

Suspension

Front and Rear Suspension

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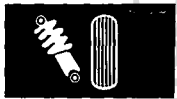
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Rear Suspension

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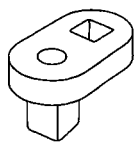
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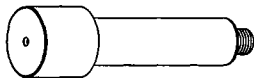
Front and Rear Suspension

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAA-SVAA100	Strut Nut Adapter	1
②	07GAF-SD40100	Hub Dis/Assembly Tool	1
③	07GAF-SE00200	Attachment, 40 mm	1
④	07MAC-SL0A102	Ball Joint Remover, 32 mm	1
⑤	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
⑥	071AF-S3VA000	Ball Joint Thread Protector, 14 mm	1
⑦	07746-0010600	Attachment, 72 x 75 mm	1
⑧	07749-0010000	Driver	1
⑨	07948-SB00101	Attachment, 96 mm	1
⑩	07965-SD90100	Support Base	1



①



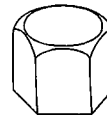
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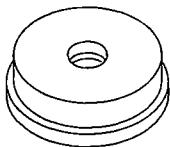
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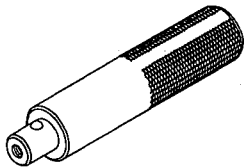
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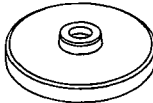
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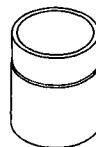
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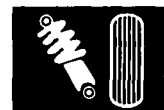


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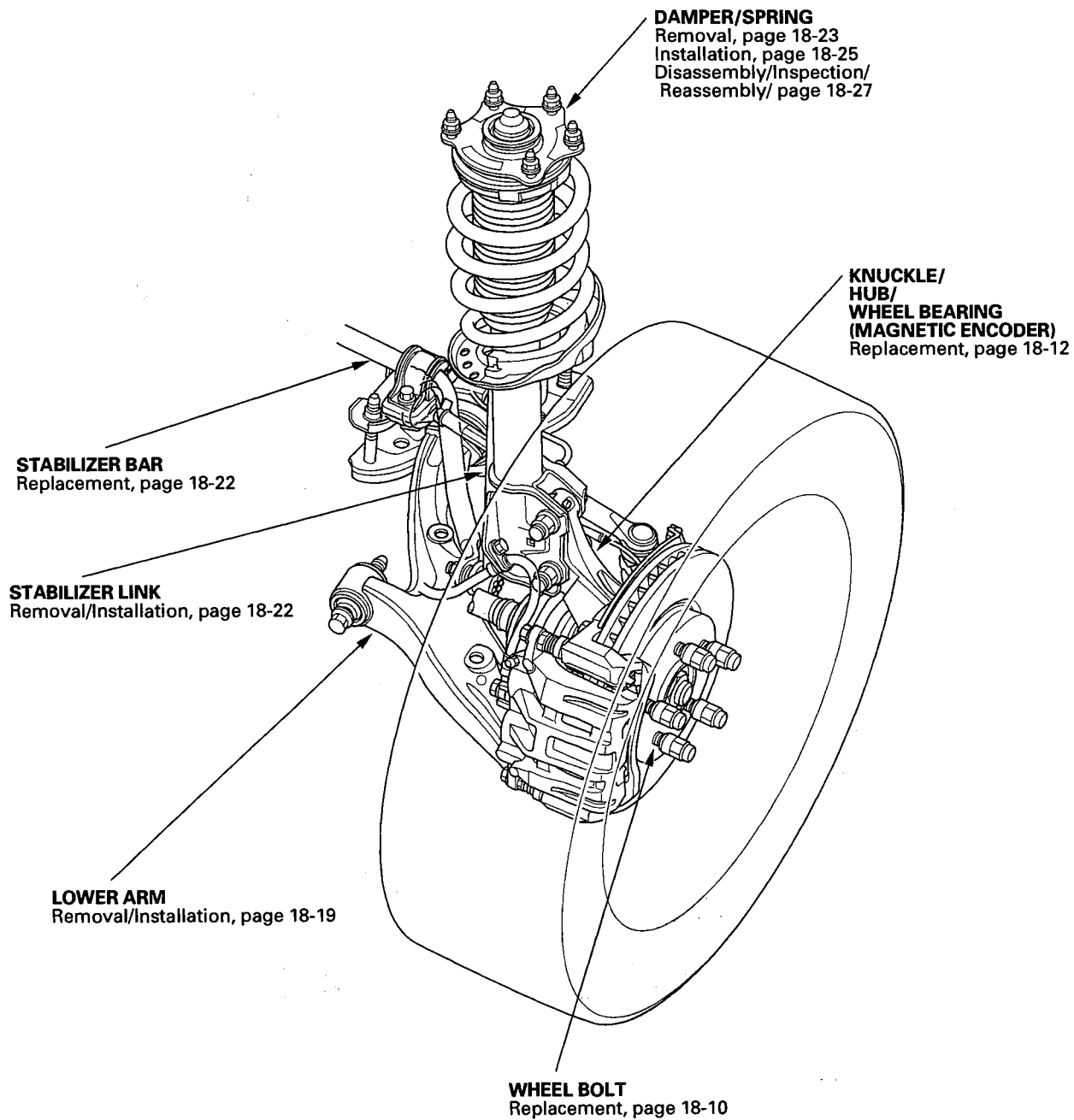
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Component Location Index

Front Suspension



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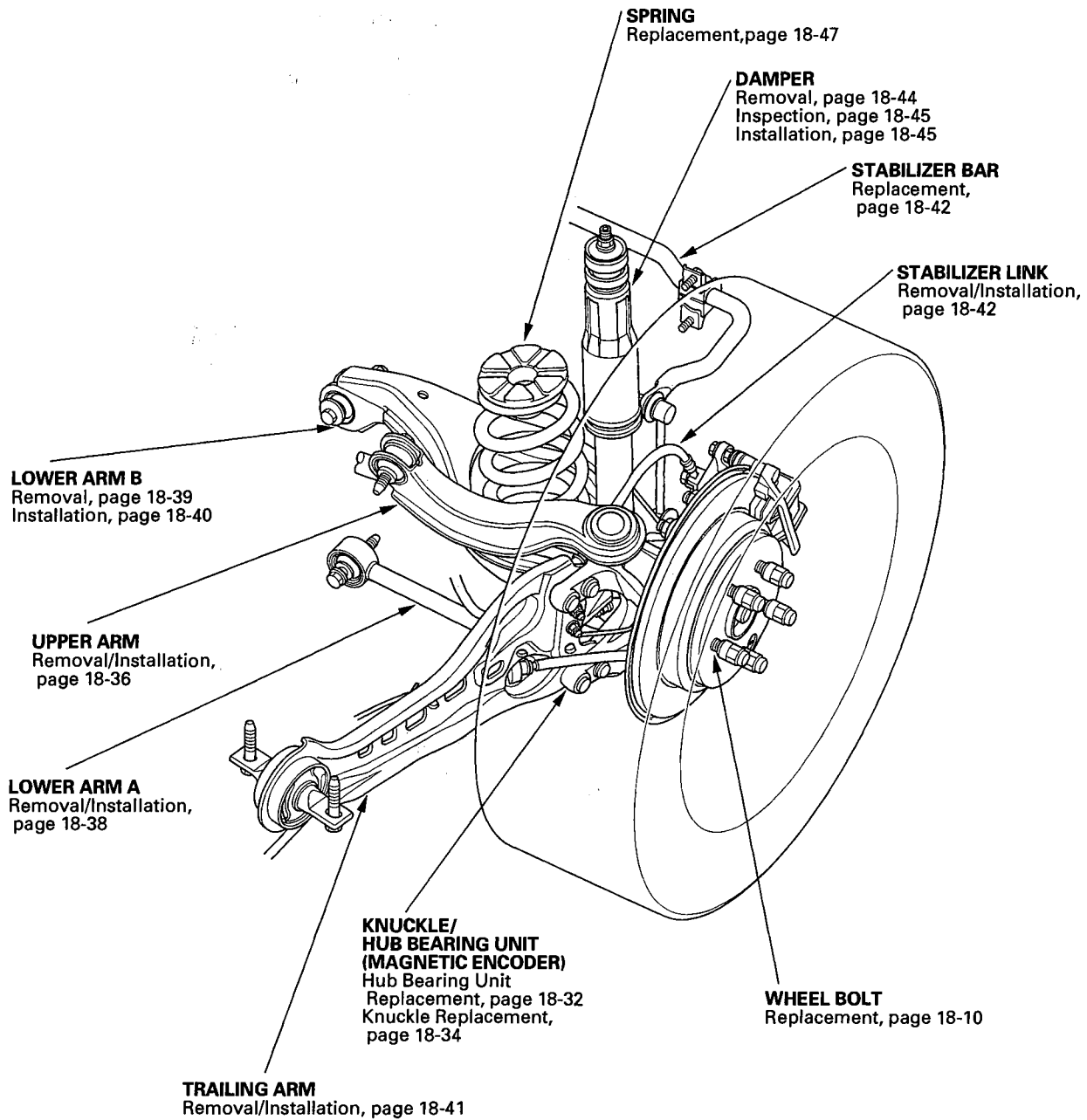
BACK

18-3

Front and Rear Suspension

Component Location Index (cont'd)

Rear Suspension





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 tire pressure.

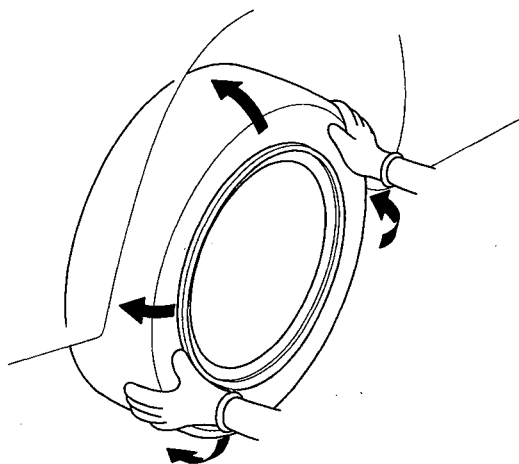
Tire size:

Front/Rear: P235/55R18 99V M+S

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: $2^{\circ}57' \pm 1^{\circ}$

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

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: $0^{\circ}10' \pm 45'$

(Maximum difference between the front right and left side: $0^{\circ}30'$)

Rear: $-1^{\circ}00' \pm 45'$

- 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.

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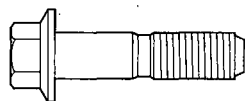
Front and Rear Suspension

Wheel Alignment (cont'd)

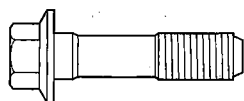
Front Camber Adjustment

The front camber can be adjusted by exchanging one or both of the damper pinch bolts with a smaller diameter adjusting bolt. The difference between the adjusting bolt diameter and the pinch bolt hole diameter allows for a small range of adjustment.

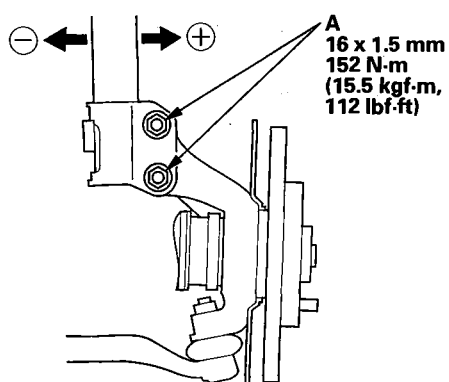
Damper pinch bolt



Adjusting bolt:
P/N 90119-STK-A01



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 flange bolts (A), and adjust the camber 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 settle the suspension.

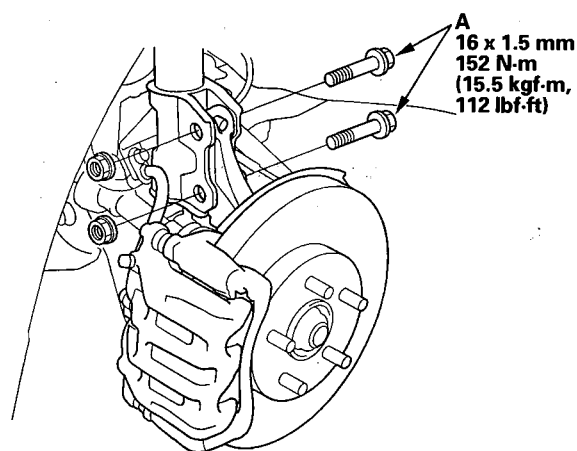
6. Measure the camber angle.

- If the measurement is within specification, measure the toe-in.
- If the measurement is not within specification, go to step 7.

7. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
8. Remove the front wheels.
9. Replace the damper pinch bolts with the adjusting bolts (A), and adjust the camber angle.

NOTE:

- The camber angle can be adjusted up to $\pm 25'$ (center of tolerance) by replacing one damper pinch bolt with the adjusting bolt.
- The camber angle can be adjusted up to $50'$ by replacing both damper pinch bolts with the adjusting bolts.



10. Tighten the adjusting bolts to the specified torque value.
11. Install the front wheels.
12. Lower the vehicle to the ground, and bounce the front of the vehicle up and down several times to settle the suspension.
13. Measure the camber angle. If the camber angle is not within specification, repeat steps 7 through 12 to readjust the camber angle. If the camber measurement is correct, measure toe-in, and adjust it if necessary.



Front Toe Inspection/Adjustment

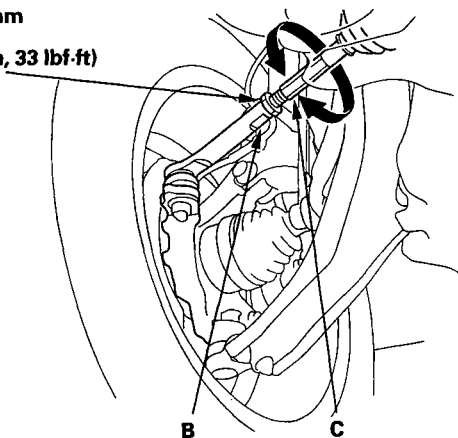
Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

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.

A
14 x 1.5 mm
44 N·m
(4.5 kgf·m, 33 lbf·ft)



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.

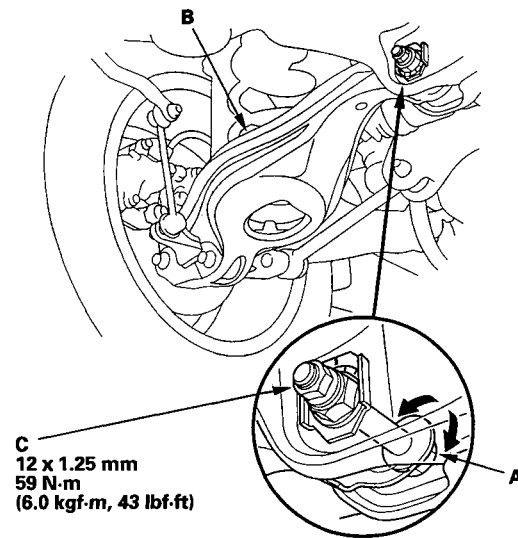
Rear Toe Inspection/Adjustment

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: 2.5 ± 2 mm (0.10 ± 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 lower arm B, and remove the self-locking nut (C).



C
12 x 1.25 mm
59 N·m
(6.0 kgf·m, 43 lbf·ft)

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

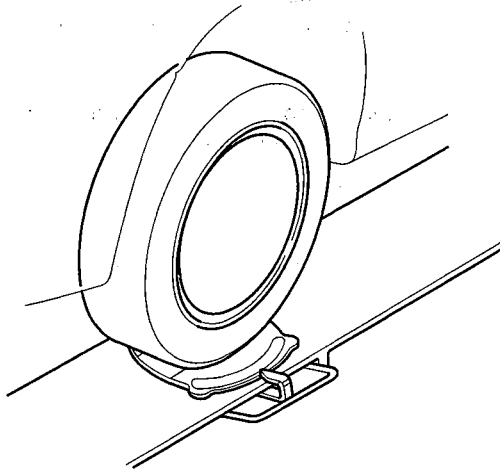
Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

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

Turning angle:

Inward wheel: $35^{\circ}24' \pm 2^{\circ}$

Outward wheel: $30^{\circ}30'$ (reference)

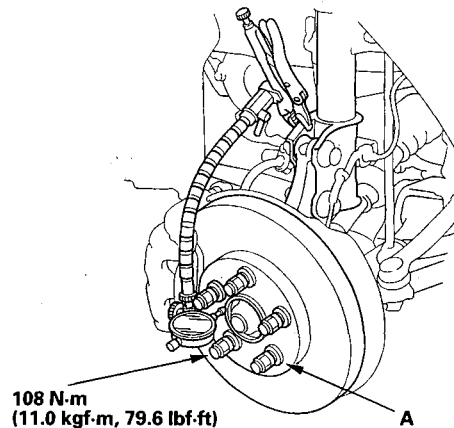


2. If the turning angle is not within the specifications, check for bent or damaged suspension components.

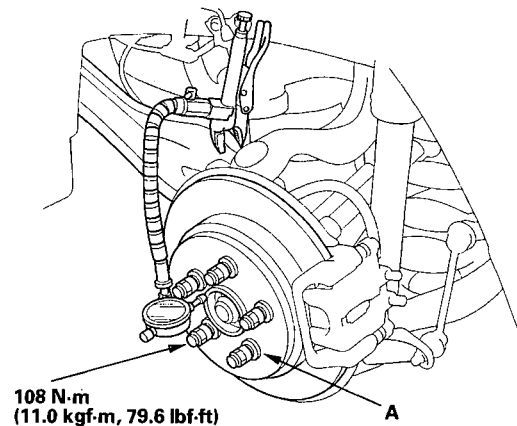
Wheel Bearing End Play Inspection

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 or disc/drum securely against the hub.

Front



Rear



4. Attach the dial gauge. Place the dial gauge against the hub flange.
5. Measure the bearing end play by moving the disc or disc/drum inward and outward.

Front/Rear:

Standard: 0—0.05 mm (0—0.002 in.)

6. If the bearing end play measurement is more than the standard, replace the wheel bearing or hub bearing unit.



Wheel Runout Inspection

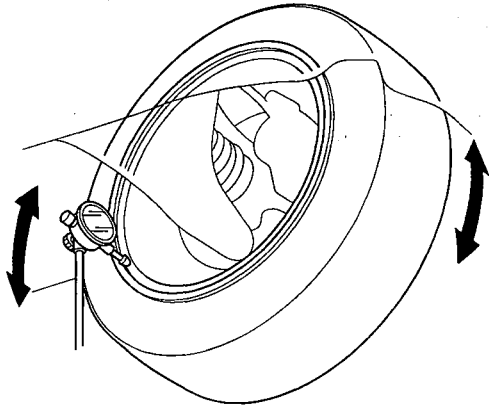
NOTE: When measuring the front wheel runout, turn the back side of the wheel slowly by hand.

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: 0–0.7 mm (0–0.03 in.)

Service limit: 2.0 mm (0.08 in.)

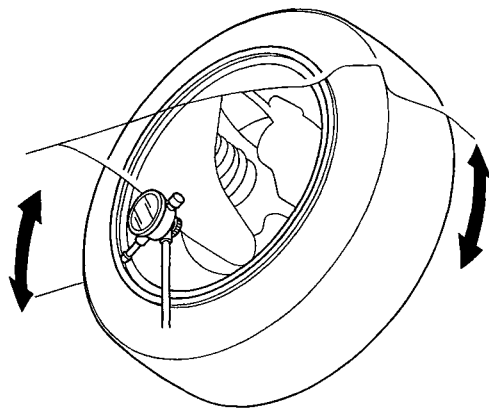


4. Reset the dial gauge to the position shown, and measure the radial runout.

Front and rear wheel radial runout:

Standard: 0–0.7 mm (0–0.03 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 or disc/drum 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

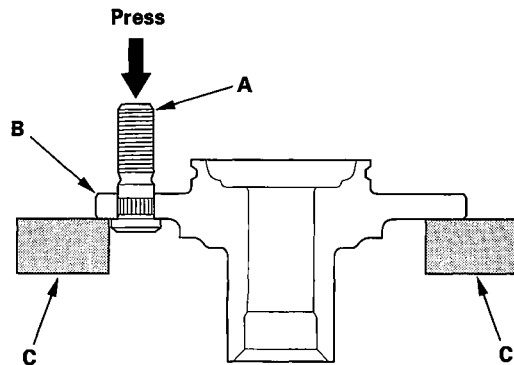
NOTICE

- 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 hub or rear hub bearing unit: front (see page 18-13), rear (see page 18-32).
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.
- The illustration shows a front hub.

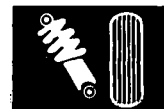


3. Insert the new wheel bolt into the hub while aligning the splined surfaces on the hub hole with the wheel bolt.

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. Press the wheel bolt using a hydraulic press. Support the hub with hydraulic press attachments or equivalent tools.
 5. Install the front hub or rear hub bearing unit: front (see page 18-13), rear (see page 18-32).

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



Ball Joint Removal

Special Tools Required

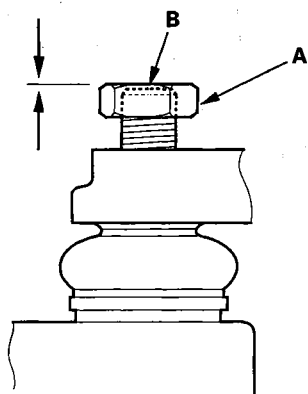
- Ball joint remover, 32 mm 07MAC-SL0A102
- Ball joint remover, 28 mm 07MAC-SL0A202

NOTICE

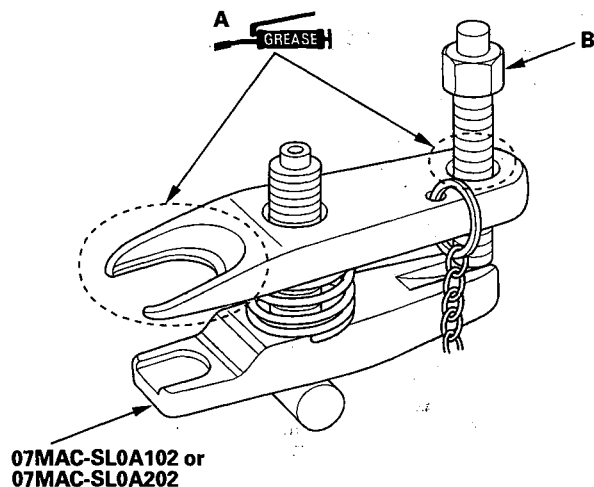
Always use a ball joint remover to disconnect a ball joint. Do not strike the housing or any other part of the ball joint connection to disconnect it.

07MAC-SL0A102 or 07MAC-SL0A202

1. Install a hex nut (A) or ball joint thread protector 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.

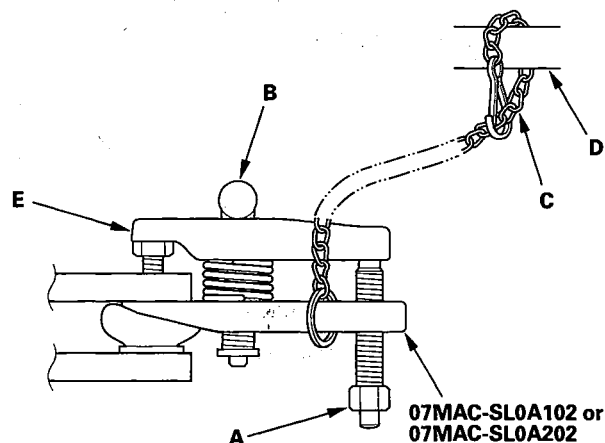


2. Apply grease to the ball joint remover on the areas shown (A). This will ease installation of the tool and prevent damage to the pressure bolt (B) threads.



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.

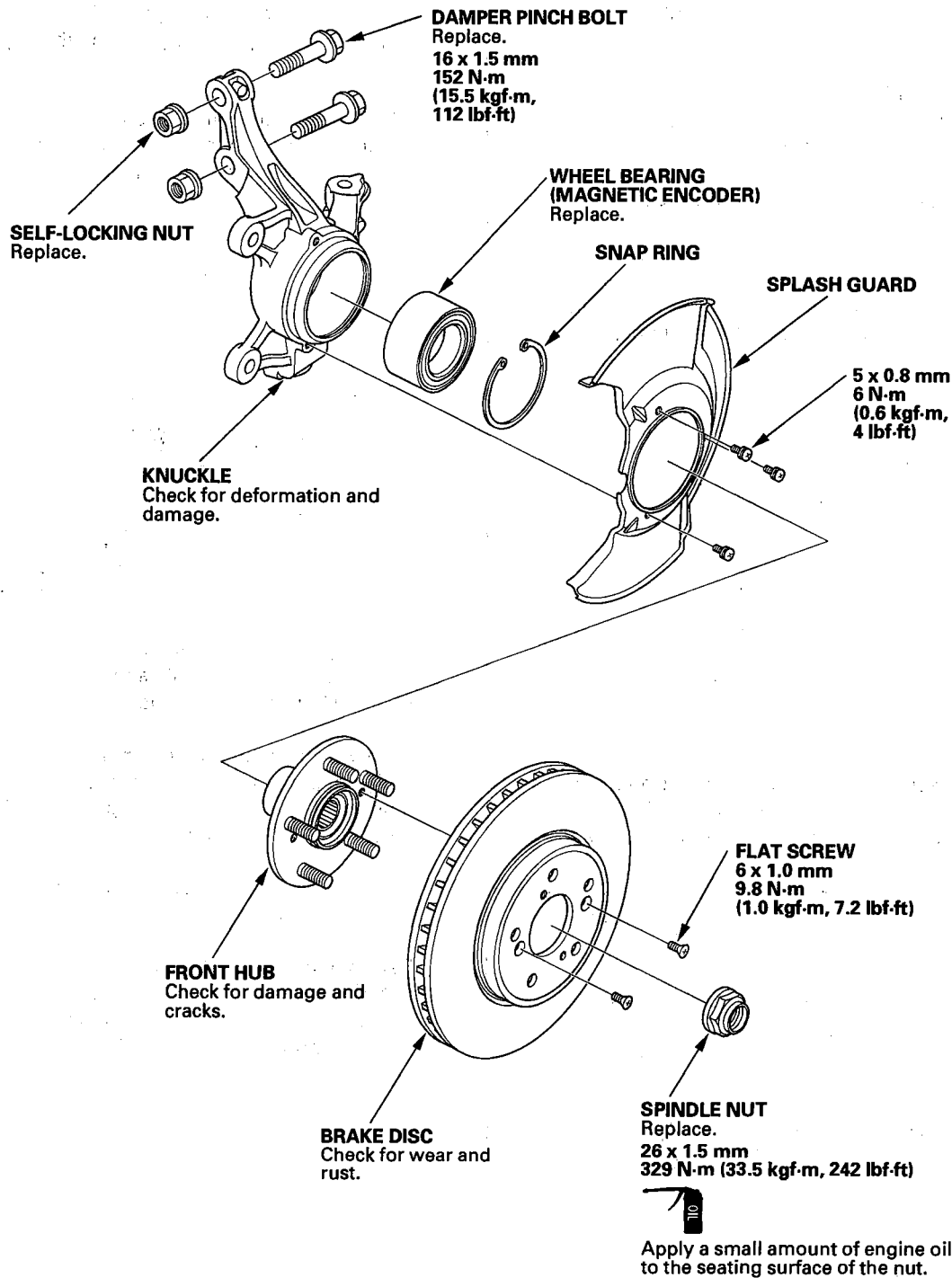
NOTE: Do not use pneumatic or electric tools on the pressure bolt.

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/Wheel Bearing Replacement

Exploded View



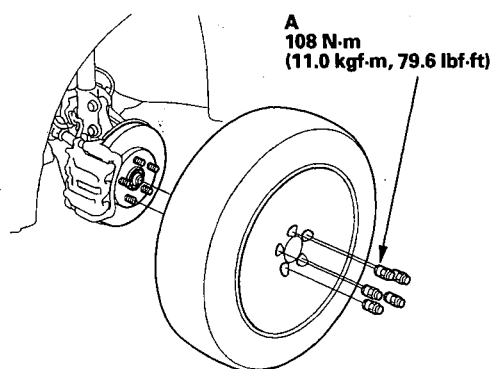


Special Tools Required

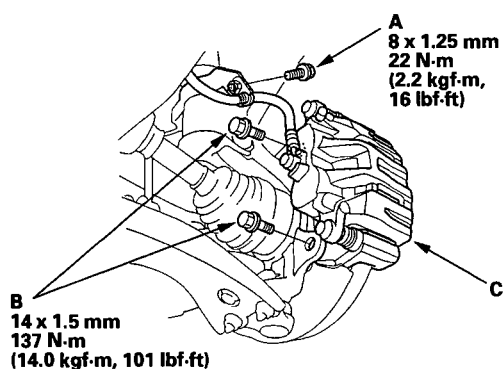
- Hub dis/assembly tool 07GAF-SD40100
- Ball joint remover, 32 mm 07MAC-SL0A102
- Ball joint remover, 28 mm 07MAC-SL0A202
- Ball joint thread protector, 14 mm 071AF-S3VA000
- Attachment, 72 x 75 mm 07746-0010600
- Driver 07749-0010000
- Attachment, 96 mm 07948-SB00101
- Support base 07965-SD90100

Knuckle/Hub 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.

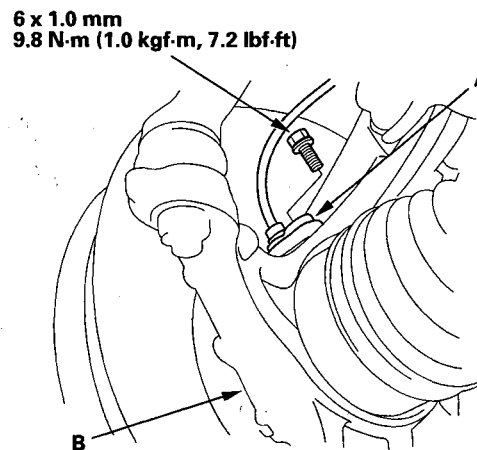


3. Remove the brake hose mounting bolt (A).

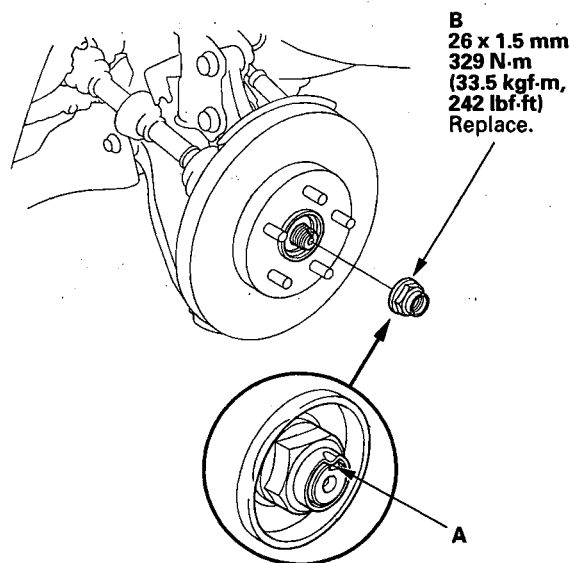


4. Remove the brake caliper bracket mounting bolts (B), and remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose excessively.

5. Remove the wheel sensor (A) from the knuckle (B). Do not disconnect the wheel sensor connector.



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

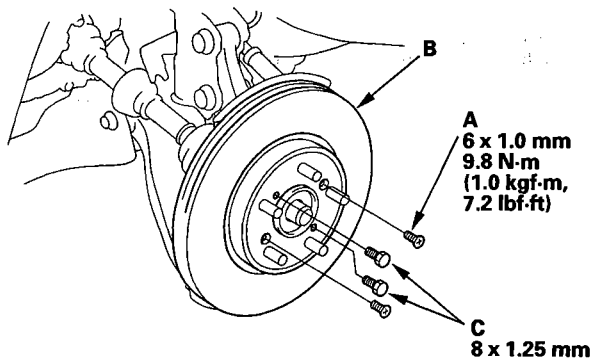


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Front Suspension

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

7. Remove the 6 mm brake disc flat screws (A).



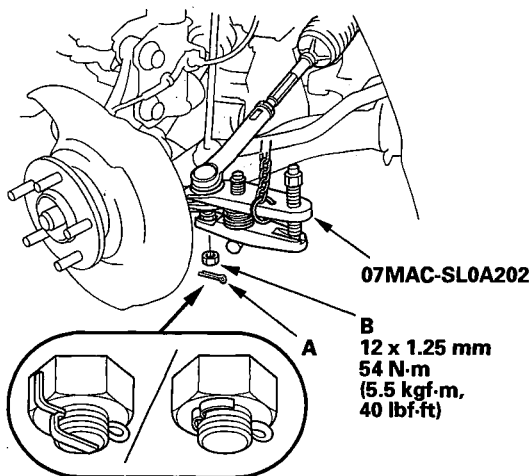
8. Remove the brake disc (B) from the hub.

NOTE: If the brake disc has clung 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 at a time to prevent the brake disc from binding.

9. Check the front hub for damage and cracks.

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

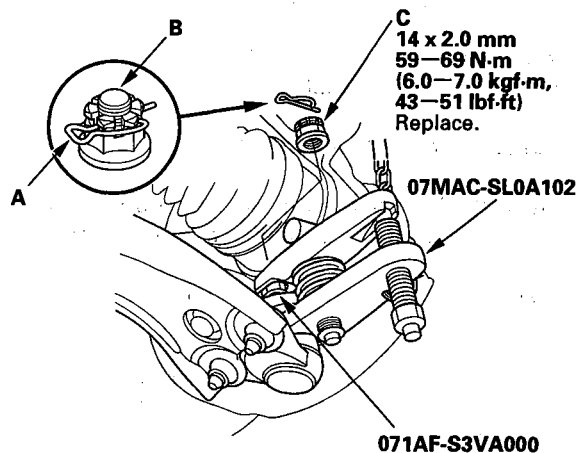
NOTE: During installation, install the new cotter pin after tightening the nut, and bend its end as shown.



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

12. Remove the lock pin (A) from the lower ball joint (B) then remove the castle nut (C).

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

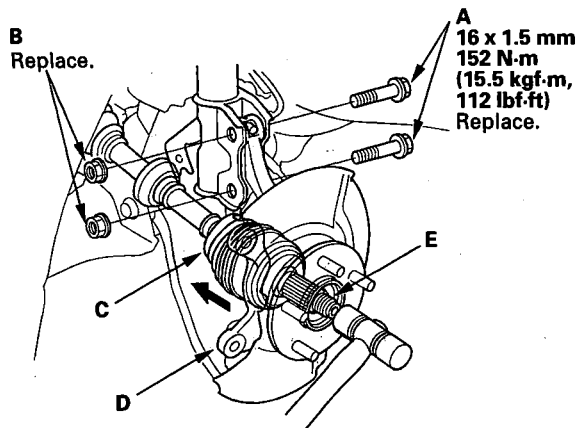


13. Disconnect the lower ball joint from the knuckle.



14. Remove the damper pinch bolts (A) and the self-locking nuts (B) from the damper.

NOTE: During installation, install the new damper pinch bolts and the new self-locking nuts.



15. Remove the driveshaft outboard joint (C) from the knuckle (D) by tapping the driveshaft end (E) with a plastic hammer while drawing the hub outward, then remove the knuckle.

NOTE:

- Do not pull the driveshaft end outward. The inner driveshaft joint may come apart.
- During installation, apply grease to the mating surface of the wheel bearing and the driveshaft outboard joint (see page 16-19).

16. Install the knuckle/hub 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 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.
- 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.
- 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, 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).

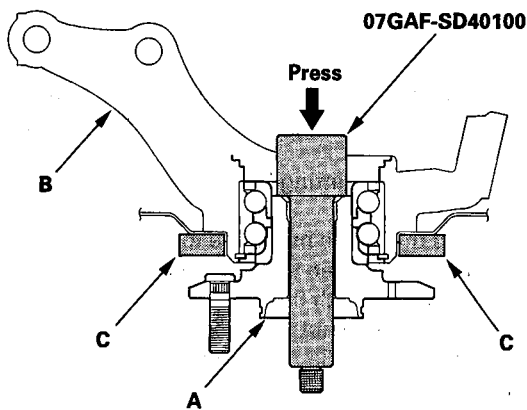
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Front Suspension

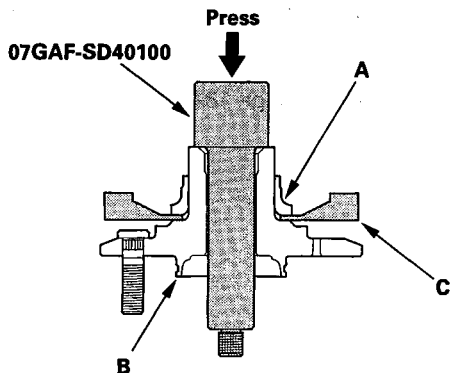
Knuckle/Hub/Wheel Bearing Replacement (cont'd)

Wheel Bearing Replacement

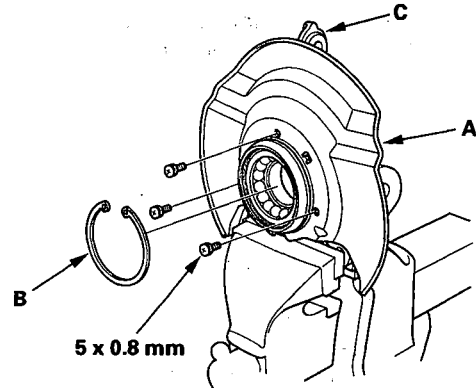
1. Separate the hub (A) from the knuckle (B) using the hub dis/assembly tool and a hydraulic press. Support the knuckle with press blocks (C) from the hydraulic press or equivalent tool. Be careful not to deform the splash guard. Hold onto the hub to keep it from falling when pressed clear.



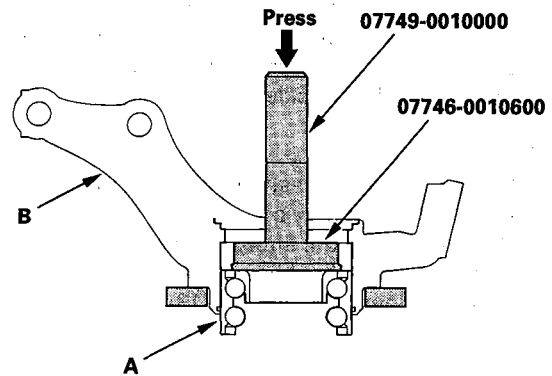
2. Press the wheel bearing inner race (A) off of the hub (B) using the hub dis/assembly tool, a commercially available bearing separator (C), and a press.



3. Remove the splash guard (A) and the snap ring (B) from the knuckle (C).



4. Press the wheel bearing (A) out of the knuckle (B) using the driver, the 72 x 75 mm attachment and a press.

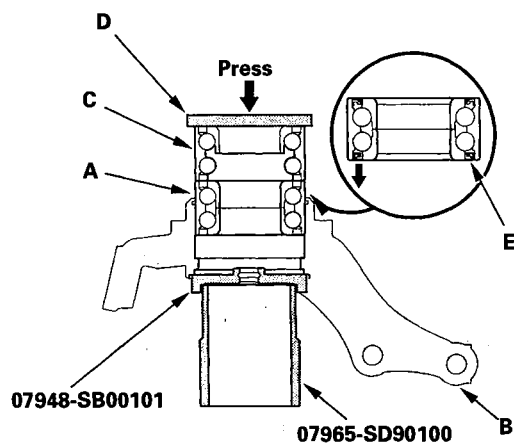




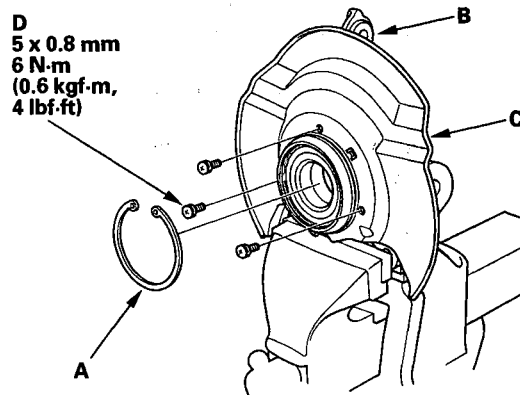
5. Wash the knuckle and hub thoroughly in high flash-point solvent before reassembly.
6. Press a new wheel bearing (A) into the knuckle (B) using the old bearing (C), a steel plate (D), the 96 mm attachment, the support base, and a press.

NOTE:

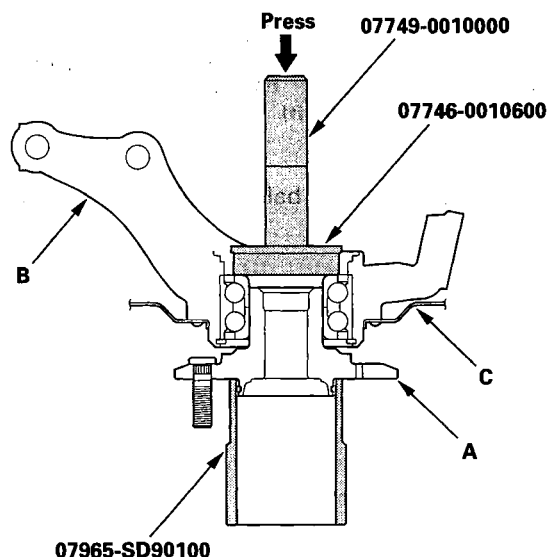
- Install the wheel bearing with the wheel sensor magnetic encoder (E) (brown color), toward the inside of the knuckle.
- Remove any oil, grease, dust, metal debris, and other foreign material from the encoder surface.
- Keep all magnetic tools away from the encoder surface.
- Be careful not to damage the encoder surface when you insert the wheel bearing.



7. Install the snap ring (A) securely in the knuckle (B).



8. Install the splash guard (C), and tighten the screws (D) to the specified torque value.
9. Install the hub (A) onto the knuckle (B) using the driver, the 72 x 75 mm attachment, the support base, and a hydraulic press. Be careful not to distort the splash guard (C).



Front Suspension

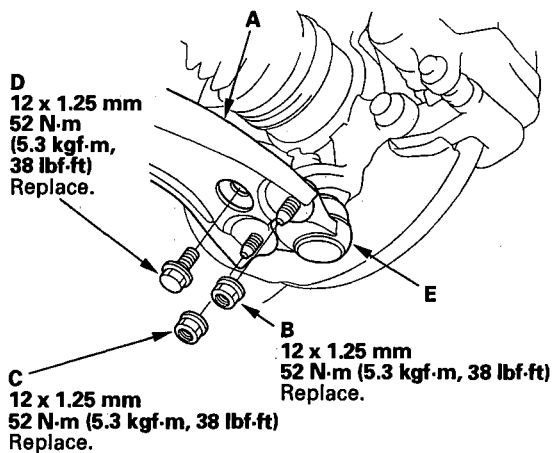
Lower Ball Joint Replacement

Special Tools Required

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

1. Remove the front wheel (see page 18-13).
2. Remove the flange bolt and flange nuts from the lower arm (A).

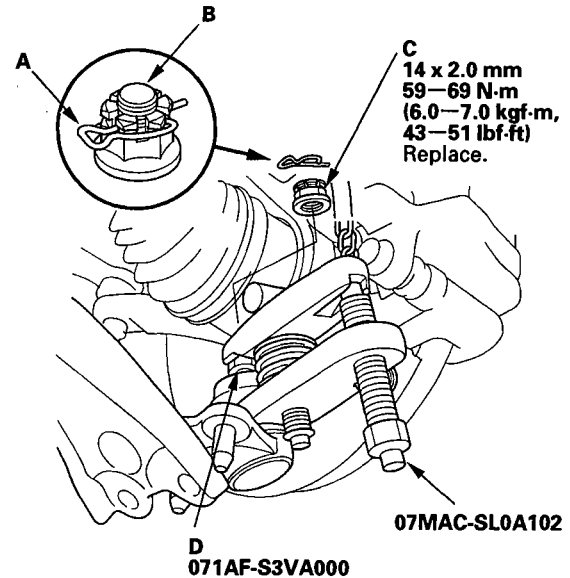
NOTE: During installation, loosely install the new flange bolt and new flange nuts. Then tighten them in the following order; the nut on the front (B), the nut on the rear (C), then the bolt (D).



3. Disconnect the lower ball joint (E) from the lower arm.

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

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



5. Install the ball joint thread protector (D).
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. Install the lower ball joint in the reverse order of removal, and note these items:
 - First install all the components, and lightly tighten the bolts and nuts, then tighten the lower ball joint to the lower arm to the specified torque. Raise the suspension to load it with the vehicle's weight before fully tightening the lower ball joint to the knuckle 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 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).

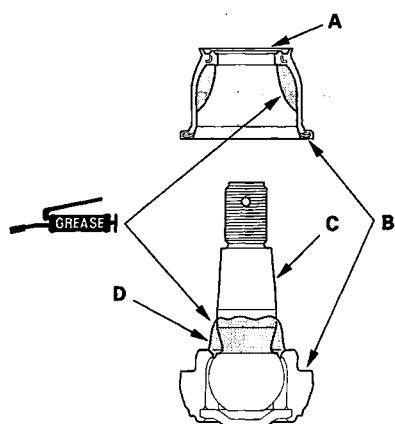


Ball Joint Boot Replacement

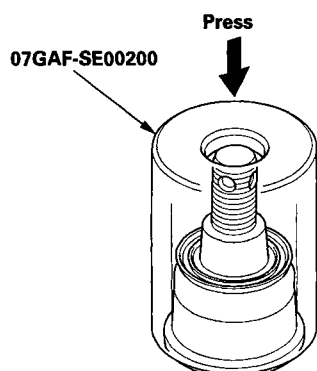
Special Tools Required

Attachment, 40 mm 07GAF-SE00200

1. Remove lower ball joint (see page 18-18).
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 ball housing 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 attachment (40 mm) until the bottom seats on the lower ball housing all the way around.

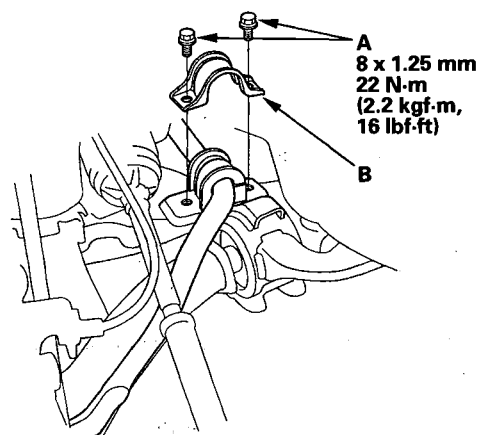


7. After installing the boot, wipe any grease off the exposed portion of the ball joint pin.
8. Install lower ball joint (see page 18-18).

Lower Arm Removal/Installation

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 bolts (A) and the bushing holder (B).



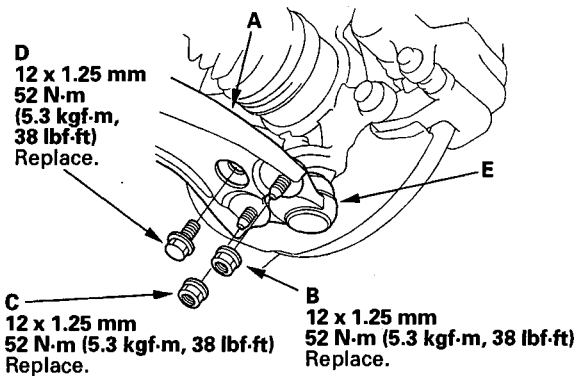
(cont'd)

Front Suspension

Lower Arm Removal/Installation (cont'd)

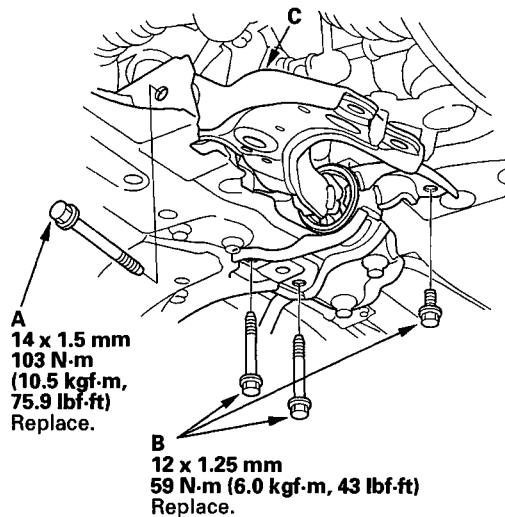
4. Remove the flange bolt and flange nuts from the lower arm (A).

NOTE: During installation, loosely install the new flange bolt and new flange nuts. Then tighten them in the following order; the nut on the front (B), the nut on the rear (C), then the bolt (D).



5. Disconnect the lower ball joint (E) from the lower arm.
6. Remove the lower arm mounting bolt (A).

NOTE: During installation, install a new mounting bolt.



7. Remove the lower arm mounting bolts (B), then remove the lower arm (C) from the front suspension subframe.

NOTE: During installation, install new mounting bolts.

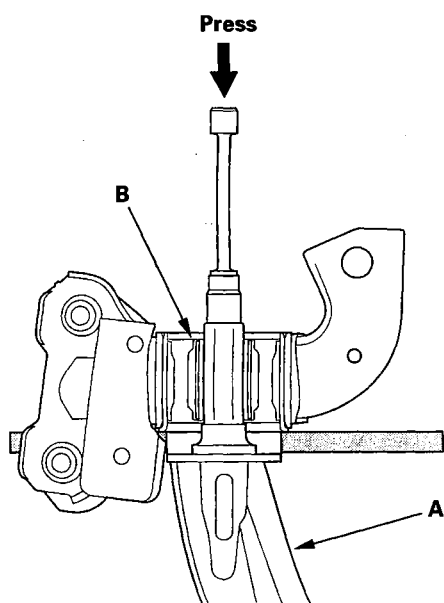
8. Install the lower arm in the reverse order of removal, and note these items:

- 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 of the brake disc and the inside of the wheel.
- Check the wheel alignment, and adjust it if necessary (see page 18-5).



Bushing Replacement

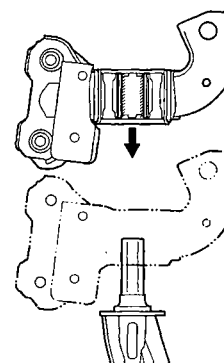
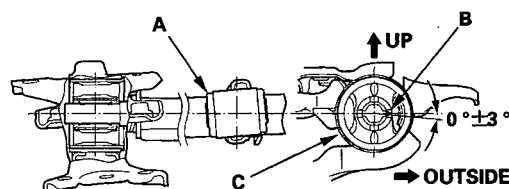
1. Press out the lower arm (A) with the suitable socket wrench and a hydraulic press, and remove the lower arm from the bushing (B).



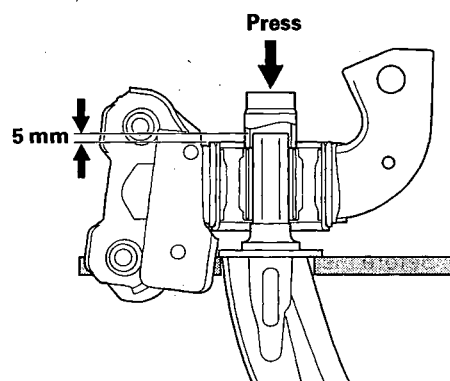
2. Apply a mild solution of soap and water to the new bushing surface.

3. Align the angle of the lower arm (A) and the tab portion (B) of the bushing (C). Press in the bushing by hand first.

NOTE: The installed bushing's tab portion points upward and downward to the installed lower arm.



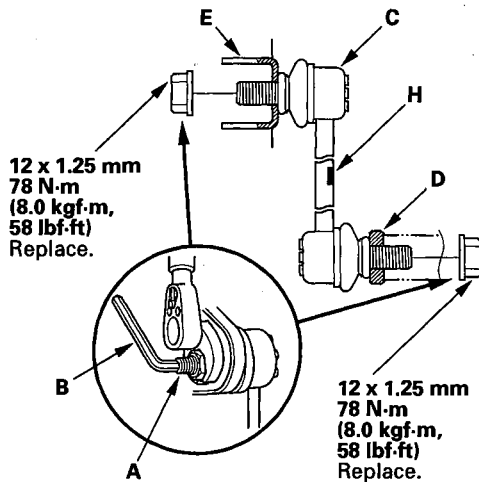
4. Press in the bushing with a suitable socket wrench and a hydraulic press.
5. Adjust the distance between the top of the lower arm and the bushing surface to the dimension shown.



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 while holding the respective joint pin (A) with a hex wrench (B), then remove the stabilizer link (C).



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

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

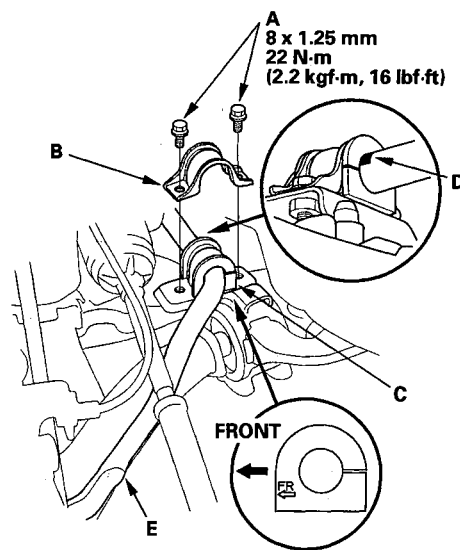
5. Install the new flange nuts and lightly tighten them.
6. Tighten the flange nuts to the specified torque value while holding the respective joint pin with a hex wrench.
7. Reinstall all removed parts and test-drive the vehicle.

NOTE: Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.

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 18-22).
4. Remove the flange bolts (A) and the bushing holders (B), then remove the bushings (C).

NOTE: During installation, align the point marks (D) on the stabilizer bar with the sides of the bushings.



5. Disconnect both tie-rod ball joints from the knuckle (see step 10 on page 18-14).
6. Remove the stabilizer bar (E) through the wheelwell opening on the passenger's side.



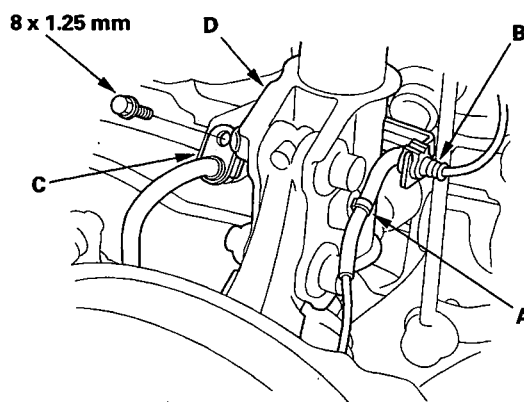
7. Install the stabilizer bar in the reverse order of removal, and note these items:

- Note the right and left direction of the stabilizer bar.
- Align the paint marks on the stabilizer bar with the sides of the bushings.
- Note the fore/aft direction of the bushing.
- Refer to stabilizer link removal/installation to connect the stabilizer bar to the links (see page 18-22).
- Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel, then install the front wheels.
- Check the wheel alignment, and adjust it if necessary (see page 18-5).

Damper/Spring Removal and Installation

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. Remove the wheel sensor harness clip (A), the wire guide (B) and the brake hose bracket (C) from the damper (D). Do not disconnect the wheel sensor connector.

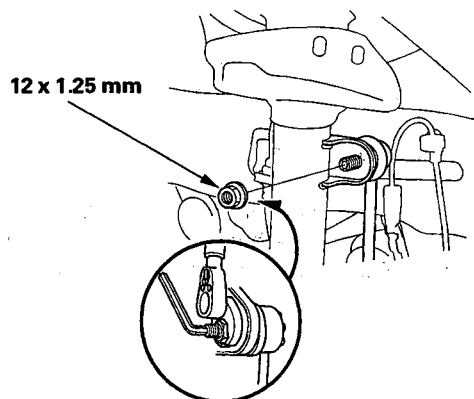


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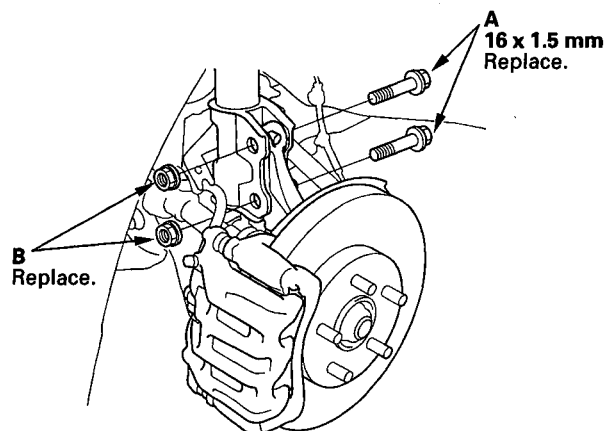
Front Suspension

Damper/Spring Removal and Installation (cont'd)

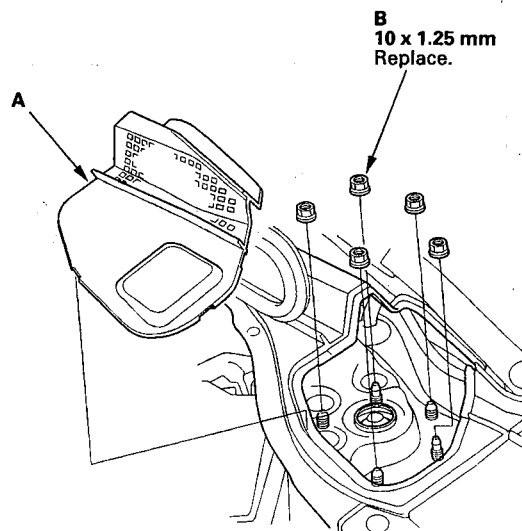
4. Disconnect the stabilizer link from the damper (see page 18-22).



5. Remove the damper pinch bolts (A) and self-locking nuts (B) from the damper.



6. Remove the lid (A).

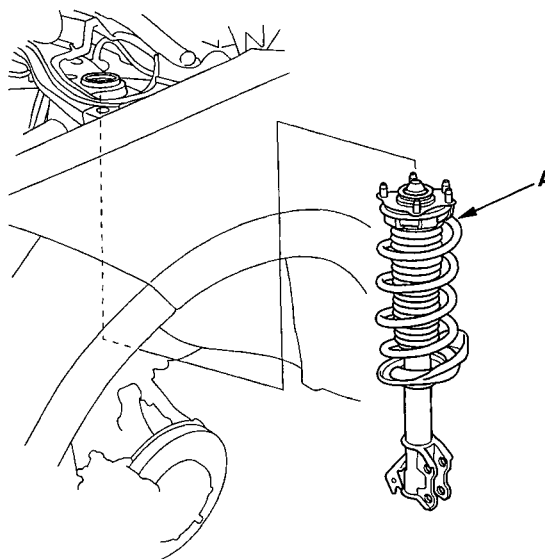


7. Remove the flange nuts (B) from the top of the damper.

NOTE: Damper springs are different, left and right. Mark the springs L and R before you continue.

8. Remove the damper assembly (A).

NOTE: Be careful not to damage the body.

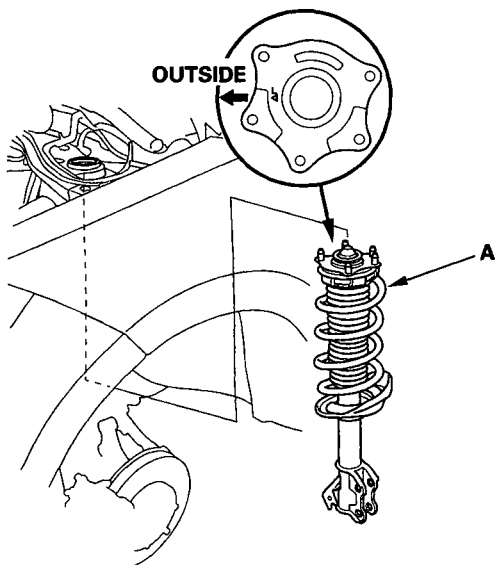




Installation

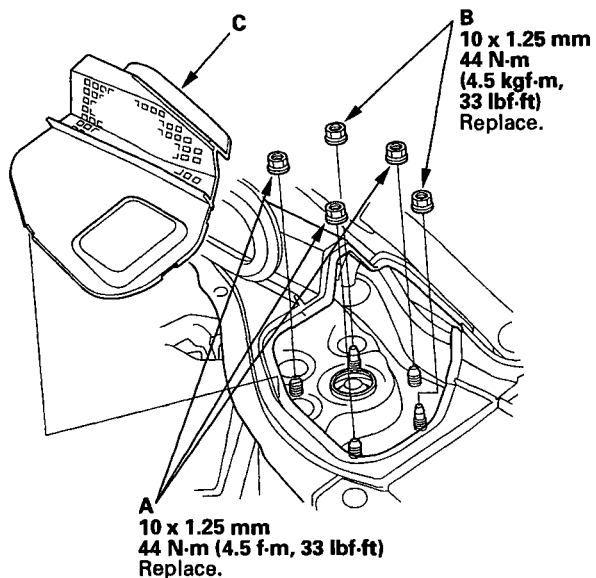
1. Install the damper assembly (A) onto the frame.

NOTE: Be careful not to damage the body.

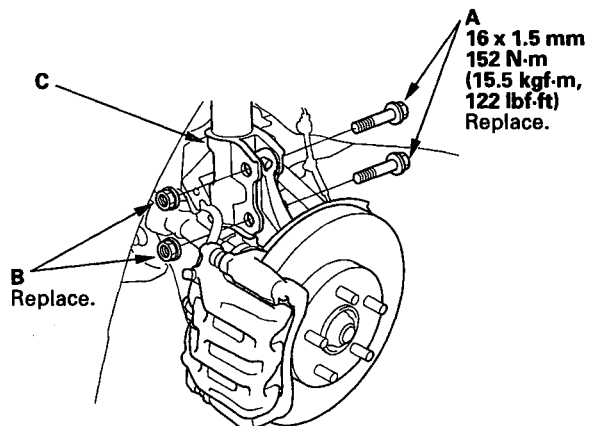


2. Loosely install the new flange nuts.

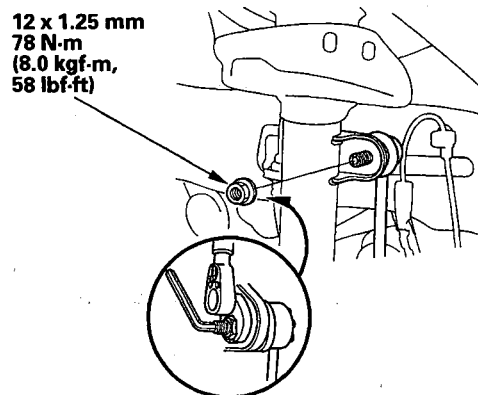
NOTE: Install the lid (C) after tightening them to the specified torque value beginning with the flange nut A and the flange nut B.



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



4. Connect the stabilizer link to the damper (see page 18-22).



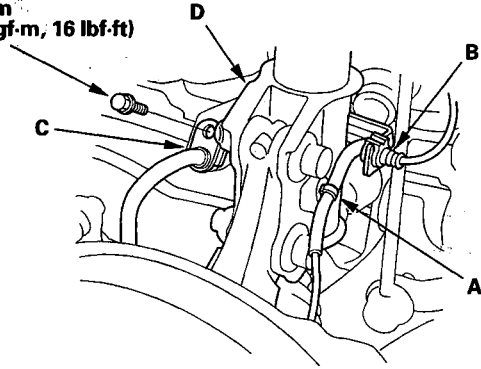
(cont'd)

Front Suspension

Damper/Spring Removal and Installation (cont'd)

5. Install the wheel sensor harness clip (A), the wire guide (B), and the brake hose bracket (C) to the damper (D).

8 x 1.25 mm
22 N·m
(2.2 kgf·m, 16 lbf·ft)

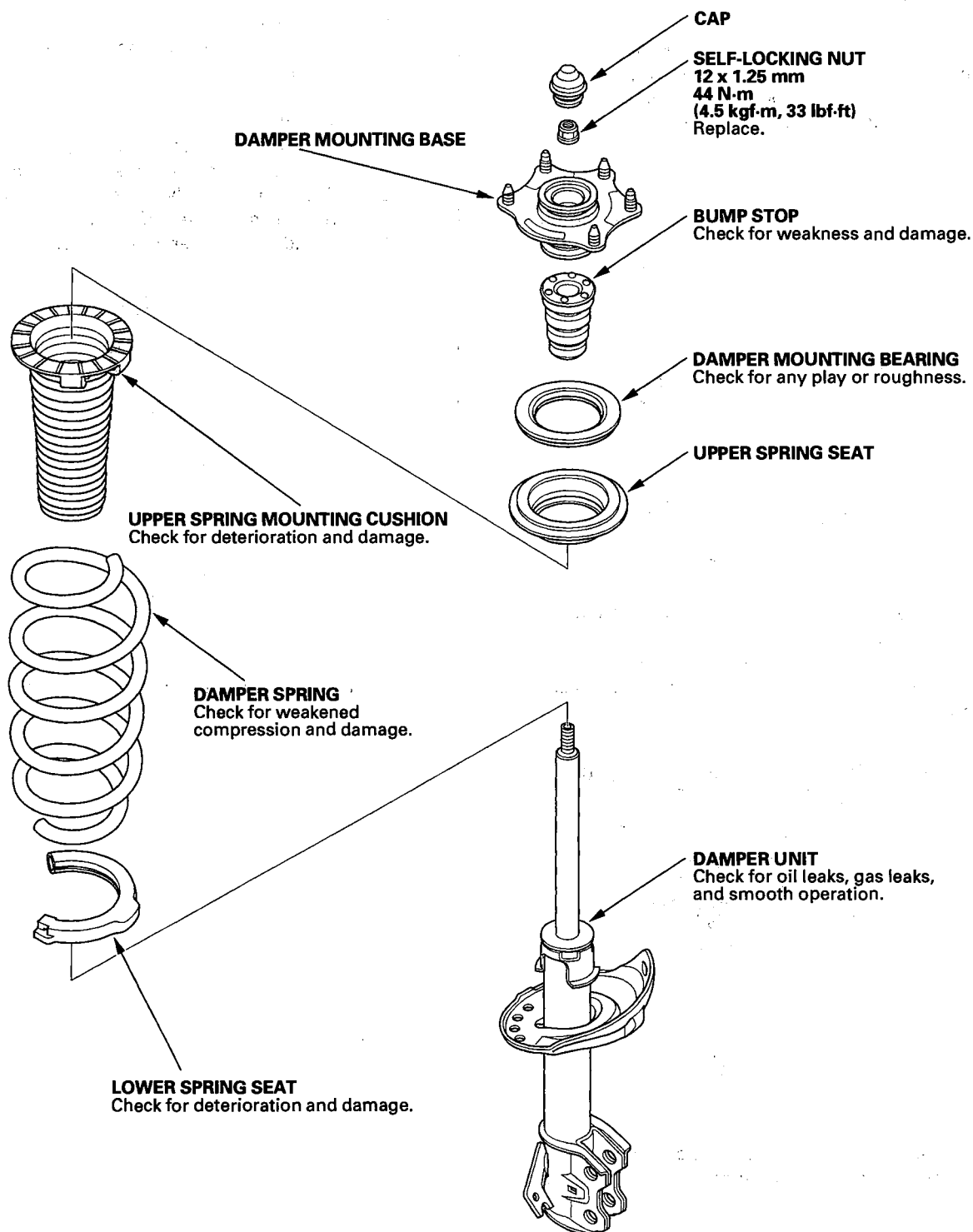


6. Raise the front suspension with a floor jack to load the suspension with the vehicle's weight.
7. Tighten the damper pinch bolts and the self-locking nuts to the specified torque value.
8. Tighten the flange nuts on top of the damper to the specified torque value beginning with the flange nut A and the flange nut B.
9. Install the lid.
10. Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheel.
11. Check the wheel alignment, and adjust it if necessary (see page 18-5).



Damper/Spring Disassembly, Inspection, and Reassembly

Exploded View



(cont'd)

Front Suspension

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

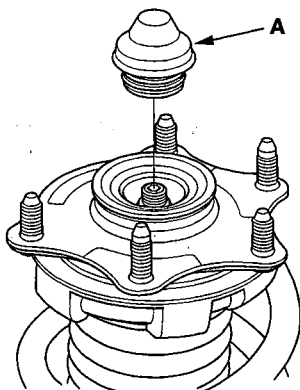
Special Tools Required

Strut nut adapter 07AAA-SVAA100

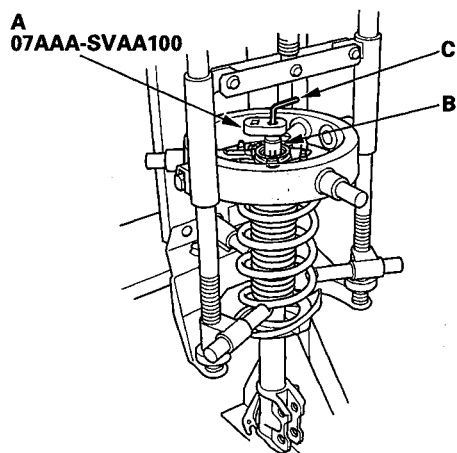
NOTE: When compressing the damper spring, use a commercially available strut spring compressor (Branick MST-580A or Model 7200, or equivalent) according to the manufacturer's instructions.

Disassembly

1. Remove the cap (A) from the top of the damper.



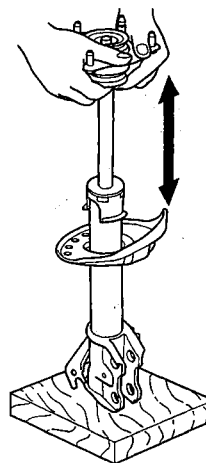
2. Compress the damper spring, then remove the self-locking nut with the strut nut adapter (A) and 17 mm deep socket (B), while holding the damper shaft with a hex wrench (C). Do not compress the spring more than necessary to remove the nut.



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

Inspection

1. Reassemble all the 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.

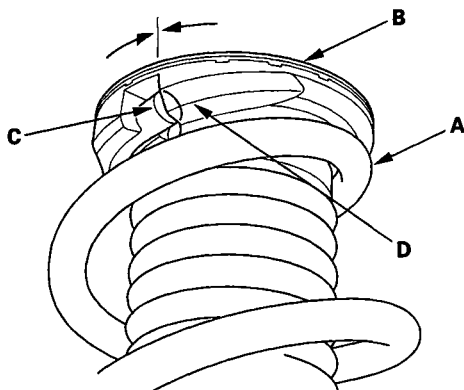


3. Check for oil leaks, abnormal noises, or binding during these tests.

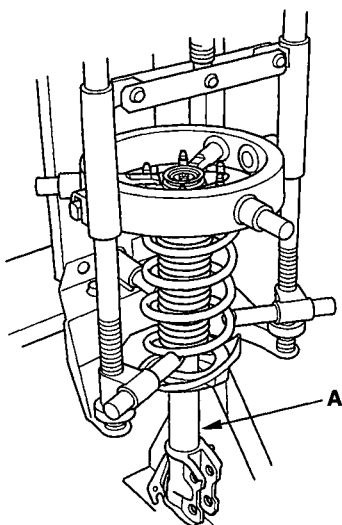


Reassembly

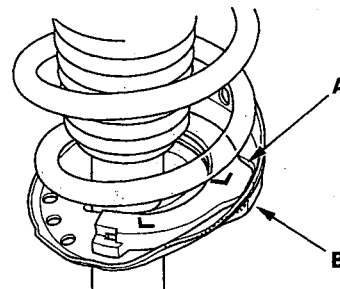
1. Install the damper spring (A) on the upper spring mounting cushion (B), then align the upper end (C) of the damper spring with the cushion stop (D).



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



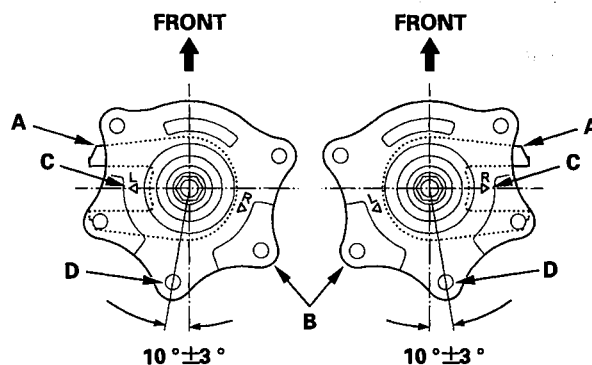
4. Align the bottom of the damper spring (A) with the stepped part (B) of the lower spring seat.



5. Align the damper bracket (A) and the damper mounting base (B) so that "△" stamp (C) points toward outside.

Left:

Right:



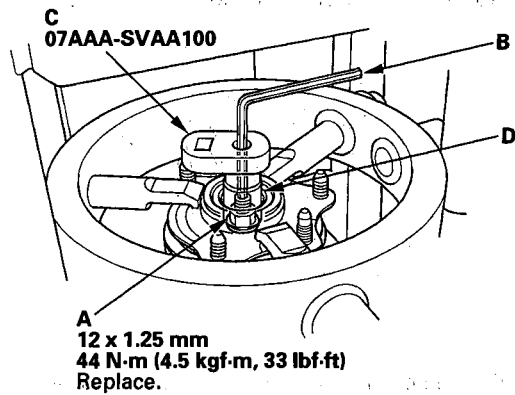
6. Align the angle of the stud bolt (D) on the damper bracket as shown.

(cont'd)

Front Suspension

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

7. Install a new self-locking nut (A).



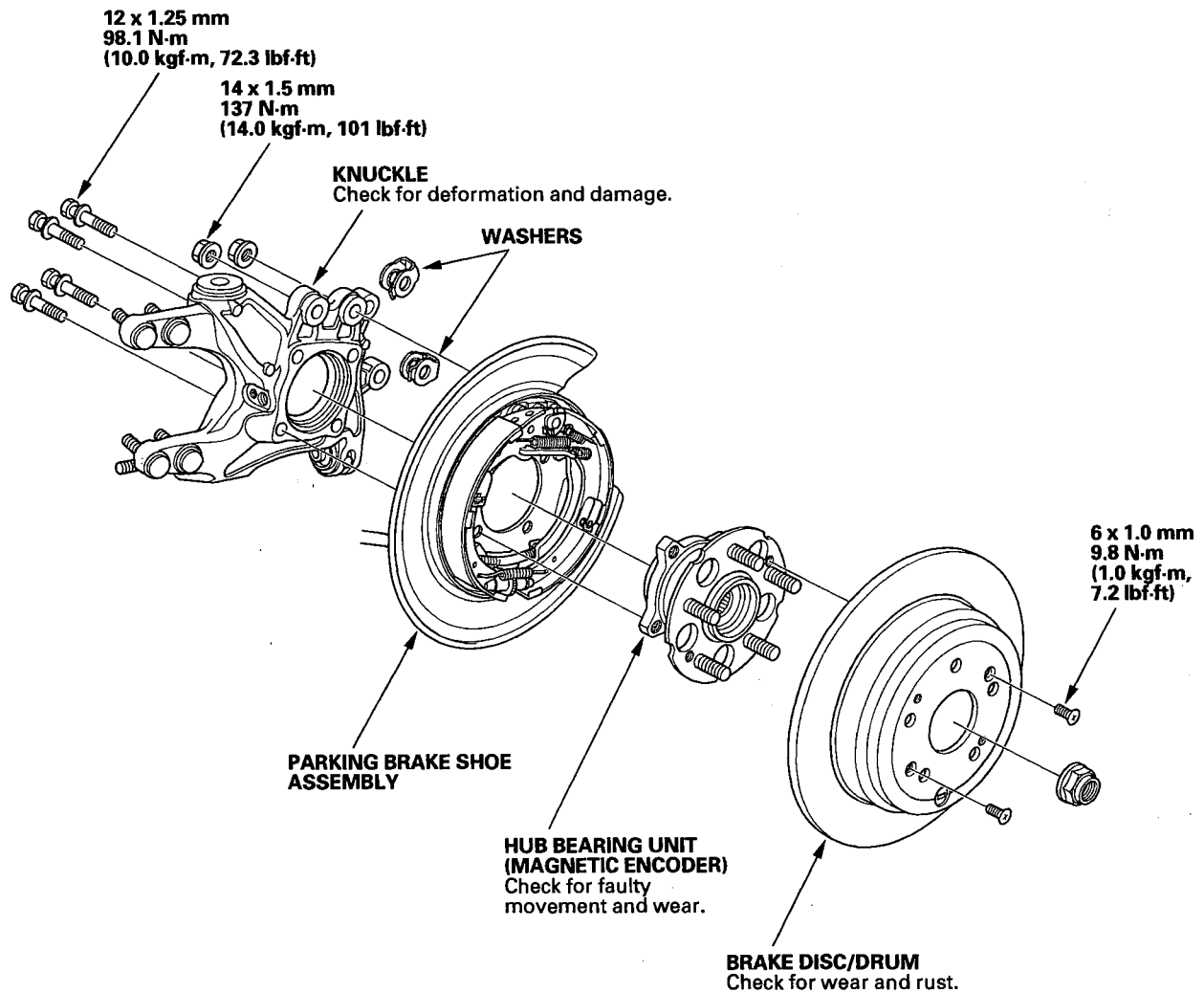
8. Hold the damper shaft using a hex wrench (B), and tighten the new self-locking nut using the strut nut adapter (C) and 17 mm deep socket (D) to the specified torque value.
9. Install the cap.

Rear Suspension



Knuckle/Hub Bearing Unit Replacement

Exploded View



cardiagn.com

(cont'd)

BACK

18-31

Rear Suspension

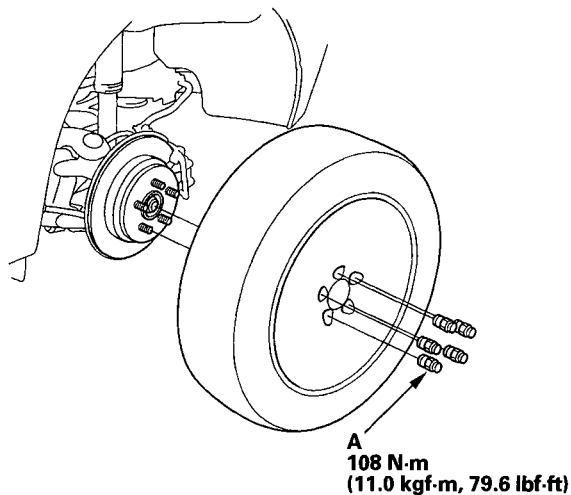
Knuckle/Hub Bearing Unit Replacement (cont'd)

Special Tools Required

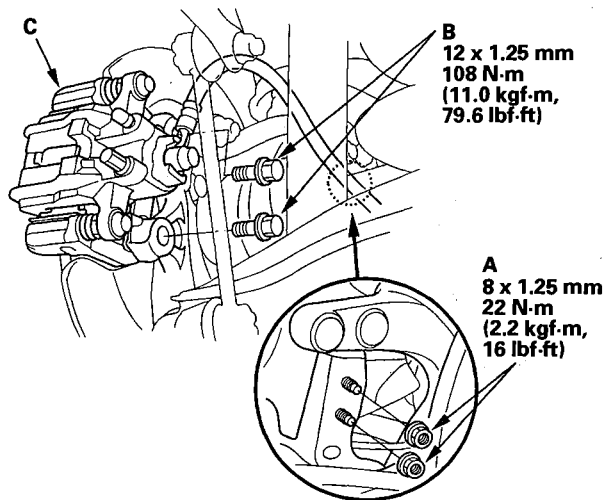
Ball joint remover, 32 mm 07MAC-SL0A102

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 rear wheel.

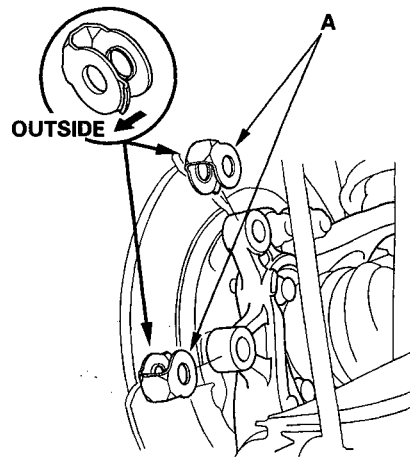


3. Remove flange nuts (A), then remove the brake hose mounting bracket.

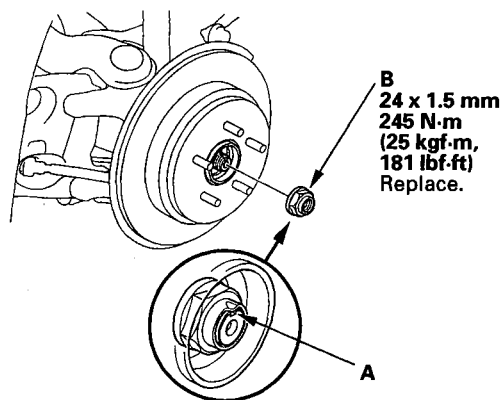


4. Remove the caliper mounting bolts (B), and hang the caliper assembly (C) to one side. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper from the undercarriage.

5. Remove the two washers (A).



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

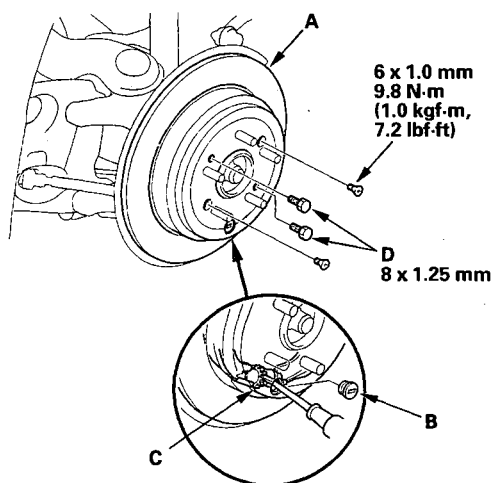




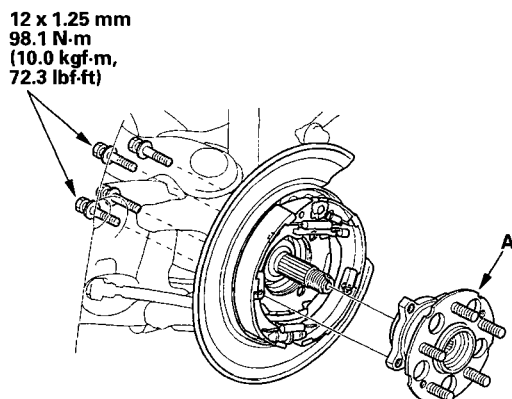
7. Release the parking brake, and remove the brake disc/drum (A) from the hub bearing unit.

NOTE:

- Remove the access plug (B), then, if necessary, turn the adjuster bolt (C) with a flat-tip screwdriver until the shoes become loose if necessary.
- If the brake disc/drum has clung to the hub bearing unit. Screw two 8 x 1.25 mm bolts (D) 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, press the brake pedal several times to make sure the brakes work if adjusted to loosen the shoes.



8. Remove the hub bearing unit (A).



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

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

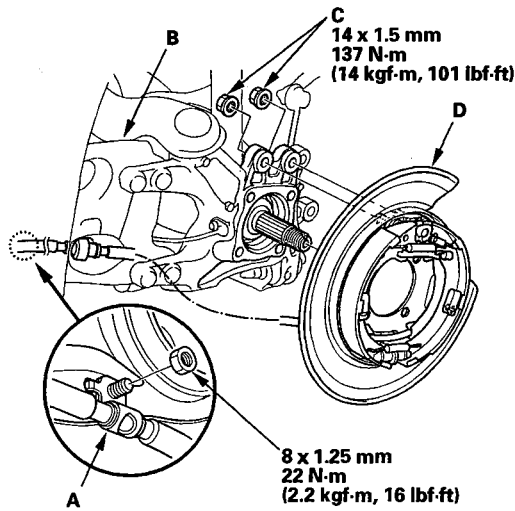
- Tighten all mounting hardware to the specified torque values.
- Use a new spindle nut during reassembly.
- Before installing the spindle nut, apply a small amount of engine oil to the seating surface of the nut. After tightening, use a drift to stake the spindle nut shoulder against the driveshaft.
- 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 parking brake cable (A) from the trailing arm (B).

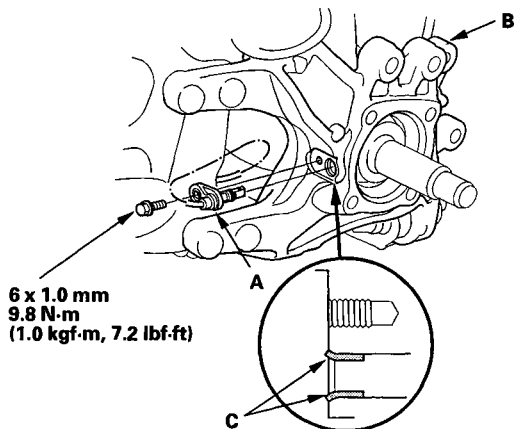


3. Remove the flange nuts (C), then remove the backing plate (D).

NOTE: To prevent damage to the backing plate or parking brake cable, use a short piece of wire to hang the backing plate from the undercarriage. Do not twist the parking brake cable excessively.

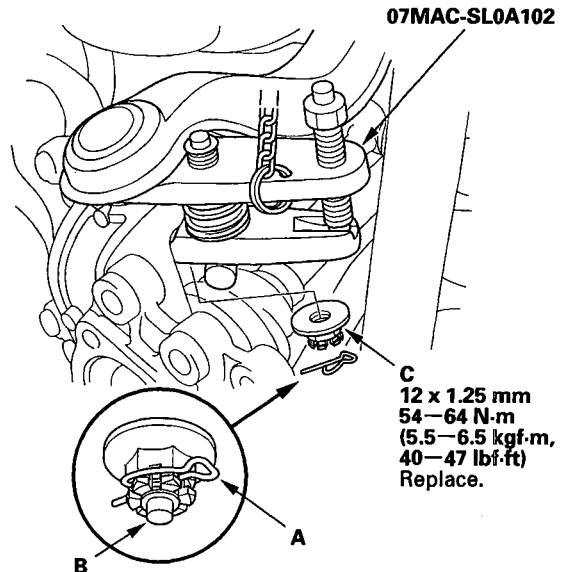
4. Remove the wheel sensor (A) from the knuckle (B). Do not disconnect the wheel sensor connector.

NOTE: During installation, apply multipurpose grease to inside of the hole (C) on the knuckle.



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

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

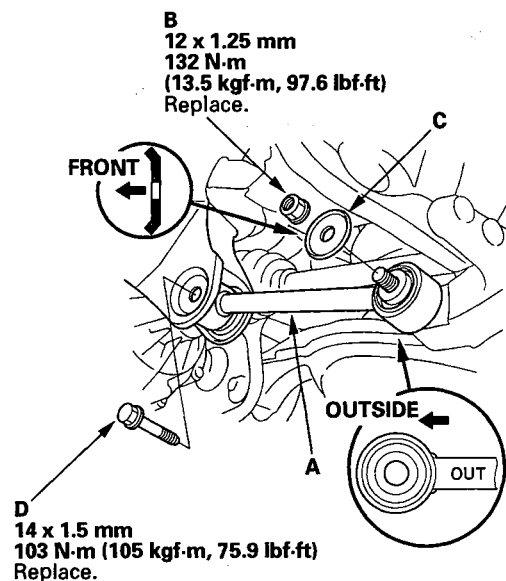


6. Disconnect the upper arm ball joint from the knuckle using the ball joint remover, 32 mm (see page 18-11).



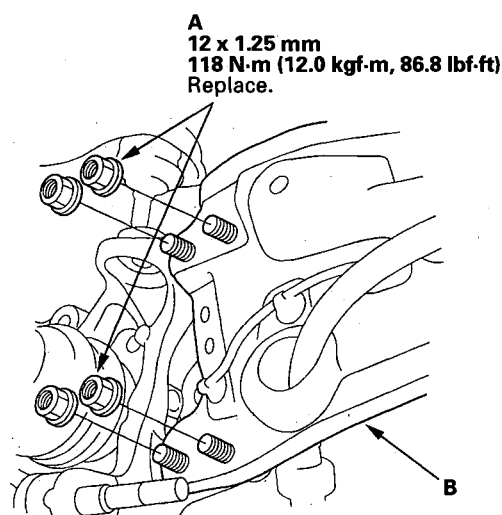
7. Remove the self-locking nut (B), the washer (C), and the flange bolt (D), then remove lower arm A.

NOTE: During installation, install a new self-locking nut, a new washer, and a new flange bolt.

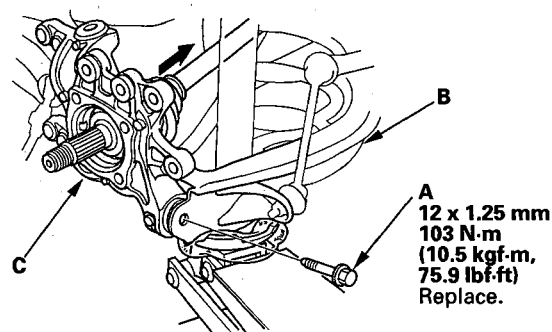


8. Remove the self-locking nuts (A), and separate the knuckle from the trailing arm (B).

NOTE: During installation, install the new self-locking nuts.



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



10. Remove the flange bolt (A), then remove the knuckle (C).

NOTE: During installation, install a new flange bolt.

(cont'd)

Rear Suspension

Knuckle/Hub Bearing Unit Replacement (cont'd)

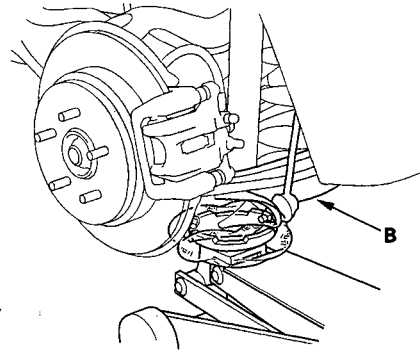
11. Install the knuckle in the reverse order of removal, and note these items:
 - Be careful not to damage the ball joint boot when installing the knuckle.
 - Tighten all mounting hardware to the specified torque values.
 - Before connecting the lower ball joint to the knuckle, degrease the threaded 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.
 - 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, 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).

Upper Arm Removal/Installation

Special Tools Required

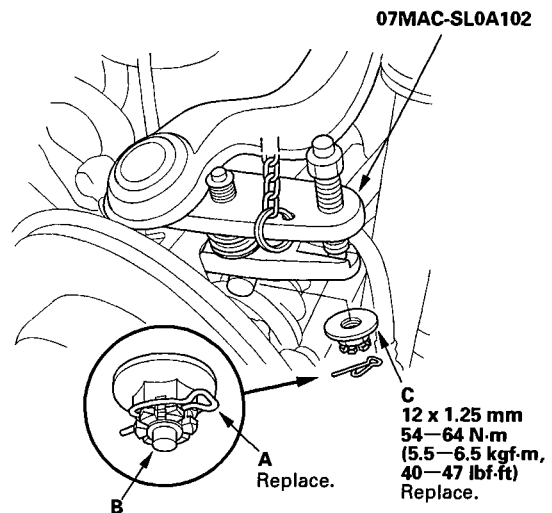
Ball joint remover, 32 mm 07MAC-SL0A102

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 at the connecting point of the lower arm B and the knuckle.

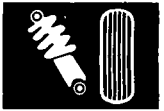


4. Remove the lock pin (A) from the upper arm ball joint (B), and loosen the nut (C).

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

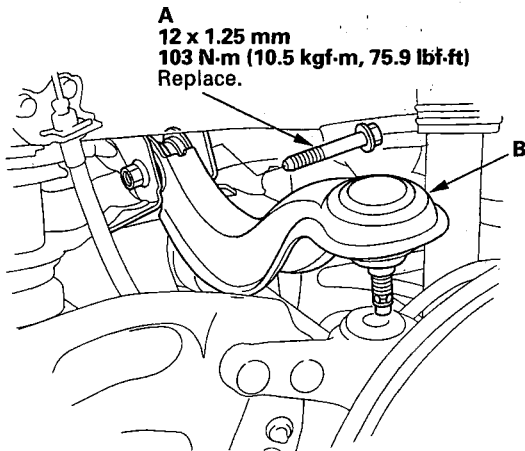


5. Disconnect the upper arm ball joint from the knuckle using the ball joint remover (see page 18-11).



6. Remove the flange bolt (A), then remove the upper arm (B) from the vehicle.

NOTE: During installation, install a new flange bolt.



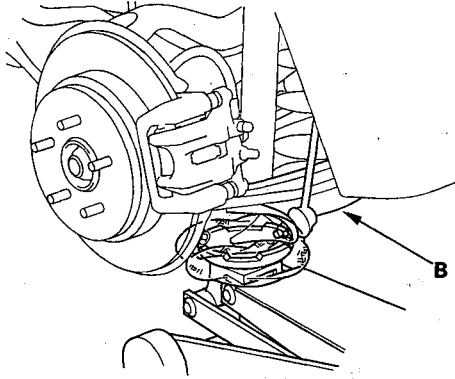
7. Install the upper arm in the reverse order of removal, and note these items:

- Be careful not to damage the ball joint boot when installing the knuckle.
- Tighten all mounting hardware to the specified torque values.
- 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 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 if necessary (see page 18-5).

Rear Suspension

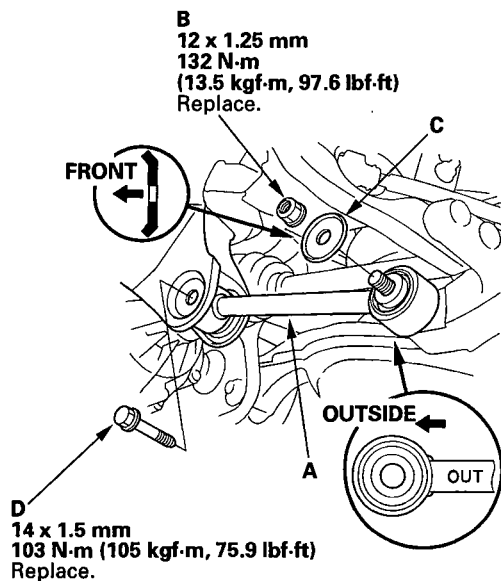
Lower Arm A Removal/Installation

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 at the connecting point of the lower arm B and the knuckle.



4. Remove the self-locking nut (B), the washer (C), and the flange bolt (D).

NOTE: During installation, install a new self-locking nut and a new flange bolt.



5. Remove the lower arm A from the vehicle.

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

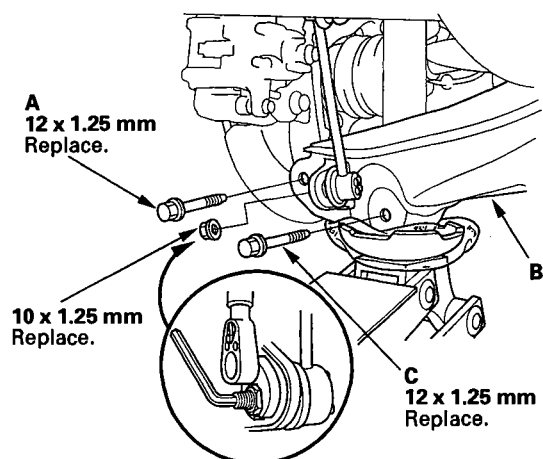
- Tighten all mounting hardware to the specified torque values.
- First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
- Before installing the wheel, clean the mating surface on 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 and Installation

Removal

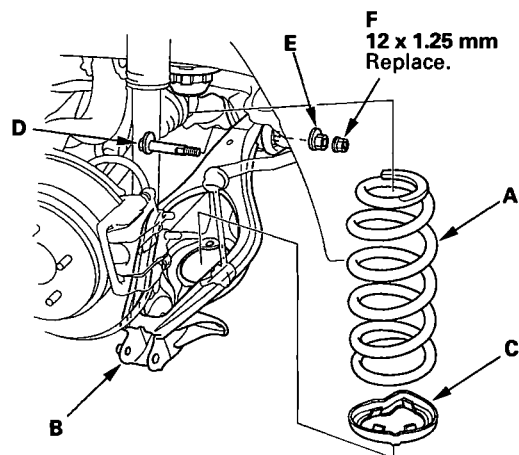
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheel.
3. Position the floor jack at the connecting point of lower arm B and the lower damper mount.
4. Disconnect the stabilizer link from the lower arm B (see page 18-42).



5. Remove the flange bolt (A) that connects the lower arm B and the knuckle.
6. Remove the flange bolt (C) that connects the lower arm B and the damper.

7. Lower the floor jack gradually.

8. Remove the spring (A) and the lower spring cushion (C).



9. Mark the cam positions of the adjusting bolt (D) and adjusting cam (E), then remove the self-locking nut (F), adjusting cam, and adjusting bolt. Set aside the self-locking nut and control arm mounting nut, then remove the lower arm B.

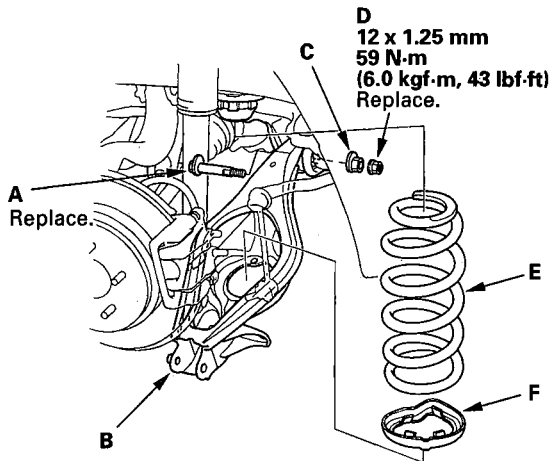
(cont'd)

Rear Suspension

Lower Arm B Removal and Installation (cont'd)

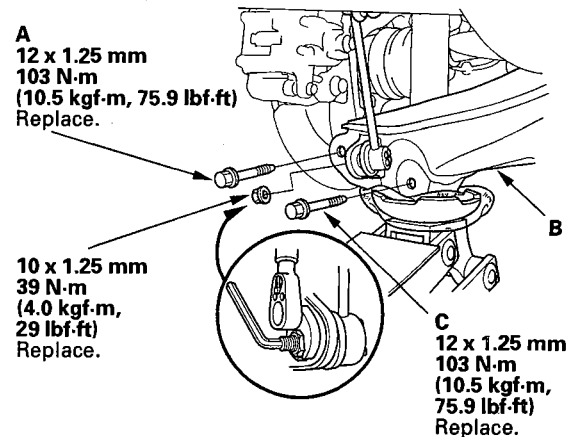
Installation

1. Position the lower arm B, and loosely install the new adjusting bolt (A), adjusting cam (C), and the new self-locking nut (D).

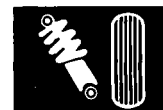


2. Install the spring (E), and lower spring cushion (F). Align the bottom of the spring and the lower spring cushion with the lower arm B as shown.

3. Position the floor jack at the connecting point of the lower arm B and the lower damper mount.

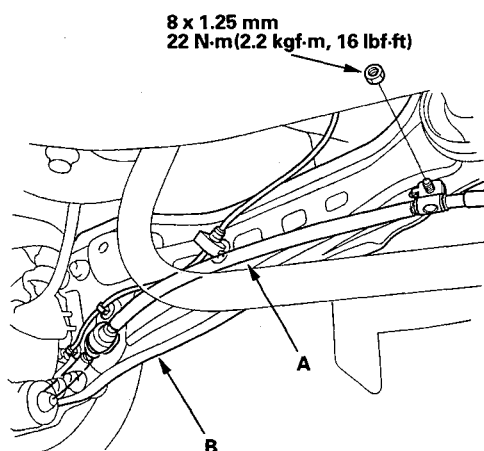


4. Slowly raise the floor jack until you can align the bolt hole with the holes in the lower arm B and the knuckle, then install the new flange bolt (A) loosely.
5. Compress the damper by hand until you can align the bolt hole with the holes in the lower arm B and the damper, then install the new flange bolt (C) loosely.
6. Connect the stabilizer link to the lower arm B (see page 18-42).
7. Raise the rear suspension with the floor jack until the vehicle just lifts off the safety stands, then tighten the flange bolts and the self-locking nut to the specified torque values.
8. Clean the mating surface of the brake disc/drum and the inside of the wheel, then install the rear wheel.
9. Check the rear wheel alignment, and adjust it if necessary (see page 18-5).



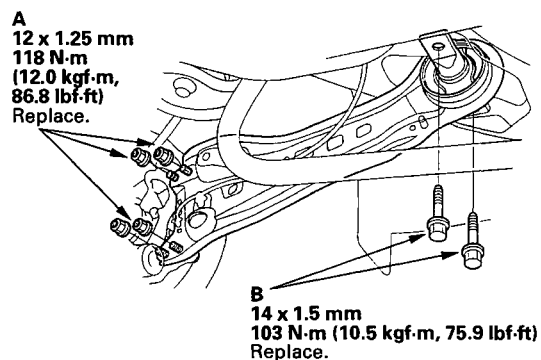
Trailing Arm Removal/Installation

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 shoe (see page 19-31).
4. Remove the parking brake cable from the backing plate (see page 19-39).
5. Remove the parking brake cable (A) from the trailing arm (B).



6. Remove the brake hose mounting bracket from the trailing arm (see step 3 on page 18-32).
7. Position a floor jack at the connecting point of the lower arm and the knuckle.
8. Remove the self-locking nuts (A) and the flange bolts (B) from the trailing arm.

NOTE: During installation, install the new self-locking nuts and the new flange bolts.



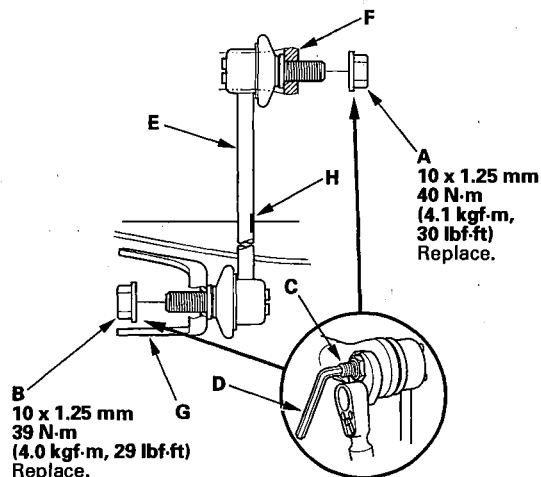
9. Install the trailing arm in the reverse order of removal, and note these items:

- 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.
- Check the brake hose and line joint for leaks, and tighten if necessary.
- Check the brake hose for interference and twisting.
- Before installing the wheel, clean the mating surfaces on the brake disc/drum and the inside of the wheel.
- After installation, check for leaks at the line joint, and retighten if necessary. Check the rear 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 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).



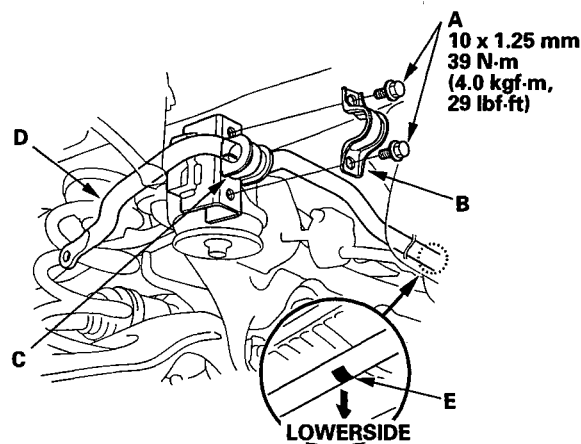
4. Install the stabilizer link on the stabilizer bar (F) and trailing arm (G) with the joint pins set at the center of their range of movement.

NOTE: The stabilizer link has a paint mark (H). Align the paint mark on the stabilizer link facing inwards.

5. Install a new self-locking nut and a new flange nut, and lightly tighten them.
6. Place the floor jack under the trailing arm, and raise the suspension to load it with the vehicle's weight.
7. Tighten the self-locking nut and the flange nut to the specified torque values while holding the respective joint pins with a hex wrench.
8. Reinstall all removed parts and test-drive the vehicle.
9. After 5 minutes of driving, tighten the self-locking nut again to the specified torque value.
10. Clean the mating surface of the brake disc/drum and the inside of the wheel, then install the rear wheel.

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. Disconnect both stabilizer links from the stabilizer bar (see page 18-42).
4. Remove the flange bolts (A) and the bushing holders (B), then remove the bushings (C) and the stabilizer bar (D).



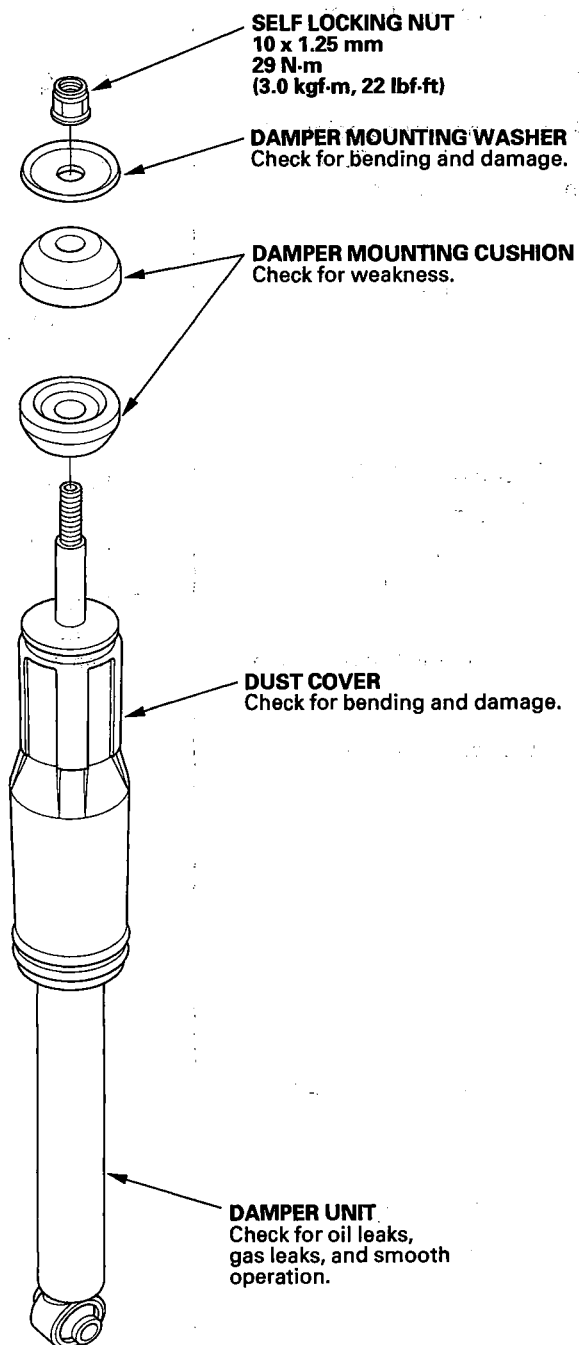
5. Install the stabilizer bar in the reverse order of removal, and note these items:

- Note the right and left direction of the stabilizer bar.
- The stabilizer bar has a paint mark (E) on the center facing downwards.
- Refer to stabilizer link removal/installation to connect the stabilizer bar to the links (see page 18-42).
- Check the wheel alignment, and adjust it if necessary (see page 18-5).



Damper Replacement

Exploded View



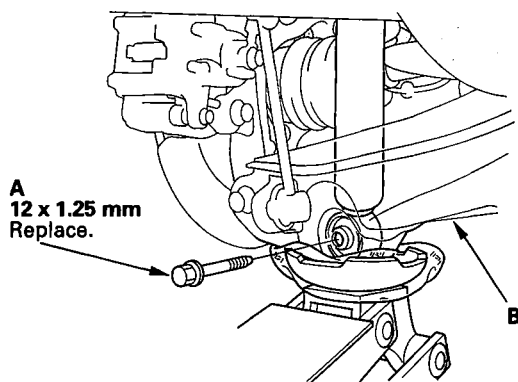
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Rear Suspension

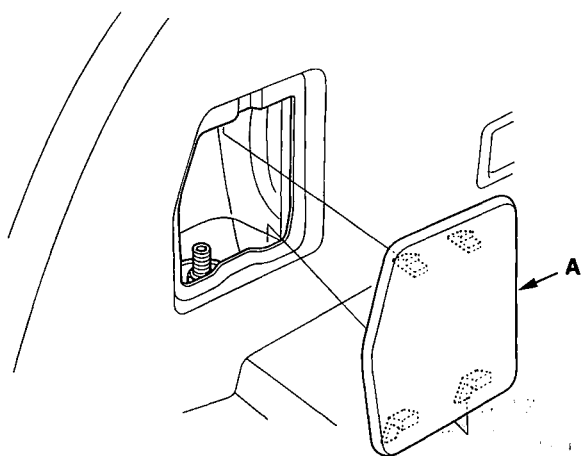
Damper Replacement (cont'd)

Removal

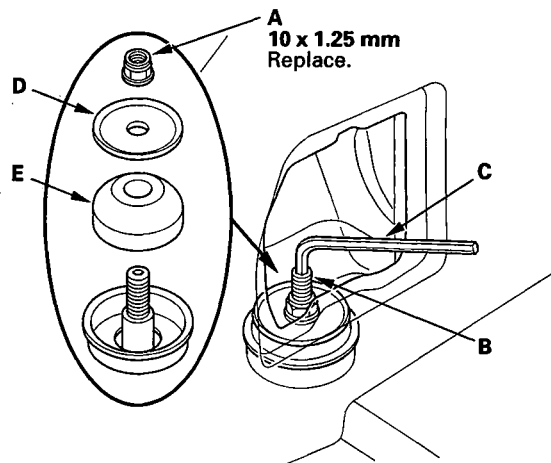
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheel.
3. Position the floor jack at the connecting point of the lower arm B and the knuckle. Raise the floor jack until the suspension begins to compress.



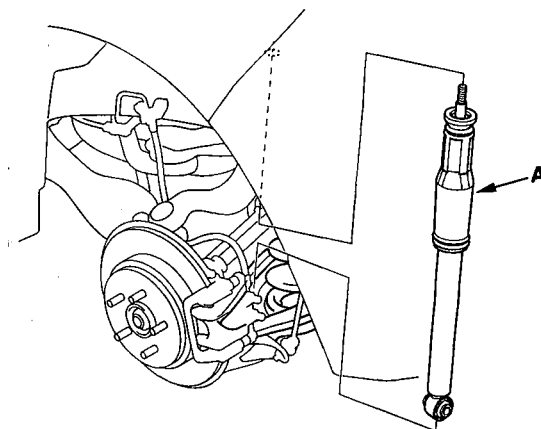
4. Remove the flange bolt (A) from the bottom of the damper.
5. Remove the lid (A) from the cargo area side trim panel.



6. Remove the self-locking nut (A) while holding the damper shaft (B) with a hex wrench (C).



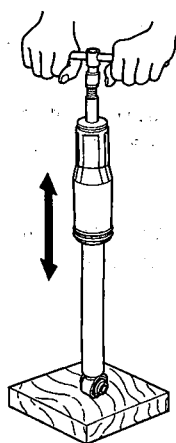
7. Remove the damper mounting washer (D) and the damper mounting cushion (E) from the top of the damper.
8. Compress the damper unit (A) by hand, and remove it from the vehicle. Be careful not to damage the body.





Inspection

1. Install the 10 mm flange nut on the damper shaft end, and set the socket wrench and T-handle on the nut.
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.

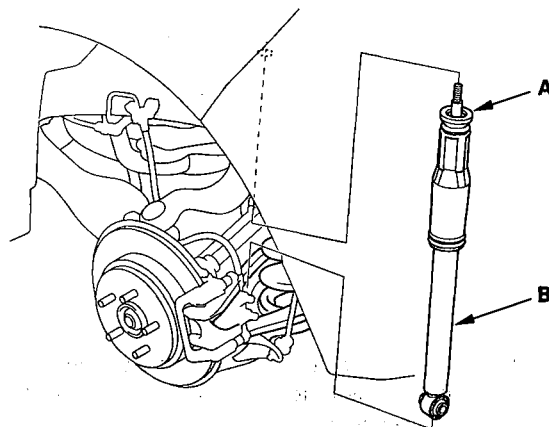


3. Check for oil leaks, abnormal noises, and binding during these tests.

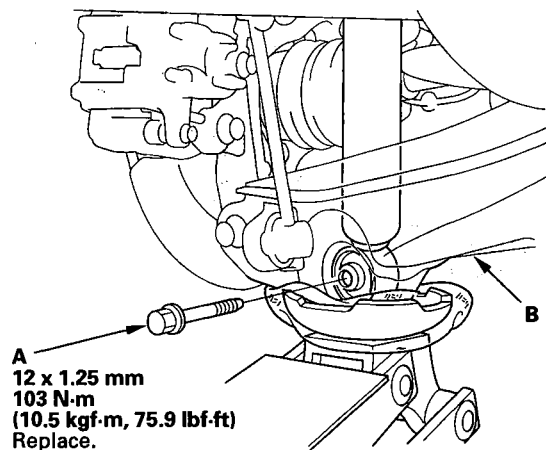
Installation

1. Install the damper mounting cushion (A) onto the damper unit (B). Compress the damper by hand, and move it into position.

NOTE: Be careful not to damage the body.



2. Position the floor jack under the lower arm B to support the suspension.



A
12 x 1.25 mm
103 N·m
(10.5 kgf·m, 75.9 lbf·ft)
Replace.

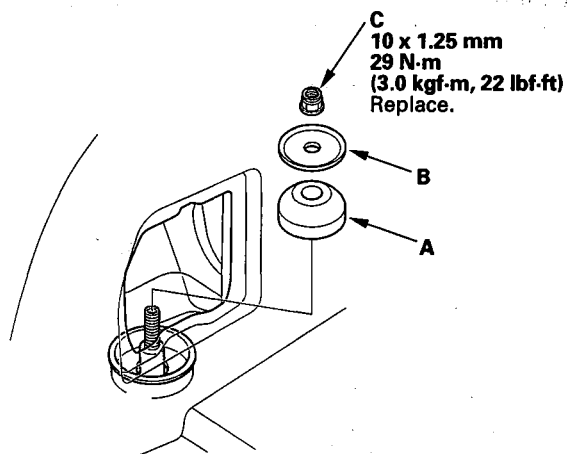
3. Slowly raise the floor jack until you can align the bolt hole with the holes in the lower arm B and the damper, then install the new flange bolt (A) loosely.
4. Raise the rear suspension with the floor jack until the vehicle just lifts off the safety stands, then tighten the flange bolt to the specified torque value.

(cont'd)

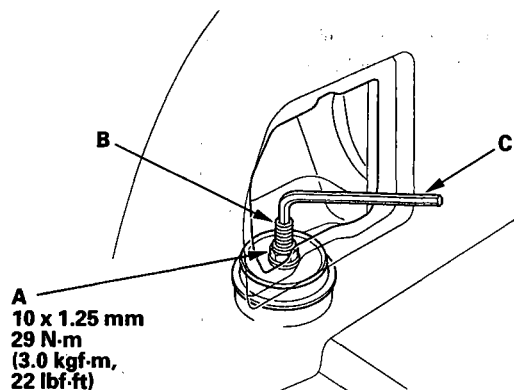
Rear Suspension

Damper Replacement (cont'd)

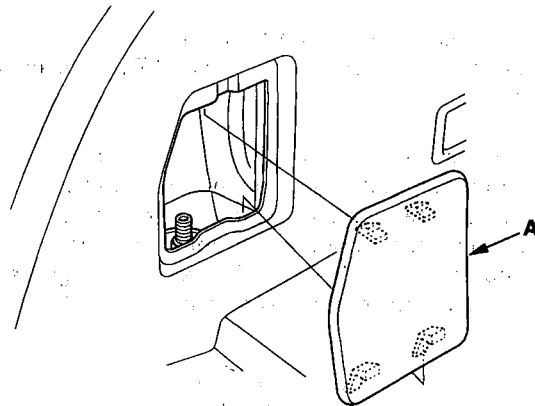
5. Install the damper mounting cushion (A), the damper mounting washer (B), and a new self-locking nut (C) on the damper shaft.



6. Tighten the self-locking nut (A) to the specified torque value while holding the damper shaft (B) with a hex wrench (C).



7. Install the lid (A) to the cargo area side trim panel.

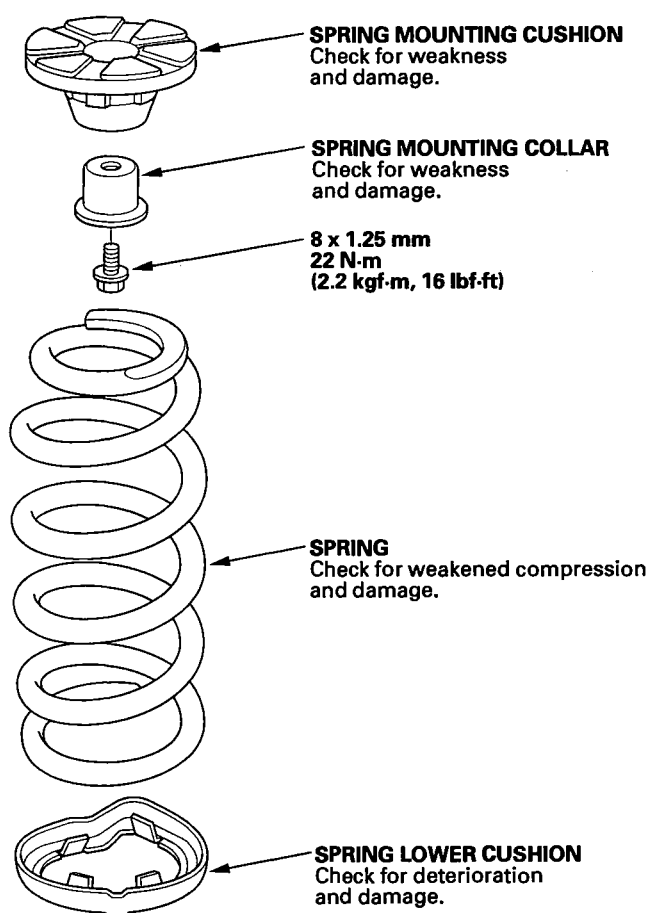


8. Clean the mating surface of the brake disc/drum and the inside of the wheel, then install the rear wheel.
9. Check the wheel alignment, and adjust it if necessary (see page 18-5).



Spring Replacement

Exploded View



cardiagn.com

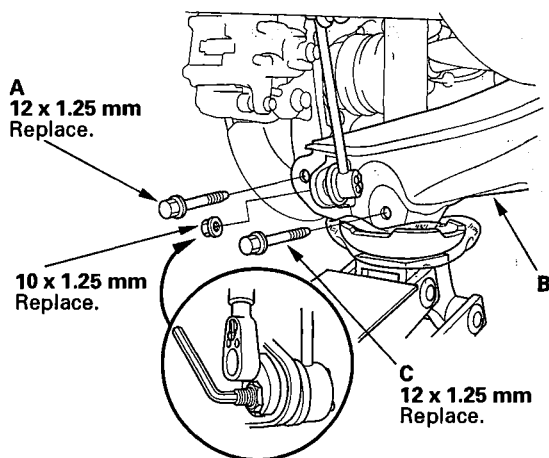
(cont'd)

Rear Suspension

Spring Replacement (cont'd)

Removal

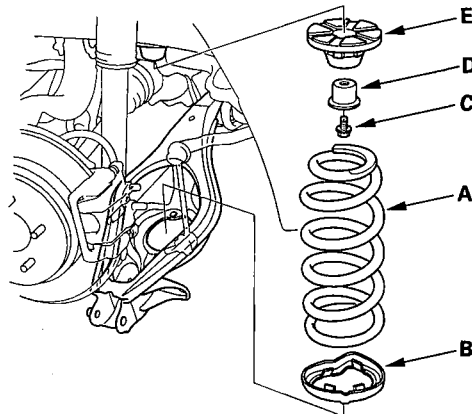
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheel.
3. Position the floor jack at the connecting point of lower arm B and the lower damper mount.
4. Disconnect the stabilizer link from the lower arm B (see page 18-42).



5. Remove the flange bolt (A) that connects the lower arm B and the knuckle.
6. Remove the flange bolt (C) that connects the lower arm B and the bottom of the damper.

7. Lower the floor jack gradually.

8. Remove the spring (A) and the lower spring cushion (B).

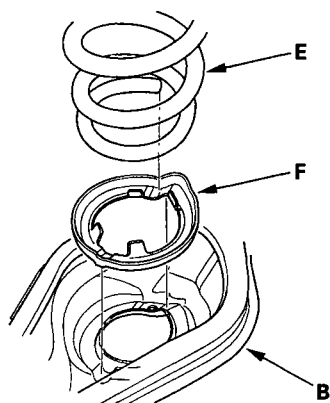
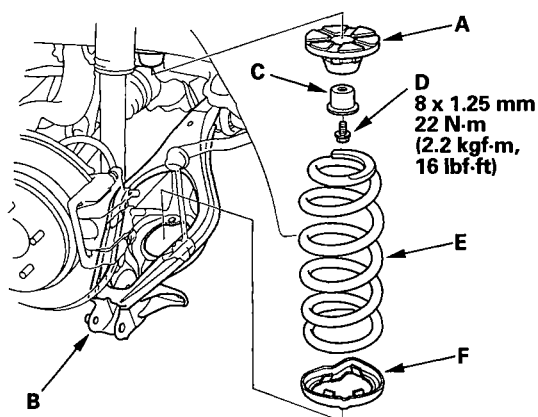


9. Remove the flange bolt (C) that connects to the body, and remove the spring mounting collar (D) and the spring mounting cushion (E) if necessary.



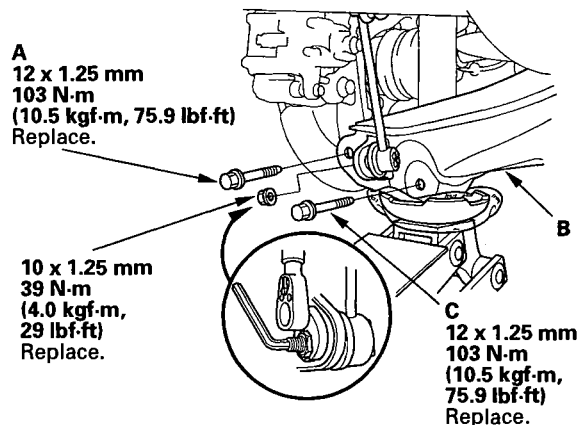
Installation

1. Install the spring mounting cushion (A), the spring mounting collar (C), and tighten the flange bolt (D) to the specified torque value.



2. Install the spring (E) and the lower spring cushion (F). Align the bottom of the spring and the lower spring cushion with the lower arm B as shown.

3. Position the floor jack at the connecting point of the lower arm B and the knuckle.



4. Slowly raise the floor jack until you can align the bolt hole with the holes in the lower arm B and the knuckle, then install the new flange bolt (A) loosely.
5. Compress the damper by hand until you can align the bolt hole with the holes in the lower arm B and the damper, then install the new flange bolt (C) loosely.
6. Connect the stabilizer link to the lower arm B (see page 18-42).
7. Raise the rear suspension with the floor jack until the vehicle just lifts off the safety stands, then tighten the flange bolts and the self-locking nut to the specified torque values.
8. Clean the mating surface of the brake disc/drum and the inside of the wheel, then install the rear wheel.
9. Check the rear wheel alignment, and adjust it if necessary (see page 18-5).

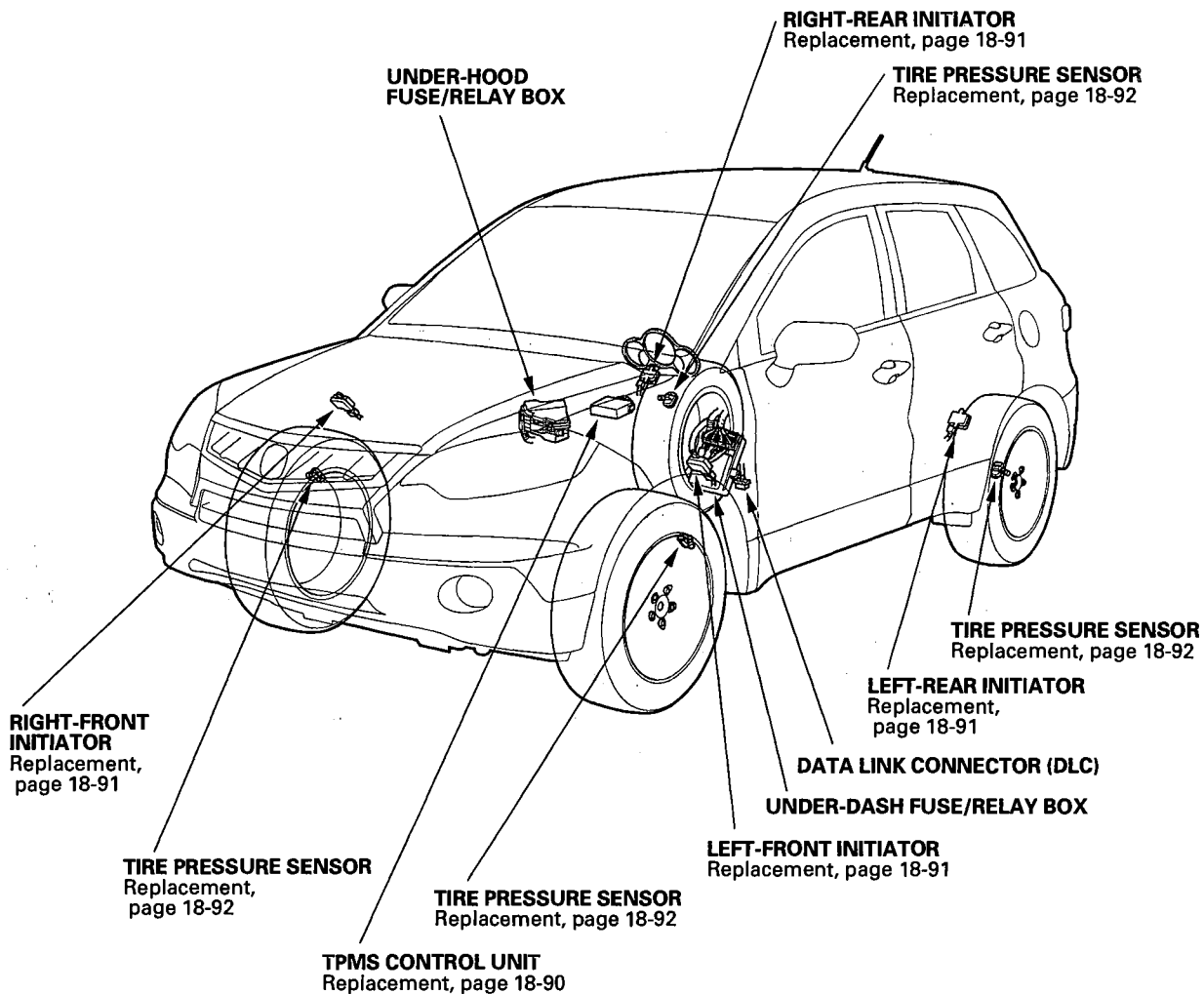
BACK

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Component Location Index

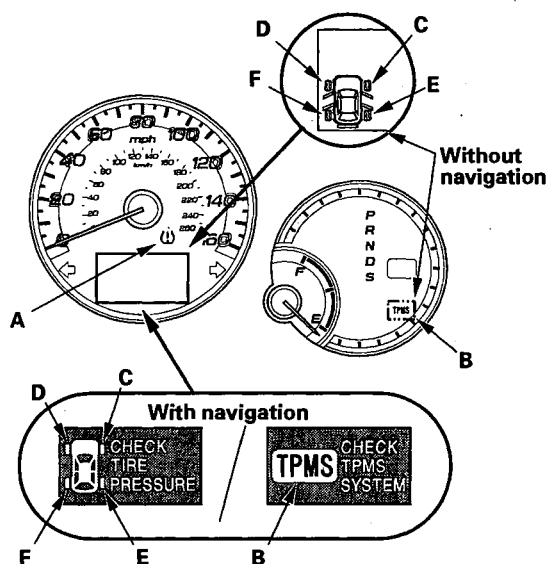


General Troubleshooting Information

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 many indicators; four tire indicators (shown on the multi-information display), a low pressure indicator (LED indicator), and a TPMS indicator (With navigation: On the multi-information display, Without navigation: LED indicator). 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 TPMS indicator (LED indicator type) and the low pressure indicator should come on when you turn the ignition switch ON (II), and then go off 2 seconds later. If they don'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 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, the TPMS indicator will come on and stay on until the system returns to normal with most DTCs. 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 customer 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.

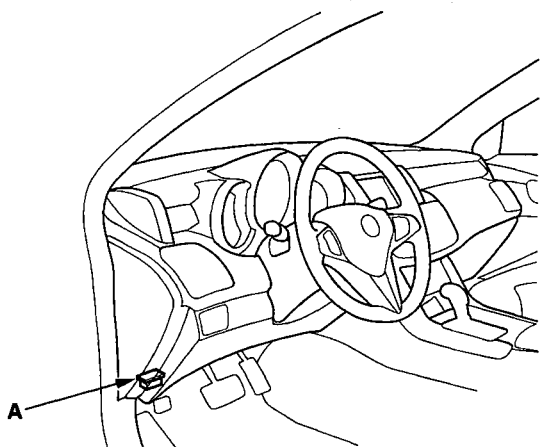
How to Troubleshoot DTCs

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.



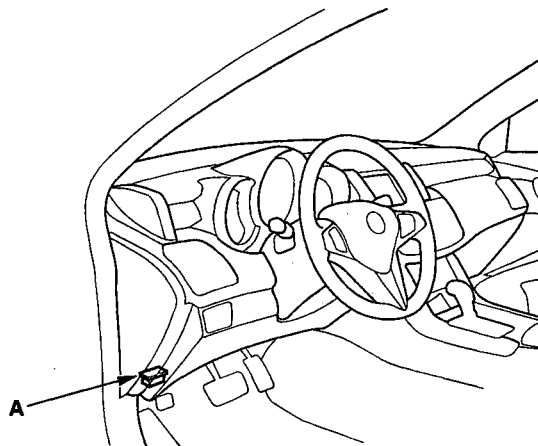
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the TPMS control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-229).
4. Follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the DTC Troubleshooting.

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 11-229).
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.

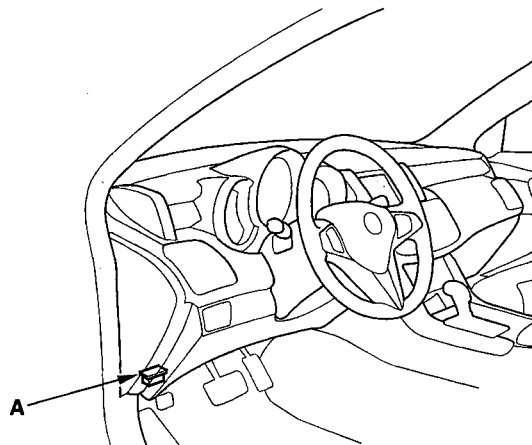
NOTE:

- 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 11-229).
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.

DTC Troubleshooting Index

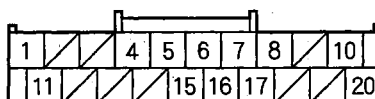
DTC	Detection Item	Troubleshooting
11	Right-front low tire pressure	(see page 18-67)
13	Left-front low tire pressure	(see page 18-67)
15	Right-rear low tire pressure	(see page 18-67)
17	Left-rear low tire pressure	(see page 18-67)
21	Right-front abnormally high tire sensor temperature	(see page 18-68)
22	Left-front abnormally high tire sensor temperature	(see page 18-68)
23	Right-rear abnormally high tire sensor temperature	(see page 18-68)
24	Left-rear abnormally high tire sensor temperature	(see page 18-68)
31	Right-front tire pressure sensor low battery voltage	(see page 18-68)
32	Right-front tire pressure sensor transmitting failure	(see page 18-69)
33	Left-front tire pressure sensor low battery voltage	(see page 18-68)
34	Left-front tire pressure sensor transmitting failure	(see page 18-69)
35	Right-rear tire pressure sensor low battery voltage	(see page 18-68)
36	Right-rear tire pressure sensor transmitting failure	(see page 18-69)
37	Left-rear tire pressure sensor low battery voltage	(see page 18-68)
38	Left-rear tire pressure sensor transmitting failure	(see page 18-69)
41	Abnormal signal reception error	(see page 18-73)
45	Initiator circuit short detection	(see page 18-74)
51	Right-front initialization status of TPMS control unit is not-completed	(see page 18-76)
53	Left-front initialization status of TPMS control unit is not-completed	(see page 18-76)
55	Right-rear initialization status of TPMS control unit is not-completed	(see page 18-76)
57	Left-rear initialization status of TPMS control unit is not-completed	(see page 18-76)
61	Right-front initiator circuit open detection	(see page 18-80)
63	Left-front initiator circuit open detection	(see page 18-80)
65	Right-rear initiator circuit open detection	(see page 18-80)
67	Left-rear initiator circuit open detection	(see page 18-80)
81	TPMS control unit failure check	(see page 18-83)
83	No VSP signal	(see page 18-83)
85	CAN data error	(see page 18-84)
91	Right-front tire pressure sensor internal error	(see page 18-85)
93	Left-front tire pressure sensor internal error	(see page 18-85)
95	Right-rear tire pressure sensor internal error	(see page 18-85)
97	Left-rear tire pressure sensor internal error	(see page 18-85)

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 11-229)	
Low pressure indicator does not come on, and no DTCs are stored	Symptom Troubleshooting (see page 18-86)	
Low pressure indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 18-87)	
TPMS indicator does not come on, and no DTCs are stored	Symptom Troubleshooting (see page 18-87)	
TPMS indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 18-88)	

System Description

TPMS Control Unit Inputs and Outputs 20P Connector



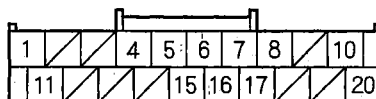
Wire side of female terminals

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	ORN	LF LF SIG. (LF low frequency signal)	Detects the signal from 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	GRY	RF LF SIG. (RF low frequency signal)	Detects the signal from 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	BRN	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	RED	+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



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	GRN	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)	Detects the signal from 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	WHT	RR LF SIG. (RR low frequency signal)	Detects the signal from 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	BLU	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

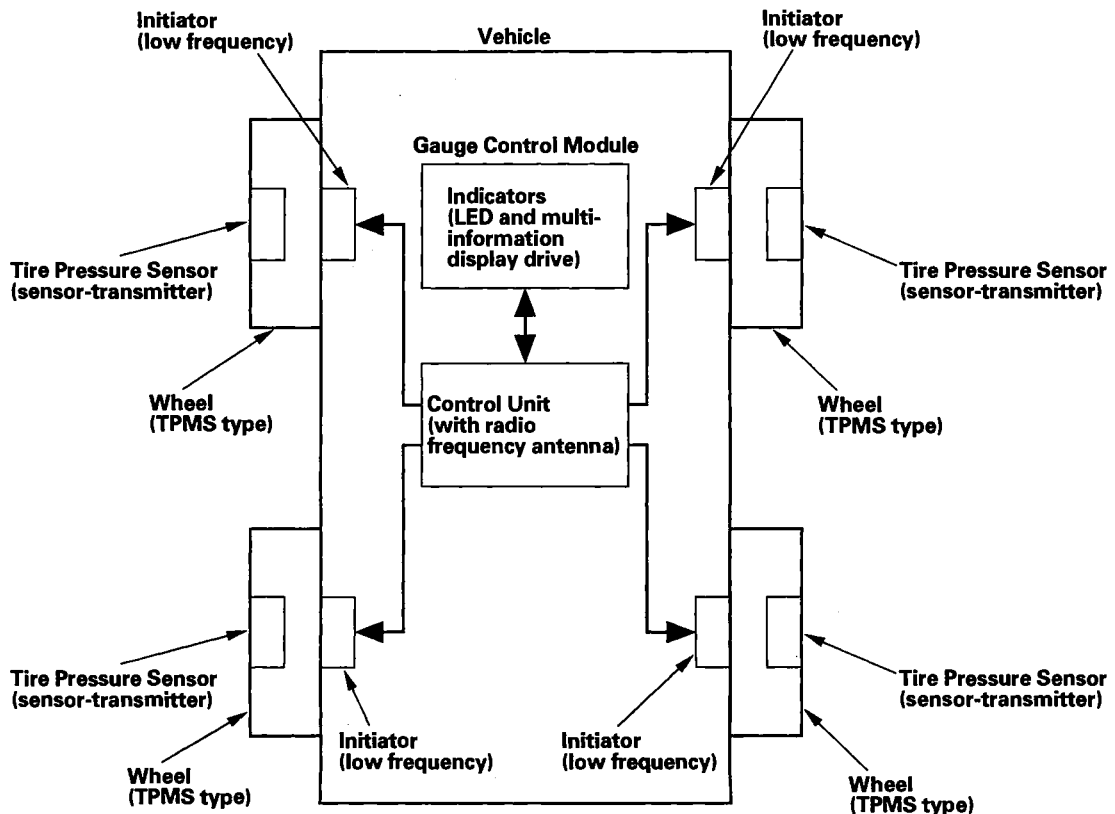
Mounted on each wheel well, each initiator sends a start/stop signal to the tire pressure sensor in the tire below it.

Control unit

Mounted back of the driver's side of the lower dash, the control unit sends signals to the initiators and 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 (With navigation: On the multi-information display, Without navigation: LED indicator) 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)

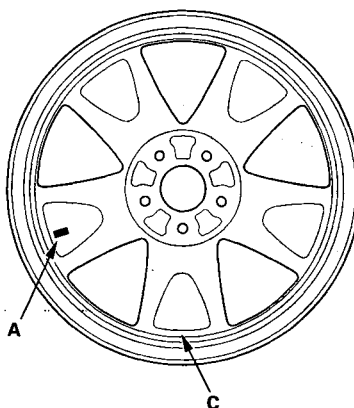
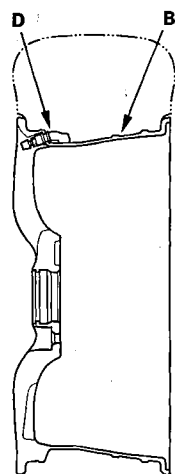
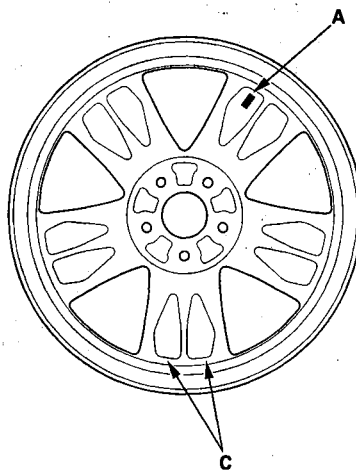
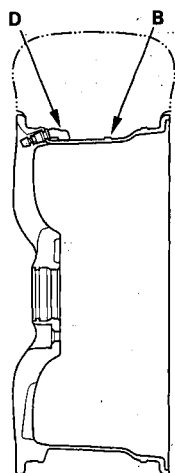
Tire pressure sensor

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 one time every 60 seconds to the control unit. When TPMS control unit receives tire pressure is 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 198 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

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

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

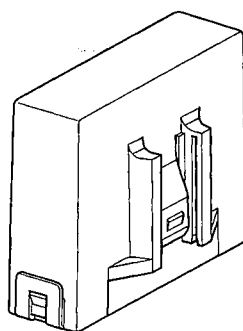


System Communication

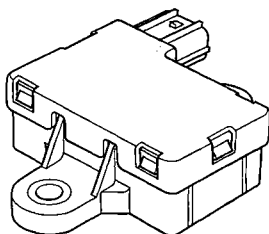
- When the vehicle is running, an RF (radio frequency) band wave signal is continuously transmitted from each tire pressure sensor to the control unit.
- When the ignition switch is turned ON (II), the initiators send an LF (low frequency) band wave signal to the tire pressure sensors, switching them 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 front initiators: Misalignment of the control unit and initiators could interfere with sending and receiving signals.

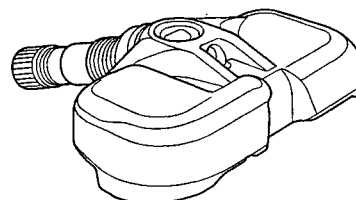
**Control Unit
(with Radio Frequency Antenna)**



**Initiator
(Low Frequency Initiator)**

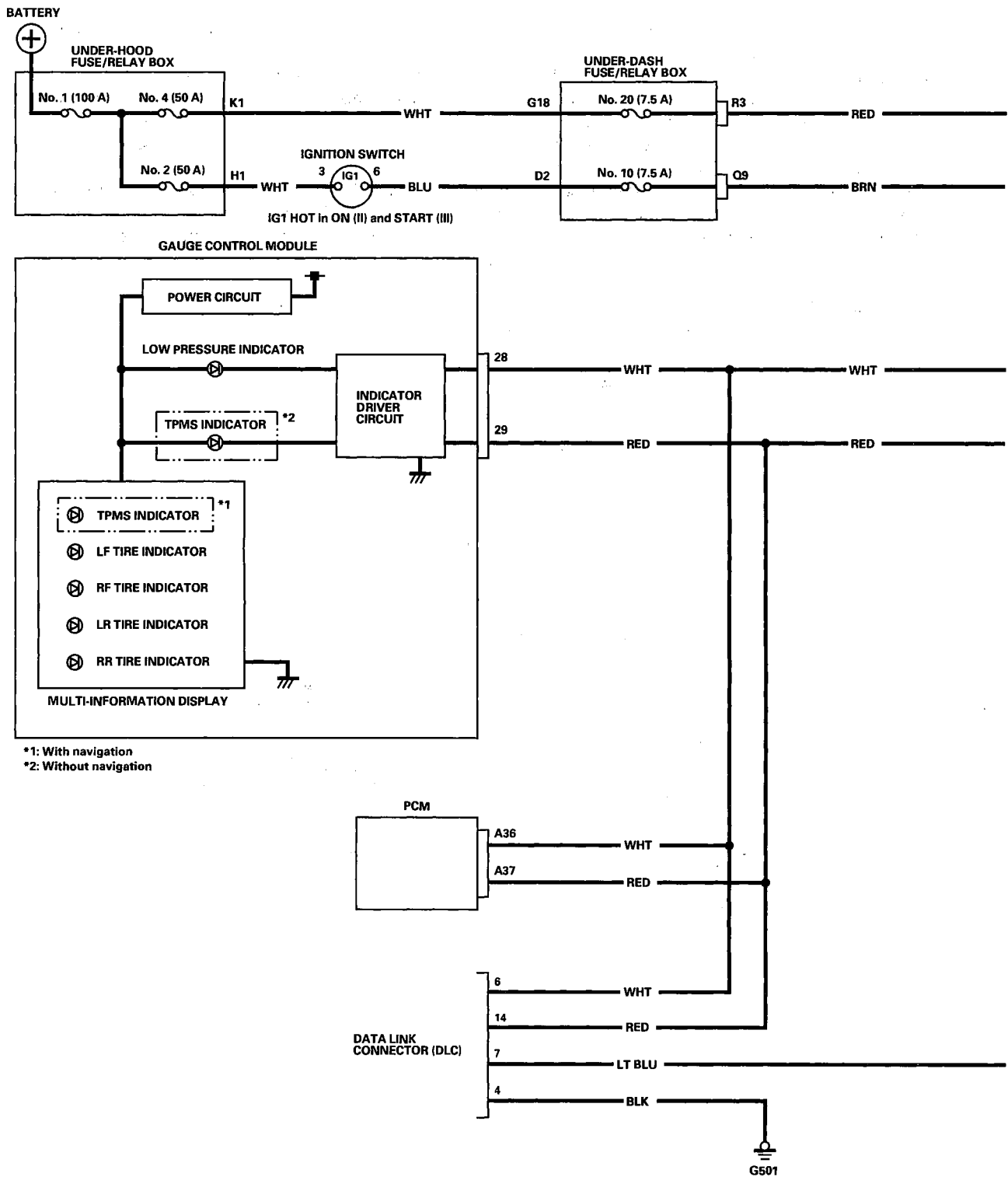


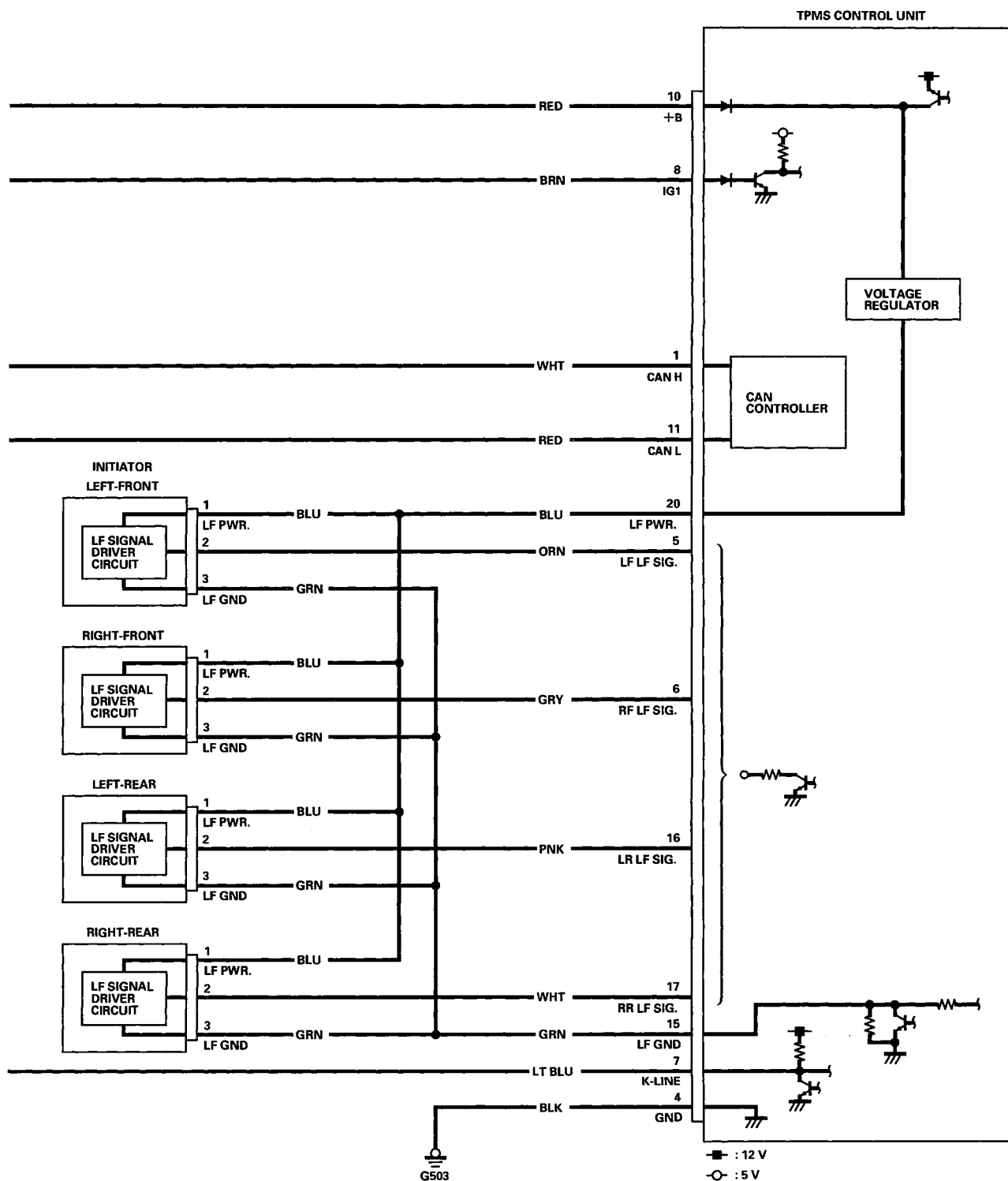
**Tire Pressure Sensor
(Sensor-transmitter)**



TPMS

Circuit Diagram

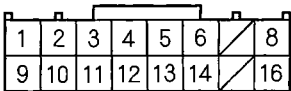




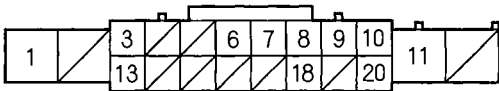
(cont'd)

Circuit Diagram (cont'd)

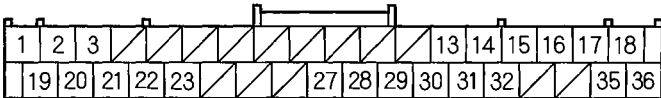
UNDER-DASH FUSE/RELAY BOX CONNECTOR Q (16P)



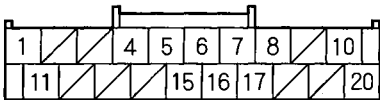
UNDER-DASH FUSE/RELAY BOX CONNECTOR R (20P)



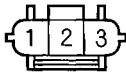
GAUGE CONTROL MODULE 36P CONNECTOR



TPMS CONTROL UNIT 20P CONNECTOR

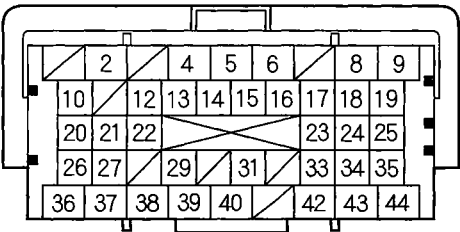


INITIATOR 3P CONNECTOR

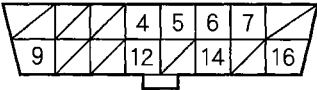


Wire side of female terminals

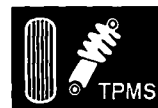
PCM CONNECTOR A (44P)



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 and monitor the value of the appropriate tire pressure with the HDS.

NOTE: If not defined is shown on the HDS, 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 18-90), and recheck. ■

NO—Check that the tire-pressure sensor is properly mounted. Replace the appropriate tire pressure sensor (see page 18-92). ■

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 not defined is shown on the HDS, 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 18-92). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-90), 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 not defined is shown on the HDS, 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 18-92). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-90), 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).

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 10.

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 18-56).
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 18-84). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-90), 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 not defined is shown on the HDS, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If 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 18-56).
- 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 not defined is shown on the HDS, 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 18-92). ■

NO—Go to step 18.

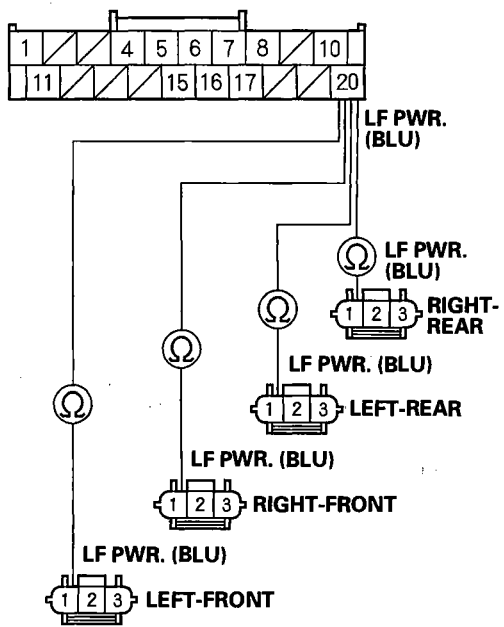
- 18. Turn the ignition switch OFF.
- 19. Disconnect the appropriate initiator 3P connector.

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



INITIATOR 3P CONNECTOR
Wire side of female terminals

Is there continuity?

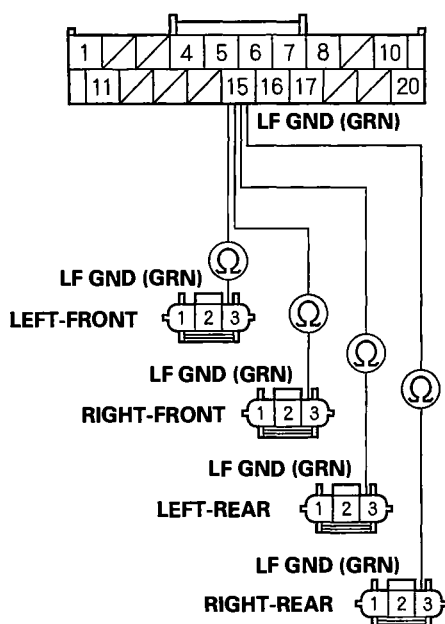
YES—Go to step 22.

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



INITIATOR 3P CONNECTOR
Wire side of female terminals

Is there continuity?

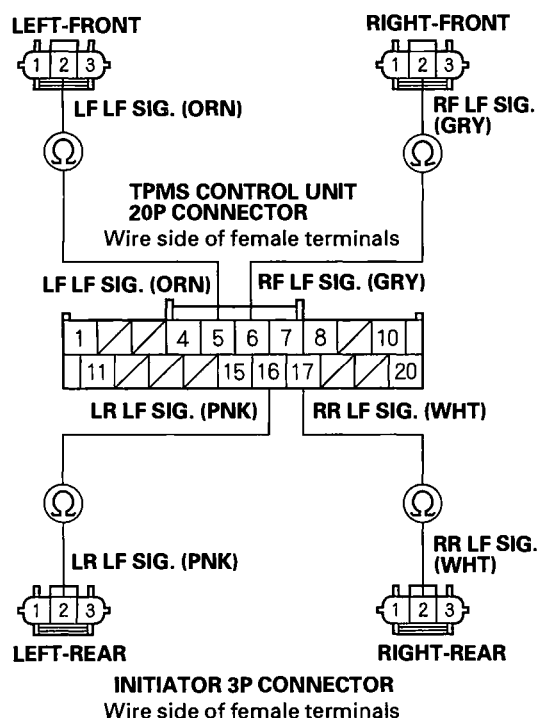
YES—Go to step 23.

NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

23. Check for continuity between the TPMS control unit 20P connector appropriate 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. ■

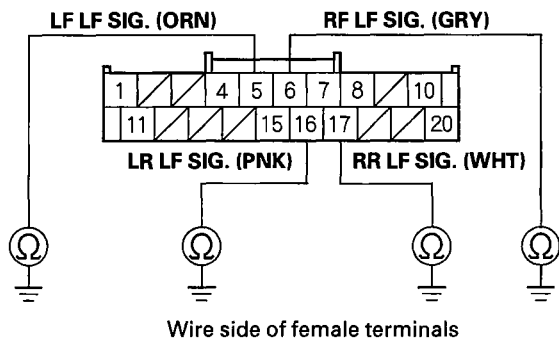
(cont'd)

DTC Troubleshooting (cont'd)

24. Check for continuity between body ground and the TPMS control unit 20P connector appropriate 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?

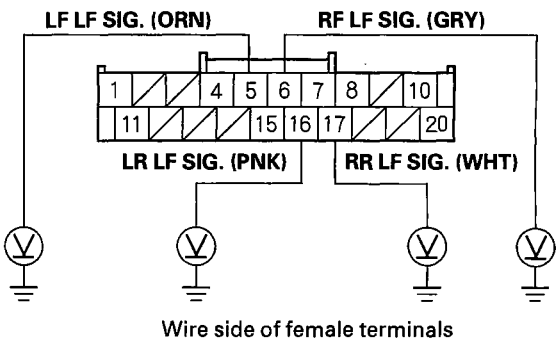
YES—Repair short to body ground in the wire between the TPMS control unit and the appropriate initiator.■

NO—Go to step 25.

25. Measure the voltage between body ground and the TPMS control unit 20P connector appropriate 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 18-91).■



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 10.

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 18-56).
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 18-84). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-90), 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 not defined is shown on the HDS, 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 18-90), 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.

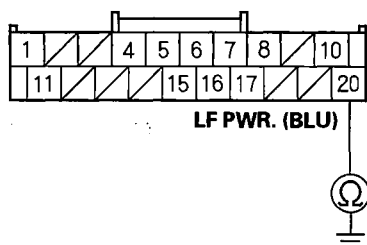
Is DTC 45 indicated?

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 the TPMS control unit 20P connector terminal No. 20.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

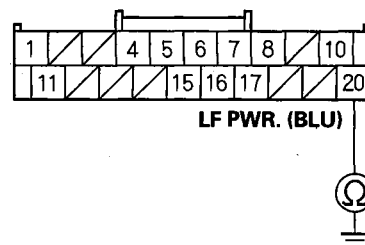
YES—Go to step 8.

NO—Go to step 11.

8. Disconnect all four the initiator 3P connectors.

9. Check for continuity between body ground and the TPMS control unit 20P connector terminal No. 20.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

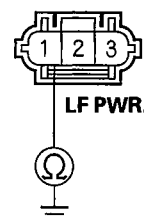
YES—Repair short to body ground in the wire between the TPMS control unit and the initiators. ■

NO—Go to step 10.

10. On each individual initiator, check for continuity between body ground and the initiator 3P connector terminal No. 1.

NOTE: Check the initiators when mounted on the vehicle.

INITIATOR 3P CONNECTOR



Terminal side of male terminals

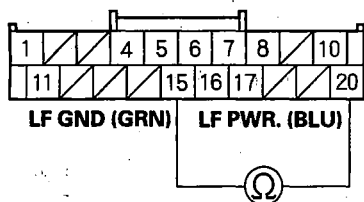
Is there continuity?

YES—Replace the appropriate initiator (see page 18-91). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-90), and recheck. ■

11. Check for continuity between TPMS control unit 20P connector terminal No. 15 and No. 20.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

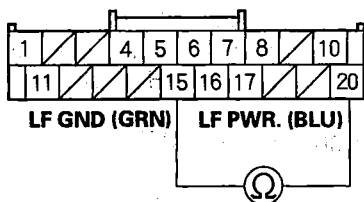
YES—Go to step 12.

NO—Go to step 15.

12. Disconnect all four initiator 3P connectors.

13. Check for continuity between TPMS control unit 20P connector terminal No. 15 and No. 20.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

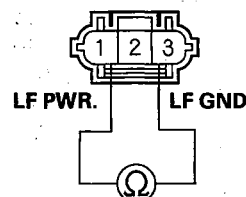
Is there continuity?

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?

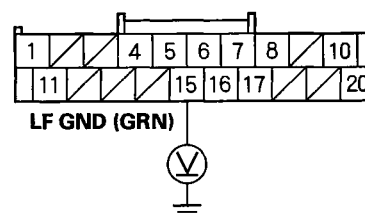
YES—Replace the appropriate initiator (see page 18-91). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-90), and recheck. ■

15. Turn the ignition switch ON (II).

16. Measure the 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 18-90), and recheck. ■

DTC Troubleshooting (cont'd)

DTC 51, 53, 55, 57: Initialization Status of TPMS Control Unit is Not-completed

1. Check the indicated 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 18-56).
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 not defined is shown on the HDS, 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 18-56).
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 not defined is shown on the HDS, 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 18-92). ■

NO—Go to step 13.

13. Turn the ignition switch OFF.
14. Disconnect the appropriate initiator 3P connector.

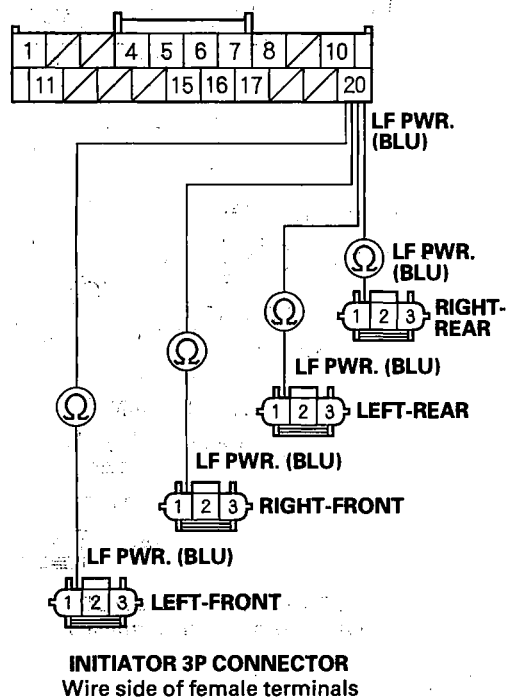
DTC	Initiator location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear

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)

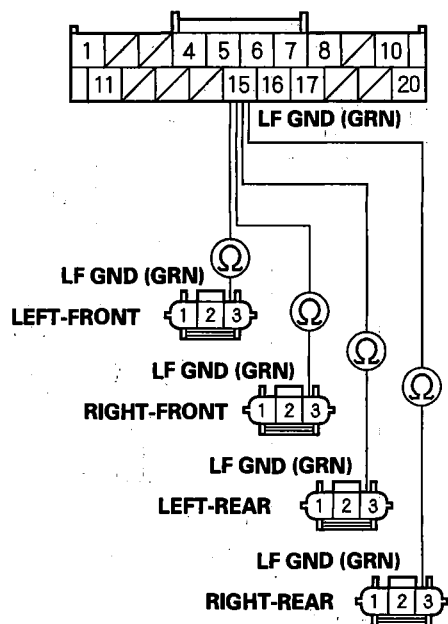
DTC Troubleshooting (cont'd)

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

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 18.

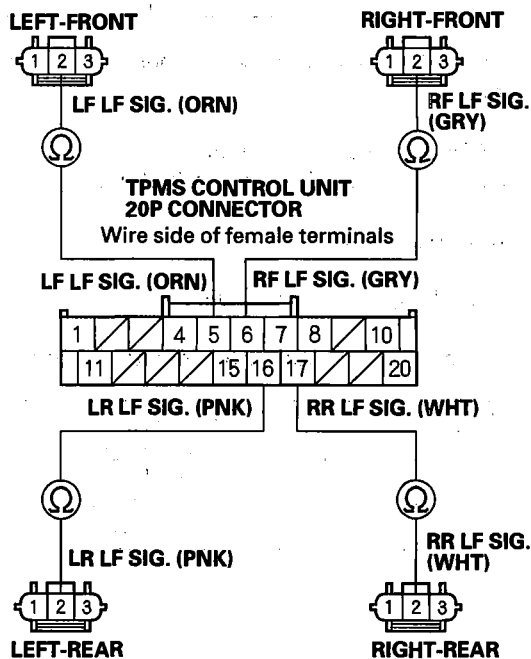
NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

18. Check for continuity between TPMS control unit 20P connector appropriate 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

INITIATOR 3P CONNECTOR

Wire side of female terminals



Is there continuity?

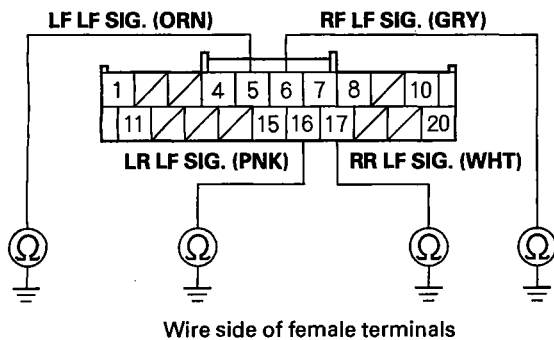
YES—Go to step 19.

NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

19. Check for continuity between body ground and the TPMS control unit 20P connector appropriate 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



Is there continuity?

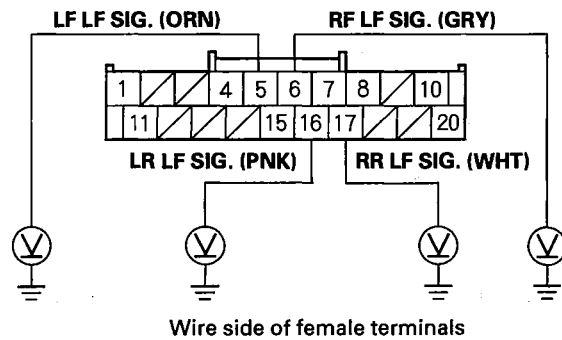
YES—Repair short to body ground in the wire between the TPMS control unit and the appropriate initiator. ■

NO—Go to step 20.

20. Measure the voltage between body ground and the TPMS control unit 20P connector appropriate 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



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 18-91). ■

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.

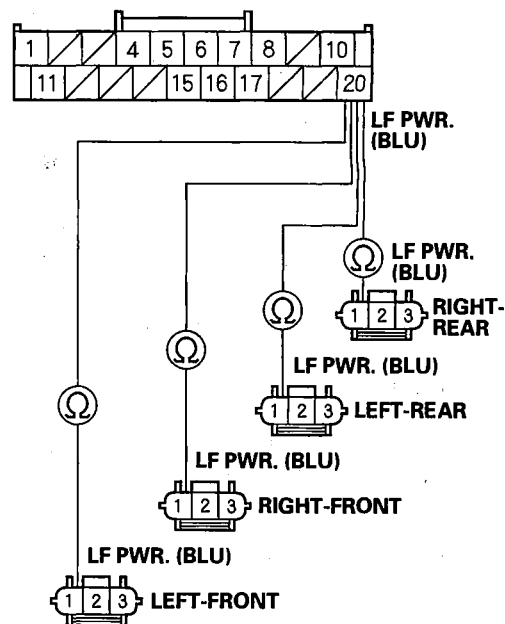
DTC	Initiator location
61	Right-front
63	Left-front
65	Right-rear
67	Left-rear

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



INITIATOR 3P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 9.

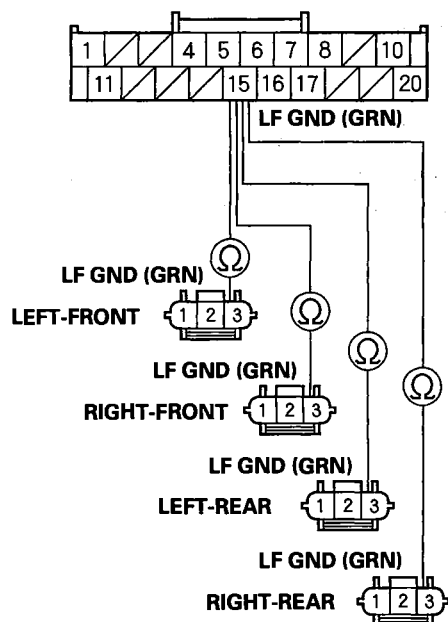
NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

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.

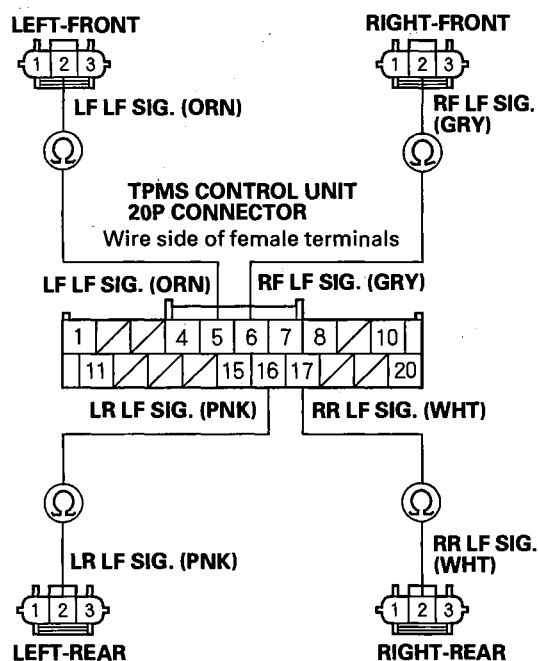
NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

10. Check for continuity between TPMS control unit 20P connector appropriate 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 18-90), and recheck. ■

NO—Go to step 12.

12. Replace the initiator indicated by the DTC with another initiator with no DTC (it may be a known-good initiator) (see page 18-91).

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 18-91). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-90), 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 18-90). ■

NO—The system is OK at this time. ■

DTC 83: No VSP Signal

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).
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 18-84). ■

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 18-90), and recheck. ■

NO—Go to step 8.

8. Check the speedometer.

Does the speedometer register speed?

YES—Replace the TPMS control unit (see page 18-90). ■

NO—Substitute a known-good PCM (see page 11-252), and retest. If no codes are shown, replace the original PCM. ■

DTC Troubleshooting (cont'd)

DTC 85: CAN Data Error

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?

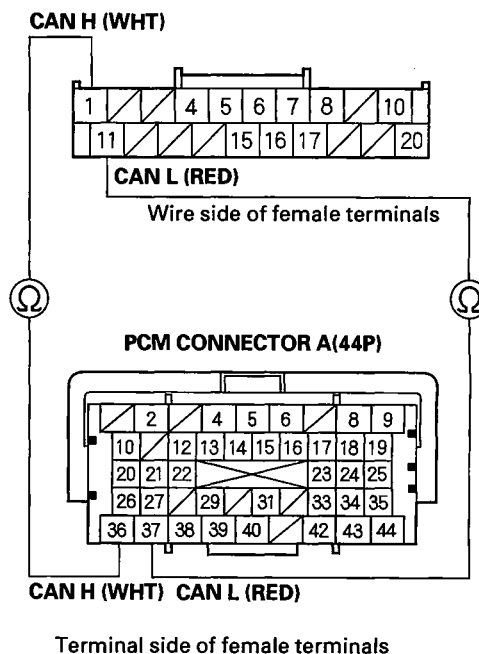
YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-90), and recheck. ■

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 (44P).
13. Disconnect the TPMS control unit 20P connector.
14. Check for continuity between TPMS control unit 20P connector terminals and PCM connector A (44P) terminals individually. (see table).

Terminal name	TPMS control unit terminal	PCM A terminal
CAN L	No. 11	No. 37
CAN H	No. 1	No. 36

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 18-90), 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 18-92). ■

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 not defined is shown on the HDS, 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 18-92). ■

7. Wait about 5 seconds with the ignition switch turned ON (II).
8. Check for gauges DTC with the HDS (see page 22-6).

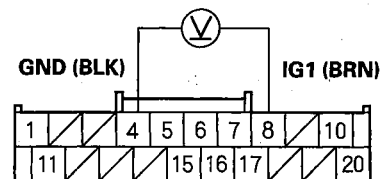
Is any gauge DTC indicated?

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 the voltage between TPMS control unit 20 P 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. 10 (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 18-90), 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—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-90), and recheck. ■

NO—Do the troubleshooting for the gauge control module (see page 22-258). If necessary, substitute a known-good gauge control module (see page 22-284), and recheck. ■

TPMS indicator does not come on, 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 TPMS indicator for several seconds when the ignition switch is turned ON (II).

Did the indicator come on and then go off?

YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-90), and recheck. ■

NO—Do the troubleshooting for the gauge control module (see page 22-258). If necessary, substitute a known-good gauge control module (see page 22-284), and recheck. ■

Symptom Troubleshooting (cont'd)

TPMS indicator does not go off, and no DTCs are stored

NOTE: Check for gauges DTCs with the HDS (see page 22-6). 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. 20 (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse blown?

YES—Replace the No. 20 (7.5 A) fuse, and recheck. ■

NO—Reinstall the fuse, then go to step 5.

5. Check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse blown?

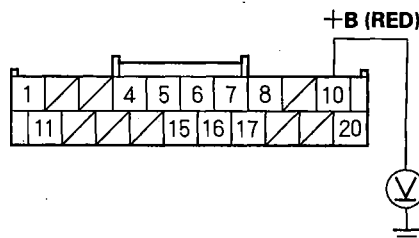
YES—Replace the No. 10 (7.5 A) fuse, and recheck. ■

NO—Reinstall the fuse, then go to step 6.

6. Disconnect the TPMS control unit 20P connector.

7. Measure the voltage between body ground and TPMS control unit 20P connector terminal No. 10.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

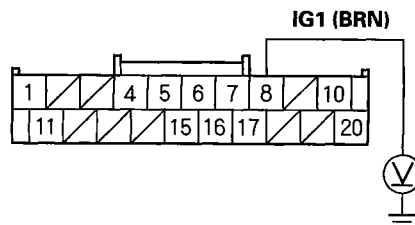
Is there battery voltage?

YES—Go to step 8.

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

8. Turn the ignition switch ON (II).
9. Measure the voltage between body ground and TPMS control unit 20P connector terminal No. 8.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

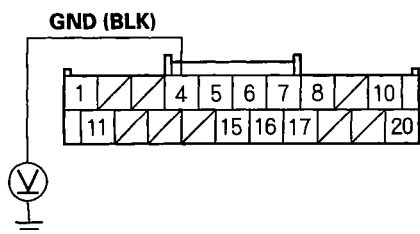
Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between the TPMS control unit and the No. 10 (7.5 A) fuse in the under-dash fuse/relay box. ■

10. Turn the ignition switch OFF.
11. Reconnect the TPMS control unit 20P connector.
12. Turn the ignition switch ON (II).
13. Measure the voltage between body ground and TPMS control unit 20P connector terminal No. 4.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES—Repair open or high resistance in the wire between the TPMS control unit and body ground (G503). ■

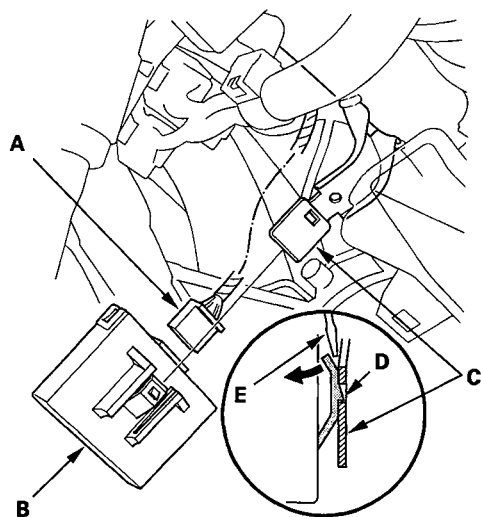
NO—Do the troubleshooting for the gauge control module (see page 22-258). If the gauge control module is OK, check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control (see page 18-90), and recheck. ■

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 20-102).
2. Disconnect the TPMS control unit connector (A).

NOTE: The TPMS control unit is located under the steering column.



3. Remove the TPMS control unit (B) from the bracket (C).

NOTE: While separating the TPMS control unit from the bracket, release the hook (D) on the TPMS control unit using a flat-tipped screwdriver (E), and push up to release it from the bracket.

4. 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.

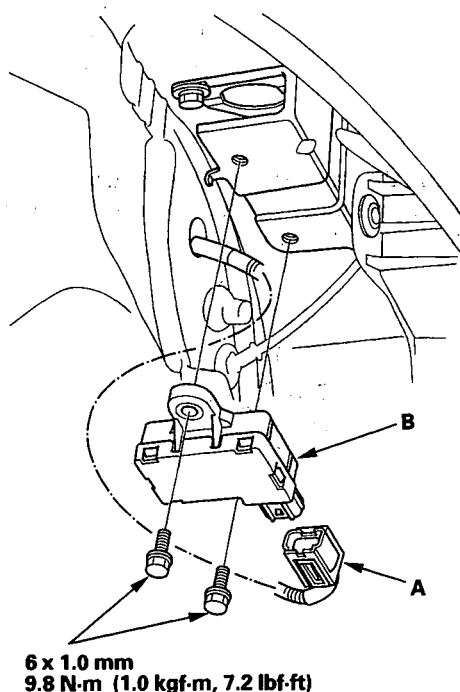
5. Connect the HDS and memorize the pressure sensor IDs (see page 18-56). Do not memorize the IDs automatically.

Initiator Replacement

Front

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.

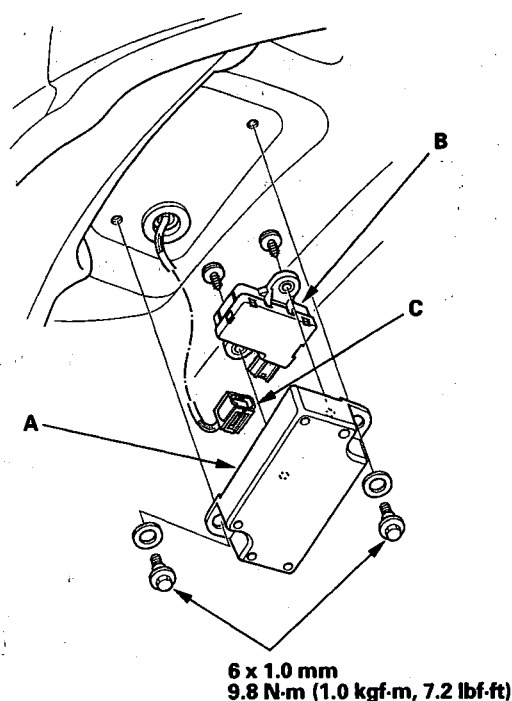
1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the front wheel.
3. Remove the front inner fender (see page 20-176).
4. Disconnect the initiator connector (A).



5. Remove the initiator (B) from the inner side of the wheel well.
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 cover (A) with the initiator (B), and disconnect the initiator connector (C).



4. Separate the cover and the initiator.
5. Install the initiator in the reverse order of removal.

Tire Pressure Sensor Replacement

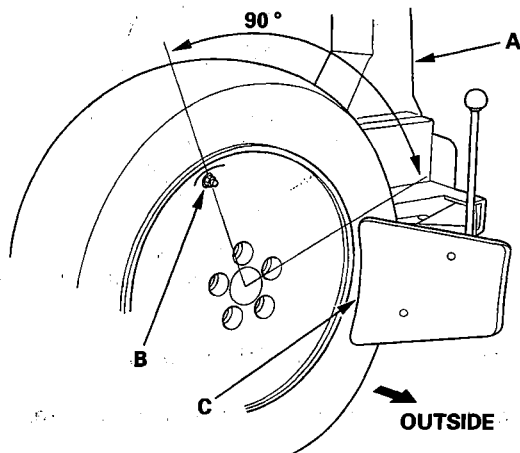
Removal

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).

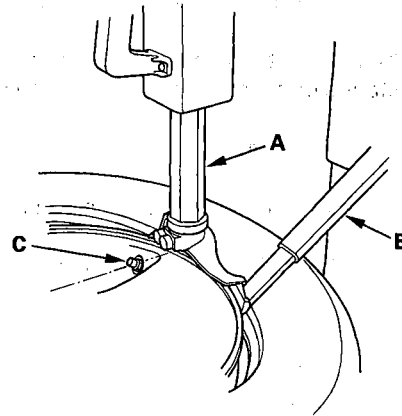
NOTICE

Note these items to avoid damaging the tire pressure sensor:

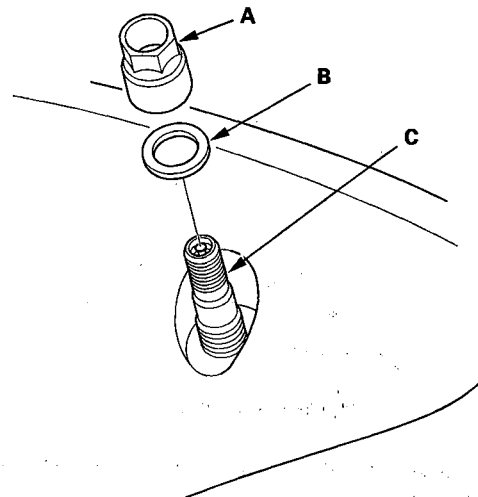
- Do the outside of the wheel first.
- Position the wheel as shown so the valve stem (B) is 90 degrees from the bead breaker (C) as shown.
- Do not position the bead breaker of the tire changer too close to the rim.



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.



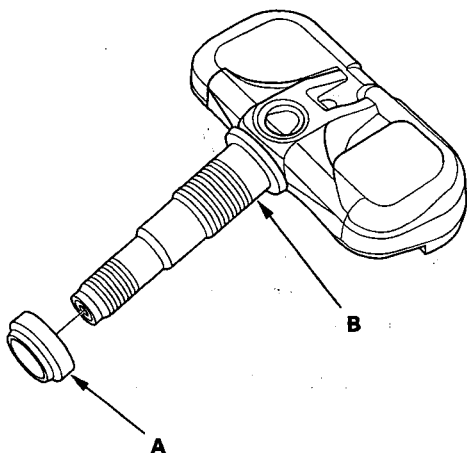
6. Remove the valve stem nut (A) and washer (B), then remove the tire pressure sensor with valve stem (C) from the wheel.



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.

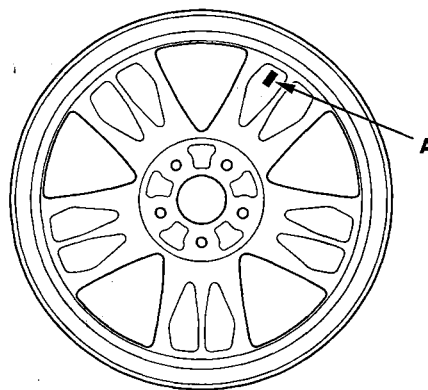


Installation

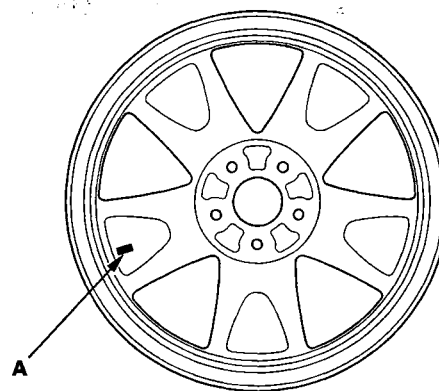
NOTE:

- Use only wheels that have a "STK" stamp (A) on them.
- This vehicle may be equipped with either type 1 or type 2 wheels.

TYPE 1



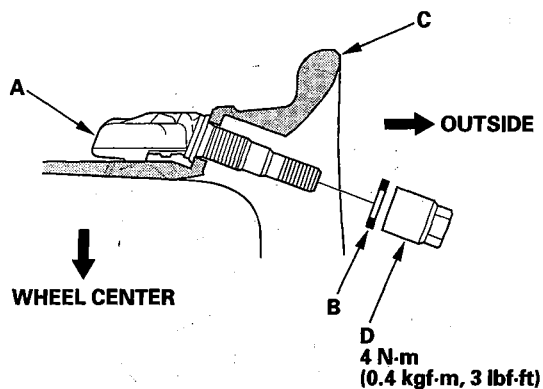
TYPE 2



(cont'd)

Tire Pressure Sensor Replacement (cont'd)

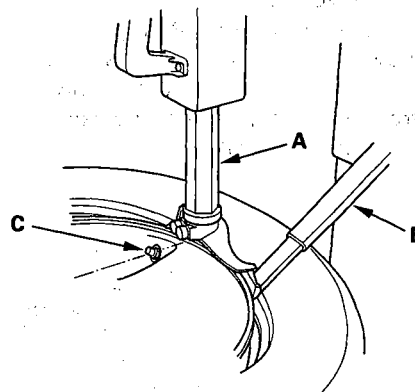
1. Before installing the tire pressure sensor, clean the mating surfaces on the sensor and the wheel.
2. Install the tire pressure sensor (A) and the washer (B) to the wheel (C), and tighten the valve stem nut (D) finger tight. Make sure the pressure sensor is resting on the wheel.



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 to 220 kPa (2.2 kgf/cm², 32 psi).

NOTE: Make sure the tire bead is seated on both sides of the rim uniformly.

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 pressure sensor ID(s) (see page 18-56).