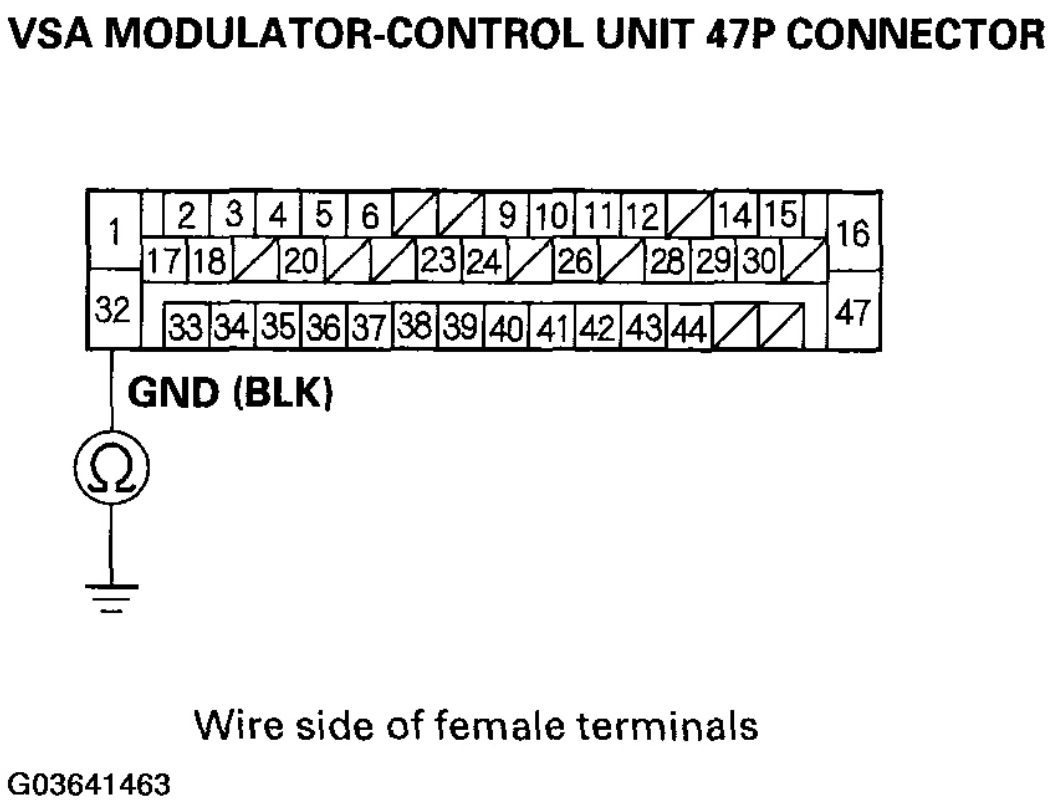


Fig. 78: Checking For Voltage Between VSA Modulator-Control Unit 47P Connector Terminal No. 32 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 0.1 V?

YES - Go to step 11.

NO - Repair open in the wire between the VSA modulator-control unit and body ground (G302).

11. Turn the ignition switch OFF.
12. Connect VSA modulator-control unit 47P connector terminal No. 24 and body ground with a jumper wire, and turn the ignition switch ON (II).

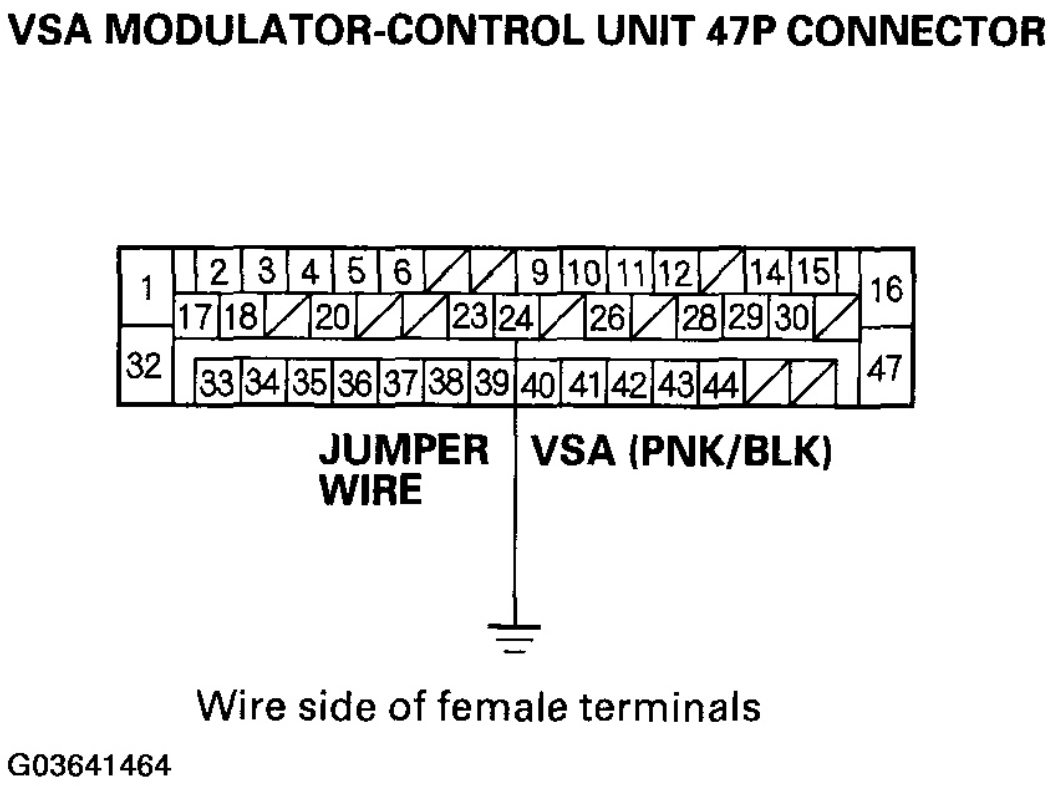


Fig. 79: Connecting VSA Modulator-Control Unit 47P Connector Terminal No. 24 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Does the VSA indicator go off?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - Check for open in the wire between the VSA modulator-control unit 47P connector terminal No. 24 and the VSA indicator.

VSA ACTIVATION INDICATOR DOES NOT COME ON AT START-UP (BULB CHECK)

1. Turn the ignition switch ON (II) and watch the VSA activation indicator.

Does the VSA activation indicator come on for several seconds?

YES - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

NO - Go to step 2.

2. Apply the parking brake.

   Does the brake system indicator come on?

   YES - Go to step 3.

   NO - Repair open in the indicator power source circuit (No. 9 (10 A) fuse in the driver's underdash fuse/relay box).
3. Turn the ignition switch OFF.
4. Disconnect the VSA modulator-control unit 47P connector.
5. Connect VSA modulator-control unit 47P connector terminal No. 10 and body ground with a jumper wire, and turn the ignition switch ON (II).

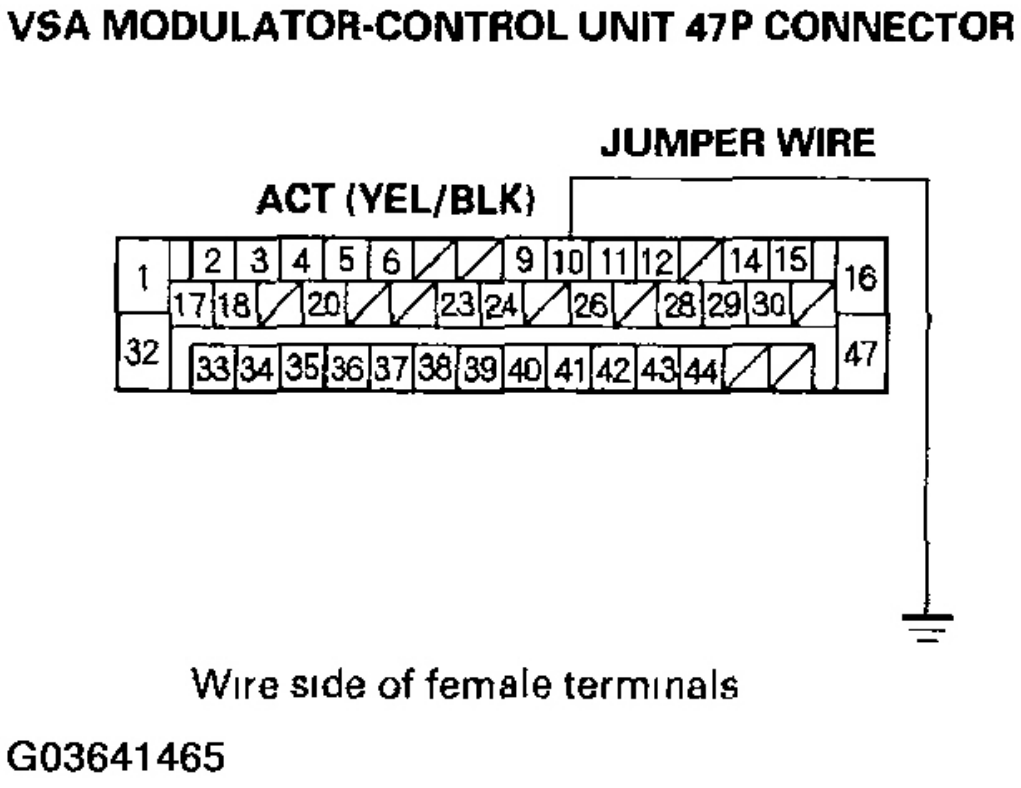


Fig. 80: Connecting VSA Modulator-Control Unit 47P Connector Terminal No. 10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Does the VSA activation indicator come on?

YES - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

NO - Check for open in the wire between the VSA modulator-control unit 47P connector terminal No. 10 and the gauge assembly. If OK, substitute a known-good gauge assembly (see **GAUGE ASSEMBLY REPLACEMENT**) and recheck.

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

1. Turn the ignition switch ON (II) and watch the VSA indicator.

   Does the VSA indicator go off?

   YES - Go to step 2.

   NO - Do the appropriate troubleshooting for the VSA indicator.
2. Turn the ignition switch OFF.
3. Check the VSA OFF switch (see **VSA OFF SWITCH TEST**).

   Is the switch OK?

   YES - Go to step 4.

   NO - Replace the VSA OFF switch.
4. Perform the VSA sensors neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).

   Does the VSA activation indicator go off?

   YES - The system is OK at this time. Refer to **INTERMITTENT FAILURES** .

   NO - Go to step 5.
5. Disconnect the VSA modulator-control unit 47P connector.
6. Turn the ignition switch ON (II).

   Does the VSA activation indicator come on?

   YES - Check for open in the wire between the VSA modulator-control unit 47P connector terminal No. 10 and the gauge assembly. If OK, substitute a known-good gauge assembly (see **GAUGE ASSEMBLY REPLACEMENT**) and recheck.

   NO - Go to step 7.
7. Measure the voltage between VSA modulator-control unit 47P connector terminal No. 44 and body ground.

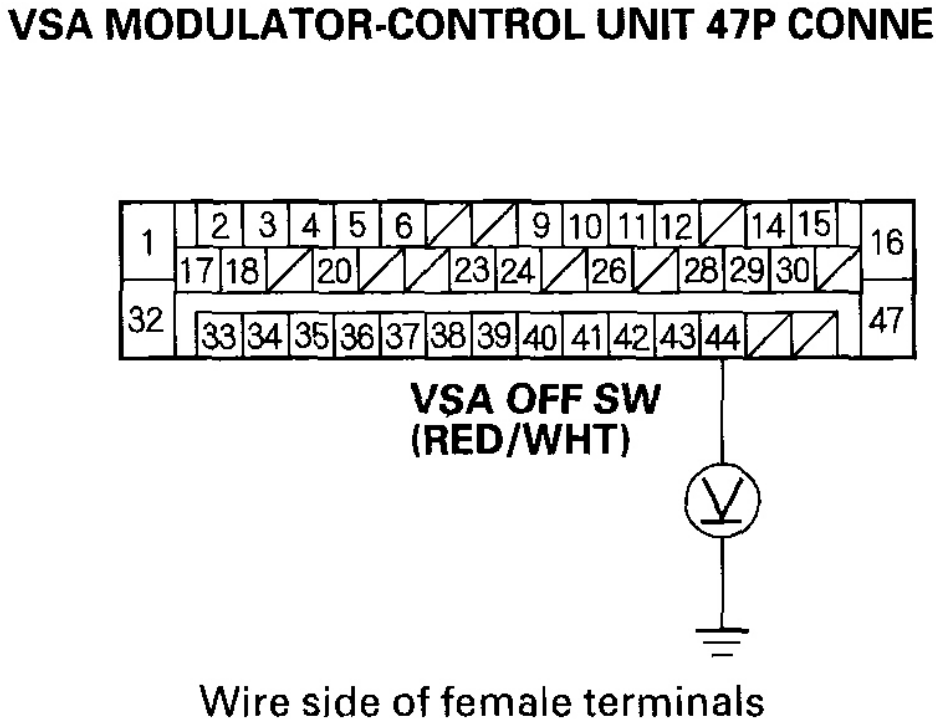


Fig. 81: Measuring Voltage Between VSA Modulator-Control Unit 47P Connector Terminal No. 44 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Repair short to power on the wire between the VSA modulator-control unit 47P connector and the VSA OFF switch.

NO - Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and recheck.

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 combination switch assembly (see **STEERING COLUMN REMOVAL AND**

INSTALLATION).

3. Remove the combination light switch (A) and the wiper/washer switch (B).

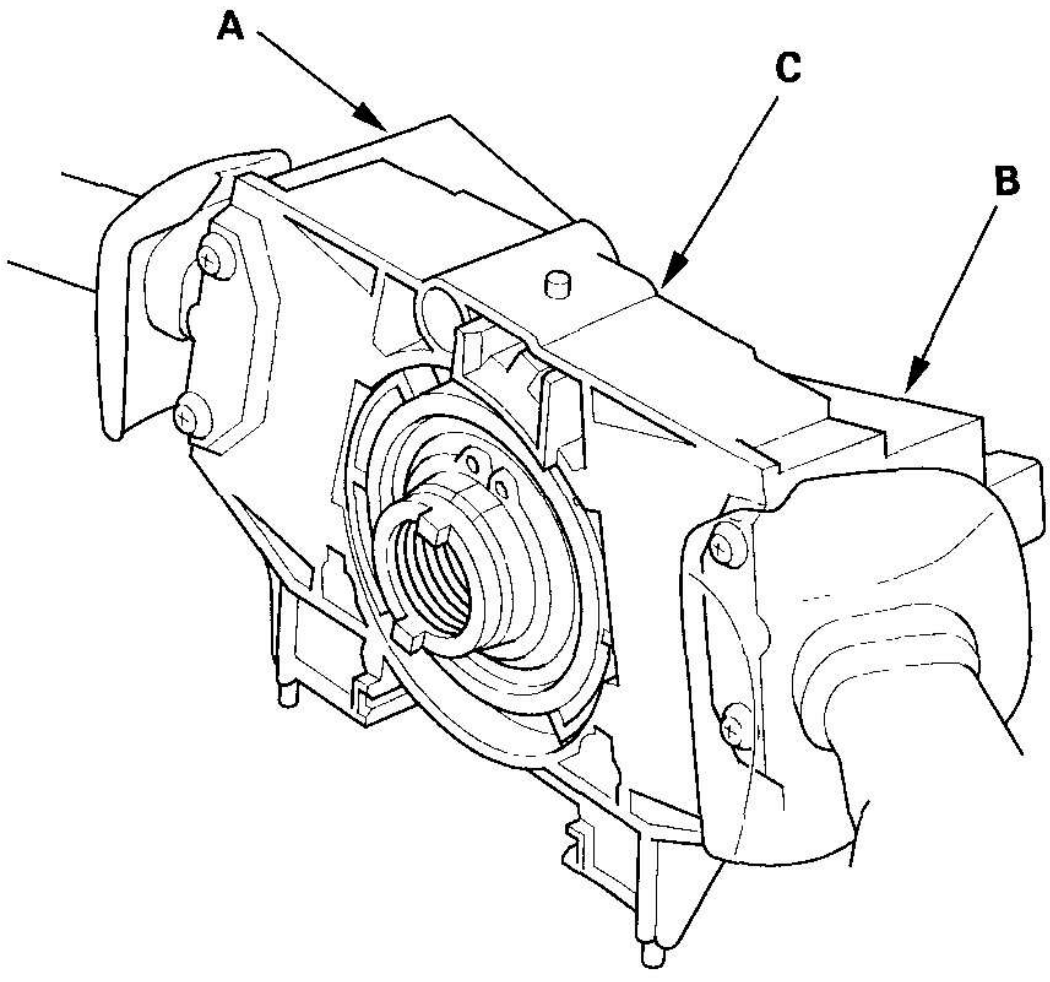


Fig. 82: Removing Combination Light Switch (A) And Wiper/Washer Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Replace the combination switch body as an assembly (C).

NOTE: Do not remove the steering angle sensor from the combination switch body.

5. Install the combination switch in the reverse order of removal.
6. Reinstall the steering wheel (see **STEERING WHEEL INSTALLATION**).

7. Do the VSA sensors neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).

YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT

NOTE:

- **Do not damage or drop the sensor as it is sensitive.**
- **Do not use an impact wrench.**

1. Remove the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).
2. Remove the yaw rate-lateral acceleration sensor (A).

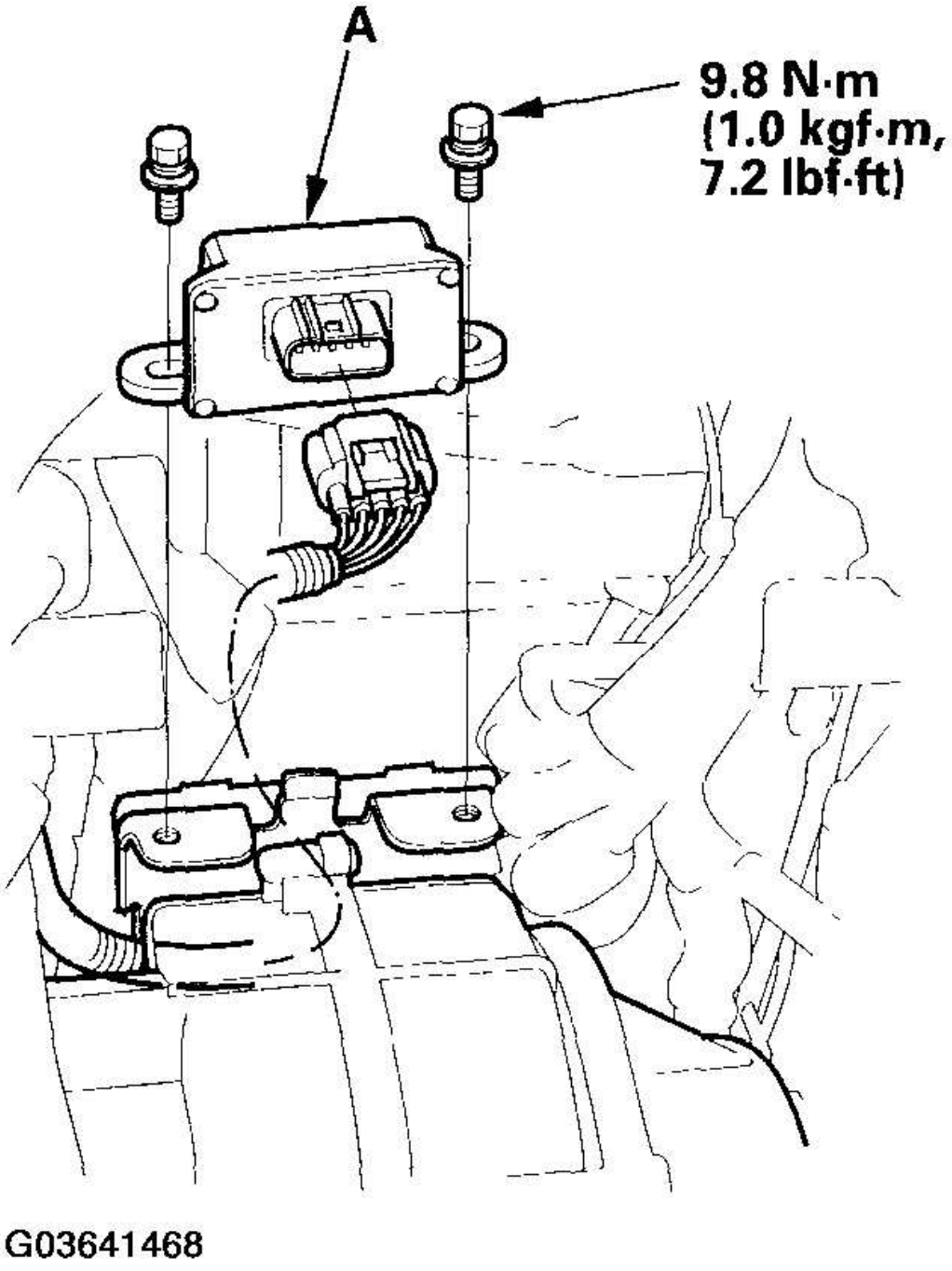


Fig. 83: Removing Yaw Rate-Lateral Acceleration Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install in the reverse order of removal.

VSA SENSOR NEUTRAL POSITION MEMORIZATION

1. With the ignition switch OFF, connect the HDS to the 16P date link connector (DLC) (A) under the left side of the driver's dashboard.

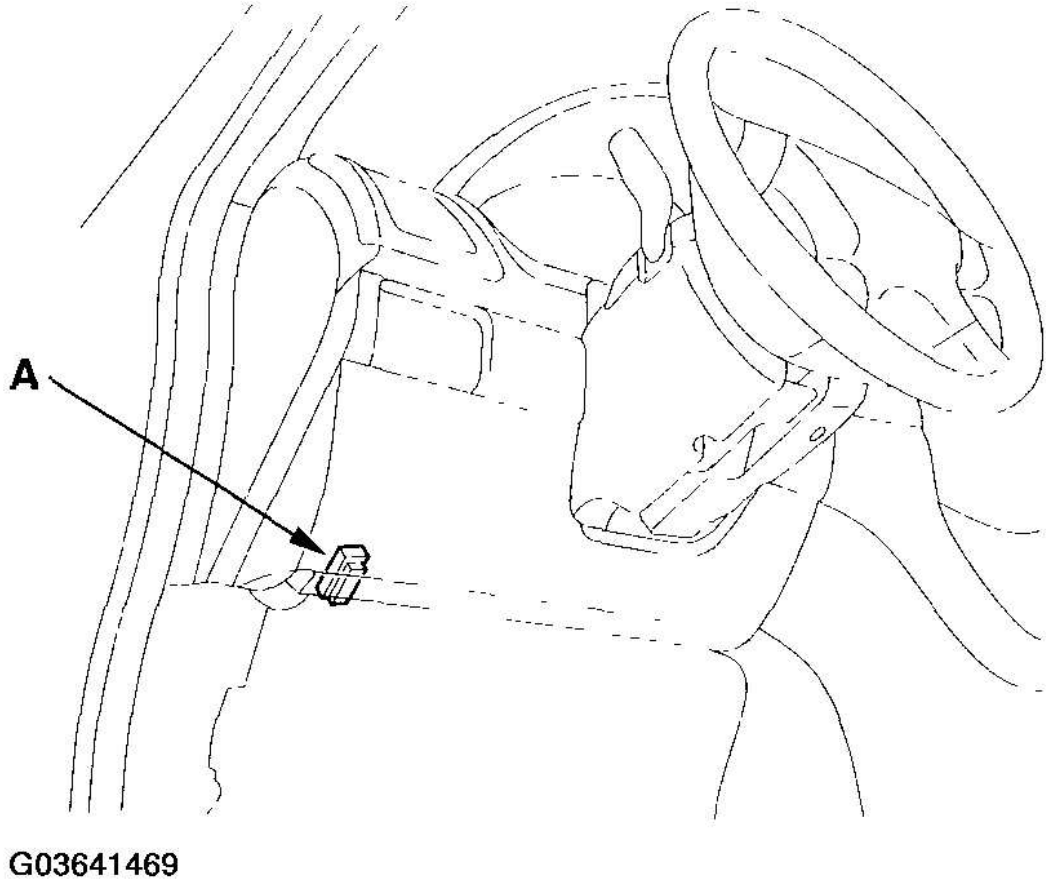


Fig. 84: Identifying VSA Sensor Neutral Position Memorization
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Short the SCS circuit to body ground using the HDS.
3. Make sure the vehicle is parked on a level surface.
4. Do not touch the brake pedal during step 5 through 10 .
5. Turn the ignition switch ON (II).
6. The ABS indicator comes on for 2 seconds and goes off.

7. After the ABS indicator goes off, push the VSA OFF switch once within 2 seconds.
8. After the ABS indicator comes on, push the VSA OFF switch once within 2 seconds.
9. The VSA activation indicator blinks and the system starts VSA sensors neutral position memorization.
10. When the ABS indicator, VSA indicator, and VSA activation indicator go off, the memorizing is done. If the indicators do not go off, retry these steps.

VSA OFF SWITCH TEST

1. Remove the VSA OFF switch (A) from the switch panel.

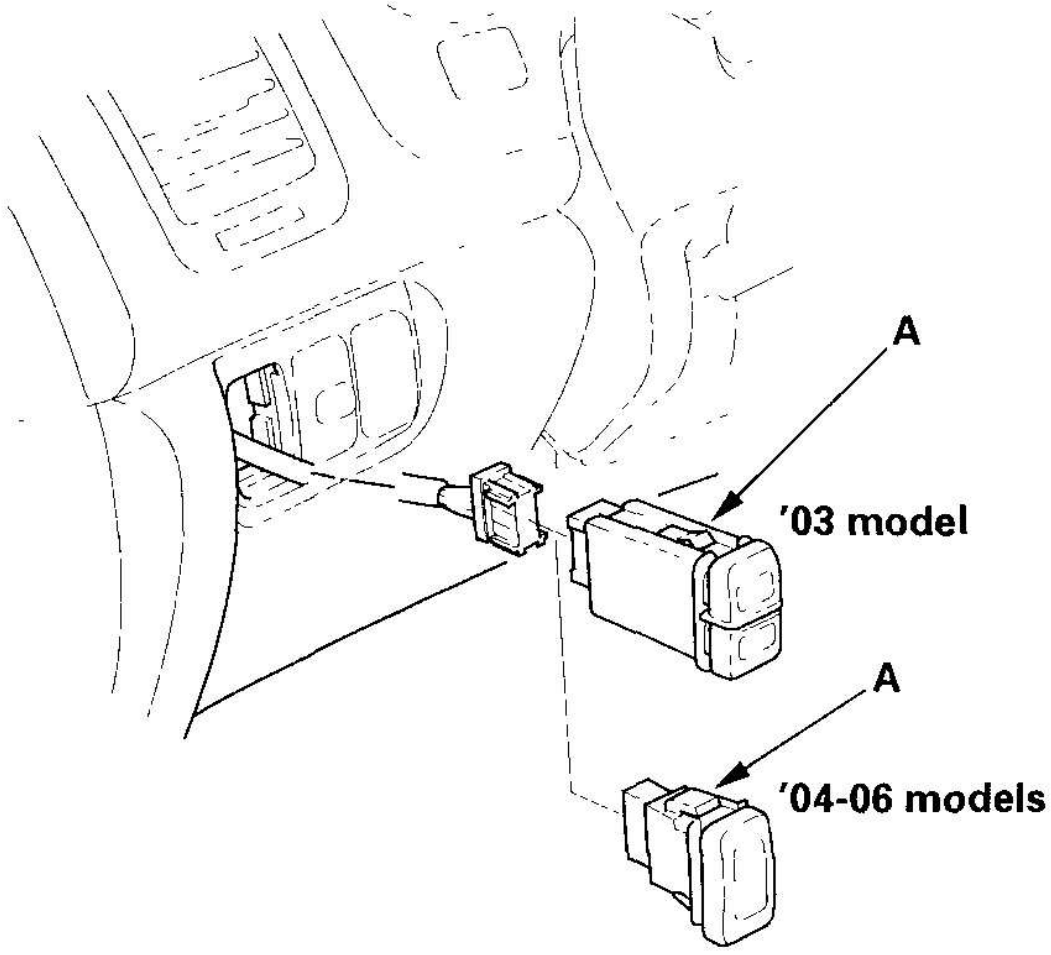


Fig. 85: Removing VSA Off Switch From Switch Panel
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. '03 model: Check for continuity between terminal No. 5 and No. 6.

   '04-06 models: Check for continuity between terminal No. 2 and No. 3.

3. There should be continuity while the VSA OFF switch is pushed.

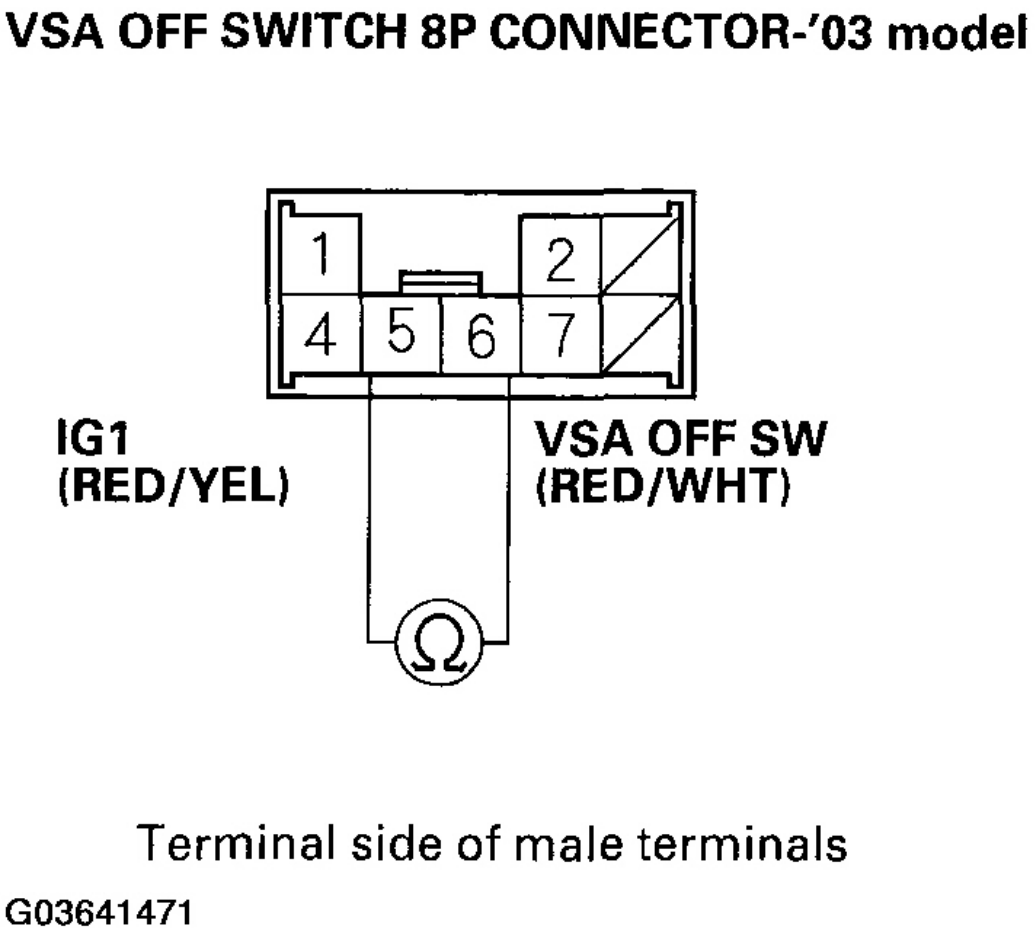


Fig. 86: Measuring Continuity Between Terminal (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

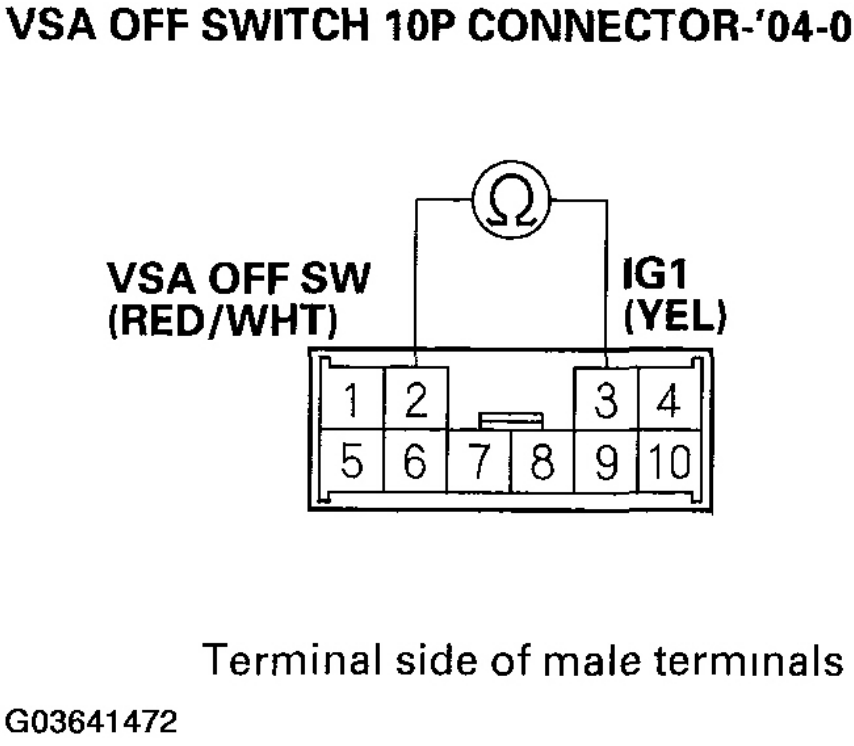


Fig. 87: Measuring Continuity Between Terminal (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. If there is no continuity, replace the switch.

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. Push the tab (A) and pull up the lock (B) of the VSA modulator-control unit 47P connector (C) and the connector disconnects itself.

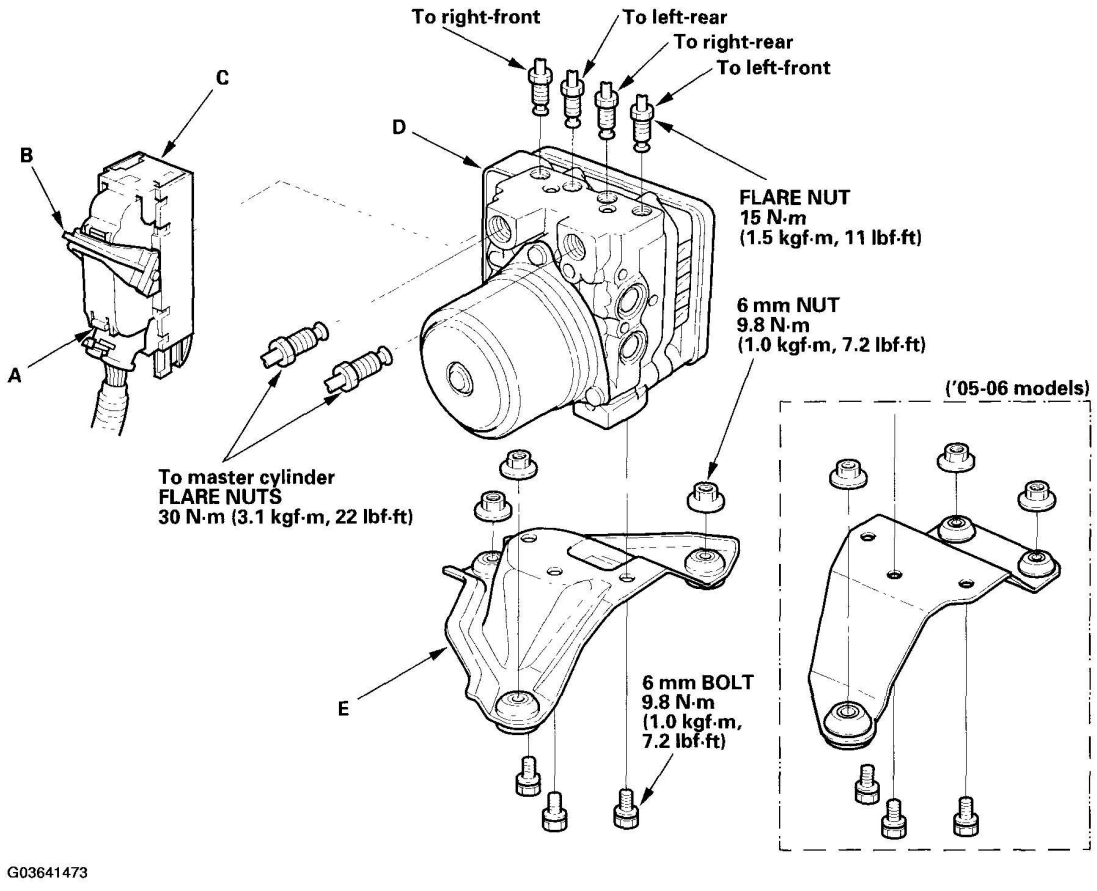


Fig. 88: Disconnecting Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Disconnect the six brake lines from the VSA modulator-control unit (D).
3. Remove the three 6 mm nuts, then remove the VSA modulator-control unit with bracket (E) from the body.
4. Remove the three 6 mm bolts, then separate the VSA modulator-control unit from the bracket.

INSTALLATION

1. Install the VSA modulator-control unit on the bracket with three 6 mm bolts.
2. Install the VSA modulator-control unit/bracket, then tighten the three 6 mm nuts.
3. Reconnect the six brake lines, then tighten the flare nuts.
4. Align the connecting surface of the VSA modulator-control unit 47P connector.
5. Push in the lock of the VSA modulator-control unit 47P connector until you hear it click into place, then confirm the connector is fully seated.
6. Bleed the brake system, starting with the front wheels (see **BRAKE SYSTEM BLEEDING**).
7. Do VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION**

MEMORIZATION).

8. Start the engine, and check that the ABS and VSA indicator goes off.
9. Test-drive the vehicle, and check that the ABS and VSA indicator does not come on.
10. If the brake pedal is now spongy, there may be air trapped in the modulator and then induced into the normal brake system during modulation. Bleed the brake system again, starting with the front wheels (see **BRAKE SYSTEM BLEEDING**).

WHEEL SENSOR INSPECTION

1. Inspect the front and rear pulser for chipped or damaged teeth.
2. Measure the air gap between the wheel sensor and pulser all the way around while rotating the pulser. If the gap exceeds 1.0 mm (0.04 in.) repair as needed.

   Standard:

   Front/Rear: 0.4-1.0 mm (0.02-0.04 in.)

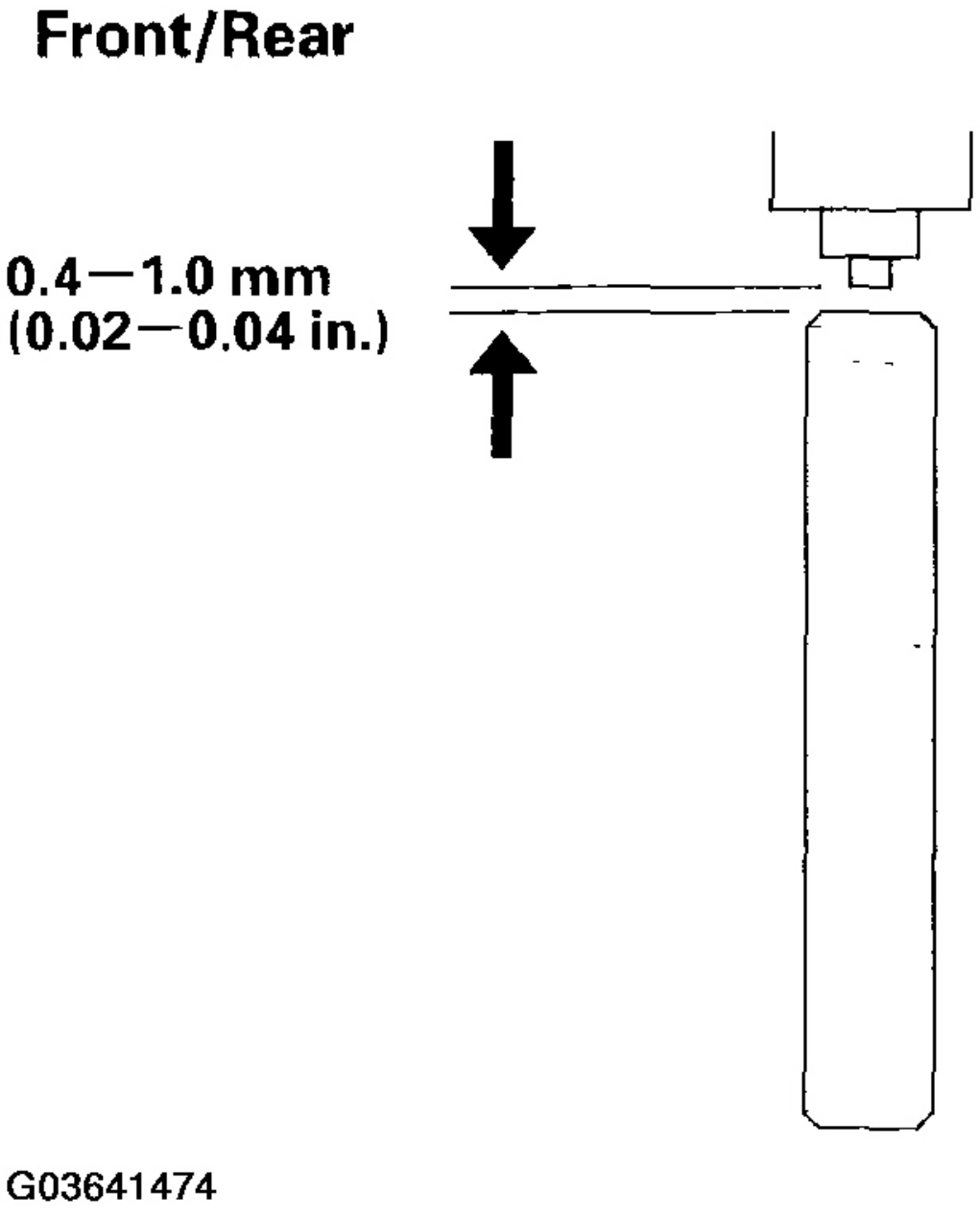


Fig. 89: Measuring Air Gap Between Wheel Sensor And Pulser All Way Around While Rotating Pulser
Courtesy of AMERICAN HONDA MOTOR CO., INC.

WHEEL SENSOR REPLACEMENT

NOTE: Install the sensors carefully to avoid twisting the wires.

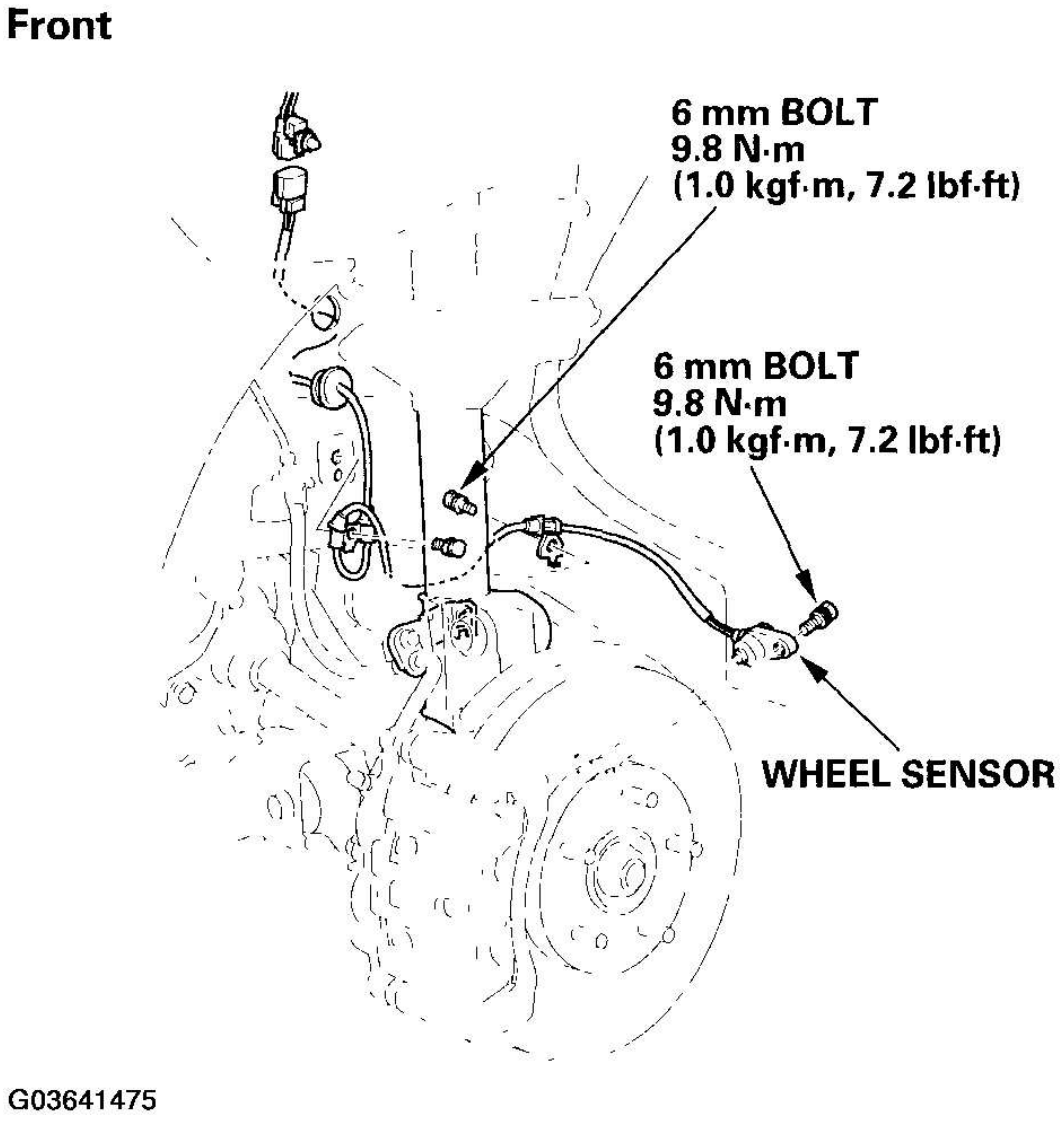


Fig. 90: Installing Sensors Carefully To Avoid Twisting Wires (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

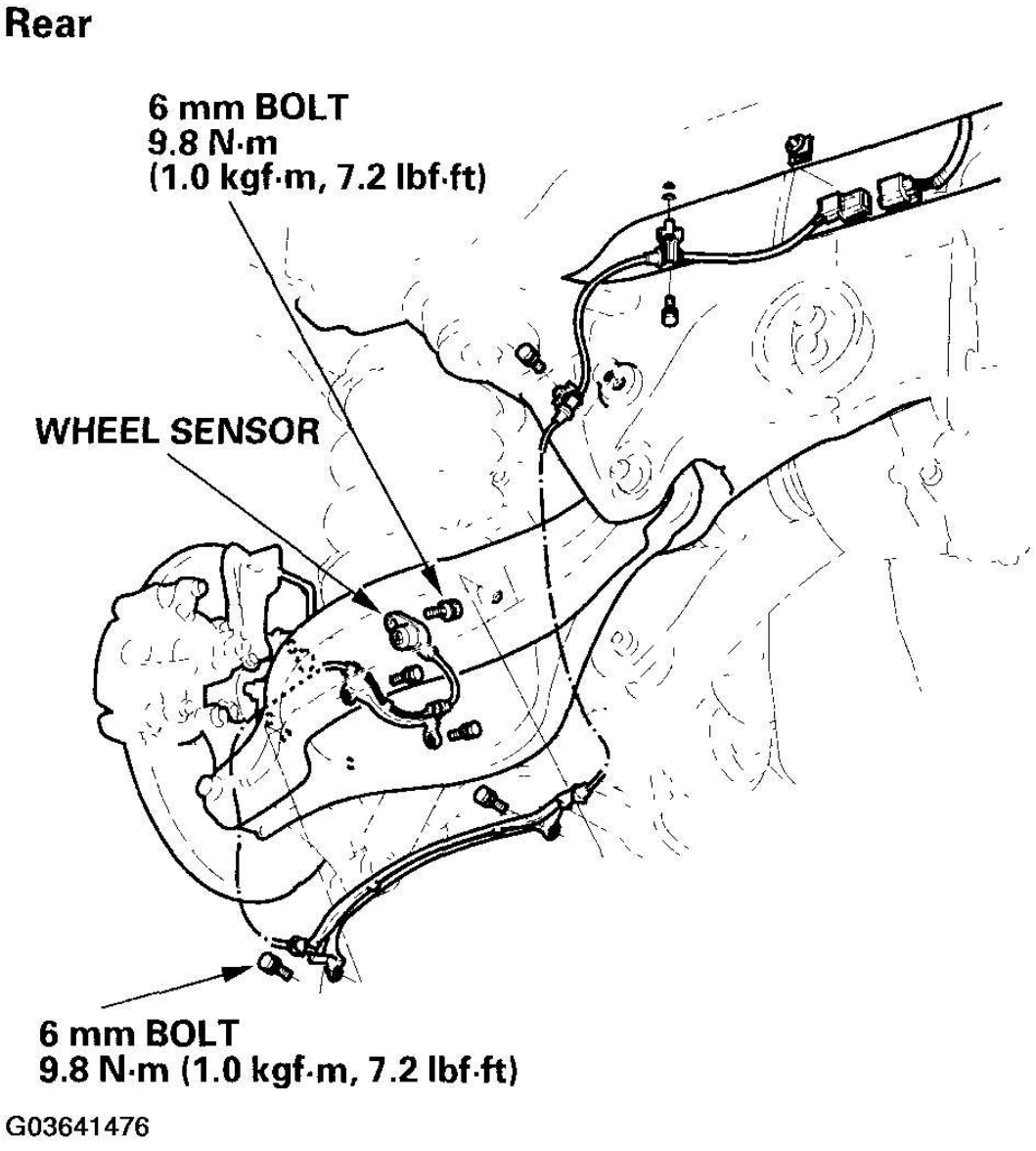


Fig. 91: Installing Sensors Carefully To Avoid Twisting Wires (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (IF BODY MAINTENANCE IS REQUIRED)

The Acura MDX SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and

should be done only by an authorized Acura dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work must be performed by an authorized Acura dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, side impact sensors, or roll rate sensor when the ignition switch is ON (II) or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.