

Suspension

Front and Rear Suspension

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Active Damper System 18-49

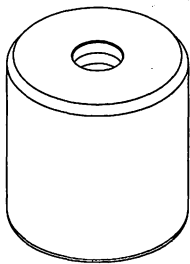
TPMS (Tire Pressure Monitoring System) 18-123



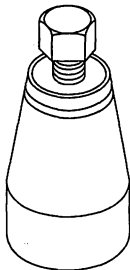
Front and Rear Suspension

Special Tools

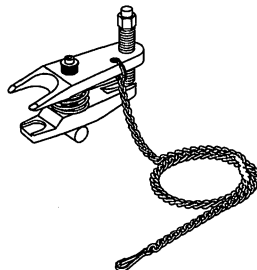
Ref. No.	Tool Number	Description	Qty
①	07GAF-SD40200	Hub Dis/Assembly Tool	1
②	07GAG-SD40700	Ball Joint Boot Clip Guide	1
③	07MAC-SL0A102	Ball Joint Remover, 32 mm	1
④	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
⑤	071AF-S3VA000	Ball Joint Thread Protector, 14 mm	1



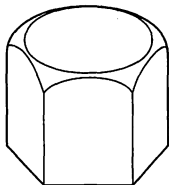
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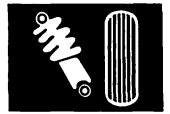
②



③, ④

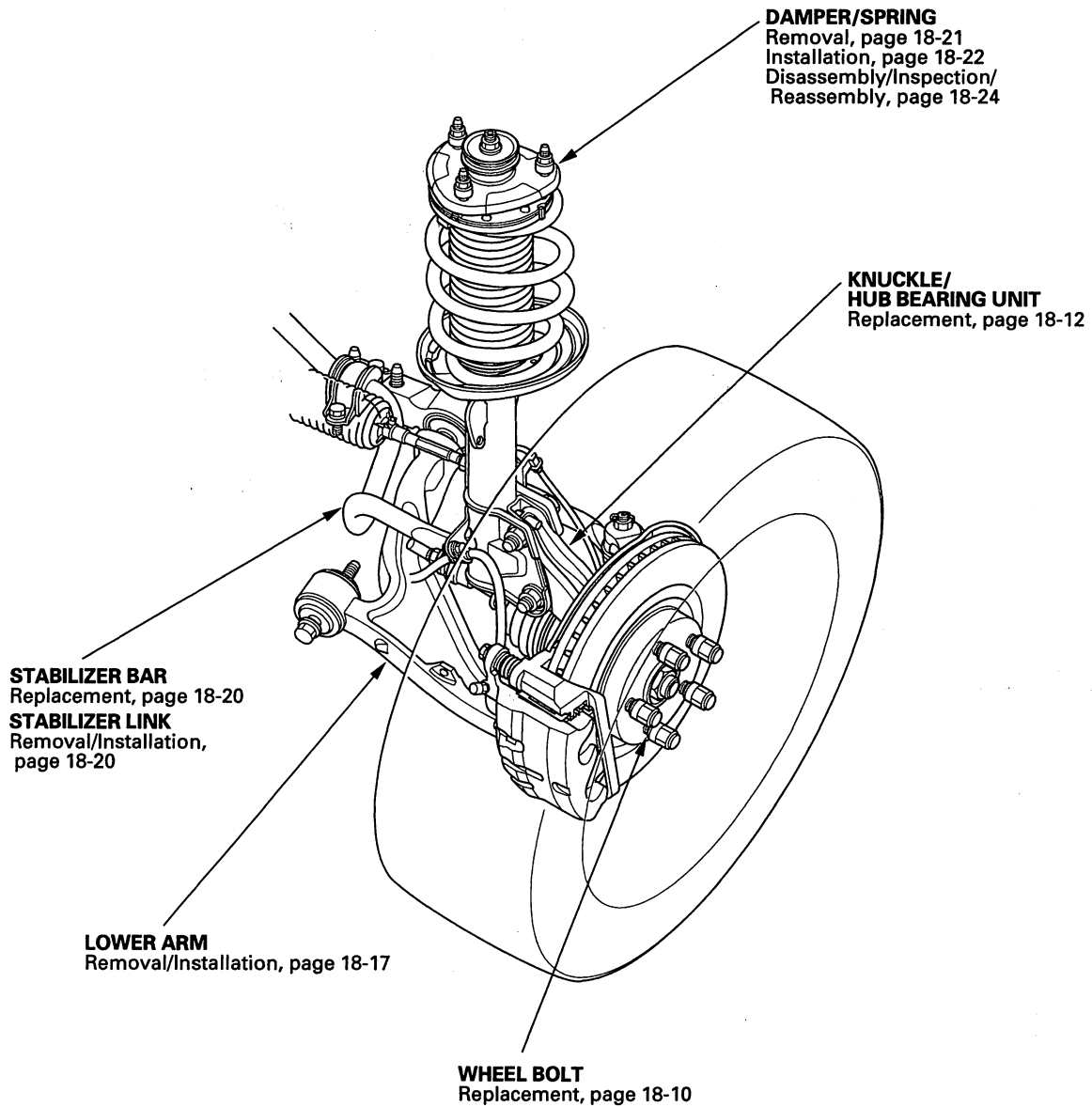


⑤



Component Location Index

Front Suspension

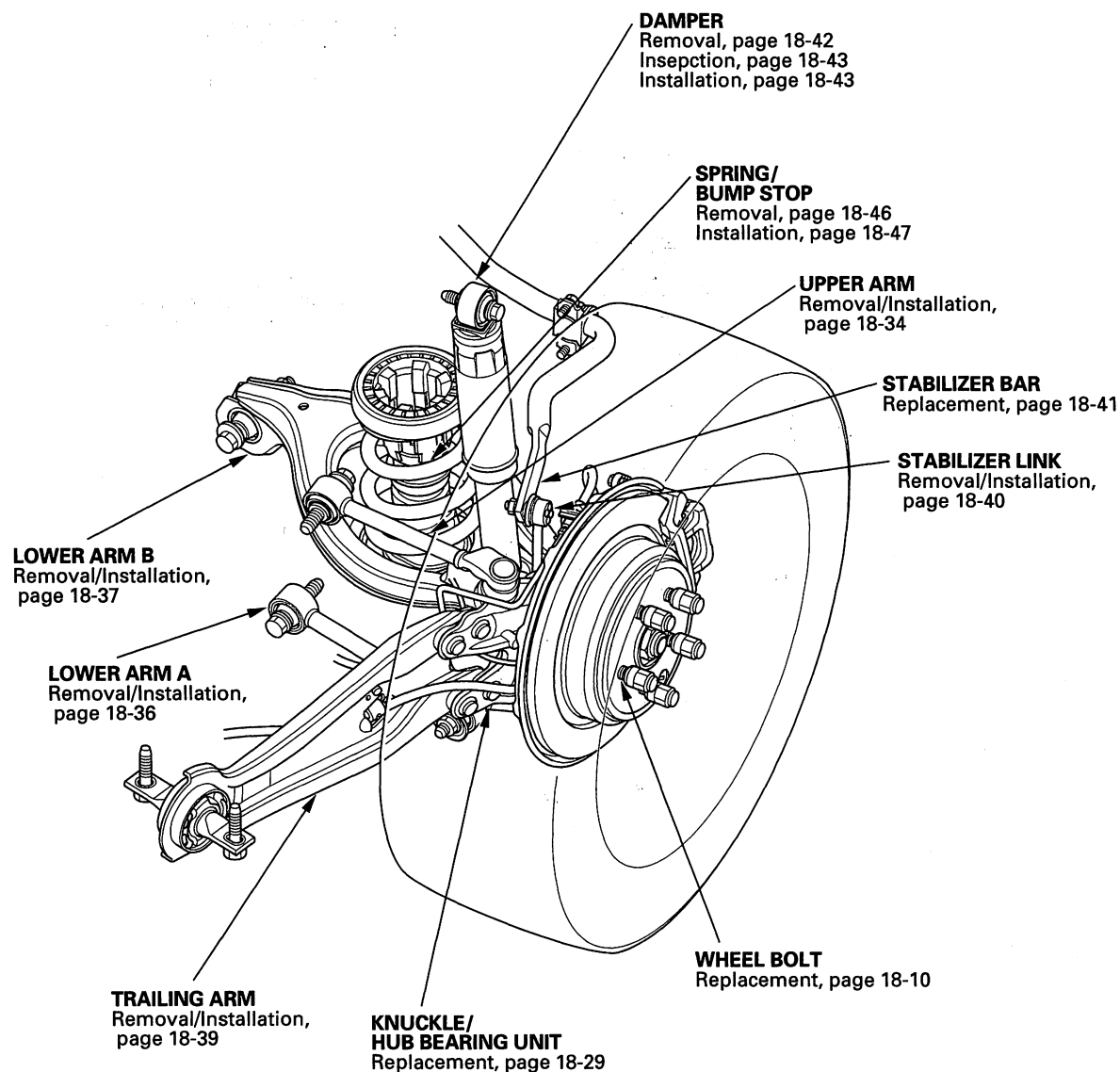


The illustration shows without active damper system.

Front and Rear Suspension

Component Location Index (cont'd)

Rear Suspension



The illustration shows without active damper system.



Wheel Alignment

The suspension can be adjusted for front camber, front toe, and rear toe. However, each of these adjustments are related to each other. For example, when you adjust camber, the toe will change. Therefore, you must adjust the front wheel alignment whenever you adjust camber or toe.

Pre-Alignment Checks

For proper inspection and adjustment of the wheel alignment, do these checks:

1. Release the parking brake to avoid an incorrect measurement.
2. Make sure the suspension is not modified.
3. Check the tire size and pressure.

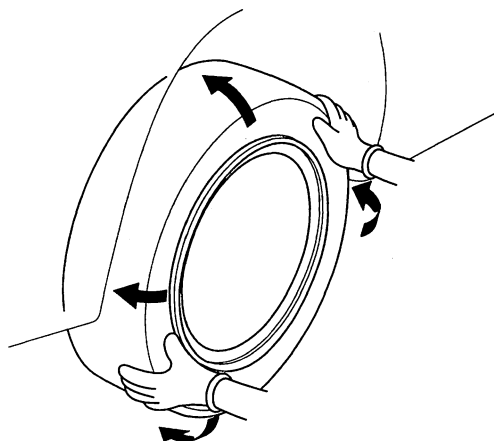
Tire size:

Front/Rear: P255/55R18 104H

Tire pressure:

Front/Rear: 220 kPa (2.2 kgf/cm², 32 psi), cold

4. Check the runout of the wheels and tires (see page 18-9).
5. Check the suspension ball joints. (Hold a tire with your hands, and move it up and down and right and left to check for wobbling.)



6. Bounce the vehicle up and down several times to settle the suspension.

Caster Inspection

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

Check the caster angle.

Caster angle: 4° 12' ±35'

- If the measurement is within specifications, measure the camber angle.
- If the measurement is not within specifications, check for bent or damaged suspension components.

(cont'd)

Front and Rear Suspension

Wheel Alignment (cont'd)

Camber Inspection

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

Check the camber angle.

Camber angle:

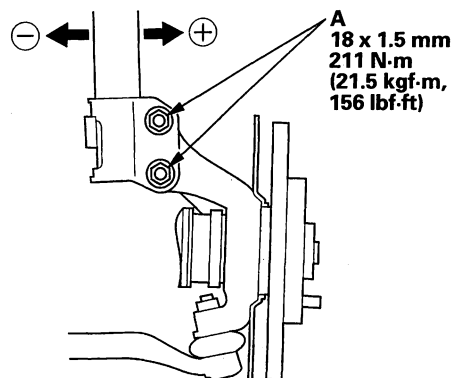
Front: $-0^{\circ}30' \pm 1^{\circ}$

Rear: $-0^{\circ}30' \pm 45'$

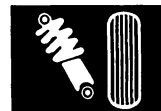
- If the measurement for the front camber is outside the specification, go to front camber adjustment.
- If the measurement for the rear camber is outside the specification, check for bent or damaged suspension components.

Front Camber Adjustment

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the front wheels.
3. Loosen the damper pinch bolts (A) and bolts, and adjust the camber angle by moving the bottom of the damper within the range of the damper pinch bolt free play.



4. Tighten the damper pinch bolts to the specified torque.
5. Reinstall the front wheels. Lower the front of the vehicle to the ground, and bounce the front of the vehicle up and down several times to stabilize the suspension.
6. Measure the camber angle.
 - If the measurement is within specification, measure the toe-in.
 - If the measurement is not within specification, check for bent or damaged suspension components.



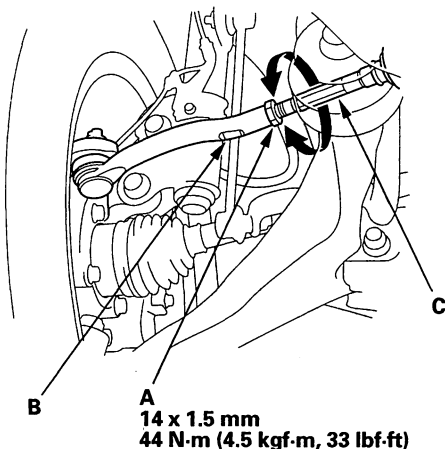
Front Toe Inspection/Adjustment

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Center the steering wheel spokes, and install a steering wheel holder tool.
2. Check the toe with the wheels pointed straight ahead.

Front toe-in: 0 ± 2 mm (0 ± 0.08 in.)

- If adjustment is required, go to step 3.
 - If no adjustment is required, go to rear toe inspection/adjustment.
3. Loosen the tie-rod locknuts (A) while holding the flat surface sections (B) of the tie-rod end with a wrench, and turn both tie-rods (C) until the front toe is within specifications.



4. After adjusting, tighten the tie-rod locknuts. Reposition the rack-end boot if it is twisted or displaced.
5. Go to rear toe inspection/adjustment.

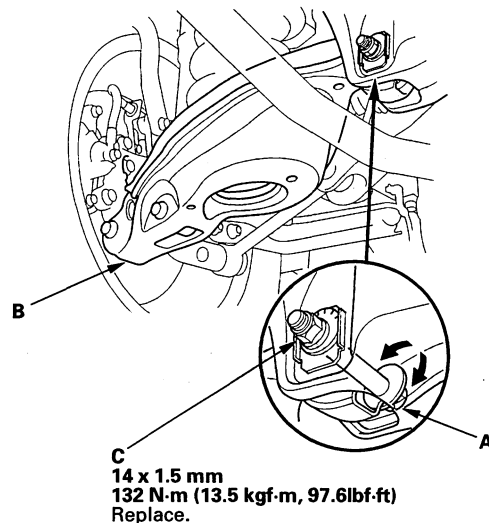
Rear Toe Inspection/Adjustment

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Release the parking brake to avoid an incorrect measurement.
2. Check the toe.

Rear toe-in: 2 ± 2 mm (0.08 ± 0.08 in.)

- If adjustment is required, go to step 3.
 - If no adjustment is required, remove the alignment equipment.
3. Hold the adjusting bolt (A) on the trailing arm (B), and remove the self-locking nut (C).



4. Replace the self-locking nut with a new one, and lightly tighten it.

NOTE:

- Always use a new self-locking nut whenever it has been loosened.
 - Reassemble the adjusting bolt and camplate with the eccentric facing up.
5. Adjust the rear toe by turning the adjusting bolt until the toe is correct.
 6. Tighten the new self-locking nut while holding the adjusting bolt.

(cont'd)

Front and Rear Suspension

Wheel Alignment (cont'd)

Turning Angle Inspection

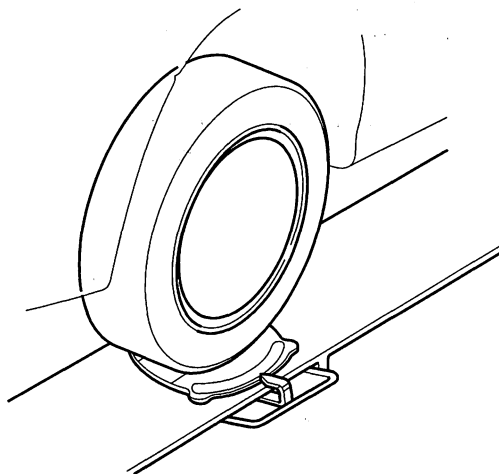
Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Turn the wheel right and left while applying the brake, and measure the turning angle of both wheels.

Turning angle:

Inward wheel: $38^{\circ}12' \pm 2^{\circ}$

Outward wheel: $31^{\circ}44'$ (reference)

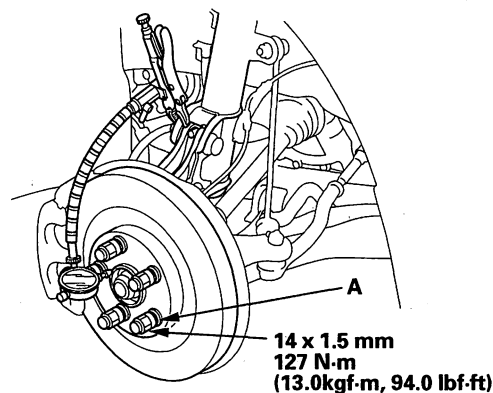


2. If the turning angle is not within the specifications, check for bent or damaged suspension components.

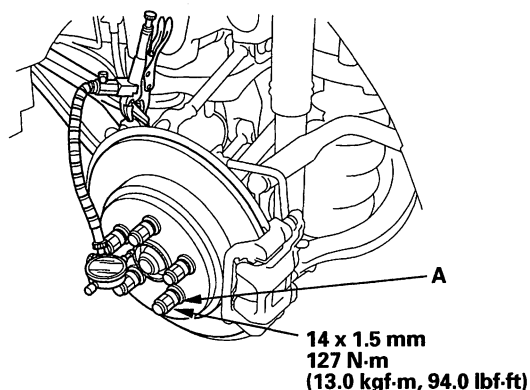
Wheel Bearing End Play Inspection

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the wheels.
3. Install suitable flat washers (A) and the wheel nuts. Tighten the nuts to the specified torque to hold the brake disc securely against the hub.

Front



Rear

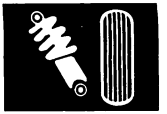


4. Attach the dial gauge. Place the dial gauge against the hub flange.

Front/Rear:

Standard: 0—0.05 mm (0—0.002 in.)

5. Measure the bearing end play by moving the disc inward and outward.
6. If the bearing end play measurement is more than the standard, replace the wheel bearing.



Wheel Runout Inspection

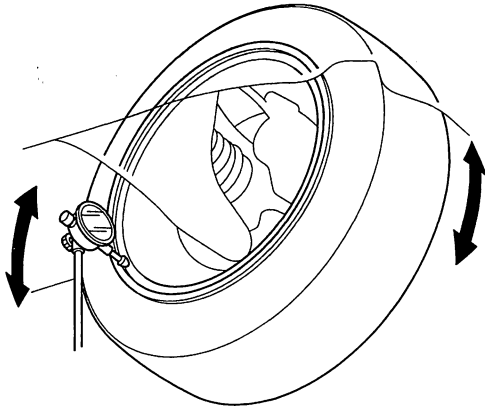
NOTE: When measuring the front wheel runout, turn the back side of the wheel slowly by hand.

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Check for bent or deformed wheels.
3. Set up the dial gauge as shown, and measure axial runout by turning the wheel.

Front and rear wheel axial runout:

Standard: 0–0.3 mm (0–0.01 in.)

Service limit: 2.0 mm (0.08 in.)

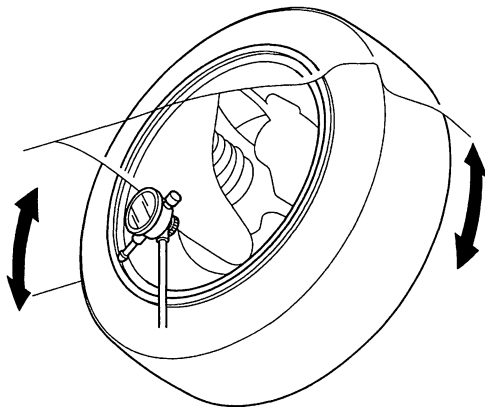


4. Reset the dial gauge to the position shown, and measure the radial runout.

Front and rear wheel radial runout:

Standard: 0–0.3 mm (0–0.01 in.)

Service limit: 1.5 mm (0.06 in.)



5. If the wheel runout is not within the specification, check the wheel bearing end play (see page 18-8), and make sure the mating surfaces on the brake disc and the inside of the wheel are clean.
6. If the bearing end play is within the specification but the wheel runout is more than the service limit, replace the wheel.

Front and Rear Suspension

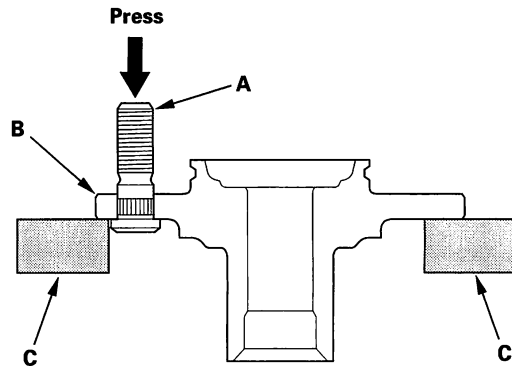
Wheel Bolt Replacement

NOTICE

- Do not use a hammer or air or electric impact tools to remove and install the wheel bolts.
- Be careful not to damage the threads of the wheel bolts.

1. Remove the front or rear hub bearing unit: front (see page 18-13), rear (see page 18-30).
2. Separate the wheel bolt (A) from the hub (B) using a hydraulic press. Support the hub with hydraulic press attachments (C) or equivalent tools.

NOTE: Before installing the new wheel bolt, clean the mating surface on the bolt and the hub.



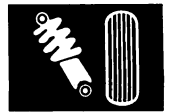
3. Insert the new wheel bolt into the hub while aligning the splined surfaces on the hub hole with the wheel bolt.

NOTE:

- Degrease all around the wheel bolt and the threaded section of the nut.
- Make sure the wheel bolt is installed vertically in relation to the hub disc surface.

4. Install the wheel bolt using a hydraulic press until the wheel bolt shoulder is fully seated.
5. Install the front or rear hub bearing unit: front (see page 18-13), rear (see page 18-30).

NOTE: If you cannot tighten the wheel nut to the specified torque value when installing the wheel, replace the hub or hub bearing unit as an assembly.



Ball Joint Removal

Special Tools Required

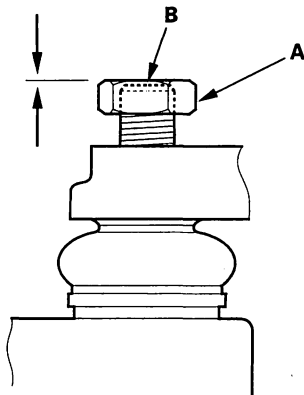
- Ball joint remover, 32 mm 07MAC-SL0A102
- Ball joint remover, 28 mm 07MAC-SL0A202

NOTICE

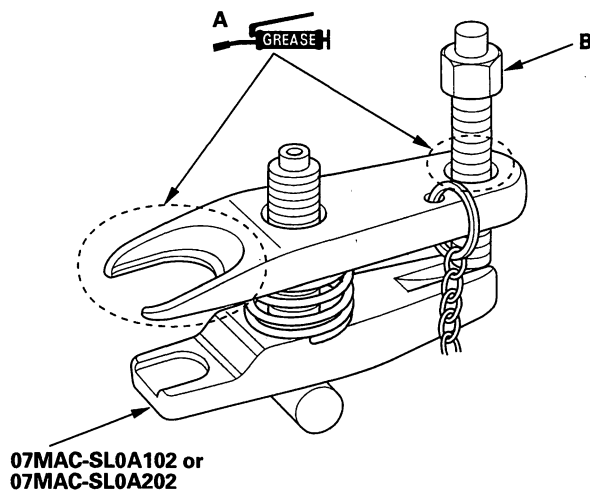
Always use a ball joint remover to disconnect a ball joint. Do not strike the housing or any other part of the ball joint connection to disconnect it.

07MAC-SL0A102 or 07MAC-SL0A202

1. Install a hex nut (A) onto the threads of the ball joint (B). Make sure the nut is flush with the ball joint pin end to prevent damage to the thread end of the ball joint pin.

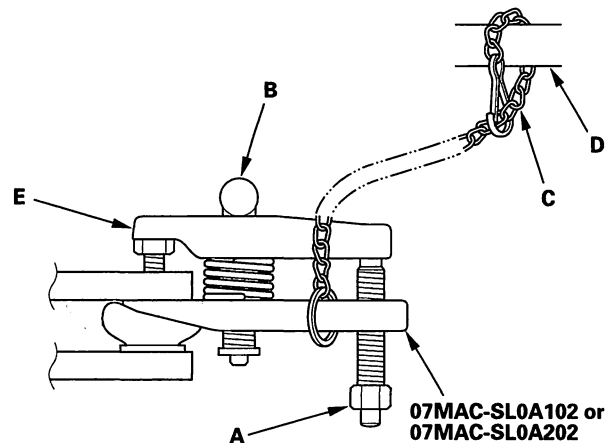


2. Apply grease to the ball joint remover on the areas shown (A). This will ease installation of the tool and prevent damage to the pressure bolt (B) threads.



3. Loosen the pressure bolt (A), and install the ball joint remover as shown. Insert the jaws carefully, making sure not to damage the ball joint boot. Adjust the jaw spacing by turning the adjusting bolt (B).

NOTE: Fasten the safety chain (C) securely to a suspension arm or the subframe (D). Do not fasten it to a brake line or wire harness.



4. After adjusting the adjusting bolt, make sure the head of the adjusting bolt is in the position shown to allow the jaw (E) to pivot.
5. With a wrench, tighten the pressure bolt until the ball joint pin pops loose from the ball joint pin hole. If necessary, apply penetrating type lubricant to loosen the ball joint pin.

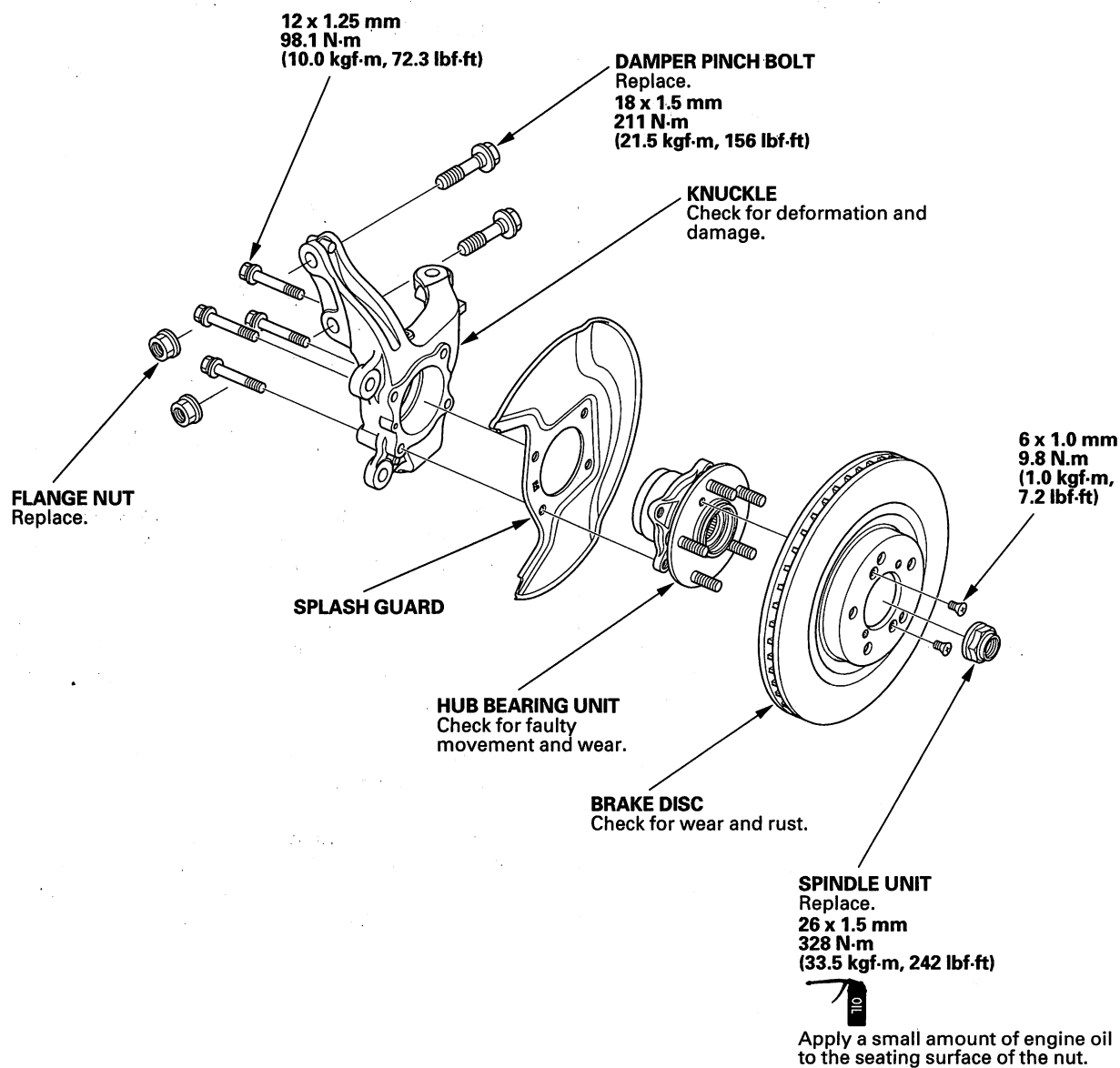
NOTE: Do not use pneumatic or electric tools on the pressure bolt.

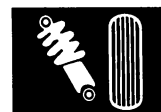
6. Remove the ball joint remover, then remove the nut from the end of the ball joint pin, and pull the ball joint out of the ball joint pin hole. Inspect the ball joint boot, and replace it if damaged.

Front Suspension

Knuckle/Hub Bearing Unit Replacement

Exploded View



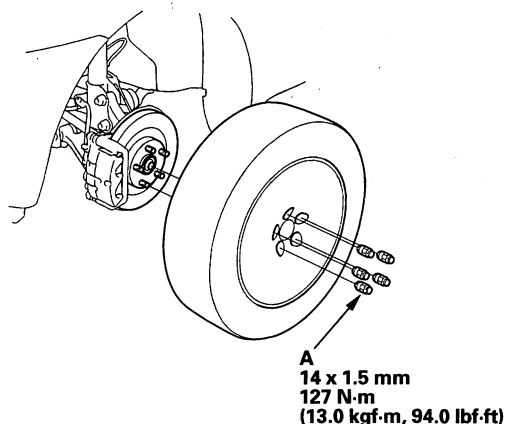


Special Tools Required

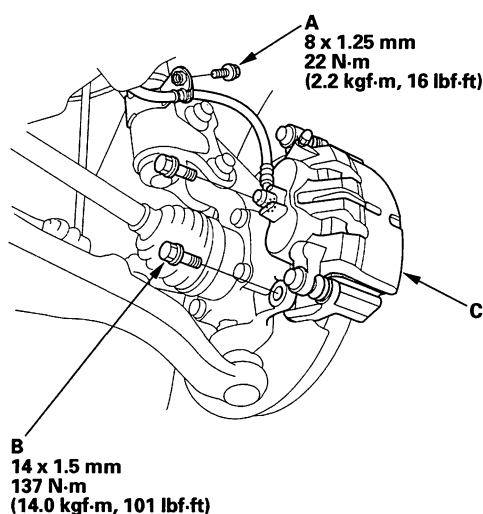
- Ball joint remover, 32 mm 07MAC-SL0A102
- Ball joint remover, 28 mm 07MAC-SL0A202

Hub Bearing Unit Replacement

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the wheel nuts (A) and the front wheel.

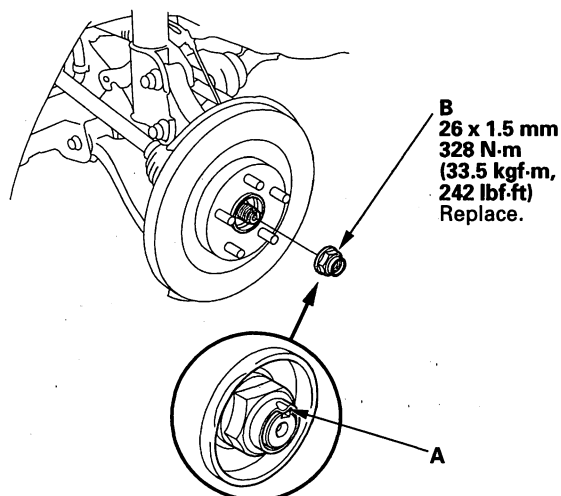


3. Remove the brake hose (A).

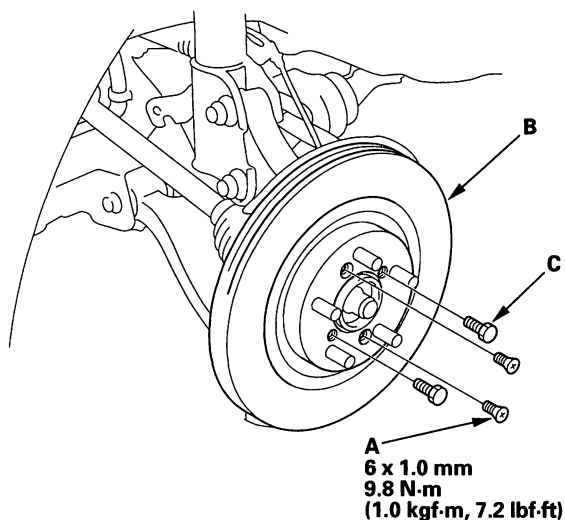


4. Remove the brake caliper bracket mounting bolts (B), and remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose excessively.

5. Remove the stake (A), then remove the spindle nut (B).



6. Remove the flat screws (A).



7. Release the brake disc (B) from the hub.

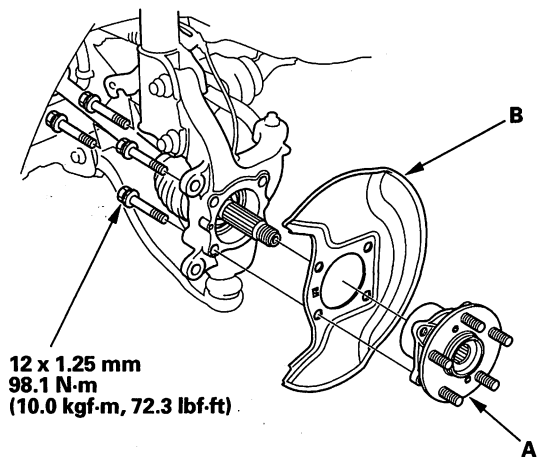
NOTE: If the brake disc is stuck to the hub. Screw two 8 x 1.25 mm bolts (C) into the brake disc to push it away from the hub. Turn each bolt 90 degrees to prevent the brake disc from binding.

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Front Suspension

Knuckle/Hub Bearing Unit Replacement (cont'd)

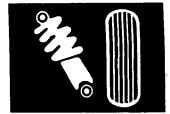
8. Remove the hub bearing unit (A) and the splash guard (B) from the knuckle.



9. Check the hub bearing unit for damage and cracks.

10. Install the hub bearing unit in the reverse order of removal, and note these items:

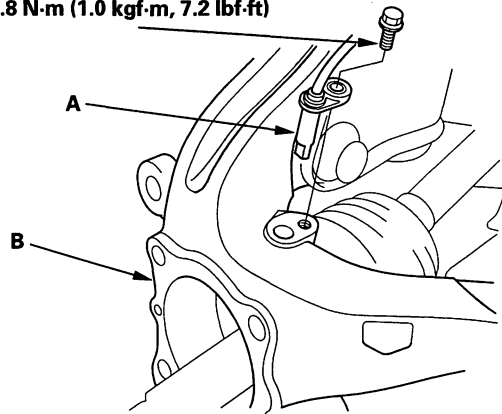
- Tighten all mounting hardware to the specified torque values.
- Use a new spindle nut, apply a small amount of engine oil to the seating surface of the nut. After tightening, use a drift to stake the spindle nut shoulder against the driveshaft.
- Before installing the brake disc, clean the matching surfaces of the hub bearing unit and the inside of the brake disc.
- Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
- Check the wheel alignment, and adjust it if necessary (see page 18-5).



Knuckle Replacement

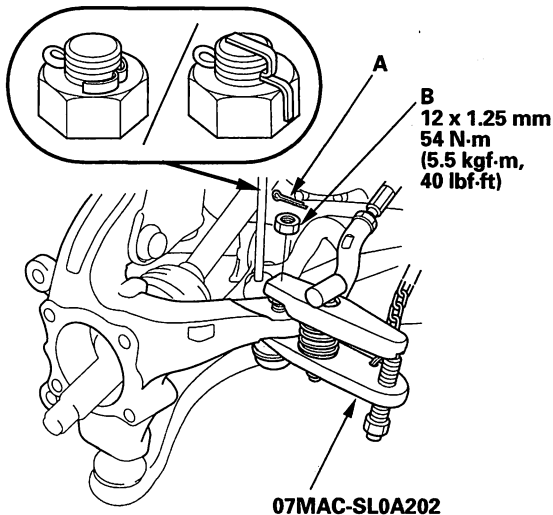
1. Remove the hub bearing unit.
2. Remove the wheel sensor (A) from the knuckle (B). Do not disconnect the wheel sensor connector.

6 x 1.0 mm
9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)



3. Remove the cotter pin (A) from the tie-rod ball joint, then remove the nut (B).

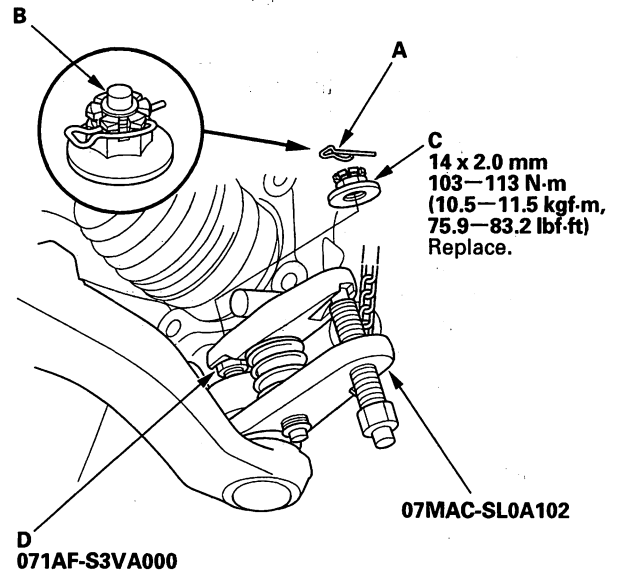
NOTE: During installation, install the new cotter pin after tightening the nut, and bend its end as shown.



4. Disconnect the tie-rod ball joint from the knuckle using the ball joint remover (see page 18-11).

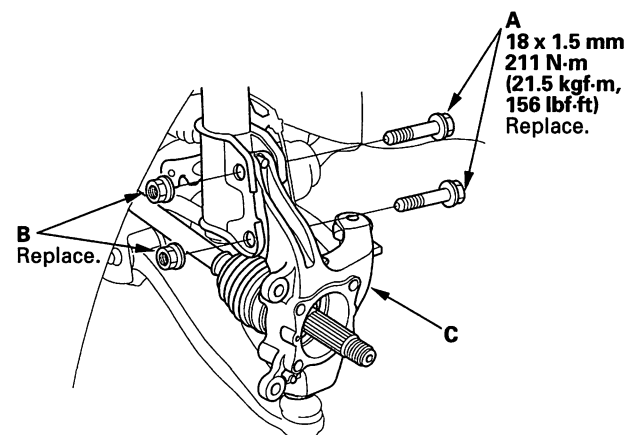
5. Remove the cotter pin (A) from the lower arm ball joint pin (B), then remove the nut (C).

NOTE: During installation, install the lock pin after tightening new castle nut.



6. Install the ball joint thread protector (D).
7. Disconnect the lower arm ball joint from the knuckle using the ball joint remover (see page 18-11).
8. Remove the damper pinch bolts (A) and flange nuts (B) from the damper, then remove the knuckle (C).

NOTE: During installation, install new damper pinch bolts and new flange nuts.



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Front Suspension

Knuckle/Hub Bearing Unit Replacement (cont'd)

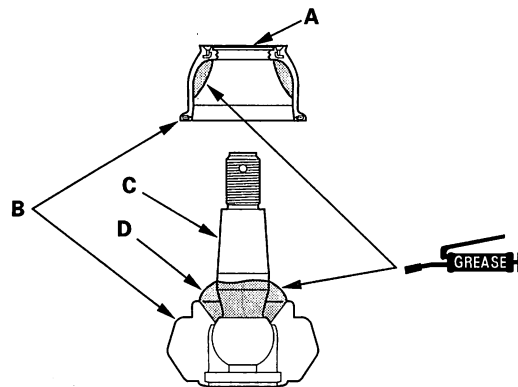
9. Install the knuckle in the reverse order of removal, and note these items:
 - Be careful not to damage the ball joint boot when installing the knuckle.
 - Before connecting the lower ball joint to the knuckle, degrease the threaded section and tapered portion of the ball joint pin, the lower arm connecting hole, the threaded section and mating surface of the castle nut.
 - First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
 - Tighten all mounting hardware to the specified torque values.
 - Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
 - Before installing the brake disc, clean the mating surface of the front hub and the inside of the brake disc.
 - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
 - Check the wheel alignment, and adjust it if necessary (see page 18-5).

Ball Joint Boot Replacement

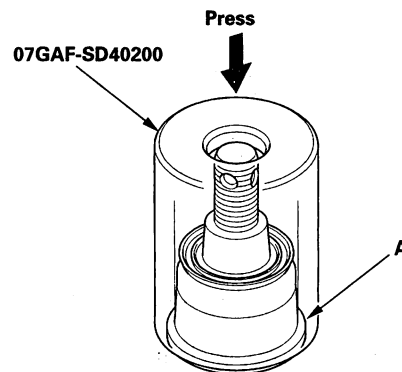
Special Tools Required

Hub Dis/Assembly Tool 07GAF-SD40200

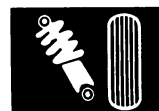
1. Remove the lower arm (see page 18-17).
2. Remove the boot.
3. Pack the interior and lip (A) of a new boot with grease. Keep the grease off of the boot-to-lower arm mating surfaces (B).



4. Wipe the grease off the tapered portion of the pin (C), and pack fresh grease into the base (D). Do not let dirt or other foreign materials get into the boot.
5. Install the boot on the ball joint, then squeeze it gently to force out any air.
6. Press the boot with the hub dis/assembly tool until the bottom seats on the lower arm (A) all the way around.



7. After installing a boot, wipe any grease off the exposed portion of the ball joint pin.
8. Install the lower arm (see page 18-17).



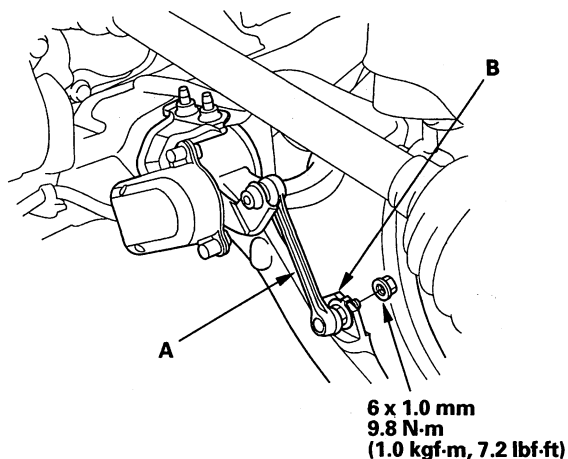
Lower Arm Removal/Installation

Special Tools Required

- Ball joint remover, 32 mm 07MAC-SL0A102
- Ball joint thread protector, 14 mm 071AF-S3VA000

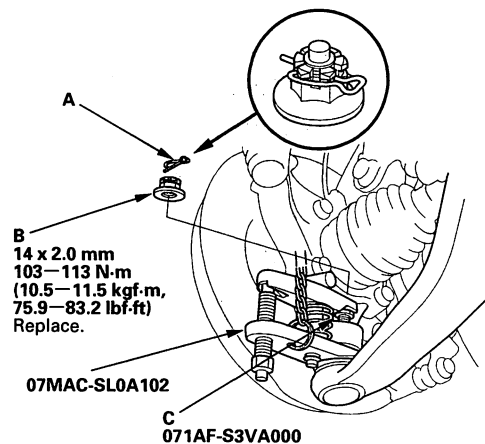
Removal/Installation

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the front wheel.
3. With active damper system: Remove the suspension stroke sensor (A) from the lower arm (B).



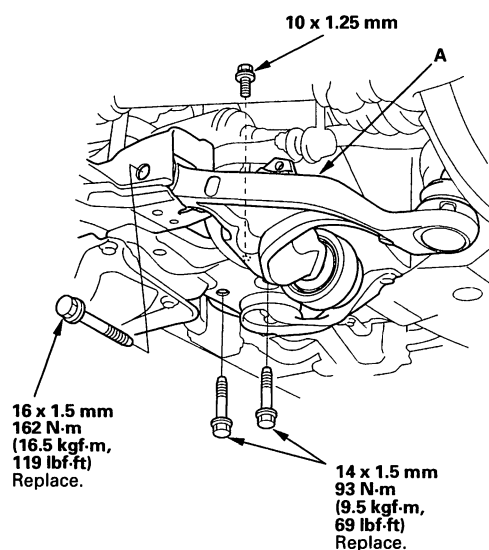
4. Remove the lock pin (A) from the lower arm ball joint, then remove the nut (B).

NOTE: During installation, install the lock pin after tightening new castle nut.



5. Install the ball joint thread protector (C).
6. Disconnect the lower ball joint from the knuckle using the ball joint remover (see page 18-11), then remove the lower ball joint.
7. Remove the lower arm mounting bolt and the 10 mm flange bolt, then remove the lower arm (A) from the front subframe.

NOTE: Use the new mounting bolts during reassembly.



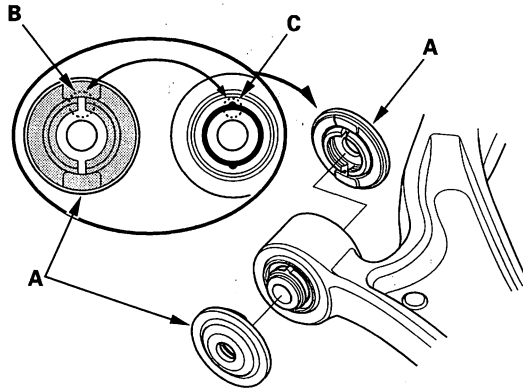
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Front Suspension

Lower Arm Removal/Installation (cont'd)

8. Remove the lower arm stops (A).

NOTE: During installation, align the slot (B) on the lower arm stop with the lug portion (C) on the lower arm bushing.



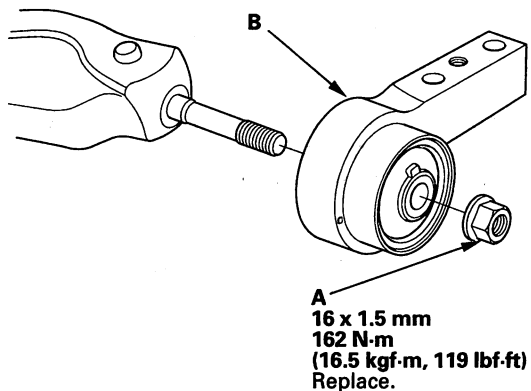
9. Install the lower arm in the reverse order of removal, and note these items:

- Be careful not to damage the ball joint boot when installing the knuckle.
 - Tighten all mounting hardware to the specified torque values.
 - Before connecting the lower ball joint to the knuckle, degrease the threaded section and tapered portion of the ball joint pin, the knuckle connecting hole, the threaded section, and mating surface of the castle nut.
 - First install all the components, and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
 - Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
 - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
 - Check the wheel alignment, and adjust it if necessary (see page 18-5).
10. With active damper system/Left side: Do the headlight initial position learning procedure (see page 22-231).

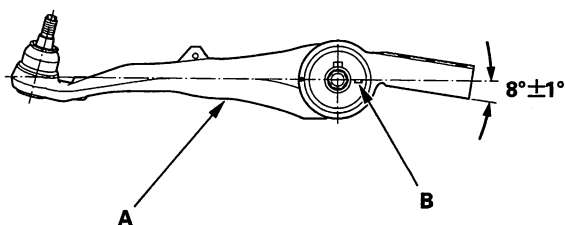


Bushing Replacement

1. Remove the self-locking nut (A), then remove the bushing with bracket (B).



2. Align the angle of the lower arm (A) and the tab portion (B) of the bushing.

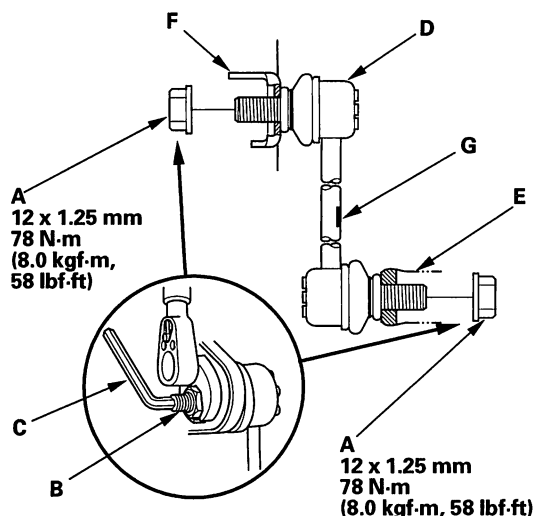


3. Install a new self-locking nut, then tighten the flange nut to the specified torque value.

Front Suspension

Stabilizer Link Removal/Installation

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the front wheel.
3. Remove the flange nuts (A) while holding the respective joint pin (B) with a hex wrench (C), then remove the stabilizer link (D).



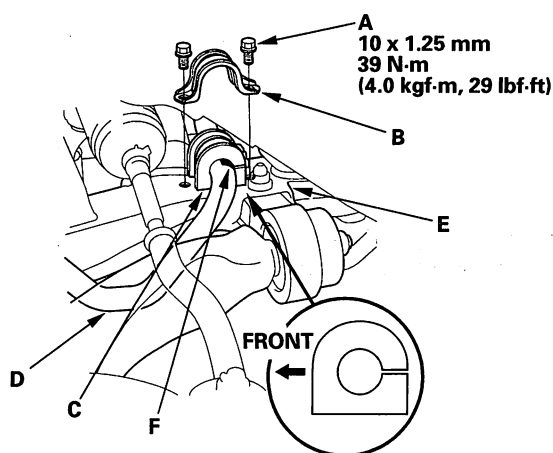
4. Install the stabilizer link on the stabilizer bar (E) and the damper (F) with the joint pins set at the center of their range of movement.

NOTE: The stabilizer link has a paint mark (G). Align the stabilizer link with the paint mark facing inward.

5. Install the flange nuts, and lightly tighten them.
6. Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheel.
7. Tighten the flange nuts to the specified torque values while holding the respective joint pin with a hex wrench.
8. Test-drive the vehicle.

Stabilizer Bar Replacement

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the front wheels.
3. Disconnect both stabilizer links from the stabilizer bar (see page 18-20).
4. Remove the flange bolts (A) and the bushing holders (B), then remove the bushings (C) and the stabilizer bar (D) from the front subframe (E).



5. Install the stabilizer bar in the reverse order of removal, and note these items:
 - Note the right and left direction of the stabilizer bar.
 - Align the paint marks (F) on the stabilizer bar with the sides of the bushings.
 - Note the fore/aft direction of the bushing.
 - Refer to the stabilizer link removal/installation to connect the stabilizer bar to the links (see page 18-20).
 - Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheel.
 - Check the wheel alignment, and adjust it if necessary (see page 18-5).



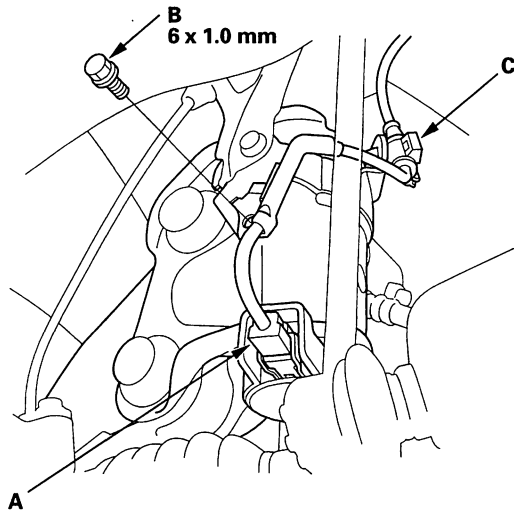
Damper/Spring Removal and Installation

NOTE: Except where called out, the illustrations show without active damper system.

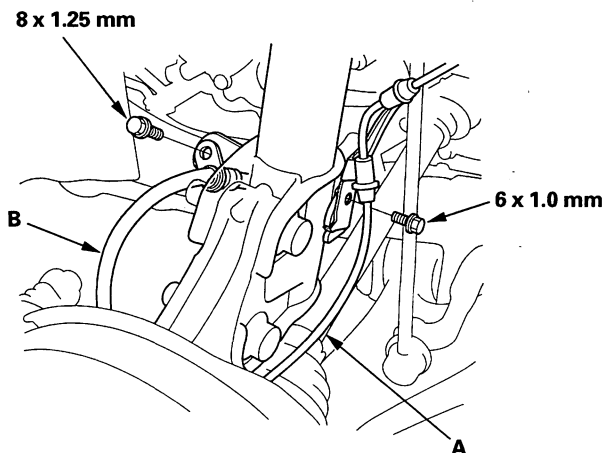
Removal

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the front wheel.
3. With active damper system: Disconnect the damper coil connector (A), and remove the flange bolt (B), and the harness clip (C).

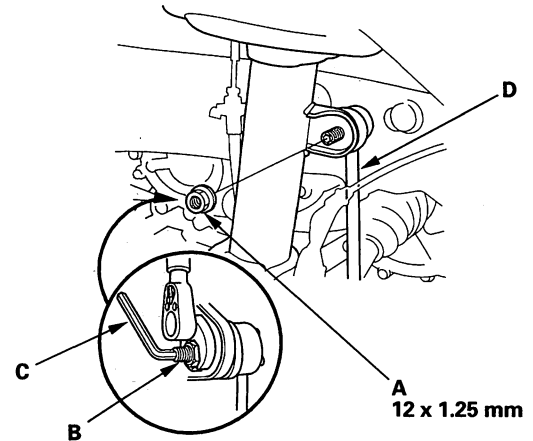
NOTE: Be careful not to damage or contaminate the damper coil connector.



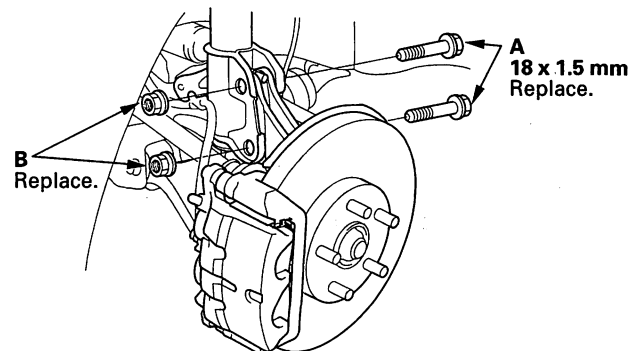
4. Remove the wheel sensor harness (A) and the brake hose (B) from the damper (C). Do not disconnect the wheel sensor connector.



5. Remove the flange nut (A), while holding the joint pin (B) with a hex wrench (C), and disconnect the stabilizer link (D) from the damper.



6. Remove the damper pinch bolts (A) and flange nuts (B) from the damper..

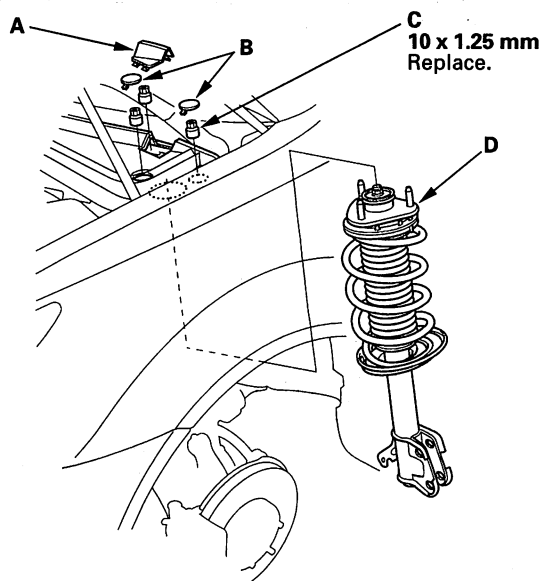


(cont'd)

Front Suspension

Damper/Spring Removal and Installation (cont'd)

7. Remove the cover (A) and the service caps (B).



8. Remove the flange nuts (C) from the top of the damper.

9. Remove the damper assembly (D).

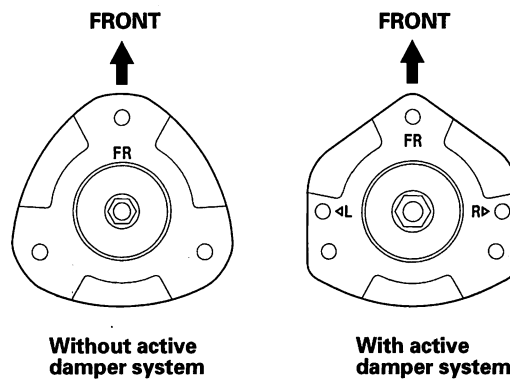
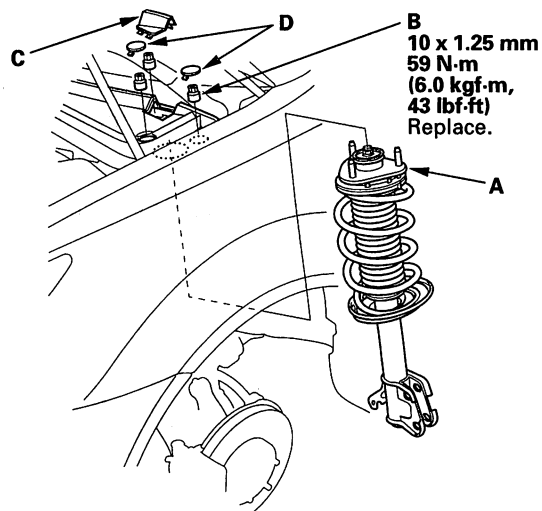
NOTE:

- The damper springs are different, left and right. Mark the springs L and R before you continue.
- Be careful not to damage the body.

Installation

1. Install the damper assembly (A) on to the frame. Note the direction of the damper mounting base as shown.

NOTE: Be careful not to damage the body.

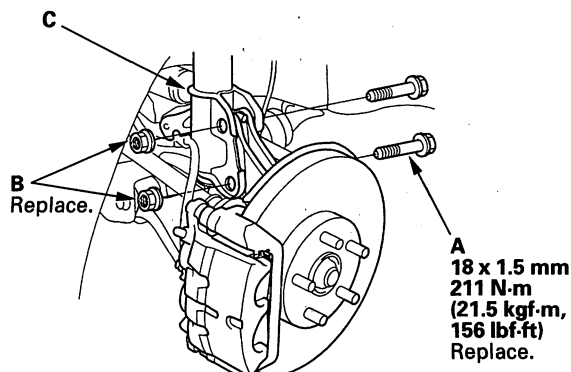


2. Loosely install the new flange nuts (B) to the top of the damper.

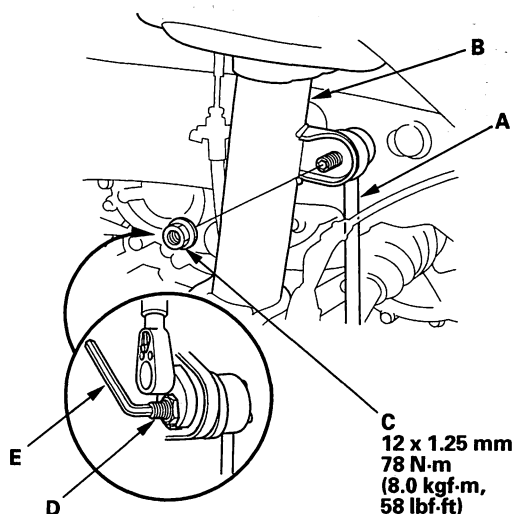
NOTE: Install the cover (C) and the service caps (D) after tightening the flange nuts to the specified torque value.



3. Loosely install new damper pinch bolts (A) and new flange nuts (B) to the damper (C).

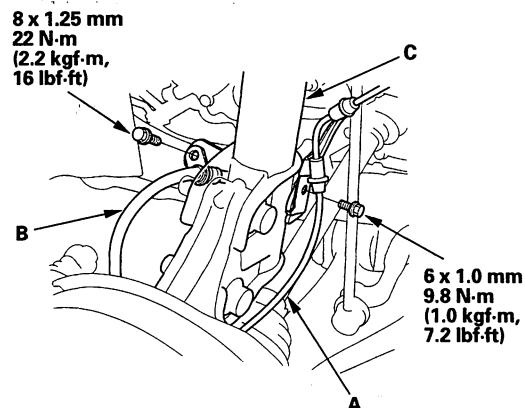


4. Connect the stabilizer link (A) to the damper (B), and loosely install new flange nut (C), while holding the joint pin (D) with the hex wrench (E).



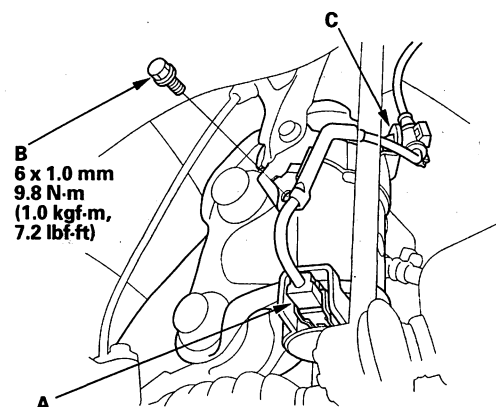
5. Raise the front suspension with a floor jack to load the suspension with the vehicle's weight.
6. Tighten the damper pinch bolts and the flange nuts to the specified torque value.
7. Tighten the flange nuts on top of the damper to the specified torque value.
8. Install the cover and the service caps.

9. Install the wheel sensor harness (A) and the brake hose (B) to the damper (C).



10. With active damper system: Connect the damper coil connector (A), and install the flange bolt (B), and the harness clip (C).

NOTE: Be careful not to damage or contaminate the damper coil connector.

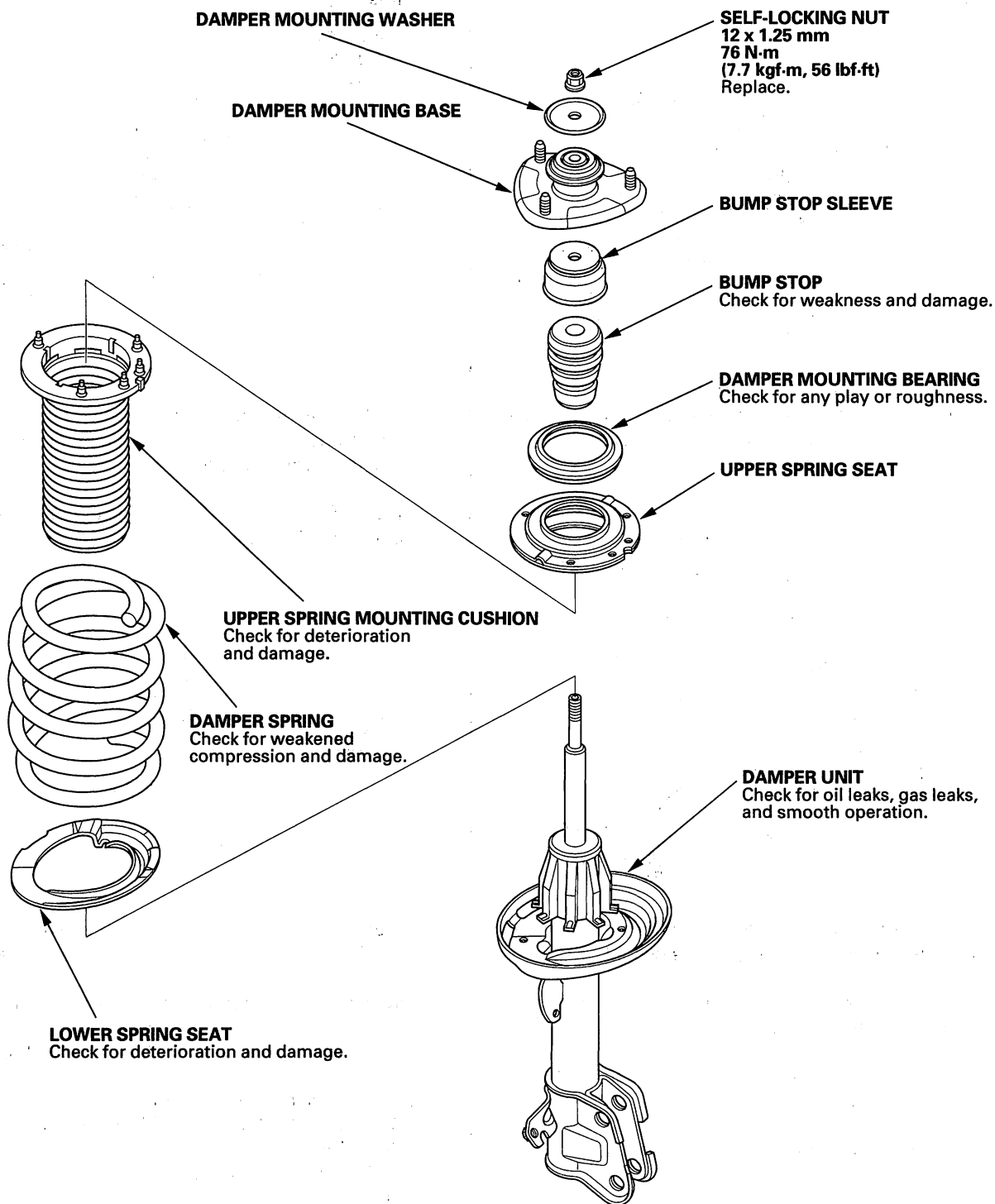


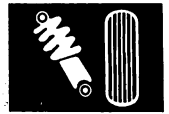
11. Clean the mating surface of the brake disc and the inside of the wheel, then install the rear wheel.
12. With active damper system/Left side: Start the engine, then make sure there are no active damper system DTCs with the HDS (see page 18-53).
13. With active damper system/Left side: Do the DAMPER FORCE OPERATION in the ACTIVE DAMPER SYSTEM INSPECTION MENU with the HDS, then make sure the all four damper units function normally.
14. Check the wheel alignment, and adjust it if necessary (see page 18-5).

Front Suspension

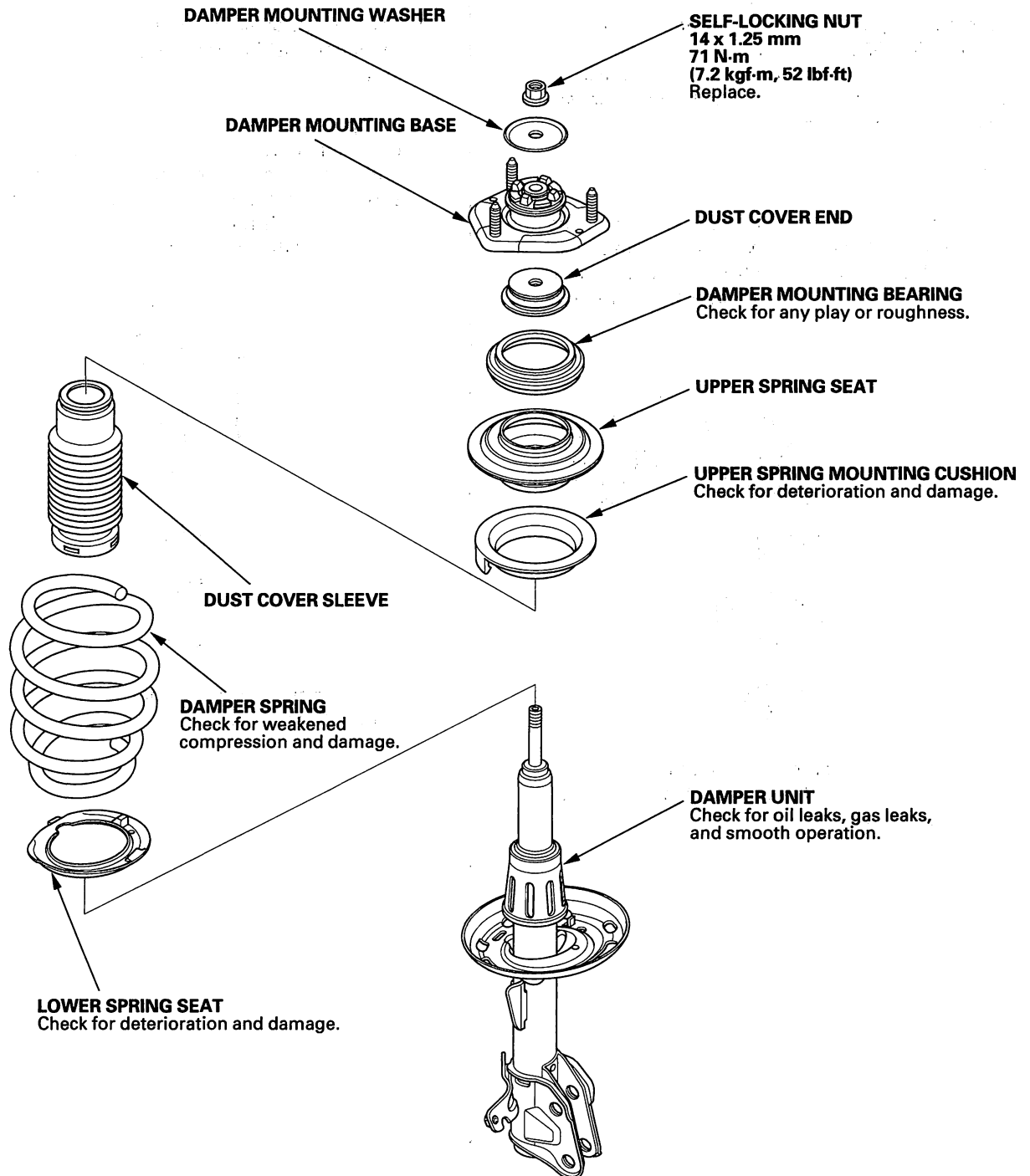
Damper/Spring Disassembly, Inspection, and Reassembly

Exploded View-Without active damper system





Exploded View-With active damper system



(cont'd)

BACK

Front Suspension

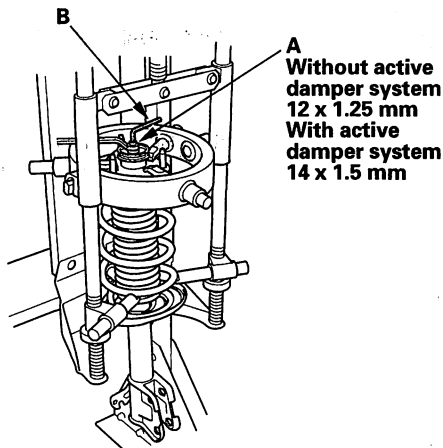
Damper/Spring Disassembly, Inspection, and Reassembly (cont'd)

NOTE:

- When compressing the damper spring, use a commercially available strut spring compressor (Branick MST-580A or Model 7200, or equivalent) according to the manufacturer's instructions.
- Except where called out, the illustrations shown are without active damper system.

Disassembly

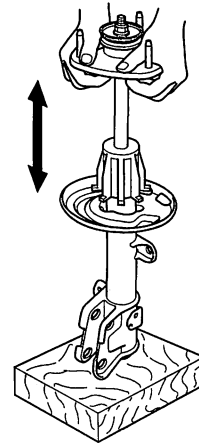
1. Compress the damper spring, then remove the nut (A) while holding the damper shaft with a hex wrench or TORX wrench (B). Do not compress the damper spring more than necessary to remove the nut.



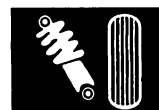
2. Release the pressure from the strut spring compressor, then disassemble the damper as shown in the Exploded View.

Inspection

1. Reassemble all parts, except for the upper spring mounting cushion, the bump stop, and the damper spring.
2. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking and the damper should be replaced.



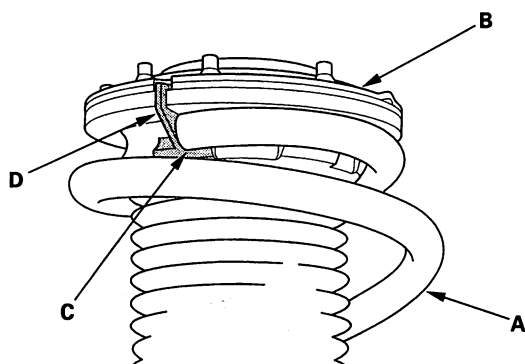
3. Check for oil leaks, abnormal noises, and binding during these tests.



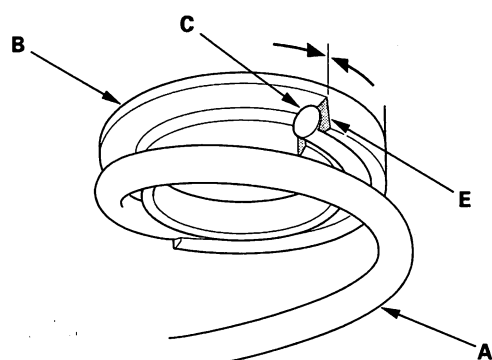
Reassembly

1. Install the damper spring (A) on the upper spring mounting cushion (B), then align the upper end (C) of the damper spring with the cushion stop (D) or the cushion end (E).

Without active damper system

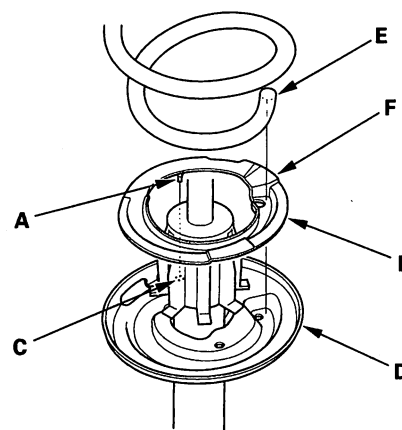


With active damper system

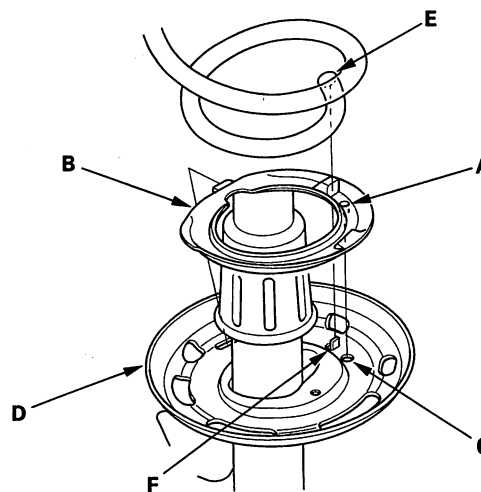


2. Install the tab (A) on the lower spring cushion (B) in the locating hole (C) on the damper unit (D).

Without active damper system



With active damper system



3. Align the lower end (E) of the spring with the stepped part (F) of the lower spring seat.

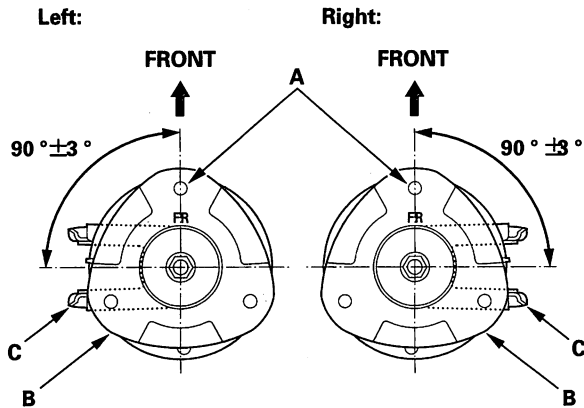
(cont'd)

Front Suspension

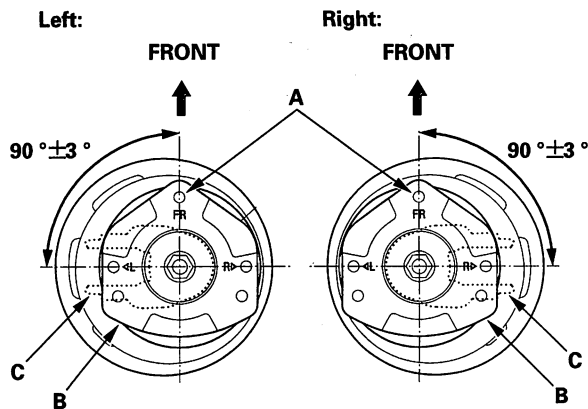
Damper/Spring Disassembly, Inspection, and Reassembly (cont'd)

- Align the angle of the stud bolt (A) on the damper mounting base (B) and the damper bracket (C) as shown.

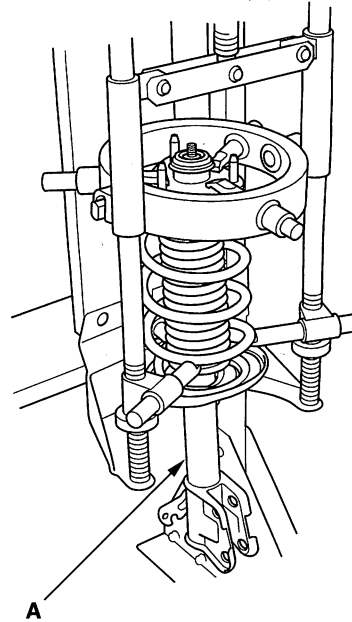
Without active damper system



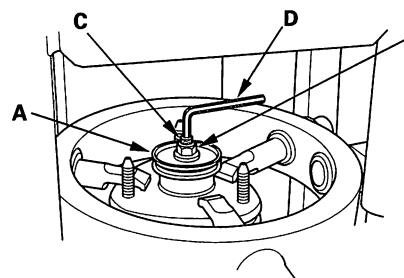
With active damper system



- Compress the damper spring.
- Install all the parts except the damper mounting washer and self-locking nut onto the damper unit (A) by referring to the Exploded View.

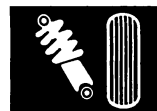


- Install the damper mounting washer (A) and a new self-locking nut (B).



B
Without active damper system
 12 x 1.25 mm
 76 N·m
 (7.7 kgf·m, 56 lbf·ft)
 Replace.
With active damper system
 14 x 1.5 mm
 71 N·m
 (7.2 kgf·m, 52 lbf·ft)
 Replace.

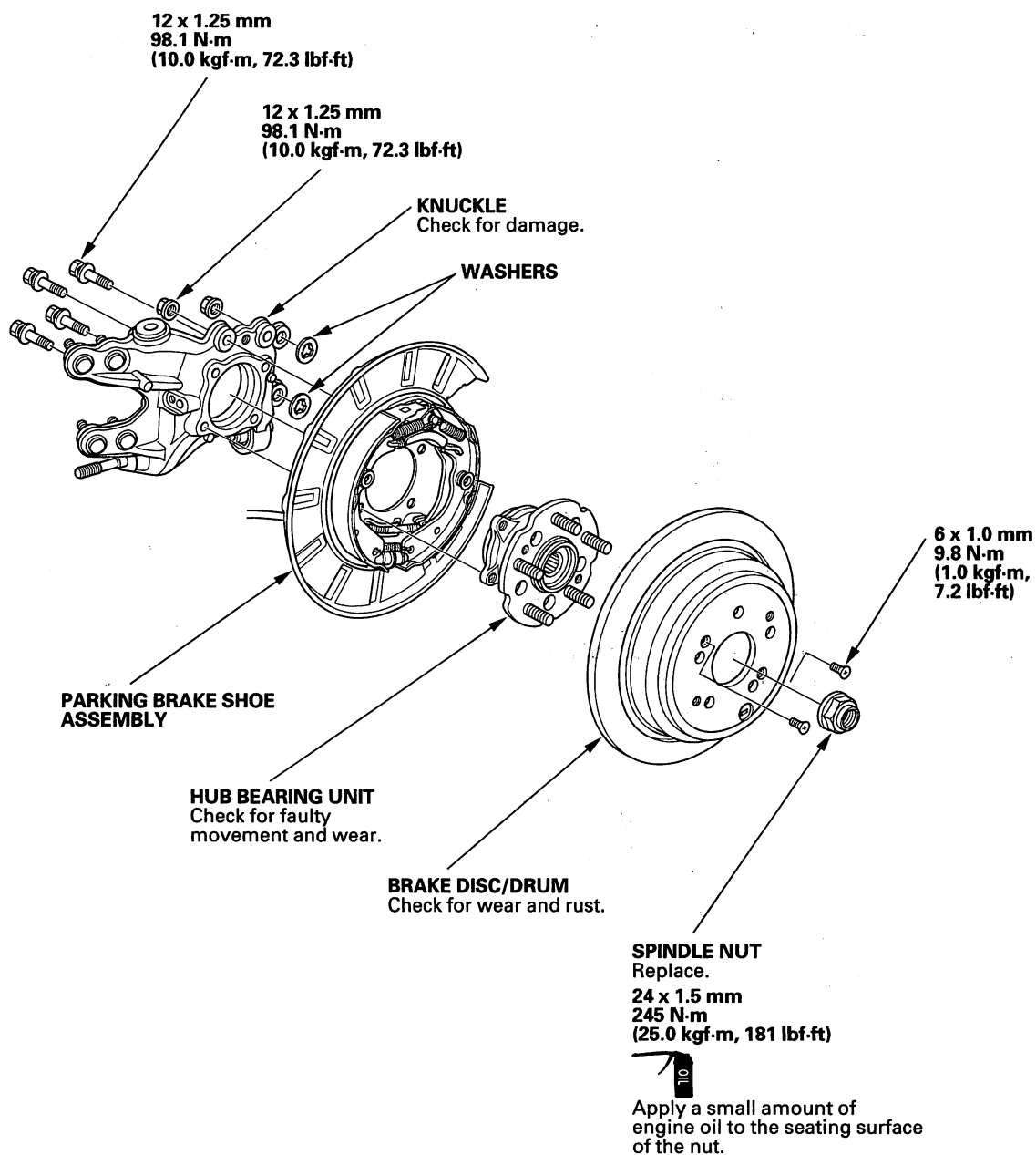
- Hold the damper shaft (C) using a hex wrench or TORX wrench (D), and tighten the new self-locking nut to the specified torque value.



Rear Suspension

Knuckle/Hub Bearing Unit Replacement

Exploded View



(cont'd)

BACK

18-29

Rear Suspension

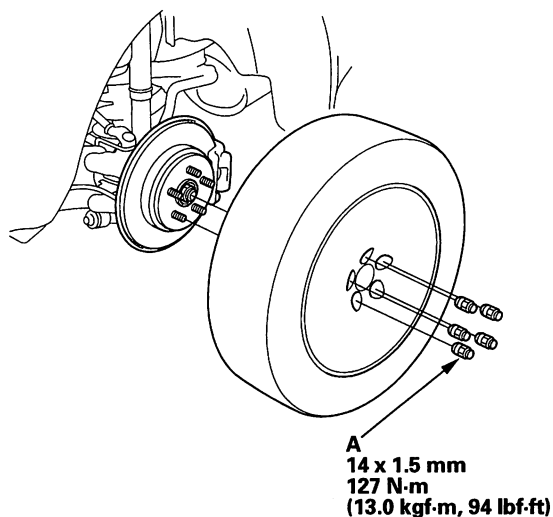
Knuckle/Hub Bearing Unit Replacement (cont'd)

Special Tools Required

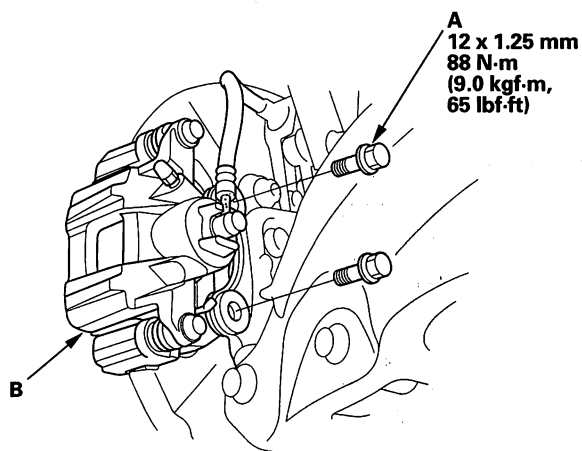
Ball joint remover, 28 mm 07MAC-SL0A202

Hub Bearing Unit Replacement

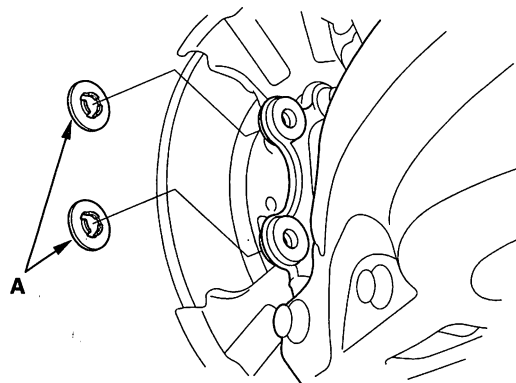
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the wheel nuts (A) and front wheel.



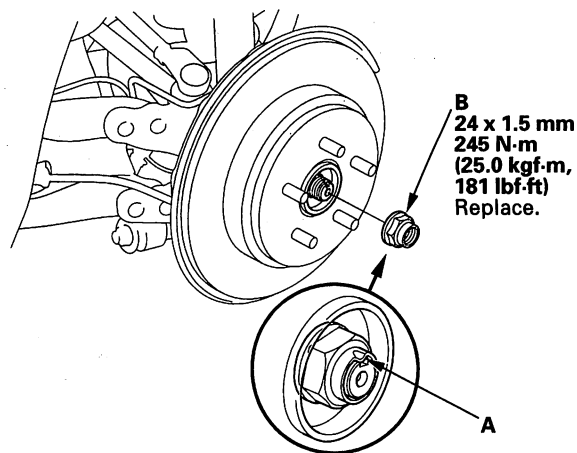
3. Remove the brake caliper bracket mounting bolts (A), and remove the caliper assembly (B) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose excessively.



4. Remove the two washers (A).



5. Raise the stake (A), then remove the spindle nut (B).

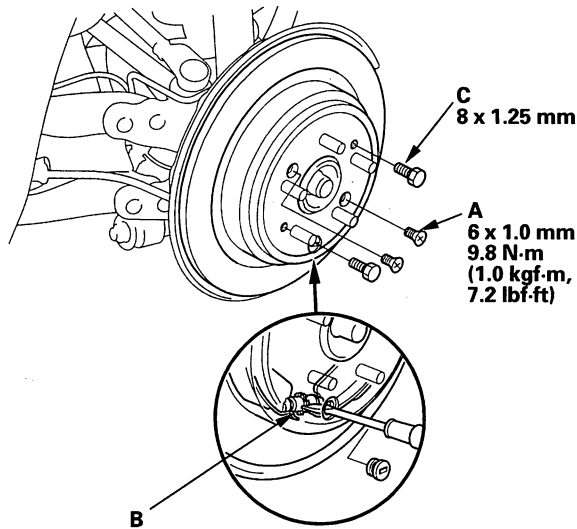




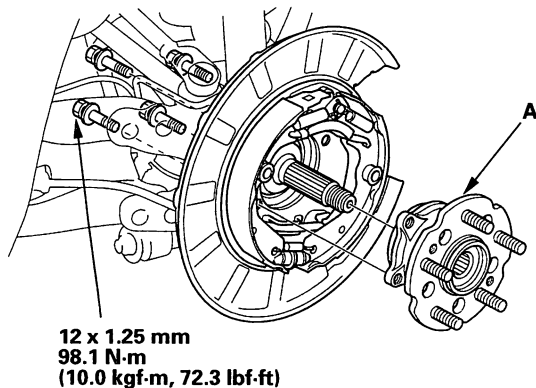
6. Remove the two 6 x 1.0 mm screws (A) attaching the disc/drum to the hub bearing unit. Release the parking brake, and remove the brake disc/drum from the hub bearing unit.

NOTE:

- It may be necessary to back-off the parking brake adjuster nut (B) to remove the disc/drum from the hub bearing unit (see step 5 on page 19-8).
- If the brake disc/drum has clung to the hub bearing unit. Screw two 8 x 1.25 mm bolts (C) into the brake disc/drum to push it away from the hub bearing unit. Turn each bolt 90 degrees at a time to prevent cocking the brake disc/drum.
- After installation, check the parking brake, and adjust it necessary (see page 19-7).



7. Remove the hub bearing unit (A).



8. Check the hub bearing unit for damage and cracks.

9. Install the hub bearing unit in the reverse order of removal, and note these items:

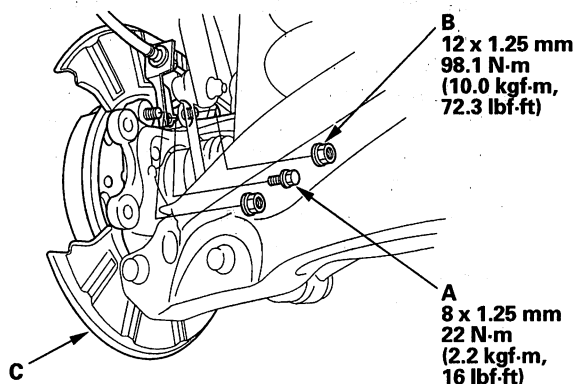
- Tighten all mounting hardware to the specified torque values.
- Use a new spindle nut during reassembly.
- Before installing the spindle nut, apply a small amount of engine oil to the seating surface of the nut. After tightening, use a drift to stake the spindle nut shoulder against the driveshaft.
- Before installing the brake disc/drum, clean the mating surface of the hub bearing unit and the inside of the brake disc/drum.
- Before installing the wheel, clean the mating surface of the brake disc/drum and the inside of the wheel.
- Check the wheel alignment, and adjust it if necessary (see page 18-5).

Rear Suspension

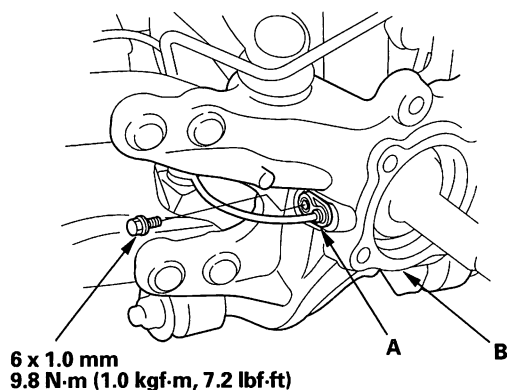
Knuckle/Hub Bearing Unit Replacement (cont'd)

Knuckle Replacement

1. Remove the hub bearing unit.
2. Remove the brake hose bracket mounting bolts (A) from the knuckle.

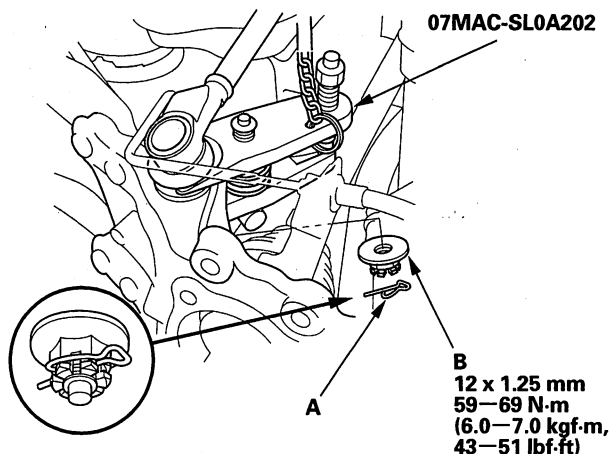


3. Remove the flange nuts (B), then remove the backing plate (C).
4. Remove the wheel sensor (A) from the knuckle (B). Do not disconnect the wheel sensor connector.



5. Remove the lock pin (A) from the upper arm ball joint, and loosen the nut (B).

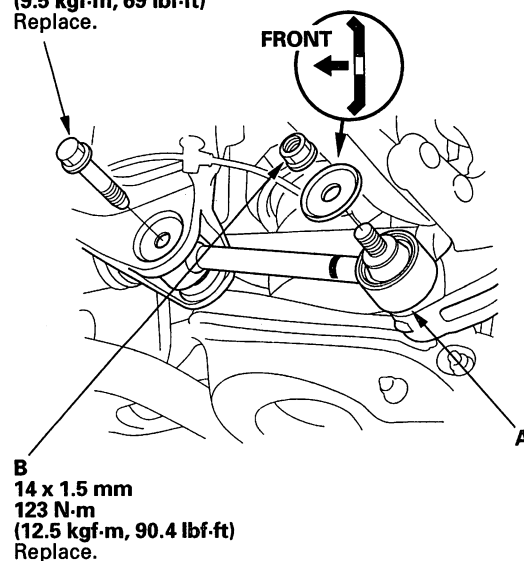
NOTE: During installation, install the lock pin and nut after tightening the nut as shown.

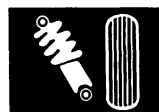


6. Disconnect the upper arm ball joint from the knuckle using the ball joint remover (see page 18-11).
7. Remove the self-locking nut (B), washer, and flange bolt (C), then remove the lower arm A.

NOTE: Use a new self-locking nut and the new flange bolt, during reassembly.

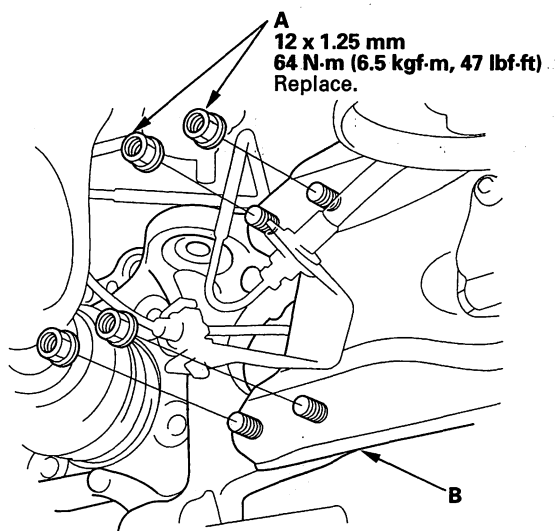
C
14 x 1.5 mm
93 N·m
(9.5 kgf·m, 69 lbf·ft)
Replace.





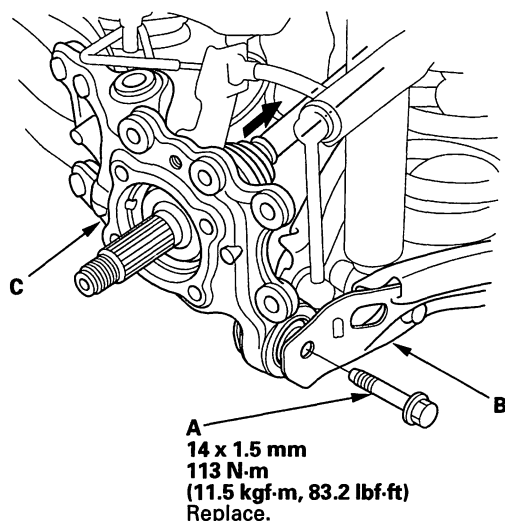
8. Remove the flange nuts (A), and separate the knuckle from the trailing arm (B).

NOTE: Use new flange nuts during reassembly.



9. Place a floor jack under lower arm B, and remove the flange bolt (A), then remove the knuckle (C).

NOTE: Use the new flange bolt during reassembly.



10. Install the knuckle in the reverse order of removal, and note these items:

- Be careful not to damage the ball joint boot when connecting the upper arm to the knuckle.
- Before connecting the ball joint to the knuckle, degrease the threaded section and tapered portion of the ball joint pin, the connecting hole, and the threaded section and mating surface of the castle nut.
- Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the hole in the stud. Do not align the castle nut by loosening it.
- First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
- Tighten all mounting hardware to the specified torque values.
- Before installing the wheel, clean the mating surface on the brake disc and the inside of the wheel.
- Check the wheel alignment, and adjust it if necessary (see page 18-5).

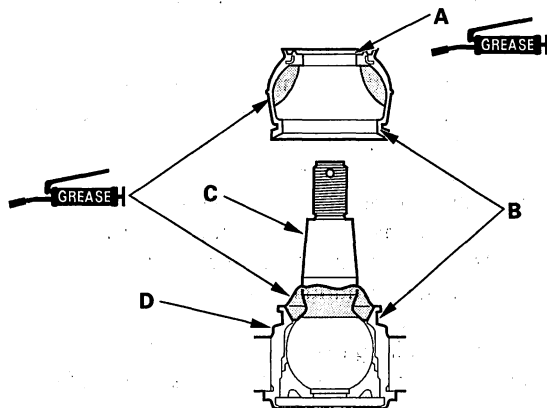
Rear Suspension

Ball Joint Boot Replacement

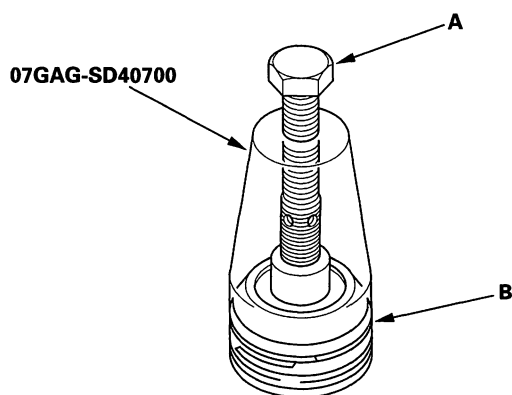
Special Tools Required

Ball joint boot clip guide 07GAG-SD40700

1. Remove the boot clip and the boot.
2. Pack the interior and lip (A) of a new boot with grease. Keep the grease off of the boot-to-knuckle mating surfaces (B).



3. Wipe the grease off the tapered portion of the pin (C), and pack fresh grease into the base (D). Do not let dirt or other foreign materials get into the boot.
4. Install the boot on the ball joint, then squeeze it gently to force out any air.
5. Adjust the special tool with the adjusting bolt (A) until its base is just above the groove around the bottom of the boot. Then slide the clip (B) over the tool and into position on the boot.



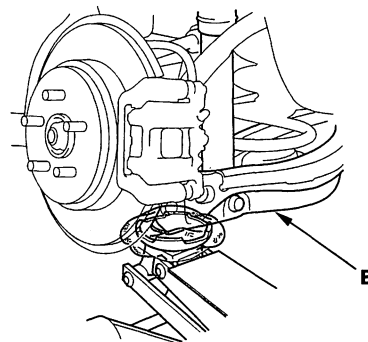
6. After installing a boot, wipe any grease off the exposed portion of the ball joint pin.

Upper Arm Removal/Installation

Special Tools Required

Ball joint remover, 32 mm 07MAC-SL0A102

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheel.
3. Position a floor jack under the lower arm B. Raise the floor jack until the suspension begins to compress.

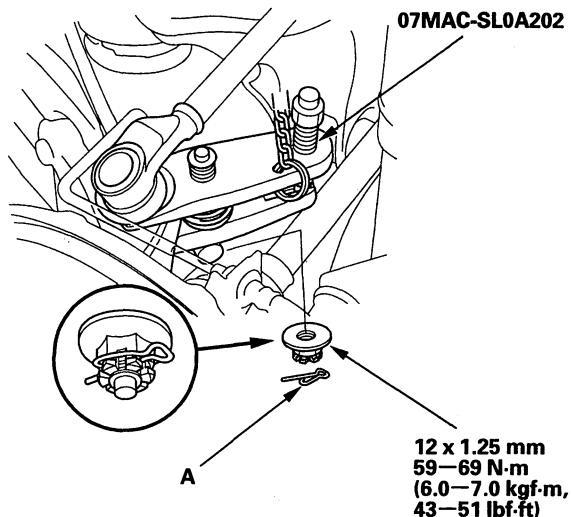


4. With active damper system: Remove the suspension stroke sensor from the upper arm (B) (see page 22-229).



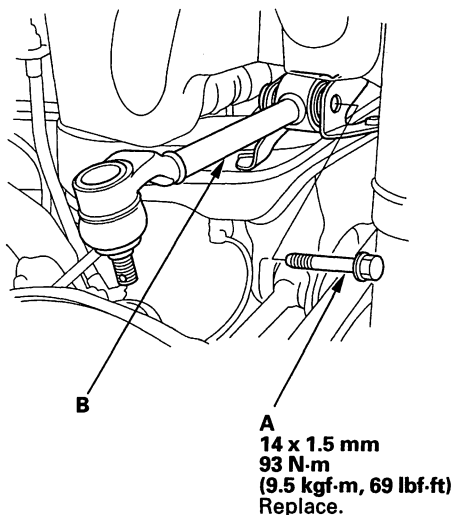
5. Remove the lock pin (A) from the upper arm ball joint, then remove the nut (B).

NOTE: During installation, install the lock pin after tightening the castle nut.



6. Disconnect the upper arm ball joint from the knuckle using the ball joint remover (see page 18-11).
7. Remove the flange bolt (A) from the vehicle, and remove the upper arm (B).

NOTE: Use new flange bolt during reassembly.



8. Install the upper arm in the reverse order of removal, and note these items:

- Be careful not to damage the ball joint boot when connecting the upper arm to the knuckle.
- Before connecting the ball joint to the knuckle, degrease the threaded section and tapered portion of the ball joint pin, the connecting hole, and the threaded section and mating surface of the castle nut.
- First install all the components and lightly tighten the flange bolt and the castle nut, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
- Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the hole in the stud. Do not align the castle nut by loosening it.
- Refer to the stroke and stroke/headlight leveling sensor replacement to install the stroke sensor to the upper arm (see page 22-229).
- Before installing the wheel, clean the mating surface of the brake disc/drum and the inside of the wheel.
- Check the rear wheel alignment, and adjust if necessary (see page 18-5).

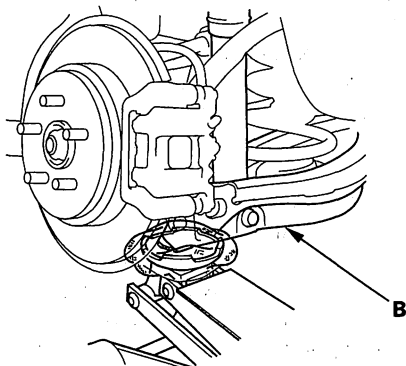
9. With active damper system: Do the memorizing rear suspension full rebound position (see page 18-54).

10. With active damper system/Left side: Do the headlight initial position learning procedure (see page 22-231).

Rear Suspension

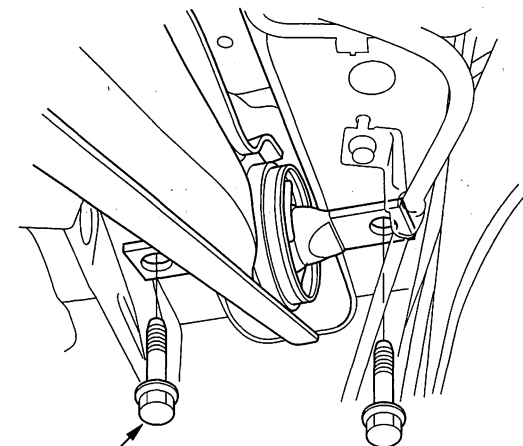
Lower Arm A Removal/Installation

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheel.
3. Position a floor jack under the lower arm B. Raise the floor jack until the suspension begins to compress.



4. Remove the flange bolts (A) from the trailing arm.

NOTE: Use new flange bolts during reassembly.

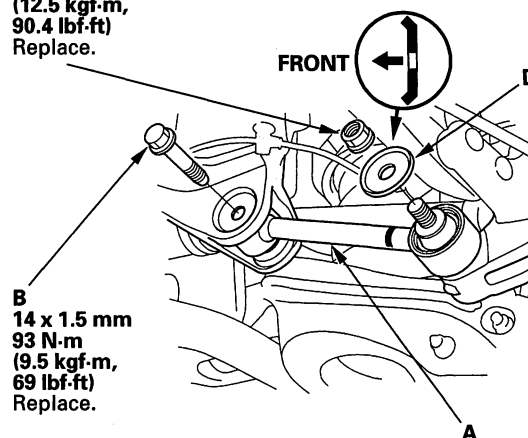


A
14 x 1.5 mm
103 N·m
(10.5 kgf·m, 75.9 lbf·ft)
Replace.

5. Remove the flange bolt (B) from the vehicle.

NOTE: Use a new flange bolt during assembly.

C
14 x 1.5 mm
123 N·m
(12.5 kgf·m,
90.4 lbf·ft)
Replace.

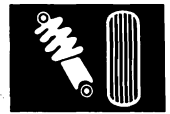


6. Remove the self-locking nut (C) and the washer (D) from the knuckle, then remove the lower arm A.

NOTE: Use a new self-locking nut during reassembly.

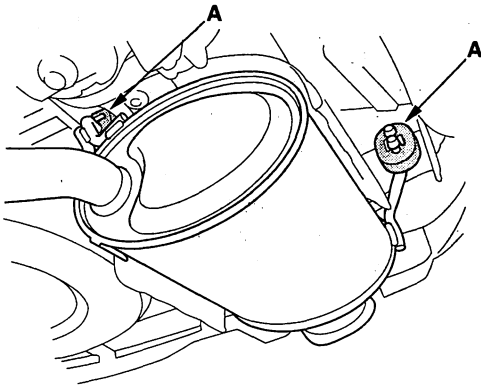
7. Install the lower arm A in the reverse order of removal, and note these items:

- Before installing the wheel, clean the mating surface of the brake disc/drum and the inside of the wheel.
- Check the wheel alignment, and adjust it if necessary (see page 18-5).

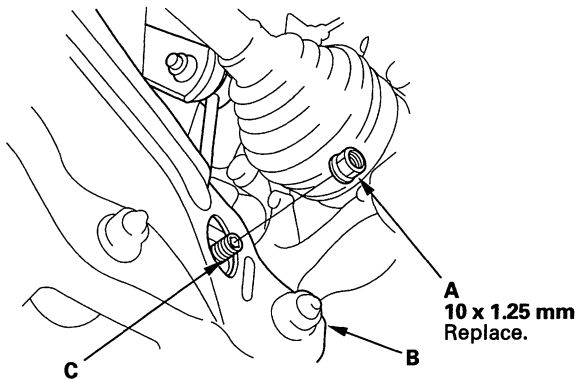


Lower Arm B Removal/Installation

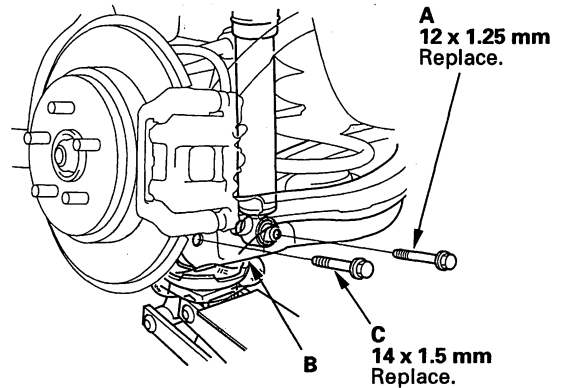
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheel.
3. Remove the muffler hanger (A).



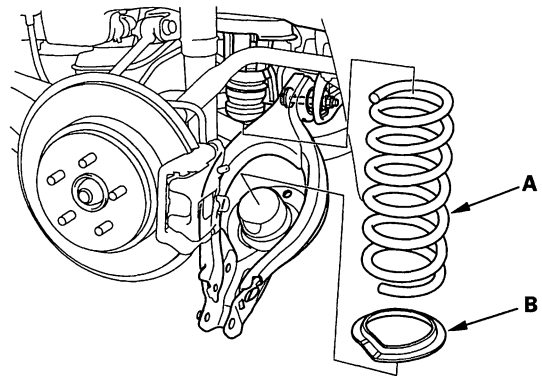
4. Remove the flange nut (A) while holding the respective joint pin (C) with a hex wrench, then remove the stabilizer link from the lower arm B.



5. Position the floor jack under the lower arm B. Raise the floor jack until the suspension begins to compress.



6. Remove the flange bolt (A) from the bottom of the damper.
7. Remove the flange bolt (C) from the knuckle.
8. Lower the floor jack gradually.
9. Remove the spring (A) and the lower spring seat (B).



(cont'd)

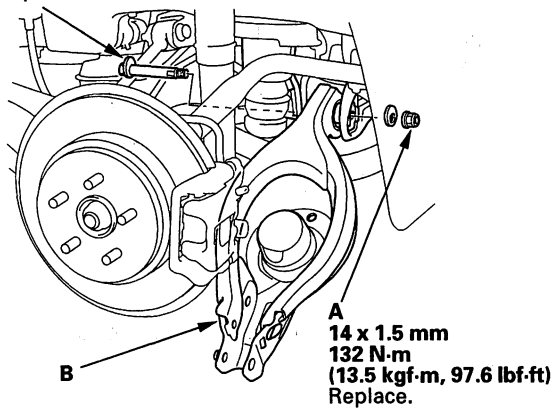
Rear Suspension

Lower Arm B Removal/Installation (cont'd)

10. Remove the self-locking nut (A) and adjusting bolt (C), then remove the lower arm B.

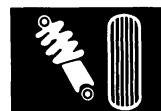
NOTE: Use a new self-locking nut and a new adjusting bolt during reassembly.

C
Replace.



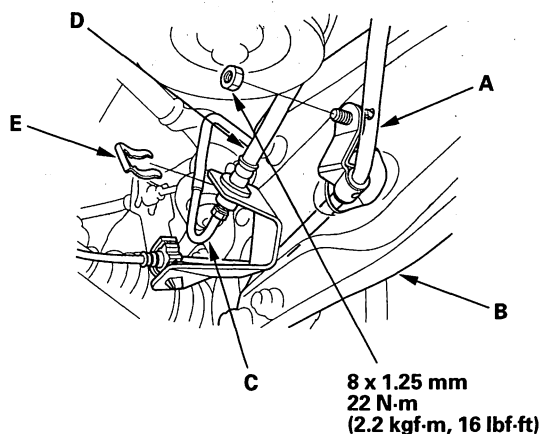
11. Install the lower arm B in the reverse order of removal, and note these items:

- First install all the suspension components, and lightly tighten the bolts and nuts, then place a floor jack under the lower arm, and raise the suspension to load it with the vehicle's weight before fully tightening the bolts and nuts to the specified torque values.
- Align the cam positions of the adjusting bolt and the adjusting cam with the marked positions when tightening.
- Before installing the brake disc/drum, clean the mating surface of the hub bearing unit and the inside of the brake disc/drum.
- Check the wheel alignment, and adjust it if necessary (see page 18-5).



Trailing Arm Removal/Installation

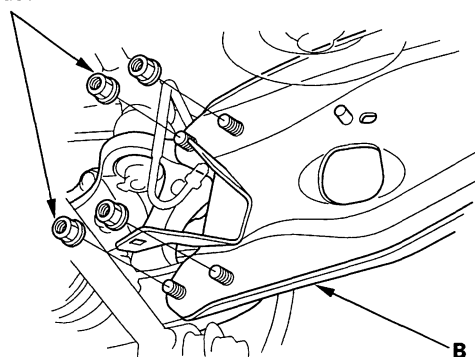
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheel.
3. Remove the parking brake cable (A) from the trailing arm (B).



4. Disconnect the brake line (C) from the brake hose (D), then remove the retaining clip (E).
5. Disconnect the parking brake cable from the parking brake lever (see page 19-30).
6. Remove the flange nuts (A) from the trailing arm (B).

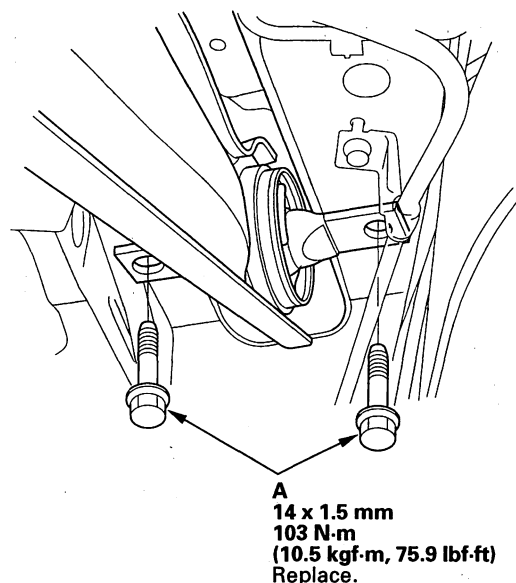
NOTE: Use new flange nuts during reassembly.

A
12 x 1.25 mm
64 N·m (6.5 kgf·m, 47 lbf·ft)
Replace.



7. Remove the flange bolts (A) from the trailing arm, then remove the trailing arm.

NOTE: Use new flange bolts during reassembly.



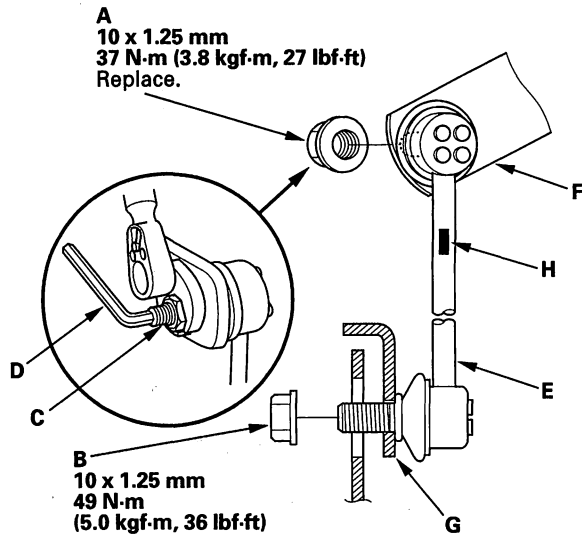
8. Install the trailing arm in the reverse order of removal, and note these items:

- First install all the suspension components, and lightly tighten the bolts and nuts, then place a floor jack under the lower arm, and raise the suspension to load it with the vehicle's weight before fully tightening the bolts and nuts to the specified torque values.
- Before installing the brake disc/drum, clean the mating surface of the hub bearing unit and the inside of the brake disc/drum.
- Before installing the wheel, clean the mating surface of the brake disc/drum and the inside of the wheel.
- Fill the master cylinder reservoir to the MAX (upper) level line, and bleed the brake system (see page 19-9). Check for a leak at the brake line to the brake hose, and retighten it if necessary.
- Check the wheel alignment, and adjust it if necessary (see page 18-5).

Rear Suspension

Stabilizer Link Removal/Installation

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the center cap and the rear wheel.
3. Remove the self-locking nut (A) and the flange nut (B) while holding the respective joint pin (C) with a hex wrench (D), then remove the stabilizer link (E).



4. Install the stabilizer link on the stabilizer bar (F) and lower arm (G) with the joint pins set at the center of their range of movement.

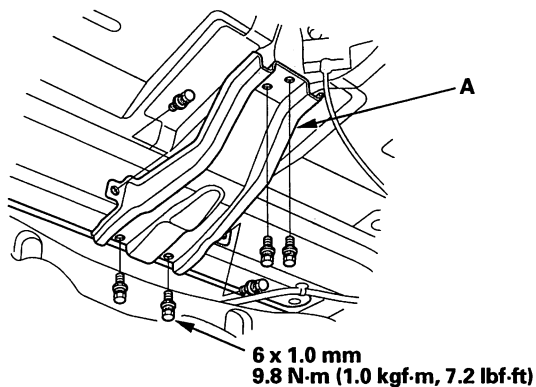
NOTE: The left stabilizer link has a yellow paint mark (H), while the right stabilizer link has a white mark. Align the paint mark to the outside.

5. Install a new self-locking nut and a new flange nut, and lightly tighten them.
6. Clean the mating surface of the brake disc/drum and the inside of the wheel, then install the rear wheel.
7. Tighten the self-locking nut and flange nut to the specified torque values while holding the respective joint pin with a hex wrench.
8. Test-drive the vehicle.
9. After 5 minutes of driving, tighten the self-locking nut again to the specified torque value.



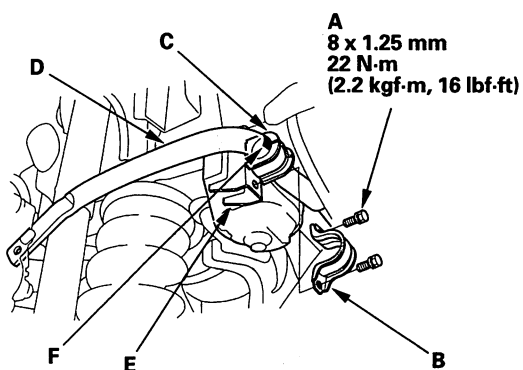
Stabilizer Bar Replacement

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheels.
3. Remove the spare tire from the vehicle.
4. Remove the spare tire support bracket (A).



5. Disconnect both stabilizer links from the stabilizer bar (see page 18-40).
6. Remove the flange bolts (A) and the bushing holders (B), then remove the bushings (C) and the stabilizer bar (D) from the front suspension subframe (E).

NOTE: Align the paint marks (F) on the stabilizer bar with the sides of the bushings during reassembly.



7. Install the stabilizer bar in the reverse order of removal, and note these items:

- Note the right and left direction of the stabilizer bar.
- Note the fore/aft direction of the bushing holders.
- Refer to stabilizer link removal/installation to connect the stabilizer bar to the links (see page 18-40).
- Clean the mating surface of the brake disc/drum the inside of the wheel, then install the rear wheel.
- Check the wheel alignment, and adjust it if necessary (see page 18-5).

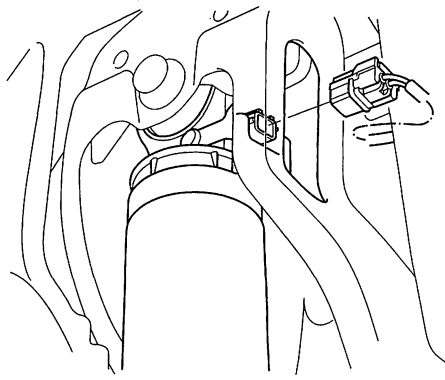
Rear Suspension

Damper Replacement

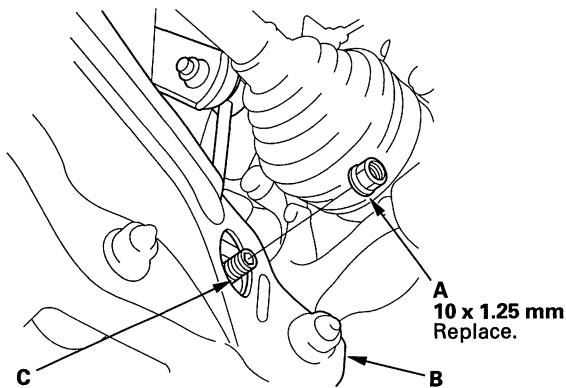
Removal

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheel.
3. With active damper system: Disconnect the damper coil connector (A).

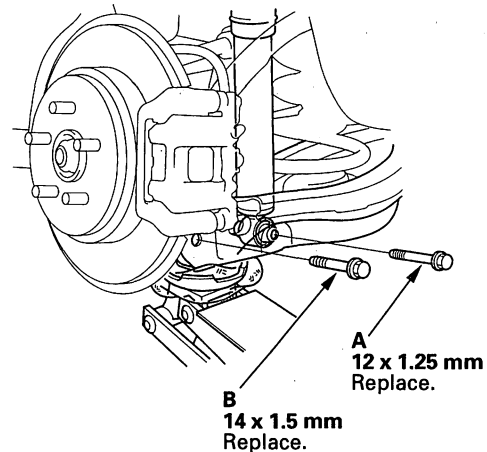
NOTE: Be careful not to damage or contaminate the damper coil connector;



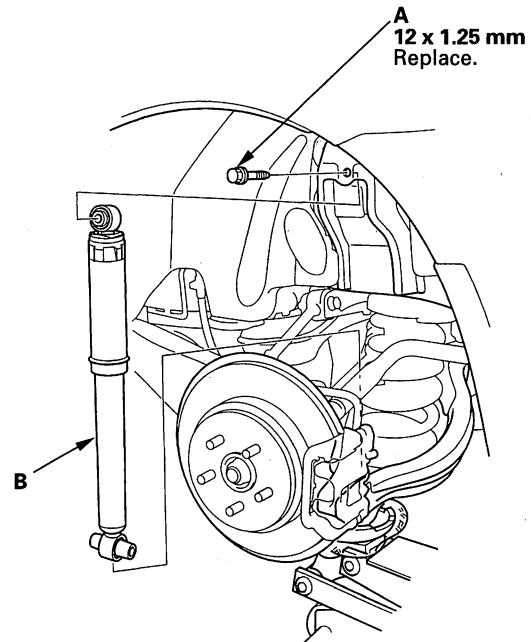
4. Position a floor jack under the lower arm B. Raise the floor jack until the suspension begins to compress.
5. Remove the flange nut (A) while holding the respective joint pin (C) with a hex wrench, then remove the stabilizer link from the lower arm B.



6. Remove the flange bolt (A) from the bottom of the damper.



7. Remove the flange bolt (B) from the knuckle.
8. Remove the flange bolt (A) from the top of the damper.

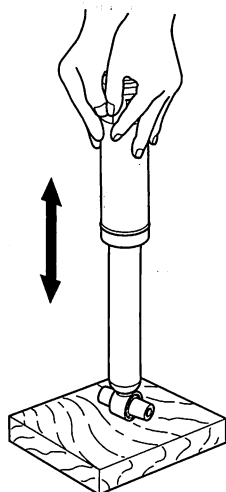


9. Lower the floor jack gradually, then remove the damper (B) from the vehicle.



Inspection

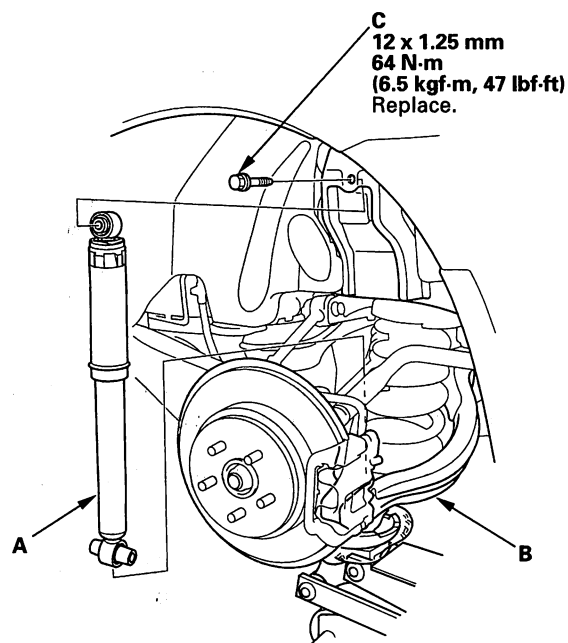
1. Push on the damper as shown.



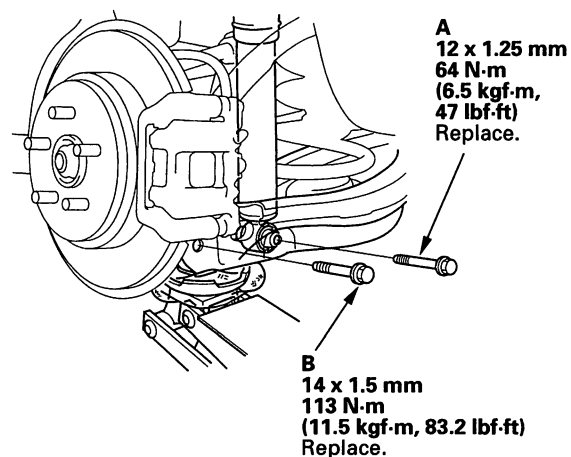
2. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking and the damper should be replaced.
3. Check for oil leaks, abnormal noises, and binding during these tests.

Installation

1. Position the damper (A) between the body and the lower arm B.



2. Loosely install a new flange bolt (C) to the top of the damper.
3. Loosely install the new flange bolt (A) to the bottom of the damper.



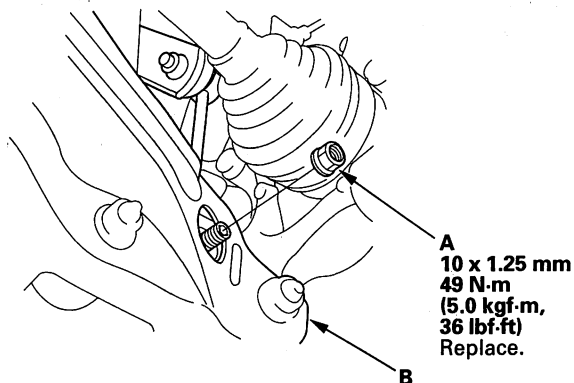
4. Loosely install a new flange bolt (B) to the knuckle.

(cont'd)

Rear Suspension

Damper Replacement (cont'd)

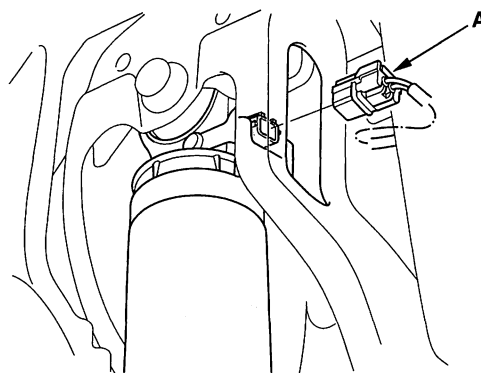
5. Install the stabilizer link on the lower arm B, then loosely install a new flange nut (A).



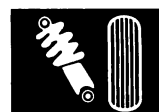
6. Raise the floor jack until the hole in the trailing arm aligns with the hole in the damper.
7. Tighten the flange bolts to the specified torque values.
8. Tighten the flange nut to the specified torque value, while holding the respective joint pin with a hex wrench.

9. With active damper system: Connect the damper coil connector (A).

NOTE: Be careful not to damage or contaminate the damper coil connector.

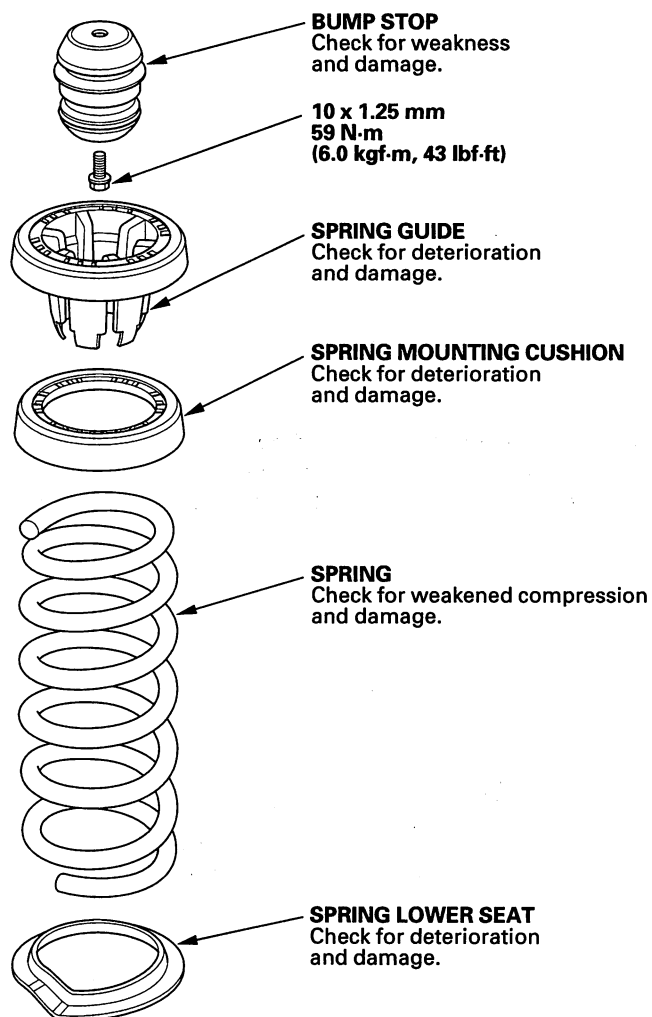


10. Clean the mating surface of the brake disc/drum and the inside of the wheel, then install the rear wheel.
11. With active damper system: Do the memorizing rear suspension full rebound position (see page 18-54).
12. With active damper system: Start the engine, then make sure there are no active damper system DTCs with the HDS (see page 18-53).
13. With active damper system: Do the DAMPER FORCE OPERATION in the ACTIVE DAMPER SYSTEM INSPECTION MENU with the HDS, then make sure the all four damper units function normally.
14. Check the wheel alignment, and adjust it if necessary (see page 18-5).



Spring/Bump Stop Removal/Installation

Exploded View



cardiagn.com

(cont'd)

BACK

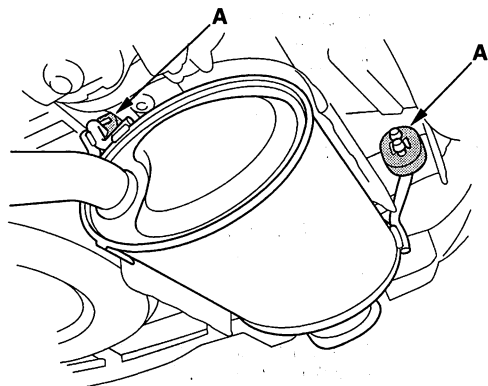
18-45

Rear Suspension

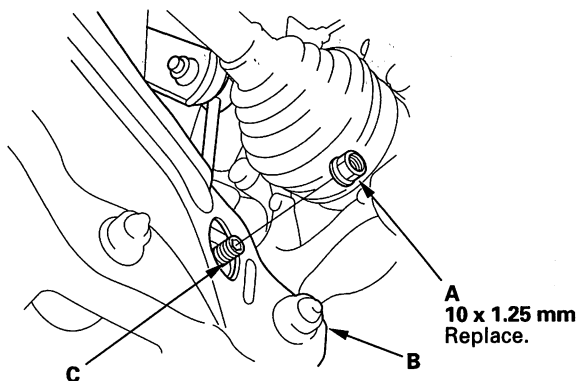
Spring/Bump Stop Removal/Installation (cont'd)

Removal

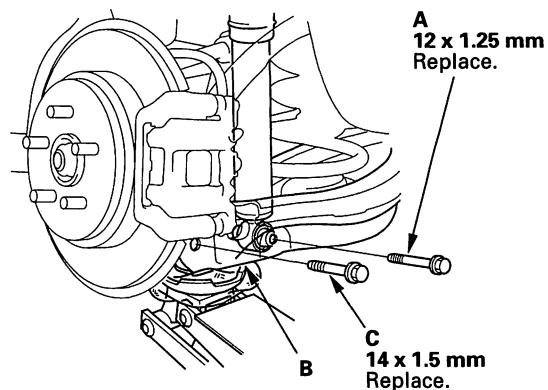
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheel.
3. Remove the muffler hanger (A).



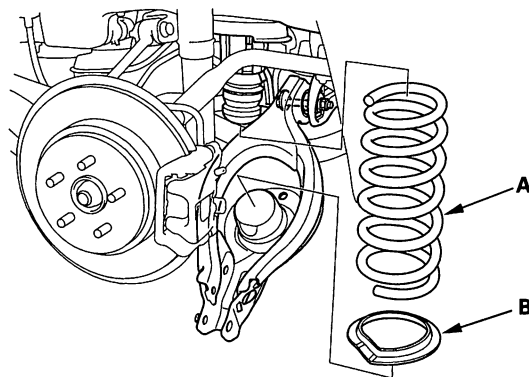
4. Remove the flange nut (A) while holding the respective joint pin (C) with a hex wrench, then remove the stabilizer link from the lower arm B.



5. Position the floor jack under the lower arm B. Raise the floor jack until the suspension begins to compress.

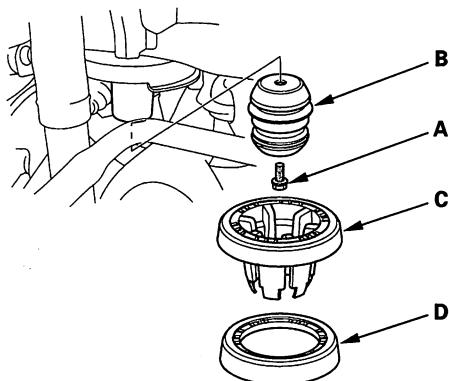


6. Remove the flange bolt (A) from the bottom of the damper.
7. Remove the flange bolt (C) from the knuckle.
8. Lower the floor jack gradually.
9. Remove the spring (A) and the lower spring seat (B).



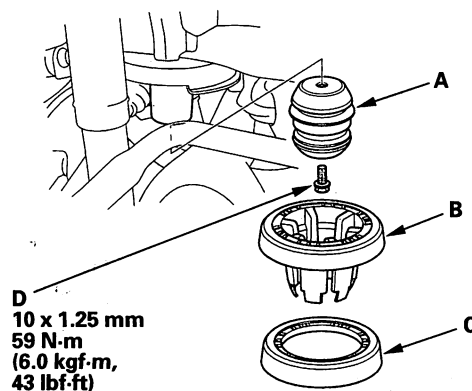


10. Remove the flange bolt (A) that connects the body, and remove the bump stop (B), the spring guide (C), and the spring mounting cushion (D) if necessary.

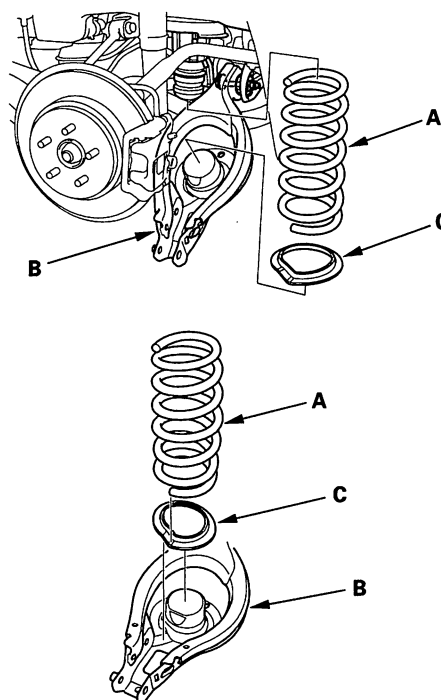


Installation

1. Install the bump stop (A), the spring guide (B), and the mounting cushion (C), then tighten the flange bolt (D) to the specified torque value if removed.



2. Install the spring (A) and the lower spring seat (C). Align the bottom of the spring and the lower spring seat with lower arm B as shown.

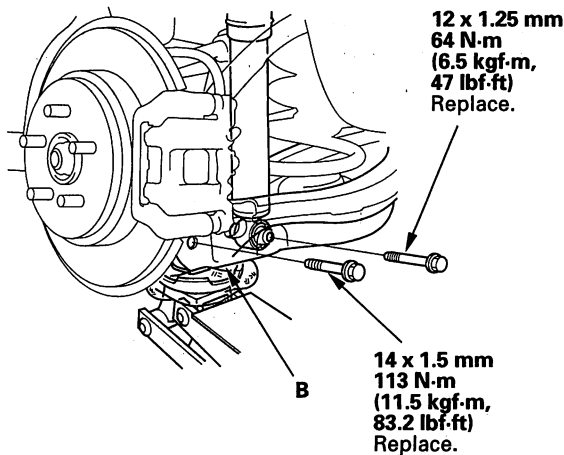


(cont'd)

Rear Suspension

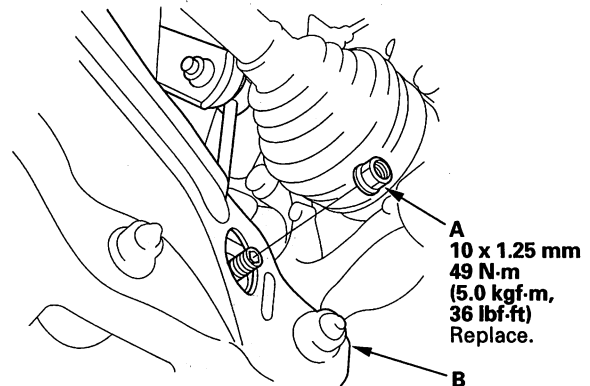
Spring/Bump Stop Removal/Installation (cont'd)

3. Position a floor jack under the lower arm B.

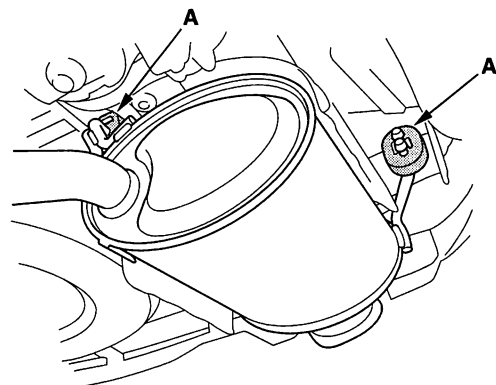


4. Slowly raise the floor jack until you can align the bolt hole with the holes in the lower arm B and the knuckle and install the new flange bolts.

5. Install the stabilizer link on the lower arm B, then loosely install the new flange nut (A).



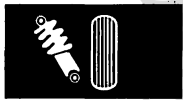
6. Raise the floor jack until the hole in the trailing arm aligns with the hole in the damper.
7. Tighten the flange bolts to the specified torque values.
8. Tighten the flange nut to the specified torque values, while holding the respective joint pin with a hex wrench.
9. Install the muffler hanger (A).



10. Clean the mating surface of the brake disc/drum and the inside of the wheel, then install the rear wheel.
11. Check the wheel alignment, and adjust it if necessary (see page 18-5).

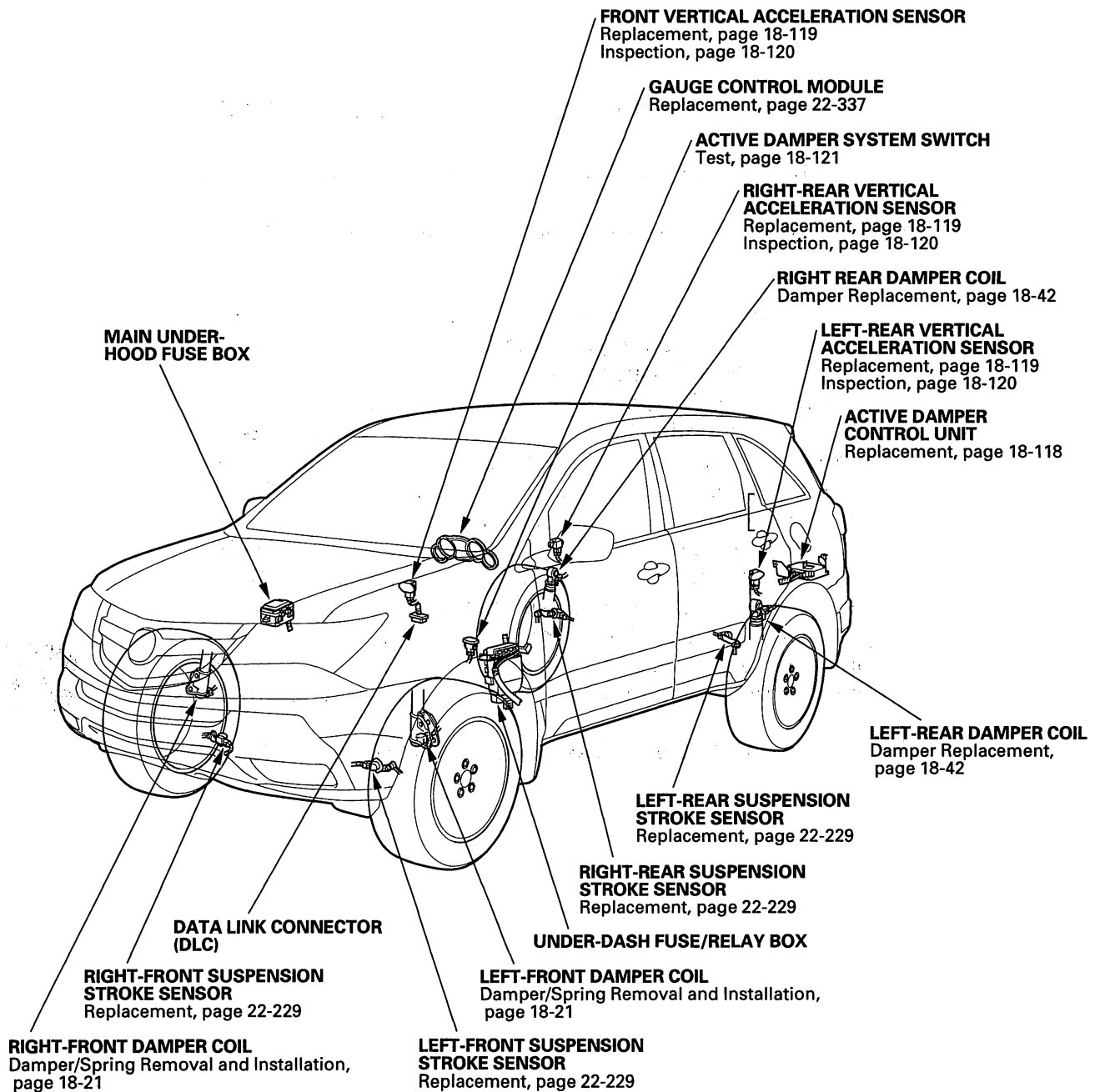
Suspension

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Active Damper System

Component Location Index

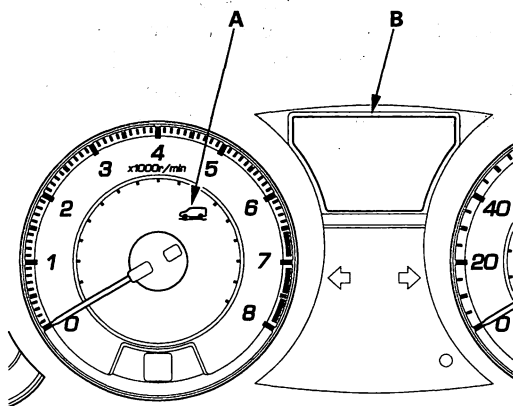




General Troubleshooting Information

System Indicator

This system has an active damper system indicator (A).



When the active damper system is working correctly, the active damper system indicator comes on after turning the ignition switch ON (II), and it goes off when the engine is started.

The indicator will stay on until the ignition switch is turned OFF, or until the problem goes away (system returns to normal), the indicator will then go off.

NOTE: The damper system mode is controlled by the active damper system switch and is indicated on the MID (multi-information display).

Diagnostic Trouble Code (DTC)

- The memory can hold any number of DTCs. However, when the same DTC is detected more than once, the most 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. Therefore, the memorized DTCs cannot be cancelled 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 active damper system indicator goes off.
 - Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned OFF.
- When the system detects a problem, it will go into fail safe mode which turns off the active damper function. When in this mode, handling characteristics are limited, and the vehicle speed should be reduced to 60 mph (96 km/h) or less, and driven no more than 200 miles (321 km).

Mode Select Switch

The system has two damping modes. Comfort and sport mode. Modes are changed using the mode selector switch.

Active Damper System Damper Units

The active damper system has four individual damper units, one on each suspension corner. These dampers function same as conventional dampers, but they should only be replaced as a single unit when indicated by a DTC. Do not replace the dampers units as a set.

(cont'd)

Active Damper System

General Troubleshooting Information (cont'd)

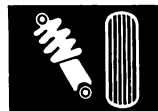
How to Troubleshoot DTCs

DTC troubleshooting procedures assume that the cause of the problem is still present and the active damper system indicator is still on. Following a troubleshooting procedure for a code that has been cleared and does not reset can result in incorrect diagnosis.

1. Question the client about the conditions that were present when the problem occurred, such as speed, turning, road conditions, and which mode the active damper system was selected. Try to duplicated the DTC by test-driving the vehicle under the same conditions.
2. Check for DTCs in the PGM-FI, A/T, and VSA system related to F-CAN stored at the same time. Troubleshoot these codes first, before troubleshooting the active damper system.
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 active damper system indicator does not come on.

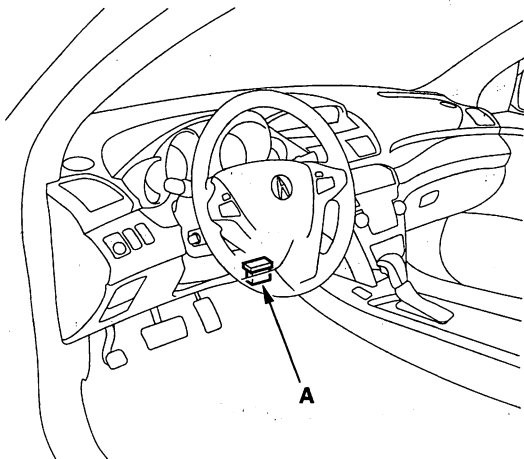
Intermittent Failures

The term "Intermittent failure" means a system may have had a failure, but it checks OK now. If the active damper system indicator does not come on, check for poor connections or loose terminals at all connectors related to the circuit that you are troubleshooting. If the indicator was on but then went out, the original problem may have been intermittent.



How to Retrieve DTCs and Freeze Data with the HDS (Honda Diagnostic System)

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



2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the active damper system control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-223).
4. Check for and note any stored DTCs. Also check the on-board snapshot data, and download any data found. Then refer to the indicated DTC's troubleshooting, and begin the appropriate troubleshooting procedure.

NOTE:

- The HDS can read the DTC, freeze data, snapshot, current data, and other system data.
- For specific operations, refer to the Help menu on the HDS.

How to Clear DTCs

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) under the driver's side of the dashboard.
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the active damper system control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-223).
4. Clear the DTC(s) by following the screen prompts on the HDS.
5. Turn the ignition switch OFF.

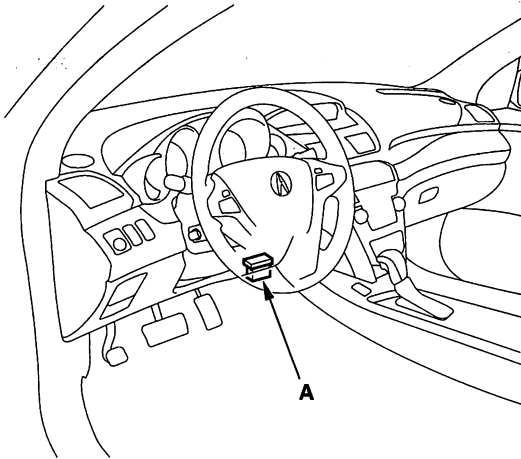
Active Damper System

Memorizing Rear Suspension Full Rebound Position

Do the rear suspension full rebound position memorizing whenever you do any of these actions:

- Replace the active damper control unit.
- Replace the rear damper unit.
- Replace the rear suspension stroke sensor.
- In the specific DTC troubleshooting.

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



2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the active damper control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-223).
4. Check for DTCs and make sure no DTC is indicated.

NOTE: For specific operations, refer to the Help menu that came with the HDS.

5. Turn the ignition switch OFF.
6. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-8).

NOTE: Verify the rear tires are suspended off the ground.

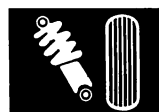
7. Make sure the rear suspension stroke sensors are installed correctly, and the linkages are properly connected (see page 22-229).

8. Turn the ignition switch ON (II).

9. Follow the screen prompts on the HDS to memorize the rear suspension full rebound position.

NOTE: For specific operations, refer to the Help menu that came with the HDS.

10. Turn the ignition switch OFF.



DTC Troubleshooting Index

DTC	Detection Item	Active Damper System Indicator	Note
1-1	Front vertical acceleration sensor circuit high voltage	ON	(see page 18-69)
1-2	Right-rear vertical acceleration sensor circuit high voltage	ON	(see page 18-69)
1-3	Left-rear vertical acceleration sensor circuit high voltage	ON	(see page 18-69)
1-4	Front vertical acceleration sensor range/performance problem	ON	(see page 18-71)
1-5	Right-rear vertical acceleration sensor range/performance problem	ON	(see page 18-71)
1-6	Left-rear vertical acceleration sensor range/performance problem	ON	(see page 18-71)
1-7	Front vertical acceleration sensor circuit low voltage	ON	(see page 18-72)
1-8	Right-rear vertical acceleration sensor circuit low voltage	ON	(see page 18-72)
1-9	Left-rear vertical acceleration sensor circuit low voltage	ON	(see page 18-72)
2-1	Right-front suspension stroke sensor circuit high voltage	ON	(see page 18-75)
2-2	Left-front suspension stroke sensor circuit high voltage	ON	(see page 18-77)
2-3	Right-rear suspension stroke sensor circuit high voltage	ON	(see page 18-75)
2-4	Left-rear suspension stroke sensor circuit high voltage	ON	(see page 18-79)
2-5	Right-front/right-rear suspension stroke sensor range/performance problem	ON	(see page 18-81)
2-6	Left-front/left-rear suspension stroke sensor range/performance problem	ON	(see page 18-81)
2-8	Right-front suspension stroke sensor signal circuit low voltage	ON	(see page 18-82)
2-9	Left-front suspension stroke sensor signal circuit low voltage	ON	(see page 18-84)
2-A	Right-rear suspension stroke sensor signal circuit low voltage	ON	(see page 18-82)
2-B	Left-rear suspension stroke sensor signal circuit low voltage	ON	(see page 18-87)
2-C	Right-rear/left-rear suspension stroke sensor incorrect correlation	ON	(see page 18-90)
3-1	Yaw rate-lateral/longitudinal acceleration sensor range/performance problem (yaw rate signal-lateral acceleration signal incorrect correlation)	ON	(see page 18-91)
3-3	Yaw rate-lateral/longitudinal acceleration sensor malfunction (lateral acceleration sensor)	ON	(see page 18-91)
3-4	Wheel speed signal malfunction (from VSA modulator-control unit by F-CAN)	ON	(see page 18-92)
3-6	Yaw rate-lateral/longitudinal acceleration sensor malfunction (yaw rate sensor)	ON	(see page 18-91)
3-7	Yaw rate-lateral/longitudinal acceleration sensor range/performance problem (wheel speed signal-longitudinal acceleration signal incorrect correlation)	ON	(see page 18-91)
3-9	Yaw rate-lateral/longitudinal acceleration sensor malfunction (longitudinal acceleration sensor)	ON	(see page 18-91)
3-A	Yaw rate-lateral/longitudinal acceleration sensor malfunction	ON	(see page 18-91)
5-1	Active damper control unit internal right-front damper coil drive circuit stuck ON	ON	(see page 18-93)
5-2	Active damper control unit internal left-front damper coil drive circuit stuck ON	ON	(see page 18-93)
5-3	Active damper control unit internal right-rear damper coil drive circuit stuck ON	ON	(see page 18-93)
5-4	Active damper control unit internal left-rear damper coil drive circuit stuck ON	ON	(see page 18-93)

(cont'd)

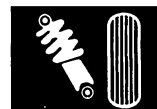
BACK

Active Damper System

DTC Troubleshooting Index (cont'd)

DTC	Detection Item	Active Damper System Indicator	Note
5-5	Active damper control unit internal right-front damper coil drive circuit stuck OFF	ON	(see page 18-94)
5-6	Active damper control unit internal left-front damper coil drive circuit stuck OFF	ON	(see page 18-94)
5-7	Active damper control unit internal right-rear damper coil drive circuit stuck OFF	ON	(see page 18-94)
5-8	Active damper control unit internal left-rear damper coil drive circuit stuck OFF	ON	(see page 18-94)
6-1	Active damper control unit internal right-front damper coil drive circuit current lower than expected	ON	(see page 18-97)
6-2	Active damper control unit internal left-front damper coil drive circuit current lower than expected	ON	(see page 18-97)
6-3	Active damper control unit internal right-rear damper coil drive circuit current lower than expected	ON	(see page 18-97)
6-4	Active damper control unit internal left-rear damper coil drive circuit current lower than expected	ON	(see page 18-97)
6-5	Active damper control unit internal right-front damper coil drive circuit current higher than expected	ON	(see page 18-99)
6-6	Active damper control unit internal left-front damper coil drive circuit current higher than expected	ON	(see page 18-99)
6-7	Active damper control unit internal right-rear damper coil drive circuit current higher than expected	ON	(see page 18-99)
6-8	Active damper control unit internal left-rear damper coil drive circuit current higher than expected	ON	(see page 18-99)
6-9	Active damper control unit power source circuit (+B) low voltage	ON	(see page 18-102)
7-1	Active damper control unit internal circuit malfunction	ON	(see page 18-93)
7-2	Active damper control unit internal circuit malfunction	ON	(see page 18-93)
7-3	Active damper control unit internal circuit malfunction	ON	(see page 18-93)
7-4	Active damper control unit internal circuit malfunction	ON	(see page 18-93)
7-5	Active damper control unit internal circuit malfunction	ON	(see page 18-93)
7-6	Active damper control unit internal circuit malfunction (fail safe relay stuck ON)	ON	(see page 18-104)
7-9	Active damper control unit internal circuit malfunction	ON	(see page 18-105)
8-2	Sensor reference voltage malfunction (SVCC line)	ON	(see page 18-107)
8-3	Sensor reference voltage malfunction (HVCC line)	ON	(see page 18-108)
8-5	F-CAN malfunction (active damper control unit lost communication with yaw rate-lateral/longitudinal acceleration sensor)	ON	(see page 18-110)
8-6	F-CAN malfunction (active damper control unit lost communication with VSA modulator-control unit)	ON	(see page 18-111)
14-1	Active damper control unit internal circuit malfunction	ON	(see page 18-93)
14-2	Active damper control unit internal circuit malfunction	ON	(see page 18-93)
14-5	Active damper control unit internal circuit malfunction	ON	(see page 18-93)
14-6	Active damper control unit internal circuit malfunction	ON	(see page 18-93)
14-7	Active damper control unit internal circuit malfunction	ON	(see page 18-93)
14-8	Active damper control unit internal circuit malfunction	ON	(see page 18-93)
14-A	Active damper control unit internal circuit malfunction	ON	(see page 18-93)
14-B	Active damper control unit power supply circuit malfunction	ON	(see page 18-113)
14-C	Active damper control unit internal circuit malfunction	ON	(see page 18-93)

BACK



Symptom Troubleshooting Index

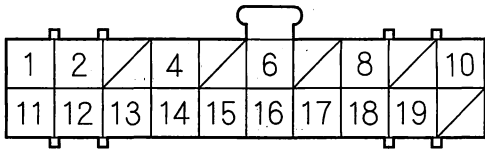
When the vehicle has one of these symptoms, check for a diagnostic trouble code (DTC) with the HDS. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure
HDS does not communicate with the active damper control unit or the vehicle	Troubleshoot the DLC circuit (see page 11-223)
Active damper system indicator does not come on	1. Do the gauge control module troubleshooting (see page 22-315) 2. Substitute a known-good active damper control unit, then recheck. If it is OK, replace the original active damper control unit (see page 18-118)
Active damper system indicator does not go off, and no DTCs are stored	1. Start the engine 2. Symptom Troubleshooting (see page 18-114) 3. Do the gauge control module troubleshooting (see page 22-315)
Active damper system switch does not work (damper mode cannot be selected)	Symptom Troubleshooting (see page 18-116)
Active damper system switch lamp blinks	1. Do the gauge control module troubleshooting (see page 22-315) 2. Substitute a known-good active damper control unit, then recheck. If it is OK, replace the original active damper control unit (see page 18-118)

Active Damper System

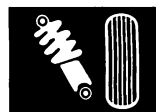
System Description

Active Damper Control Unit Inputs and Outputs for Connector A (20P)



Wire side of female terminals

Terminal number	Wire color	Terminal sign	Description	Signal		
				Terminals	Conditions	Voltage
1	RED	CRLH	Left-rear damper coil drive power	1-11	Drive the vehicle	Variable
2	GRN	CRRH	Right-rear damper coil drive power	2-12	Drive the vehicle	Variable
4	BLK	CFLH	Left-front damper coil drive power	4-14	Drive the vehicle	Variable
6	RED	CFRH	Right-front damper coil drive power	6-16	Drive the vehicle	Variable
8	GRN	IG1	IG1 power supply	8-GND	Ignition switch ON (II)	Battery voltage
10	LT BLU	VB	Battery power supply	10-GND	At all times	Battery voltage

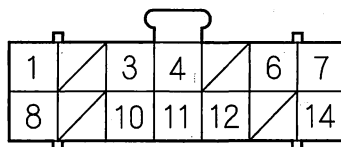


Terminal number	Wire color	Terminal sign	Description	Signal		
				Terminals	Conditions	Voltage
11	WHT	CRL	Left-rear damper coil drive ground	1-11	Drive the vehicle	Variable
12	YEL	CRRL	Right-rear damper coil drive ground	2-12	Drive the vehicle	Variable
13	ORN	RRST	Detects right-rear stroke sensor signal	13-GND	Damper stroking	About 0-5 V
14	WHT	CFL	Left-front damper coil drive ground	4-14	Drive the vehicle	Variable
15	PUR	FLST	Detects left-front stroke sensor signal	15-GND	Damper stroking	About 0-5 V
16	BLU	CFRL	Right-front damper coil drive ground	6-16	Drive the vehicle	Variable
17	BLU	FRST	Detects right-front stroke sensor signal	17-GND	Damper stroking	About 0-5 V
18	BLK	LG	Ground for the logic circuit	18-GND	At all times	0.1 V or less
19	BLK	PG	Ground for the damper coil drive	19-GND	At all times	0.1 V or less

Active Damper System

System Description (cont'd)

Active Damper Control Unit Inputs and Outputs for Connector B (14P)



Wire side of female terminals

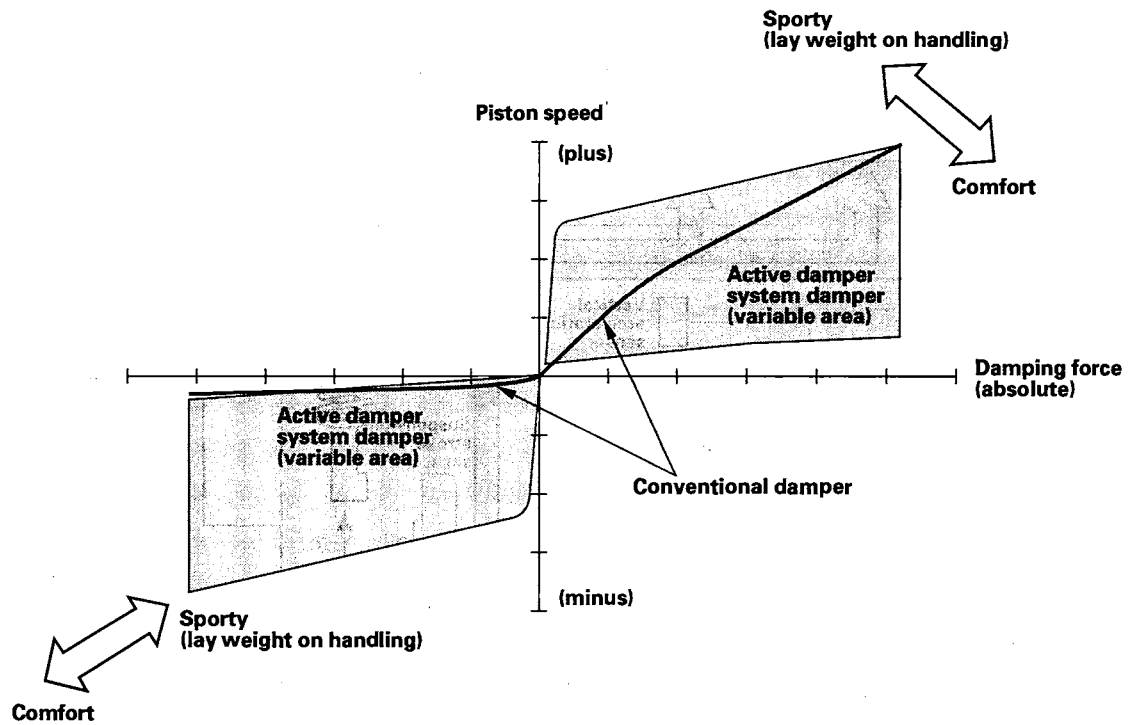
Terminal number	Wire color	Terminal sign	Description	Signal		
				Terminals	Conditions	Voltage
1	WHT	CAN H	CAN communication circuit			
3	LT BLU	K-LINE	Communication with HDS	3-GND	HDS not connected	About 5 V
4	PNK	SVCC	Supply power to the sensors	4-GND	Ignition switch ON (II)	About 5 V
6	PNK	HVCC	Supply power to the sensor and the other unit	6-GND	Ignition switch ON (II)	About 5 V
7	LT BLU	RLST	Detects left-rear stroke sensor signal	7-GND	Damper stroking	About 0-5 V
8	RED	CAN L	CAN communication circuit			
10	LT GRN	RLG	Detects left-rear acceleration sensor signal	10-GND	Move the vehicle up and down	About 0-5 V
11	GRY	SG	Ground for the sensors	11-GND	At all times	0.1 V or less
12	BRN	RRG	Detects right-rear acceleration sensor signal	12-GND	Move the vehicle up and down	About 0-5 V
14	YEL	FCG	Detects front acceleration sensor signal	14-GND	Move the vehicle up and down	About 0-5 V



Active Damper System Controls

The active damper control unit continuously monitors inputs from various sensors and the mode select switch. The control unit will adjust each damper's force by controlling current to them. The active damper system requires a special damper that is capable of quick response and action. This allows them to respond quickly for changes in conditions.

Active damper system damping character



(cont'd)

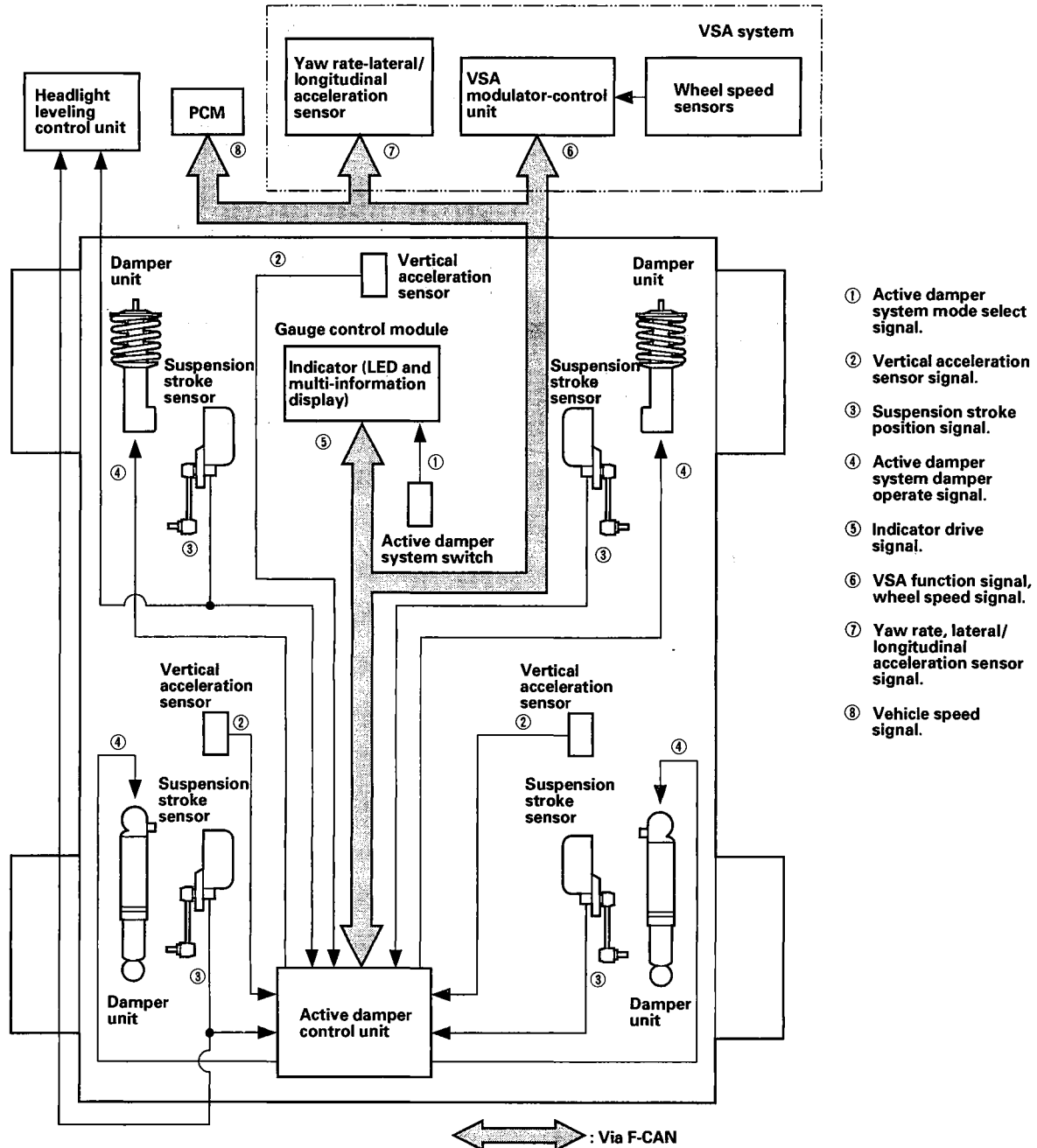
Active Damper System

System Description (cont'd)

System Communication

The active damper system has an active damper control unit, four quick-reacting damper units with internal damper coil, three vertical acceleration sensors, four suspension stroke sensors, a mode select switch, and an active damper system indicator. In addition, the active damper system receives signals from the VSA system, the PCM, and relates information with the headlight leveling control system.

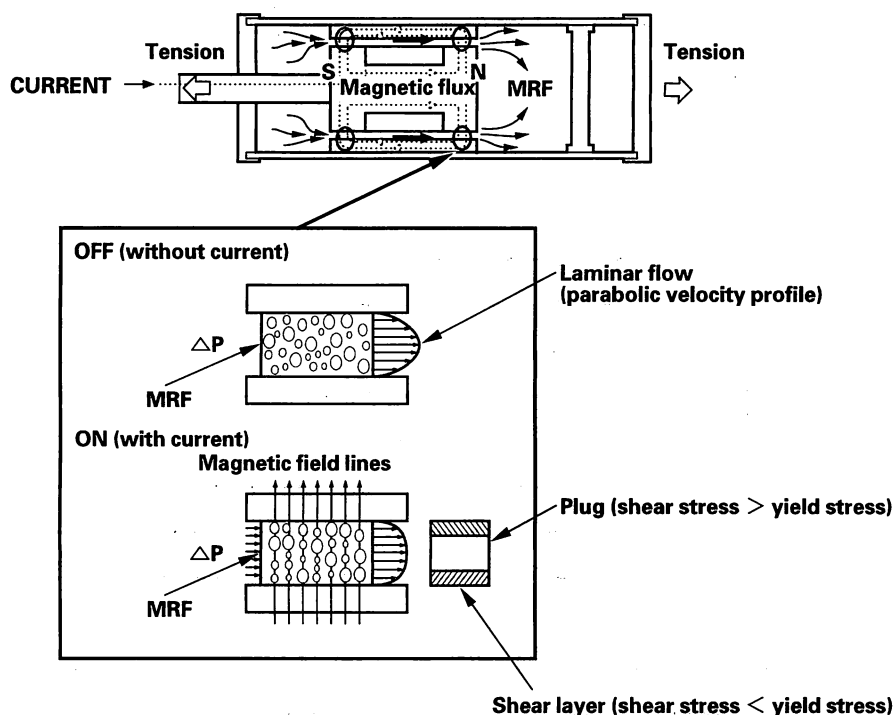
The active damper control unit performs an arithmetical operation from various vehicle conditions pitching, roll, bump, vehicle speed, and driver's mode selection, then selects the most suitable damping characteristics or setting.





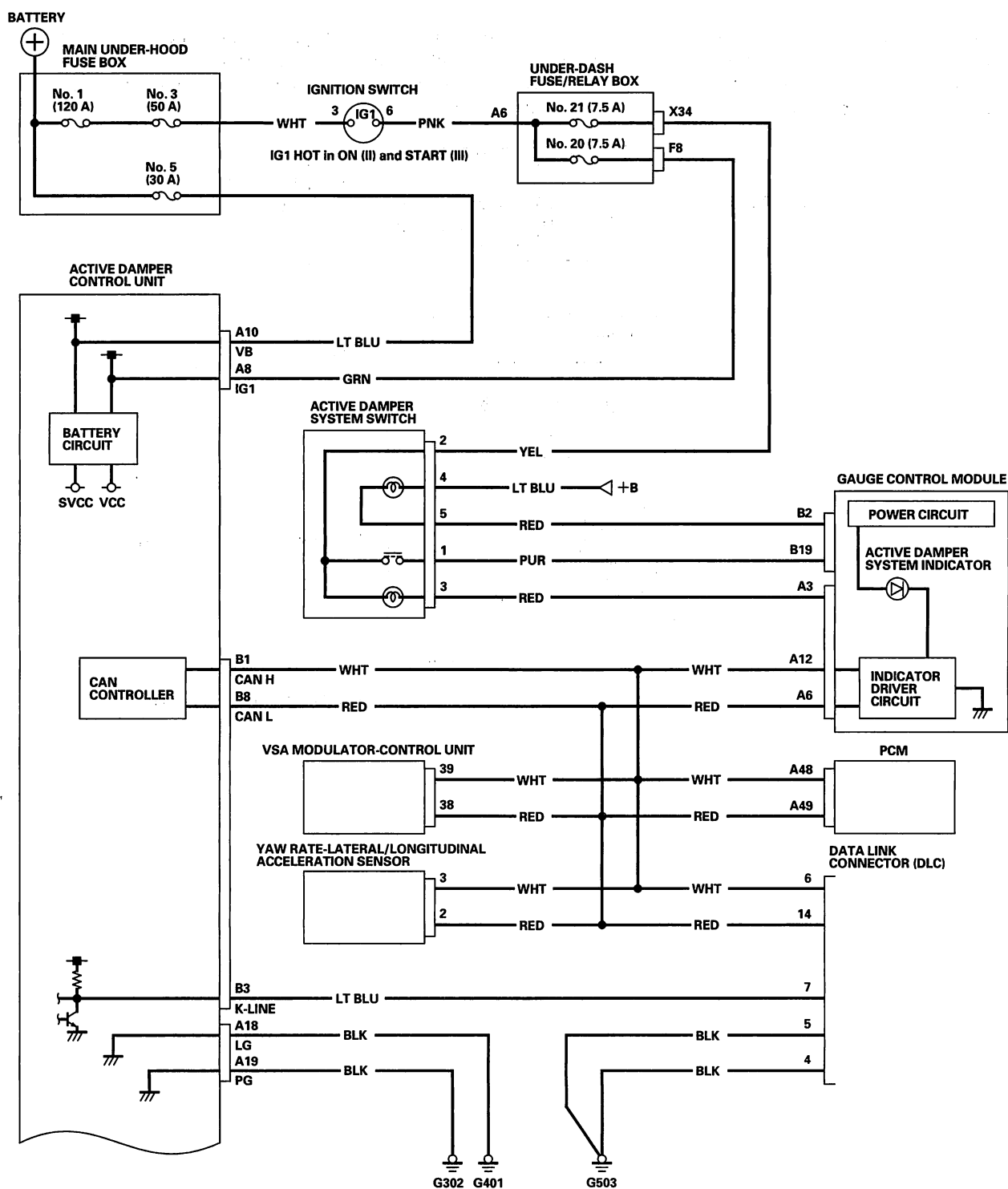
MRF (Magneto Rheological Fluid) in the Damper Unit

Variable suspension damping force is achieved by controlling the intensity of magnetic flux in the damper piston. The orientation of iron particles suspended in the damper oil is changed as the fluid flows through the magnetic field, thereby changing the effective viscosity of the fluid. The amount of change in the fluid's behavior is proportional to the amount of electrical current supplied to the windings in the piston.



Active Damper System

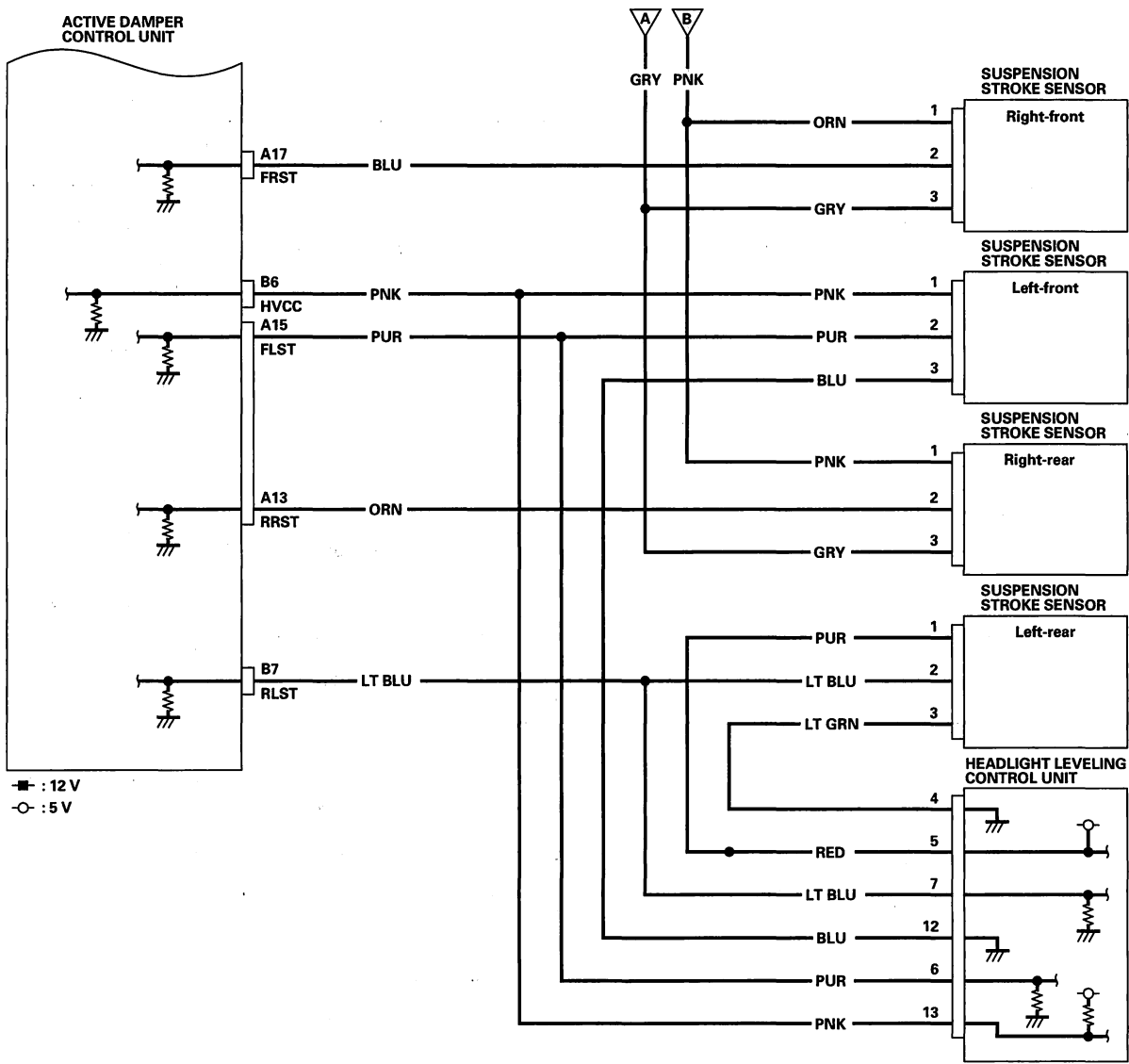
Circuit Diagram





Active Damper System

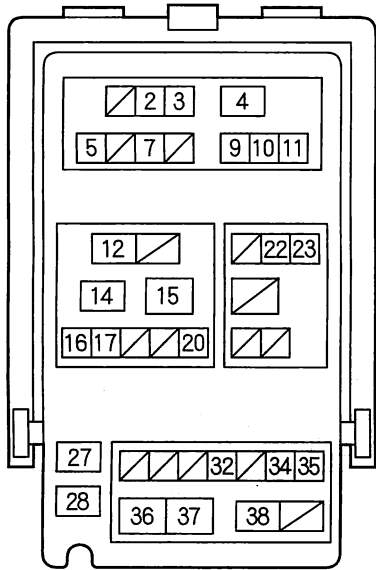
Circuit Diagram (cont'd)



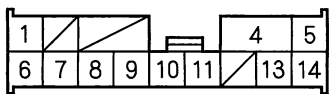
cardiagn.com



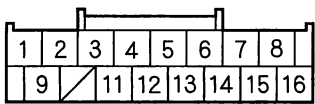
**UNDER-DASH FUSE/RELAY BOX
CONNECTOR X (39P)**



**UNDER-DASH FUSE/RELAY BOX
CONNECTOR F (14P)**



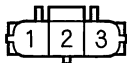
**HEADLIGHT LEVELING
CONTROL UNIT
16P CONNECTOR**



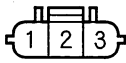
DAMPER COIL 2P CONNECTOR



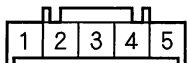
**SUSPENSION STROKE
SENSOR 3P CONNECTOR**



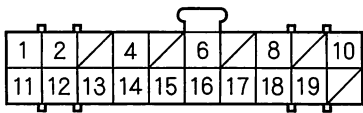
**VERTICAL ACCELERATION
SENSOR 3P CONNECTOR**



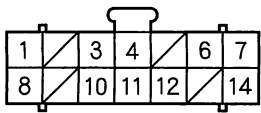
**ACTIVE DAMPER SYSTEM
SWITCH 5P CONNECTOR**



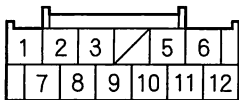
**ACTIVE DAMPER CONTROL UNIT
CONNECTOR A (20P)**



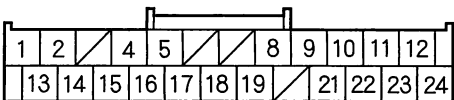
**ACTIVE DAMPER CONTROL UNIT
CONNECTOR B (14P)**



**GAUGE CONTROL MODULE
CONNECTOR A (12P)**



**GAUGE CONTROL MODULE
CONNECTOR B (24P)**

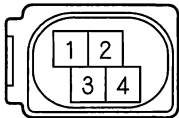


Wire side of female terminals

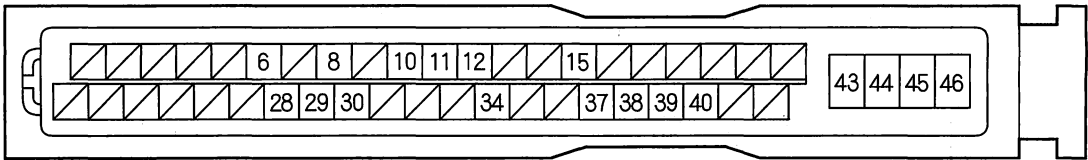
Active Damper System

Circuit Diagram (cont'd)

YAW RATE-LATERAL/LONGITUDINAL
ACCELERATION SENSOR 4P CONNECTOR

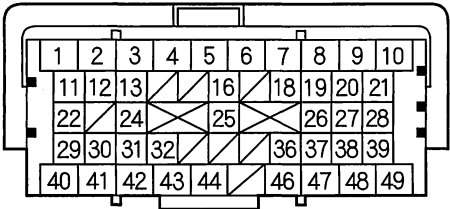


VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

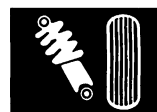
PCM CONNECTOR A (49P)



DATA LINK CONNECTOR (DLC)



Terminal side of female terminals



DTC Troubleshooting

DTC 1-1: Front Vertical Acceleration Sensor Circuit High Voltage

DTC 1-2: Right-rear Vertical Acceleration Sensor Circuit High Voltage

DTC 1-3: Left-rear Vertical Acceleration Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Start the engine, and wait 5 seconds.
5. Check for DTCs with the HDS.

Is DTC 1-1, 1-2, or 1-3 indicated?

YES—Go to step 6.

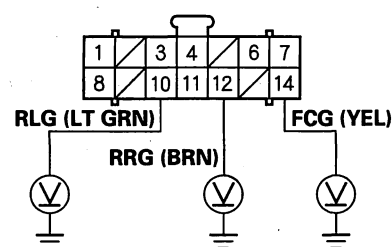
NO—Intermittent failure at this time. Check for poor or loose connections between the vertical acceleration sensor and the active damper control unit. ■

6. Turn the ignition switch OFF.
7. Disconnect active damper control unit connector B (14P).
8. Turn the ignition switch ON (II).

9. Measure voltage between body ground and the appropriate active damper control unit connector B (14P) terminal (see table).

DTC	Active Damper Control Unit Connector Terminal
1-1	No. 14
1-2	No. 12
1-3	No. 10

ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)



Wire side of female terminals

Is there more than 0.5 V?

YES—Repair short to power in the wire between the appropriate vertical acceleration sensor and the active damper control unit. ■

NO—Go to step 10.

(cont'd)

Active Damper System

DTC Troubleshooting (cont'd)

- 10. Turn the ignition switch OFF.
- 11. Reconnect active damper control unit connector B (14P).
- 12. Do the appropriate vertical acceleration sensor inspection (see page 18-120).

DTC	Appropriate Vertical Acceleration Sensor
1-1	Front
1-2	Right-rear
1-3	Left-rear

Is the vertical acceleration sensor indicate OK?

YES—Replace the active damper control unit (see page 18-118). ■

NO—Go to step 13.

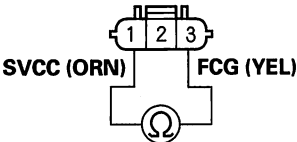
- 13. Turn the ignition switch OFF.
- 14. Disconnect the appropriate vertical acceleration sensor 3P connector.

DTC	Appropriate Vertical Acceleration Sensor
1-1	Front
1-2	Right-rear
1-3	Left-rear

- 15. Disconnect active damper control unit connector B (14P).
- 16. Check for continuity between the appropriate vertical acceleration sensor terminals No. 1 and No. 3.

DTC 1-1

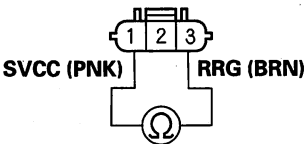
FRONT VERTICAL ACCELERATION SENSOR 3P CONNECTOR



Wire side of female terminals

DTC 1-2

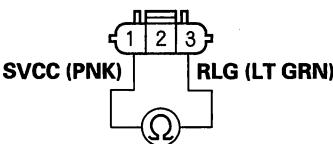
RIGHT-REAR VERTICAL ACCELERATION SENSOR 3P CONNECTOR



Wire side of female terminals

DTC 1-3

LEFT-REAR VERTICAL ACCELERATION SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the appropriate vertical acceleration sensor and the active damper control unit. ■

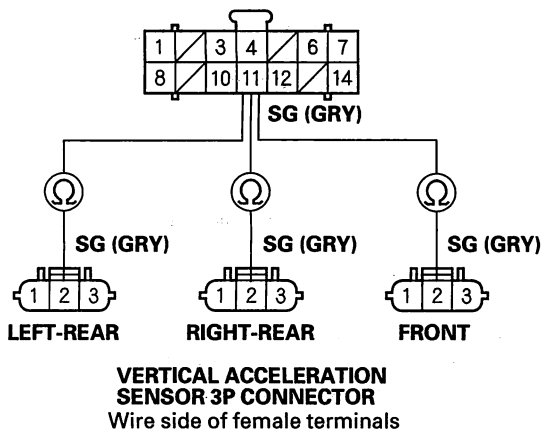
NO—Go to step 17.



17. Check for continuity between active damper control unit connector B (14P) terminal No. 11 and appropriate vertical acceleration sensor 3P connector terminal No.2 (see table).

DTC	Appropriate Vertical Acceleration Sensor
1-1	Front
1-2	Right-rear
1-3	Left-rear

ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)
Wire side of female terminals



Is there continuity?

YES—Replace the appropriate vertical acceleration sensor (see page 18-119). ■

NO—Repair open in the wire between the appropriate vertical acceleration sensor and the active damper control unit. ■

DTC 1-4: Front Vertical Acceleration Sensor Range/Performance Problem

DTC 1-5: Right-rear Vertical Acceleration Sensor Range/Performance Problem

DTC 1-6: Left-rear Vertical Acceleration Sensor Range/Performance Problem

1. Turn the ignition switch OFF.
2. Do the appropriate vertical acceleration sensor inspection (see page 18-120).

DTC	Appropriate Vertical Acceleration Sensor
1-4	Front
1-5	Right-rear
1-6	Left-rear

Is the vertical acceleration sensor indicate OK?

YES—Replace the active damper control unit (see page 18-118). ■

NO—Replace the appropriate vertical acceleration sensor (see page 18-119). ■

Active Damper System

DTC Troubleshooting (cont'd)

DTC 1-7: Front Vertical Acceleration Sensor Circuit Low Voltage

DTC 1-8: Right-rear Vertical Acceleration Sensor Circuit Low Voltage

DTC 1-9: Left-rear Vertical Acceleration Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Start the engine, and wait 5 seconds.
5. Check for DTCs with the HDS.

Is DTC 1-7, 1-8, or 1-9 indicated?

YES—Go to step 6.

NO—Intermittent failure at this time. Check for poor or loose connections between the vertical acceleration sensor and the active damper control unit. ■

6. Do the appropriate vertical acceleration sensor inspection (see page 18-120).

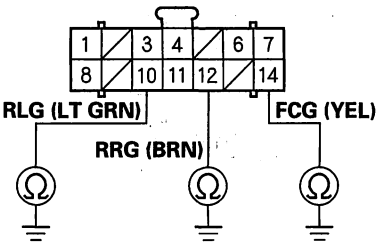
DTC	Appropriate Vertical Acceleration Sensor
1-7	Front
1-8	Right-rear
1-9	Left-rear

7. Turn the ignition switch OFF.
8. Disconnect active damper control unit connector A (20P) and connector B (14P).

9. Check for continuity between body ground and the appropriate active damper control unit connector B (14P) terminal (see table).

DTC	Active Damper Control Unit Connector Terminal
1-7	No. 14
1-8	No. 12
1-9	No. 10

ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

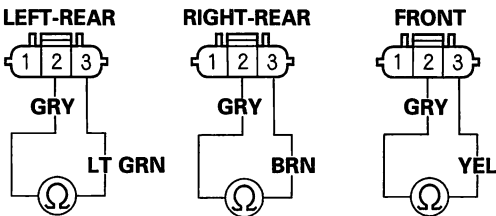
YES—Repair short to body ground in the wire between the appropriate vertical acceleration sensor and the active damper control unit. ■

NO—Go to step 10.

10. Disconnect the appropriate vertical acceleration sensor 3P connector.

DTC	Appropriate Vertical Acceleration Sensor
1-7	Front
1-8	Right-rear
1-9	Left-rear

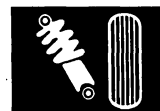
11. Check for continuity between the appropriate vertical acceleration sensor terminals No. 2 and No. 3.



Is there continuity?

YES—Repair short in the wires between the appropriate vertical acceleration sensor and the active damper control unit. ■

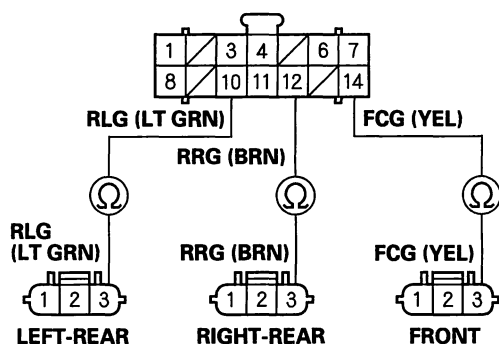
NO—Go to step 12.



12. Check for continuity between the appropriate active damper control unit connector B (14P) terminal and the appropriate vertical acceleration sensor 3P connector terminal No. 3 (see table).

DTC	Active Damper Control Unit Connector Terminal	Appropriate Vertical Acceleration Sensor
1-7	No. 14	Front
1-8	No. 12	Right-rear
1-9	No. 10	Left-rear

ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)
Wire side of female terminals



VERTICAL ACCELERATION SENSOR 3P CONNECTOR
Wire side of female terminals

Is there continuity?

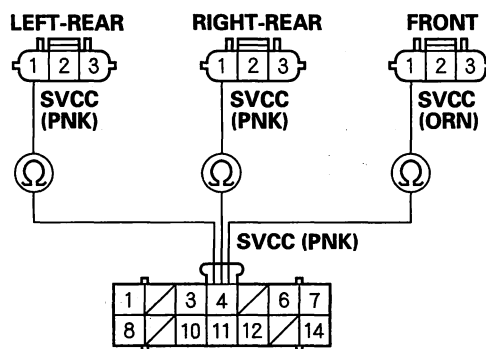
YES—Go to step 13.

NO—Repair open in the wire between the appropriate vertical acceleration sensor and the active damper control unit. ■

13. Check for continuity between active damper control unit connector B (14P) terminal No. 4 and appropriate vertical acceleration sensor 3P connector terminal No. 1 (see table).

DTC	Appropriate Vertical Acceleration Sensor
1-7	Front
1-8	Right-rear
1-9	Left-rear

VERTICAL ACCELERATION SENSOR 3P CONNECTOR
Wire side of female terminals



ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)
Wire side of female terminals

Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the appropriate vertical acceleration sensor and the active damper control unit. ■

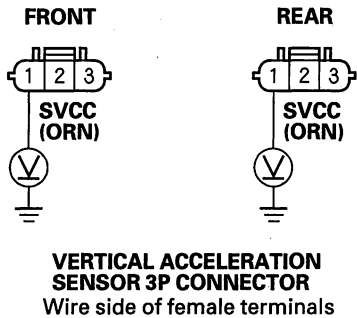
(cont'd)

Active Damper System

DTC Troubleshooting (cont'd)

- 14. Reconnect active damper control unit connector A (20P) and connector B (14P).
- 15. Start the engine, and wait 5 seconds.
- 16. Measure voltage between body ground and appropriate vertical acceleration sensor 3P connector terminal No. 1.

DTC	Appropriate Vertical Acceleration Sensor
1-7	Front
1-8	Right-rear
1-9	Left-rear



Is there about 5 V?

YES—Replace the appropriate vertical acceleration sensor (see page 18-119). ■

NO—Replace the active damper control unit (see page 18-118). ■



DTC 2-1: Right-front Suspension Stroke Sensor Circuit High Voltage

DTC 2-3: Right-rear Suspension Stroke Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Start the engine, and wait 5 seconds.
5. Check for DTCs with the HDS.

Is DTC 2-1, or 2-3 indicated?

YES—Go to step 6.

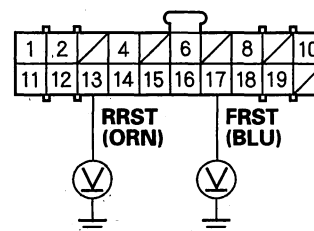
NO—Intermittent failure at this time. Check for poor or loose connections between the suspension stroke sensor and the active damper control unit. ■

6. Turn the ignition switch OFF.
7. Disconnect active damper control unit connector A (20P).
8. Turn the ignition switch ON (II).

9. Measure voltage between body ground and the appropriate active damper control unit connector A (20P) terminal (see table).

DTC	Active Damper Control Unit Connector Terminal
2-1	No. 17
2-3	No. 13

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there more than 0.5 V?

YES—Repair short to power in the wire between the appropriate suspension stroke sensor and the active damper control unit. ■

NO—Go to step 10.

(cont'd)

Active Damper System

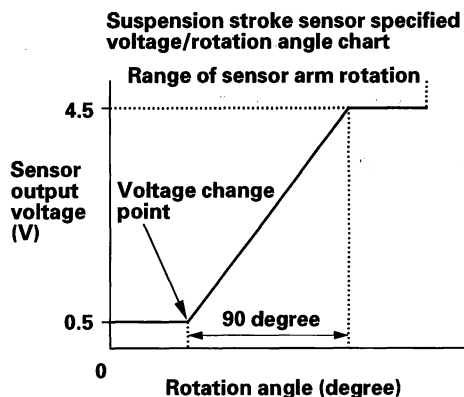
DTC Troubleshooting (cont'd)

10. Turn the ignition switch OFF.
11. Reconnect active damper control unit connector A (20P).
12. Remove the appropriate suspension stroke sensor (see page 22-229). Do not disconnect the sensor connector.

DTC	Appropriate Suspension Stroke Sensor
2-1	Right-front
2-3	Right-rear

13. Start the engine, and wait 5 seconds.
14. Check the SUS STROKE_S VOLTAGE (RF), or (RR) in the ACTIVE DAMPER SYSTEM DATA LIST with the HDS while moving the suspension stroke sensor arm through a complete stroke. Compare the voltage/rotation angle between the chart and the measurements.

NOTE: The voltage should increase (decrease) within 90 degrees of the sensor arm rotation from the first voltage change point.



Is the voltage as specified?

YES—Substitute a known-good active damper control unit and retest. If the DTC goes away, replace the original active damper control unit (see page 18-118). ■

NO—Go to step 15.

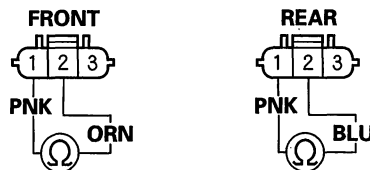
15. Turn the ignition switch OFF.
16. Disconnect the appropriate suspension stroke sensor 3P connector.

DTC	Appropriate Suspension Stroke Sensor
2-1	Right-front
2-3	Right-rear

17. Check for continuity between the appropriate suspension stroke sensor 3P connector terminals No. 1 and No. 2.

SUSPENSION STROKE SENSOR 3P CONNECTOR

Wire side of female terminals



Is there continuity?

YES—Repair short in the wires between the appropriate suspension stroke sensor and the active damper control unit. ■

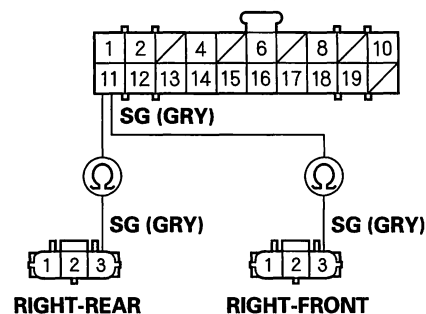
NO—Go to step 18.

18. Check for continuity between active damper control unit connector B (14P) terminal No. 11 and appropriate suspension stroke sensor 3P connector terminal No. 3 (see table).

DTC	Appropriate Suspension Stroke Sensor
2-1	Right-front
2-3	Right-rear

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)

Wire side of female terminals



SUSPENSION STROKE SENSOR 3P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Replace the appropriate suspension stroke sensor (see page 22-229). ■

NO—Repair open in the wire between the appropriate suspension stroke sensor and the active damper control unit. ■



DTC 2-2: Left-front Suspension Stroke Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Start the engine, and wait 5 seconds.
5. Check for DTCs with the HDS.

Is DTC 2-2 indicated?

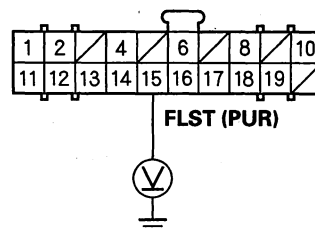
YES—Go to step 6.

NO—Intermittent failure at this time. Check for poor or loose connections between the suspension stroke sensor and the active damper control unit. ■

6. Turn the ignition switch OFF.
7. Disconnect active damper control unit connector A (20P).
8. Disconnect the headlight leveling control unit connector (16P).
9. Turn the ignition switch ON (II).

10. Measure voltage between body ground and active damper control unit connector A (20P) terminal No. 15.

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there more than 0.5 V?

YES—Repair short to power in the wire between the left-front suspension stroke sensor, the headlight leveling control unit, and the active damper control unit.

NO—Go to step 11.

(cont'd)

Active Damper System

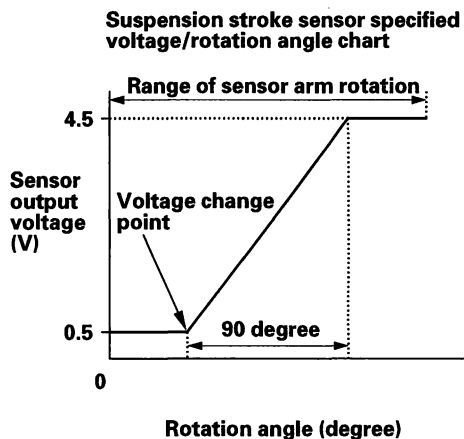
DTC Troubleshooting (cont'd)

11. Turn the ignition switch OFF.
12. Reconnect active damper control unit connector A (20P) and the headlight leveling control unit connector (16P).
13. Remove the left-front suspension stroke sensor (see page 22-229). Do not disconnect the sensor connector.

NOTE: After troubleshooting, do the headlight initial position learning procedure (see page 22-229).

14. Start the engine, and wait 5 seconds.
15. Check the SUS STROKE_S VOLTAGE (LF) in the ACTIVE DAMPER SYSTEM DATA LIST with the HDS while moving the suspension stroke sensor arm through a complete stroke. Compare the voltage/rotation angle between the chart and the measurements.

NOTE: The voltage increase (decrease) within 90 degrees of the sensor arm rotation from the first voltage change point.



Is the voltage as specified?

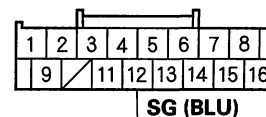
YES—Substitute a known-good active damper control unit and retest. If the DTC goes away, replace the original active damper control unit (see page 18-118). ■

NO—Go to step 16.

16. Turn the ignition switch OFF.
17. Disconnect active damper control unit connector A (20P).
18. Disconnect the headlight leveling control unit 16P connector.
19. Disconnect the left-front suspension stroke sensor 3P connector.
20. Check for continuity between headlight leveling control unit 16P connector terminal No. 12 and left-front suspension stroke sensor 3P connector terminal No. 3.

HEADLIGHT LEVELING CONTROL UNIT 16P CONNECTOR

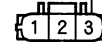
Wire side of female terminals



SG (BLU)



SG (BLU)



LEFT-FRONT SUSPNSION STROKE SENSOR 3P CONNECTOR

Wire side of female terminals

Is there continuity?

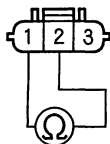
YES—Go to step 21.

NO—Repair open in the wire between the left-front suspension stroke sensor and the headlight leveling control unit. ■



21. Check for continuity between the left-front suspension stroke sensor 3P connector terminals No. 1 and No. 2.

LEFT-FRONT SUSPENSION STROKE SENSOR 3P CONNECTOR
Wire side of female terminals



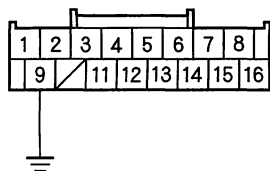
Is there continuity?

YES—Repair short in the wires between the left-front suspension stroke sensor and the active damper control unit. ■

NO—Go to step 22.

22. Check for continuity between the No. 9 terminal of the headlight leveling control unit connector (16P) and body ground.

HEADLIGHT LEVELING CONTROL UNIT 16P CONNECTOR
Wire side of female terminals



Is there continuity?

YES—Replace the left-front suspension stroke sensor (see page 22-229). ■

NO—Repair open in the wire between the headlight leveling control unit and body ground (G401). ■

DTC 2-4: Left-rear Suspension Stroke Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Start the engine, and wait 5 seconds.
5. Check for DTCs with the HDS.

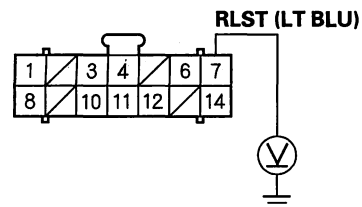
Is DTC 2-4 indicated?

YES—Go to step 6.

NO—Intermittent failure at this time. Check for poor or loose connections between the suspension stroke sensor and the active damper control unit. ■

6. Turn the ignition switch OFF.
7. Disconnect active damper control unit connector B (14P).
8. Disconnect the headlight leveling control unit connector (16P).
9. Turn the ignition switch ON (II).
10. Measure voltage between body ground and active damper control unit connector B (14P) terminal No. 7.

ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)



Wire side of female terminals

Is there more than 0.5 V?

YES—Repair short to power in the wire between the left-rear suspension stroke sensor, the headlight leveling control unit, and the active damper control unit. ■

NO—Go to step 11.

(cont'd)

Active Damper System

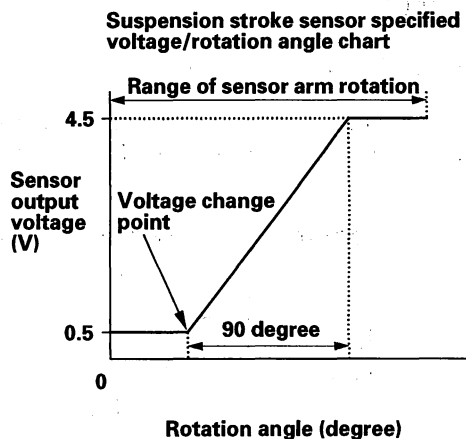
DTC Troubleshooting (cont'd)

11. Turn the ignition switch OFF.
12. Reconnect active damper control unit connector B (14P) and the headlight leveling control unit connector (16P).
13. Remove the left- rear suspension stroke sensor (see page 22-229). Do not disconnect the sensor connector.

NOTE: After troubleshooting, do the headlight initial position learning procedure (see page 22-229).

14. Start the engine, and wait 5 seconds.
15. Check the SUS STROKE_S VOLTAGE (LR) in the ACTIVE DAMPER SYSTEM DATA LIST with the HDS while moving the suspension stroke sensor arm through a complete stroke. Compare the voltage/rotation angle between the chart and the measurements.

NOTE: The voltage should increase (decrease) within 90 degrees of the sensor arm rotation from the first voltage change point.



Is the voltage as specified?

YES—Substitute a known-good active damper control unit and retest. If the DTC goes away, replace the original active damper control unit (see page 18-118). ■

NO—Go to step 16.

16. Turn the ignition switch OFF.
17. Disconnect active damper control unit connector B (14P).
18. Disconnect the headlight leveling control unit 16P connector.
19. Disconnect the left-rear suspension stroke sensor 3P connector.
20. Check for continuity between headlight leveling control unit 16P connector terminal No. 4 and left-rear suspension stroke sensor 3P connector terminal No. 3.

LEFT-REAR SUSPENSION STROKE SENSOR 3P CONNECTOR

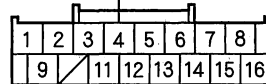
Wire side of female terminals



SG (LT GRN)



SG (LT GRN)



HEADLIGHT LEVELING CONTROL UNIT 16P CONNECTOR

Wire side of female terminals

Is there continuity?

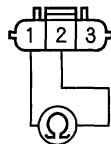
YES—Go to step 21.

NO—Repair open in the wire between the left-rear suspension stroke sensor and the headlight leveling control unit. ■



21. Check for continuity between the left-rear suspension stroke sensor 3P connector terminals No. 1 and No. 2.

LEFT-FRONT SUSPENSION STROKE SENSOR 3P CONNECTOR
Wire side of female terminals



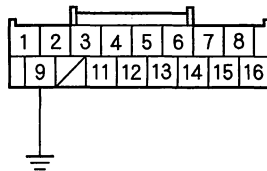
Is there continuity?

YES—Repair short in the wires between the left-rear suspension stroke sensor and the active damper control unit. ■

NO—Go to step 22.

22. Check for continuity between the No. 9 terminal of the headlight leveling control unit connector (16P) and body ground.

HEADLIGHT LEVELING CONTROL UNIT 16P CONNECTOR
Wire side of female terminals



Is there continuity?

YES—Replace the left-front suspension stroke sensor (see page 22-229). ■

NO—Repair open in the wire between the headlight leveling control unit and body ground (G401). ■

DTC 2-5: Right-front/Right-rear Suspension Stroke Sensor Range/Performance Problem

DTC 2-6: Left-front/Left-rear Suspension Stroke Sensor Range/Performance Problem

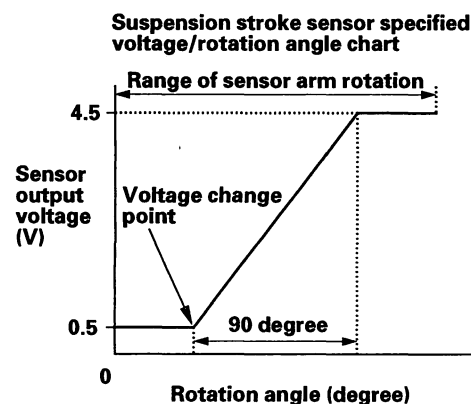
1. Turn the ignition switch OFF.
2. Remove the appropriate suspension stroke sensor (see page 22-229). Do not disconnect the sensor connector.

NOTE: After troubleshooting for the left side suspension stroke sensor, do the headlight initial position learning procedure (see page 22-229).

DTC	Appropriate Suspension Stroke Sensor
2-5	Right-front and Right-rear
2-6	Left-front and Left-rear

3. Start the engine, and wait 5 seconds.
4. Check the SUS STROKE_S VOLTAGE (RF), (LF), (RR), or (LR) in the ACTIVE DAMPER SYSTEM DATA LIST with the HDS while moving the suspension stroke sensor arm through a complete stroke. Compare the voltage/rotation angle between the chart and the measurements.

NOTE: The voltage should increase (decrease) within 90 degrees of the sensor arm rotation from the first voltage change point.



Is the voltage as specified?

YES—Replace the active damper control unit (see page 18-118). ■

NO—Replace the suspension stroke sensor (see page 22-229). ■

Active Damper System

DTC Troubleshooting (cont'd)

DTC 2-8: Right-front Suspension Stroke Sensor Signal Circuit Low Voltage

DTC 2-A: Right-rear Suspension Stroke Sensor Signal Circuit Low Voltage

NOTE: If DTC 8-2 is stored at the same time as DTC 2-8 and DTC 2-A, troubleshoot DTC 8-2 first, then recheck for DTC 2-8 and 2-A.

- 1. Turn the ignition switch ON (II).
- 2. Clear the DTC with the HDS.
- 3. Turn the ignition switch OFF.
- 4. Start the engine, and wait 5 seconds.
- 5. Check for DTCs with the HDS.

Is DTC 2-8, or 2-A indicated?

YES—Go to step 6.

NO—Intermittent failure at this time. Check for poor or loose connections between the suspension stroke sensor and the active damper control unit. ■

- 6. Turn the ignition switch OFF.
- 7. Disconnect the appropriate suspension stroke sensor 3P connector.

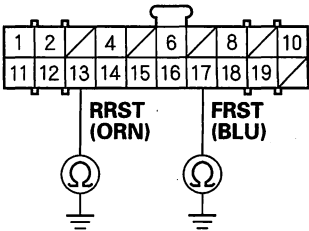
DTC	Appropriate Suspension Stroke Sensor
2-8	Right-front
2-A	Right-rear

- 8. Disconnect active damper control unit connector A (20P).

- 9. Check for continuity between body ground and the appropriate active damper control unit connector A (20P) terminal (see table).

DTC	Active Damper Control Unit Connector Terminal
2-8	No. 17
2-A	No. 13

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the appropriate suspension stroke sensor and the active damper control unit. ■

NO—Go to step 10.

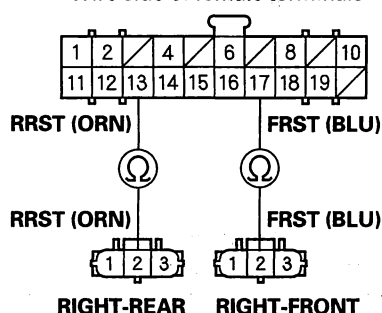


10. Check for continuity between appropriate suspension stroke sensor 3P connector terminal No. 2 and the appropriate active damper control unit connector A (20P) terminal (see table).

DTC	Active Damper Control Unit Connector Terminal	Appropriate Suspension Stroke Sensor
2-8	No. 17	Right-front
2-A	No. 13	Right-rear

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)

Wire side of female terminals



SUSPENSION STROKE SENSOR 3P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Go to step 11.

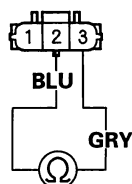
NO—Repair open in the wire between the appropriate suspension stroke sensor and the active damper control unit. ■

11. Check for continuity between the appropriate suspension stroke sensor terminals No. 2 and No. 3.

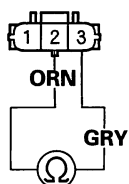
SUSPENSION STROKE SENSOR 3P CONNECTOR

Wire side of female terminals

RIGHT-FRONT



RIGHT-REAR



Is there continuity?

YES—Repair short in the wires between the appropriate suspension stroke sensor and the active damper control unit. ■

NO—Go to step 12.

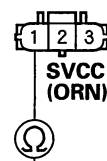
12. Check for continuity between active damper control unit connector B (14P) terminal No. 4 and appropriate suspension stroke sensor 3P connector terminal No. 1 (see table).

DTC	Appropriate Suspension Stroke Sensor
2-8	Right-front
2-A	Right-rear

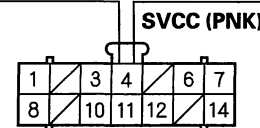
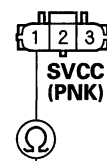
SUSPENSION STROKE SENSOR 3P CONNECTOR

Wire side of female terminals

RIGHT-FRONT



RIGHT-REAR



ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)

Wire side of female terminals

Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the appropriate suspension stroke sensor and the active damper control unit. ■

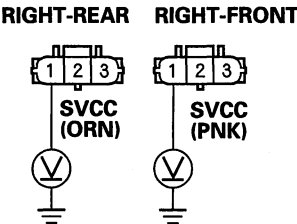
(cont'd)

Active Damper System

DTC Troubleshooting (cont'd)

- 13. Reconnect active damper control unit connector B (14P).
- 14. Start the engine, and wait 5 seconds.
- 15. Measure voltage between body ground and appropriate suspension stroke sensor 3P connector terminal No. 1.

DTC	Appropriate Suspension Stroke Sensor
2-8	Right-front
2-A	Right-rear



SUSPENSION STROKE SENSOR 3P CONNECTOR
Wire side of female terminals

Is there about 5 V?

YES—Replace the suspension stroke sensor (see page 22-229). ■

NO—Replace the active damper control unit (see page 18-118). ■

DTC 2-9: Left-front Suspension Stroke Sensor Signal Circuit Low Voltage

NOTE: If DTC 8-3 is stored at the same time as DTC 2-9, troubleshoot DTC 8-3 first, then recheck for DTC 2-9.

- 1. Turn the ignition switch ON (II).
- 2. Clear the DTC with the HDS.
- 3. Turn the ignition switch OFF.
- 4. Start the engine, and wait 5 seconds.
- 5. Check for DTCs with the HDS.

Is DTC 2-9 indicated?

YES—Go to step 6.

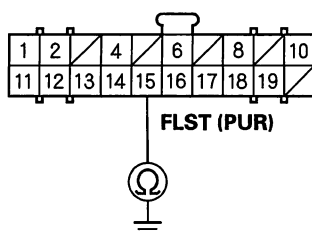
NO—Intermittent failure at this time. Check for poor or loose connections between the suspension stroke sensor and the active damper control unit. ■

- 6. Turn the ignition switch OFF.
- 7. Disconnect the left-front suspension stroke sensor 3P connector.
- 8. Disconnect active damper control unit connector A (20P).
- 9. Disconnect the headlight leveling control unit connector (16P).



10. Check for continuity between body ground and active damper control unit connector A (20P) terminal No. 15.

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

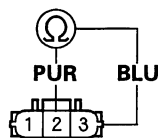
YES—Repair short to body in the wire between the left-front suspension stroke sensor and the active damper control unit. ■

NO—Go to step 11.

11. Check for continuity between the appropriate suspension stroke sensor terminals No. 2 and No. 3.

LEFT-FRONT SUSPENSION STROKE SENSOR 3P CONNECTOR

Wire side of female terminals



Is there continuity?

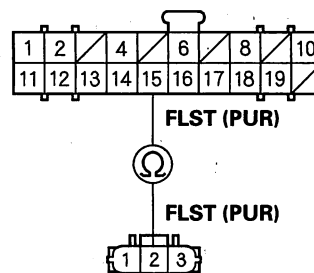
YES—Repair short in the wires between the appropriate suspension stroke sensor and the active damper control unit. ■

NO—Go to step 12.

12. Check for continuity between left-front suspension stroke sensor 3P connector terminal No. 2 and active damper control unit connector A (20P) terminal No. 15.

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)

Wire side of female terminals



LEFT-FRONT SUSPENSION STROKE SENSOR 3P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the left-front suspension stroke sensor and the active damper control unit. ■

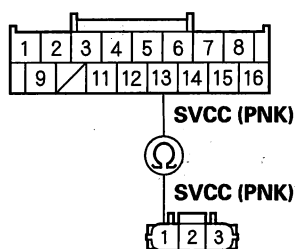
(cont'd)

Active Damper System

DTC Troubleshooting (cont'd)

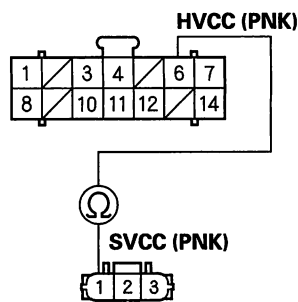
13. Disconnect active damper control unit connector B (14P).
14. Check for continuity between headlight leveling control unit 16P connector terminal No. 13 and left-front suspension stroke sensor 3P connector terminal No. 1, and between active damper control unit connector B (14P) terminal No. 6 and left-front suspension stroke sensor 3P connector terminal No. 1 individually.

HEADLIGHT LEVELING CONTROL UNIT 16P CONNECTOR



LEFT-FRONT SUSPENSION STROKE SENSOR 3P CONNECTOR
Wire side of female terminals

ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)



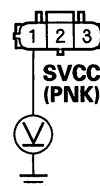
LEFT-FRONT SUSPENSION STROKE SENSOR 3P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the left-front suspension stroke sensor and the headlight leveling control unit, or between active damper control unit and the left-front suspension stroke sensor. ■

15. Reconnect the headlight leveling control unit 16P connector.
16. Start the engine, and wait 5 seconds.
17. Measure voltage between body ground and left-front suspension stroke sensor 3P connector terminal No. 1.



LEFT-FRONT SUSPENSION STROKE SENSOR 3P CONNECTOR
Wire side of female terminals

Is there about 5 V?

YES—Replace the suspension stroke sensor (see page 22-229). ■

NO—Check the headlight leveling control system. If necessary, substitute a known-good headlight leveling control unit. ■



DTC 2-B: Left-rear Suspension Stroke Sensor Signal Circuit Low Voltage

NOTE: If DTC 8-3 is stored at the same time as DTC 2-8, troubleshoot DTC 8-3 first, then recheck for DTC 2-B.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Start the engine, and wait 5 seconds.
5. Check for DTCs with the HDS.

Is DTC 2-B indicated?

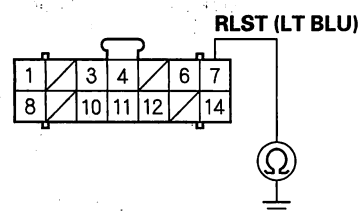
YES—Go to step 6.

NO—Intermittent failure at this time. Check for poor or loose connections between the suspension stroke sensor and the active damper control unit. ■

6. Turn the ignition switch OFF.
7. Disconnect the headlight leveling control unit 16P connector.
8. Disconnect the left-rear suspension stroke sensor 3P connector.
9. Disconnect active damper control unit connector B (14P).

10. Check for continuity between body ground and active damper control unit connector B (14P) terminal No. 7.

ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

YES—Go to step 11.

NO—Repair short to body ground in the wire between the left-rear suspension stroke sensor, the headlight leveling control unit, and the active damper control unit. ■

(cont'd)

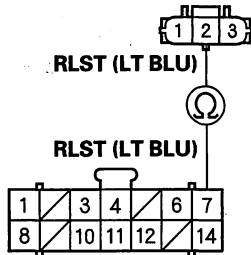
Active Damper System

DTC Troubleshooting (cont'd)

11. Check for continuity between left-rear suspension stroke sensor 3P connector terminal No. 2 and active damper control unit connector B (14P) terminal No. 7.

LEFT-REAR SUSPENSION STROKE SENSOR 3P CONNECTOR

Wire side of female terminals



ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)

Wire side of female terminals

Is there continuity?

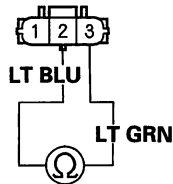
YES—Go to step 12.

NO—Repair open in the wire between the left-rear suspension stroke sensor, and the active damper control unit. ■

12. Check for continuity between the appropriate suspension stroke sensor terminals No. 2 and No. 3.

LEFT-REAR SUSPENSION STROKE SENSOR 3P CONNECTOR

Wire side of female terminals



Is there continuity?

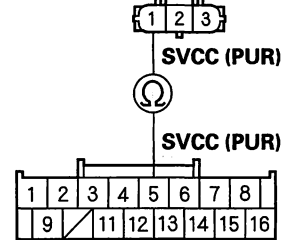
YES—Repair short in the wires between the appropriate suspension stroke sensor and the active damper control unit. ■

NO—Go to step 13.

13. Check for continuity between headlight leveling control unit 16P connector terminal No. 5 and left-rear suspension stroke sensor 3P connector terminal No. 1.

LEFT-REAR SUSPENSION STROKE SENSOR 3P CONNECTOR

Wire side of female terminals



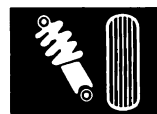
HEADLIGHT LEVELING CONTROL UNIT 16P CONNECTOR

Wire side of female terminals

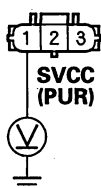
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the left-rear suspension stroke sensor and the headlight leveling control unit. ■



14. Reconnect the headlight leveling control unit 16P connector.
15. Start the engine, and wait 5 seconds.
16. Measure voltage between body ground and left-rear suspension stroke sensor 3P connector terminal No. 1.



**LEFT-REAR SUSPENSION STROKE
SENSOR 3P CONNECTOR**
Wire side of female terminals

Is there about 5 V?

YES—Replace the suspension stroke sensor (see page 22-229). ■

NO—Check the headlight leveling control system. If necessary, substitute a known-good headlight leveling control unit. ■

Active Damper System

DTC Troubleshooting (cont'd)

DTC 2-C: Right-rear/Left-rear Suspension Stroke Sensor Incorrect Correlation

1. Turn the ignition switch OFF.
2. Check that the right-rear and left-rear suspension stroke sensors are properly mounted (see page 22-229), and check for bent or damaged sensor links.

NOTE: After troubleshooting for the left side suspension stroke sensor, do the headlight initial position learning procedure (see page 22-231).

Are they OK?

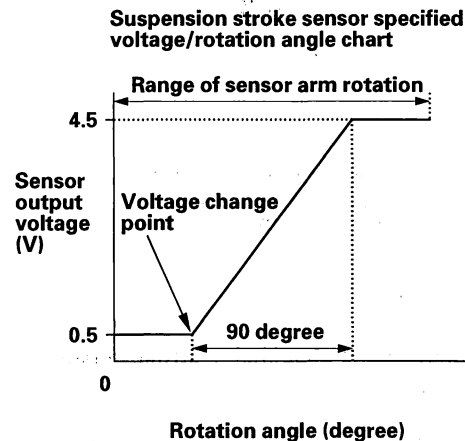
YES—Go to step 3.

NO—Reinstall or replace the appropriate suspension stroke sensor, or linkage (see page 22-229). ■

3. Remove the right-rear and left-rear suspension stroke sensors (see page 22-229). Do not disconnect the sensor connector.
4. Start the engine, and wait 5 seconds.

5. Check the SUS STROKE_S VOLTAGE (RR), or (LR) in the ACTIVE DAMPER SYSTEM DATA LIST with the HDS while moving the suspension stroke sensor arm through a complete stroke. Compare the voltage/rotation angle between the chart and the measurements.

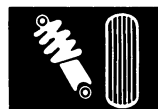
NOTE: The voltage should increase (decrease) within 90 degrees of the sensor arm rotation from the first voltage change point.



Is the voltage as specified?

YES—Replace the active damper control unit (see page 18-118). ■

NO—Replace the suspension stroke sensor (see page 22-229). ■



DTC 3-1: Yaw Rate-Lateral/Longitudinal Acceleration Sensor Range/Performance Problem (Yaw Rate Signal-Lateral Acceleration Signal Incorrect Correlation)

DTC 3-3: Yaw Rate-Lateral/Longitudinal Acceleration Sensor Malfunction (Lateral Acceleration Sensor)

DTC 3-6: Yaw Rate-Lateral/Longitudinal Acceleration Sensor Malfunction (Yaw Rate Sensor)

DTC 3-7: Yaw Rate-Lateral/Longitudinal Acceleration Sensor Range/Performance Problem (Wheel Speed Signal-Longitudinal Acceleration Signal Incorrect Correlation)

DTC 3-9: Yaw Rate-Lateral/Longitudinal Acceleration Sensor Malfunction (Longitudinal Acceleration Sensor)

DTC 3-A: Yaw Rate-Lateral/Longitudinal Acceleration Sensor Malfunction

NOTE: If DTC 8-6 is stored at the same time, troubleshoot DTC 8-6 first.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Test-drive the vehicle around a corner for 2 seconds or more.
5. Check for DTCs with the HDS.

Is DTC 3-1, 3-3, 3-6, 3-7, 3-9, or 3-A indicated?

YES—Go to step 6.

NO—Intermittent failure at this time. Check for poor or loose connections between the yaw rate-lateral/longitudinal acceleration sensor and the active damper control unit. ■

6. Check for VSA system DTCs with the HDS (see page 19-43).

Is any DTC indicated?

YES—Go to the indicated VSA system DTC's troubleshooting. ■

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Substitute a known-good yaw rate-lateral/longitudinal acceleration sensor (see page 19-100).
9. Turn the ignition switch ON (II).
10. Clear the DTC with the HDS.
11. Turn the ignition switch OFF.
12. Test-drive the vehicle around a corner for 2 seconds or more.
13. Check for DTCs with the HDS.

Is DTC 3-1, 3-3, 3-6, 3-7, 3-9, or 3-A indicated?

YES—Replace the active damper control unit (see page 18-118). ■

NO—Replace the original yaw rate-lateral/longitudinal acceleration sensor (see page 19-100). ■

Active Damper System

DTC Troubleshooting (cont'd)

DTC 3-4: Wheel Speed Signal Malfunction (from VSA Modulator-control Unit by F-CAN)

NOTE: If DTC 8-6 is stored at the same time, troubleshoot DTC 8-6 first.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Test-drive the vehicle around corners at 10 mph (15 k/m) or more.
5. Check for DTCs with the HDS.

Is DTC 3-4 indicated?

YES—Go to step 6.

NO—Intermittent failure at this time. Check for poor or loose connections between the VSA modulator-control unit and the active damper control unit. ■

6. Check for VSA system DTCs with the DTS (see page 19-43).

Is any DTC indicated?

YES—Go to the indicated VSA system DTC's troubleshooting. ■

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Substitute a known-good active damper control unit (see page 18-118).
9. Turn the ignition switch ON (II).
10. Clear the DTC with the HDS.
11. Turn the ignition switch OFF.
12. Test-drive the vehicle around corners at 10 mph (15 k/m) or more.
13. Check for DTCs with the HDS.

Is DTC 3-4 indicated?

YES—Replace the VSA modulator-control unit (see page 19-102). ■

NO—Replace the original active damper control unit (see page 18-118). ■



DTC 5-1: Active Damper Control Unit Internal Right-front Damper Coil Drive Circuit Stuck ON

DTC 5-2: Active Damper Control Unit Internal Left-front Damper Coil Drive Circuit Stuck ON

DTC 5-3: Active Damper Control Unit Internal Right-rear Damper Coil Drive Circuit Stuck ON

DTC 5-4: Active Damper Control Unit Internal Left-rear Damper Coil Drive Circuit Stuck ON

DTC 7-1: Active Damper Control Unit Internal Circuit Malfunction

DTC 7-2: Active Damper Control Unit Internal Circuit Malfunction

DTC 7-3: Active Damper Control Unit Internal Circuit Malfunction

DTC 7-4: Active Damper Control Unit Internal Circuit Malfunction

DTC 7-5: Active Damper Control Unit Internal Circuit Malfunction

DTC 14-1: Active Damper Control Unit Internal Circuit Malfunction

DTC 14-2: Active Damper Control Unit Internal Circuit Malfunction

DTC 14-5: Active Damper Control Unit Internal Circuit Malfunction

DTC 14-6: Active Damper Control Unit Internal Circuit Malfunction

DTC 14-7: Active Damper Control Unit Internal Circuit Malfunction

DTC 14-8: Active Damper Control Unit Internal Circuit Malfunction

DTC 14-A: Active Damper Control Unit Internal Circuit Malfunction

DTC 14-C: Active Damper Control Unit Internal Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Start the engine, and wait 5 seconds.
5. Check for DTCs with the HDS.

Is DTC 5-1, 5-2, 5-3, 5-4, 7-1, 7-2, 7-3, 7-4, 7-5, 14-1, 14-2, 14-5, 14-6, 14-7, 14-8, 14-A, or 14-C indicated?

YES—Replace the active damper control unit (see page 18-118). ■

NO—Intermittent failure at this time. Check for poor or loose connections at the active damper control unit.

Active Damper System

DTC Troubleshooting (cont'd)

DTC 5-5: Active Damper Control Unit Internal Right-front Damper Coil Drive Circuit Stuck OFF

DTC 5-6: Active Damper Control Unit Internal Left-front Damper Coil Drive Circuit Stuck OFF

DTC 5-7: Active Damper Control Unit Internal Right-rear Damper Coil Drive Circuit Stuck OFF

DTC 5-8: Active Damper Control Unit Internal Left-rear Damper Coil Drive Circuit Stuck OFF

1. Turn the ignition switch OFF.
2. Disconnect the appropriate damper coil 2P connector, then reconnect the connector.

DTC	Appropriate Damper Coil
5-5	Right-front
5-6	Left-front
5-7	Right-rear
5-8	Left-rear

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Turn the ignition switch OFF.
6. Start the engine.
7. Do the DAMPER FORCE OPERATION in the ACTIVE DAMPER SYSTEM INSPECTION MENU with the HDS.
8. Check for DTCs with the HDS.

Is DTC 5-5, 5-6, 5-7, or 5-8 indicated?

YES—Go to step 9.

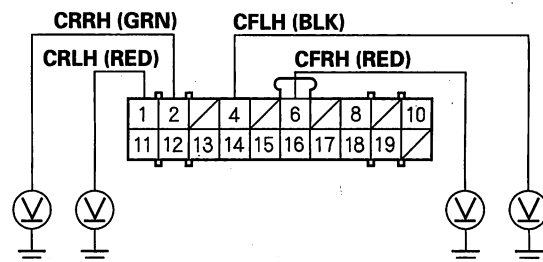
NO—Intermittent failure at this time. Check for poor or loose connections between the damper coil and the active damper control unit. ■

9. Turn the ignition switch OFF.

10. Disconnect active damper control unit connector A (20P).
11. Turn the ignition switch ON (II).
12. Measure voltage between body ground and the appropriate active damper control unit connector A (20P) terminal.

DTC	Active Damper Control Unit Connector Terminal
5-5	No. 6
5-6	No. 4
5-7	No. 2
5-8	No. 1

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)

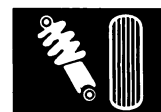


Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the appropriate damper coil and the active damper control unit, then go to step 18.

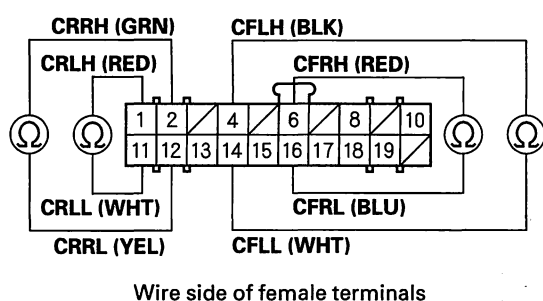
NO—Go to step 13.



13. Turn the ignition switch OFF.
14. Measure resistance between the appropriate active damper control unit connector A (20P) terminals (see table).

DTC	Active Damper Control Unit Connector Terminal	
5-5	No. 6	No. 16
5-6	No. 4	No. 14
5-7	No. 2	No. 12
5-8	No. 1	No. 11

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)



Is the resistance between 0.6—2.0 Ω ?

YES—Check for loose terminals in the active damper control unit connector A (20P). If the terminals are OK, replace the active damper control unit (see page 18-118), then go to step 20.

NO—Go to step 15.

15. Disconnect the appropriate damper coil 2P connector.

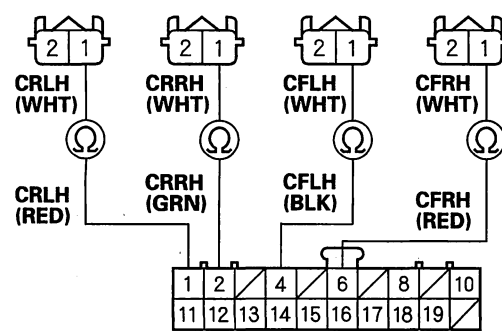
DTC	Appropriate Damper Coil
5-5	Right-front
5-6	Left-front
5-7	Right-rear
5-8	Left-rear

16. Check for continuity between the appropriate active damper control unit connector A (20P) terminal and the appropriate damper coil 2P connector terminal No. 1 (see table).

DTC	Active Damper Control Unit Connector Terminal	Appropriate Damper Coil
5-5	No. 6	Right-front
5-6	No. 4	Left-front
5-7	No. 2	Right-rear
5-8	No. 1	Left-rear

DAMPER COIL 2P CONNECTOR

Terminal side of female terminals



ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)

Wire side of female terminals

Is there continuity?

YES—Go to step 17.

NO—Repair open in the wire between the damper coil and the active damper control unit, then go to step 19.

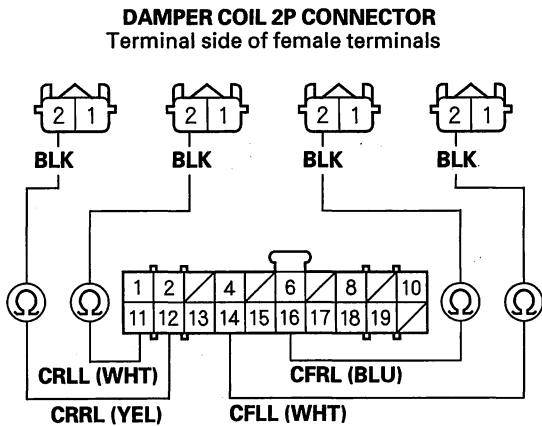
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Active Damper System

DTC Troubleshooting (cont'd)

17. Check for continuity between the appropriate active damper control unit connector A (20P) terminal and the appropriate damper coil 2P connector terminal No. 2 (see table).

DTC	Active Damper Control Unit Connector Terminal	Appropriate Damper Coil
5-5	No. 16	Right-front
5-6	No. 14	Left-front
5-7	No. 12	Right-rear
5-8	No. 11	Left-rear



Is there continuity?

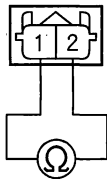
YES—Go to step 18.

NO—Repair open in the wire between the damper coil and the active damper control unit, then go to step 20.

18. On the damper, check for continuity between the appropriate damper coil terminals No. 1 and No. 2.

DTC	Appropriate Damper Coil
5-5	Right-front
5-6	Left-front
5-7	Right-rear
5-8	Left-rear

DAMPER COIL 2P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Repair open in the wire (CFRL, CFLL, CRRL, or CRLL line) between the damper coil and active damper control unit, then go to step 19.

NO—Replace the appropriate damper unit: Front (see page 18-24), rear (see page 18-42) then go to step 20.

19. Turn the ignition switch OFF.

20. Reconnect all connectors.

21. Turn the ignition switch ON (II).

22. Clear the DTC with the HDS.

23. Start the engine.

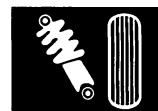
24. Do the DAMPER FORCE OPERATION in the ACTIVE DAMPER SYSTEM INSPECTION MENU with the HDS.

25. Check for DTCs with the HDS.

Is any DTC indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC 6-1: Active Damper Control Unit Internal Right-front Damper Coil Drive Circuit Current Lower Than Expected

DTC 6-2: Active Damper Control Unit Internal Left-front Damper Coil Drive Circuit Current Lower Than Expected

DTC 6-3: Active Damper Control Unit Internal Right-rear Damper Coil Drive Circuit Current Lower Than Expected

DTC 6-4: Active Damper Control Unit Internal Left-rear Damper Coil Drive Circuit Current Lower Than Expected

1. Turn the ignition switch OFF.
2. Disconnect the appropriate damper coil 2P connector, then reconnect the connector.

DTC	Appropriate Damper Coil
6-1	Right-front
6-2	Left-front
6-3	Right-rear
6-4	Left-rear

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Turn the ignition switch OFF.
6. Start the engine.
7. Do the DAMPER FORCE OPERATION in the ACTIVE DAMPER SYSTEM INSPECTION MENU with the HDS.
8. Check for DTCs with the HDS.

Is DTC 6-1, 6-2, 6-3, or 6-4 indicated?

YES—Go to step 9.

NO—Intermittent failure at this time. Check for poor or loose connections between the damper coil and the active damper control unit. ■

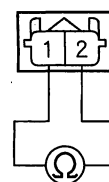
9. Turn the ignition switch OFF.

10. Disconnect the appropriate damper coil 2P connector.

DTC	Appropriate Damper Coil
6-1	Right-front
6-2	Left-front
6-3	Right-rear
6-4	Left-rear

11. On the damper, measure the resistance between the appropriate damper coil terminals No. 1 and No. 2.

DAMPER COIL 2P CONNECTOR



Terminal side of male terminals

Is the resistance between 0.6 – 2.0 Ω ?

YES—Repair open or high resistance in the wires between the damper coil and the active damper control unit, then go to step 12.

NO—Replace the appropriate damper unit: Front (see page 18-24), rear (see page 18-42) then go to step 12.

(cont'd)

Active Damper System

DTC Troubleshooting (cont'd)

12. Reconnect all connectors.
13. Turn the ignition switch ON (II).
14. Clear the DTC with the HDS.
15. Start the engine.
16. Do the DAMPER FORCE OPERATION in the ACTIVE DAMPER SYSTEM INSPECTION MENU with the HDS.
17. Check for DTCs with the HDS.

Is any DTC indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

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DTC 6-5: Active Damper Control Unit Internal Right-front Damper Coil Drive Circuit Current Higher Than Expected

DTC 6-6: Active Damper Control Unit Internal Left-front Damper Coil Drive Circuit Current Higher Than Expected

DTC 6-7: Active Damper Control Unit Internal Right-rear Damper Coil Drive Circuit Current Higher Than Expected

DTC 6-8: Active Damper Control Unit Internal Left-rear Damper Coil Drive Circuit Current Higher Than Expected

1. Turn the ignition switch OFF.
2. Disconnect the appropriate damper coil 2P connector, then reconnect the connector.

DTC	Appropriate Damper Coil
6-5	Right-front
6-6	Left-front
6-7	Right-rear
6-8	Left-rear

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Turn the ignition switch OFF.
6. Start the engine.
7. Do the DAMPER FORCE OPERATION in the ACTIVE DAMPER SYSTEM INSPECTION MENU with the HDS.
8. Check for DTCs with the HDS.

Is DTC 6-5, 6-6, 6-7, or 6-8 indicated?

YES—Go to step 9.

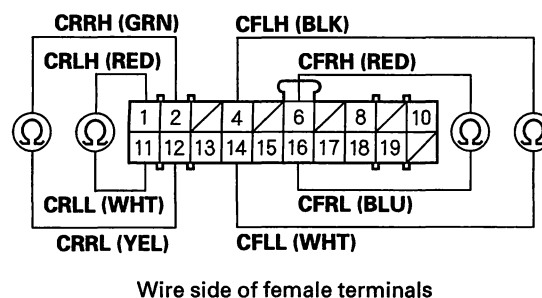
NO—Intermittent failure at this time. Check for poor or loose connections between the damper coil and the active damper control unit. ■

9. Turn the ignition switch OFF.

10. Disconnect active damper control unit connector A (20P).
11. Measure resistance between the appropriate active damper control unit connector A (20P) terminals (see table).

DTC	Active Damper Control Unit Connector Terminal	
6-5	No.6	No.16
6-6	No.4	No.14
6-7	No.2	No.12
6-8	No.1	No.11

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)



Is the resistance between 0.6–2.0 Ω?

YES—Replace the active damper control unit (see page 18-118), then go to step 16.

NO—Go to step 12.

12. Disconnect the appropriate damper coil 2P connector.

DTC	Appropriate Damper Coil
6-5	Right-front
6-6	Left-front
6-7	Right-rear
6-8	Left-rear

(cont'd)

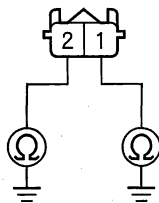
Active Damper System

DTC Troubleshooting (cont'd)

13. Check for continuity between body ground and the appropriate damper coil 2P connector terminals No. 1 and No. 2 individually (see table).

DTC	Damper Coil	
	Sign/Terminal	Sign/Terminal
6-5	CFRH/No.1	CFRL/No.2
6-6	CFLH/No.1	CFLL/No.2
6-7	CRRH/No.1	CRRL/No.2
6-8	CRLH/No.1	CRLL/No.2

DAMPER COIL 2P CONNECTOR



Terminal side of female terminals

Is there continuity?

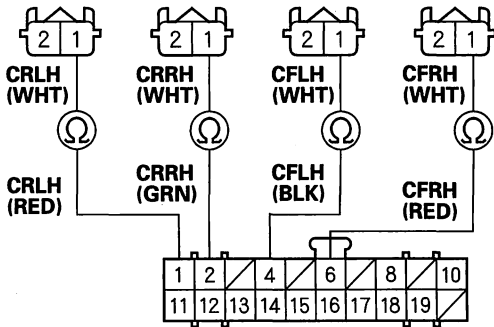
YES—Repair short to body ground in the wire between the appropriate damper coil and active damper control unit, then go to step 16.

NO—Go to step 14.

14. Check for continuity between the appropriate active damper control unit connector A (20P) terminal and the appropriate damper coil 2P connector terminal No. 1 (see table).

DTC	Active Damper Control Unit Connector Terminal	Appropriate Damper Coil
6-5	No. 6	Right-front
6-6	No. 4	Left-front
6-7	No. 2	Right-rear
6-8	No. 1	Left-rear

DAMPER COIL 2P CONNECTOR
Terminal side of female terminals



ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)
Wire side of female terminals

Is there continuity?

YES—Go to step 15.

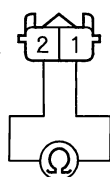
NO—Repair open in the wire between the damper coil and the active damper control unit, then go to step 16.



15. Check for continuity between the appropriate damper coil 2P connector terminals No. 1 and No. 2 (see table).

DTC	Damper Coil	
	Sign/Terminal	Sign/Terminal
6-5	CFRH/No.1	CFRL/No.2
6-6	CFLH/No.1	CFL/No.2
6-7	CRRH/No.1	CRRL/No.2
6-8	CRLH/No.1	CRL/No.2

DAMPER COIL 2P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wires between the appropriate damper coil and the active damper control unit, then go to step 16.

NO—Replace the appropriate damper unit: Front (see page 18-24), rear (see page 18-42), then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch ON (II).

18. Clear the DTC with the HDS.

19. Start the engine.

20. Do the DAMPER FORCE OPERATION in the ACTIVE DAMPER SYSTEM INSPECTION MENU with the HDS.

21. Check for DTCs with the HDS.

Is any DTC indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

Active Damper System

DTC Troubleshooting (cont'd)

DTC 6-9: Active Damper Control Unit Power Source Circuit (+B) Low Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Start the engine, and wait 5 seconds.
5. Check for DTCs with the HDS.

Is DTC 6-9 indicated?

YES—Go to step 6.

NO—Intermittent failure at this time. Check for poor or loose connections between the main under-hood fuse box and the active damper control unit. Check for a loose or poor ground at G302 and G401.■

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

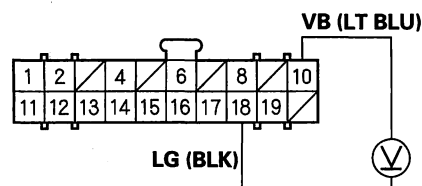
Is the fuse blown?

YES—Check for short to ground in the LT BLU wire between the main under-hood fuse box and the active damper control unit, then replace the fuse.■

NO—Reinstall the fuse, then go to step 8.

8. Measure voltage between active damper control unit connector A (20P) terminals No. 10 and No 18.

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)

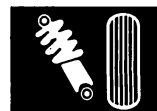


Wire side of female terminals

Is there battery voltage?

YES—Replace the active damper control unit (see page 18-118), then go to step 9.

NO—Repair open in the wire between the active damper control unit and the No. 5 (30 A) fuse in the main under-hood fuse box, or an open or poor connection between active damper control unit connector A terminal No. 18 and body ground (G302), then go to step 9.



9. Turn the ignition switch ON (II).
10. Clear the DTC with the HDS.
11. Start the engine.
12. Do the DAMPER FORCE OPERATION in the ACTIVE DAMPER SYSTEM INSPECTION MENU with the HDS.
13. Check for DTCs with the HDS.

Is any DTC indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

Active Damper System

DTC Troubleshooting (cont'd)

DTC 7-6: Active Damper Control Unit Internal Circuit Malfunction (Fail Safe Relay Stuck On)

NOTE: The fail safe relay is built into the active damper control unit.

1. Turn the ignition switch OFF.
2. Check that the all four damper coil 2P connectors are properly connected.

Are the connectors OK?

YES—Go to step 3.

NO—Reconnect and check the connectors, then go to step 12.

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Turn the ignition switch OFF.
6. Start the engine, and wait 5 seconds.
7. Check for DTCs with the HDS.

Is DTC 7-6 indicated?

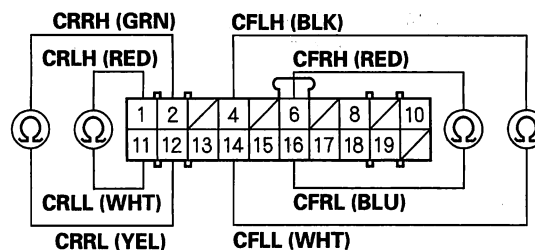
YES—Go to step 8.

NO—Intermittent failure at this time. Check for poor or loose connections between the damper coil and the active damper control unit. ■

8. Turn the ignition switch OFF.
9. Disconnect active damper control unit connector A (20P).

10. Check for continuity between the active damper control unit connector A (20P) terminals individually.

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Check for poor or loose connections in the active damper control unit, clean body ground terminals G302 and G401. If the connections and the terminal are OK, replace the active damper control unit (see page 18-118), then go to step 11.

NO—Repair open in the wires between the damper coil and active damper control unit, then go to step 11.

11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Clear the DTC with the HDS.
14. Start the engine.
15. Do the DAMPER FORCE OPERATION in the ACTIVE DAMPER SYSTEM INSPECTION MENU with the HDS.
16. Check for DTC's with the HDS.

Is any DTC indicated?

YES—Go to the indicated DTC's troubleshooting.

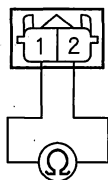
NO—Troubleshooting is complete. ■

Active Damper System

DTC Troubleshooting (cont'd)

10. On the damper, check for continuity between damper coil 2P connect or terminals No. 1 and No. 2 for all four dampers.

DAMPER COIL 2P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Repair open in the wire between the damper coil and active damper control unit, then go to step 11.

NO—Replace the damper unit: Front (see page 18-24), rear (see page 18-42), then go to step 11.

11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Clear the DTC with the HDS.
14. Start the engine.
15. Do the DAMPER FORCE OPERATION in the ACTIVE DAMPER SYSTEM INSPECTION MENU with the HDS.
16. Check for DTCs with the HDS.

Is any DTC indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC 8-2: Sensor Reference Voltage Malfunction (SVCC Line)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Start the engine, and wait 5 seconds.
5. Check for DTCs with the HDS.

Is DTC 8-2 indicated?

YES—Go to step 6.

NO—Intermittent failure at this time. Check for poor or loose connections between the vertical acceleration sensor, the suspension stroke sensor, and the active damper control unit. ■

6. Clear the DTC with the HDS.
7. Turn the ignition switch OFF.
8. Disconnect the right-front suspension stroke sensor 3P connector.
9. Start the engine, and wait 5 seconds.
10. Check for DTCs with the HDS.

Is DTC 8-2 indicated?

YES—Go to step 11.

NO—Replace the right-front suspension stroke sensor (see page 22-229). ■

11. Clear the DTC with the HDS.
12. Turn the ignition switch OFF.
13. Disconnect the right-rear suspension stroke sensor 3P connector.
14. Start the engine, and wait 5 seconds.
15. Check for DTCs with the HDS.

Is DTC 8-2 indicated?

YES—Go to step 16.

NO—Replace the right-rear suspension stroke sensor (see page 22-229). ■

16. Clear the DTC with the HDS.
17. Turn the ignition switch OFF.
18. Disconnect the front vertical acceleration sensor 3P connector.
19. Start the engine, and wait 5 seconds.
20. Check for DTCs with the HDS.

Is DTC 8-2 indicated?

YES—Go to step 21.

NO—Replace the front vertical acceleration sensor (see page 18-119). ■

21. Clear the DTC with the HDS.
22. Turn the ignition switch OFF.
23. Disconnect the right-rear vertical acceleration sensor 3P connector.
24. Start the engine, and wait 5 seconds.
25. Check for DTCs with the HDS.

Is DTC 8-2 indicated?

YES—Go to step 26.

NO—Replace the right-rear vertical acceleration sensor (see page 18-119). ■

26. Clear the DTC with the HDS.
27. Turn the ignition switch OFF.
28. Disconnect the left-rear vertical acceleration sensor 3P connector.
29. Start the engine, and wait 5 seconds.
30. Check for DTCs with the HDS.

Is DTC 8-2 indicated?

YES—Go to step 31.

NO—Replace the left-rear vertical acceleration sensor (see page 18-119). ■

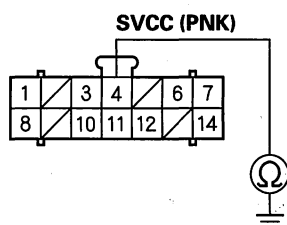
(cont'd)

Active Damper System

DTC Troubleshooting (cont'd)

31. Turn the ignition switch OFF.
32. Disconnect active damper control unit connector B (14P).
33. Check for continuity between body ground and active damper control unit connector B (14P) terminal No. 4.

ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)



Wire side of female terminals

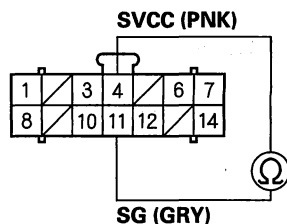
Is there continuity?

YES—Repair short to body ground in the wire between the right-front/right-rear suspension stroke sensors, the front/right-rear/left-rear vertical acceleration sensors, and the active damper control unit. ■

NO—Go to step 34.

34. Check for continuity between active damper control unit connector B (14P) terminals No. 4 and No. 11.

ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires. ■

NO—Replace the active damper control unit (see page 18-118). ■

DTC 8-3: Sensor Reference Voltage Malfunction (HVCC Line)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Start the engine, and wait 5 seconds.
5. Check for DTCs with the HDS.

Is DTC 8-3 indicated?

YES—Go to step 6.

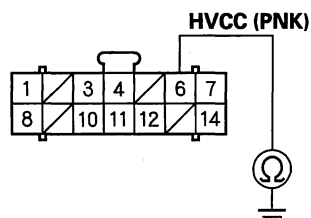
NO—Intermittent failure at this time. Check for poor or loose connections between the suspension stroke sensor, the headlight leveling control unit, and the active damper control unit. ■

6. Turn the ignition switch OFF.
7. Disconnect the headlight leveling control unit 16P connector.
8. Disconnect the left-front suspension stroke sensor 3P connector.
9. Disconnect active damper control unit connector B (14P) connector.



10. Check for continuity between body ground and active damper control unit connector B (14P) terminal No. 6.

ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)



Wire side of female terminals

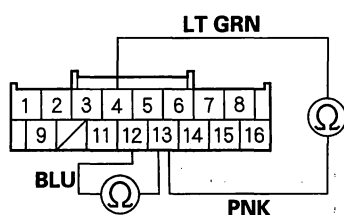
Is there continuity?

YES—Repair short to body ground in the wire between the left-front suspension stroke sensor, the headlight leveling control unit, and the active damper control unit. ■

NO—Go to step 11.

11. Check for continuity between the headlight leveling control unit connector (16P) terminal No. 13 and terminals No. 4 and No. 12 individually.

HEADLIGHT LEVELING CONTROL UNIT 16P CONNECTOR
Wire side of female terminals



Is there continuity?

YES—Repair short between the wires. ■

NO—Go to step 12.

12. Reconnect all connectors.
13. Start the engine, and wait 5 seconds.

14. Check the HVCC VOLTAGE in the ACTIVE DAMPER SYSTEM DATA LIST with the HDS.

Is there 4.36 V or more indicated?

YES—Replace the active damper control unit (see page 18-118). ■

NO—Go to step 15.

15. Turn the ignition switch OFF.
16. Substitute a known-good headlight leveling control unit.
17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Clear the DTC with the HDS.
20. Start the engine, and wait 5 seconds.
21. Check for DTCs with the HDS.

Is DTC 8-3 indicated?

YES—Replace the active damper control unit (see page 18-118). ■

NO—Replace the original headlight leveling control unit. ■

Active Damper System

DTC Troubleshooting (cont'd)

DTC 8-5: F-CAN Malfunction (Active Damper Control Unit Lost Communication with Yaw Rate-lateral/Longitudinal Acceleration Sensor)

1. Turn the ignition switch ON (II).
2. Clear the active damper system, and VSA system DTC with the HDS.
3. Turn the ignition switch OFF.
4. Start the engine, and wait 5 seconds.
5. Check for DTCs with the HDS.

Is DTC 8-5 indicated?

YES—Go to step 6.

NO—Intermittent failure at this time. Check for poor or loose connections between the yaw rate-lateral/longitudinal acceleration sensor and the active damper control unit. ■
6. Check for VSA system DTCs with the HDS (see page 19-43).

Are any VSA system DTCs indicated?

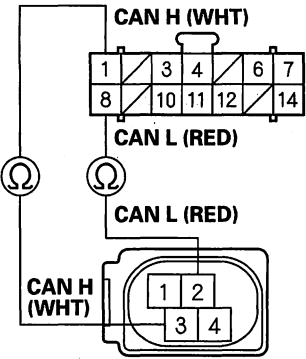
YES—Go to the indicated VSA DTC's troubleshooting. ■

NO—Go to step 7.
7. Turn the ignition switch OFF.
8. Wait 30 seconds or more.
9. Disconnect the yaw rate-lateral/longitudinal acceleration sensor 4P connector.
10. Disconnect active damper control unit connector B (14P) connector.

11. Check for continuity between the active damper control unit connector B (14P) terminals and the yaw rate-lateral/longitudinal acceleration sensor 4P connector terminals individually (see table).

Sign	Active Damper Control Unit Connector Terminal	Yaw Rate-lateral /Longitudinal Acceleration Sensor Terminal
CAN L	No. 8	No. 2
CAN H	No. 1	No. 3

ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)
Wire side of female terminals

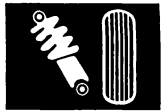


YAW RATE-LATERAL/LONGITUDINAL
ACCELERATION SENSOR
4P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the yaw rate-lateral/longitudinal acceleration sensor and the active damper control unit. ■



12. Substitute a known-good active damper control unit (see page 18-118).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Clear the DTC with the HDS.
16. Start the engine, and wait 5 seconds.
17. Check for DTCs with the HDS.

Is DTC 8-5 indicated?

YES—Replace the yaw rate-lateral/longitudinal acceleration sensor (see page 19-100). ■

NO—Replace the original active damper control unit (see page 18-118). ■

DTC 8-6: F-CAN Malfunction (Active Damper Control Unit Lost Communication with VSA Modulator-control Unit)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Start the engine, and wait 5 seconds.
5. Check for DTCs with the HDS.

Is DTC 8-6 indicated?

YES—Go to step 6.

NO—Intermittent failure at this time. Check for poor or loose connections between the VSA modulator-control unit and the active damper control unit. ■

6. Check for VSA system DTCs with the HDS (see page 19-43).

Are any VSA system DTCs indicated?

YES—Go to the indicated DTC's troubleshooting, then go to step 17.

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Wait 30 seconds or more.
9. Disconnect the VSA modulator-control unit 46P connector.
10. Disconnect active damper control unit connector B (14P) connector.

(cont'd)

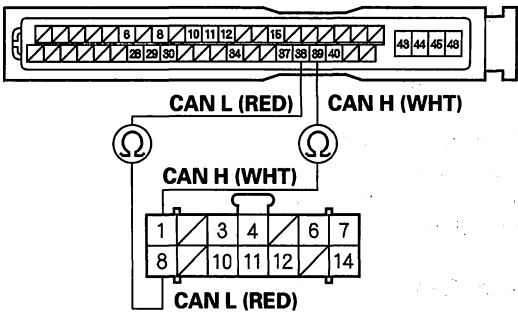
Active Damper System

DTC Troubleshooting (cont'd)

11. Check for continuity between the active damper control unit connector B (14P) terminals and the VSA modulator-control unit 46P connector terminals individually (see table).

Sign	Active Damper Control Unit Connector Terminal	VSA Modulator-control Unit Terminal
CAN L	No. 8	No. 38
CAN H	No. 1	No. 39

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR
Wire side of female terminals



ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)
Wire side of female terminals

Is there continuity?

YES—Go to step 12

NO—Repair open in the wire between the VSA modulator-control unit and the active damper control unit. ■

12. Substitute a known-good active damper control unit (see page 18-118).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Clear the DTC with the HDS.
16. Start the engine, and wait 5 seconds.
17. Check for DTCs with the HDS.

Is DTC 8-6 indicated?

YES—Replacement the VSA modulator-control unit (see page 19-102). ■

NO—Replacement the original active damper control unit (see page 18-118). ■



DTC 14-B: Active Damper Control Unit Power Supply Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and raise the engine speed to 2,000 rpm.
4. Check and note IG1 VOLTAGE in the ACTIVE DAMPER SYSTEM DATA LIST with the HDS within 40 seconds after starting the engine.

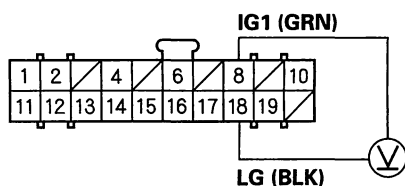
Was there within 9.3—17.5 V for 30 seconds continuously?

YES—Go to step 9

NO—Go to step 5.

5. Wait 40 seconds.
6. Start the engine, then raise the engine speed to 2,000 rpms.
7. Measure voltage between active damper control unit connector A (20P) terminal No.8 and terminal No. 18.

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there battery voltage?

YES—If the voltage is above 17.5 V, check the battery (see page 22-76) and troubleshoot the alternator regulator circuit (see page 4-30), then go to step 8. If the voltage is normal, replace the active damper control unit (see page 18-118).

NO—Repair poor connection between under-dash fuse/relay box connector F (14P) terminal No. 8, and active damper control unit connector A (20P) terminal No. 8, or poor ground at G302 and G401, then go to step 8.

8. Clear the DTC with the HDS.

9. Start the engine.

10. Do the DAMPER FORCE OPERATION in the ACTIVE DAMPER SYSTEM INSPECTION MENU with the HDS.

11. Check for DTCs with the HDS.

Is any DTC indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

Active Damper System

Symptom Troubleshooting

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

NOTE: Check for gauges DTCs with the HDS (see page 22-3). If gauges DTCs are stored, troubleshoot those DTCs first.

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

Is there communication with all vehicle systems?

YES—Check for loose terminals in the gauge control module connector A (12P). If necessary, substitute a known-good gauge control module, then recheck. If it is OK, replace the original gauge control module (see page 22-337). ■

NO—If the HDS does not communicate with all the systems of the vehicle, troubleshoot the DLC circuit (see page 11-223). If the HDS does not communicate with only the active damper control unit, go to step 2.

2. Turn the ignition switch OFF.
3. Check the No. 20 (7.5 A) fuse in the under-dash fuse /relay box.

Is the fuse blown?

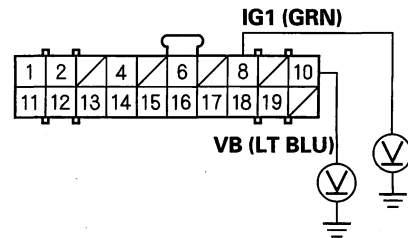
YES—Install the No.20 (7.5 A) fuse, and recheck. If the fuse continues to blow, check for short to body ground in the wire between the No. 20 (7.5 A) fuse and the active damper control unit. ■

NO—Reinstall the fuse, then go to step 4.

4. Turn the ignition switch ON (II).

5. Measure voltage between body ground and active damper control unit connector A (20P) terminals No. 8, and No. 10.

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)

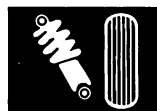


Wire side of female terminals

Is there battery voltage?

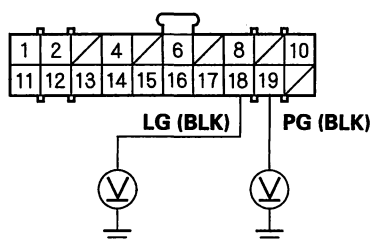
YES—Go to step 6.

NO—Repair open in the wire between the active damper control unit and the No. 20 (7.5 A) fuse in the under-dash fuse/relay box or between the active damper control unit and the under-dash fuse/relay box. ■



6. Measure voltage between body ground and active damper control unit connector A (20P) terminal No. 18 and No. 19 individually.

ACTIVE DAMPER CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there less than 0.5 V?

YES—Go to step 7.

NO—Repair open in the wire between the active damper control unit and body ground (G401 or G302). ■

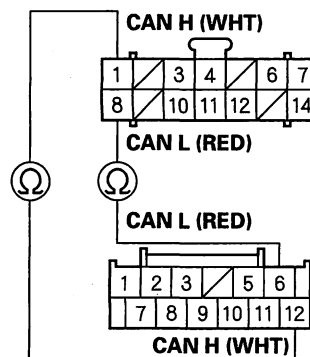
7. Turn the ignition switch OFF.
8. Disconnect gauge control module connector A (12P).
9. Disconnect active damper control unit connector A (20P).

10. Check for continuity between the active damper control unit connector B (14P) terminals and the gauge control module connector A (12P) terminals individually (see table).

Sign	Active Damper Control Unit Connector Terminal	Gauge Control Module Terminal
CAN L	No. 8	No. 6
CAN H	No. 1	No. 12

ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)

Wire side of female terminals



GAUGE CONTROL MODULE CONNECTOR A (12P)

Wire side of female terminals

Is there continuity?

YES—Check for loose terminals in the active damper control unit connectors A (20P)/B (14P). If necessary, substitute a known-good active damper control unit, then recheck. If it is OK, replace the original active damper control unit (see page 18-118). ■

NO—Repair open in the wire between the gauge control module and the active damper control unit. ■

Active Damper System

Symptom Troubleshooting (cont'd)

Active damper system switch does not work (damper mode cannot be selected)

1. Turn the ignition switch ON (II).
2. Check for the ACTIVE DAMPER SYSTEM SWITCH in the ACTIVE DAMPER SYSTEM DATA LIST with the HDS when pushing the active damper system switch.

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

YES—Check for loose terminals in the gauge control module connector B (24P). If necessary, substitute a known-good gauge control module, then recheck. If it is OK, replace the original gauge control module (see page 22-337). ■

NO—Go to step 3.

3. Turn the ignition switch OFF.
4. Check the No. 21 (7.5 A) fuse in the under-dash fuse /relay box.

Is the fuse OK?

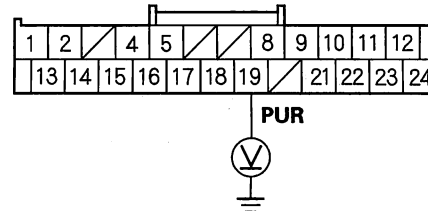
YES—Go to step 5.

NO—Replace the blown fuse. ■

5. Disconnect gauge control module connector B (24P).
6. Turn the ignition switch ON (II).
7. Push the active damper system switch, and turn it ON.

8. Measure voltage between body ground and gauge control module connector B (24P) terminal No. 19.

GAUGE CONTROL MODULE CONNECTOR B (24P)

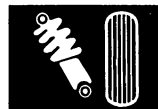


Wire side of female terminals

Is there battery voltage?

YES—Check for loose terminals in the gauge control module connector B (24P). If necessary, substitute a known-good gauge control module, then recheck. If it is OK, replace the original gauge control module (see page 22-337). ■

NO—Go to step 9.



9. Turn the ignition switch OFF.
10. Disconnect active damper system switch 5P connector.
11. Check the active damper system switch (see page 18-121).

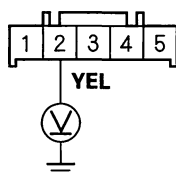
Is the active damper system switch OK?

YES—Go to step 12.

NO—Replace the active damper system switch (see page 18-121). ■

12. Turn the ignition switch ON (II).
13. Measure voltage between body ground and active damper system switch 5P connector terminal No. 2.

ACTIVE DAMPER SYSTEM SWITCH 5P CONNECTOR



Wire side of female terminals

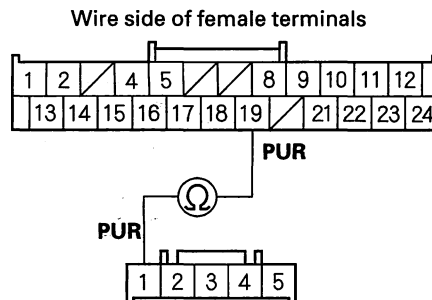
Is there battery voltage?

YES—Go to step 14.

NO—Repair open in the wire between the under-dash fuse/relay box and the active damper switch. ■

14. Check for continuity between gauge control module connector B (24P) terminal No. 19 and the active damper system switch 5P connector terminal No. 1.

GAUGE CONTROL MODULE CONNECTOR B (24P)



ACTIVE DAMPER SYSTEM SWITCH 5P CONNECTOR

Wire side of female terminals

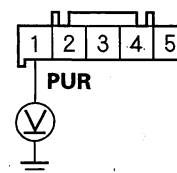
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the gauge control modulator and the active damper system switch. ■

15. Turn the ignition switch ON (II).
16. Measure voltage between body ground and active damper system switch 5P connector terminal No. 1.

ACTIVE DAMPER SYSTEM SWITCH 5P CONNECTOR



Wire side of female terminals

Is there more than 0.1 V?

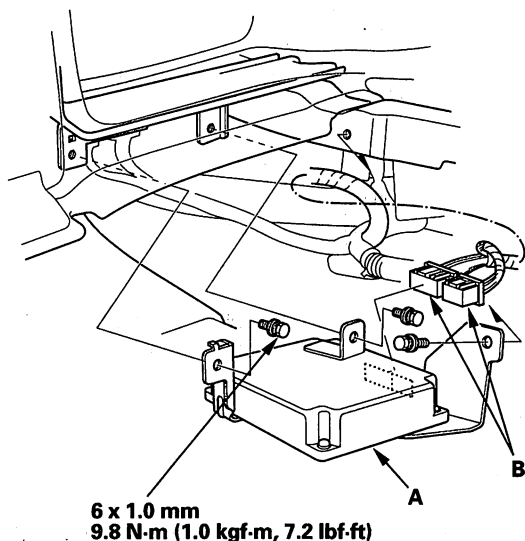
YES—Repair short to power in the wire between the gauge control module and the active damper system switch. ■

NO—Check for loose terminals in the active damper control unit connectors A (20P)/B (14P). If necessary, substitute a known-good active damper control unit, then recheck. If it is OK, replace the original active damper control unit (see page 18-118). ■

Active Damper System

Active Damper Control Unit Replacement

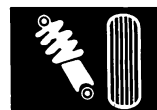
1. Turn the ignition switch OFF.
2. Remove the cargo rear trim panel (see page 20-90).
3. Remove the mounting bolts ,and move the active damper control unit (A).



4. Disconnect the active damper control unit connectors (B).
5. Install the active damper control unit in the reverse order of removal.

NOTE: Do not pinch the wire harnesses between the frame and the active damper control unit.

6. Do the memorizing rear suspension full rebound position (see page 18-54).
7. Start the engine, then make sure there are no active damper system DTCs with the HDS (see page 18-53).
8. Do the DAMPER FORCE OPERATION in the ACTIVE DAMPER SYSTEM INSPECTION MENU with the HDS, then make sure the all four damper units function normally.
9. Test-drive the vehicle, and check that the active damper system indicator does not come on (see page 18-51).

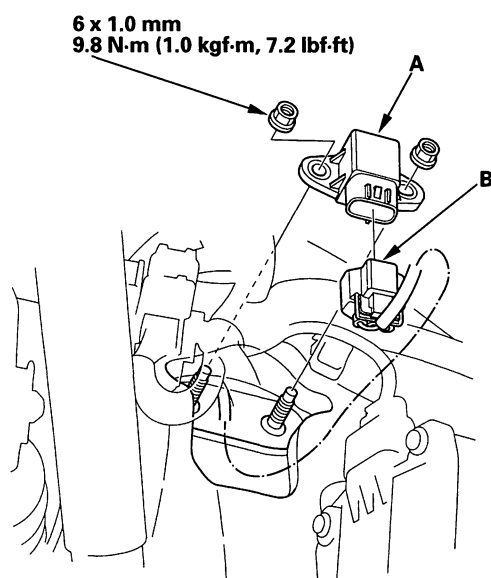


Vertical Acceleration Sensor Replacement

NOTE: This vehicle has one front vertical acceleration sensor, and two rear vertical acceleration sensors on both right and left sides.

Front

1. Turn the ignition switch OFF.
2. Remove the driver's dashboard undercover (see page 20-120).
3. Remove the TPMS control unit (see page 18-162).
4. Remove the sensor mounting nuts, and move the vertical acceleration sensor (A).

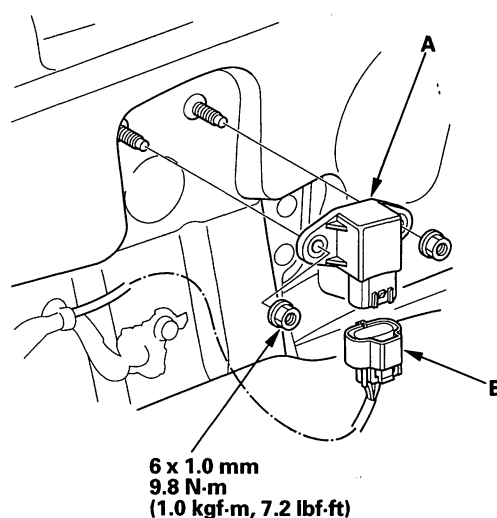


5. Disconnect the vertical acceleration sensor connector (B).
6. Install the vertical acceleration sensor in the reverse order of removal.
7. Test-drive the vehicle, and check that the active damper system indicator does not come on (see page 18-51).

Rear

1. Turn the ignition switch OFF.
2. Remove the appropriate side of the rear side trim panel (see page 20-92).
3. Remove the sensor mounting nuts, and move the vertical acceleration sensor (A).

NOTE: The illustration shows the left side of the vehicle, the right side is similar.



4. Disconnect the vertical acceleration sensor connector (B).
5. Install the vertical acceleration sensor in the reverse order of removal.
6. Test-drive the vehicle, and check that the active damper system indicator does not come on (see page 18-51).

Active Damper System

Vertical Acceleration Sensor Inspection

1. Turn the ignition switch OFF.

2. Remove the vertical acceleration sensor (see page 18-119). Do not disconnect the sensor connector.

3. Connect the HDS to the data link connector (DLC) (see page 18-53).

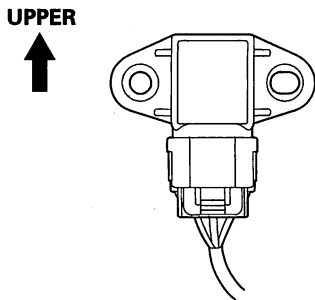
4. Start the engine, and wait 5 seconds.

5. With the HDS, check the VERTICAL_S VOLTAGE (F), (RR), or (LR) in the active damper system DATA LIST at a "normal", "lay down", and "top down" each sensor positions by moving it (see table).
6. If the voltages shown on the HDS are within the specified voltage in the all positions, the sensor is OK. If the voltages are out of specification in only one position, the sensor is fault.

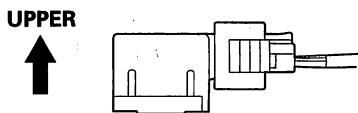
7. Turn the ignition switch OFF.

8. Install the vertical acceleration sensor in the proper position (see page 18-119).

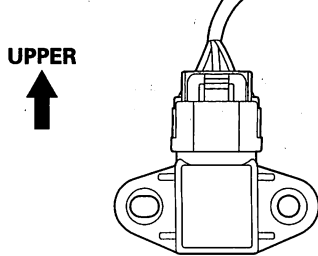
NORMAL POSITION



LAY DOWN POSITION



TOP DOWN POSITION

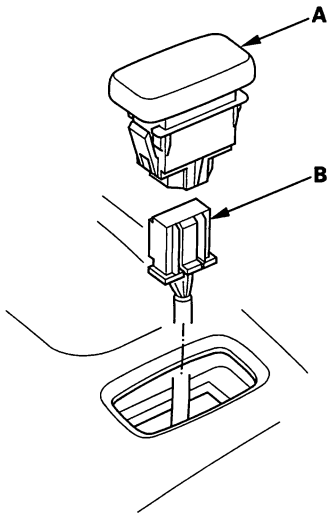


Sensor position	Specified voltage
Normal	2.2—2.8 V
Lay down	3.2—3.8 V
Top down	4.2—4.8 V



Active Damper System Switch Test

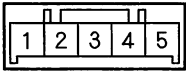
- 1. Turn the ignition switch OFF.
- 2. Remove the center console (see page 20-107).
- 3. Push out the active damper system switch (A) from the back of center console.



- 4. Disconnect the active damper system switch connector (B).

- 5. Check for continuity between the active damper system switch terminals in each switch position according to the table.

ACTIVE DAMPER SYSTEM SWITCH 5P CONNECTOR



Terminal side of male terminals

Terminal Position	1	2	3	4	5
OFF		○	○	○	○
ON	○	○	○	○	○

- 6. If the continuity is not as specified, replace the illumination bulb or the switch.

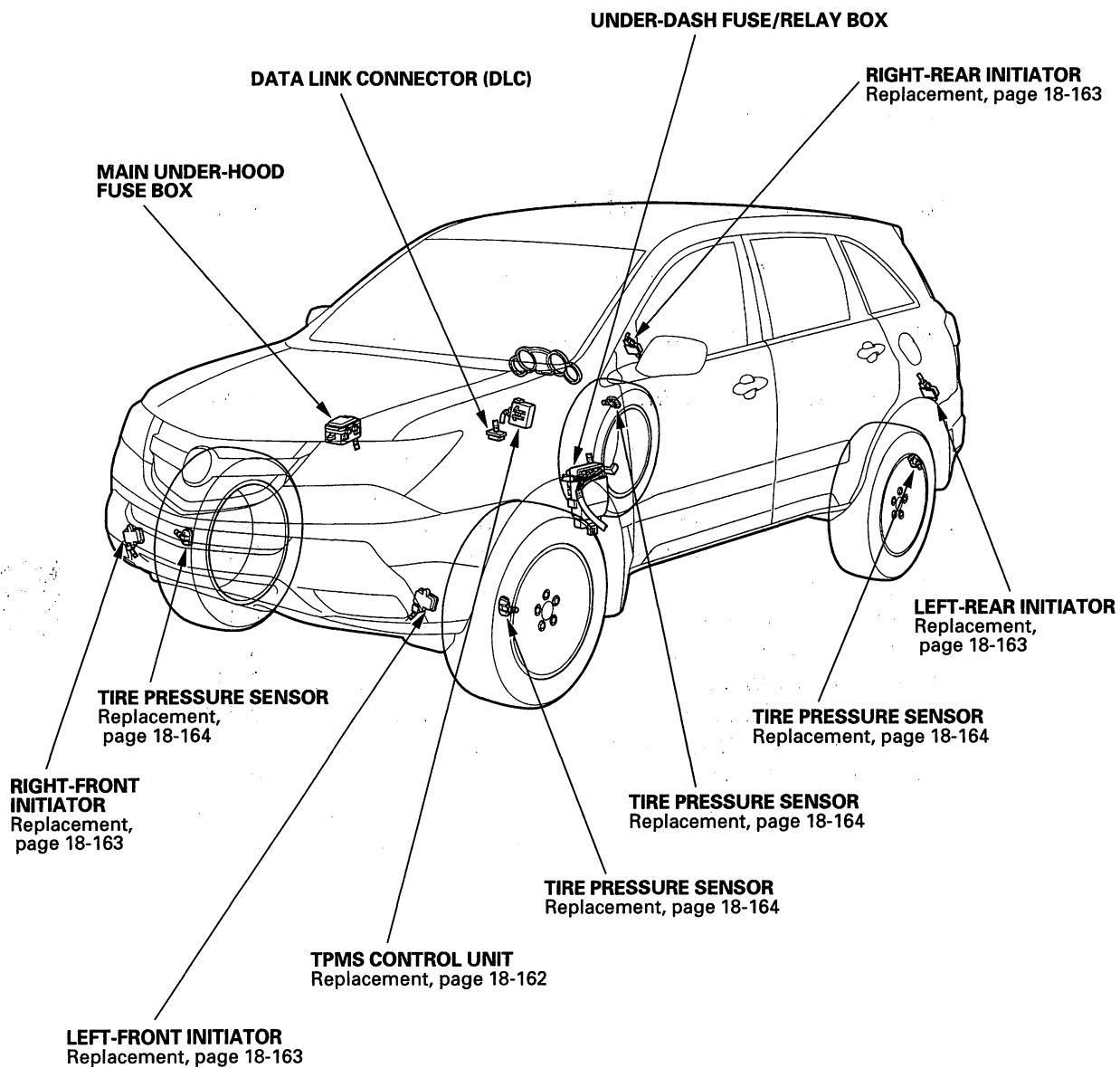
BACK

Suspension

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Component Location Index

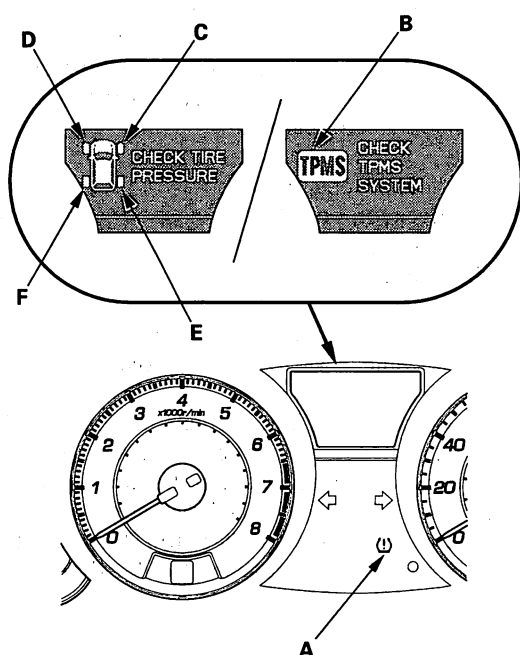


General Troubleshooting Information

System Indicator Location

The system has six indicators.

- The low pressure indicator (A)
- The TPMS indicator (B)
- The right-front (RF) tire indicator (C)
- The left-front (LF) tire indicator (D)
- The right-rear (RR) tire indicator (E)
- The left-rear (LR) tire indicator (F)



How TPMS Works

The TPMS (tire pressure monitoring system) has six indicators: four tire indicators (on the multi-information display), a low pressure indicator (LED indicator), and a TPMS indicator (on the multi-information display). When the TPMS control unit detects low pressure in a tire, or a problem in the system, it turns on the appropriate indicator(s).

- If low tire pressure is detected, the low pressure indicator and the appropriate tire indicator(s) come on.
- If a problem in the system is detected, the TPMS indicator comes on.
- If low tire pressure and a problem in the system are detected, only the TPMS indicator comes on.

If the system is OK, the low pressure indicator should come on when you turn the ignition switch ON (II), and then go off 2 seconds later. If it doesn't, there is a problem with the system.

If the system detects low pressure in any of the four tires, the low pressure indicator and the appropriate tire indicator(s) will come on, and the control unit will set one or more of these codes:

DTC 11, 13, 15, 17. When the tire pressure returns to normal, the control unit will turn off the indicators and store the DTC(s). However, if the control unit detects a problem in the system during an indication of low tire pressure, it will turn off the low pressure indicator and tire indicators, store the DTC(s), and turn on the TPMS indicator.

NOTE: Tire pressures will increase slightly as the temperature in the tires rises during driving at highway speeds. Pressures will also increase or decrease slightly with changes in outside air temperature. A temperature change of about 18 °F (10 °C) will change tire pressure by about 10 kPa (0.1 kgf/cm², 1.5 psi). If the temperature drops, tire pressure could decrease just enough to turn on the low pressure indicator and tire indicator(s), but later as tire temperature increases, the tire pressure could increase enough to turn them off. To resolve a complaint of such intermittent indications, confirm and clear the stored DTC(s) and check the tire pressures. Then explain to the customer how temperature changes can affect the system, especially when tire pressures are near the low end of the TPMS normal range - 168 to 220 kPa (1.7 to 2.2 kgf/cm², 24 to 32 psi).

If a problem is detected in the system, most DTCs will cause the TPMS indicator to come on and stay on until the system returns to normal. If DTC 45, 61, 63, 65, 67, 81, 83, or 85 is set, the TPMS indicator will go off only when the ignition switch is turned off.

If a flat tire is replaced with the spare tire, and the flat tire is stored in the trunk area or the cabin, the low pressure indicator will stay on, but the appropriate tire indicator will go off. This prevents the client from thinking there is a problem with the spare tire. When the flat tire is taken out of the vehicle for repair, the TPMS indicator will come on (DTC 32, 34, 36, or 38) because the system is no longer receiving the signal from the tire's transmitter.

(cont'd)

General Troubleshooting Information (cont'd)

Problems That Are Not System Faults

- **Tire Sealant**
Fluid sealant used to repair a punctured tire can damage the tire pressure sensor mounted on each wheel. It can prevent the system from detecting the correct tire pressure, which sets a DTC 11, 13, 15, or 17 even though the system is normal.
- **Cold Weather**
When the weather is extremely cold - about -40°F (-40°C) or colder - the output of the lithium battery in each tire pressure sensor may drop far enough that the control unit sets a DTC for low battery voltage (31, 33, 35, or 37) even though the system is normal.
- **Non-TPMS Wheels**
Vehicles equipped with TPMS must use wheels made for the system. Every TPMS wheel has an exclusive mark; do not use any other type of wheel.

How a Diagnostic Trouble Code (DTC) is Set

- When the system detects a problem, the TPMS control unit sets a code, but shifts to fail-safe mode, and will not alert the driver to low tire pressures.
- If the TPMS control unit loses power, or fails, the TPMS indicator will come on, but no DTC will be set.
- The memory can hold all the DTCs that could possibly be set. However, when the same DTC is detected more than once, the most recent one overwrites the previous one, so only the latest DTC of each type is stored.
- DTCs are indicated in ascending order, not in the order they occurred.
- Set DTCs are stored in the EEPROM (nonvolatile memory), they cannot be cleared by disconnecting the battery. To clear a DTC, connect the HDS (Honda Diagnostic System) to the data link connector (DLC), and follow the screen prompts.

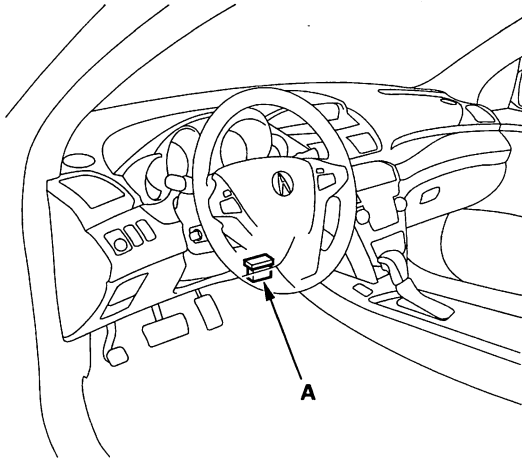
How to Troubleshoot DTCs

DTC troubleshooting procedures assume the cause of the problem is still present and the TPMS indicator is still on. (NOTE: The TPMS indicator comes on for DTCs 11, 13, 15, and 17 only if the low tire pressure indication is false, caused by a problem in the system.) Do not use a troubleshooting procedure unless the system has set the DTC listed for it.

1. Ask the customer to describe the conditions when the indicator came on, and try to reproduce the same conditions for troubleshooting. Find out if the customer checked and/or adjusted tire pressures since the indicator came on.
2. If an indicator does not come on during the test-drive, check for loose terminals, poor contact due to damaged terminals, etc. before you start troubleshooting.
3. After troubleshooting, clear the DTCs, and test-drive the vehicle. Make sure no indicators come on.
4. Check for other unit DTCs which are connected via F-CAN. If there are DTCs that are related to F-CAN, the most likely cause was that the ignition switch was turned ON (II) with the TPMS control unit connector disconnected. Clear the DTCs. Check for PGM-FI and TPMS codes, and troubleshoot those first.

How to Retrieve DTCs

1. With the ignition switch OFF, connect the HDS (Honda Diagnostic System) to the data link connector (DLC) (A) located under the driver's side of the dashboard.



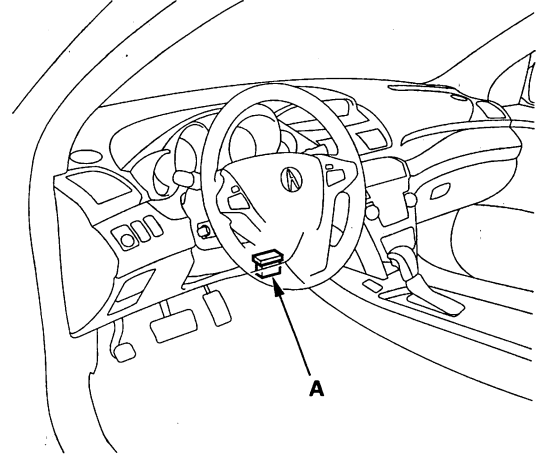
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the TPMS control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-223).
4. Follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the DTC Troubleshooting.

NOTE: See the HDS Help menu for specific instructions.

5. Turn the ignition switch OFF.

How to Clear DTCs

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



2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the TPMS control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-223).
4. Clear the DTC(s) by following the screen prompts on the HDS.

NOTE: See the HDS Help menu for specific instructions.

5. Turn the ignition switch OFF.

Memorizing the Tire Pressure Sensor ID

Memorizing a Tire Pressure Sensor ID

When a tire pressure sensor is replaced, the sensor ID must be memorized by the TPMS control unit.

NOTE: To ensure the control unit memorizes the correct ID, the vehicle with the new sensor must be at least 10 ft (3 m) from any other TPMS pressure sensor not installed on that vehicle.

Memorizing a Sensor ID Automatically

After rotating the tires or replacing a tire pressure sensor, drive the vehicle for at least 40 seconds at a speed of 15 mph (24 km/h) or more, and all the sensor IDs will be memorized automatically.

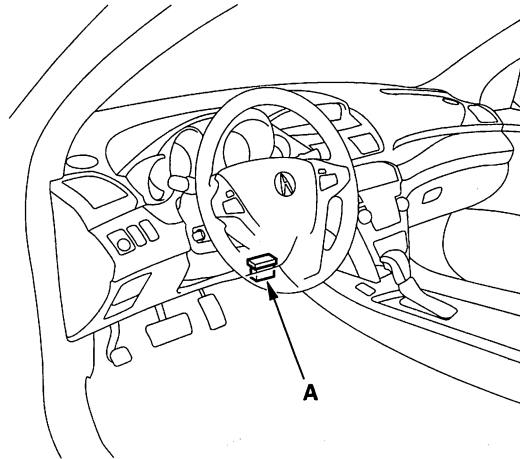
NOTE:

- When replacing the TPMS control unit, use the HDS to memorize IDs.
- After the IDs are memorized, reduce the pressure in all four tires to less than the appropriate specification, and check to see that the four tire indicators come on.

Memorize the ID with the HDS

The HDS can memorize the ID of a new tire pressure sensor or a previously memorized ID.

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



2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the TPMS control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-223).
4. Memorize the ID of the tire pressure sensor by following the screen prompts on the HDS.

NOTE:

- See the HDS Help menu for specific instructions.
- When replacing the TPMS control unit, use the HDS to memorize IDs.
- After the IDs are memorized, reduce the pressure in all four tires to less than the appropriate specification, and check to see that the four tire indicators come on.

5. Turn the ignition switch OFF.

DTC Troubleshooting Index

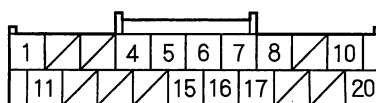
DTC	Detection Item	Troubleshooting
11	Right-front low tire pressure	(see page 18-139)
13	Left-front low tire pressure	(see page 18-139)
15	Right-rear low tire pressure	(see page 18-139)
17	Left-rear low tire pressure	(see page 18-139)
21	Right-front abnormally high tire sensor temperature	(see page 18-140)
22	Left-front abnormally high tire sensor temperature	(see page 18-140)
23	Right-rear abnormally high tire sensor temperature	(see page 18-140)
24	Left-rear abnormally high tire sensor temperature	(see page 18-140)
31	Right-front tire pressure sensor low battery voltage	(see page 18-140)
32	Right-front tire pressure sensor transmitting failure	(see page 18-141)
33	Left-front tire pressure sensor low battery voltage	(see page 18-140)
34	Left-front tire pressure sensor transmitting failure	(see page 18-141)
35	Right-rear tire pressure sensor low battery voltage	(see page 18-140)
36	Right-rear tire pressure sensor transmitting failure	(see page 18-141)
37	Left-rear tire pressure sensor low battery voltage	(see page 18-140)
38	Left-rear tire pressure sensor transmitting failure	(see page 18-141)
41	Abnormal signal reception error	(see page 18-145)
45	Initiator circuit short detection	(see page 18-146)
51	Right-front initialization status of TPMS control unit is not completed	(see page 18-148)
53	Left-front initialization status of TPMS control unit is not completed	(see page 18-148)
55	Right-rear initialization status of TPMS control unit is not completed	(see page 18-148)
57	Left-rear initialization status of TPMS control unit is not completed	(see page 18-148)
61	Right-front initiator circuit open detection	(see page 18-152)
63	Left-front initiator circuit open detection	(see page 18-152)
65	Right-rear initiator circuit open detection	(see page 18-152)
67	Left-rear initiator circuit open detection	(see page 18-152)
81	TPMS control unit failure check	(see page 18-155)
83	No VSP signal	(see page 18-155)
85	CAN data error	(see page 18-156)
91	Right-front tire pressure sensor internal error	(see page 18-157)
93	Left-front tire pressure sensor internal error	(see page 18-157)
95	Right-rear tire pressure sensor internal error	(see page 18-157)
97	Left-rear tire pressure sensor internal error	(see page 18-157)

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
HDS does not communicate with the TPMS control unit or the vehicle	Troubleshoot the DLC circuit (see page 11-223)	
Low pressure indicator does not come on, and no DTCs are stored	Symptom Troubleshooting (see page 18-158)	
Low pressure indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 18-159)	
TPMS indicator does not come on, and no DTCs are stored	Symptom Troubleshooting (see page 18-159)	
TPMS indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 18-160)	

System Description

TPMS Control Unit Inputs and Outputs 20P Connector



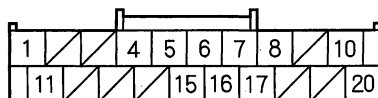
Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Signal		
				Terminal	Conditions	Voltage
1	WHT	CAN H (CAN communication signal high)	Sends the communication signal	—	Ignition switch ON (II)	Pulses
4	BLK	GND (Ground)	Ground for the TPMS control unit	4—GND	At all times	Less than 0.1 V
5	GRY	LF LF SIG. (LF low frequency signal)	Sends the signal to the left-front initiator	5—GND	For the first 5—16 seconds after turning the ignition switch ON (II)	Pulses 0—2 V
					With ignition switch ON (II) for more than 5—16 seconds	Less than 0.1 V
6	LT GRN	RF LF SIG. (RF low frequency signal)	Sends the signal to the right-front initiator	6—GND	For the first 5—16 seconds after turning the ignition switch ON (II)	Pulses 0—2 V
					With ignition switch ON (II) for more than 5—16 seconds	Less than 0.1 V
7	LT BLU	K-LINE (Data link connector)	Communications with the HDS	—	—	—
8	YEL	IG1 (Ignition switch 1)	Power source for activating the system	8—GND	Ignition switch ON (II)	Battery voltage
					Ignition switch OFF	Less than 0.1 V
10	WHT	+B (Battery positive)	Power source for the TPMS control unit	10—GND	At all times	Battery voltage

(cont'd)

System Description (cont'd)

TPMS Control Unit Inputs and Outputs 20P Connector (cont'd)



Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Signal		
				Terminal	Conditions	Voltage
11	RED	CAN L (CAN communication signal low)	Sends the communication signal	—	Ignition switch ON (II)	Pulses
15	LT BLU	LF GND (LF low frequency ground)	Ground for the initiators	15—GND	Ignition switch ON (II)	Less than 0.1 V
16	PNK	LR LF SIG. (LR low frequency signal)	Sends the signal to the left-rear initiator	16—GND	For the first 5—16 seconds after turning the ignition switch ON (II)	Pulses 0—2 V
					With ignition switch ON (II) for more than 5—16 seconds	Less than 0.1 V
17	GRY	RR LF SIG. (RR low frequency signal)	Sends the signal to the right-rear initiator	17—GND	For the first 5—16 seconds after turning the ignition switch ON (II)	Pulses 0—2 V
					With ignition switch ON (II) for more than 5—16 seconds	Less than 0.1 V
20	BRN	LF PWR. (LF low frequency power)	Power source for the initiators	20—GND	For 5 seconds with ignition switch ON (II)	About 7 V
					After 5 seconds with ignition switch ON (II)	—

System Structure

Whenever the engine is running, the TPMS control unit continuously monitors all four tires and the system. If it detects low pressure in a tire, it alerts the driver by turning on the low pressure indicator and the appropriate tire indicator. If it detects a problem in the system, it turns on the TPMS indicator.

Initiators

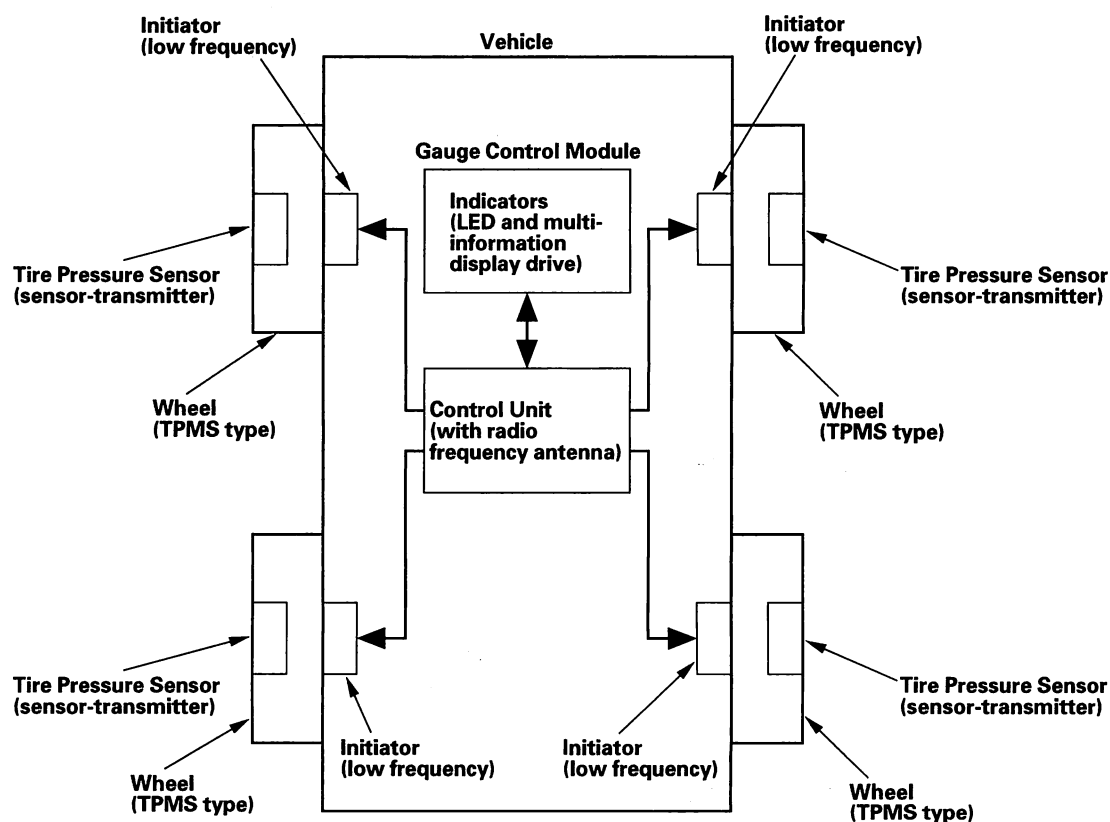
Mounted on each wheel well, each initiator sends a start/stop signal to the tire pressure sensor in the tire below it.

Control unit

Mounted on the brake pedal bracket, the control unit sends signals to the initiators and receives signals from them to verify pressure sensor IDs every time the engine starts. It also receives signals from the transmitters in the tire pressure sensors, and it continuously monitors and controls the system.

Indicators

All indicators are in the gauge control module: The low pressure indicator (LED indicator), four tire indicators (on the multi-information display) to show which tire is affected, and the TPMS indicator (on the multi-information display) that comes on only if there's a problem with the system. When two or more tire pressures are low, the low pressure indicator comes on about 5 seconds before the appropriate tire indicator. Once low pressure is detected, the system scans all four pressure sensors to ensure that it turns on the correct tire indicator.



(cont'd)

System Description (cont'd)

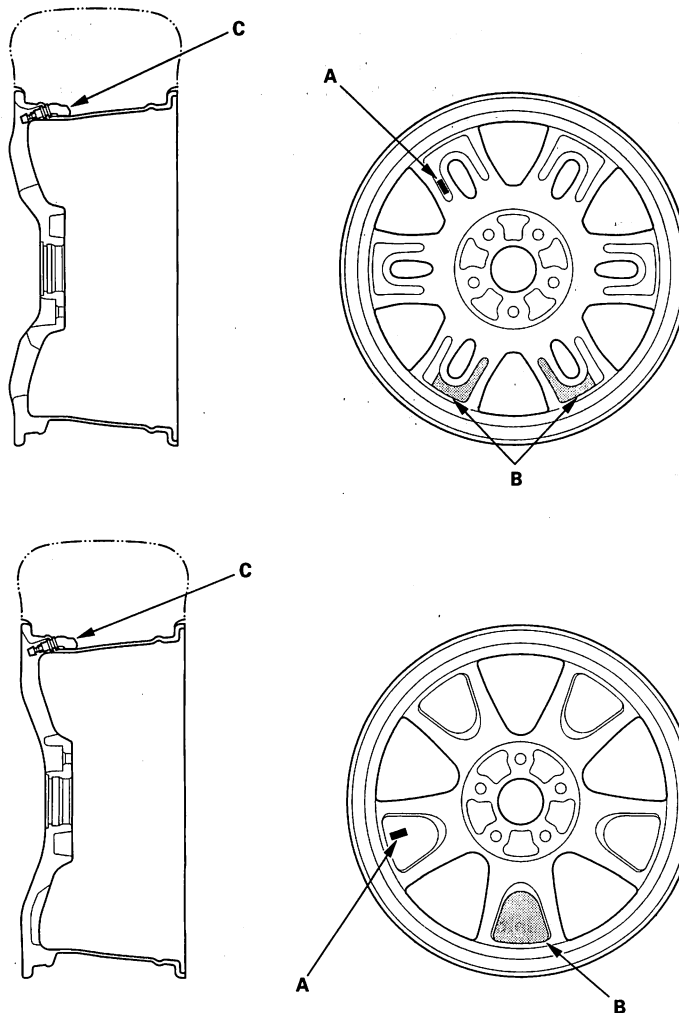
Tire pressure sensor

Each sensor is an integrated unit made up of the tire valve stem, a pressure sensor, and a transmitter. The unit is attached to the inside of the wheel, around the valve stem. The sensor transmits the internal tire information to the control unit once every 60 seconds. When the TPMS control unit receives tire pressure of less than 175 kPa (1.8 kgf/cm², 25 psi), the control unit then turns on the low pressure indicator and the appropriate tire(s) indicator. When that tire's pressure is increased to more than 200 kPa (2.0 kgf/cm², 29 psi), the transmitter sends tire pressure to the control unit, and then the control unit turns the indicators off.

Wheels

The TPMS will not work unless TPMS type wheels are installed on the vehicle. The original equipment wheels have a "TPMS" stamp (A) on the back of the wheel and counterweights (B) cast into the opposite side of the spoke to balance the weight of the tire pressure sensor (C).

NOTE: The vehicle is equipped with either wheel as shown.

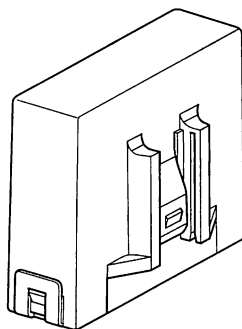


System Communication

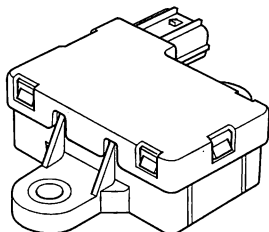
- When the vehicle is running, a RF (radio frequency) band wave signal is continuously transmitted from each tire pressure sensor to the control unit.
- When the ignition switch is turned ON (II), the initiators send a LF (low frequency) band wave signal to the tire pressure sensors, switching them from sleep mode to normal function mode. When the ignition switch is turned OFF, the sensors switch from normal function mode back to sleep mode to extend their battery life.
- Each tire pressure sensor has its own ID to prevent jamming by similar systems on other vehicles. After memorizing all the sensor IDs, the control unit receives only those specific signals.
- An ID can be memorized manually or automatically. Each initiator is hardwired to the control unit. Every time the ignition is turned ON (II), the control unit asks each initiator for a sensor ID. The initiators then transmit the sensor IDs, and the control unit receives and memorizes them. The control unit then knows which ID belongs to each tire location. This recurring ID confirmation prevents any confusion in the system as a result of normal tire rotation.

NOTE: Be careful not to bend the brackets on the TPMS control unit and the front initiators. Misalignment of the control unit and initiators could interfere with sending and receiving signals.

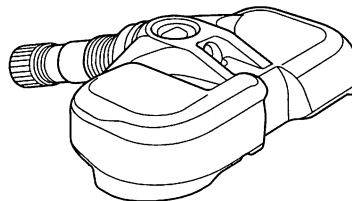
**Control Unit
(with Radio Frequency Antenna)**



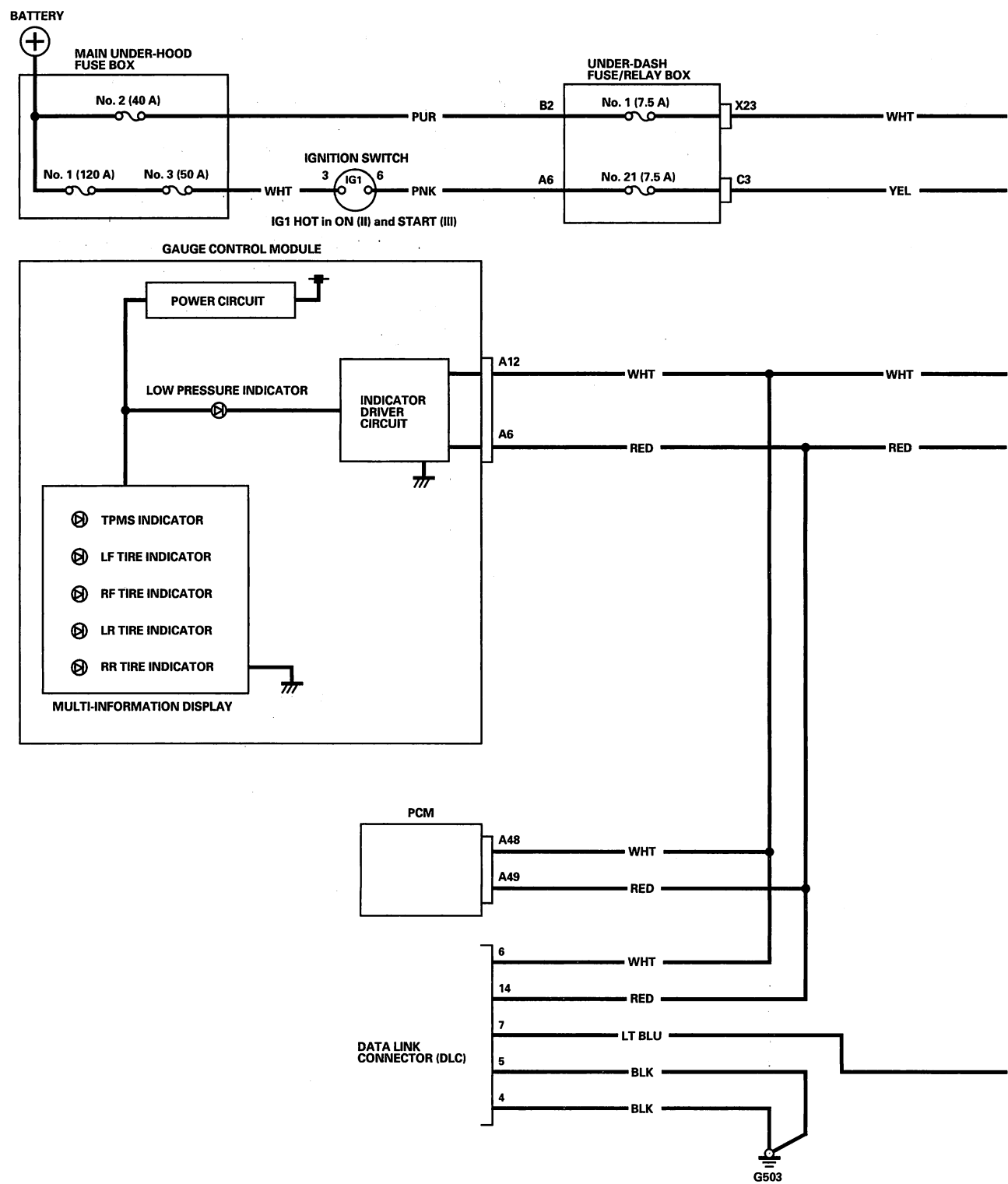
**Initiator
(Low Frequency Initiator)**

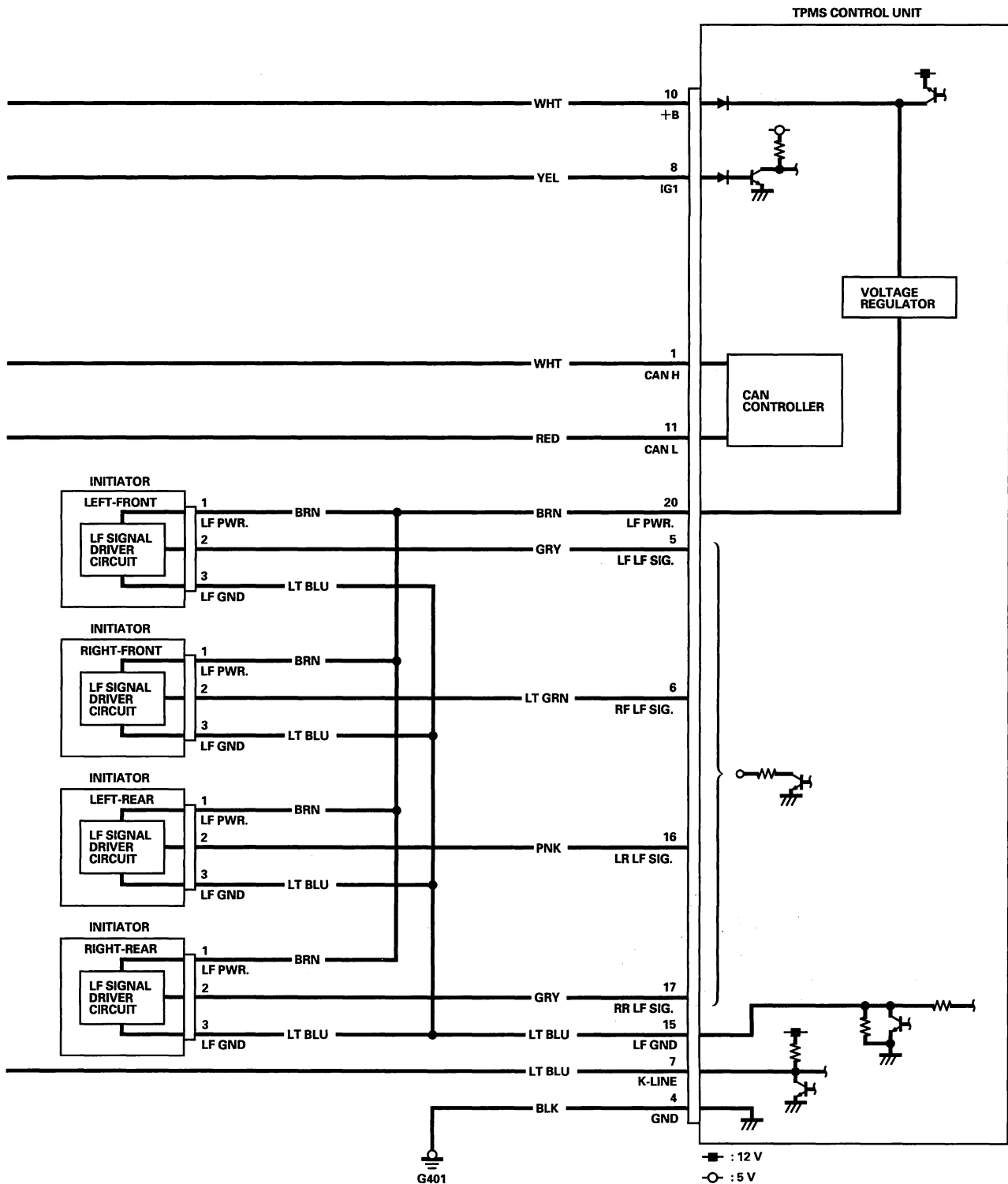


**Tire Pressure Sensor
(Sensor-transmitter)**



Circuit Diagram





cardiagn.com

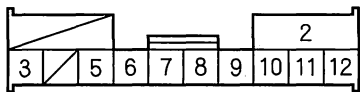
(cont'd)

BACK

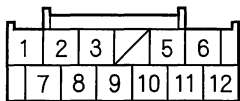
18-137

Circuit Diagram (cont'd)

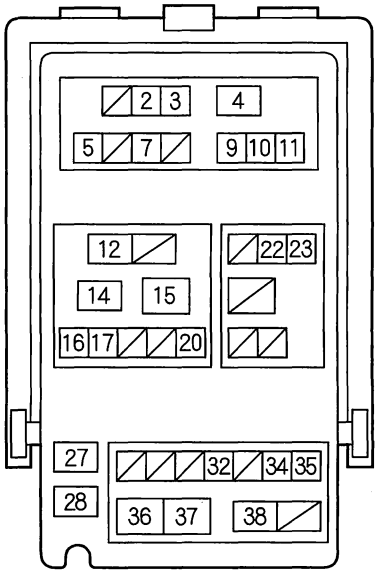
UNDER-DASH FUSE/RELAY BOX
CONNECTOR C (12P)



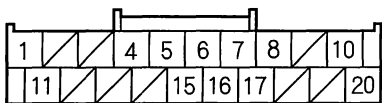
GAUGE CONTROL MODULE
CONNECTOR A (12P)



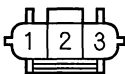
UNDER-DASH FUSE/RELAY BOX
CONNECTOR X (39P)



TPMS CONTROL UNIT 20P CONNECTOR

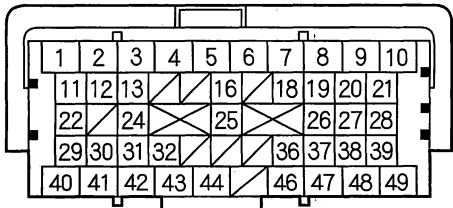


INITIATOR 3P CONNECTOR



Wire side of female terminals

PCM CONNECTOR A (49P)



DATA LINK CONNECTOR (DLC)



Terminal side of female terminals



DTC Troubleshooting

DTC 11, 13, 15, 17: Low Tire Pressure

NOTE: If low tire pressure is detected, the control unit will set one or more of these DTCs, and turn on the low pressure indicator and the appropriate tire indicator(s). If the low pressure and tire indicators come on due to true low tire pressure, and the customer corrects it before bringing the vehicle in, the DTCs will have been stored, but all the indicators will be off.

1. Turn the ignition switch ON (II).
2. Check which tire indicator is on.

NOTE: If no tire indicators are on, retrieve the DTCs with the HDS.

DTC	Tire location
11	Right-front
13	Left-front
15	Right-rear
17	Left-rear

3. Turn the ignition switch OFF.
4. Check the pressure of the indicated tire.

Is there 175 kPa (1.8 kgf/cm², 25 psi) or less?

YES—Go to step 5.

NO—Go to step 7.

5. Check for and repair the cause of air loss, and then inflate the tire (see page 18-5).
6. Turn the ignition switch ON (II).

Do the tire indicators go off within one minute?

YES—The system is OK at this time. Clear the DTC with the HDS. ■

NO—Go to step 7.

7. Check the tire pressure of the appropriate tire with the HDS.

NOTE: If the HDS screen shows not defined for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If not defined is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

Is the indicated tire pressure on the HDS within 40 kPa (0.4 kgf/cm², 6 psi) of the actual tire pressure?

YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■

NO—Check that the tire-pressure sensor is properly mounted. Replace the appropriate tire pressure sensor (see page 18-164). ■

DTC Troubleshooting (cont'd)

DTC 21, 22, 23, 24: Abnormally High Tire Sensor Temperature

1. Make sure the tires have cooled down.
2. Turn the ignition switch ON (II).
3. Check the tire indicated by the DTCs you retrieved.

NOTE: An abnormal rise in the internal temperature of the tires can be caused by:

- Excessive braking
- Failure to release the parking brake (rear tires only)
- Leaving the vehicle running while parked
- Improper assembly of a wheel and tire

DTC	Tire location
21	Right-front
22	Left-front
23	Right-rear
24	Left-rear

4. Turn the ignition switch ON (II).

Does the TPMS indicator go off within one minute?

YES—The system is OK at this time. Clear the DTC with the HDS. ■

NO—Go to step 5.

5. Read the internal temperature of the tire with the HDS.

NOTE: If the HDS screen shows not defined for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If not defined is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

Is 176 °F (80 °C) or more indicated?

YES—Replace the appropriate tire pressure sensor (see page 18-164). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■

DTC 31, 33, 35, 37: Tire Pressure Sensor Low Battery Voltage

NOTE: This problem occurs when the temperature around the sensor is -40°F (-40°C) or less. Note that the diagnosis must be made in a place where ambient temperature is -4°F (-20°C) or more.

1. Turn the ignition switch ON (II).

Does the TPMS indicator go off within one minute?

YES—The system is OK at this time. Clear the DTC with the HDS. ■

NO—Go to step 2.

2. Check the FR, FL, RR, or RL in the TPMS DATA LIST with the HDS.

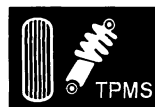
NOTE: If the HDS screen shows not defined for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If not defined is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

DTC	Tire location
31	Right-front
33	Left-front
35	Right-rear
37	Left-rear

Is LOW indicated?

YES—Replace the appropriate tire pressure sensor (see page 18-164). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■



DTC 32, 34, 36, 38: Tire Pressure Sensor Transmitting Failure

NOTE:

- Inspect for an aftermarket device interfering with the RF signal from the sensors when turning the ignition switch ON (II).
- Vehicle must be driven for 3 minutes at 15 mph (24 km/h) or more for DTC 32, 34, 36, or 38 to set.

1. Check the indicated location to make sure the wheel is a TPMS type with the tire pressure sensor.

DTC	Tire location
32	Right-front
34	Left-front
36	Right-rear
38	Left-rear

Is a TPMS type wheel with a tire pressure sensor mounted on the vehicle?

YES—Go to step 4.

NO—Go to step 2.

2. Install a known-good TPMS wheel.
3. To memorize the sensor ID, drive the vehicle above 15 mph (24 km/h) for 40 continuous seconds, or memorize the ID with the HDS (see page 18-128).
4. Test-drive the vehicle.
5. Check the VSP in the TPMS DATA LIST with the HDS.

Is the vehicle speed indicated?

YES—Go to step 9.

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).

8. Check for DTCs with the HDS.

Is DTC 85 indicated?

YES—Go to the DTC 85 troubleshooting (see page 18-156). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■

9. Turn the ignition switch OFF.
10. Turn the ignition switch ON (II).
11. With the HDS, check the indicated tire for the tire sensor status changing to normal.

NOTE: If the HDS screen shows not defined for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If the status does not change to normal, repeat the procedure in the previous sentence until NORMAL is shown.

DTC	Tire location
32	Right-front
34	Left-front
36	Right-rear
38	Left-rear

Is NORMAL indicated within one full turn of the tire?

YES—The system is OK at this time. Clear the DTC with the HDS. ■

NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Install a wheel with a known-good tire pressure sensor on the vehicle.
14. To memorize the sensor ID, drive the vehicle above 15 mph (24 km/h) for 40 continuous seconds, or memorize the ID with the HDS (see page 18-128).
15. Turn the ignition switch OFF.
16. Turn the ignition switch ON (II).
17. With the HDS, check the indicated tire for a normal pressure sensor signal.

NOTE: If the HDS screen shows not defined for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If not defined is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

DTC	Tire location
32	Right-front
34	Left-front
36	Right-rear
38	Left-rear

Is NORMAL indicated within one full turn of the tire?

YES—Replace the tire pressure sensor on the customer's wheel (see page 18-164). ■

NO—Go to step 18.

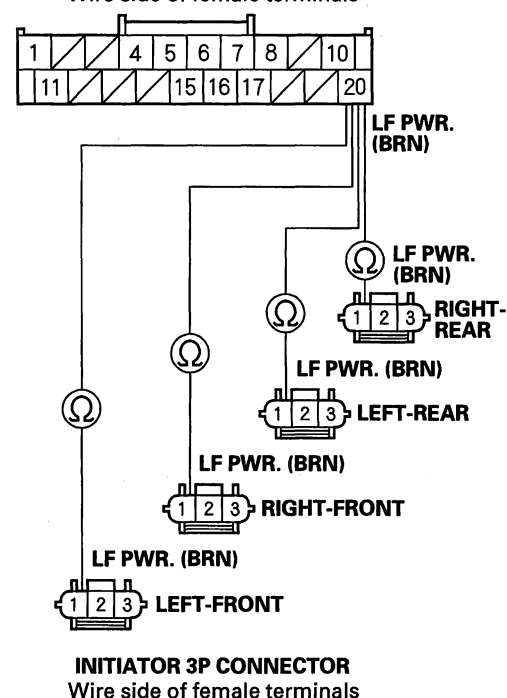
18. Turn the ignition switch OFF.
19. Disconnect the appropriate initiator 3P connector.

DTC	Initiator location
32	Right-front
34	Left-front
36	Right-rear
38	Left-rear

20. Disconnect the TPMS control unit 20P connector.
21. Check for continuity between TPMS control unit 20P connector terminal No. 20 and the appropriate initiator 3P connector terminal No. 1.

DTC	Initiator location
32	Right-front
34	Left-front
36	Right-rear
38	Left-rear

TPMS CONTROL UNIT 20P CONNECTOR
Wire side of female terminals



Is there continuity?

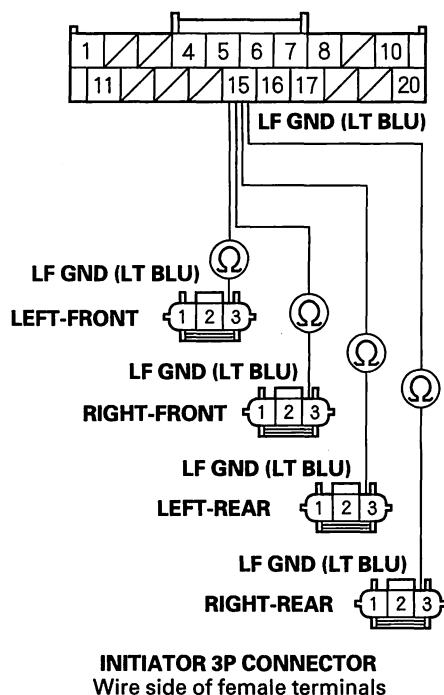
YES—Go to step 22.

NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

22. Check for continuity between TPMS control unit 20P connector terminal No. 15 and appropriate initiator 3P connector terminal No. 3.

DTC	Initiator location
32	Right-front
34	Left-front
36	Right-rear
38	Left-rear

TPMS CONTROL UNIT 20P CONNECTOR
Wire side of female terminals



Is there continuity?

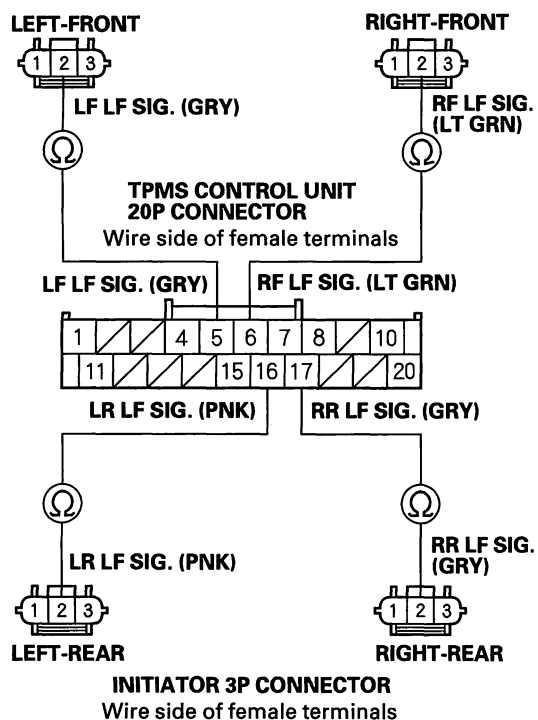
YES—Go to step 23.

NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

23. Check for continuity between the appropriate TPMS control unit 20P connector terminal and appropriate initiator 3P connector terminal No. 2 (see table).

DTC	TPMS control unit terminal	Initiator location
32	No. 6	Right-front
34	No. 5	Left-front
36	No. 17	Right-rear
38	No. 16	Left-rear

INITIATOR 3P CONNECTOR
Wire side of female terminals



Is there continuity?

YES—Go to step 24.

NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

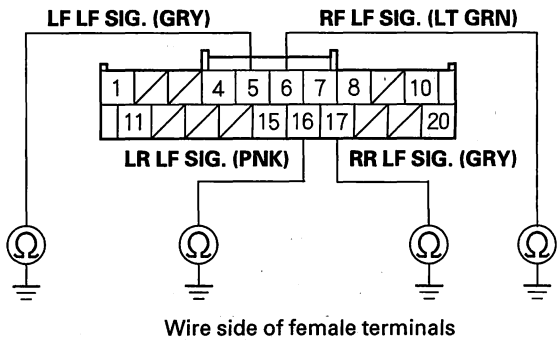
(cont'd)

DTC Troubleshooting (cont'd)

24. Check for continuity between body ground and the appropriate TPMS control unit 20P connector terminal (see table).

DTC	TPMS control unit terminal
32	No. 6
34	No. 5
36	No. 17
38	No. 16

TPMS CONTROL UNIT 20P CONNECTOR



Is there continuity?

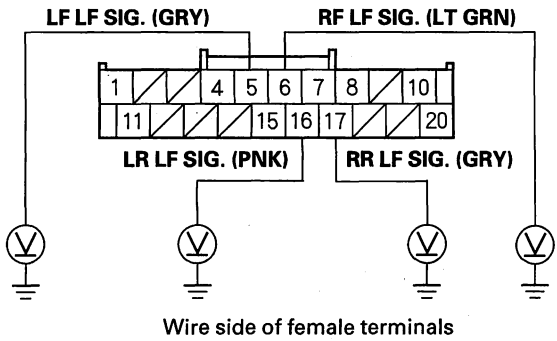
YES—Repair short to body ground in the wire between the TPMS control unit and the appropriate initiator. ■

NO—Go to step 25.

25. Measure voltage between body ground and the appropriate TPMS control unit 20P connector terminal (see table).

DTC	TPMS control unit terminal
32	No. 6
34	No. 5
36	No. 17
38	No. 16

TPMS CONTROL UNIT 20P CONNECTOR



Is there battery voltage?

YES—Repair short to power in the wire between the TPMS control unit and the appropriate initiator. ■

NO—Replace the appropriate initiator (see page 18-163). ■



DTC 41: Abnormal Signal Reception Error

NOTE: Inspect for an aftermarket device interfering with the RF signal from the sensors when turning the ignition switch ON (II).

1. Check all four wheels to make sure they are the TPMS type with the tire pressure sensor.

Is each wheel a TPMS type with a tire pressure sensor mounted on the vehicle?

YES—Go to step 4.

NO—Go to step 2.

2. Install known-good TPMS wheel(s).
3. To memorize the sensor ID(s), drive the vehicle above 15 mph (24 km/h) for 40 continuous seconds, or memorize the ID(s) with the HDS (see page 18-128).
4. Test-drive the vehicle.
5. Check the VSP in the TPMS DATA LIST with the HDS.

Is the vehicle speed indicated?

YES—Go to step 9.

NO—Go to step 6.

6. Turn the ignition switch OFF.

7. Turn the ignition switch ON (II).

8. Check for DTCs with the HDS.

Is DTC 85 indicated?

YES—Go to the DTC 85 troubleshooting (see page 18-156). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■

9. Turn the ignition switch OFF.

10. Turn the ignition switch ON (II).

11. Check TPMS DATA LIST for LF, RF, LR, RR sensor status changing to "NORMAL".

NOTE: If the HDS screen shows not defined for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If not defined is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

Is NORMAL indicated within one full turn of the tire?

YES—The system is OK at this time. Clear the DTC with the HDS. ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■

DTC Troubleshooting (cont'd)

DTC 45: Initiator Circuit Short Detection

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

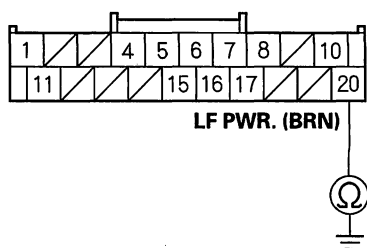
Is DTC 45 indicated?

YES—Go to step 5.

NO—The system is OK at this time. ■

5. Turn the ignition switch OFF.
6. Disconnect the TPMS control unit 20P connector.
7. Check for continuity between body ground and TPMS control unit 20P connector terminal No. 20.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

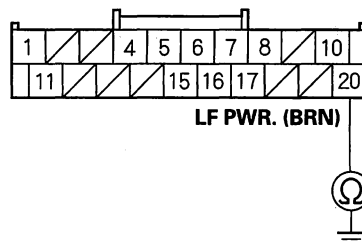
YES—Go to step 8.

NO—Go to step 11.

8. Disconnect all four of the initiator 3P connectors.

9. Check for continuity between body ground and TPMS control unit 20P connector terminal No. 20.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

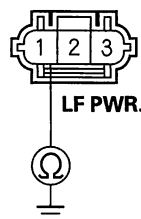
YES—Repair short to body ground in the wire between the TPMS control unit and the initiators. ■

NO—Go to step 10.

10. On each individual initiator, check for continuity between body ground and initiator 3P connector terminal No. 1.

NOTE: Check the initiators when mounted on the vehicle.

INITIATOR 3P CONNECTOR



Terminal side of male terminals

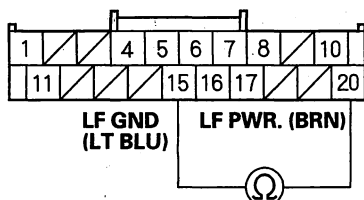
Is there continuity?

YES—Replace the appropriate initiator (see page 18-163). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■

11. Check for continuity between TPMS control unit 20P connector terminals No. 15 and No. 20.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

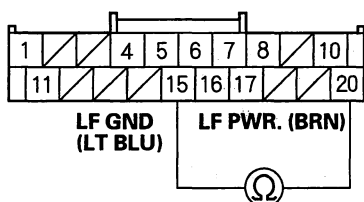
YES—Go to step 12.

NO—Go to step 15.

12. Disconnect all four of the initiator 3P connectors.

13. Check for continuity between TPMS control unit 20P connector terminals No. 15 and No. 20.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

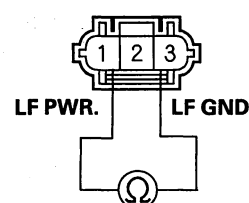
Is there continuity?

YES—Repair short in the wire between TPMS control unit 20P connector terminals No. 15 (LF GND line) and No. 20 (LF PWR. line). ■

NO—Go to step 14.

14. On the initiator side, check for continuity between all four initiator 3P connector terminals No. 1 and No. 3 individually.

INITIATOR 3P CONNECTOR



Terminal side of male terminals

Is there continuity?

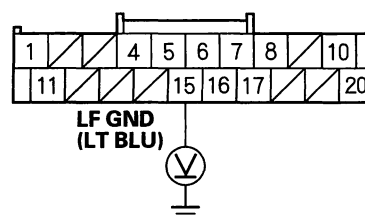
YES—Replace the appropriate initiator (see page 18-163). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■

15. Turn the ignition switch ON (II).

16. Measure voltage between body ground and TPMS control unit 20P connector terminal No. 15.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the TPMS control unit and the initiators. ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■

DTC Troubleshooting (cont'd)

DTC 51, 53, 55, 57: Initialization Status of TPMS Control Unit is Not Completed

NOTE: These DTCs will only set during initialization with the HDS.

1. Check the DTC indicated to the tire location to make sure the wheel is a TPMS type with the tire pressure sensor.

DTC	Tire location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear

Is a TPMS type wheel with a tire pressure sensor mounted on the vehicle?

YES—Go to step 7.

NO—Go to step 2.

2. Install a known-good TPMS wheel.
3. To memorize the sensor ID, drive the vehicle above 15 mph (24 km/h) for 40 continuous seconds, or memorize the ID with the HDS (see page 18-128).
4. Turn the ignition switch OFF.
5. Turn the ignition switch ON (II).

6. With the HDS, check the indicated tire for the normal sensor signal.

NOTE: If the HDS screen shows not defined for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If not defined is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

DTC	Tire location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear

Is NORMAL indicated within one full turn of the tire?

YES—The system is OK at this time. Clear the DTC with the HDS. ■

NO—Go to step 12.

7. Turn the ignition switch OFF.
8. Install a wheel with a known-good tire pressure sensor on the vehicle.
9. To memorize the sensor ID, drive the vehicle above 15 mph (24 km/h) for 40 continuous seconds, or memorize the ID with the HDS (see page 18-128).
10. Turn the ignition switch OFF.
11. Turn the ignition switch ON (II).

12. With the HDS, check the indicated tire for a normal pressure sensor signal.

NOTE: If the HDS screen shows not defined for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If not defined is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

DTC	Tire location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear

Is NORMAL indicated within one full turn of the tire?

YES—Replace the tire pressure sensor on the customer's wheel (see page 18-164). ■

NO—Go to step 13.

13. Turn the ignition switch OFF.

14. Disconnect the appropriate initiator 3P connector.

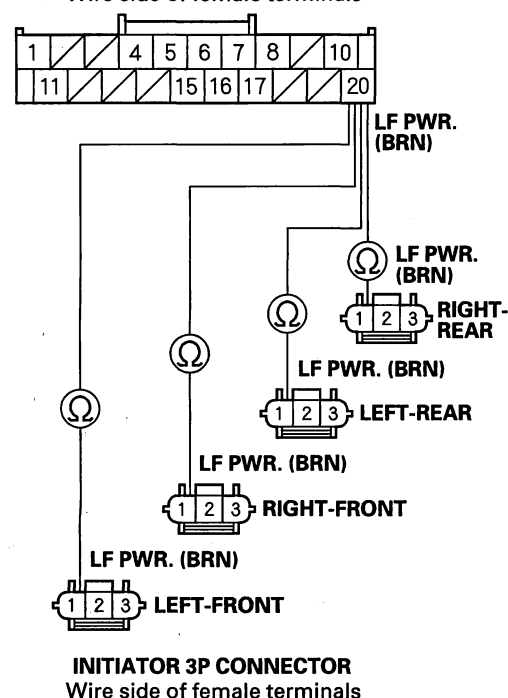
DTC	Initiator location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear

15. Disconnect the TPMS control unit 20P connector.

16. Check for continuity between TPMS control unit 20P connector terminal No. 20 and appropriate initiator 3P connector terminal No. 1.

DTC	Initiator location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear

TPMS CONTROL UNIT 20P CONNECTOR
Wire side of female terminals



Is there continuity?

YES—Go to step 17.

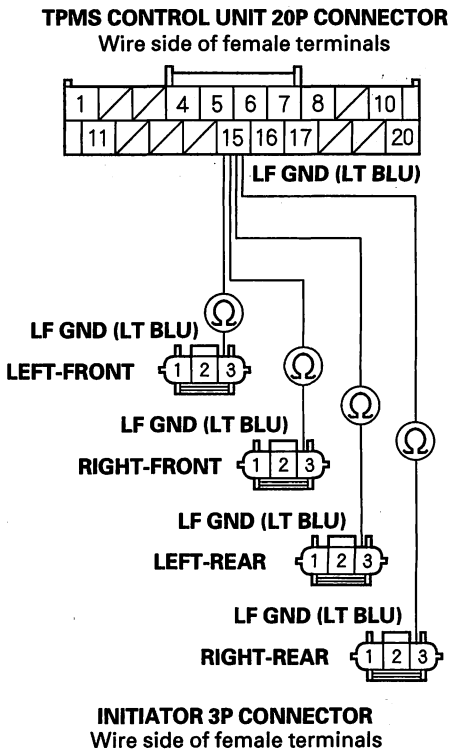
NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

(cont'd)

DTC Troubleshooting (cont'd)

17. Check for continuity between TPMS control unit 20P connector terminal No. 15 and appropriate initiator 3P connector terminal No. 3.

DTC	Initiator location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear



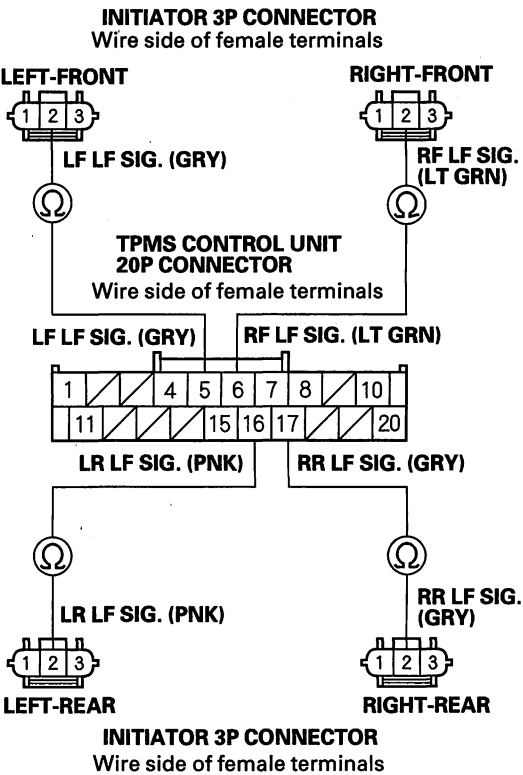
Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

18. Check for continuity between the appropriate TPMS control unit 20P connector terminal and appropriate initiator 3P connector terminal No. 2 (see table).

DTC	TPMS control unit terminal	Initiator location
51	No. 6	Right-front
53	No. 5	Left-front
55	No. 17	Right-rear
57	No. 16	Left-rear



Is there continuity?

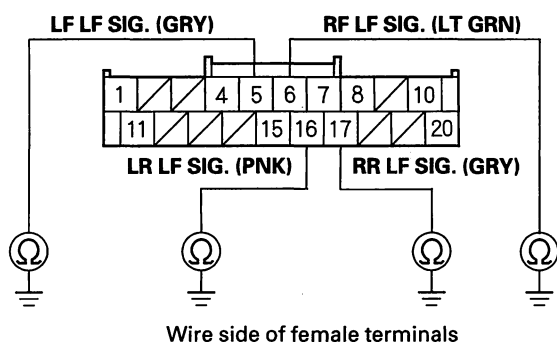
YES—Go to step 19.

NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

19. Check for continuity between body ground and the appropriate TPMS control unit 20P connector terminal (see table).

DTC	TPMS control unit terminal
51	No. 6
53	No. 5
55	No. 17
57	No. 16

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

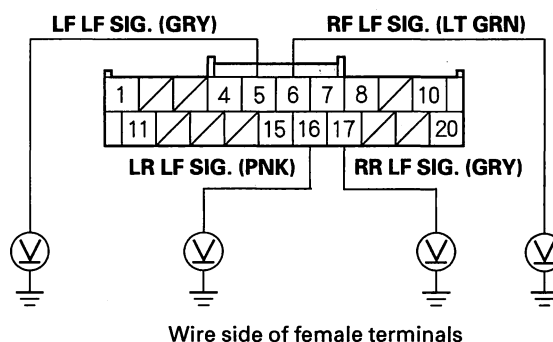
YES—Repair short to body ground in the wire between the TPMS control unit and the appropriate initiator. ■

NO—Go to step 20.

20. Measure voltage between body ground and the appropriate TPMS control unit 20P connector terminal (see table).

DTC	TPMS control unit terminal
51	No. 6
53	No. 5
55	No. 17
57	No. 16

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the TPMS control unit and the appropriate initiator. ■

NO—Repair the appropriate initiator (see page 18-163). ■

DTC Troubleshooting (cont'd)

DTC 61, 63, 65, 67: Initiator Circuit Open Detection

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

Is DTC 61, 63, 65, and/or 67 indicated?

YES—Go to step 5.
NO—The system is OK at this time. ■

- 5. Turn the ignition switch OFF.
- 6. Disconnect the appropriate initiator 3P connector.

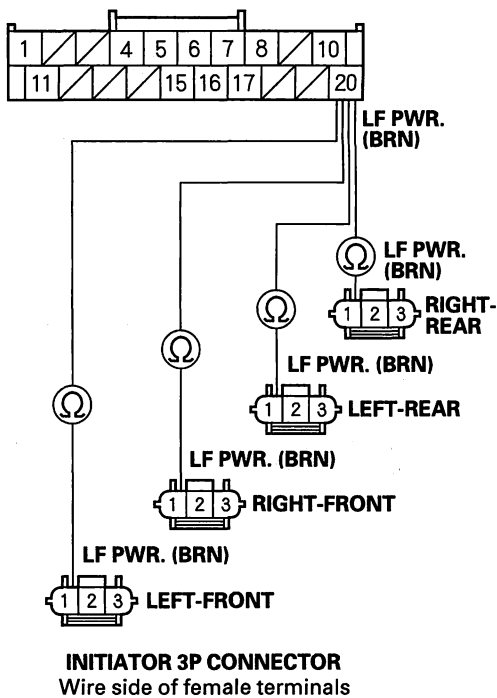
DTC	Initiator location
61	Right-front
63	Left-front
65	Right-rear
67	Left-rear

- 7. Disconnect the TPMS control unit 20P connector.

- 8. Check for continuity between TPMS control unit 20P connector terminal No. 20 and appropriate initiator 3P connector terminal No. 1.

DTC	Initiator location
61	Right-front
63	Left-front
65	Right-rear
67	Left-rear

TPMS CONTROL UNIT 20P CONNECTOR
Wire side of female terminals



Is there continuity?

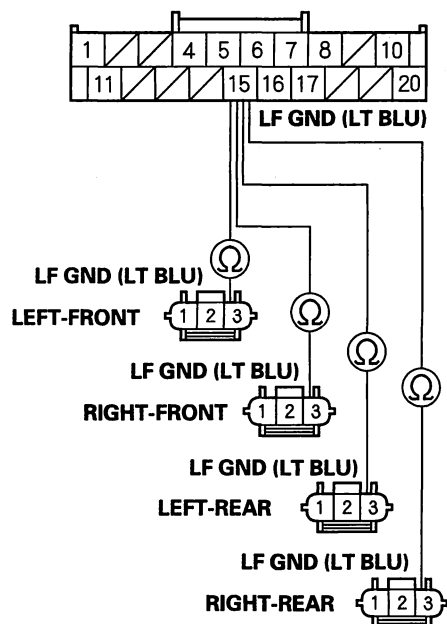
YES—Go to step 9.
NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

9. Check for continuity between TPMS control unit 20P connector terminal No. 15 and appropriate initiator 3P connector terminal No. 3.

DTC	Initiator location
61	Right-front
63	Left-front
65	Right-rear
67	Left-rear

TPMS CONTROL UNIT 20P CONNECTOR

Wire side of female terminals



INITIATOR 3P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Go to step 10.

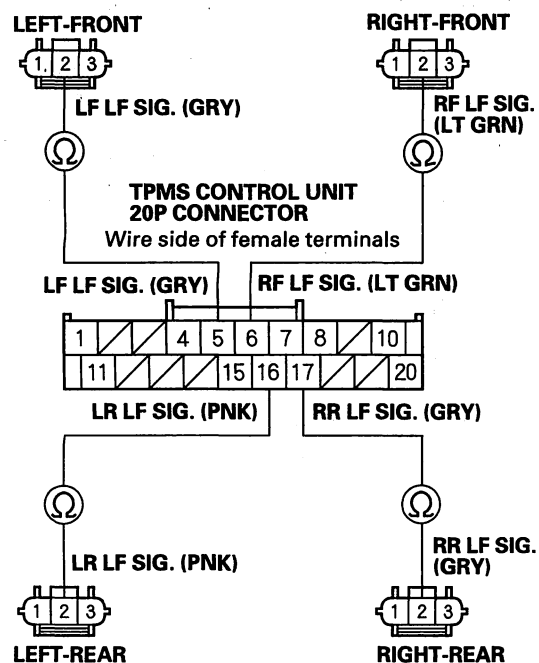
NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

10. Check for continuity between the appropriate TPMS control unit 20P connector terminal and appropriate initiator 3P connector terminal No. 2 (see table).

DTC	TPMS control unit terminal	Initiator location
61	No. 6	Right-front
63	No. 5	Left-front
65	No. 17	Right-rear
67	No. 16	Left-rear

INITIATOR 3P CONNECTOR

Wire side of female terminals



INITIATOR 3P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

(cont'd)

DTC Troubleshooting (cont'd)

11. Check for noted DTC(s) in step 4.

Were DTC 61, 63, 65, and 67 indicated at the same time?

YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■

NO—Go to step 12.

12. Swap a known-good initiator with the initiator indicated by the DTC (see page 18-163).

DTC	Initiator location
61	Right-front
63	Left-front
65	Right-rear
67	Left-rear

13. Reconnect all connectors.

14. Turn the ignition switch ON (II).

15. Clear the DTC with the HDS.

16. Turn the ignition switch OFF, then turn the ignition switch ON (II) again.

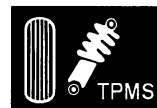
17. Check for DTCs with the HDS, and compare the indicated DTC with the noted DTC(s) in step 4.

DTC	Initiator location
61	Right-front
63	Left-front
65	Right-rear
67	Left-rear

Does the indicated DTC change between the initiators that were replaced in step 12?

YES—Replace the appropriate initiator (see page 18-163). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■



DTC 81: TPMS Control Unit Failure (RAM/ROM/ADC/EEPROM/ALU) Check

NOTE: Low battery voltage can cause this DTC. Make sure the battery is fully charged and in good condition.

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

Is DTC 81 indicated?

YES—Replace the TPMS control unit (see page 18-162). ■

NO—The system is OK at this time. ■

DTC 83: No VSP Signal

NOTE: Check the fuel and emission systems DTCs with the HDS, and troubleshoot the PCM and F-CAN communication errors first (see page 11-3).

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

Is DTC 83 indicated?

YES—Go to step 5.

NO—The system is OK at this time. ■

5. Check for DTCs with the HDS.

Is DTC 85 indicated?

YES—Go to DTC 85 troubleshooting (see page 18-156). ■

NO—Go to step 6.

6. Test-drive the vehicle.
7. Check the VSP in the TPMS DATA LIST with the HDS.

Is the vehicle speed indicated?

YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■

NO—Go to step 8.

8. Check the speedometer.

Does the speedometer register speed?

YES—Replace the TPMS control unit (see page 18-162). ■

NO—Substitute a known-good PCM (see page 11-8), and retest. If no codes are shown, replace the original PCM. ■

DTC Troubleshooting (cont'd)

DTC 85: CAN Data Error

NOTE: Check the fuel and emission systems DTCs with the HDS, and troubleshoot the PCM and F-CAN communication errors first (see page 11-3).

- 1. Turn the ignition switch ON (II).
- 2. Clear the DTC with the HDS.
- 3. Turn the ignition switch OFF, then turn the ignition switch ON (II) again.
- 4. Wait about 5 seconds.
- 5. Check for DTCs with the HDS.

Is DTC 85 indicated?

- YES—Go to step 6.
- NO—The system is OK at this time. ■

- 6. Test-drive the vehicle.

Does the speedometer work?

- YES—Go to step 10.
- NO—Go to step 7.

- 7. Turn the ignition switch OFF.
- 8. Disconnect the TPMS control unit 20P connector.
- 9. Test-drive the vehicle.

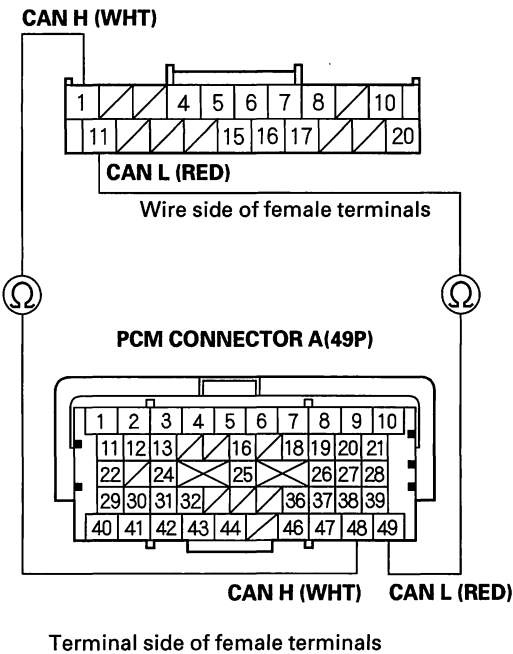
Does the speedometer work?

- YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■
- NO—Turn the ignition switch OFF, and reconnect all connectors, then check and troubleshoot the fuel and emissions systems (see page 11-3). ■

- 10. Turn the ignition switch OFF.
- 11. Short the SCS line with the HDS.
- 12. Disconnect PCM connector A (49P).
- 13. Disconnect the TPMS control unit 20P connector.
- 14. Check for continuity between the TPMS control unit 20P connector terminals and the PCM connector A (49P) terminals individually (see table).

Terminal name	TPMS control unit terminal	PCM A terminal
CAN L	No. 11	No. 49
CAN H	No. 1	No. 48

TPMS CONTROL UNIT 20P CONNECTOR



Is there continuity?

- YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■
- NO—Repair open in the wire between the TPMS control unit and the PCM. ■

DTC 91, 93, 95, 97: Tire Pressure Sensor Internal Error

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

NOTE: The tire pressure sensor of the appropriate wheel is shown.

DTC	Tire location
91	Right-front
93	Left-front
95	Right-rear
97	Left-rear

Is DTC 91, 93, 95 or 97 indicated?

YES—Replace the appropriate tire pressure sensor (see page 18-164). ■

NO—The system is OK at this time. ■

Symptom Troubleshooting

Low pressure indicator does not come on, and no DTCs are stored

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

Did the indicator come on and then go off?

YES—Go to step 3.

NO—Go to step 7.

3. Turn the ignition switch OFF.
4. Check the pressure in all four tires.

Is the tire pressure 175 kPa (1.8 kgf/cm², 25 psi) or less?

YES—Go to step 5.

NO—The system is OK at this time. ■

5. Turn the ignition switch ON (II).
6. Check the TIRE PRESSURE in the TPMS DATA LIST with the HDS, and compare with measured actual tire pressure.

NOTE: If the HDS screen shows not defined for sensor status, turn the ignition switch OFF, rotate the appropriate tire 1/4 turn, then turn the ignition switch ON (II), and try again. If not defined is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

Is the indicated tire pressure on the HDS within 40 kPa (0.4 kgf/cm², 6 psi) of the actual tire pressure?

YES—Go to step 7.

NO—Replace the tire pressure sensor (see page 18-164). ■

7. Wait about 5 seconds with the ignition switch turned ON (II).
8. Check for gauge DTCs with the HDS (see page 22-3).

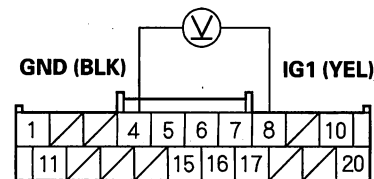
Is any gauge DTC indicated?

YES—Troubleshoot the indicated gauge DTC. ■

NO—Go to step 9.

9. Turn the ignition switch OFF.
10. Disconnect the TPMS control unit 20P connector.
11. Measure voltage between TPMS control unit 20P connector terminals No. 4 and No. 8.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the TPMS control unit and the No. 21 (7.5 A) fuse in the under-dash fuse/relay box. ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-162), and recheck. ■

Low pressure indicator does not go off, and no DTCs are stored

1. Turn the ignition switch OFF.
2. Disconnect the TPMS control unit 20P connector.
3. Turn the ignition switch ON (II).
4. Check the low pressure indicator for several seconds when the ignition switch is turned ON (II).

Did the indicator come on and then go off?

YES—Replace the TPMS control unit (see page 18-162). ■

NO—Do the troubleshooting for the gauge control module (see page 22-3). If necessary, substitute a known-good gauge control module (see page 22-337), and recheck. ■

TPMS indicator does not come on, and no DTCs are stored

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

Did the indicator come on and then go off?

YES—The system is OK at this time. ■

NO—Do the troubleshooting for the gauge control module (see page 22-3). If necessary, substitute a known-good gauge control module (see page 22-337), and recheck. ■

Symptom Troubleshooting (cont'd)

TPMS indicator does not go off, and no DTCs are stored

NOTE: Check for gauge DTCs with the HDS (see page 22-3). If gauges DTCs are stored, troubleshoot those DTCs first.

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

Did the indicator come on and then go off?

YES—The system is OK at this time. ■

NO—Go to step 3.

3. Turn the ignition switch OFF.
4. Check the No. 1 (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse blown?

YES—Replace the No. 1 (7.5 A) fuse, and recheck. ■

NO—Reinstall the fuse, then go to step 5.

5. Check the No. 21 (7.5 A) fuse in the under-dash fuse/relay box.

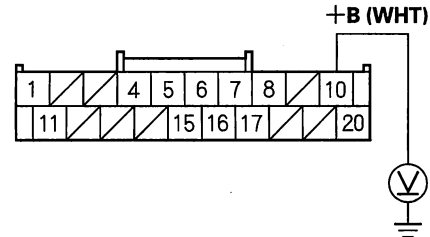
Is the fuse blown?

YES—Replace the No. 21 (7.5 A) fuse, and recheck. ■

NO—Reinstall the fuse, then go to step 6.

6. Measure voltage between body ground and TPMS control unit 20P connector terminal No. 10.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

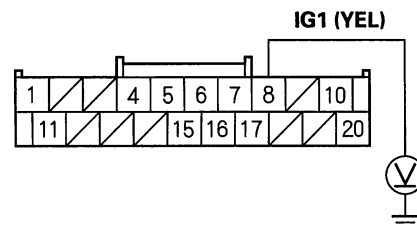
Is there battery voltage?

YES—Go to step 7.

NO—Repair open in the wire between the TPMS control unit and the No. 1 (7.5 A) fuse in the under-dash fuse/relay box. ■

7. Turn the ignition switch ON (II).
8. Measure voltage between body ground and TPMS control unit 20P connector terminal No. 8.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

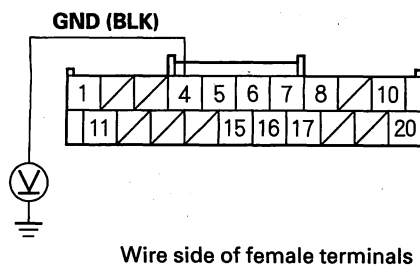
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between the TPMS control unit and the No. 21 (7.5 A) fuse in the under-dash fuse/relay box. ■

9. Measure voltage between body ground and TPMS control unit 20P connector terminal No. 4.

TPMS CONTROL UNIT 20P CONNECTOR



Is there 0.1 V or more?

YES—Repair open or high resistance in the wire between the TPMS control unit and body ground (G401). ■

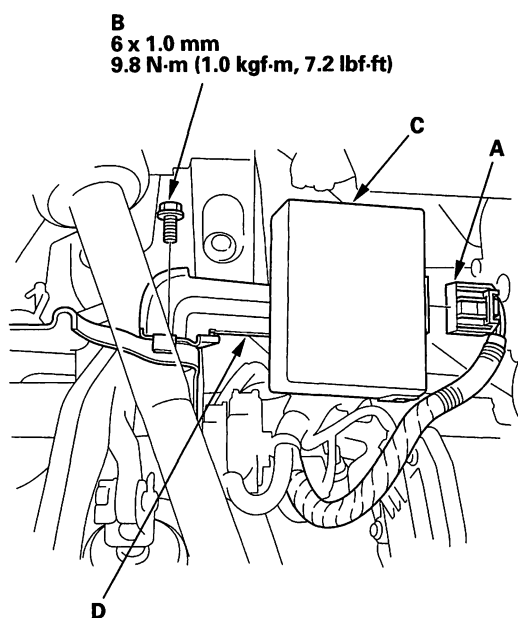
NO—Do the troubleshooting for the gauge control module (see page 22-3). If the gauge control module is OK, check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control (see page 18-162), and recheck. ■

TPMS Control Unit Replacement

NOTE: Make sure the TPMS control unit mounting bracket is not bent or twisted as this may affect its communication with the initiators and the tire pressure sensors.

1. Remove the driver's dashboard undercover (see page 20-120).
2. Disconnect the TPMS control unit connector (A).

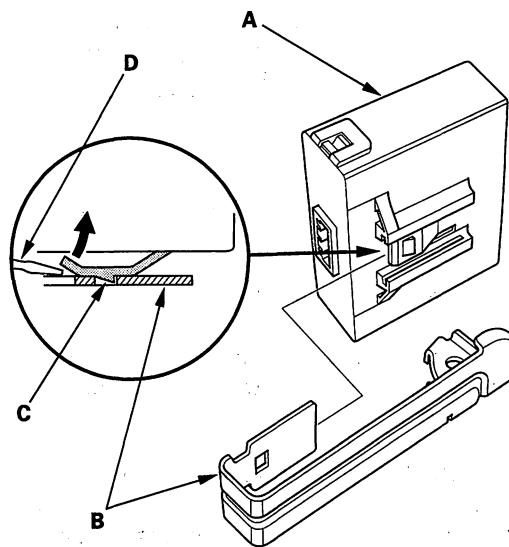
NOTE: The TPMS control unit is located on the brake pedal bracket.



3. Remove the flange bolt (B) from the brake pedal bracket.
4. Remove the TPMS control unit (C) from the bracket (D).

5. Remove the TPMS control unit (A) from the bracket (B).

NOTE: While separating the TPMS control unit from the bracket, release the hook (C) on the TPMS control unit using a flat-tipped screwdriver (D), and push up to release it from the bracket.



6. Install the TPMS control unit in the reverse order of removal.

NOTE: Make sure the TPMS control unit is properly installed. You will hear a click when the TPMS control unit is securely mounted on the bracket.

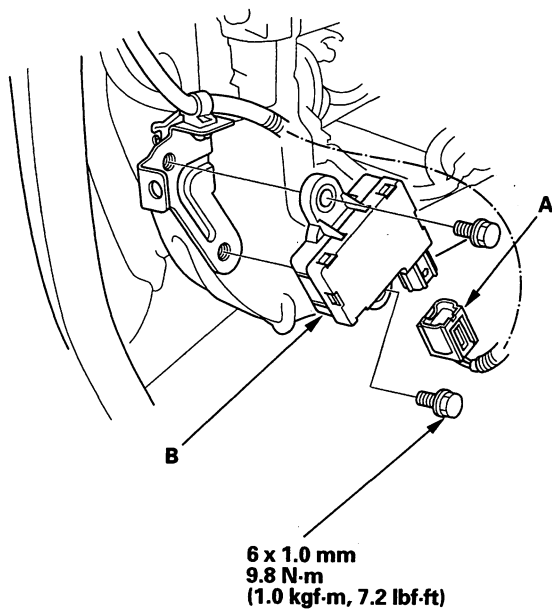
7. Connect the HDS and memorize the tire pressure sensor IDs (see page 18-128). Do not memorize the IDs automatically.

Initiator Replacement

NOTE: Make sure the initiator mounting bracket is not bent or twisted as this may affect its communication with the TPMS control unit and the tire pressure sensor.

Front

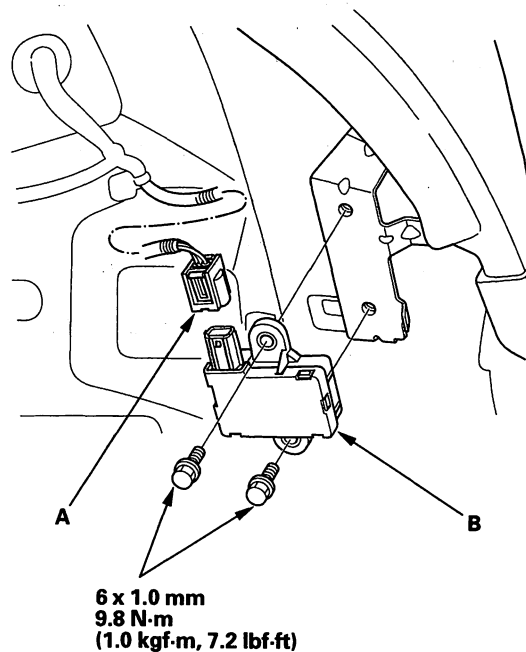
1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the front wheel.
3. Remove the front inner fender (see page 20-217).
4. Disconnect the initiator connector (A).



5. Remove the initiator (B) from the inner side of the wheelwell.
6. Install the initiator in the reverse order of removal.

Rear

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheel.
3. Remove the rear fender cover (see page 20-221).
4. Disconnect the initiator connector (A).



5. Remove the initiator (B) from the inner side of the wheelwell.
6. Install the initiator in the reverse order of removal.

Tire Pressure Sensor Replacement

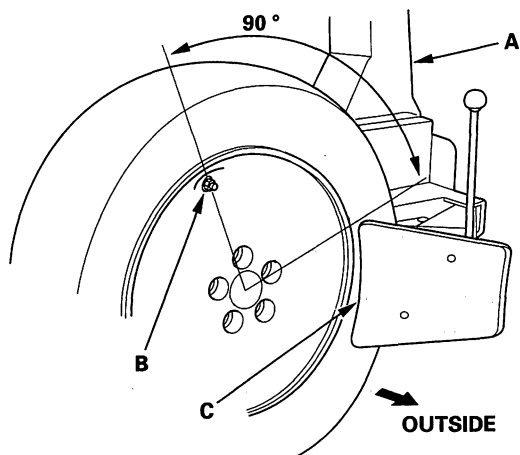
Removal

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the wheel with the faulty sensor.
3. Remove the tire valve cap and the valve core, and let the tire deflate.
4. Remove any balance weights, and then break the bead loose from the wheel with a commercially available tire changer (A).

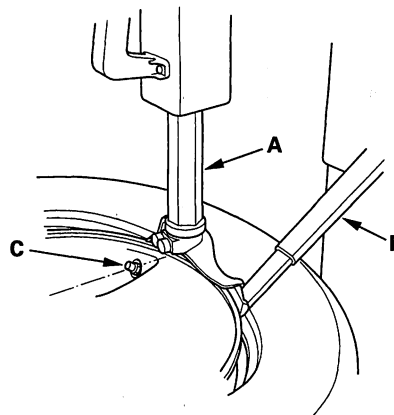
NOTICE

Note these items to avoid damaging the tire pressure sensor:

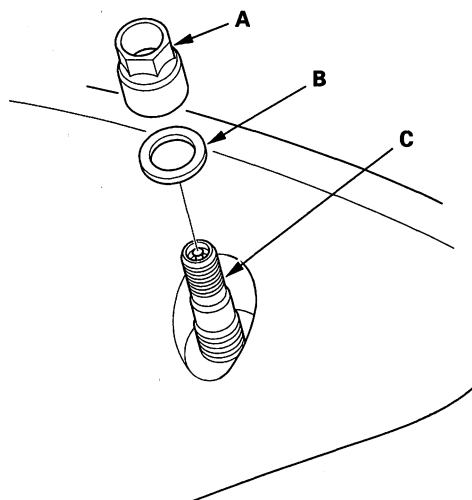
- Do the outside of the wheel first.
- Position the wheel as shown so the valve stem (B) is 90 degrees from the bead breaker (C) as shown.
- Do not position the bead breaker of the tire changer too close to the rim.



5. Position the wheel so the tire machine (A) and tire iron (B) are next to the valve stem (C) and will move away from it when the machine starts. Then remove the tire from the wheel.



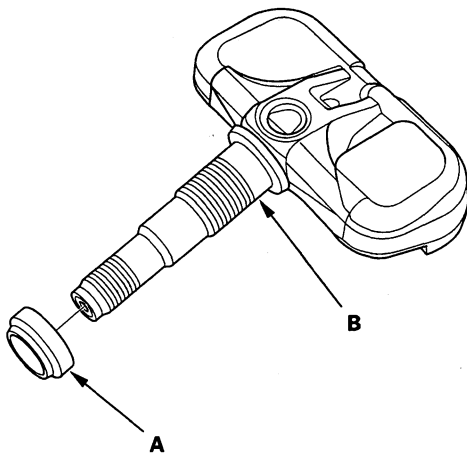
6. Remove the valve stem nut (A) and washer (B), then remove the tire pressure sensor with valve stem (C) from the wheel.



7. Remove and discard the valve stem grommet (A), from the tire pressure sensor (B).

NOTE:

- The valve stem grommet might stay in the wheel; make sure you remove it.
- Always use a new valve stem grommet whenever the tire pressure sensor has been removed from the wheel. When only removing a tire from the wheel, replace the valve stem grommet if it is possible.

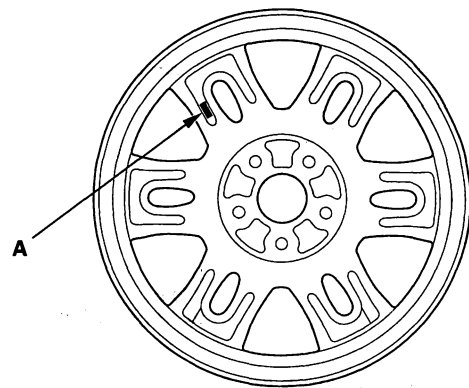


Installation

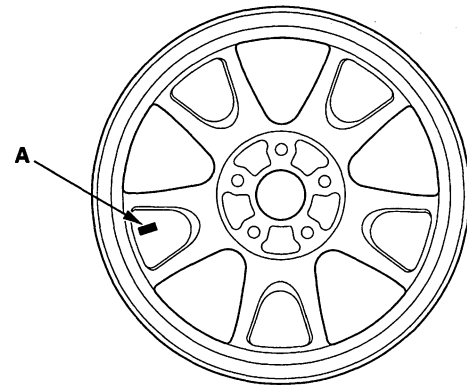
NOTE:

- Use only wheels that have a "TPMS" stamp (A) on them.
- This vehicle may be equipped with either type 1 or type 2 wheels.

TYPE 1



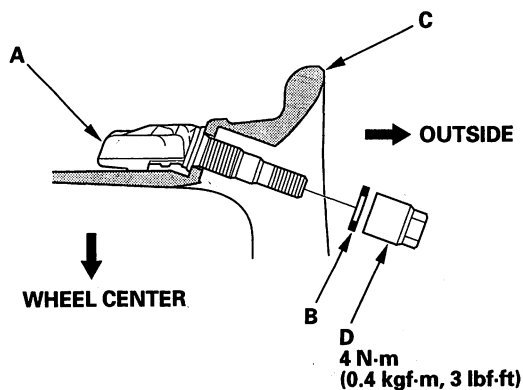
TYPE 2



(cont'd)

Tire Pressure Sensor Replacement (cont'd)

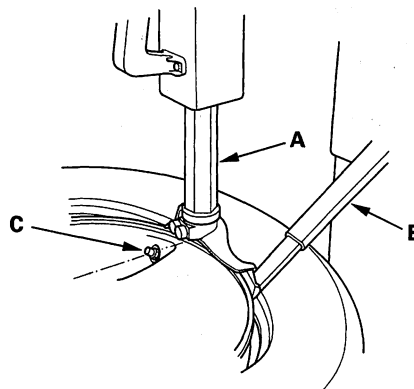
1. Before installing the tire pressure sensor, clean the mating surfaces on the sensor and the wheel.
2. Install the tire pressure sensor (A) and the washer (B) to the wheel (C), and tighten the valve stem nut (D) finger tight. Make sure the pressure sensor is resting on the wheel.



3. Tighten the valve stem nut to the specified torque while holding the tire pressure sensor.

NOTE: Do not use air or electric impact tools to tighten a valve stem nut.

4. Lube the tire bead, and position the wheel so the tire machine (A) and tire iron (B) are next to the valve stem (C) and will move away from it when the machine starts. Then install the tire onto the wheel.



5. Inflate the tire to 300 kPa (3.1 kgf/cm², 44 psi) to seat the tire bead to the rim, then adjust the tire pressure (see page 18-5).

NOTE: Make sure the tire bead is uniformly seated on both sides of the rim.

6. Check the valve stem nut tightening torque, then install the valve stem cap.
7. Check and adjust the wheel balance, then install the wheels on the vehicle. Torque the wheels to specifications.
8. Remove the jack stands, and lower the vehicle.
9. Connect the HDS and memorize the tire pressure sensor ID(s) (see page 18-128).