2003-06 SUSPENSION

Front Suspension - MDX

KNUCKLE/HUB REPLACEMENT

EXPLODED VIEW

NOTE: The illustration shows '04-06 models. For '03 model, the installation directions of the damper pinch bolts are reversed.

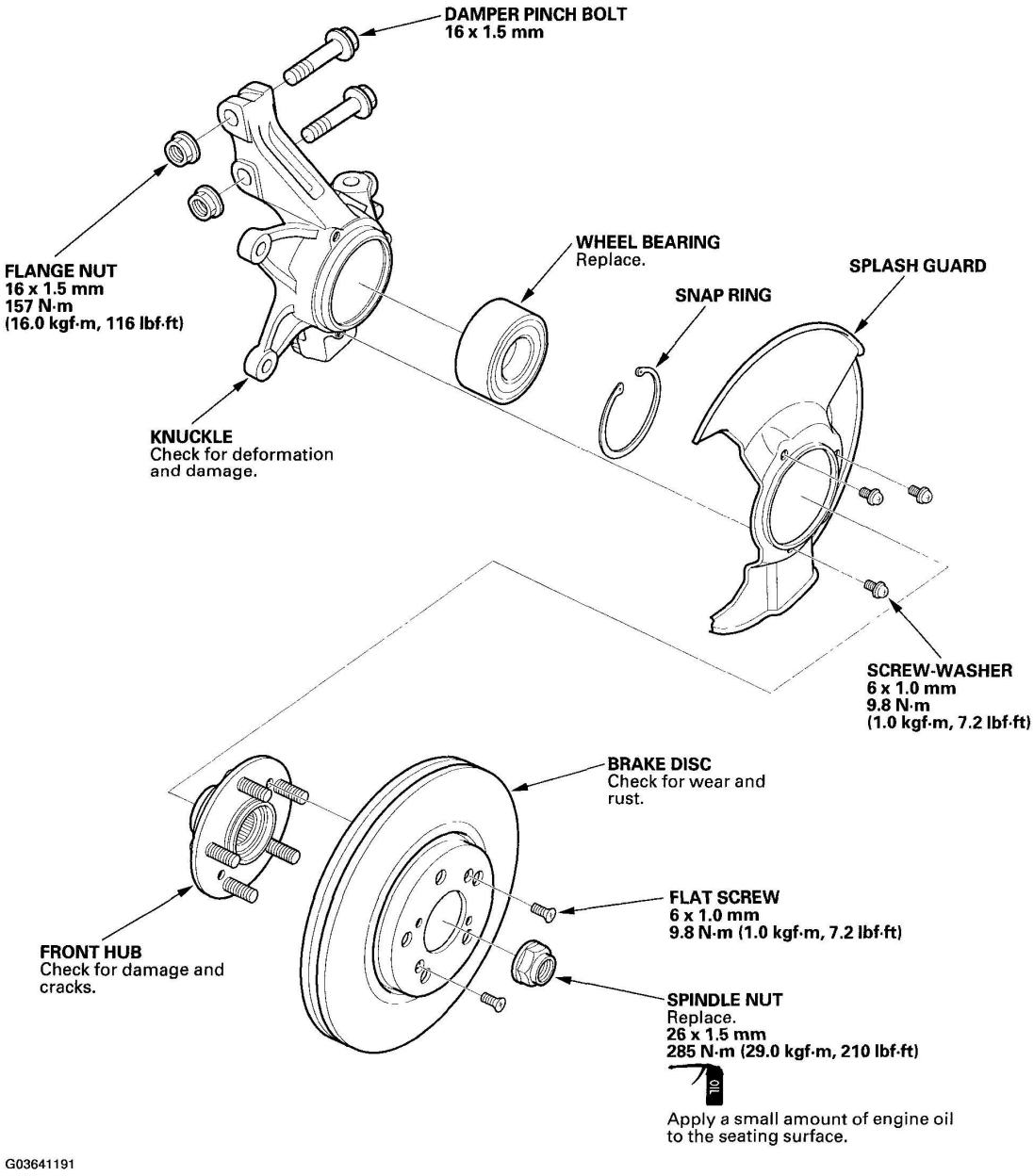


Fig. 1: Exploded View Of Knuckle/Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Ball joint remover, 28 mm 07MAC-SL0A202
- Hub disassembly tool, 42 mm 07GAF-SD40100
- Attachment, 80 mm 07VAD-P8A010A
- Ball joint thread protector 071AF-S3VA000

- Attachment, 62 x 68 mm 07746-0010500
- Driver 07749-00100
- Support base 07965-SD90100
- Attachment, 96 mm 07948-SB00101

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the wheel nuts and front wheels.

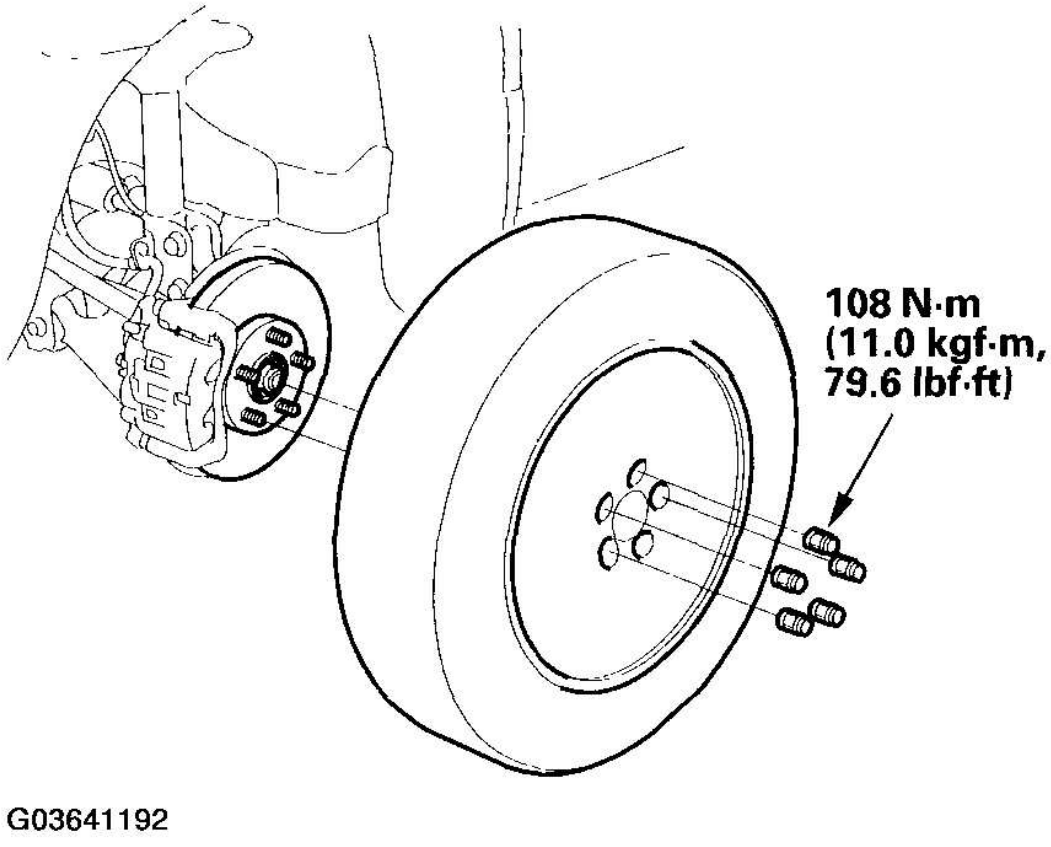


Fig. 2: Removing Wheel Nuts And Front Wheels
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

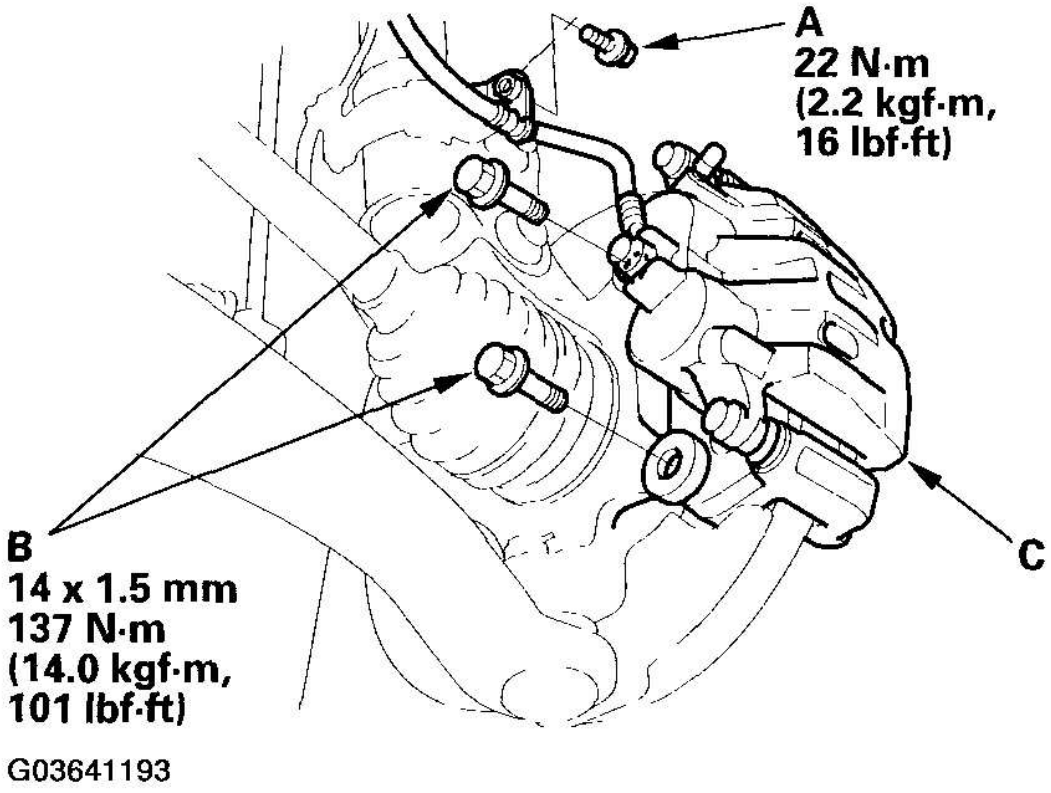


Fig. 3: Removing Brake Hose And Caliper Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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. Do not twist the brake hose with force.
5. Remove the wheel sensor (A) from the knuckle (B). Do not disconnect the wheel sensor connector.

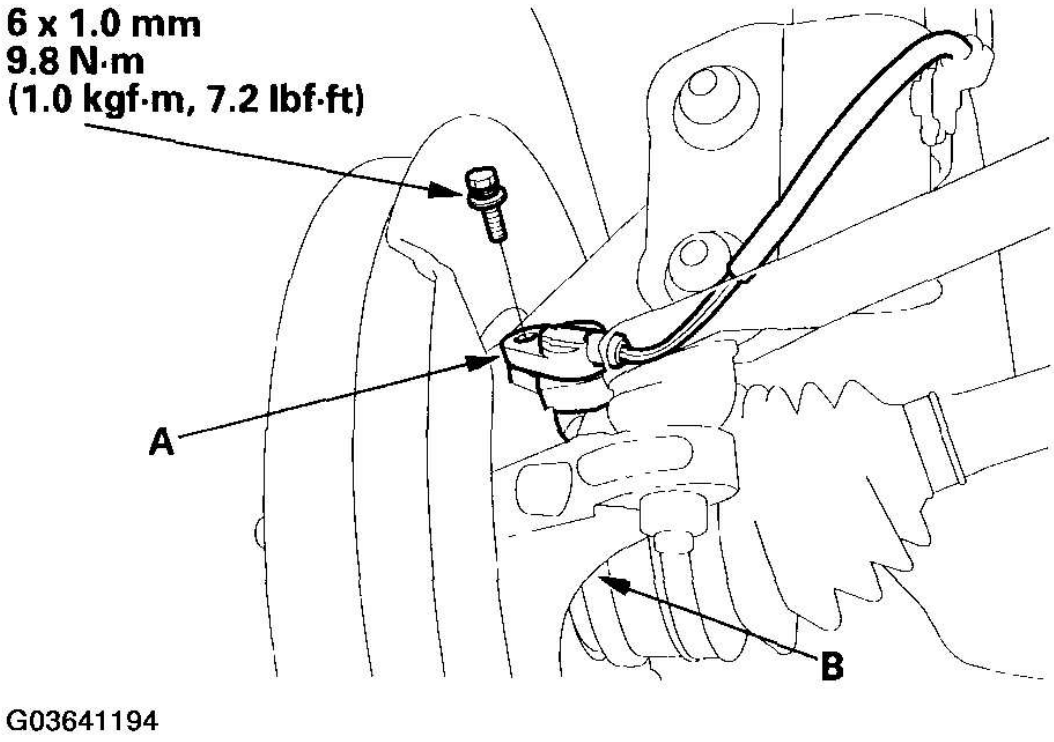


Fig. 4: Removing Wheel Sensor From Knuckle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

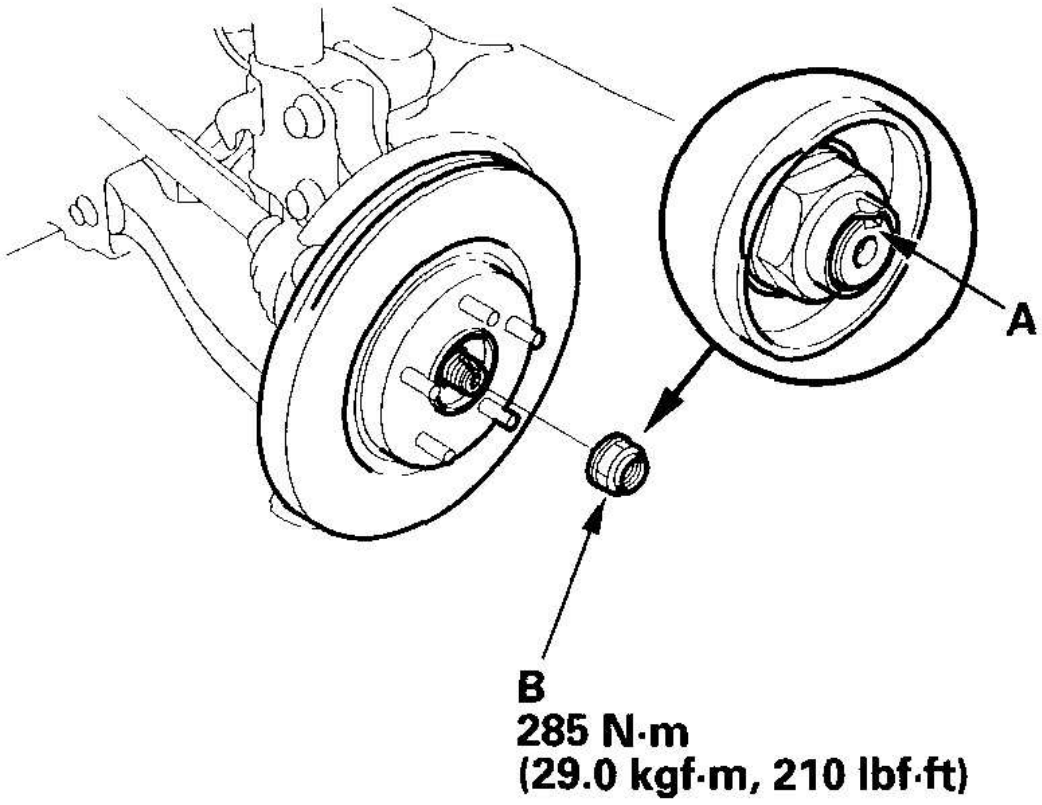


Fig. 5: Removing Spindle Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the brake disc retaining screws (A).

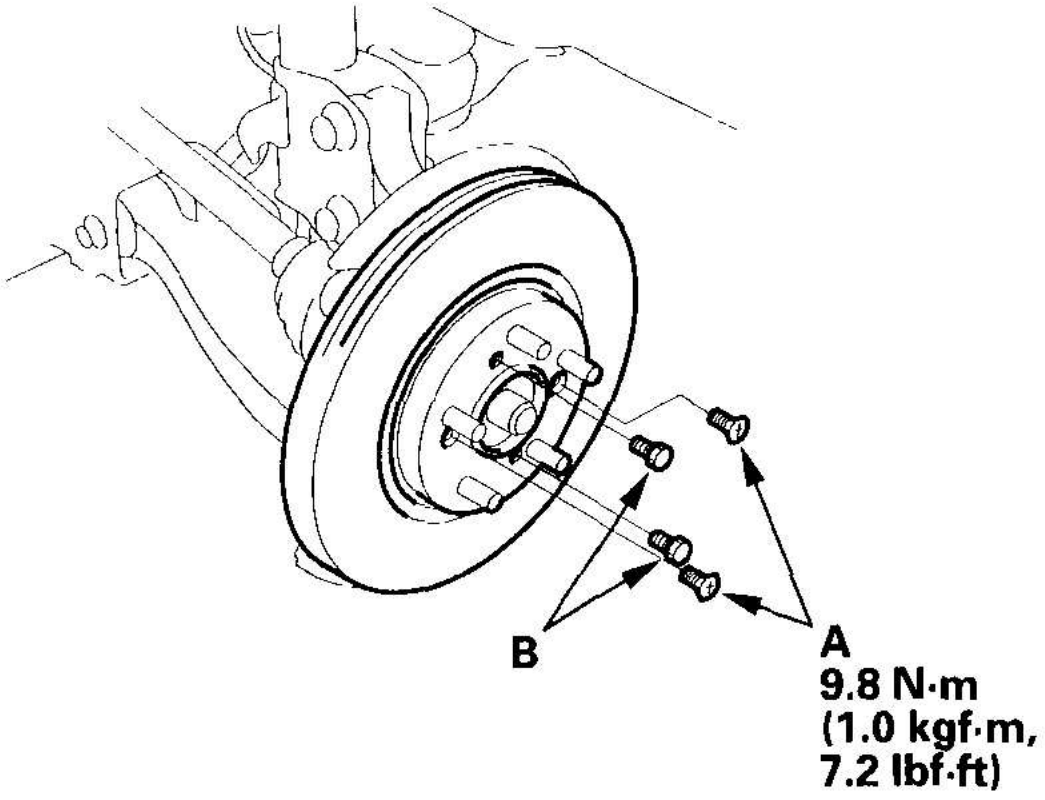


Fig. 6: Removing Brake Disc Retaining Screws
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. 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.
9. Remove the brake disc from the hub.
10. Check the front hub for damage and cracks.
11. Remove the cotter pin (A) from the tie-rod end ball joint, then loosen the nut (B).

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

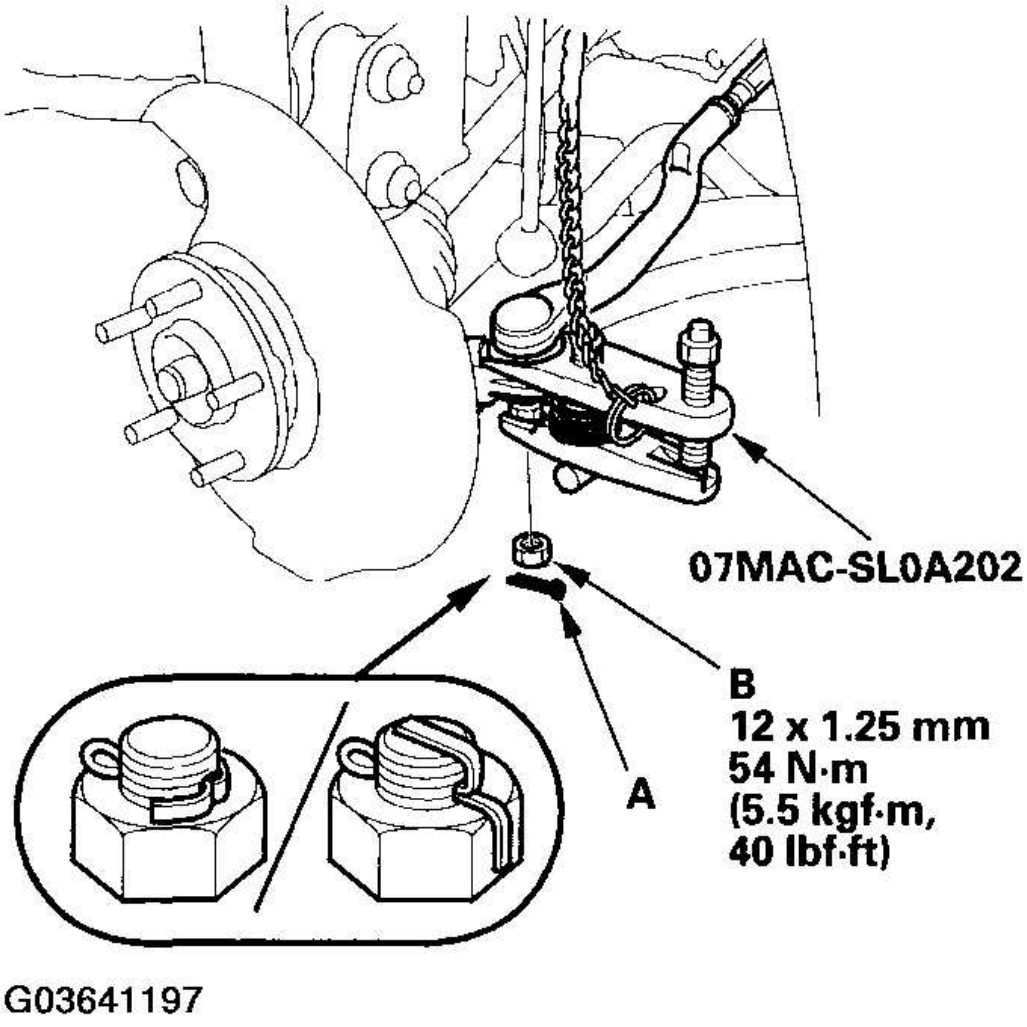


Fig. 7: Installing New Cotter Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Disconnect the tie-rod ball joint from the knuckle using the special tool (see **BALL JOINT REMOVAL**).
13. Remove the lock pin (A) from the lower arm ball joint castle nut (B), and remove the nut.

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

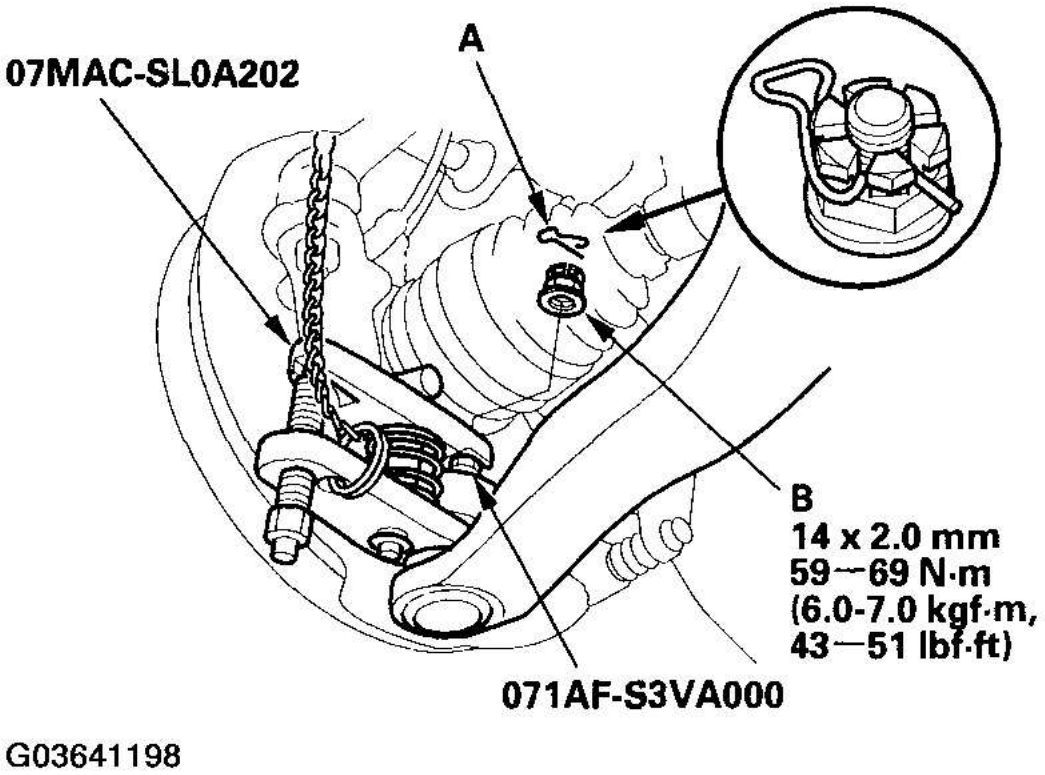


Fig. 8: Disconnecting Lower Arm Ball Joint From Knuckle Using Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Disconnect the lower arm ball joint from the knuckle using the special tools (see **BALL JOINT REMOVAL**).

NOTE: Do not force or hammer on the lower arm, or pry between the lower arm and the knuckle. You could damage the ball joint.

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

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

B

16 x 1.5 mm

157 N.m

(16.0 kgf.m, 116 lbf.ft)

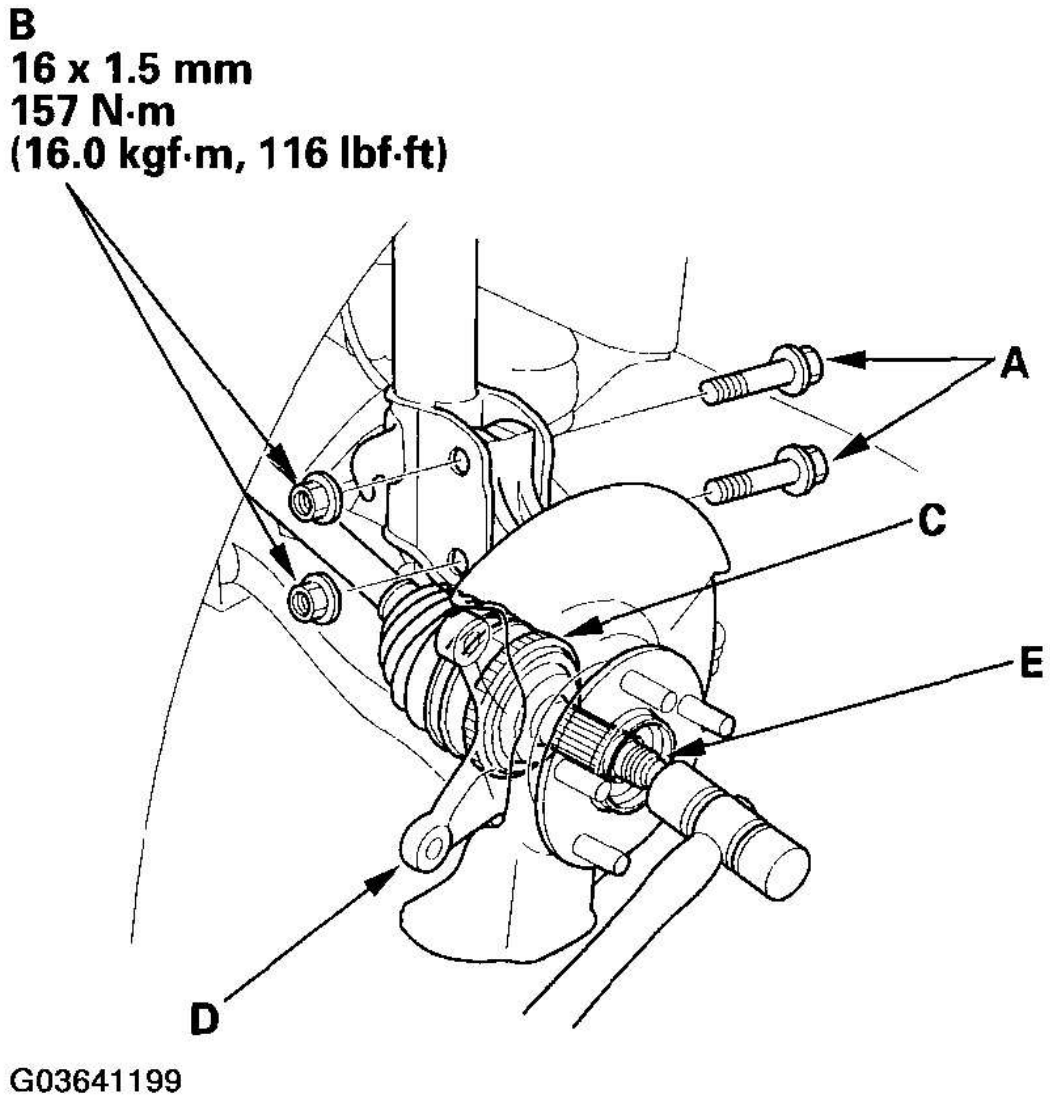


Fig. 9: Removing Damper Pinch Bolts And Flange Nuts From Damper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

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

17. 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.

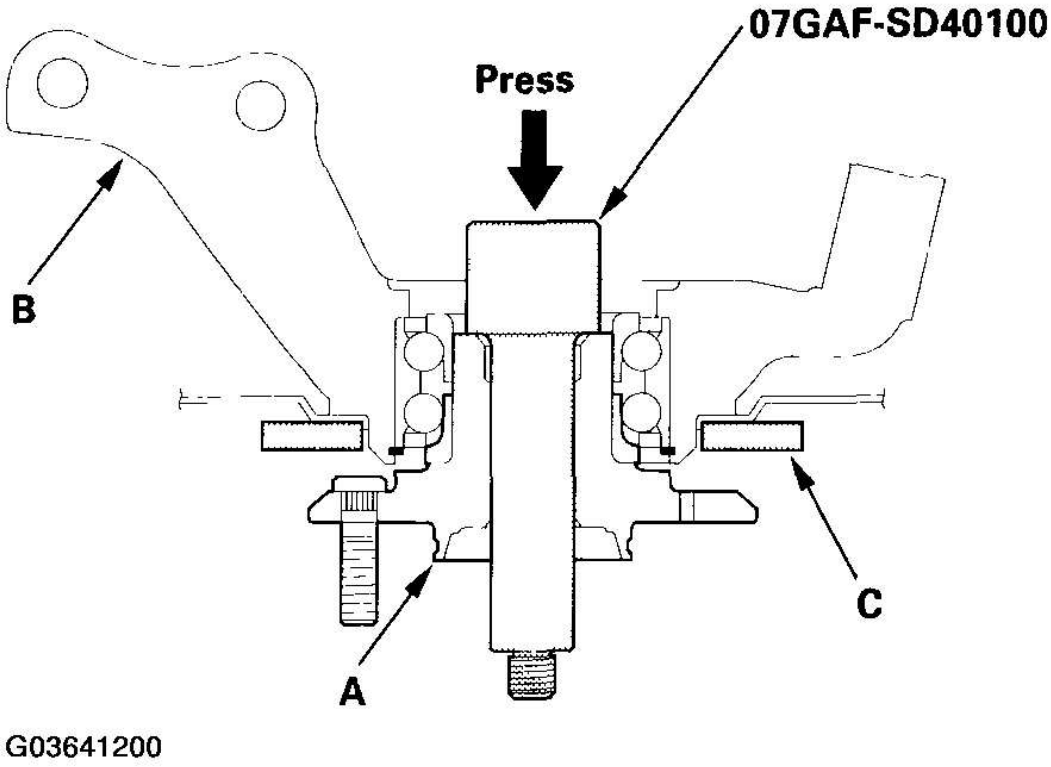


Fig. 10: Separating Hub From Knuckle Using Special Tool And A Hydraulic Press
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

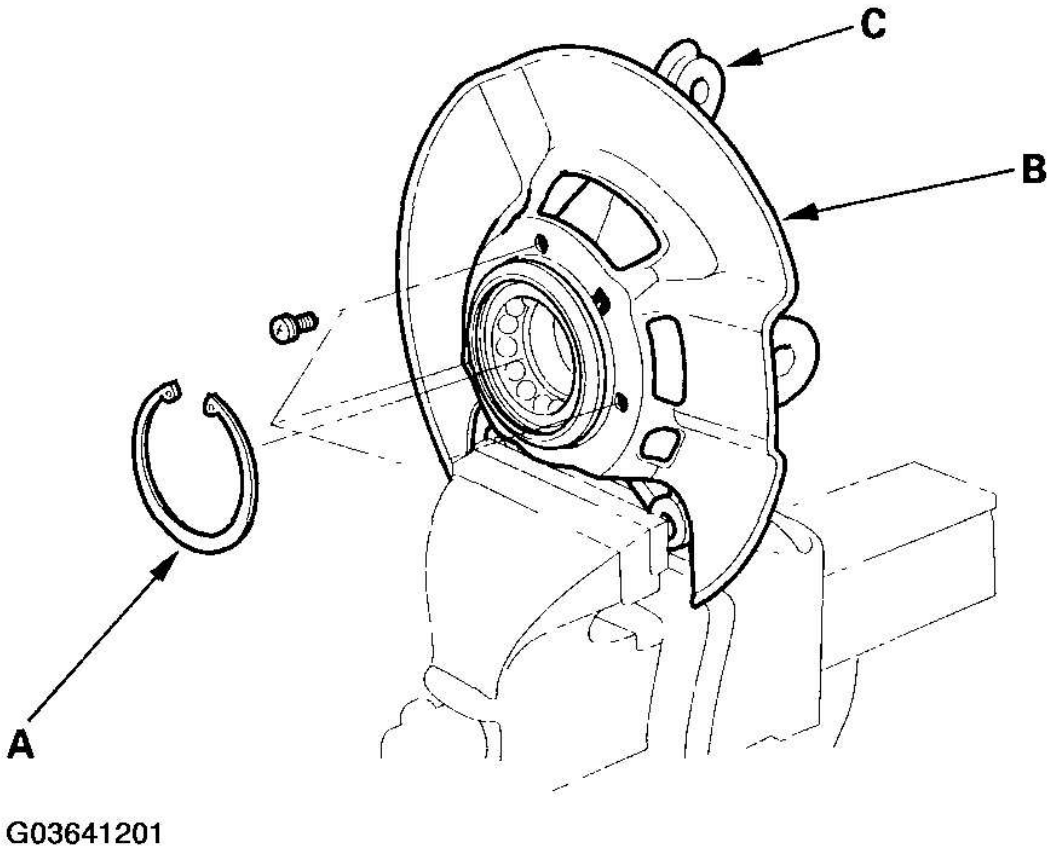


Fig. 11: Removing Snap Ring And Splash Guard From Knuckle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

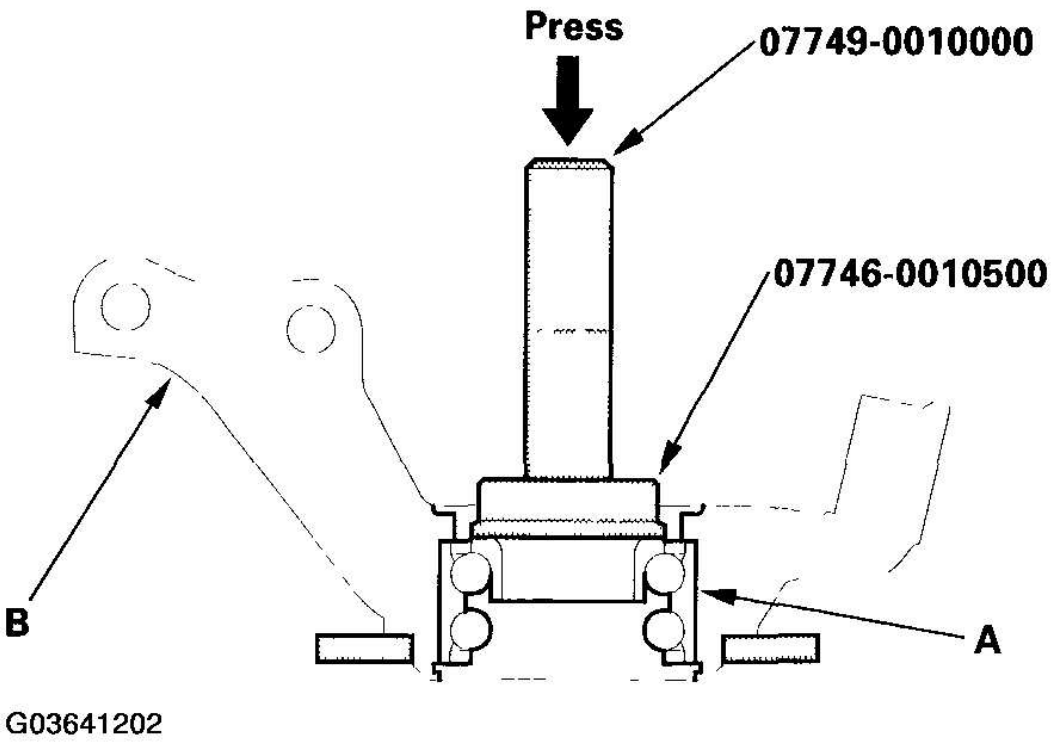


Fig. 12: Pressing Wheel Bearing Out Of Knuckle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

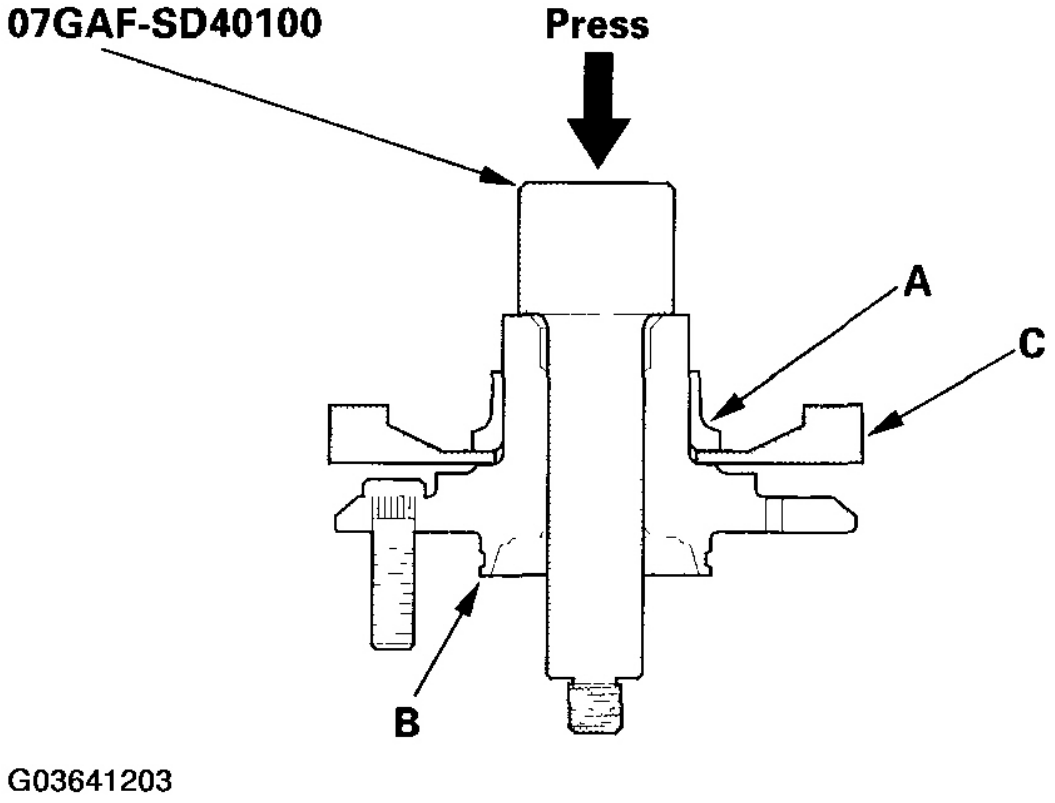


Fig. 13: Pressing Wheel Bearing Inner Race From Hub Using Special Tool And Press
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Wash the knuckle and hub thoroughly in high flash point solvent before reassembly.
22. Press a new wheel bearing (A) into the knuckle (B) using the old bearing (C), a steel plate (D), the special tools, and a press. Be careful not to damage the sleeve of the pack seal.

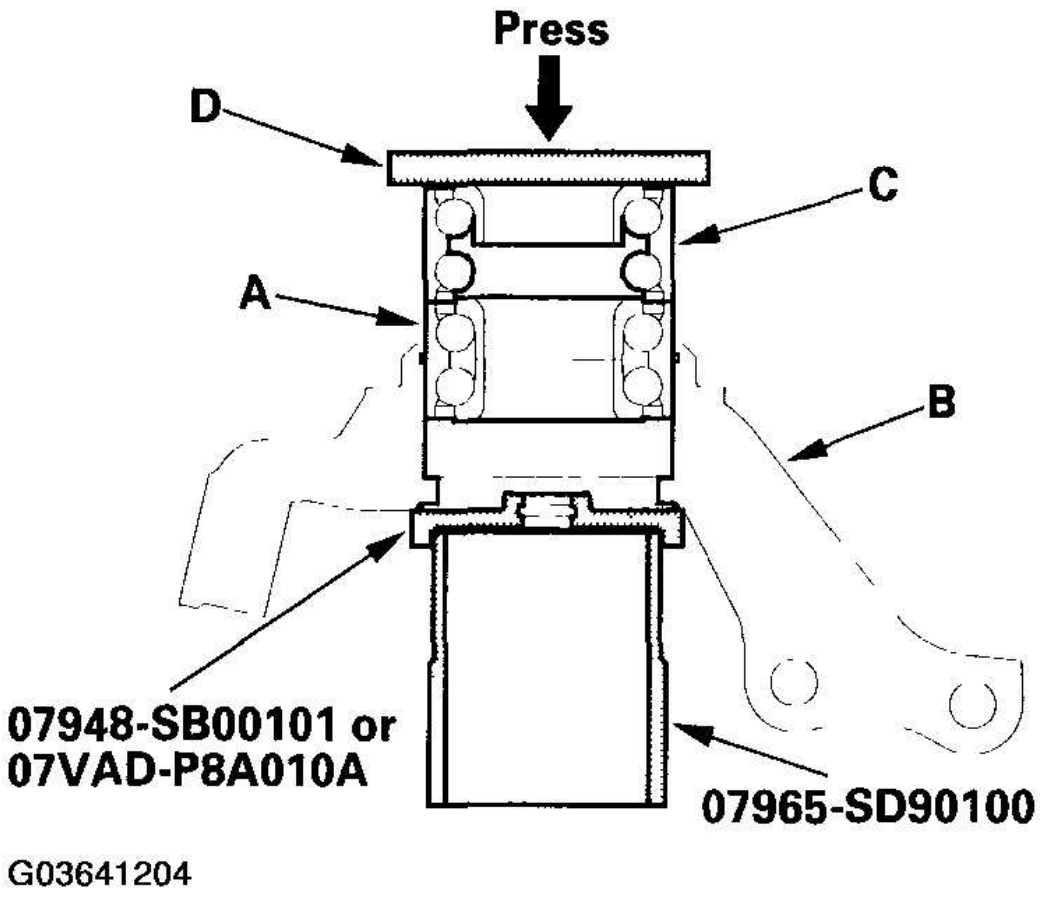


Fig. 14: Pressing New Wheel Bearing Into Knuckle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

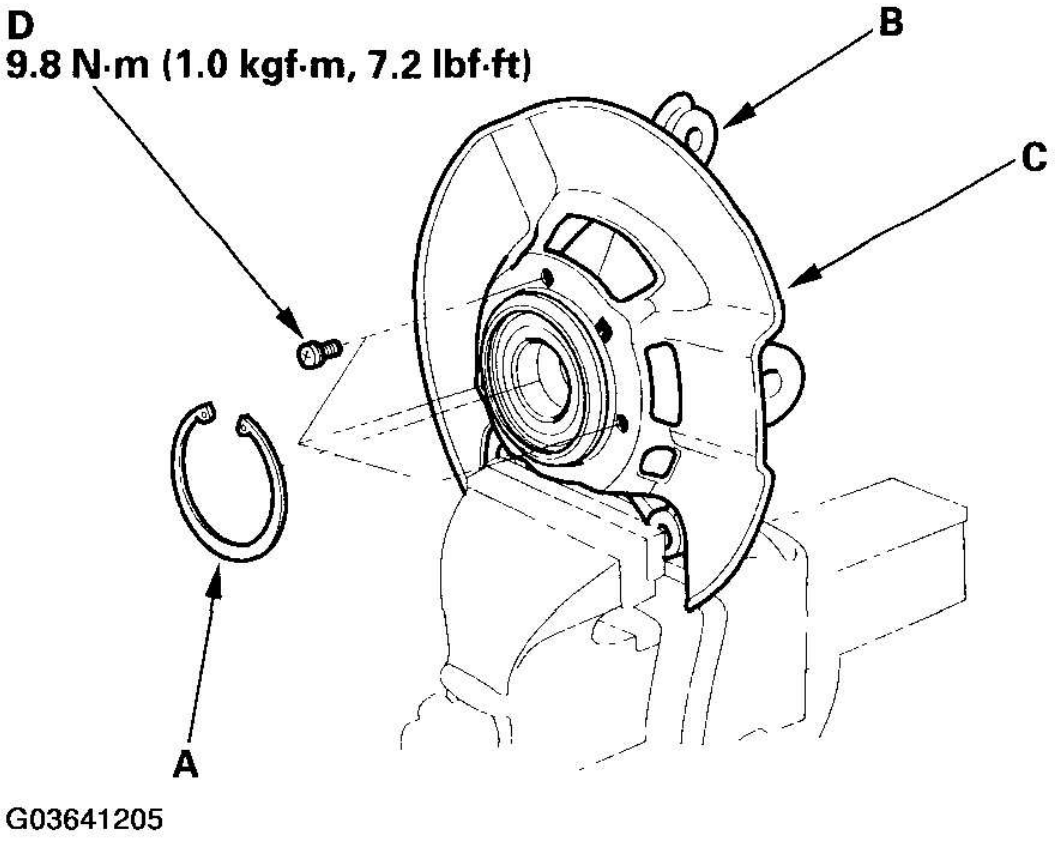


Fig. 15: Installing Snap Ring Securely In Knuckle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Install the splash guard (C), and tighten the screws (D).
25. Install the hub (A) onto the knuckle (B) using the special tools and a press. Be careful not to deform the splash guard (C).

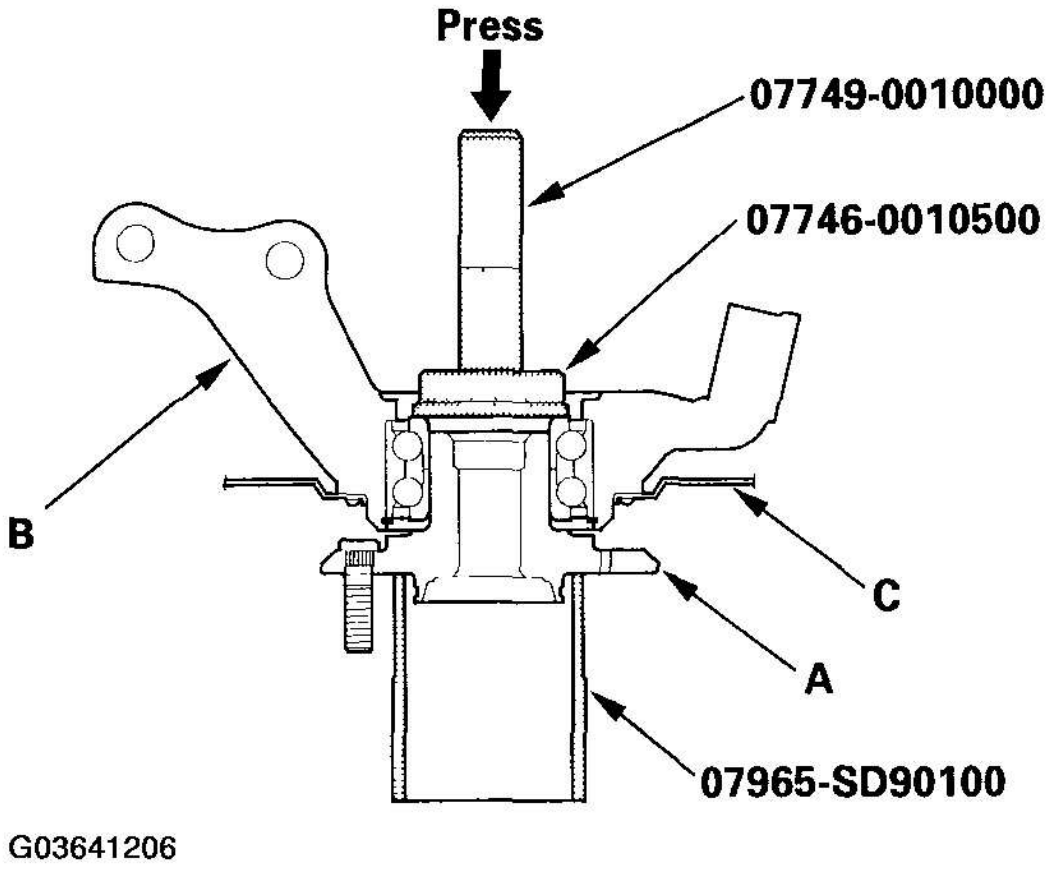


Fig. 16: Installing Hub Onto Knuckle Using Special Tools And Press
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. 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, decrease the threaded section and tapered portion of the ball joint pin, the lower arm connecting hole, the threaded section and mating surface of the castle nut.
    - First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
    - 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.
    - Install a new lock pin on the castle nut after torquing.
    - 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.

- Before installing the brake disc, clean the mating surfaces of the front hub and the inside of the brake disc.
- Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.
- Check the front wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

BALL JOINT BOOT REPLACEMENT

Special Tools Required

Ball joint boot clip guide 07974-SA50700

1. Remove the boot clip and the boot.
2. Pack the interior and lip (A) of a new boot with grease. Do not contaminate the lower collar of the boot (B) with grease.

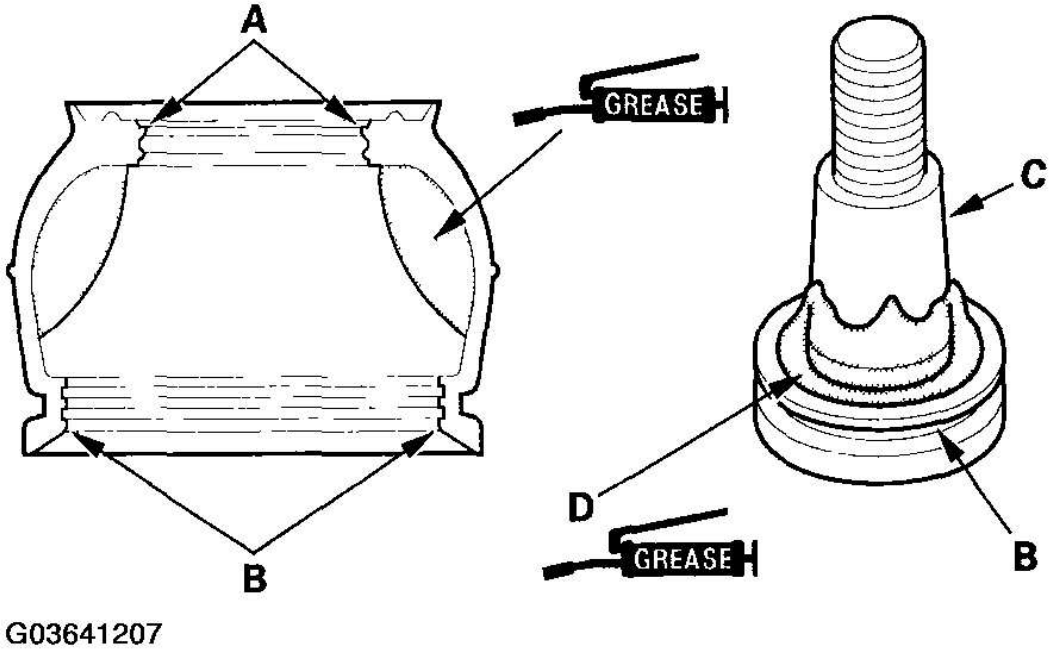


Fig. 17: Packing Interior And Lip Of Boot Using Grease
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Wipe the grease off the tapered section (C) of the pin, and pack fresh grease into the base (D). Do not let dirt or other foreign materials get into the boot.
4. Install the boot onto the ball joint, then squeeze it gently to force out any air.

5. Adjust the special tool with the adjusting bolt (A) until its base is just above the groove around the bottom of the boot. Then slide the clip (B) over the tool and into position on the boot.

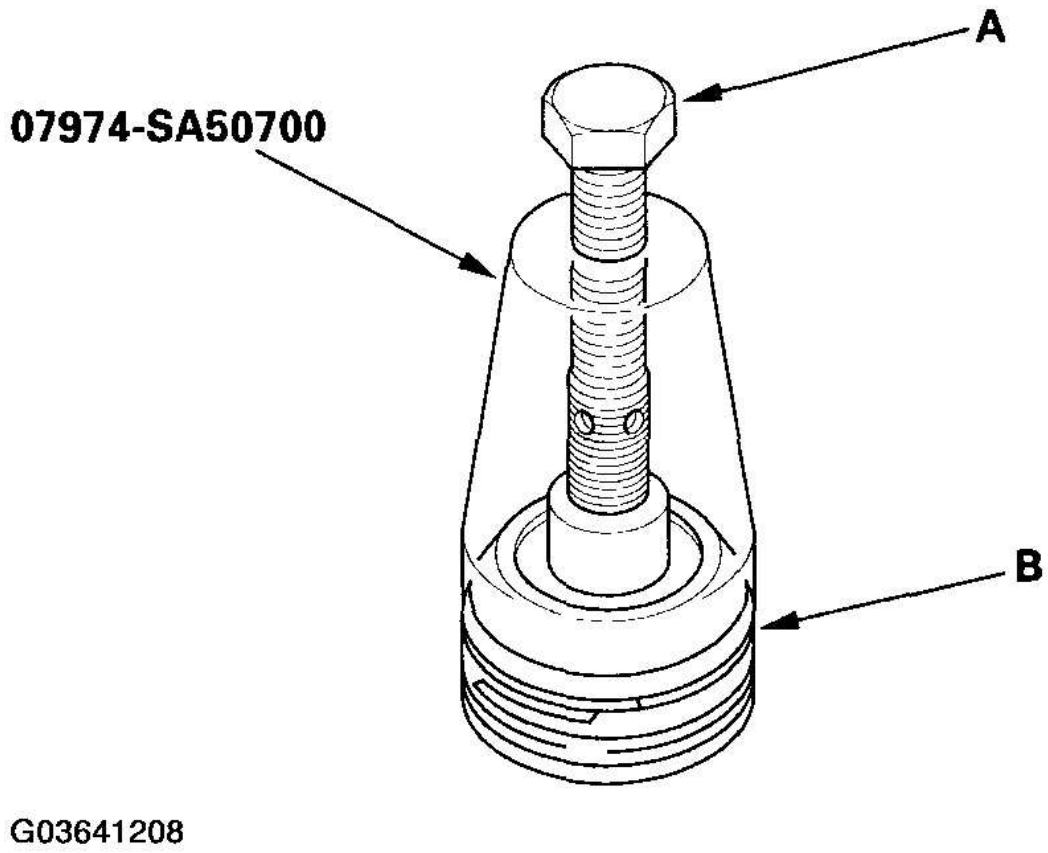


Fig. 18: Installing Boot
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 **LIFT AND SUPPORT POINTS**). Remove the front wheels.
2. Remove the flange nuts (A) while holding the respective joint pin (B) with a hex wrench (C), and remove the stabilizer link (D).

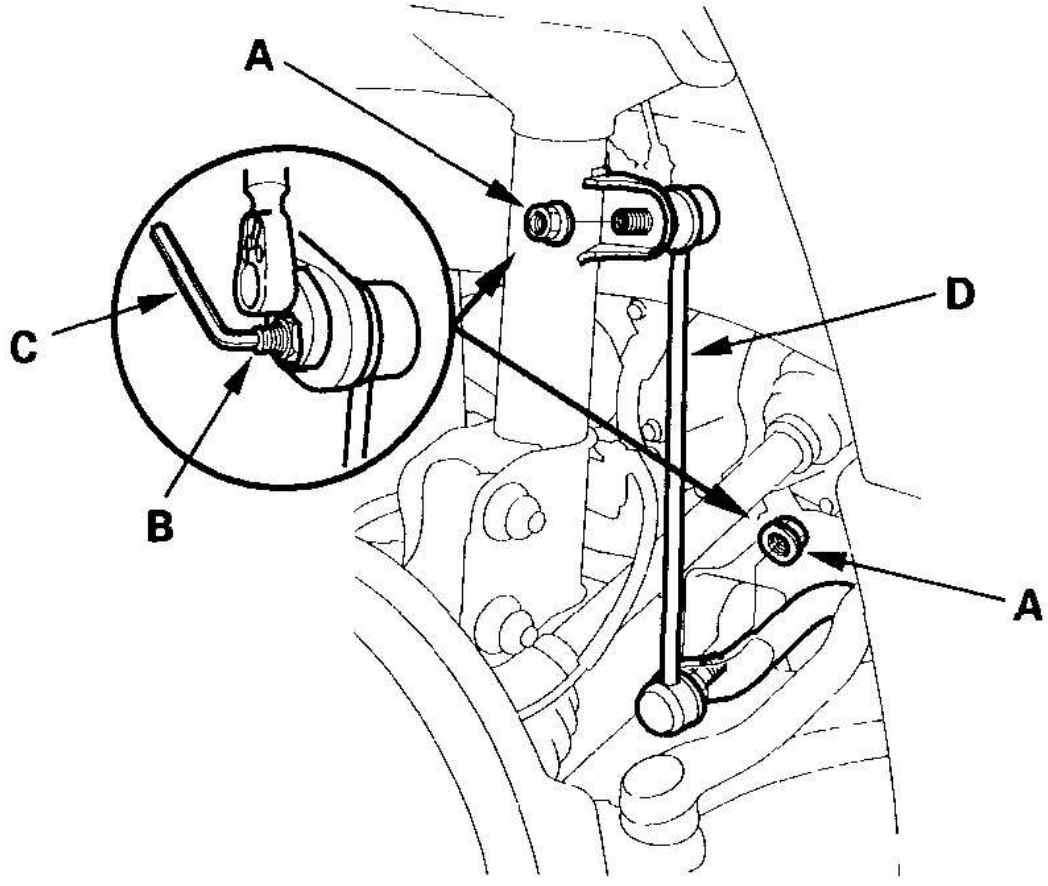


Fig. 19: Removing Flange Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the stabilizer link (A) on the stabilizer bar (B) and damper (C) with the joint pins (D) set at the center of each moving range.

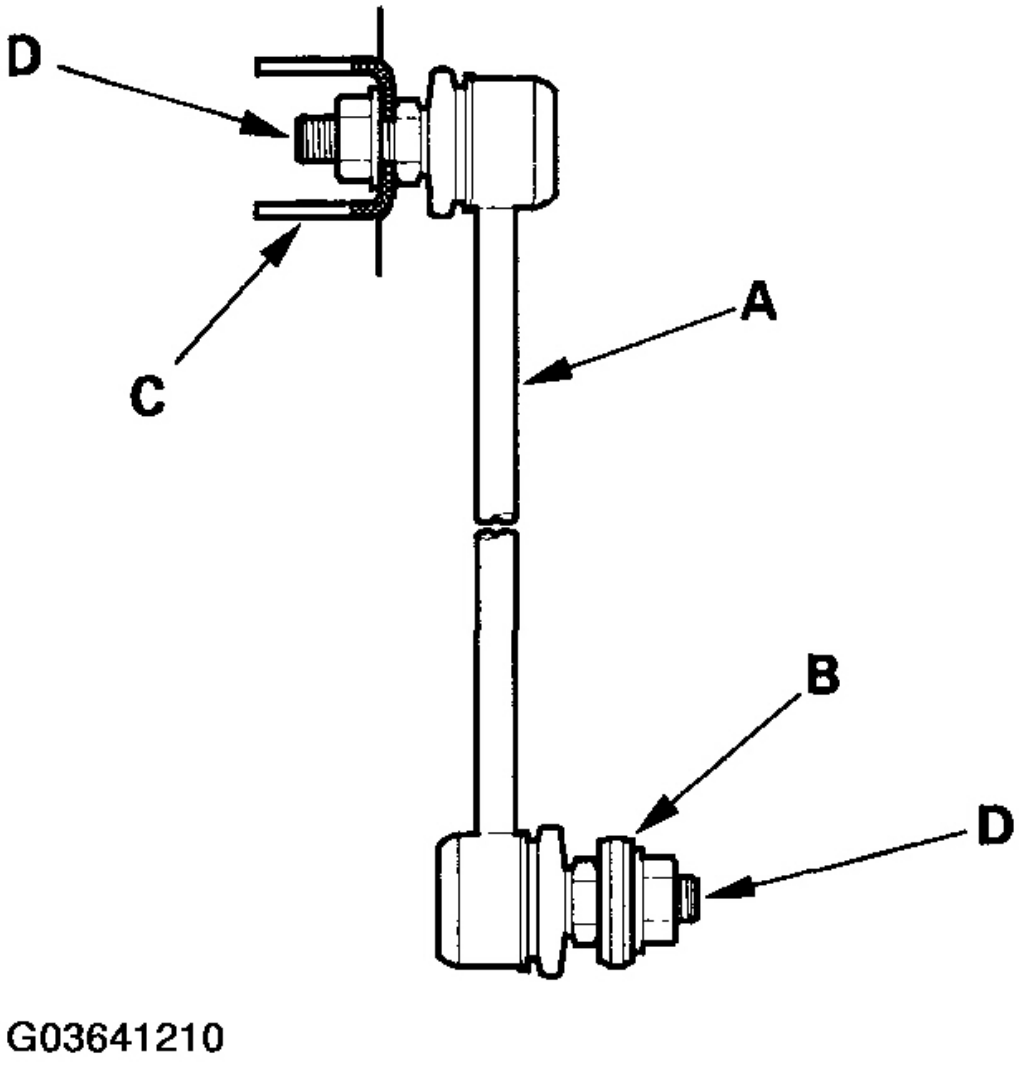


Fig. 20: Installing Stabilizer Link On Stabilizer Bar And Damper With Joint Pins
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the flange nuts, and lightly tighten them.
5. Place a jack under the lower arm, and raise the suspension to load it with the vehicle's weight.
6. Tighten the flange nuts (A) to the specified torque values while holding the respective joint pin (B) with a hex wrench (C).

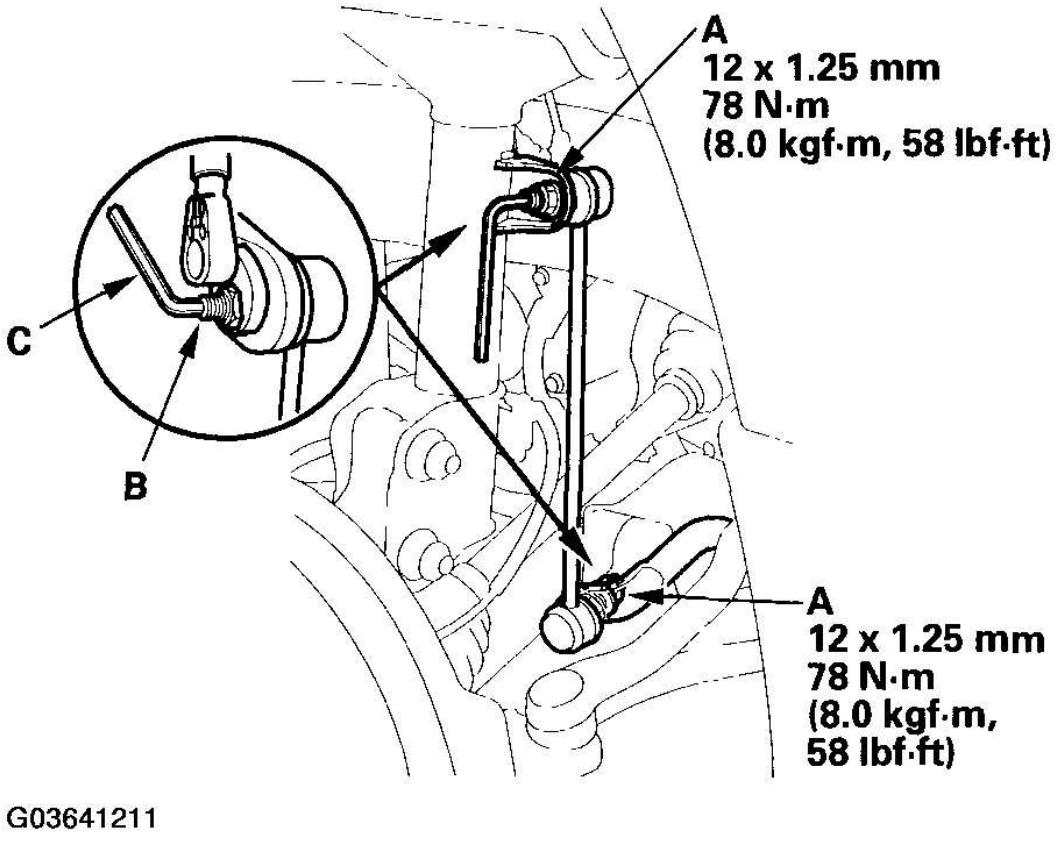


Fig. 21: Tightening Flange Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

LOWER ARM REMOVAL/INSTALLATION

Special Tools Required

- Ball joint remover, 28 mm 07MAC-SL0A202
- Ball joint thread protector 071AF-S3VA000

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**). Remove the front wheels.
2. Remove the lock pin (A) from the lower arm ball joint castle nut (B), and remove the nut.

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

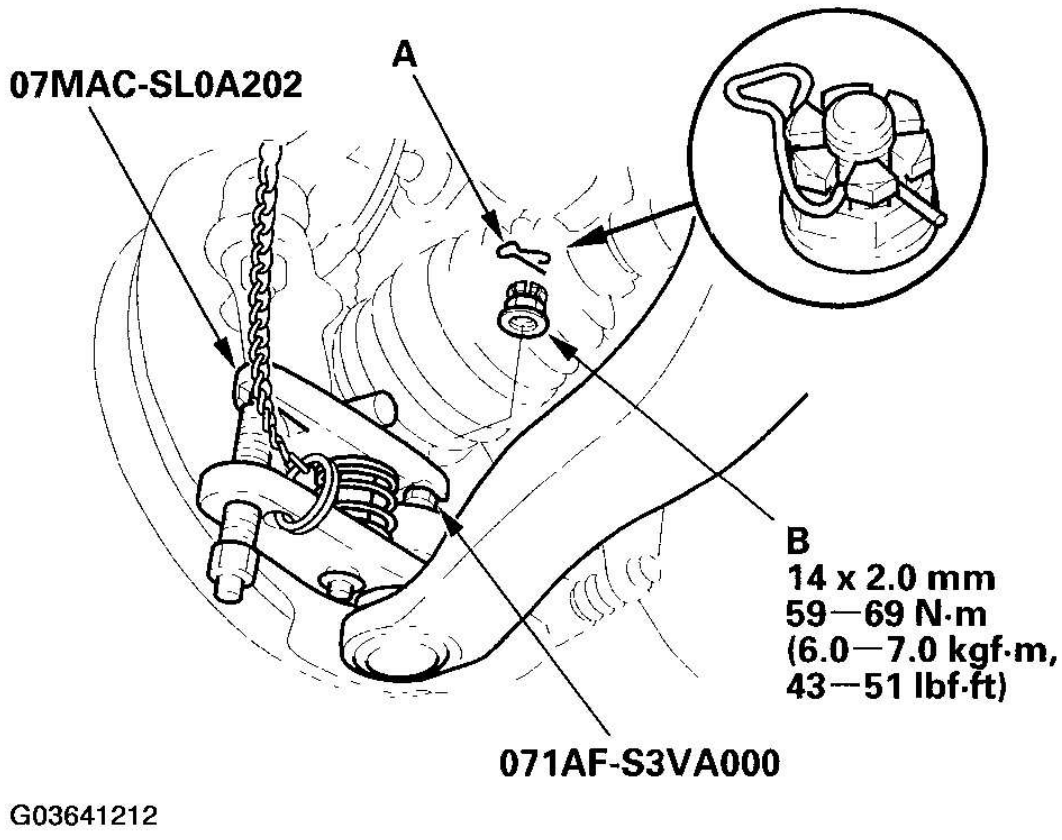


Fig. 22: Disconnecting Lower Arm Ball Joint From Knuckle Using Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the lower arm ball joint from the knuckle using the special tools (see **BALL JOINT REMOVAL**).

NOTE: Do not force or hammer on the lower arm, or pry between the lower arm and the knuckle. You could damage the ball joint.

4. Remove the lower arm.
   1. Remove the forward lower arm mounting bolt (A).
   2. Remove the rearward lower arm mounting bolt (B).
   3. Remove the lower arm (C) from the front suspension subframe.

NOTE: During installation, install the new mounting bolts.

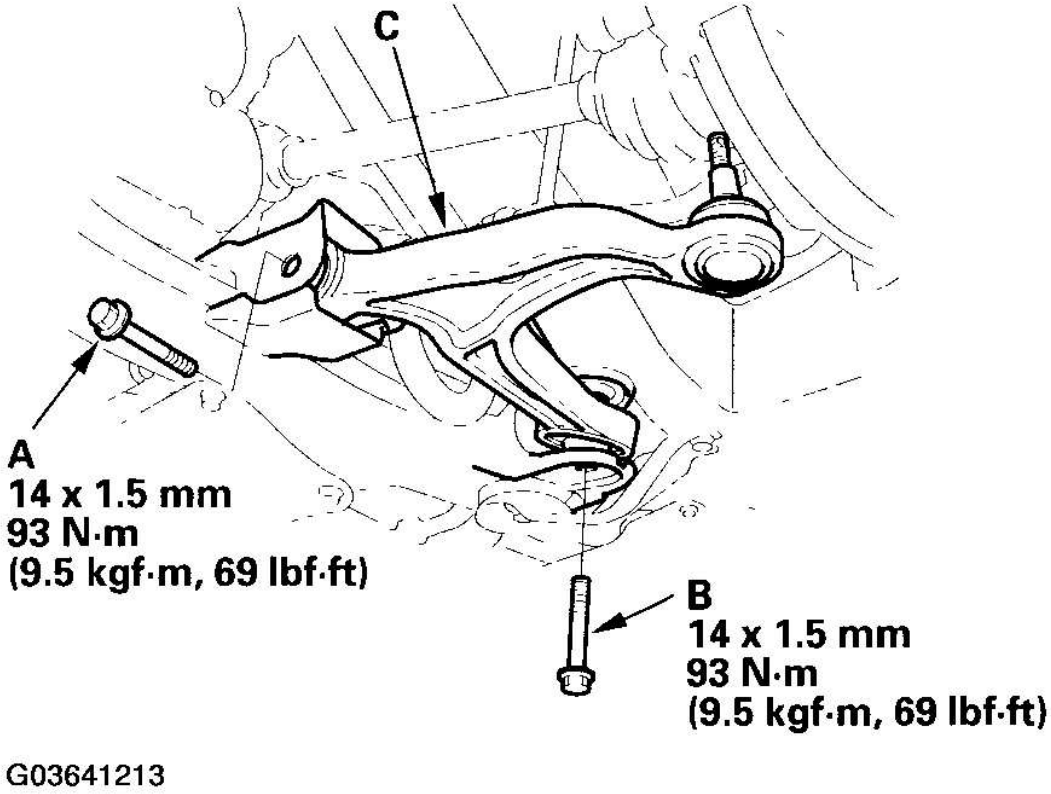


Fig. 23: Removing Lower Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. 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.
   - Before connecting the lower ball joint to the knuckle, decrease the threaded section and tapered portion of the ball joint pin, the lower arm connecting hole, the threaded section and mating surface of the castle nut.
   - First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
   - 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 surfaces of the brake disc and the inside of the wheel.
   - Check the front wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

DAMPER/SPRING REPLACEMENT

EXPLODED VIEW

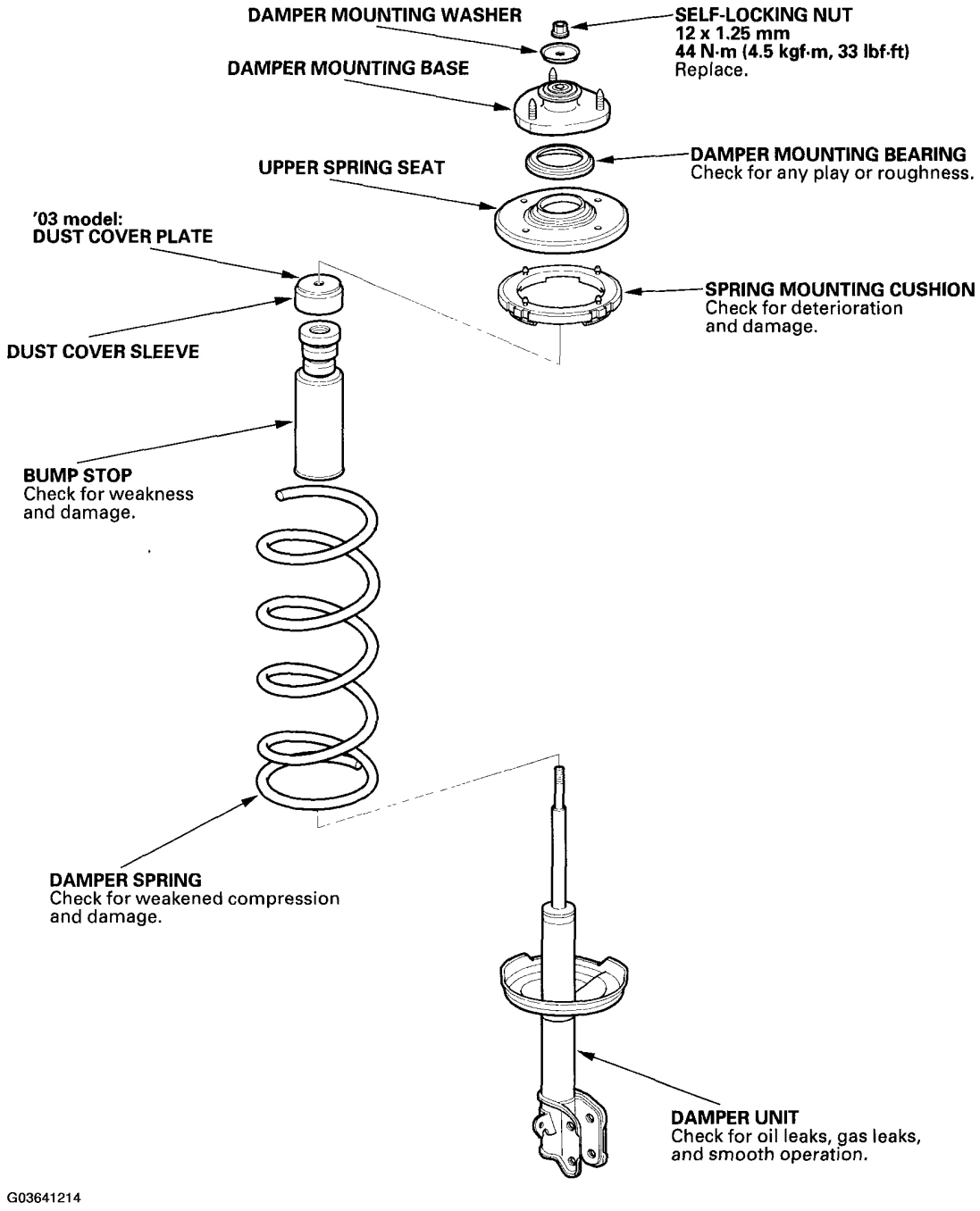


Fig. 24: Exploded View Of Damper/Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the front wheels.
3. Remove the damper.

NOTE: The illustration shows '04-06 models. For '03 model, the installation directions of the damper pinch bolts are reversed.

1. Remove the wheel sensor harness (A) from the damper (B). Do not disconnect the wheel sensor connector.
2. Remove the brake hose bracket (C) from the damper.
3. Disconnect the stabilizer link (D) from the damper.
4. Remove the flange nuts (E) and damper pinch bolts (F) from the damper.

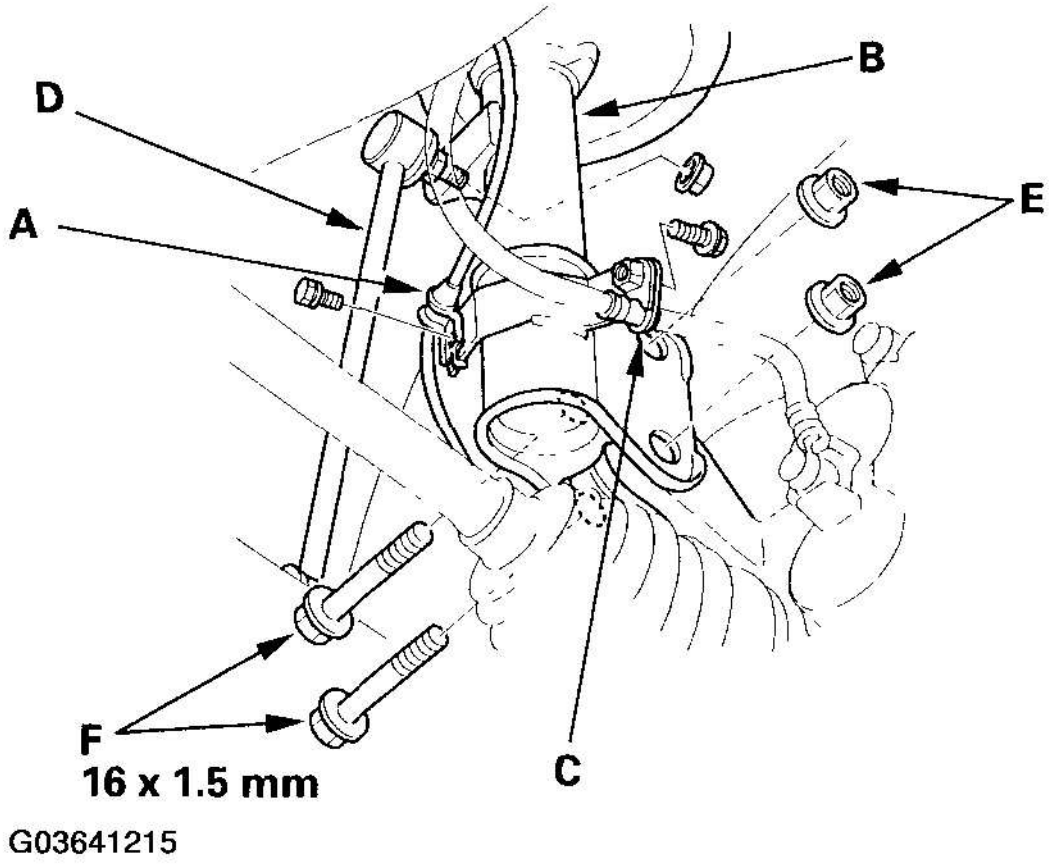


Fig. 25: Removing Damper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the service caps (A), and remove the damper by removing the three flange nuts (B).

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

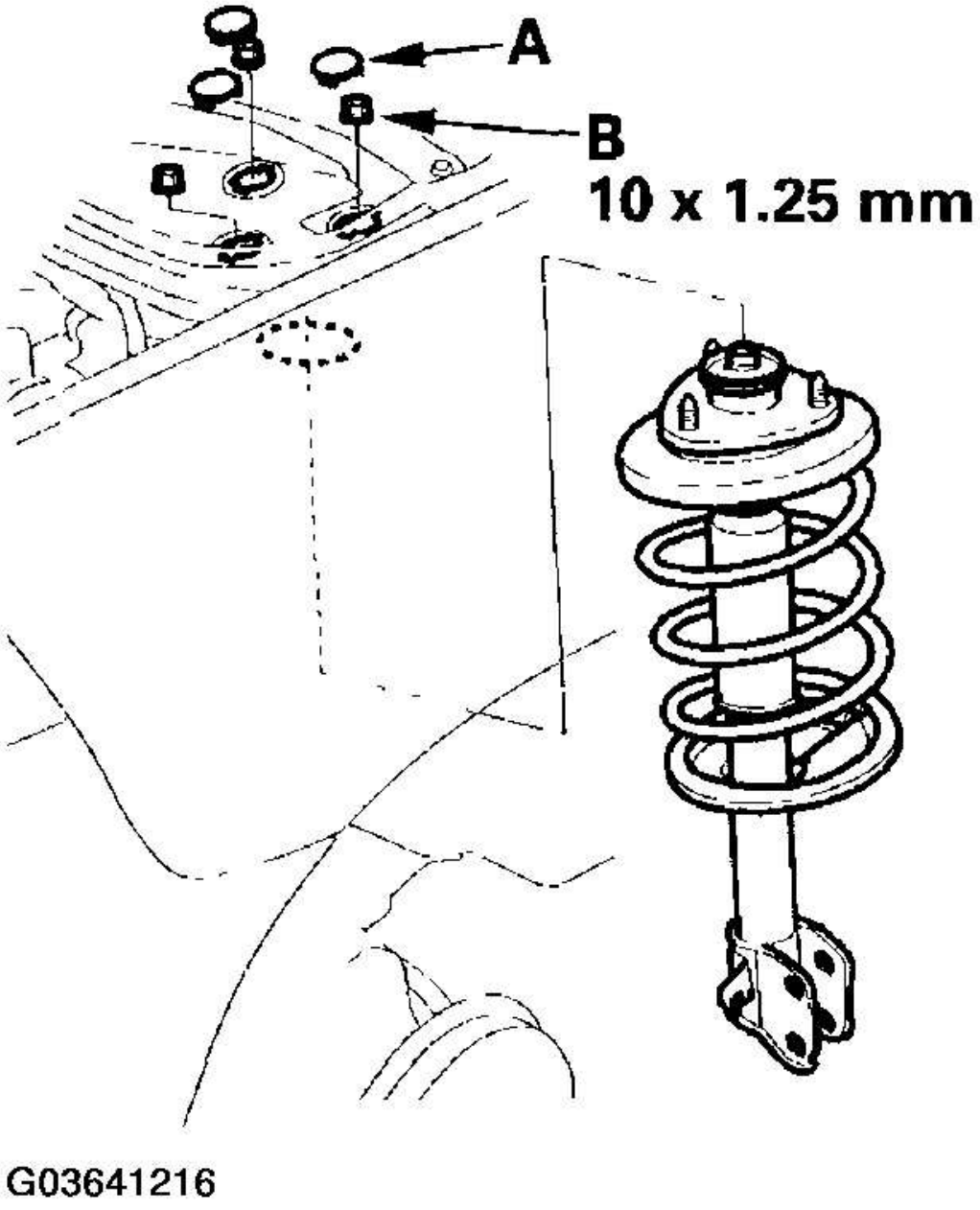


Fig. 26: Removing Service Caps And Three Flange Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DISASSEMBLY/INSPECTION

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

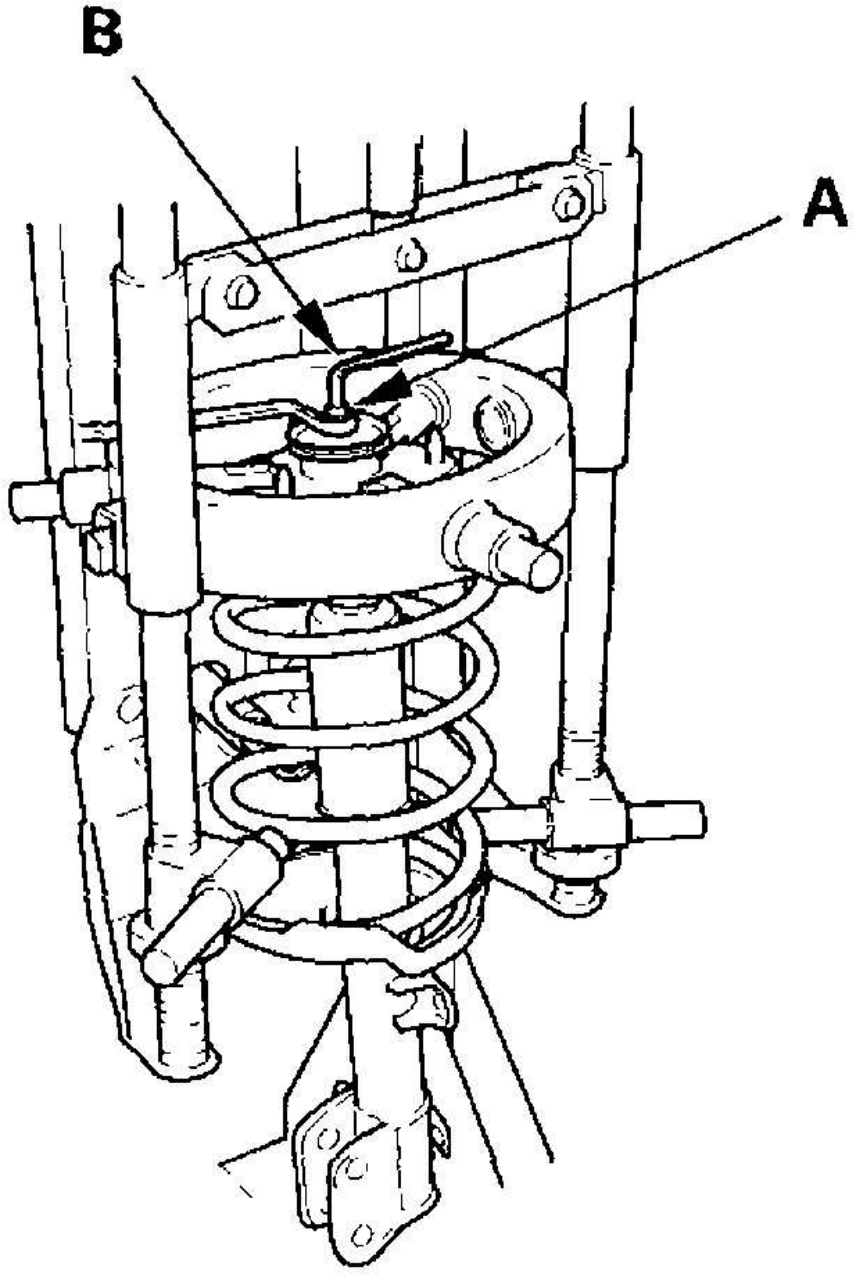


Fig. 27: Removing Self-Locking Nut

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 parts, except for the 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 in a smooth, continuous motion when the compression is released. If it does not (no compression or no extension), the gas is leaking, and the damper should be replaced.

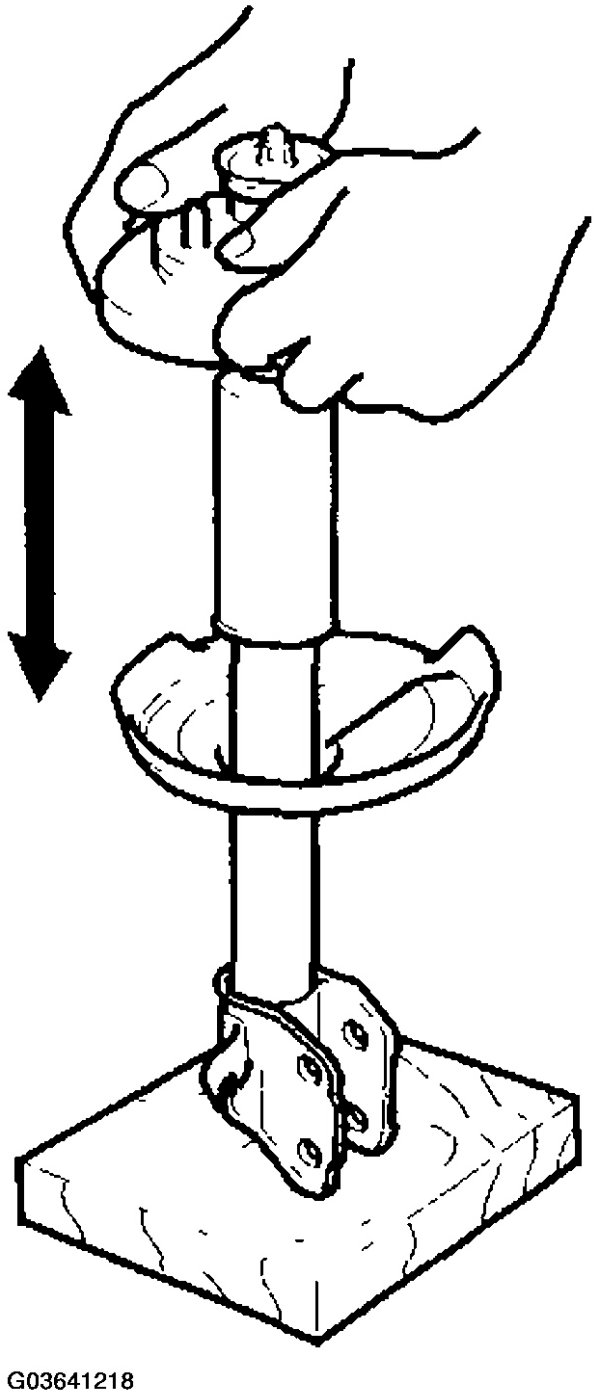
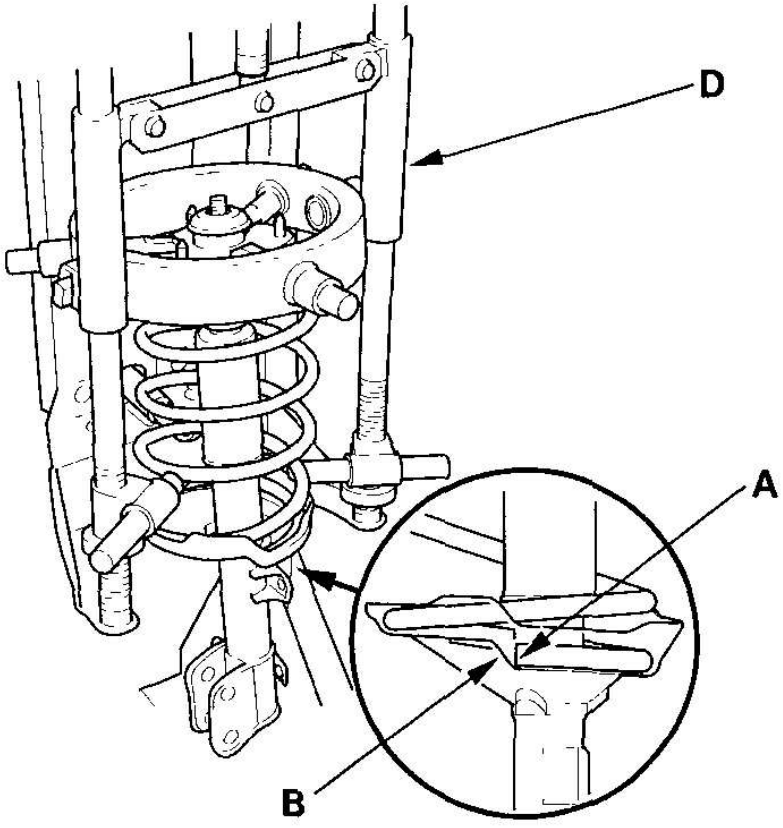


Fig. 28: Compressing Damper Assembly By Hand
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

REASSEMBLY

1. Install all the parts except the damper mounting washer and self-locking nut onto the damper unit by referring to the Exploded View. Align the bottom of the spring (A) and the stepped part of the lower spring seat (B).


D
A
B

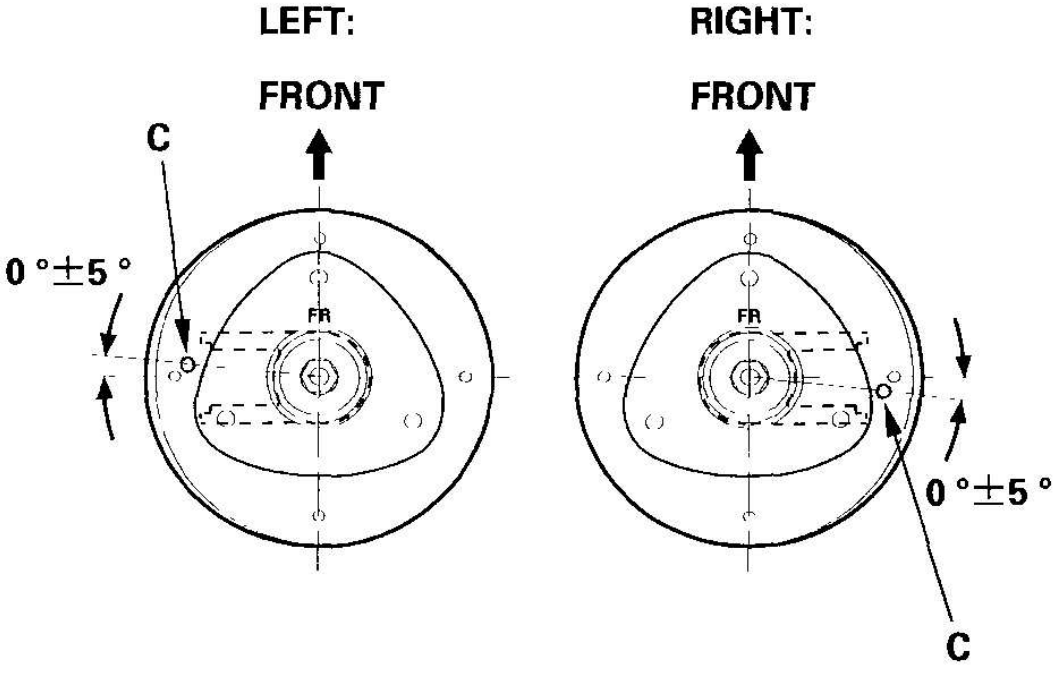

LEFT:
FRONT
C
0 °±5 °
FR
RIGHT:
FRONT
FR
0 °±5 °
C

Fig. 29: Reassembling Damper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Align the small hollow (C) on the upper spring seat with the spring mounting cushion as shown. And install the damper assembly on a commercially available strut spring compressor (D).
3. Compress the damper spring with the spring compressor.
4. Install the damper mounting washer (A) and a new self-locking nut (B).

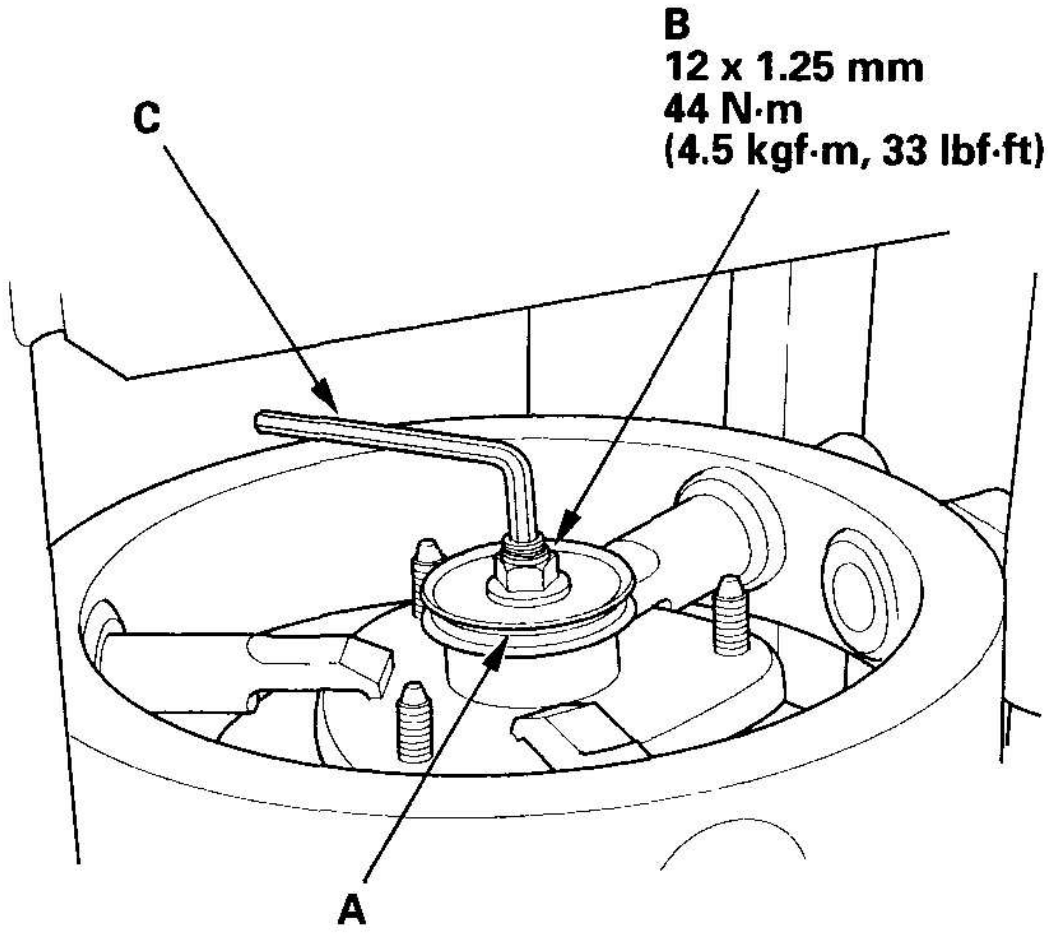


Fig. 30: Installing Damper Mounting Washer And New Self-Locking Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Hold the damper rod using a hex wrench (C), and tighten the self-locking nut.

INSTALLATION

1. Loosely install the damper (A) onto the frame, then loosely install the new three flange nuts (B).

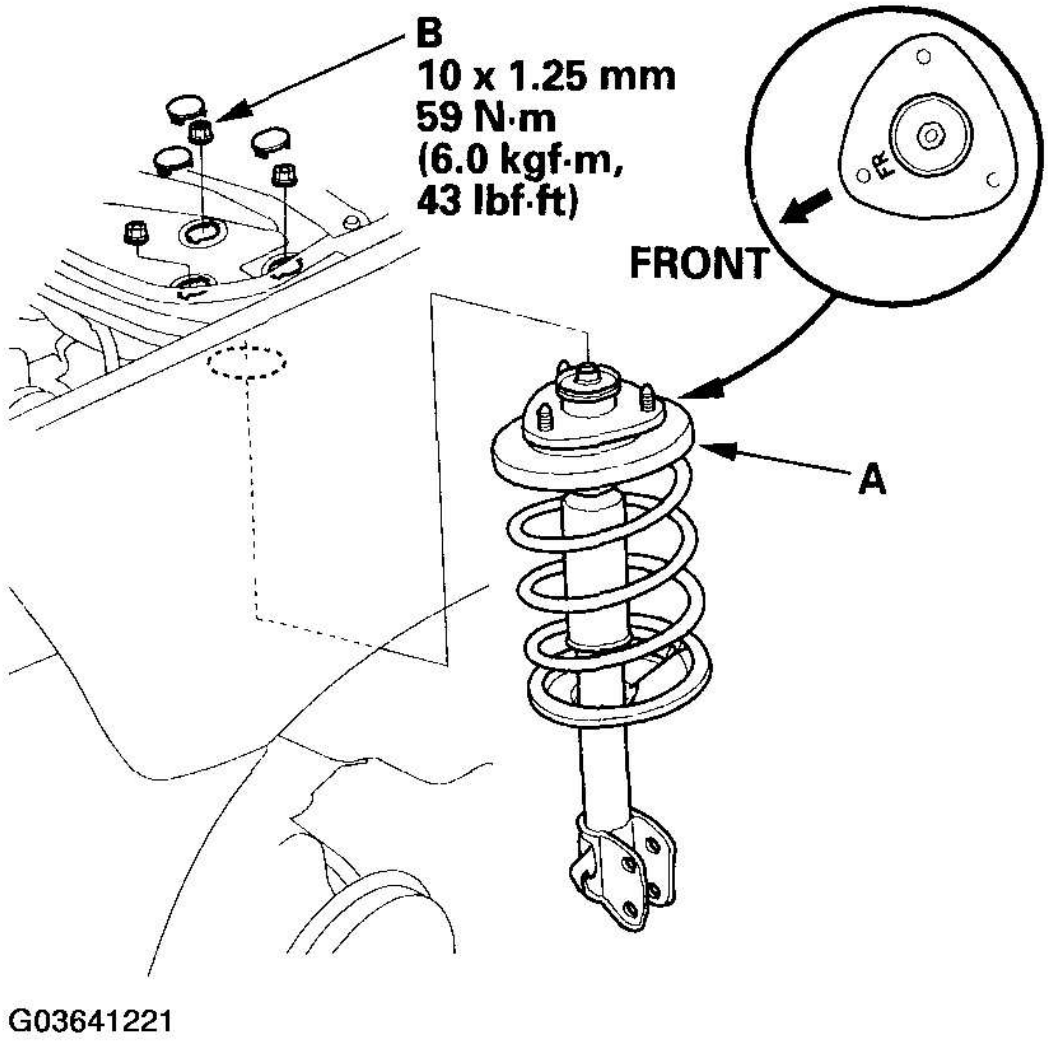


Fig. 31: Installing Damper And New Three Flange Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the damper onto the knuckle.

NOTE: The illustration shows '04-06 models. For '03 model, the installation directions of the damper pinch bolts are reversed.

1. Loosely install the new damper pinch bolts (A) and new flange nuts (B) to the damper (C).
2. Install the wheel sensor harness (D) to the damper.

3. Install the brake hose bracket (E) to the damper.
4. Loosely install the stabilizer link (F) to the damper.

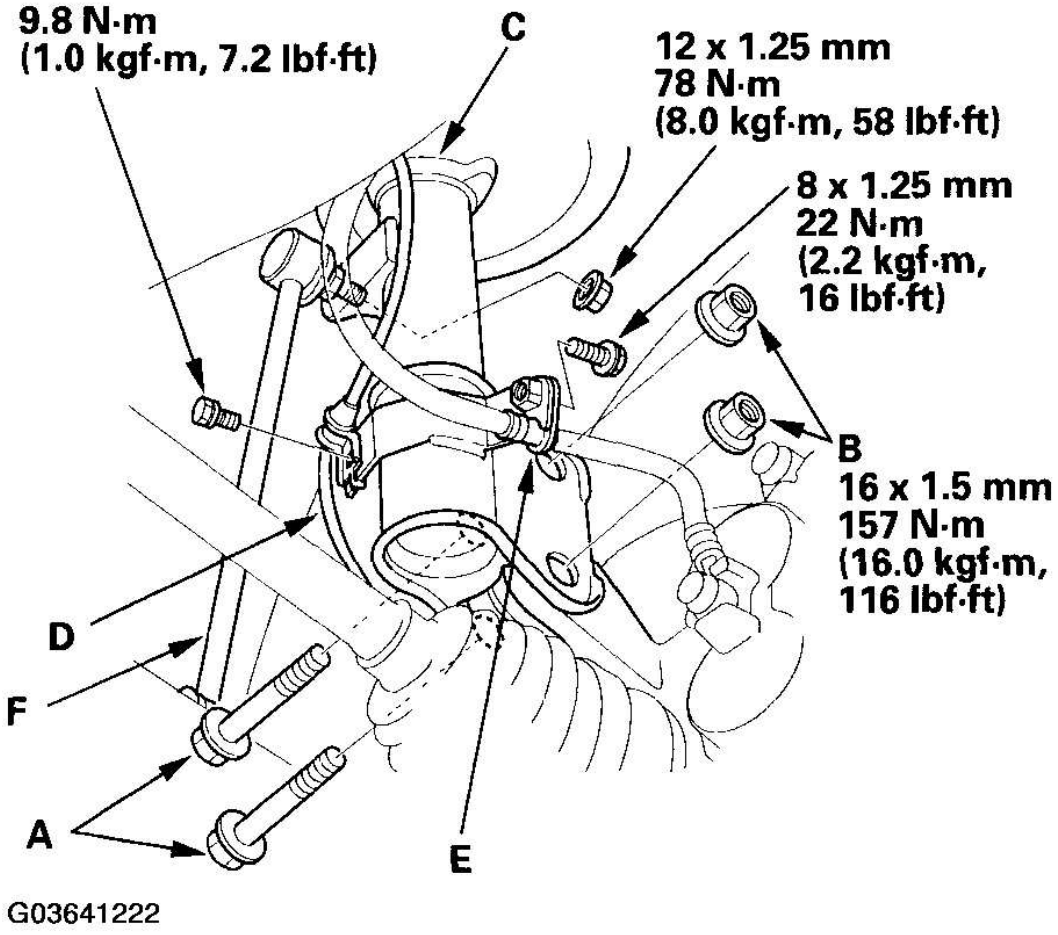


Fig. 32: Installing Damper Onto Knuckle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Raise the front suspension with a floor jack to load the suspension with the vehicle's weight.
4. Tighten the damper pinch bolts and flange nuts to the specified torque value.
5. Tighten the flange nuts on top of the damper to the specified torque value.
6. Install the service caps.
7. Install the front wheels.
8. Check the front wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).