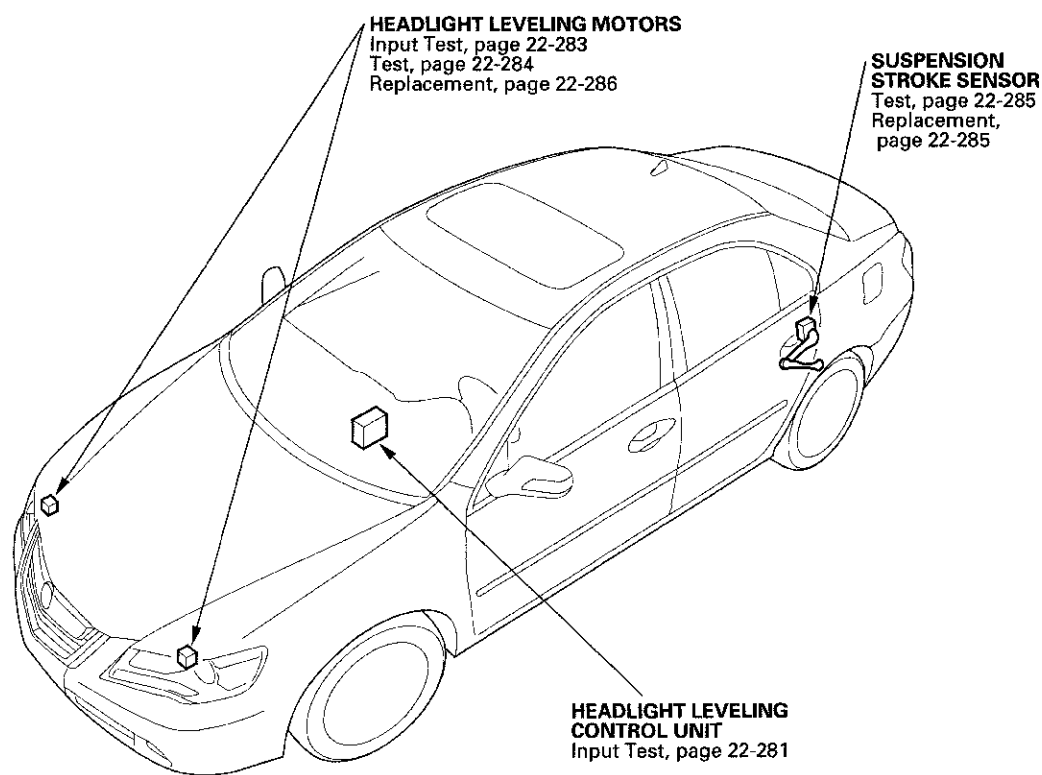


Headlight Leveling System



Component Location Index



Headlight Leveling System

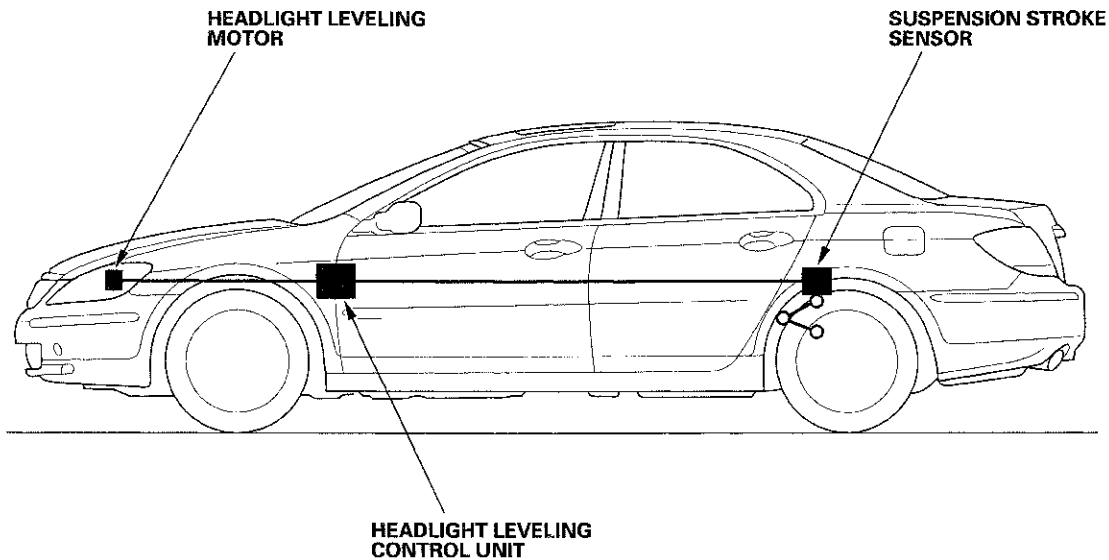
System Description

Headlight Leveling System

The headlight leveling system is composed of the headlight leveling control unit, the suspension stroke sensor, and the left and right headlight leveling motors.

The system uses the suspension stroke sensor to monitor the vehicle ride height. The ride height is monitored every 3 minutes while the vehicle is running with the headlight switch ON, and 8 seconds after the vehicles stops with the ignition and headlight switches ON.

If the control unit detects a ride height change, the control unit controls the headlight leveling motors to adjust the headlight vertical position.



Suspension Stroke Sensor

The suspension stroke sensor detects the vehicle posture and send a voltage signal (about 0.4—4.6 V) to the headlight leveling control unit.

Headlight Leveling Control Unit

The headlight leveling control unit is located under the driver's side of the dashboard. The headlight leveling control unit uses the voltage signals it receives from the suspension stroke sensor to determine the voltage signal (about 2—11 V) it sends to control the left and right leveling motors.

Headlight Leveling Motors

The headlight leveling motors are located behind both headlights, and they adjust the headlights vertically based upon the voltage signals (about 2—11 V) they receive from the headlight leveling control unit.



Headlight Initial Position Learning Procedure

Do the headlight initial position learning when any of the related parts of the headlight leveling system shown are removed or replaced:

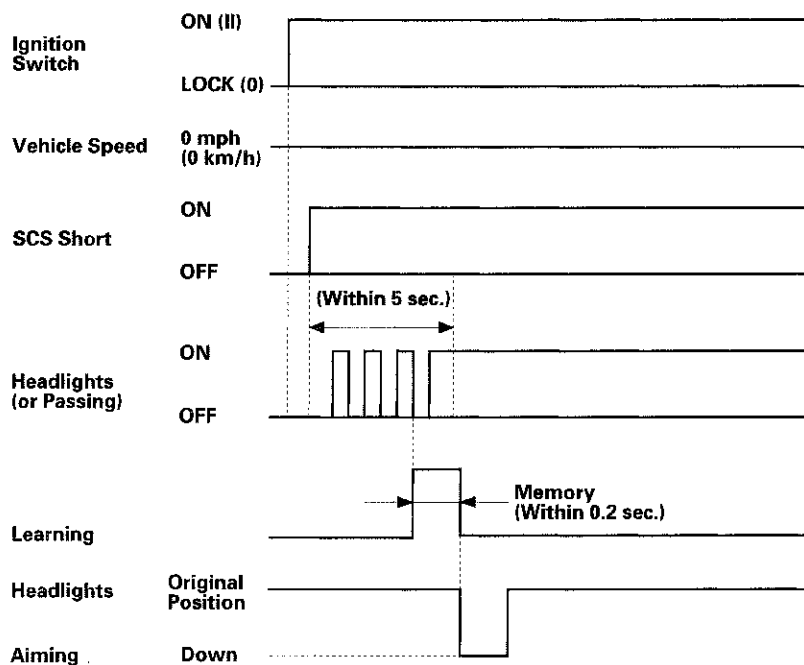
- Suspension stroke sensor removed or replaced
- Headlight leveling control unit replaced

Learning Procedure

Before learning the headlights:

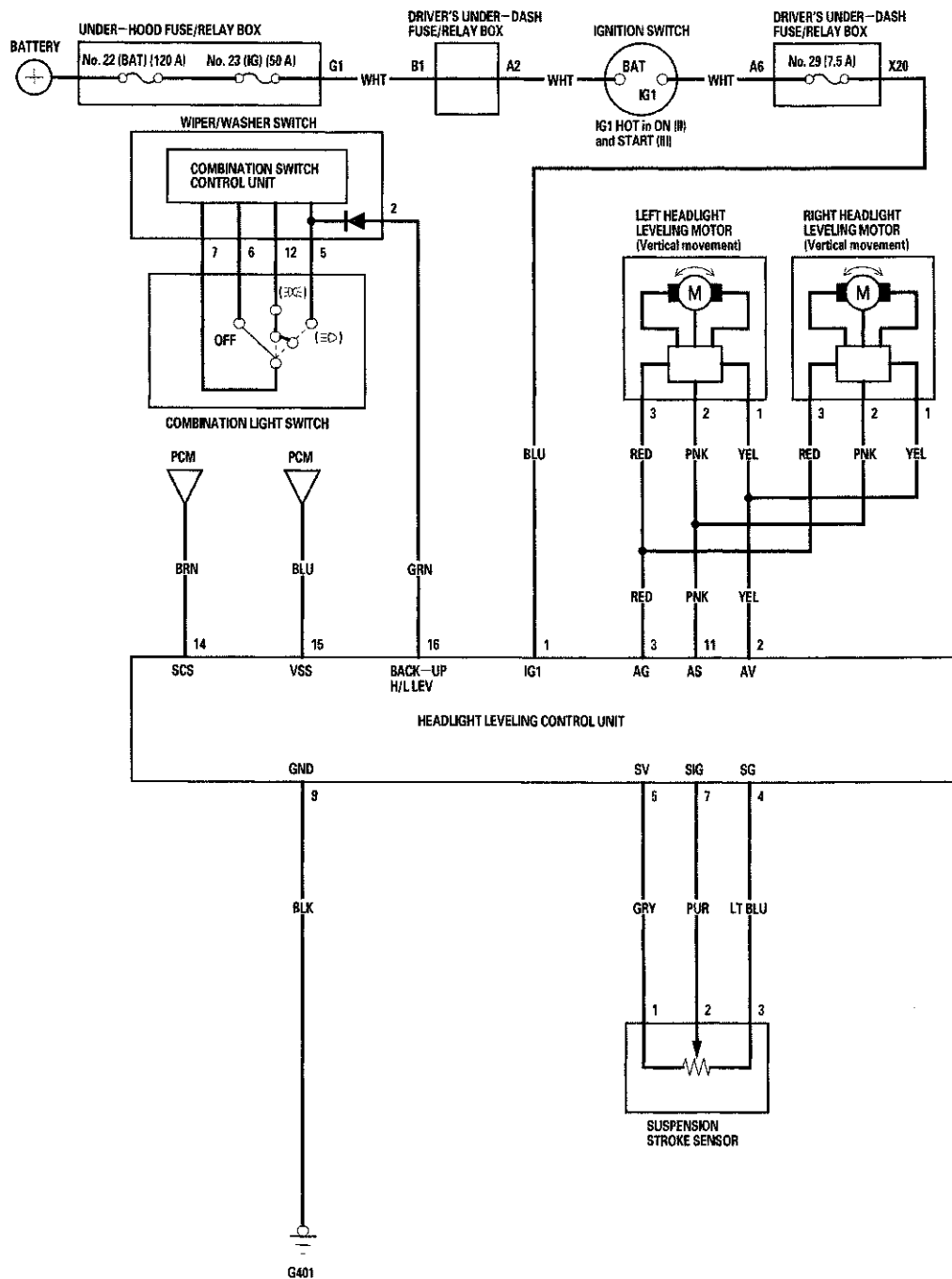
- Park the vehicle on a level surface.
- Make sure the tire pressures are correct.

1. Turn the ignition switch to LOCK (0).
2. Remove all of the baggage from the vehicle.
3. Slide the front seats fully backward.
4. Have the driver or someone who weighs the same (about 165 lb (75 kg)) sit in the driver's seat.
5. Connect the HDS to the data link connector.
6. Turn the ignition switch to ON (II).
7. Short the SCS line with the HDS.
8. Turn the ignition switch to LOCK (0), and then back to ON (II).
9. Within 5 seconds, turn the headlights (low beam) or passing switch ON and OFF three times repeatedly, and leave them on.
 - If the headlights move down (about 2 in at 10 feet), then return to the original position, the initial position learning is complete.
 - If the headlights don't move, go to step 1 and repeat the procedure.
10. Turn the ignition switch to LOCK (0), and disconnect the HDS from the data link connector.
11. Adjust the headlight aim to conform with the applicable requirements.



Headlight Leveling System

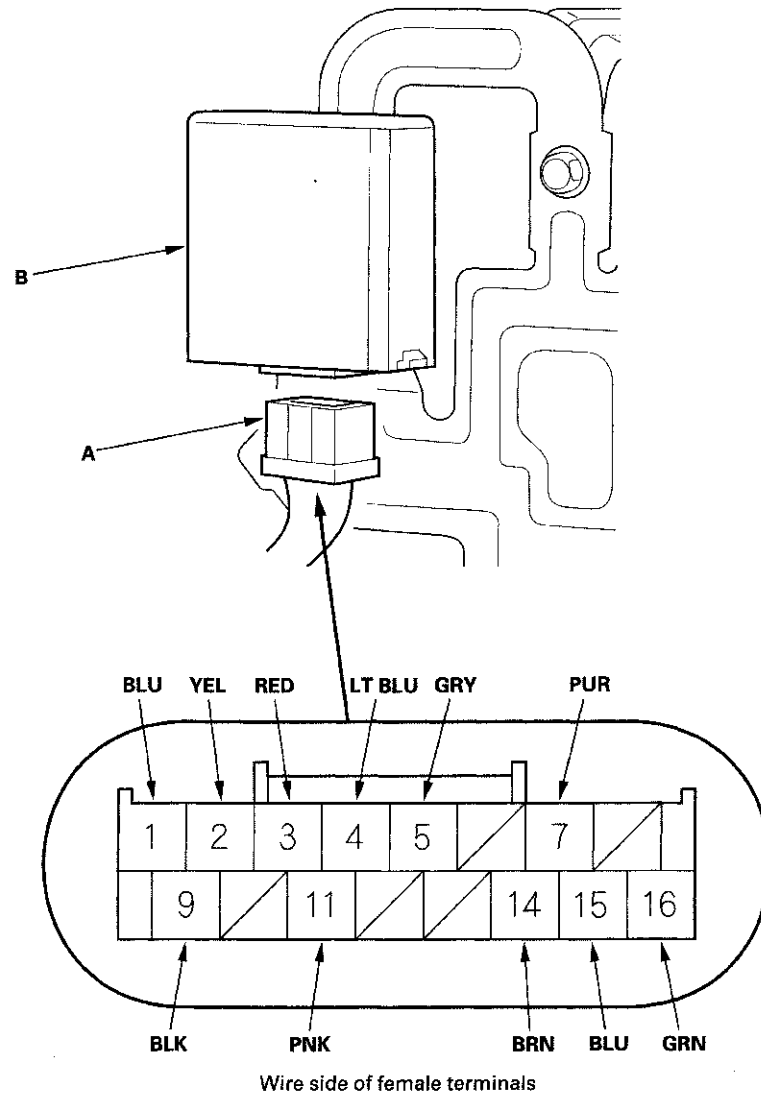
Circuit Diagram





Headlight Leveling Control Unit Input Test

1. Turn the ignition switch to LOCK (0).
2. Remove the driver's dashboard undercover (see page 20-100), and the driver's dashboard lower cover (see page 20-100).
3. Disconnect the 16P connector (A) from the headlight leveling control unit (B).



4. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals are OK, go to step 5.

(cont'd)

Headlight Leveling System

Headlight Leveling Control Unit Input Test (cont'd)

5. With the connector still disconnected, do these input tests at the following connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
15	BLU	Ignition switch ON (II), raise the vehicle, make sure it is securely supported, and rotate one of the front wheels slowly with the other wheel blocked.	Measure the voltage between terminals No. 15 (+) and No. 9 (—): There should be a pulse of at least 0—5 V showing repeatedly.	• Faulty PCM • An open in the wire • A short to ground in the wire
16	GRN	Under all conditions	Check for continuity between terminal No. 16 and combination switch control unit 8P connector terminal No. 2: There should be continuity.	An open in the wire

6. Reconnect the connector to the control unit, and do these input tests at the following connector.

- If any tests indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, replace the headlight leveling control unit.

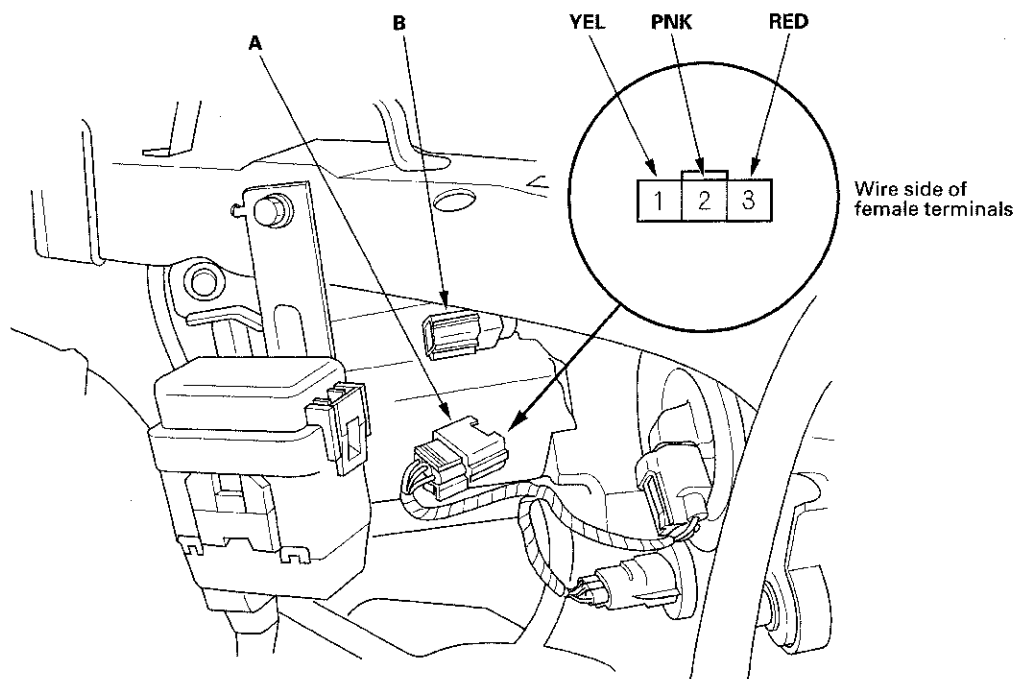
Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
1	BLU	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	• Blown No. 29 (7.5 A) fuse in the driver's under-dash fuse/relay box • An open in the wire
9	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.2 V.	• Poor ground (G401) • An open in the wire
4	LT BLU	Under all conditions	Measure the voltage to ground: There should be less than 0.2 V.	• Poor ground (G401) • An open in the wire
2	YEL	Ignition switch ON (II), headlight ON	Measure the voltage between terminals No. 2 and No. 3: There should be battery voltage.	• Faulty headlight leveling motor • An open in the wire
3	RED			
11	PNK	Ignition switch ON (II), headlight ON	Measure the voltage between terminals No. 11 and No. 3: There should be at least 2 V to 12 V.	• Faulty headlight leveling motor • An open in the wire
3	RED			
5	GRY	Under all conditions	• Measure the voltage between the terminals No. 5 (+) and No. 4 (—): There should be at least 5 V. • Measure the voltage between the terminals No. 7 (+) and No. 4 (—): There should be at least 0.5 V to 4.5 V.	• Faulty suspension stroke sensor • An open in the wire
7	PUR			
4	LT BLU			

7. After replacing the control unit, do the headlight initial position learning procedure (see page 22-279).



Headlight Leveling Motor Input Test

1. Turn the ignition switch to LOCK (0).
2. Disconnect the 3P connector (A) from the headlight leveling motor (B).



3. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose, or corroded, repair them as necessary, and recheck the system.
 - If the terminals are OK, go to step 4.
4. Reconnect the connector to the headlight leveling motor, and do these input tests at the following connector.
 - If any tests indicate a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, replace the headlight leveling motor (see page 22-286).

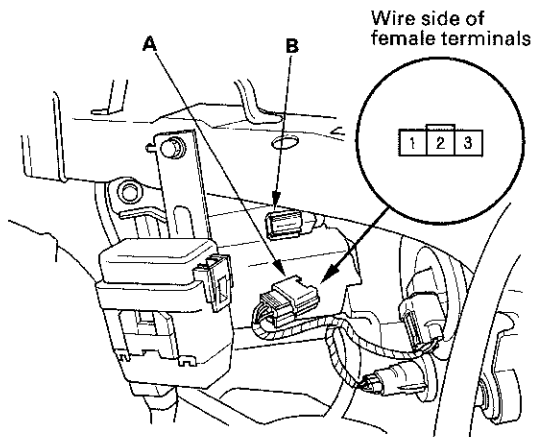
Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
1	YEL	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	• Faulty headlight leveling control unit • An open in the wire
2	PNK	Ignition switch ON (II), headlight switch ON	Measure the voltage to ground: There should be at least 2—12 V. NOTE: Depending on the headlight leveling position.	• Poor ground (G401) • Faulty headlight leveling control unit • An open in the wire
3	RED	Ignition switch ON (II)	Measure the voltage to ground: There should be less than 0.2 V.	• Faulty headlight leveling control unit • An open in the wire

Headlight Leveling System

Headlight Leveling Motor Test

NOTE: Before testing, check the No. 11 (7.5 A) and No. 29 (7.5 A) fuses in the driver's under-dash fuse/relay box.

1. Disconnect the 3P connector (A) from the headlight leveling motor (B).



2. Check for continuity between headlight leveling motor 3P connector terminal No. 3 and body ground. There should be continuity.
 - If there is continuity, go to step 3.
 - If there is no continuity, check for:
 - Faulty headlight leveling control unit.
 - An open in the wire between the adaptive front lighting control unit and headlight leveling motor.
 - Poor ground (G 401).

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

4. Measure the voltage between headlight leveling motor 3P connector terminal No. 1 and body ground. There should be battery voltage.

- If there is battery voltage, go to step 5.
- If there is no voltage, check for:
 - Faulty headlight leveling control unit.
 - An open in the wire between the adaptive front lighting control unit and headlight leveling motor.

5. Turn the headlight switch ON.

6. Measure the voltage between headlight leveling motor 3P connector terminal No. 2 and body ground. There should be about 3–13 V.

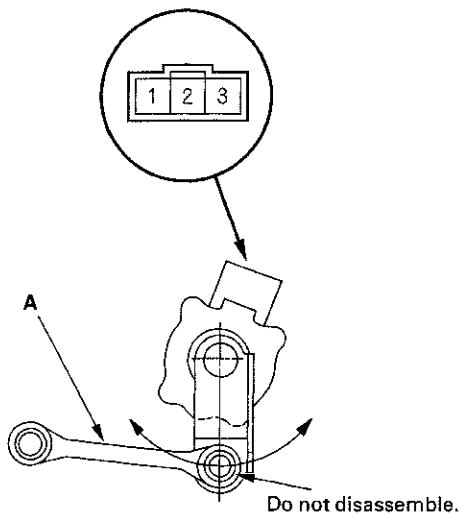
NOTE: The voltage will vary depending on the vehicle position.

- If there is battery voltage, replace the headlight leveling motor (see page 22-286).
- If there is no voltage, check for:
 - Faulty headlight leveling control unit.
 - An open in the wire between the adaptive front lighting control unit and headlight leveling motor.



Suspension Stroke Sensor Test

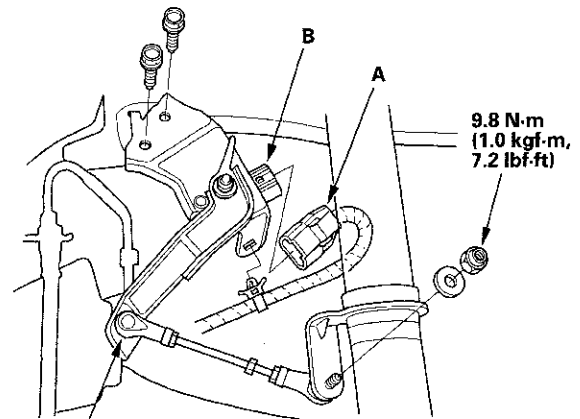
1. Remove the suspension stroke sensor (see page 22-285).
2. Measure the resistance between suspension stroke sensor 3P connector terminals No. 1 and No. 3. There should be about 3.5—6.5 k Ω .
3. Measure the resistance between suspension stroke sensor 3P connector terminals No. 2 and No. 3 with the linkage (A) moved. There should be about 0.5—4.5 k Ω .



4. If the resistance is not as specified, replace the suspension stroke sensor (see page 22-285).

Suspension Stroke Sensor Replacement

1. Raise the vehicle on a lift (see page 1-8).
2. Disconnect the 3P connector (A) from the suspension stroke sensor (B).

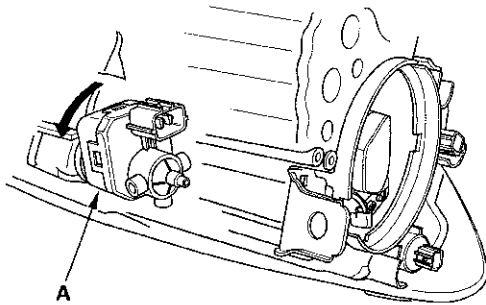


3. Remove the bolts and nut, then remove the suspension stroke sensor.
4. Install the sensor in the reverse order of removal.
5. After replacement, do the headlight initial position learning procedure (see page 22-279).

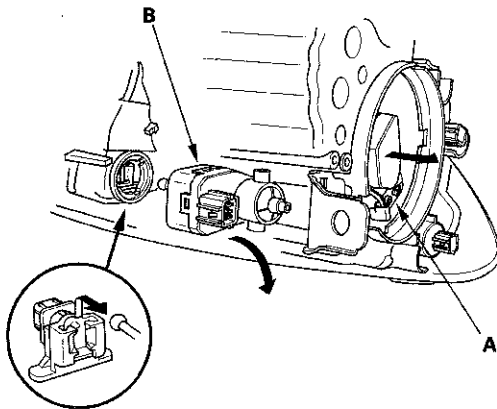
Headlight Leveling System

Headlight Leveling Motor Replacement

1. Remove the headlight assembly (see page 22-220).
2. Turn the HID light cover 45 ° counterclockwise to remove it from the headlight housing (see step 4 on page 22-221).
3. Turn the headlight leveling motor (A) 45 ° clockwise.



4. Pull the headlight reflector (A) slightly, and remove the headlight leveling motor (B).



5. Install the parts in the reverse order of removal.
6. After installation, do the headlight initial position learning procedure (see page 22-279).