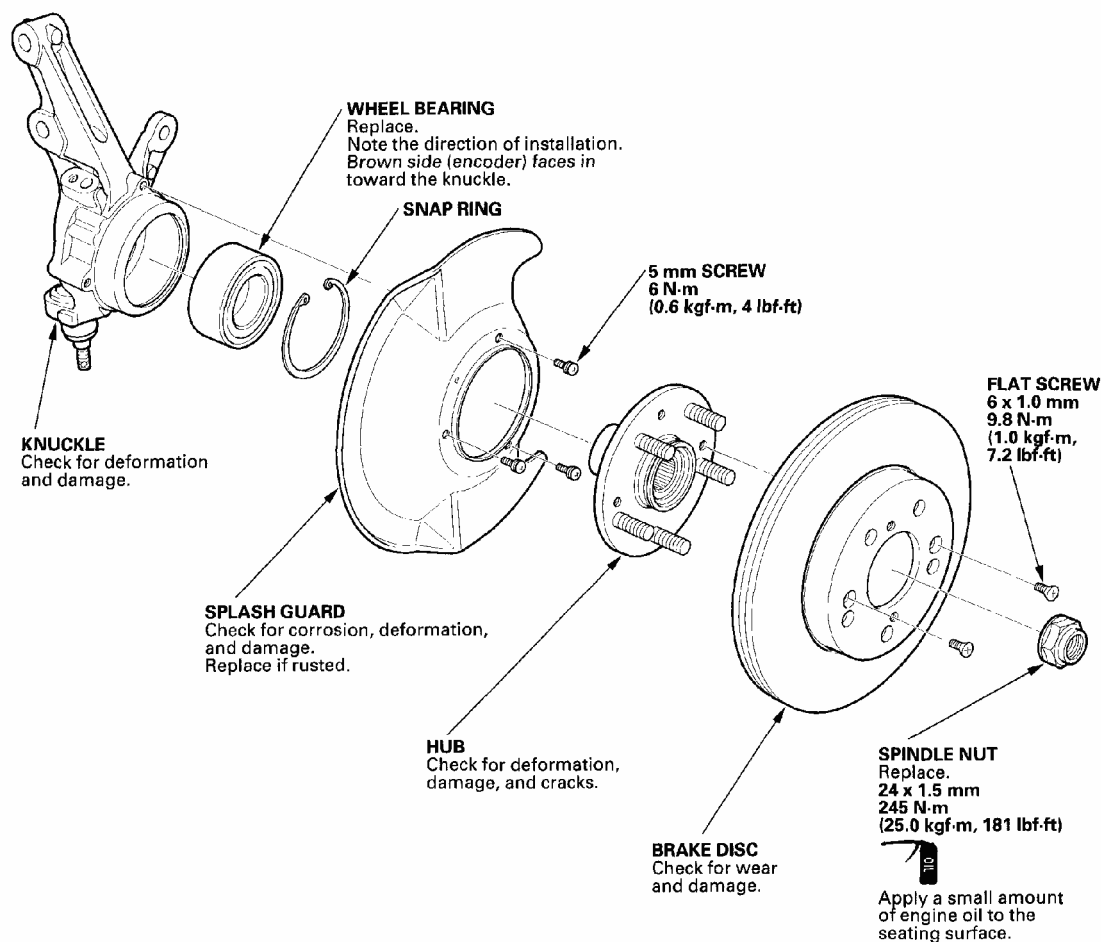


2003-06 SUSPENSION

Front Suspension - Element

**KNUCKLE/HUB/WHEEL BEARING REPLACEMENT**

**EXPLODED VIEW**



G03879063

**Fig. 1: Exploded View Of Knuckle/Hub/Wheel Bearing**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

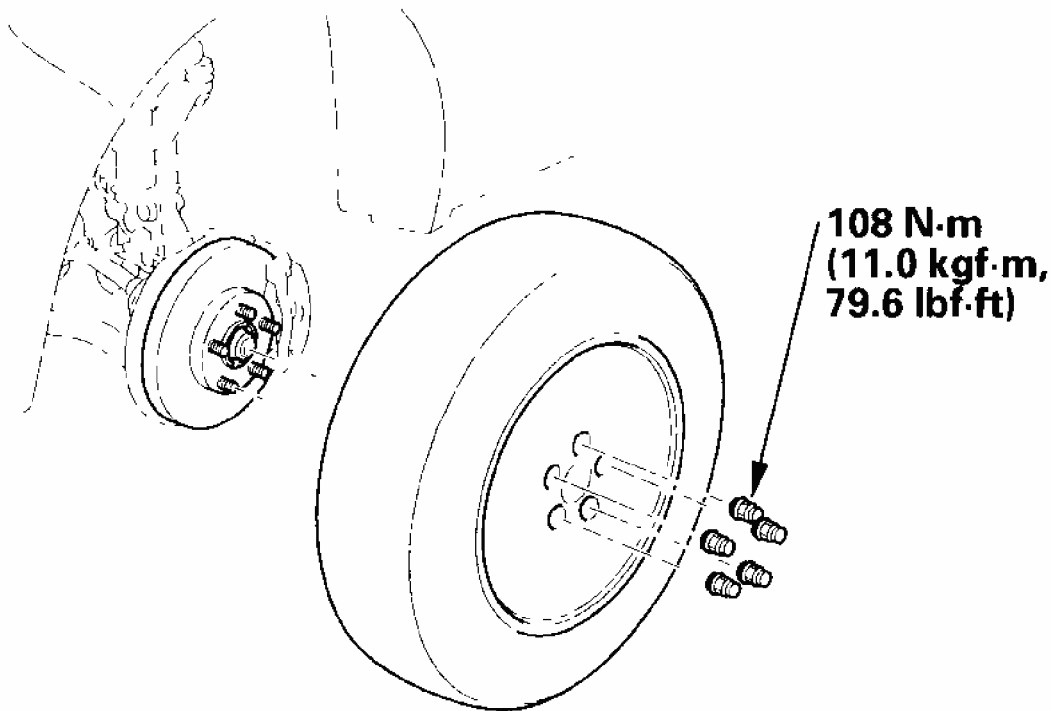
**Special Tools Required**

- Hub dis-assembly tool 07GAF-SD40100
- Ball joint remover, 28 mm 07MAC-SL0A202
- Attachment, 62 x 68 mm 07746-0010500
- Driver 07749-0010000
- Support base 07965-SD90100

- Ball joint thread protector, 12 mm 07AAF-SDAA100

### KNUCKLE AND HUB REPLACEMENT

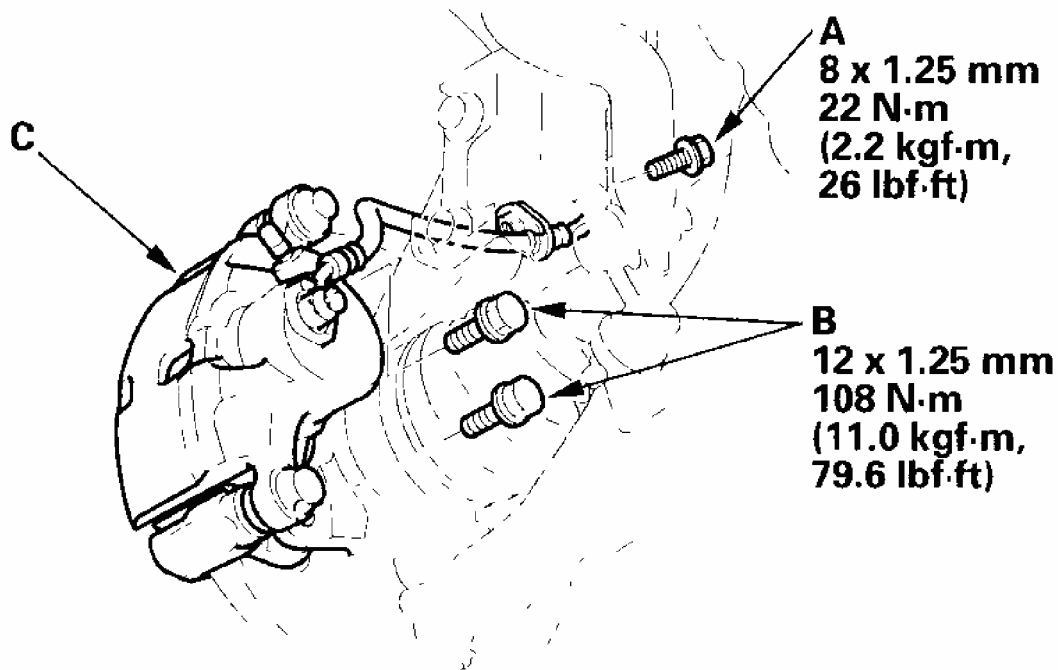
1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **SAFETY STANDS** ).
2. Remove the wheel nuts and front wheel.



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**Fig. 2: Removing Wheel Nuts And Front Wheel And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

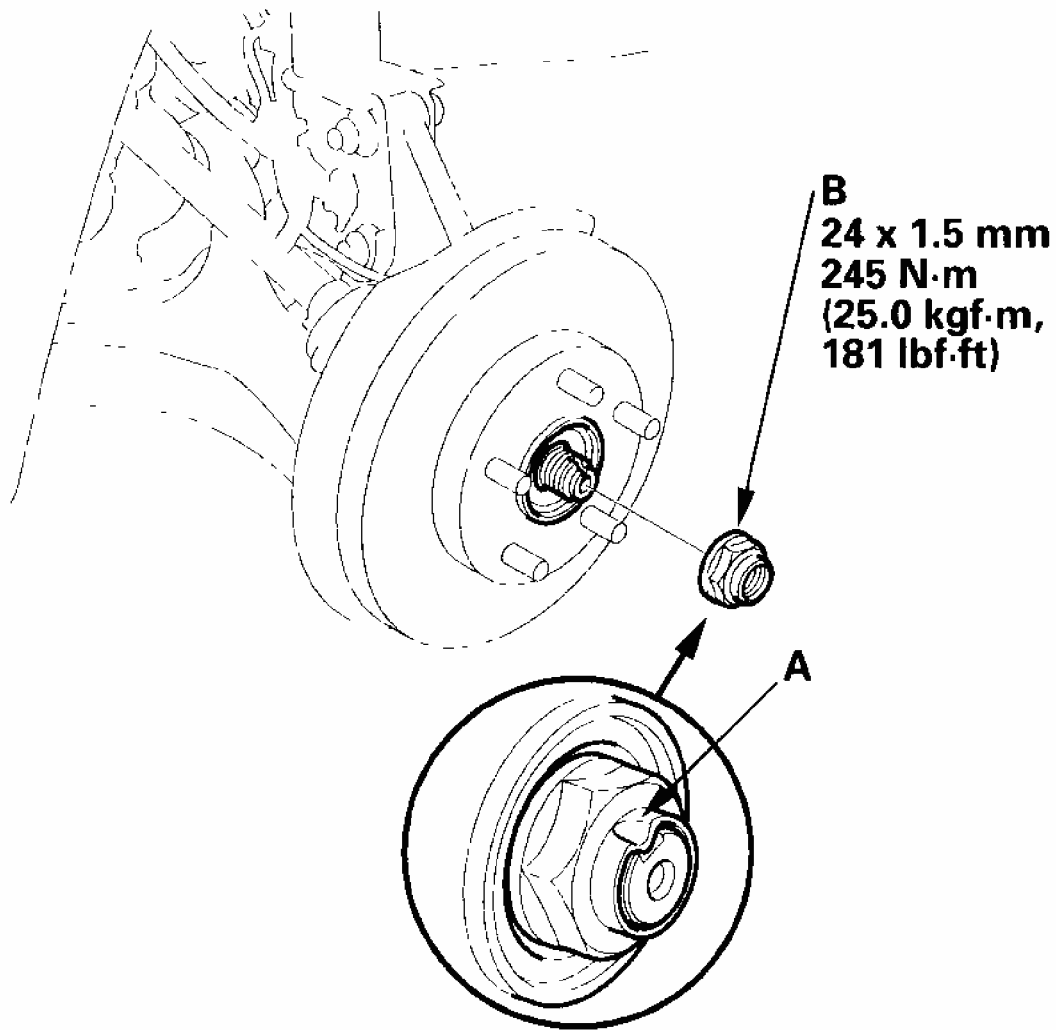
3. Remove the brake hose bracket mounting bolt (A).



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**Fig. 3: Removing Brake Hose Bracket Mounting Bolt And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

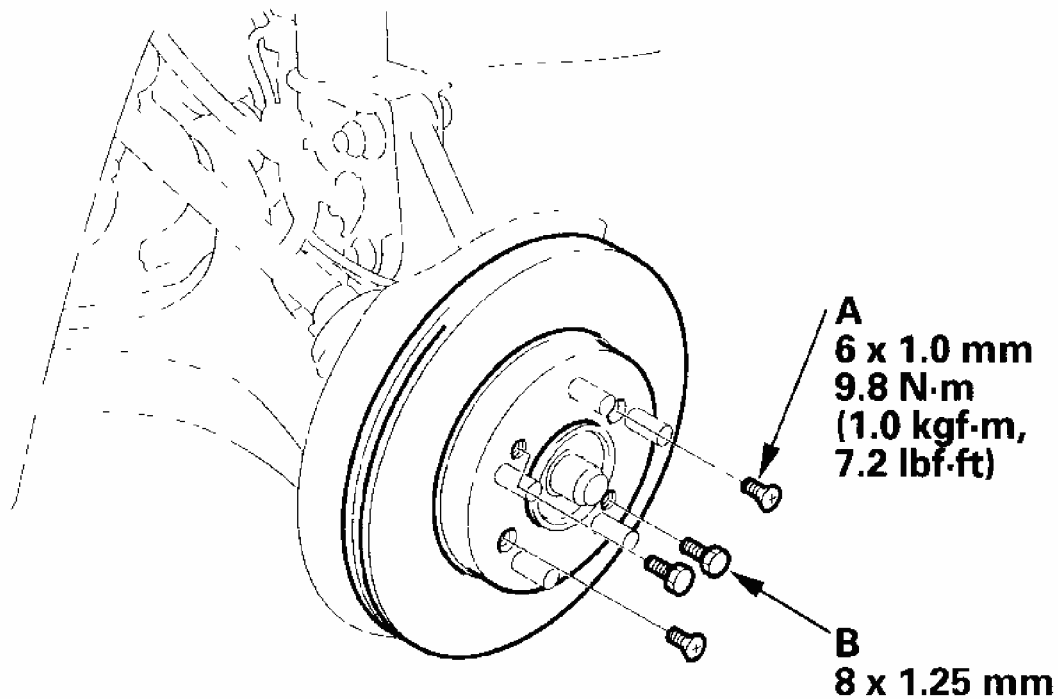
4. Remove the caliper bracket mounting bolts (B), and remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose with force.
5. Raise the stake (A) of the spindle nut (B), then remove and discard the nut.



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**Fig. 4: Raising Stake Of Spindle Nut And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

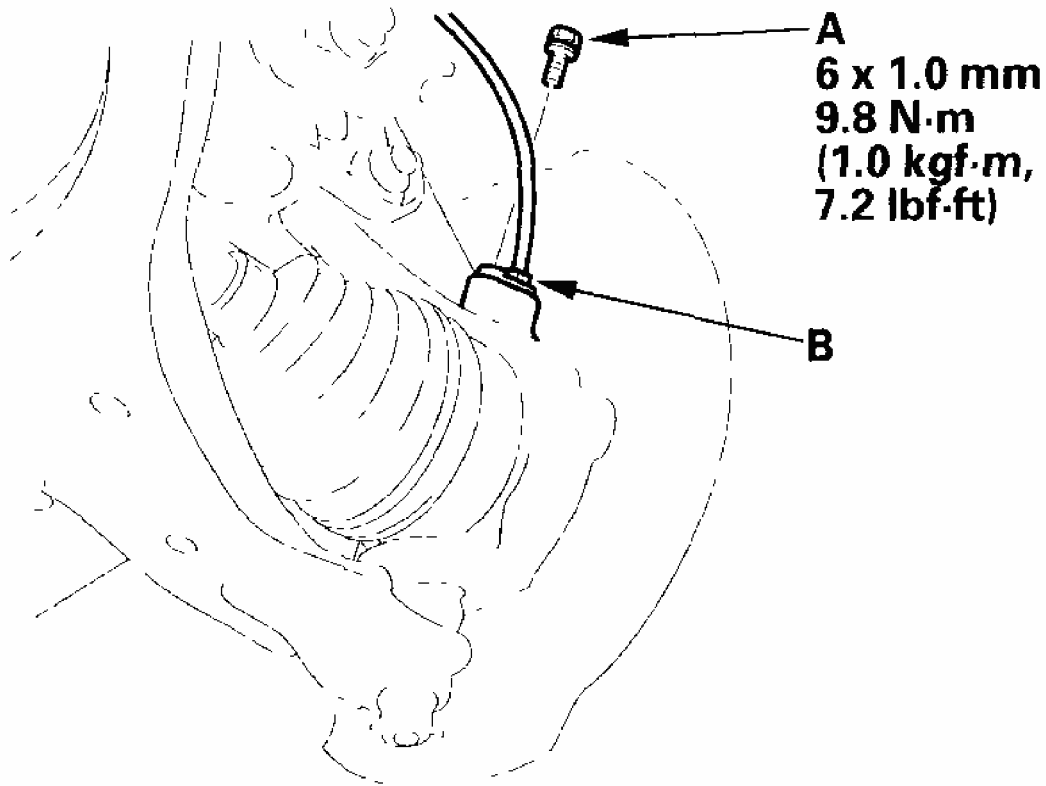
6. Remove the brake disc retaining flat screws (A).



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**Fig. 5: Removing Brake Disc Retaining Flat Screws And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Screw two 8 x 1.25 mm bolts (B) into the brake disc to push it away from the hub. Turn each bolt two turns at a time to prevent cocking the disc excessively.
8. With ABS: Remove the flange bolt (A) and wheel sensor (B) from the knuckle. Do not disconnect the wheel sensor connector.

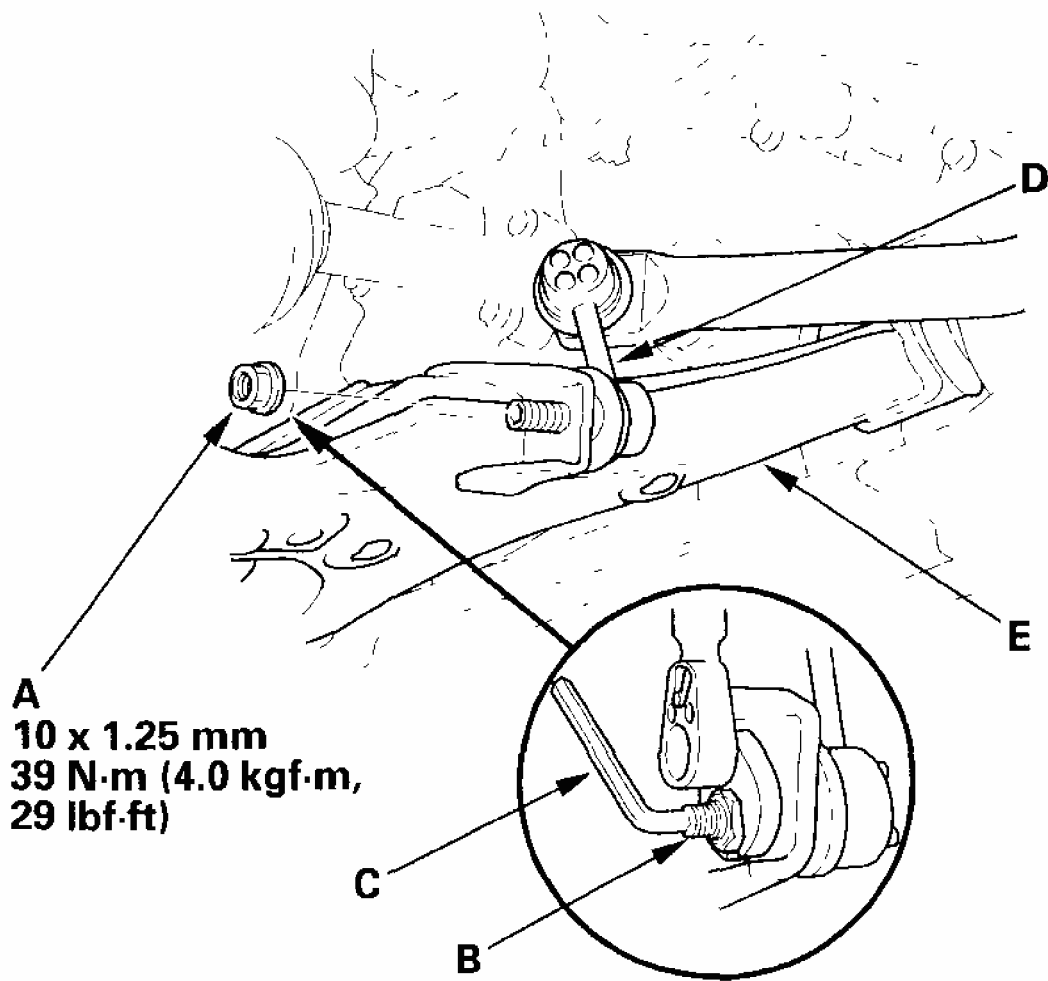


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**Fig. 6: Removing Flange Bolt And Wheel Sensor From Knuckle And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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



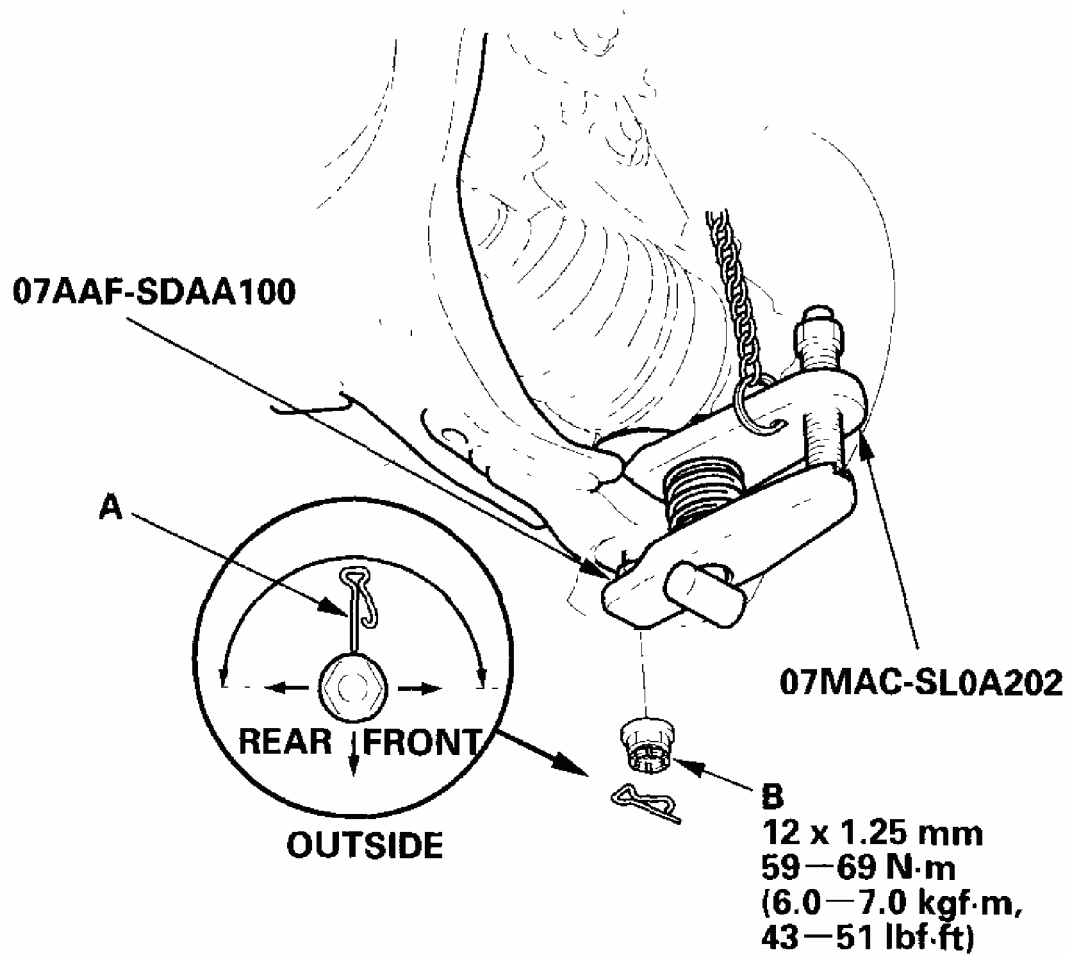
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**Fig. 7: Removing Flange Nut While Holding Joint Pin With Hex Wrench And Torque Specifications**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the lock pin (A) from the lower arm ball joint, and remove the castle nut (B).

**NOTE:** During installation, insert the new lock pin as shown after tightening the nut.



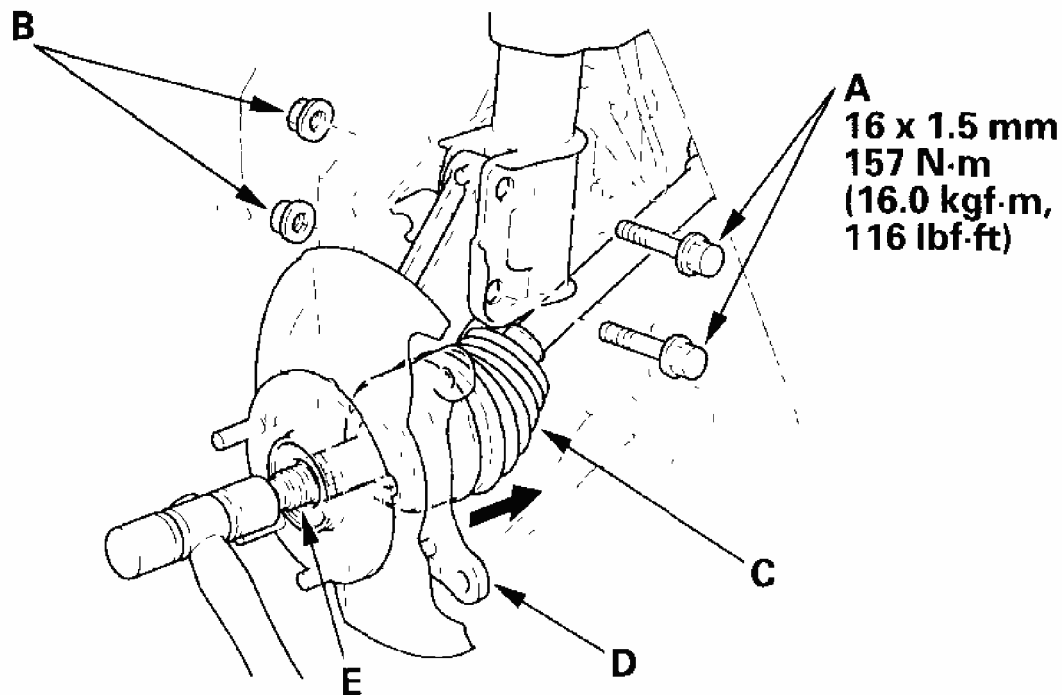
G03679070

**Fig. 8: Removing Lock Pin From Lower Arm Ball Joint And Torque Specifications**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Disconnect the lower arm from the knuckle using the ball joint thread protector and ball joint remover (see **BALL JOINT REMOVAL**).
12. Loosen the damper pinch bolts (A) while holding the nuts (B), and remove the bolts and the nuts.





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**Fig. 9: Disconnecting Driveshaft Outboard Joint From Knuckle And Torque Specifications**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

**NOTE: Do not pull the driveshaft end outward. The inboard driveshaft joint may come apart.**

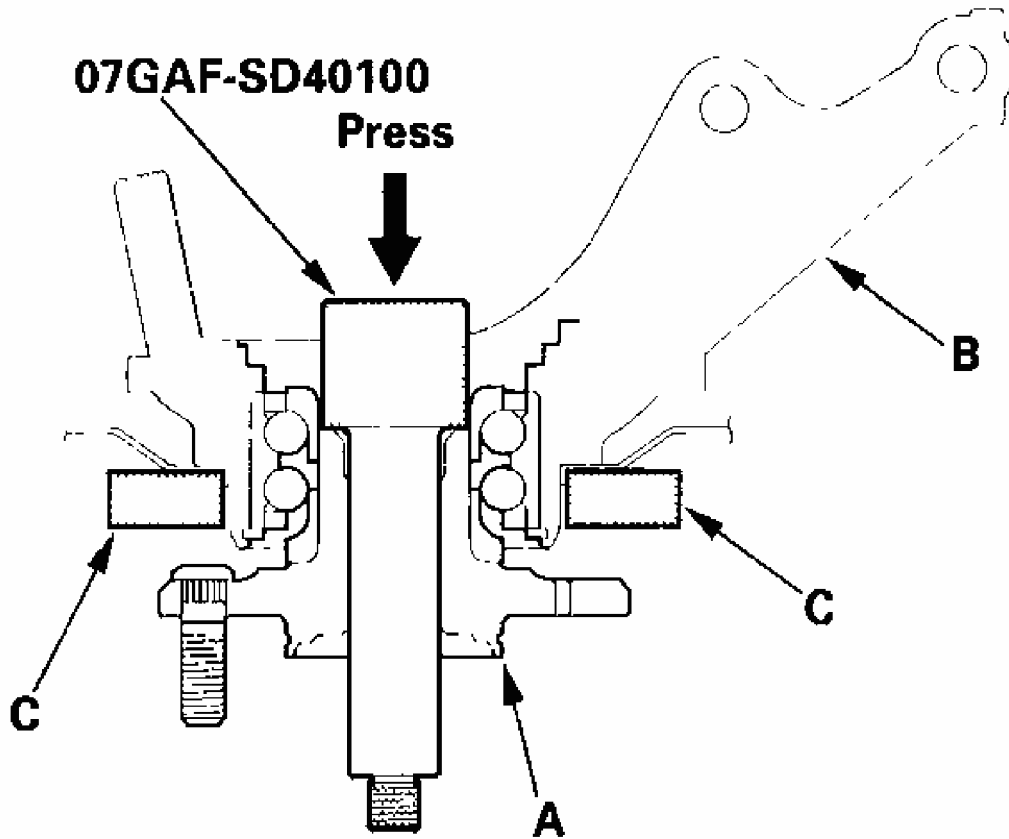
14. Install the knuckle/hub/hub bearing unit in the reverse order of removal, and note these items:
  - Be careful not to damage the ball joint boot when installing the knuckle.
  - Tighten all mounting hardware to the specified torque values.
  - First install all the components and lightly tighten the bolts and nuts, then raise the suspension with a floor jack to load it with the vehicle's weight before fully tightening to the specified torque values. Do not place the jack against the ball joint pin of the lower arm.
  - Torque the castle nut to the lower torque value 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 on reassembly.
- Before installing the new spindle nut, apply a small amount of engine oil to the seating surface of the nut. After tightening, use a drift to stake the spindle nut shoulder against the driveshaft.
- Replace the self-locking nuts, damper pinch bolts and nuts with new ones.
- 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 front wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT** ).

#### **WHEEL BEARING REPLACEMENT**

1. Separate the hub (A) from the knuckle (B) using the special tool and a hydraulic press. Hold the knuckle with the attachment (C) of 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.

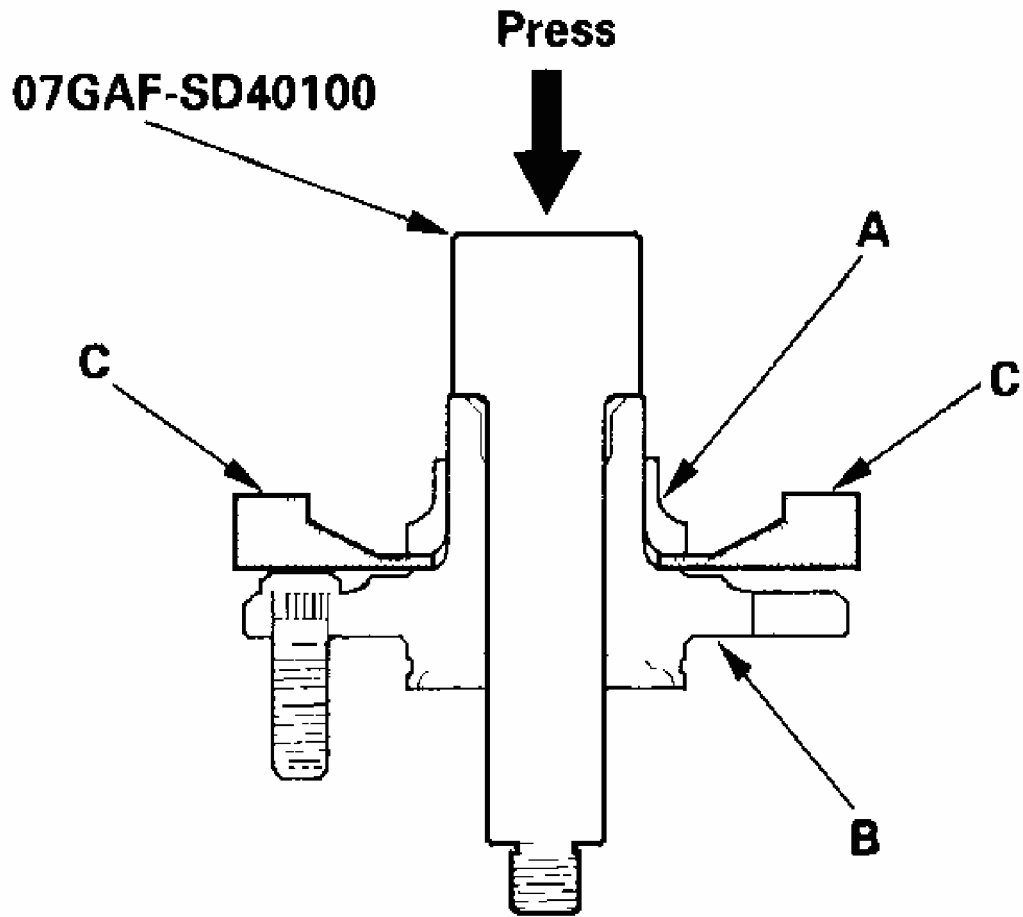


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**Fig. 10: Identifying Wheel Bearing**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

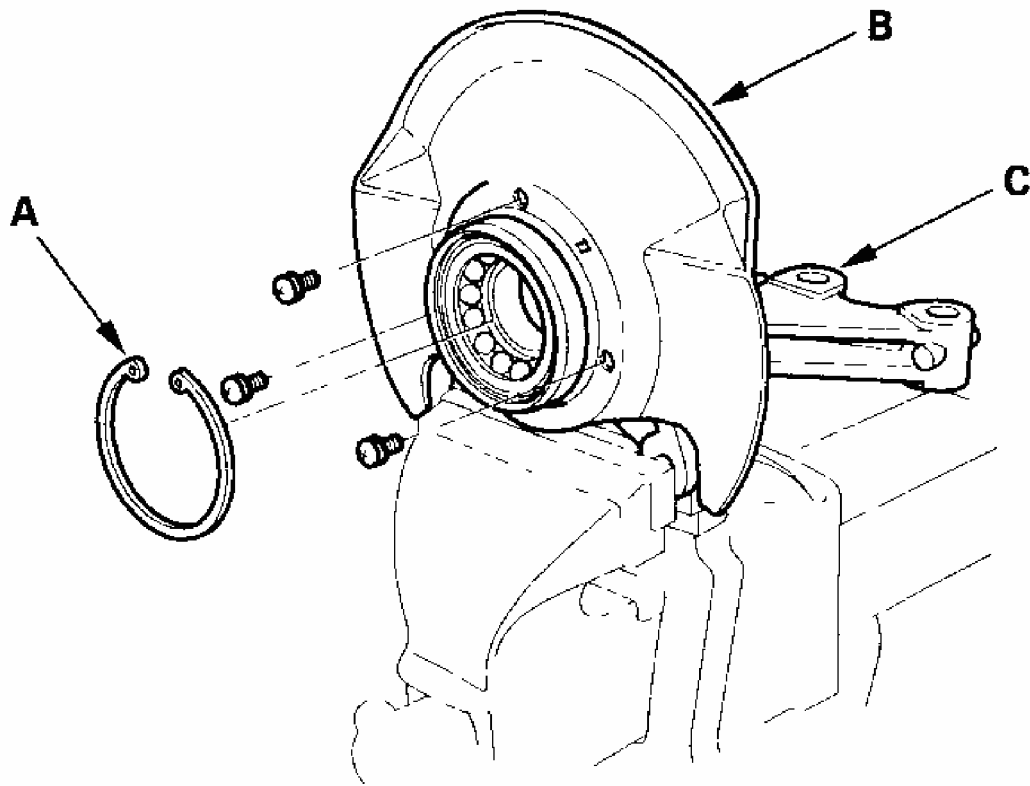
2. Press the wheel bearing inner race (A) out of the hub (B) using the special tool, a commercially available bearing separator (C), and a press.



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**Fig. 11: Pressing Wheel Bearing Inner Race Out Of Hub Using Special Tool**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

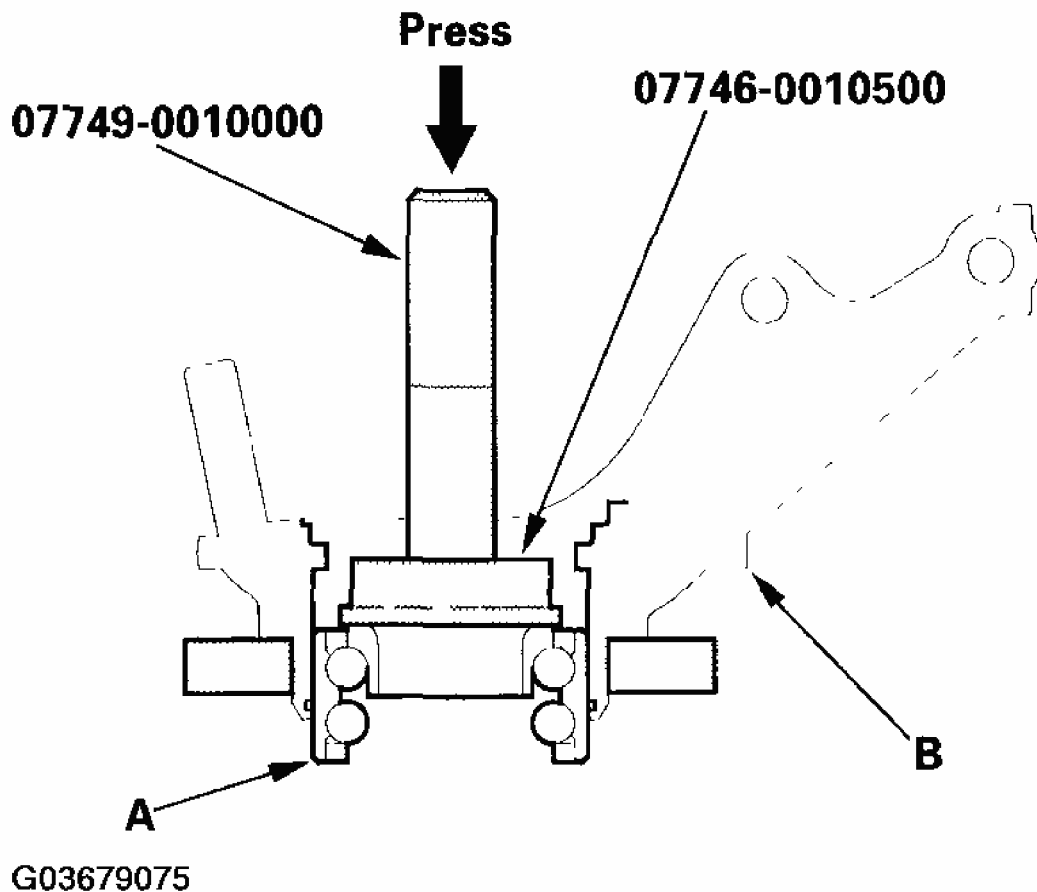
3. Remove the snap ring (A) and the splash guard (B) from the knuckle (C).



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**Fig. 12: Removing Snap Ring And Splash Guard From Knuckle**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Press the wheel bearing (A) out of the knuckle (B) using the special tools, and a press.

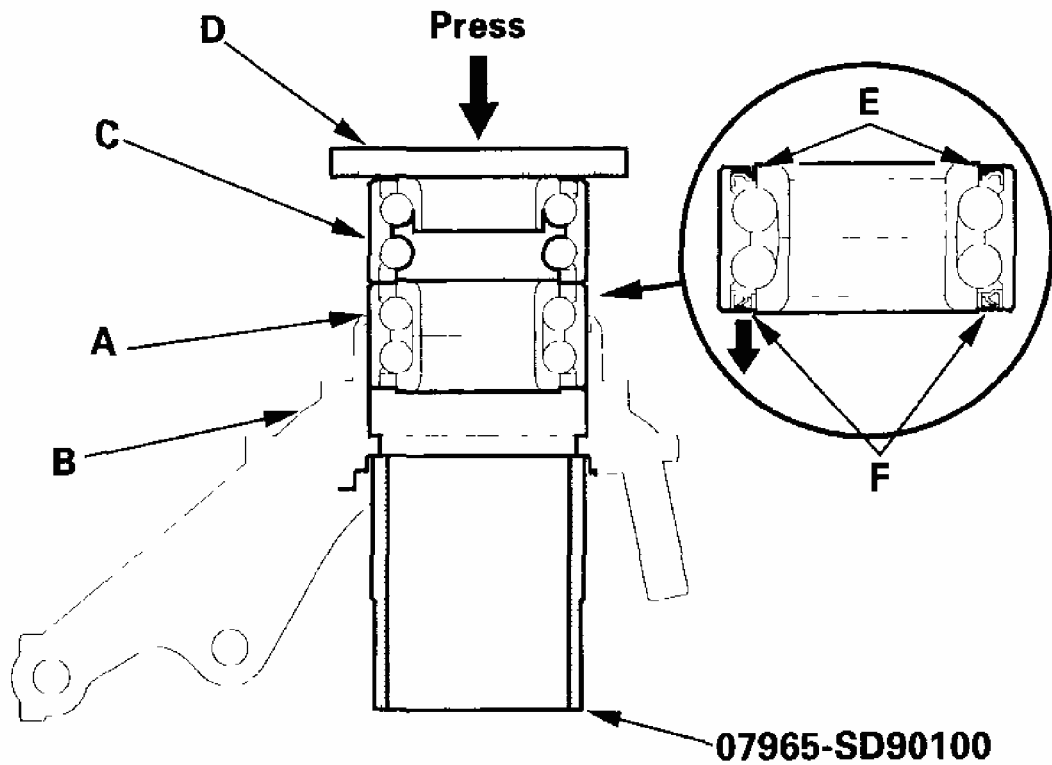


**Fig. 13: Pressing Wheel Bearing Out Of Knuckle**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Wash the knuckle and hub thoroughly in a 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 special tool, and a press. Be careful not to damage the bearing seal (E).

**NOTE (with ABS):**

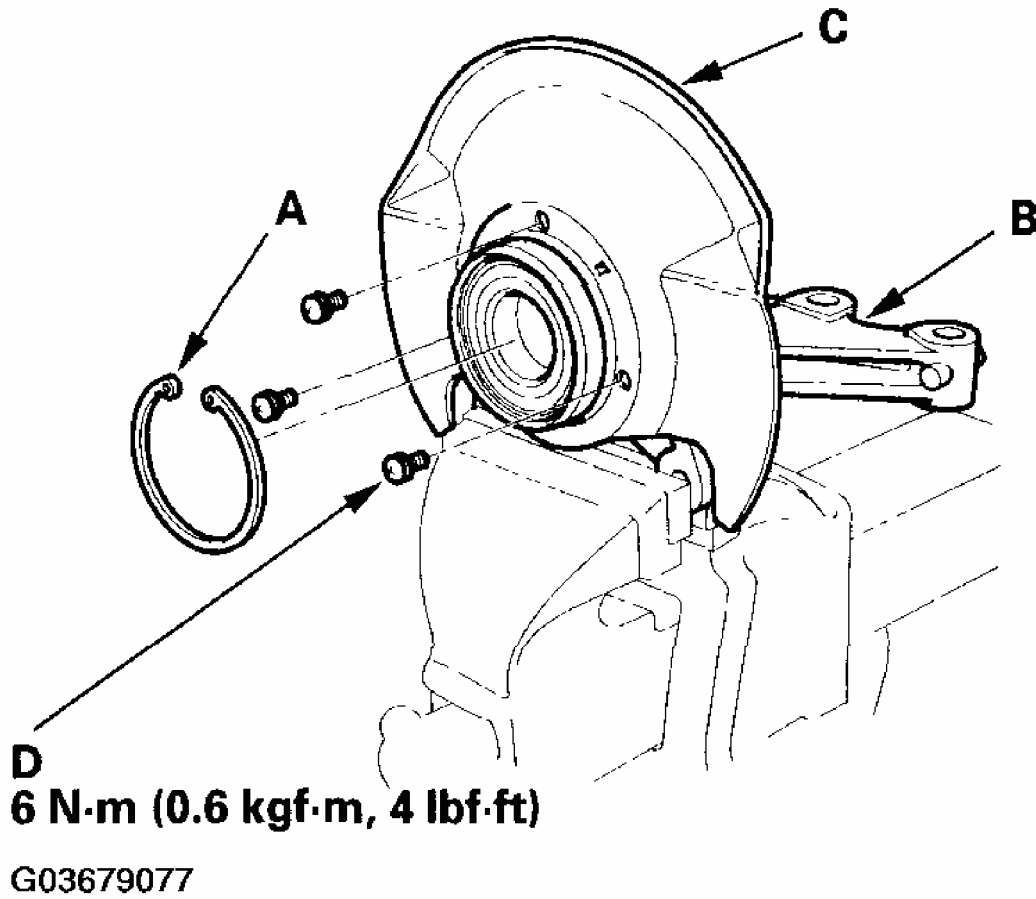
- Install the wheel bearing with the magnetic encoder (F) (brown color) toward the inside of the knuckle.
- Remove any oil, grease, dust, metal debris, or other foreign material from the encoder surface.
- Keep magnetic tools away from the encoder surface.
- Be careful not to damage the encoder surface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



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**Fig. 14: Installing Wheel Bearing With Magnetic Encoder**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

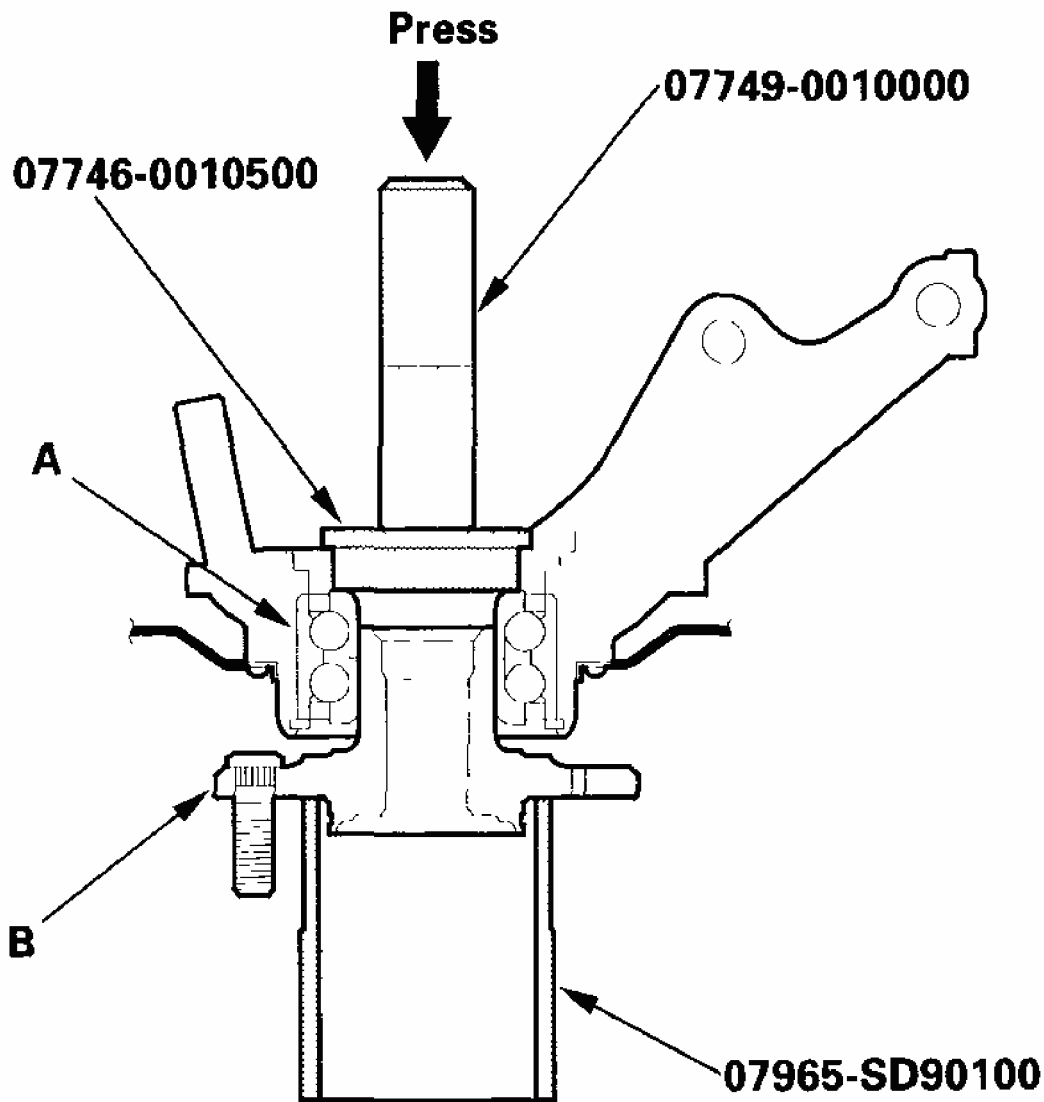
7. Install the snap ring (A) securely in the knuckle (B).



**Fig. 15: Installing Snap Ring Securely In Knuckle**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the splash guard (C), and tighten the screws (D) to the specified torque value.
9. Press a wheel bearing (A) onto the hub (B) using the special tools, and a press.





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**Fig. 16: Installing Splash Guard**

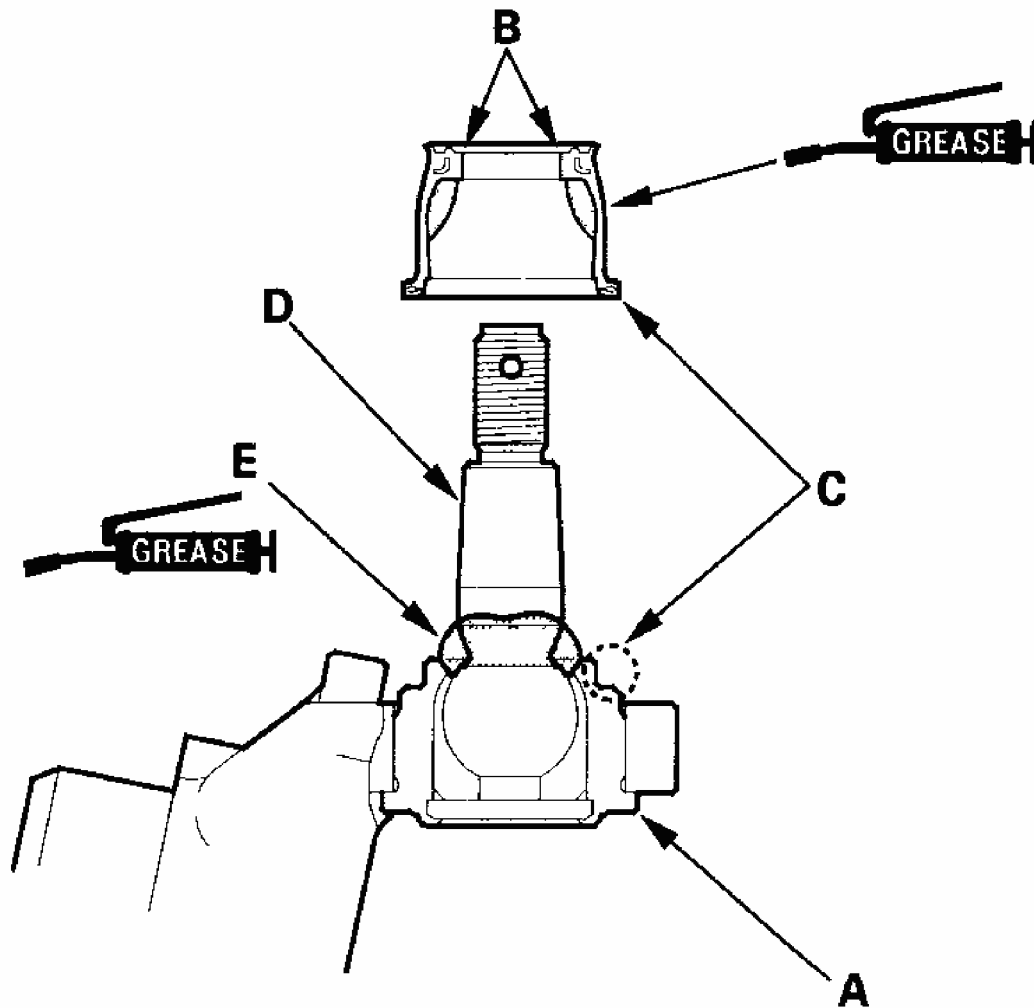
Courtesy of AMERICAN HONDA MOTOR CO., INC.

## BALL JOINT BOOT REPLACEMENT

### Special Tools Required

Front hub dis-assembly tool 07965-SA50500

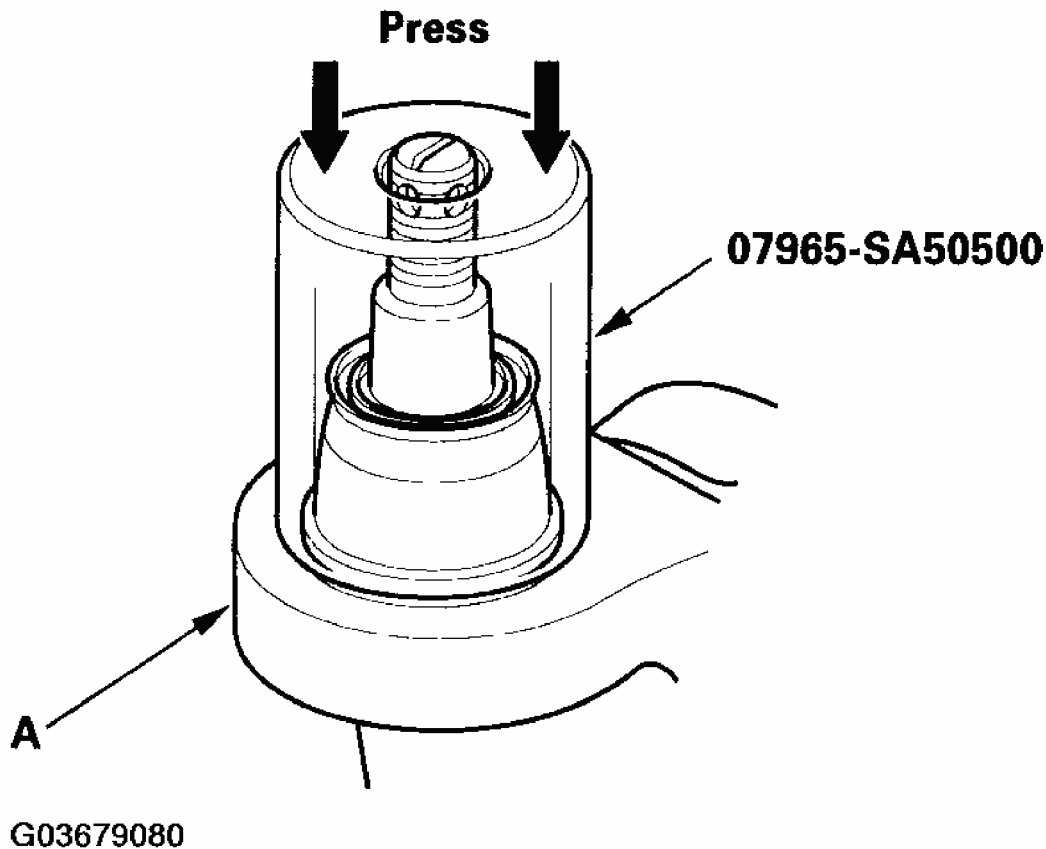
1. Remove the boot. Check for a gap between the ball joint (A) and the knuckle. If there is a gap, replace the knuckle assembly. Do not press the ball joint back into the knuckle.



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**Fig. 17: Packing The Interior and Lip With Grease**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Pack the interior and lip (B) of a new boot with fresh grease. Keep the grease off of the boot-to-knuckle mating surfaces (C).
3. Wipe the grease off the tapered section of the pin (D), and pack fresh grease onto the base (E).
4. Install the boot onto the ball joint pin, then squeeze it gently to force out any air. Do not let dirt or other foreign materials get into the boot.
5. Press the boot with the special tool until the bottom seats on the knuckle (A) evenly around.

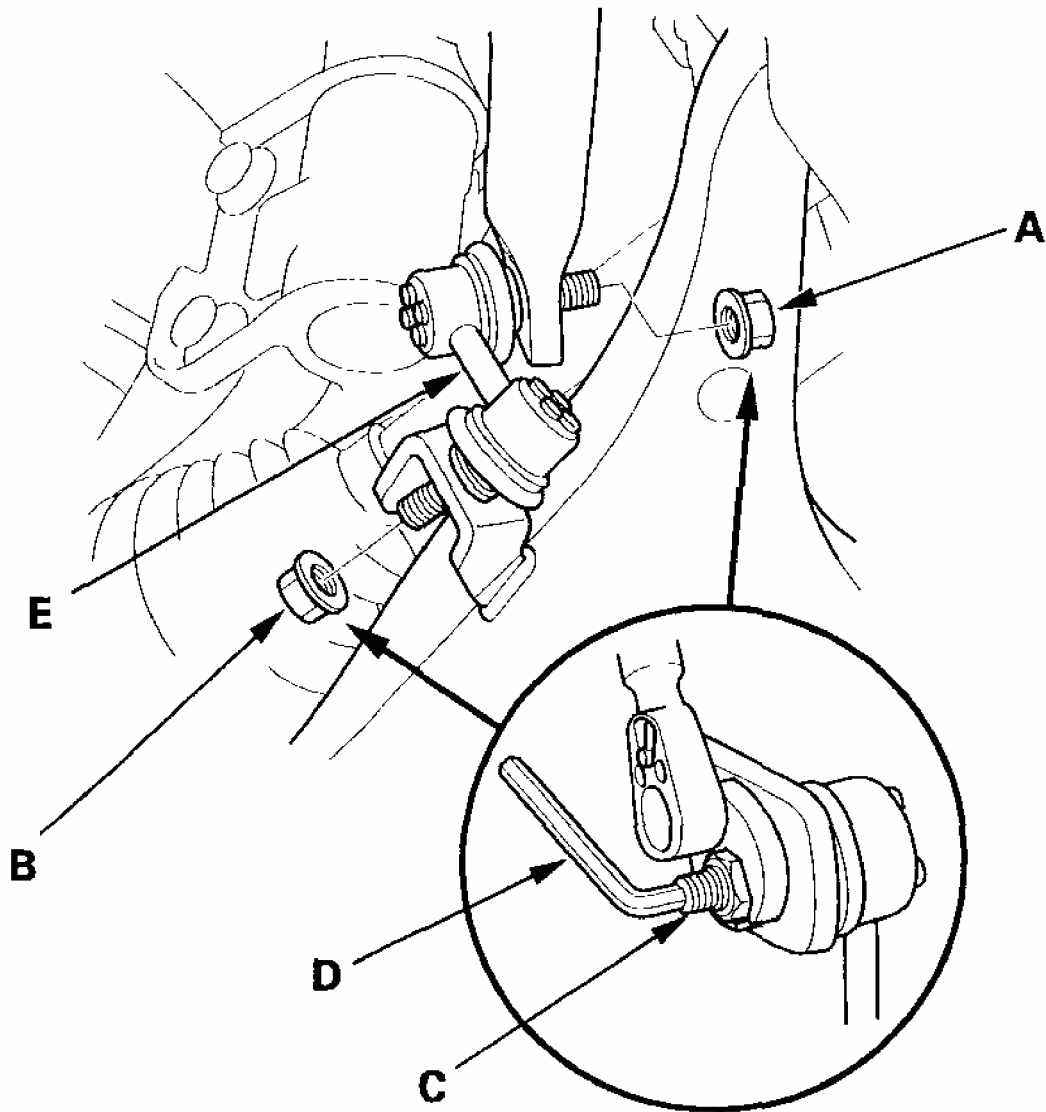


**Fig. 18: Installing Boot Onto Ball Joint Pin**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

## **STABILIZER LINK REMOVAL/INSTALLATION**

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



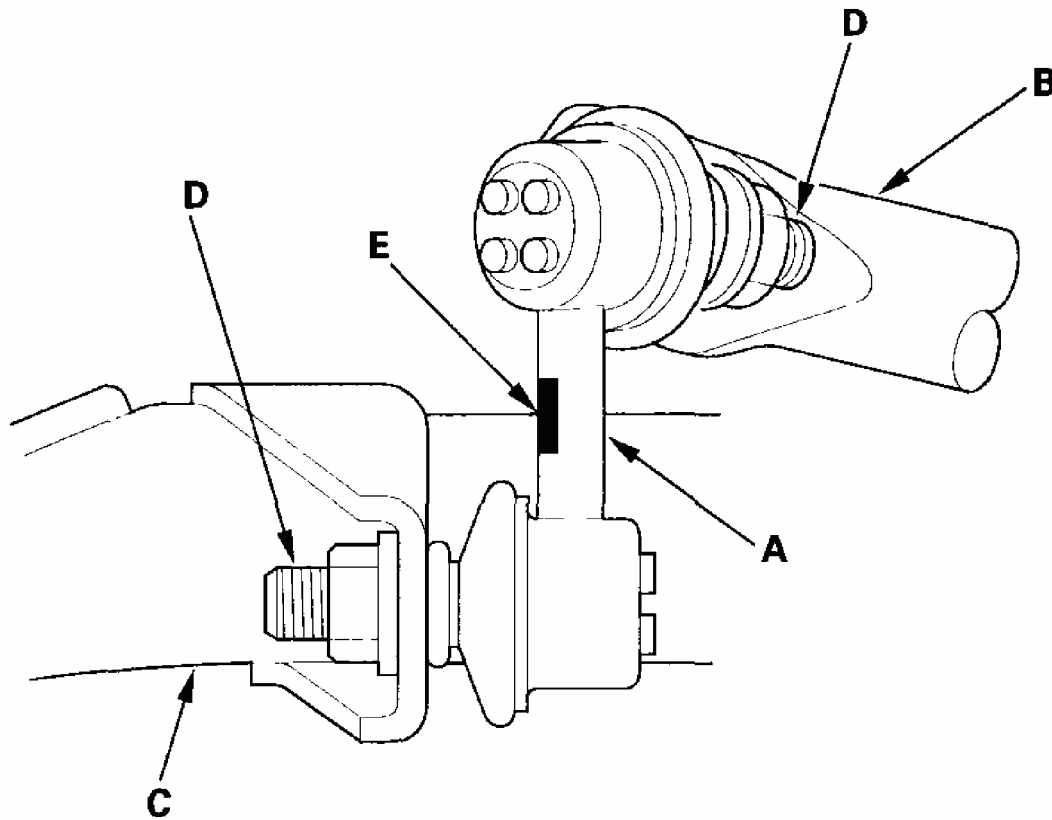
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**Fig. 19: Removing Front Wheel**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the stabilizer link (A) on the stabilizer bar (B) and lower arm (C) with the joint pins (D) set at the center of their range of movement.

**NOTE:** The left stabilizer has a yellow paint mark (E), while the right stabilizer link has a white paint mark.



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**Fig. 20: Installing Stabilizer Link On Stabilizer Bar And Lower Arm With The Joint Pins**

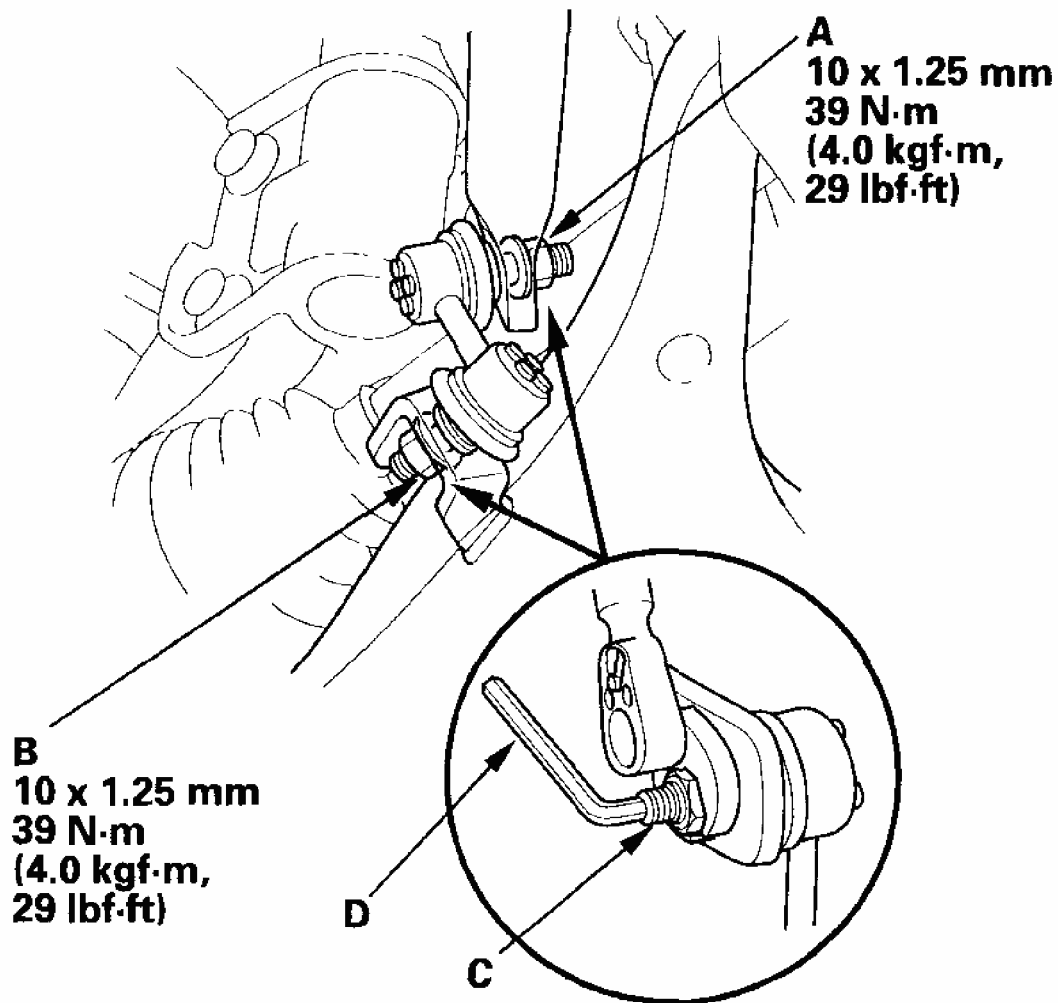
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install a new self-locking nut and flange nut, and lightly tighten them.

**NOTE:** Use a new self-locking nut on reassembly.

**NOTE:** Do not place the jack against the ball joint pin.

6. Tighten the self-locking nut (A) and flange nut (B) to the specified torque values while holding the respective joint pin (C) with a hex wrench (D).



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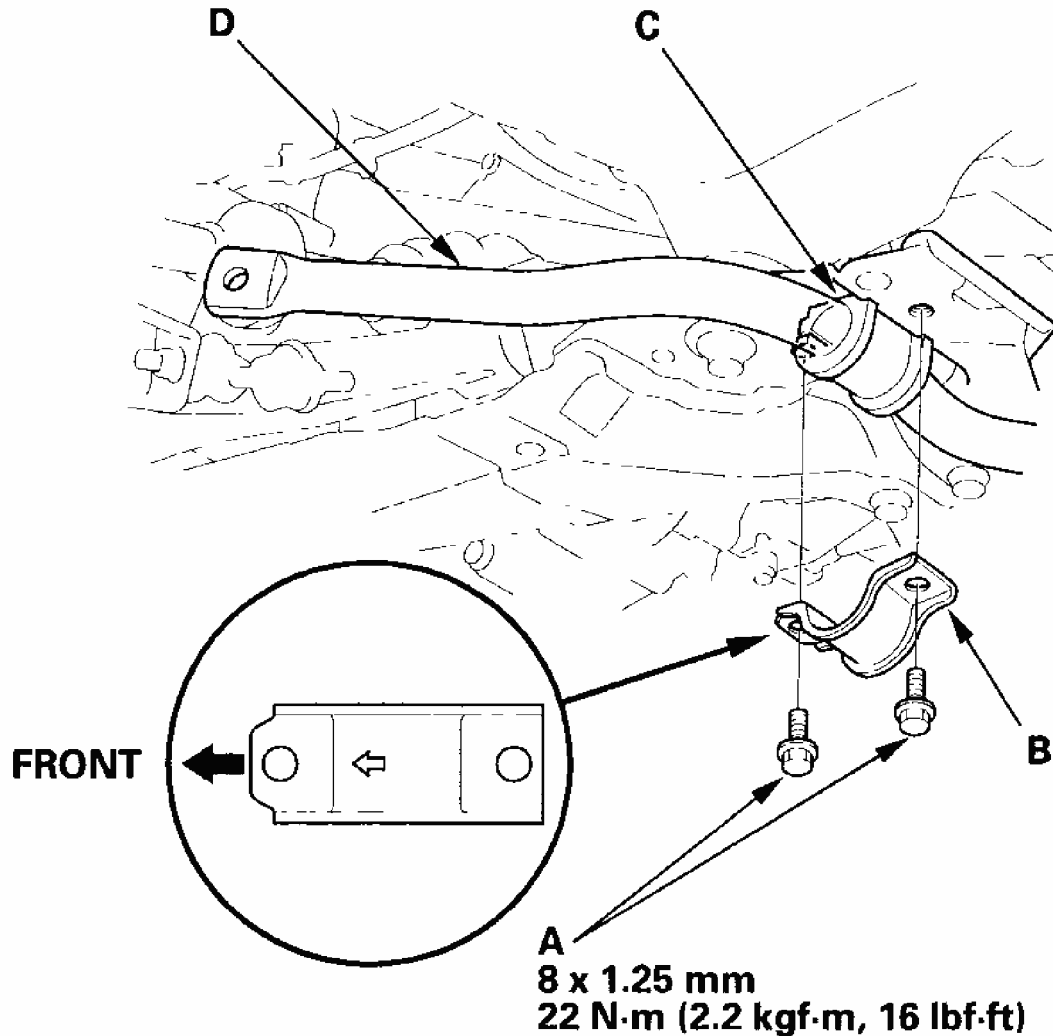
**Fig. 21: Tightening Self-Locking Nut And Flange Nut To Torque Values**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Reinstall the front wheel and test-drive the vehicle.
8. After 5 minutes of driving, torque the self-locking nut torque value again.

## **STABILIZER BAR REPLACEMENT**

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **SAFETY STANDS**).
2. Remove the front wheels.
3. Disconnect the stabilizer links from the stabilizer bar on the right and left sides (see **STABILIZER LINK REMOVAL/INSTALLATION**).

4. Remove the flange bolts (A) and bushing holders (B), then remove the bushings (C) and the stabilizer bar (D).

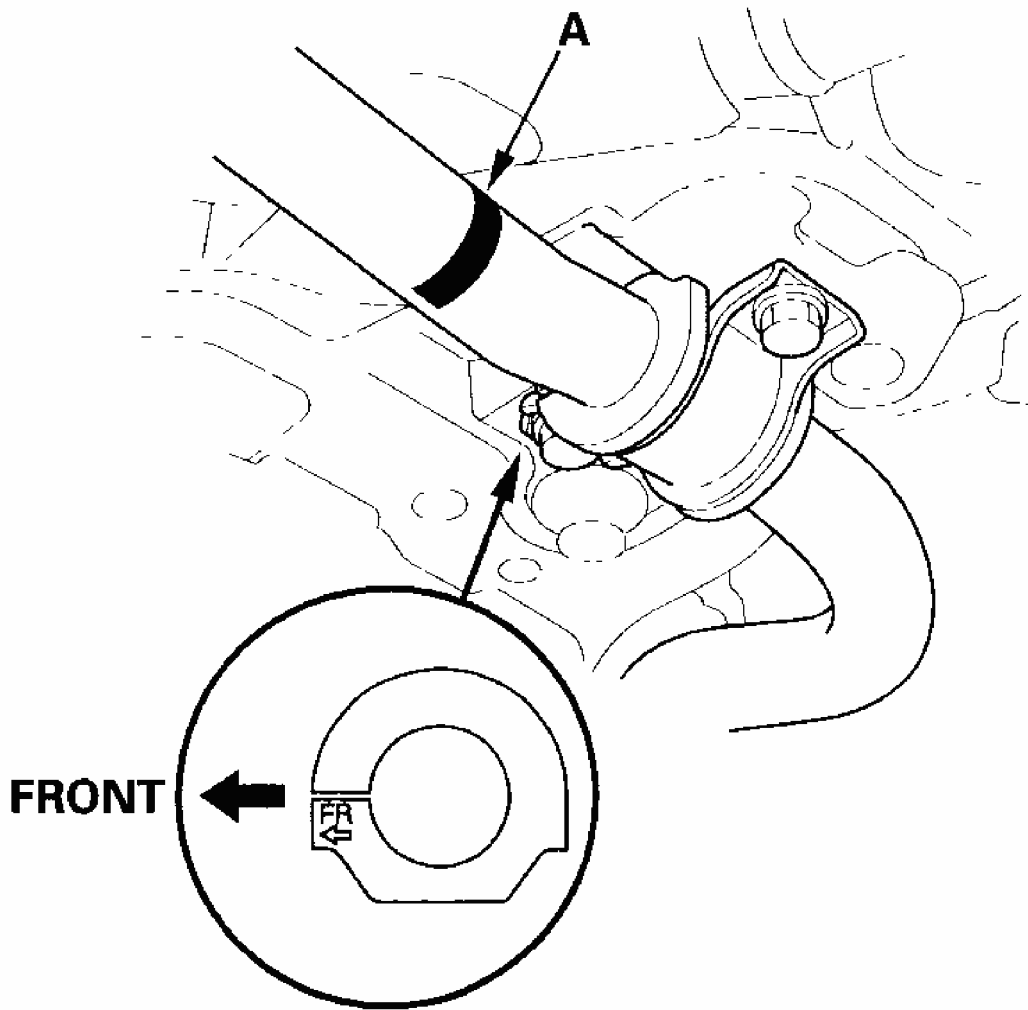


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**Fig. 22: Removing Flange Bolts And Bushing Holders With Specified Torques**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 paint mark (A) on the stabilizer bar shows the right side.
  - Do not set the bushings on the bent or curved part of the stabilizer bar.
  - Note the fore/aft direction of the bushing holders.
  - Refer to stabilizer link removal/installation to connect the stabilizer bar to the

links (see **STABILIZER LINK REMOVAL/INSTALLATION** ).



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**Fig. 23: Identifying Right Side Of Stabilizer Bar**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

## LOWER ARM REPLACEMENT

### Special Tools Required

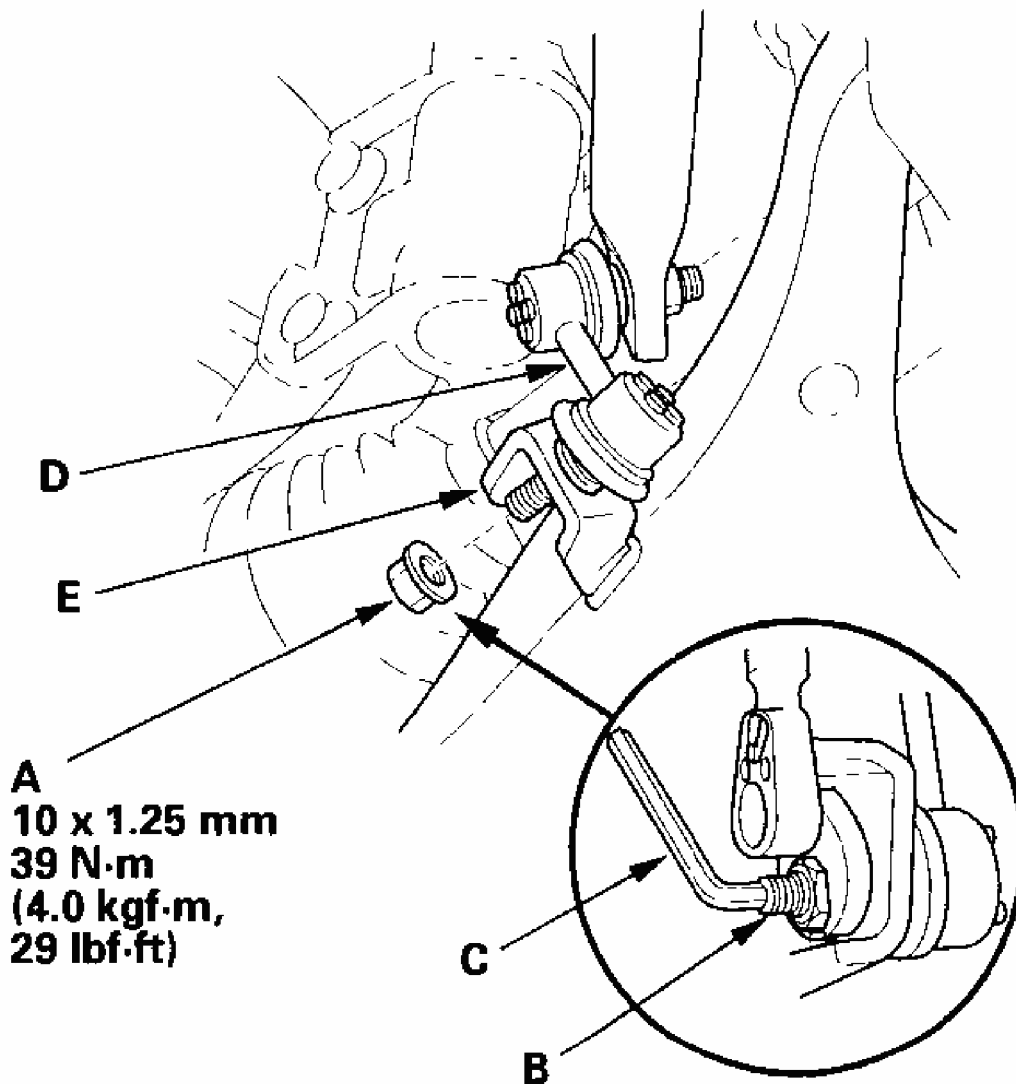
- Ball joint thread protector, 12mm 07AAF-SDAA100
- Ball joint remover, 28 mm 07MAC-SL0A202

1. Raise the front of the vehicle, and support it with safety stands in the proper locations



(see **SAFETY STANDS** ).

2. Remove the front wheel.
3. Remove the flange nut (A) while holding the joint pin (B) with a hex wrench (C), and disconnect the stabilizer link (D) from the lower arm (E).

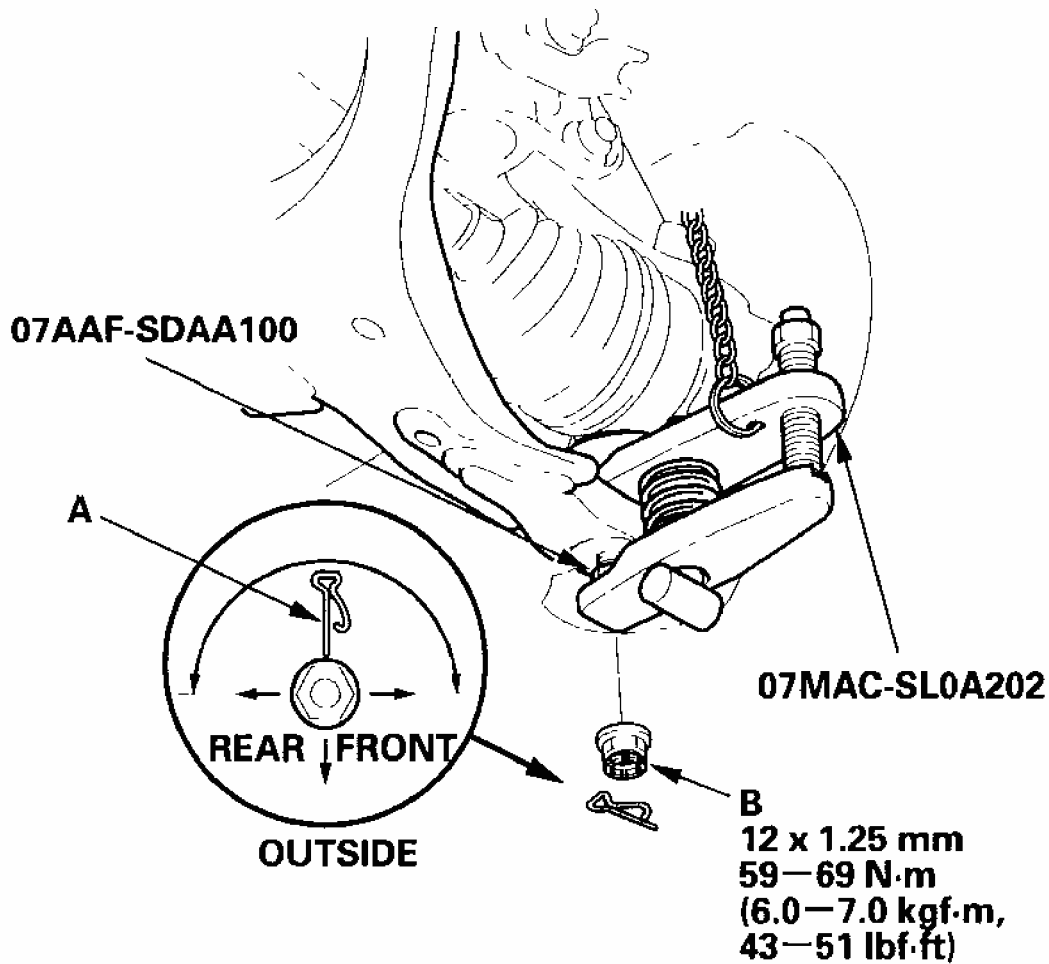


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**Fig. 24: Removing Flange Nut While Holding Joint Pin And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

**NOTE:** During installation, insert the new lock pin as shown after tightening the nut.

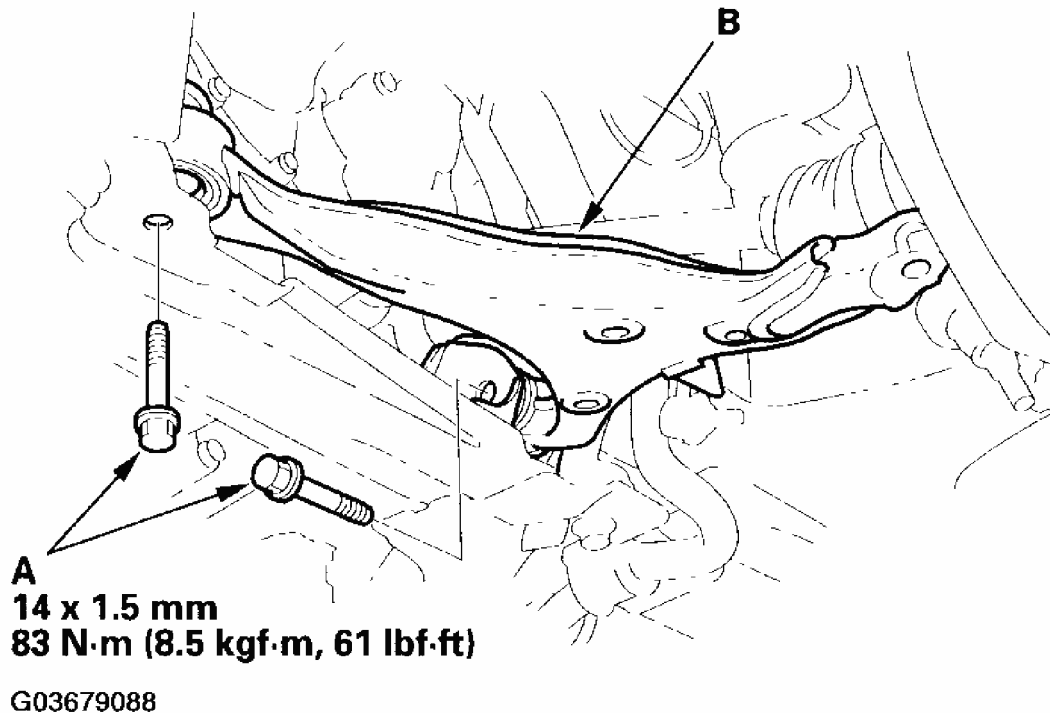


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**Fig. 25: Removing Lock Pin From Lower Arm Ball Joint And Torque Specifications**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Disconnect the lower arm from the knuckle using the ball joint thread protector and ball joint remover (see **BALL JOINT REMOVAL**).
6. Remove the flange bolts (A), and remove the lower arm (B).



**Fig. 26: Removing Flange Bolts And Lower Arm With Specified Torques**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

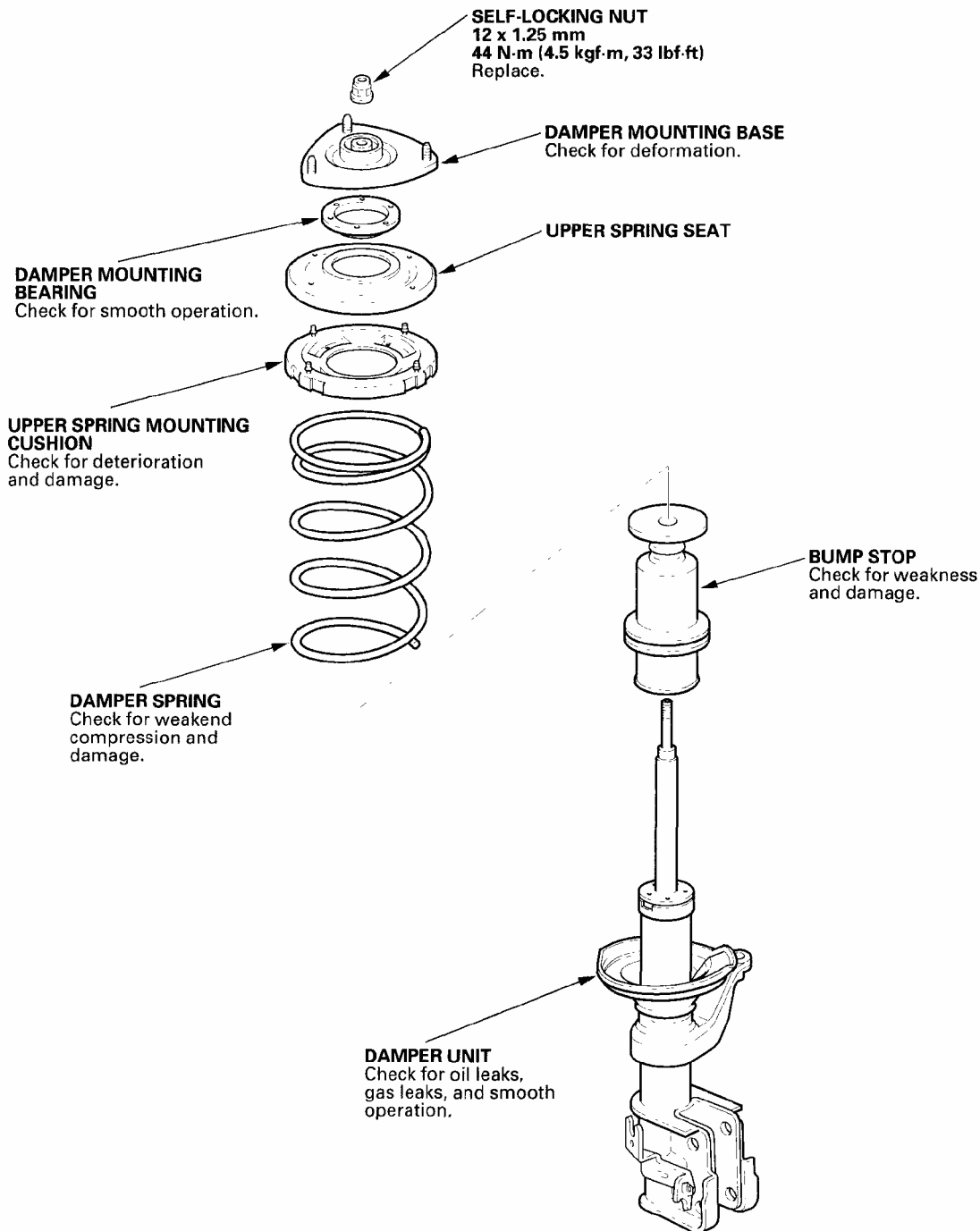
7. Install the lower arm in the reverse order of removal, and note these items:
  - Be careful not to damage the ball joint boot when connecting the lower arm to the knuckle.
  - Tighten all mounting hardware to the specified torque values.
  - First install all the components and lightly tighten the bolts and nuts, then raise the suspension with a floor jack to load it with the vehicle's weight before fully tightening it to the specified torque values. Do not place the jack on the lower arm ball joint.
  - Torque the castle nut to the lower torque value 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 **WHEEL ALIGNMENT**).

## DAMPER/SPRING REPLACEMENT

### EXPLODED VIEW

## 2004 Honda Element DX

2003-06 SUSPENSION Front Suspension - Element



G03679089

**Fig. 27: Exploded View Of Damper/Spring And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

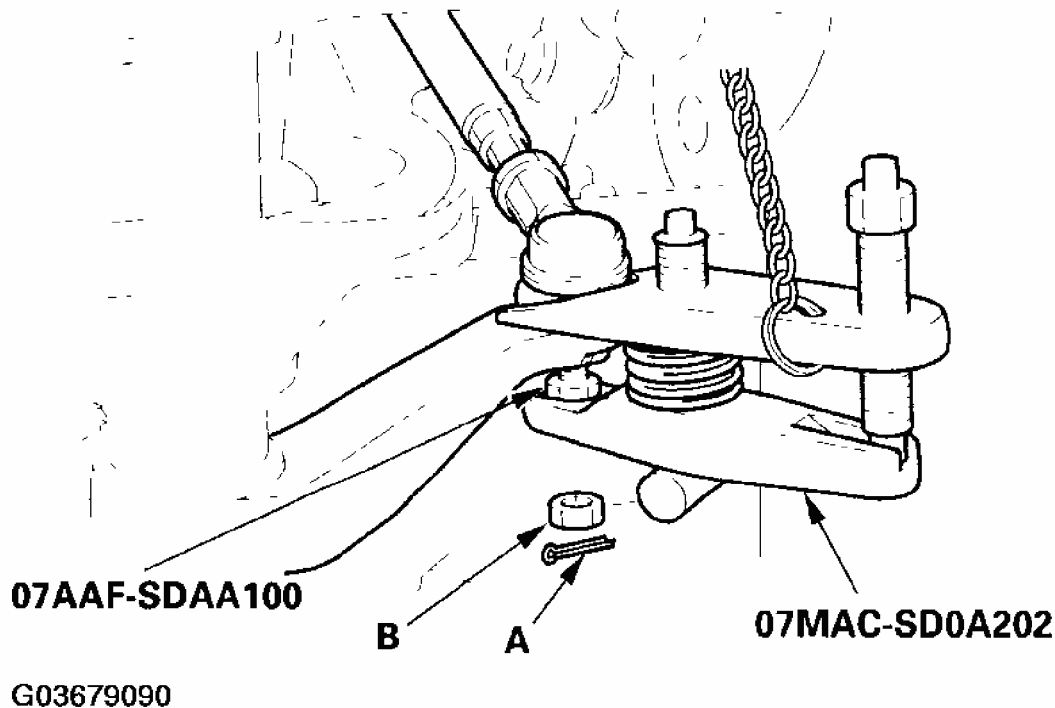
### Special Tools Required

- Ball joint thread protector, 12mm 07AAF-SDAA100
- Ball joint remover, 28 mm 07MAC-SL0A202

**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.

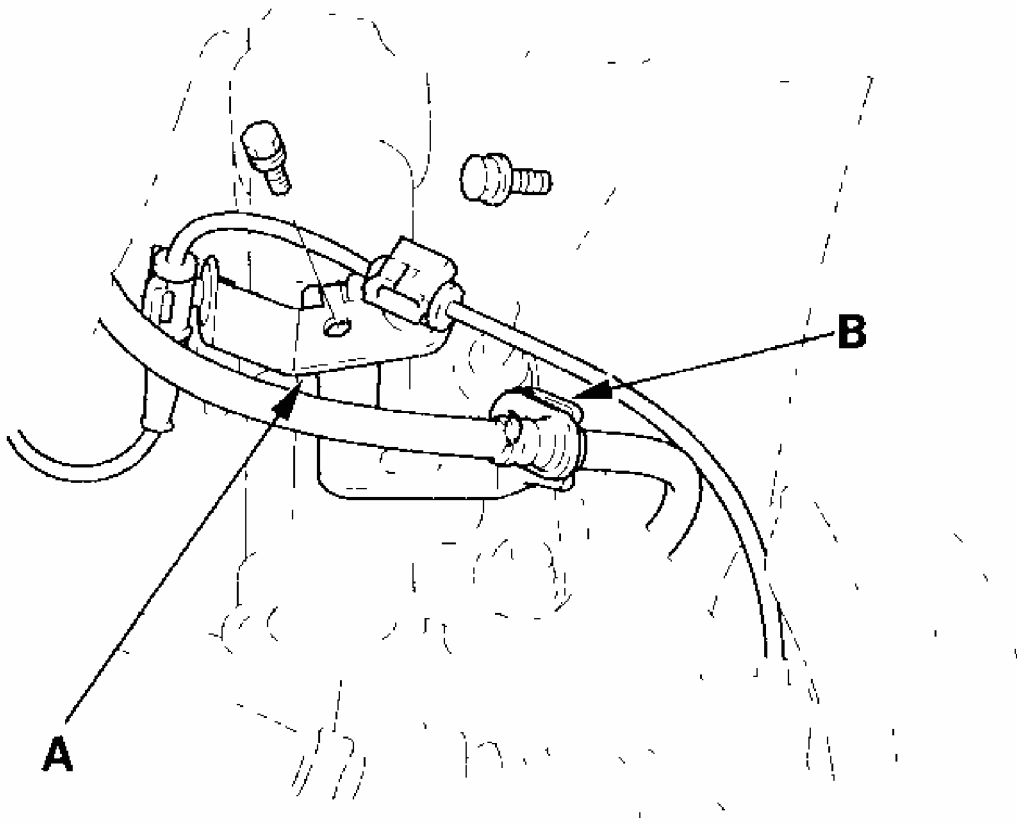
## REMOVAL

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **SAFETY STANDS** ).
2. Remove the front wheel.
3. Remove the cotter pin (A) from the tie-rod end ball joint, and remove the nut (B).



**Fig. 28: Removing Cotter Pin From Tie-Rod End Ball Joint**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

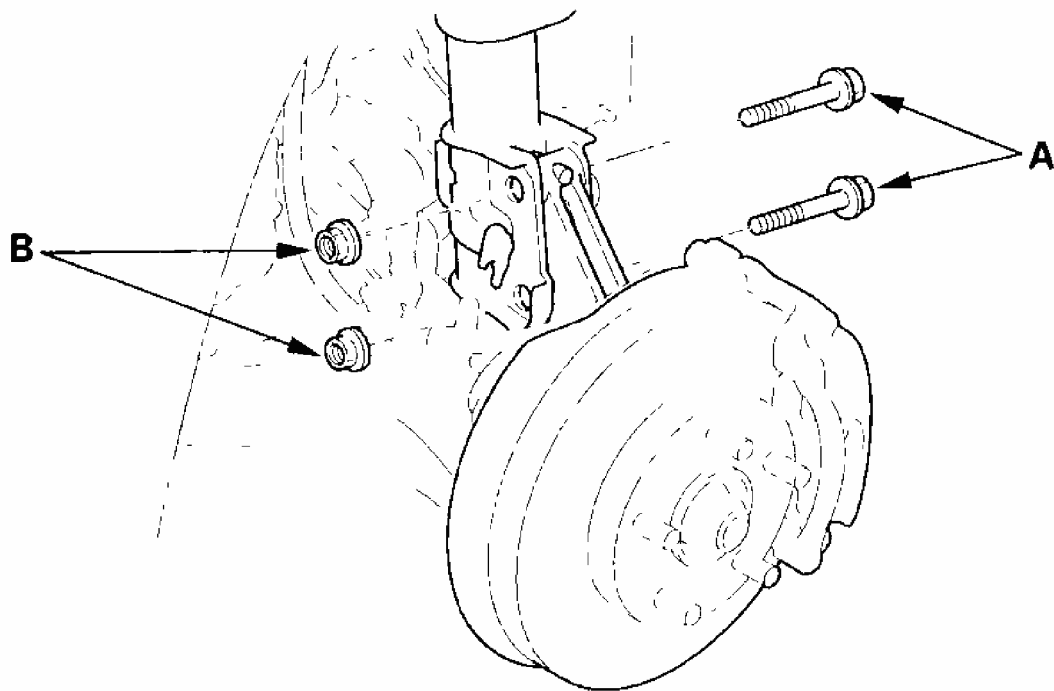
4. Disconnect the tie-rod end from the steering arm on the damper using the ball joint thread protector and ball joint remover (see **BALL JOINT REMOVAL** ).
5. Remove the bolts, and remove the wheel sensor harness bracket (A) (with ABS) and brake hose bracket (B) from the damper. Do not disconnect the wheel sensor connector.



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**Fig. 29: Removing Bolts Wheel Sensor Harness Bracket**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

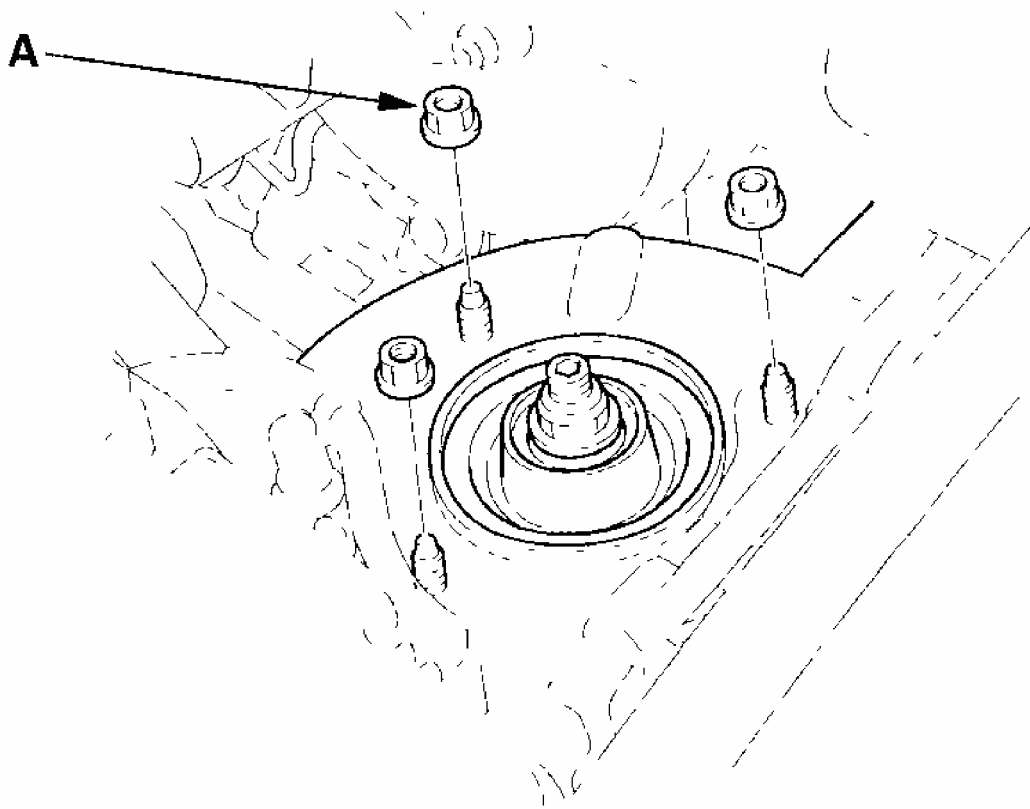
6. Remove the damper pinch bolts (A) while holding the nuts (B).



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**Fig. 30: Removing Damper Pinch Bolts While Holding Nuts**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

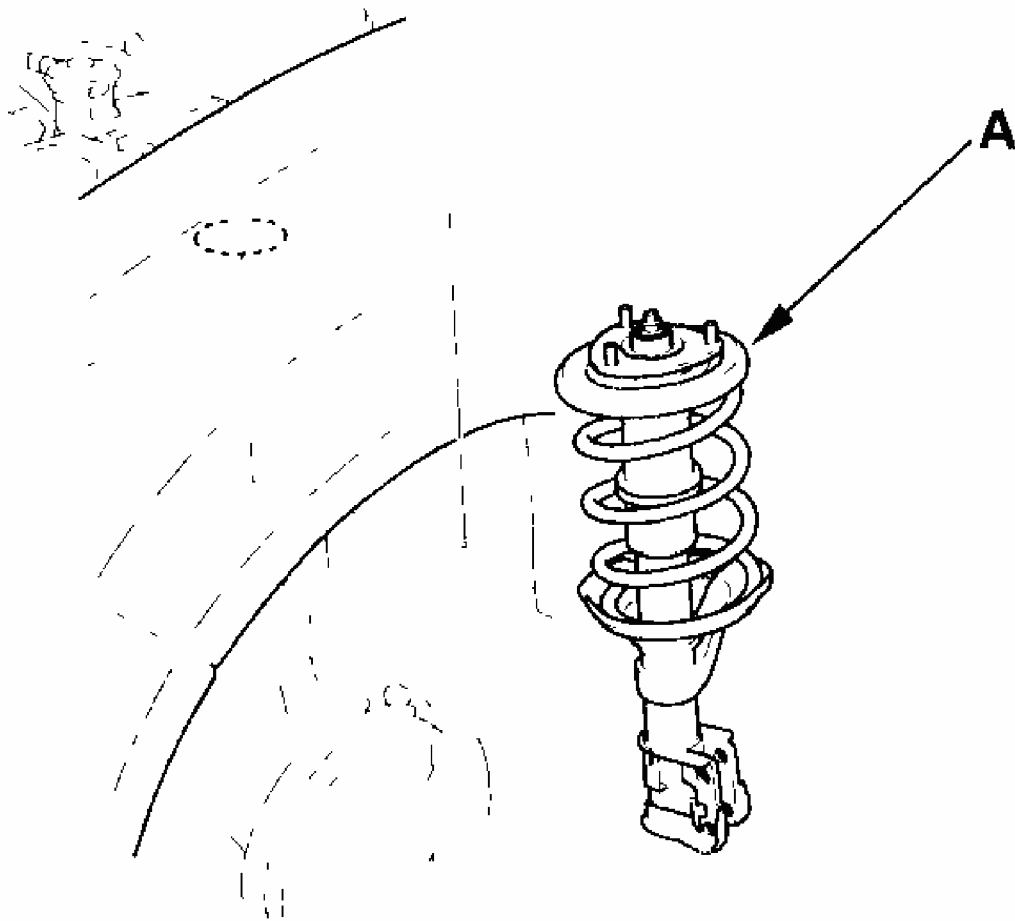


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**Fig. 31: Removing Flange Nuts From Top Of Damper**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Lower the lower arm, and remove the damper assembly (A).



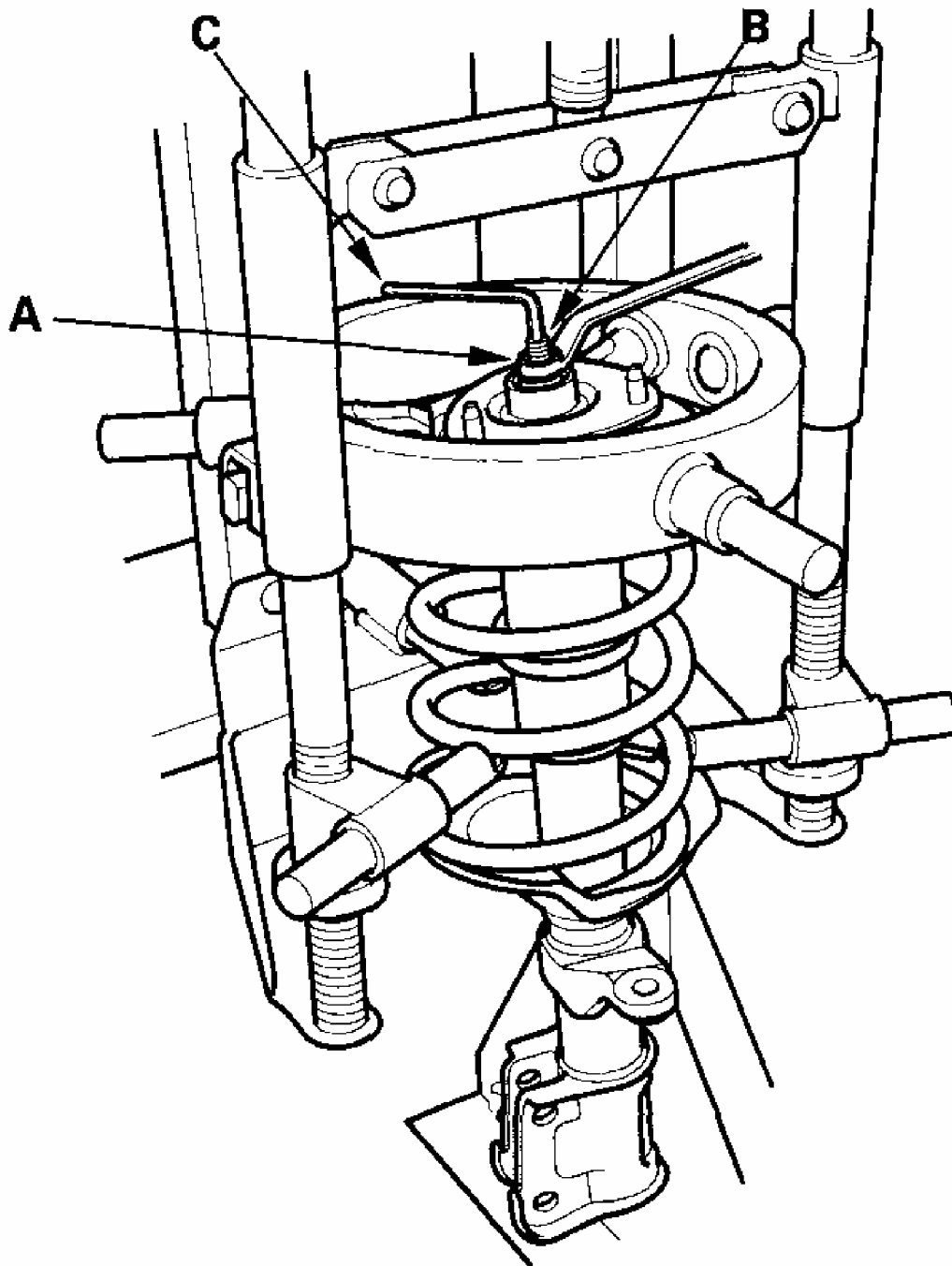


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**Fig. 32: Removing Damper Assembly**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

**DISASSEMBLY/INSPECTION**

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



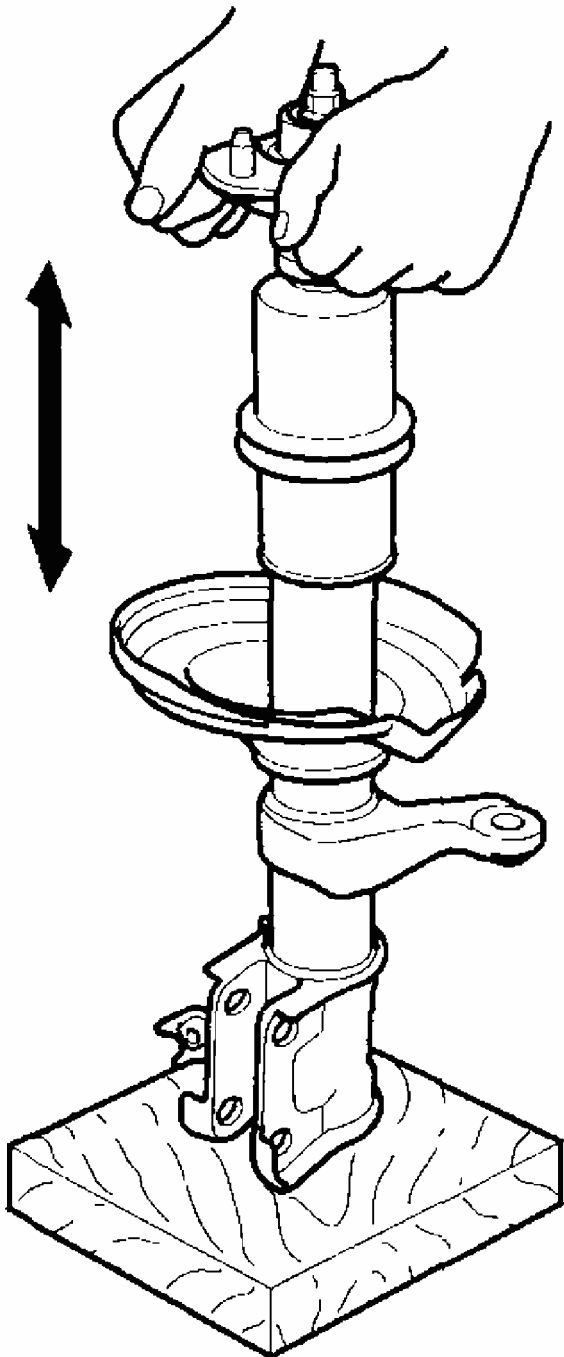
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**Fig. 33: Compressing Damper Spring**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Release the pressure from the strut spring compressor, then disassemble the damper as

shown in the Exploded View.

3. Reassemble all the parts, except for the upper spring seat and spring.
4. 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.



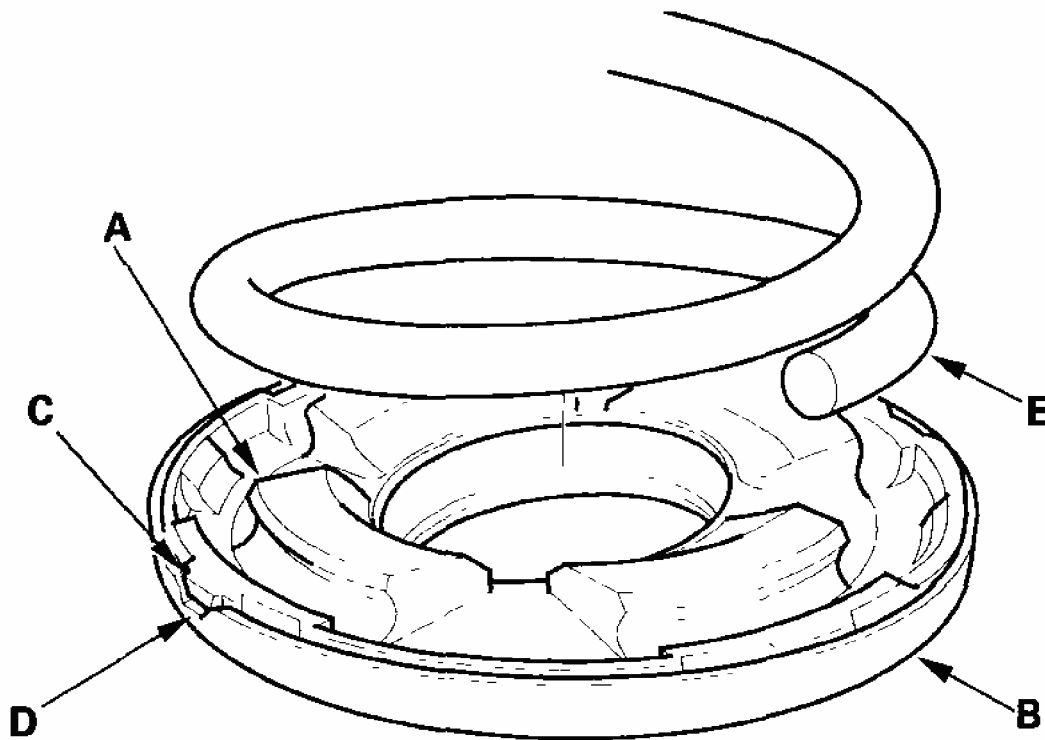
**Fig. 34: Compressing Damper Assembly Hand**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

#### REASSEMBLY

**NOTE:** Refer to the **EXPLODED VIEW** as needed.

1. Install the upper spring mounting cushion (A) on the upper spring seat (B) by aligning the tab portion (C) on the cushion with the cutout (D) in the seat.

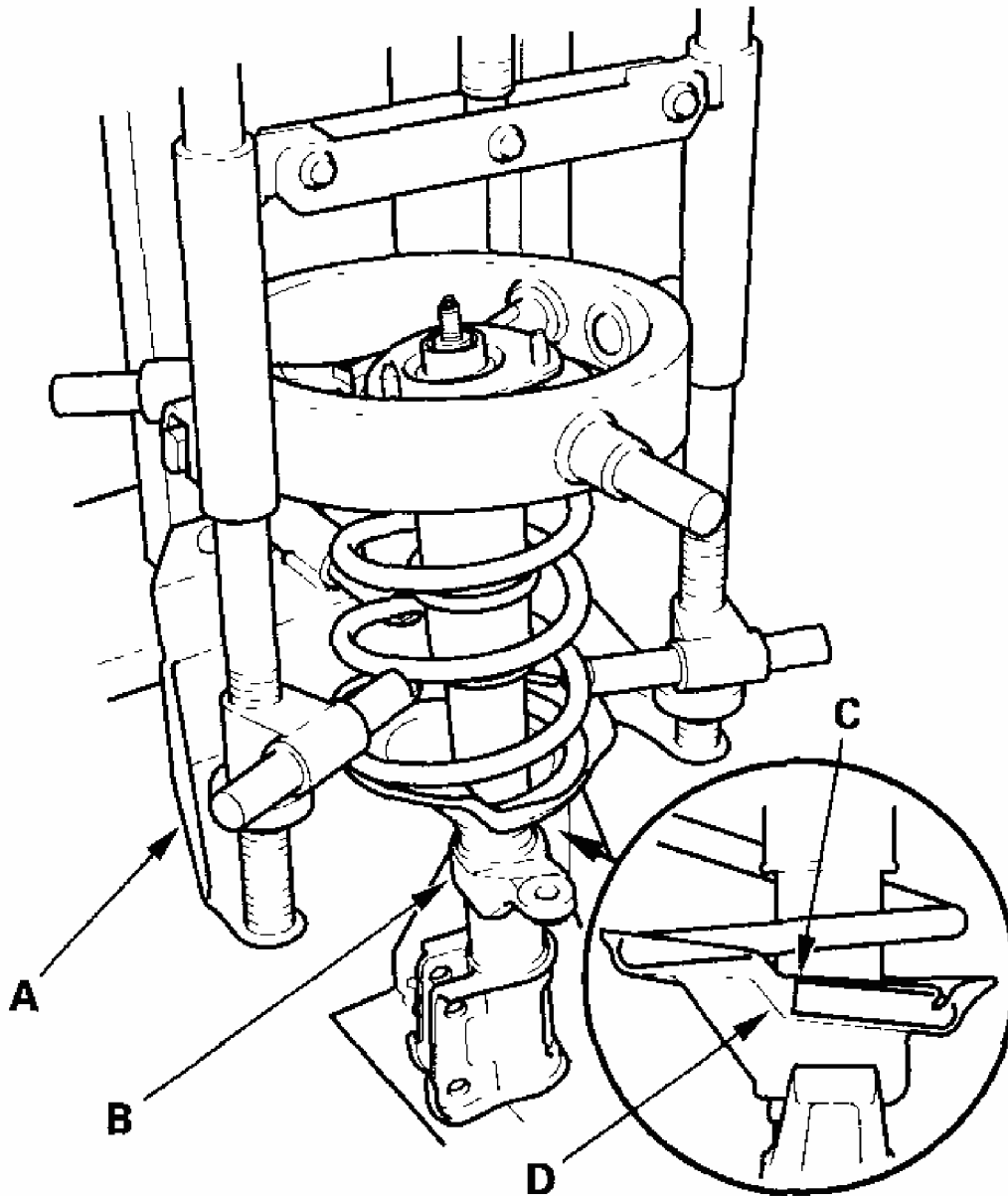


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**Fig. 35: Installing Upper Spring Mounting Cushion On Upper Spring Seat**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the damper spring (E) in the groove of the cushion securely.
3. Install the damper mounting bearing and damper mounting base on the upper spring seat.
4. Install the upper spring seat and the spring on a strut spring compressor (A), and

compress the spring lightly.

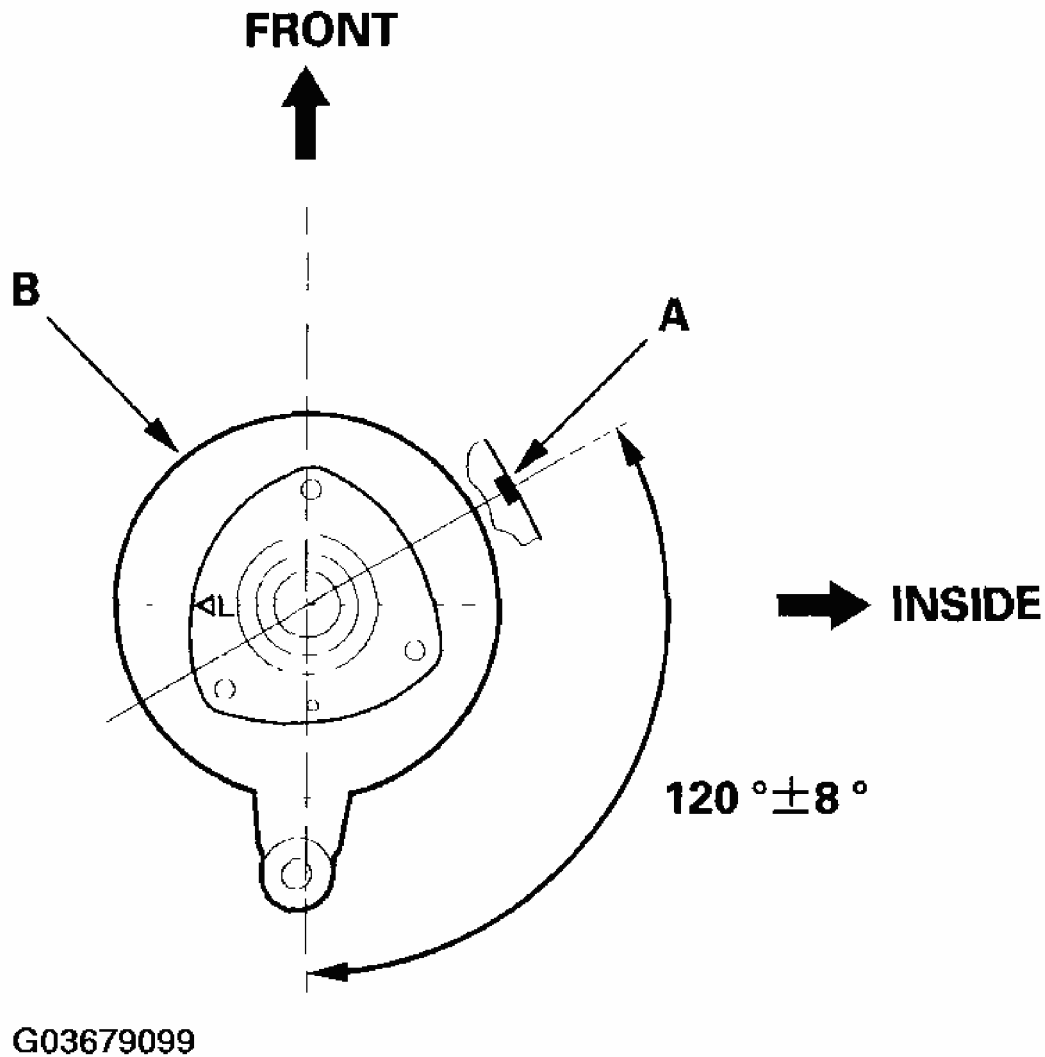


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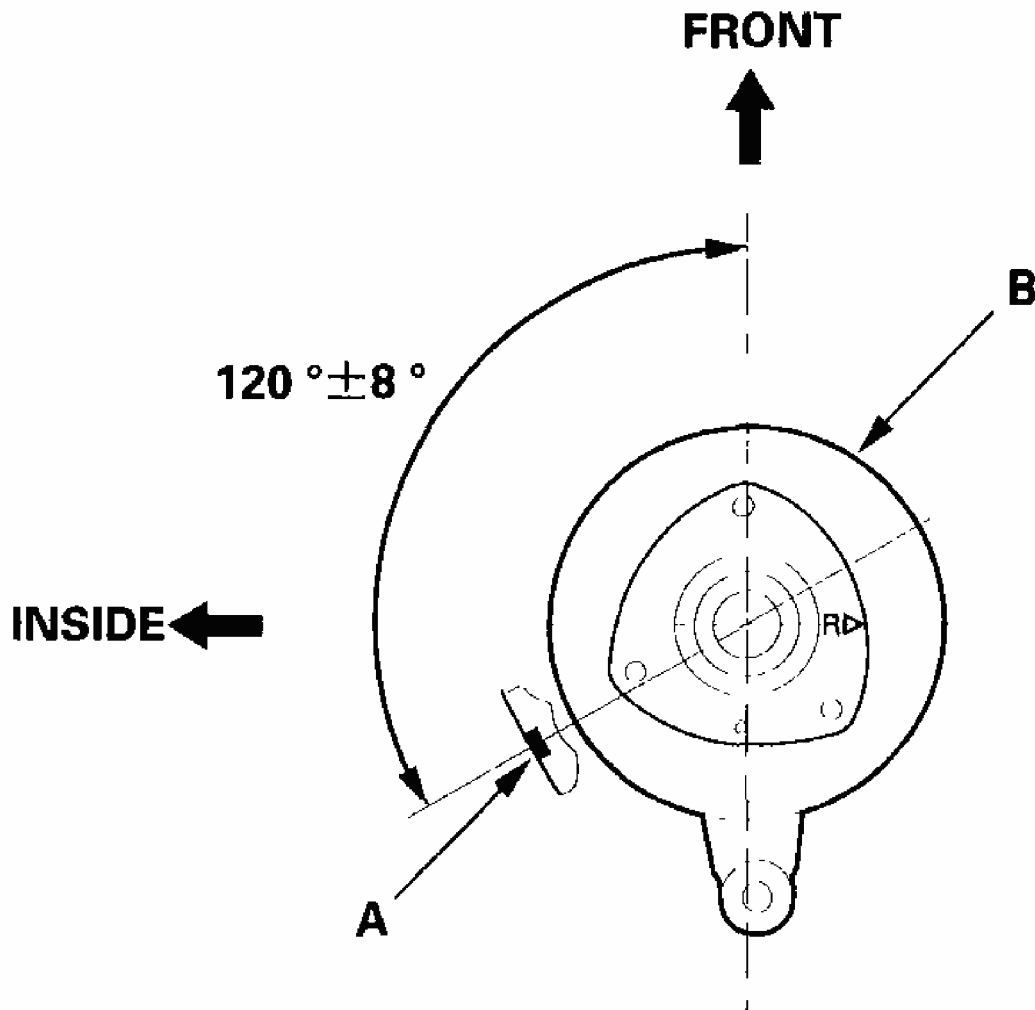
**Fig. 36: Installing Upper Spring Seat And Spring On A Strut Spring Compressor**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Insert the damper unit (B) up through the compressed spring.
6. Align the bottom of the spring (C) and the stepped part (D) of the lower spring seat.

7. Check that the cutout (A) in the side of the upper spring seat (B) is in the position shown. If the cutout is out of position, remove all the components from the strut spring compressor. Go to step 2, and reassemble the spring and upper spring seat accordingly.



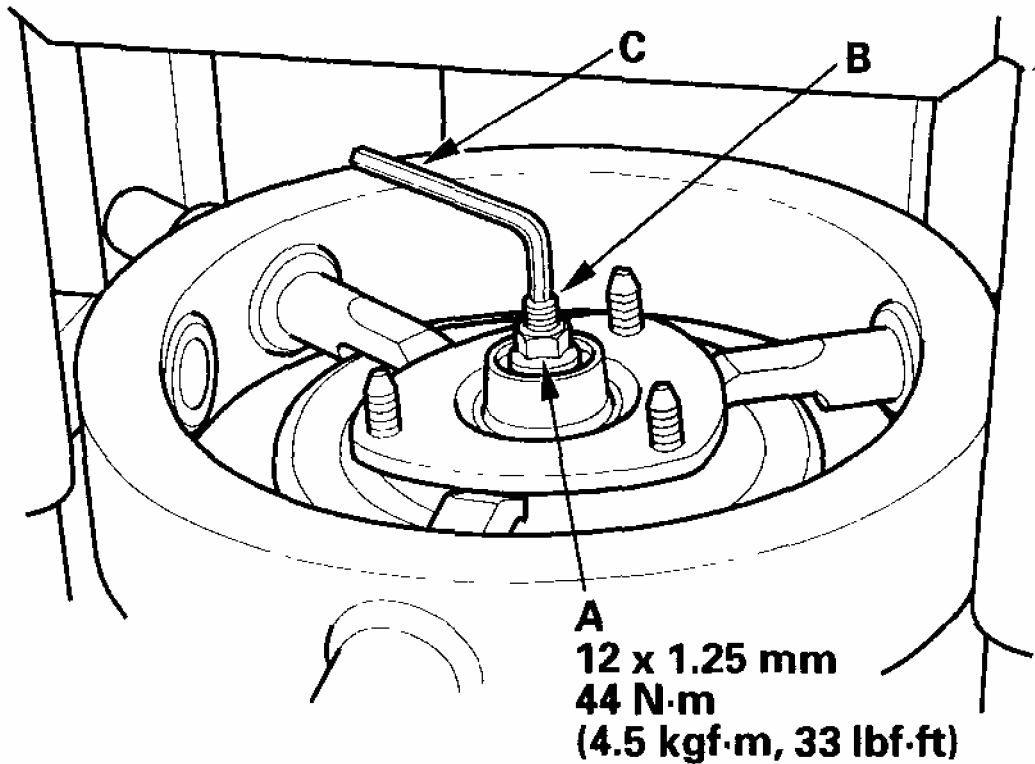
**Fig. 37: Aligning Bottom Of Spring Left Side**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.



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**Fig. 38: Aligning Bottom Of Spring Right Side**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Hold the bottom of the damper with your hand, and compress the spring. Do not compress the spring excessively.
9. Install the new 12 mm self-locking nut (A) on the damper shaft (B). Hold the damper shaft with a hex wrench (C), and tighten the 12 mm self-locking nut to the specified torque value.



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**Fig. 39: Installing New Self-Locking Nut And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the damper assembly from the strut spring compressor.

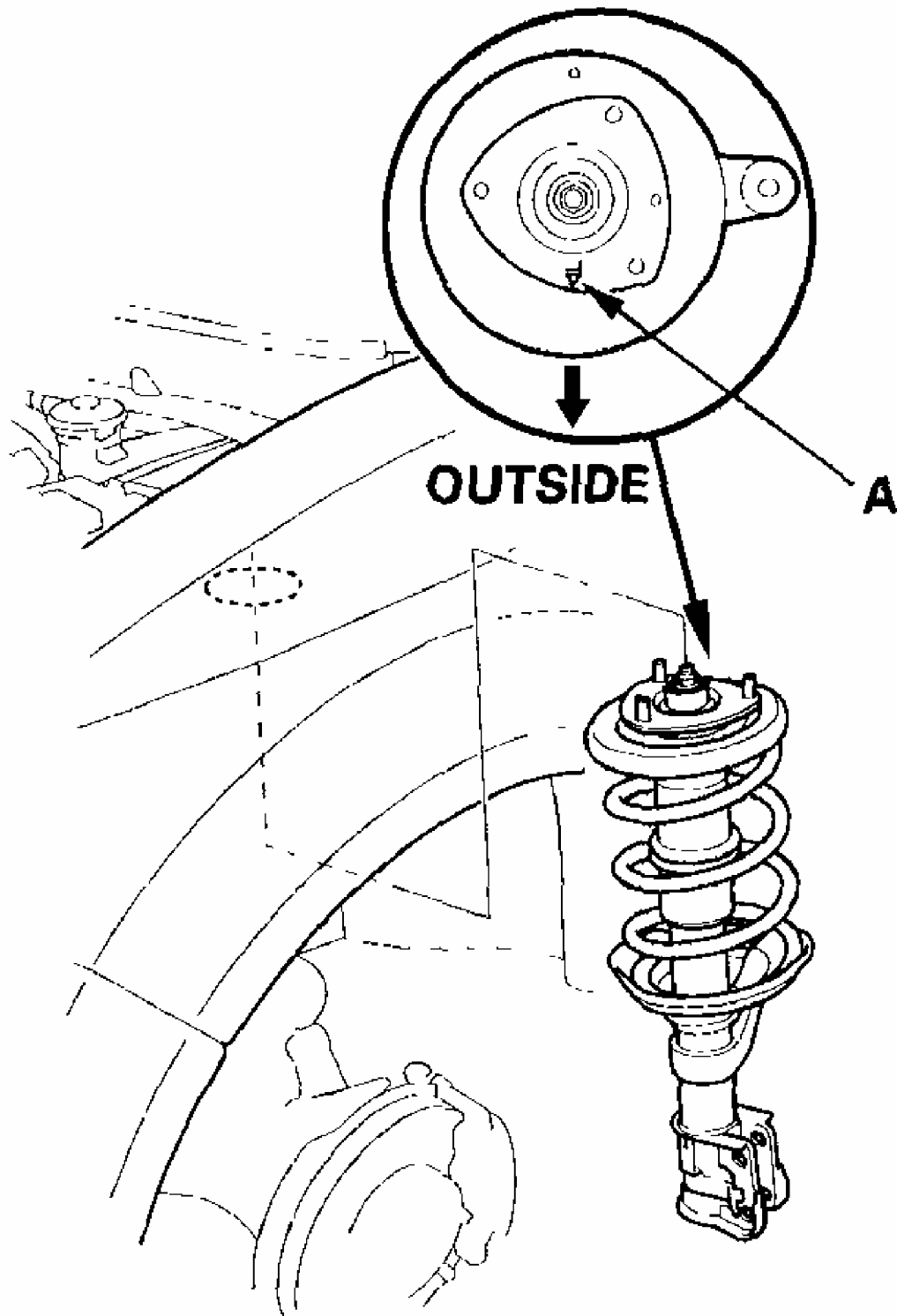
#### INSTALLATION

1. Lower the lower arm, and position the damper assembly in the body. Turn the damper mounting base so the "Arrow L" or "Arrow R" mark (A) faces toward the outside of the vehicle.



2004 Honda Element DX

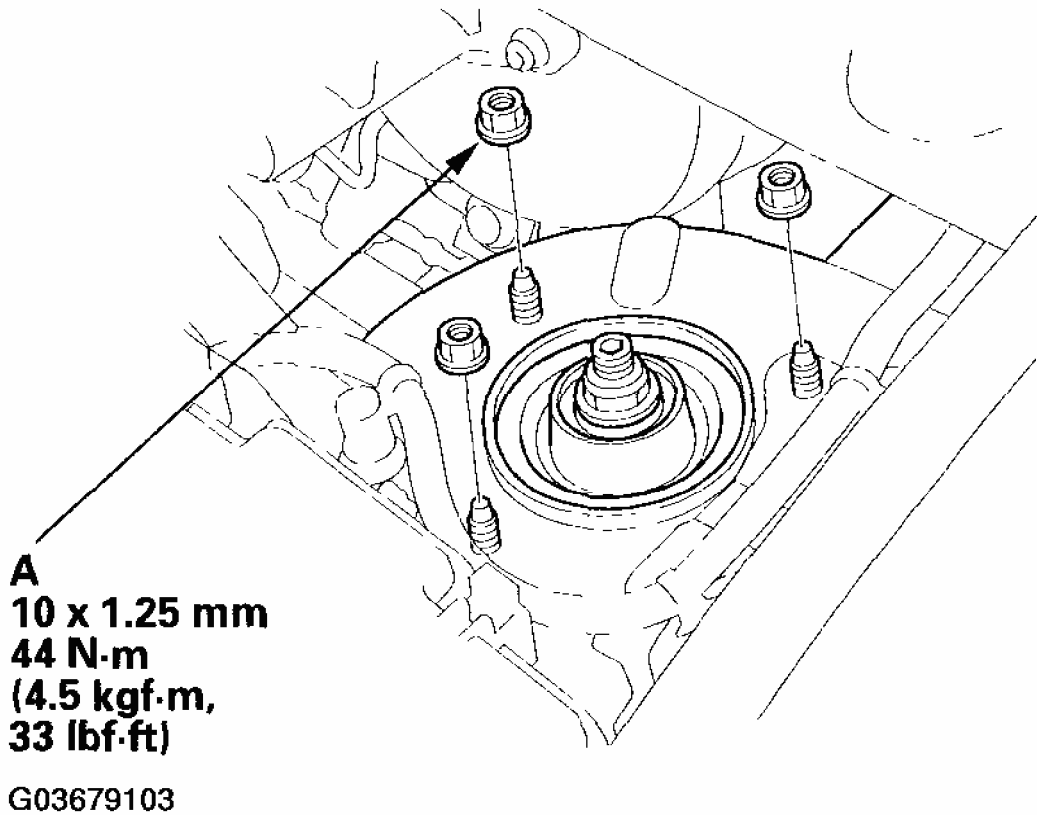
2003-06 SUSPENSION Front Suspension - Element



G03679102

**Fig. 40: Installing Lower Arm And Position Damper Assembly**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

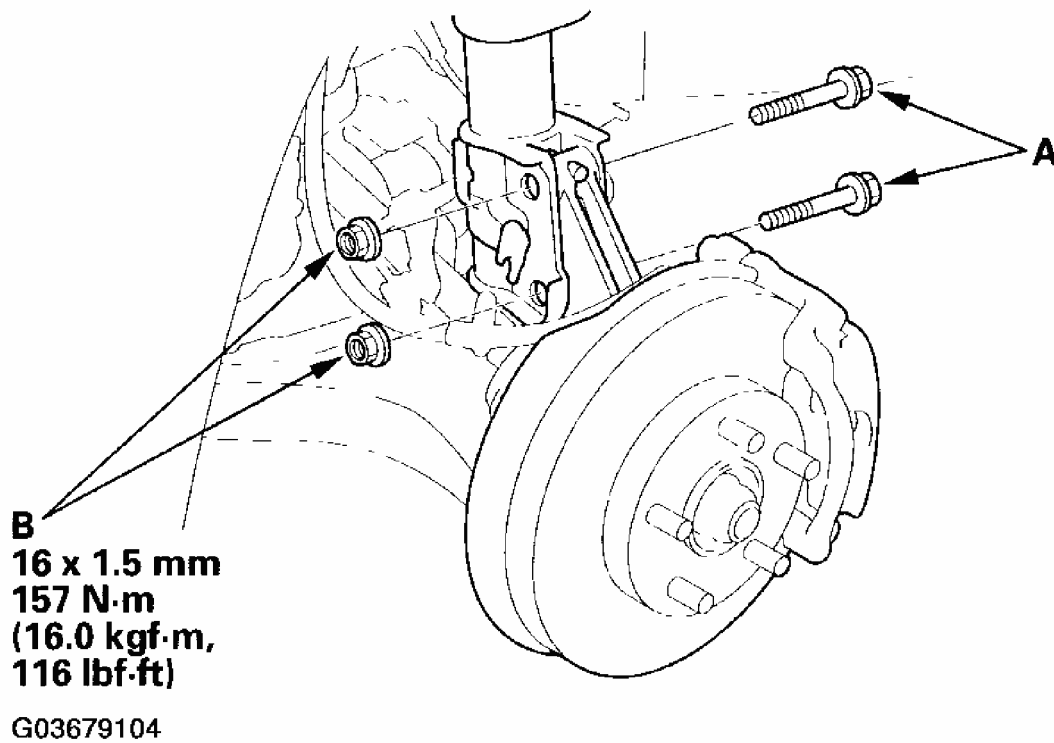
2. Loosely install the flange nuts (A) onto the top of the damper.



**Fig. 41: Installing Flange Nuts Onto Top Of Damper And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

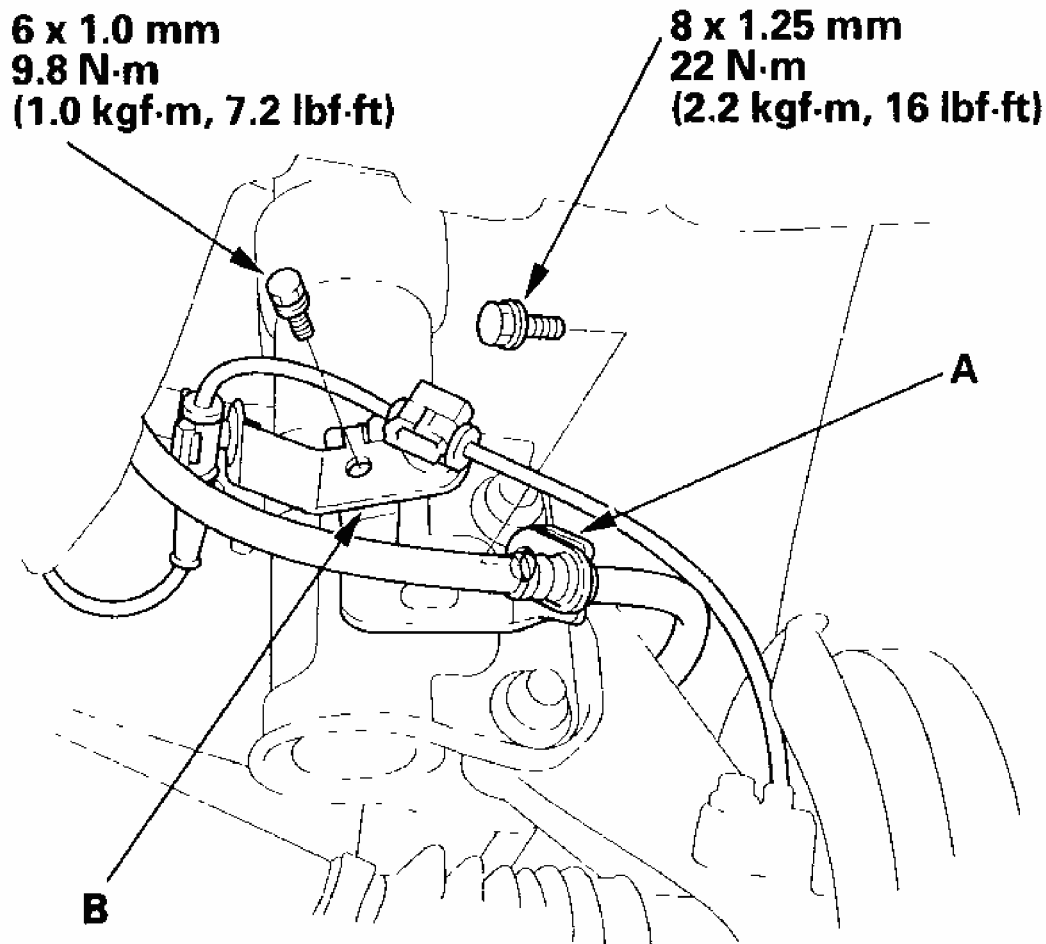
3. Position the damper on the knuckle, and install the new damper pinch bolts (A) and nuts (B), and lightly tighten the nuts.

**NOTE:** Do not place the jack against the lower arm ball joint.



**Fig. 42: Positioning Damper On Knuckle And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Tighten the flange nuts on the top of the damper to the specified torque value.
5. Tighten the damper pinch nuts to the specified torque value.
6. Install the brake hose bracket (A) and the wheel sensor harness bracket (B) (with ABS) onto the damper, and tighten the bolt to the specified torque values.

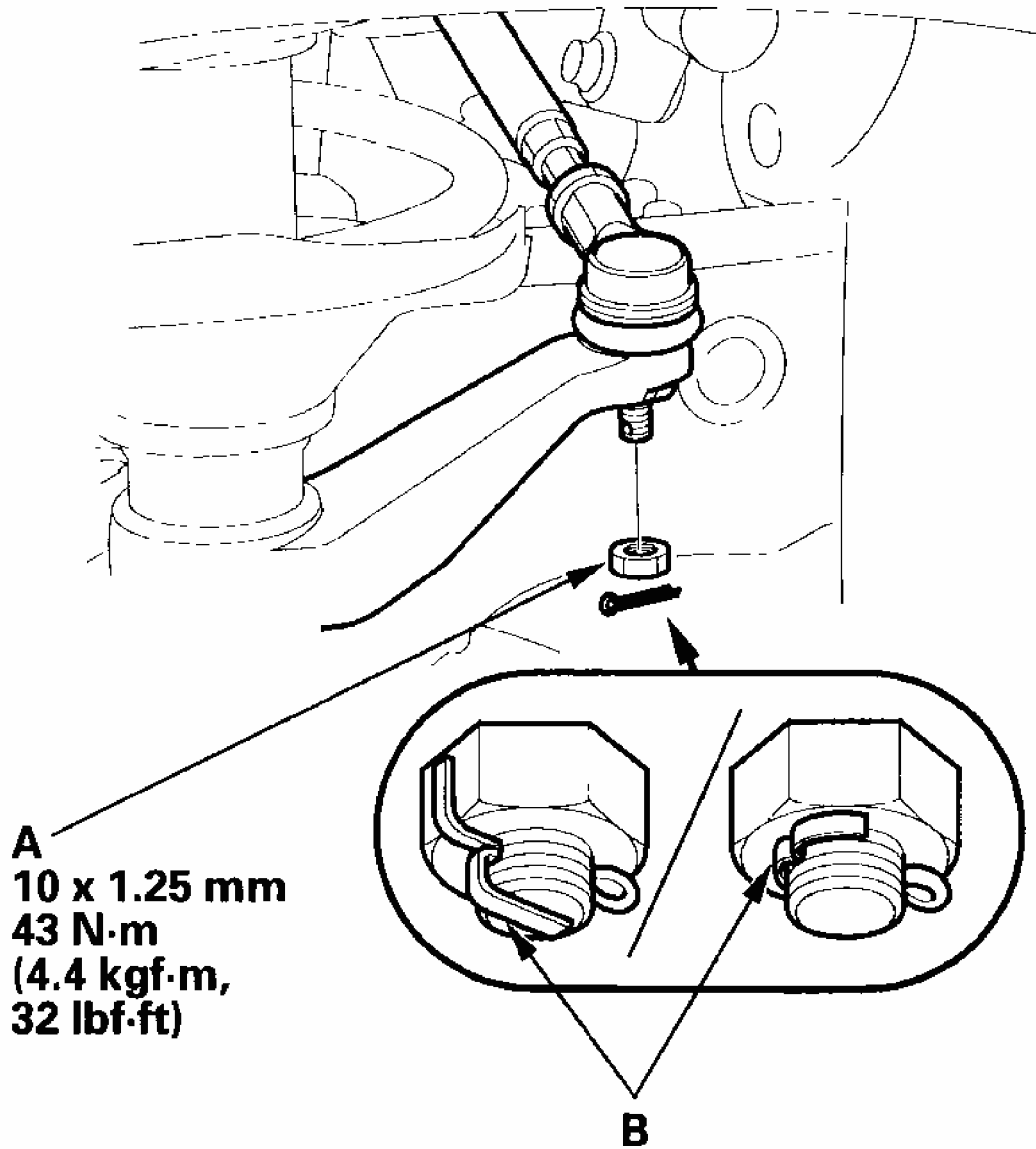


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**Fig. 43: Installing Brake Hose Bracket And Wheel Sensor Harness Bracket With Specified Torques**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Clean off any grease contamination from the ball joint tapered section and threads, then connect the tie-rod end to the steering arm. Tighten the nut (A) to the specified torque value. Install the cotter pin (B) after tightening, and bend its end as shown.



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**Fig. 44: Connecting Tie-Rod End To Steering Arm And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheels.
9. Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT** ).