Navigation Tools: Click on the “Table of Contents” below, or use the Bookmarks to the left.

Brakes

HONDA

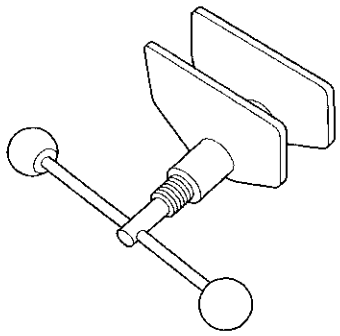
Brakes

Conventional Brake Components

Conventional Brake Components

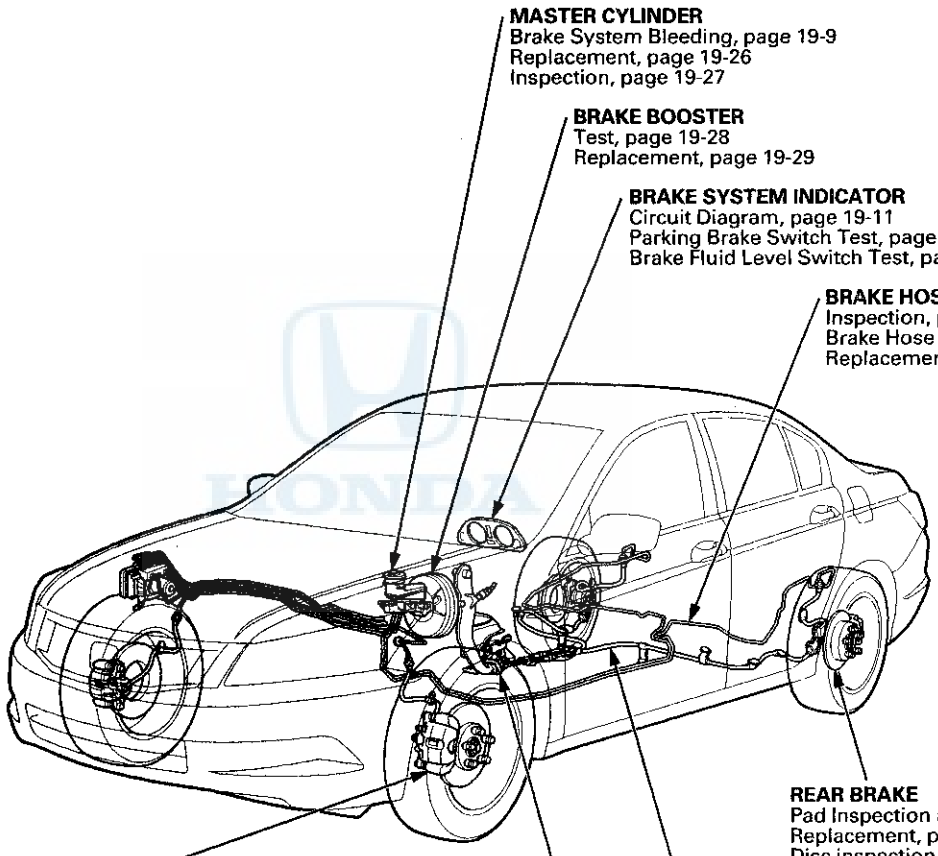
Special Tools

Ref.No.	Tool Number	Description	Qty
①	07AAE-SEPA101	Brake Caliper Piston Compressor	1



①

Component Location Index



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Conventional Brake Components

Brake System Inspection and Test

Inspect the brake system components listed. Repair or replace any parts that are leaking or damaged.

Component Inspections:

Component	Procedure	Also check for
Master Cylinder	Look for damage or signs of fluid leakage at: • Reservoir or reservoir grommets. • Line joints. • Between master cylinder and booster.	Bulging seal at reservoir cap. This is a sign of fluid contamination.
Brake Hoses	Look for damage or signs of fluid leakage at: • Line joints and banjo bolt connections. • Hoses and lines, also inspect for twisting or damage.	Bulging, twisted, or bent lines.
Caliper	Look for damage or signs of fluid leakage at: • Piston seal. • Banjo bolt connections. • Bleed screw.	Seized or sticking caliper pins.
VSA Modulator-control Unit	Look for damage or signs of fluid leakage at: • Line joints. • Modulator-control unit.	

Brake System Test

Brake pedal sinks/fades when braking

1. Set the parking brake, and start the engine, then turn off the A/C. Allow the engine to warm up to normal operating temperature (radiator fan comes on twice).
2. Attach a 50 mm (2 in) piece of masking tape along the bottom of the steering wheel, and draw a horizontal reference mark across it.
3. With the transmission in neutral (M/T) or P or N (A/T), press and hold the brake pedal lightly (about the same pressure needed to keep an A/T-equipped vehicle from creeping), then release the parking brake.
4. While still holding the brake pedal, hook the end of the tape measure behind the brake pedal, then pull the tape up to the steering wheel. Note the measurement between the brake pedal and the reference mark on the steering wheel.
5. Apply steady pressure to the brake pedal for 3 minutes.
6. Watch the tape measure.
   - If the measurement increases 10 mm (0.39 in) or less, the master cylinder is OK.
   - If the measurement increases more than 10 mm (0.39 in), replace the master cylinder.

Rapid brake pad wear, vehicle vibration (after a long drive), or high, hard brake pedal

NOTE: Make sure that the caliper pins are installed correctly. Upper caliper pin B and lower caliper pin A are different. If these caliper pins are installed in the wrong location, it will cause vibration, uneven or rapid brake pad wear, and possibly uneven tire wear. For proper caliper pin location: NISSIN type (see page 19-22), AKEBONO type (see page 19-24).

1. Drive the vehicle until the brakes drag or until the pedal is high and hard. This can take 20 or more brake pedal applications during an extended test-drive.
2. With the engine running, raise and support the vehicle (see page 1-13), and spin all four wheels by hand.

   Is there brake drag at any of the wheels?

   YES–Go to step 3.

   NO–Look for other causes of pad wear, high pedal, or vehicle vibration.■
3. Turn the ignition switch to LOCK (0), press the brake pedal several times to deplete the vacuum in the brake booster, and then spin the wheels again to check for brake drag.

   Is there brake drag at any of the wheels?

   YES–Go to step 4.

   NO–Replace the brake booster (see page 19-29).■
4. Without removing the brake lines, unbolt and separate the master cylinder from the brake booster, then spin the wheels to check for brake drag.

   Is there brake drag at any of the wheels?

   YES–Go to step 5.

   NO–Check the brake pedal position switch adjustment and pedal free play (see page 19-6).■
5. Loosen the hydraulic lines at the master cylinder, then spin the wheels to check for brake drag.

   Is there brake drag at any of the wheels?

   YES–Go to step 6.

   NO–Check the master cylinder reservoir for contamination in the brake fluid. If you find contamination, flush the entire brake system of all contaminated fluid, then replace all rubber parts in the brake system that were exposed to contaminated fluid. If the brake fluid is OK, replace the master cylinder (see page 19-26).■
6. Loosen the bleed screws at each caliper, then spin the wheels to check for brake drag.

   Is there brake drag at any of the wheels?

   YES–Check the master cylinder reservoir for contamination in the brake fluid. If you find contamination, flush the entire brake system of all contaminated fluid, then replace all rubber parts in the brake system that were exposed to contaminated fluid. If the brake fluid is OK, disassemble and repair the caliper on the wheel(s) with brake drag.■

   NO–Look for and replace any damaged brake lines. If all brake lines are OK, replace the VSA modulator-control unit (see page 19-136).■

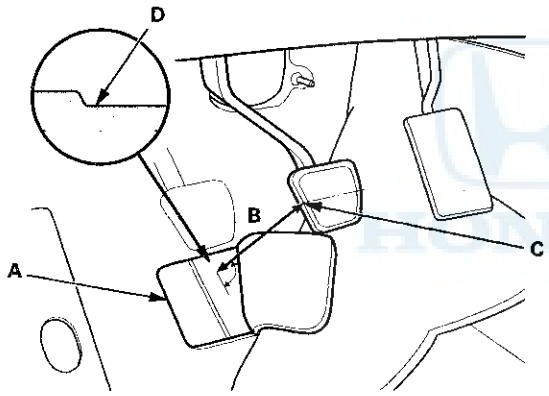
Brake Pedal and Brake Pedal Position Switch Adjustment

Pedal Height

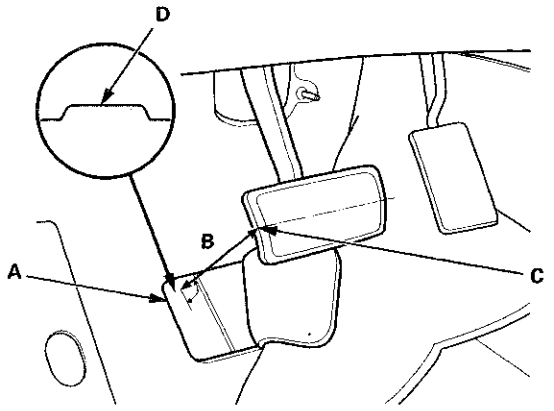
1. Turn the brake pedal position switch 45° counterclockwise, and pull it back until it is no longer touching the brake pedal.
2. Remove the footrest (see step 4 on page 20-151), then remove the steering joint cover (see page 17-10).
3. Pull back the carpet, and find the cutout (A) in the insulation. Measure the pedal height (B) from left side middle of the brake pedal pad (C) to the floor (D) without the insulation as shown.

Standard pedal height (with carpet removed):
M/T: 156 mm (6.1 in)
A/T: 155 mm (6.1 in)

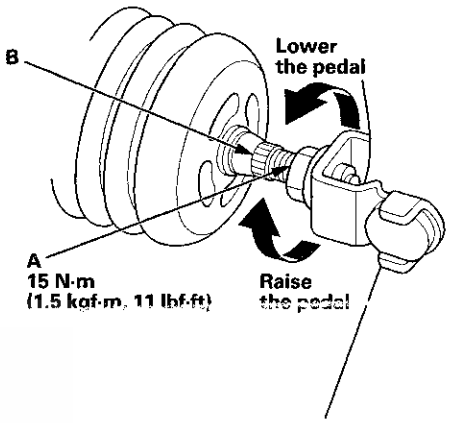
M/T



A/T

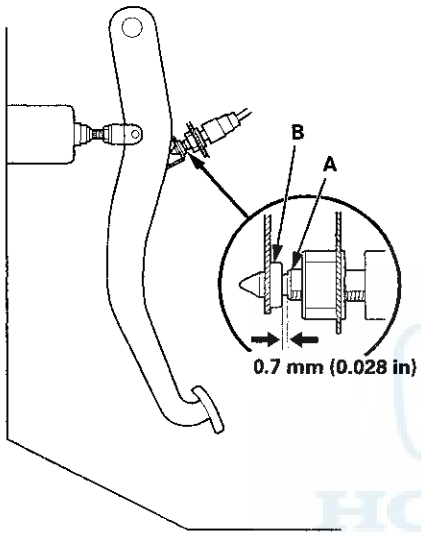


4. Loosen the pushrod locknut (A), and screw the pushrod (B) in or out with pliers until the standard pedal height from the floor is reached. After adjustment, tighten the locknut firmly. Do not adjust the pedal height with the pushrod pressed.



Brake Pedal Position Switch Adjustment

5. Lift up on the brake pedal by hand. Push in the brake pedal position switch until its plunger is fully pressed (threaded end (A) touching the pad (B) on the pedal arm). Turn the switch 45 ° clockwise to lock it. The gap between the brake pedal position switch and the pad is automatically adjusted to 0.7 mm (0.028 in) by locking the switch. Make sure the brake lights go off when the pedal is released.

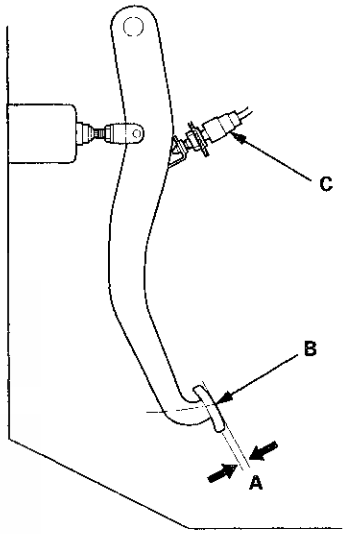


6. Install all removed parts in the reverse order of removal.
7. Check the brake pedal free play.

Pedal Free Play

1. With the ignition switch in LOCK (0), inspect the free play (A) at the pedal pad (B) by pushing the brake pedal by hand. If the brake pedal free play is out of specification, adjust the brake pedal position switch (C). If the brake pedal free play is insufficient, it may result in brake drag.

Free play: 1—5 mm (0.04—0.20 in)

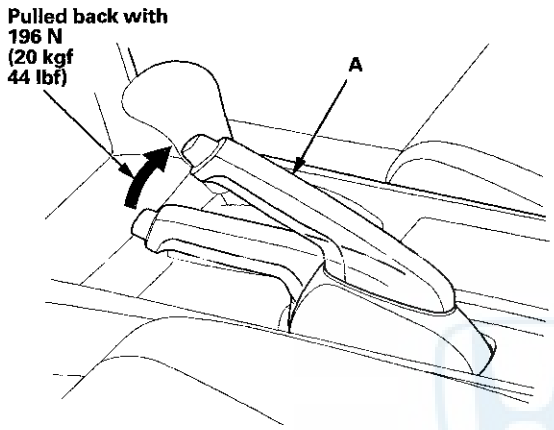


Parking Brake Inspection and Adjustment

Inspection

1. Pull the parking brake lever (A) with 196 N (20 kgf, 44 lbf) of force to fully apply the parking brake. The parking brake lever should be locked within the specified number of clicks.

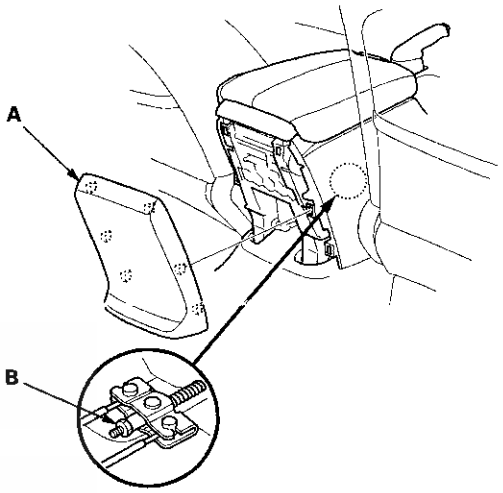
   Lever locked clicks: 7 to 9 clicks



2. If the number of lever clicks is not as specified, adjust the parking brake.

Adjustment

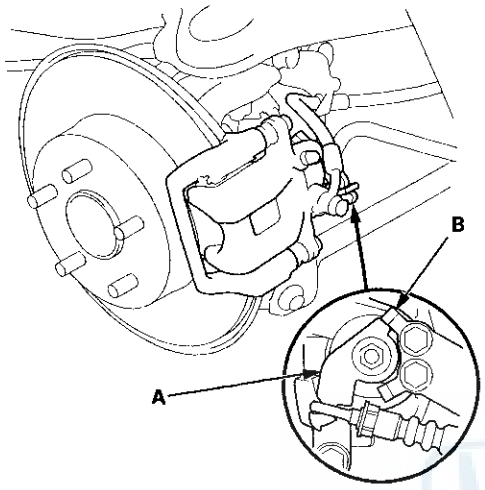
1. Release the parking brake lever fully.
2. Pull out the center console rear trim (A) (see page 20-160).



3. Loosen the parking brake adjusting nut (B).
4. Raise and support the vehicle (see page 1-13).
5. Remove the rear wheels.

6. Make sure the lever (A) on the rear brake caliper contacts the arm (B).

   NOTE: The lever will contact the arm when the parking brake adjusting nut is loosened.

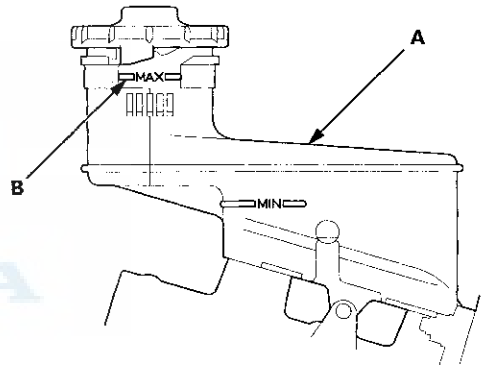


7. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the rear wheels.
8. Pull the parking brake lever 1 click.
9. Tighten the parking brake adjusting nut until the parking brakes drag slightly when the rear wheels are turned.
10. Release the parking brake lever fully, and check that the parking brakes do not drag when the rear wheels are turned. Readjust if necessary.
11. Make sure the parking brake lever is within the specified number of clicks (7 to 9 clicks).
12. Install the center console rear trim (see page 20-160).

NOTE:

- Do not reuse the drained fluid. Use only new Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Make sure no dirt or other foreign matter gets in the brake fluid.
- Do not spill brake fluid on the vehicle; it may damage the paint. If brake fluid does contact the paint, wash it off immediately with water.
- The reservoir connected to the master cylinder must be at the MAX (upper) level mark at the start of the bleeding procedure and checked after bleeding each wheel location. Add fluid as required.

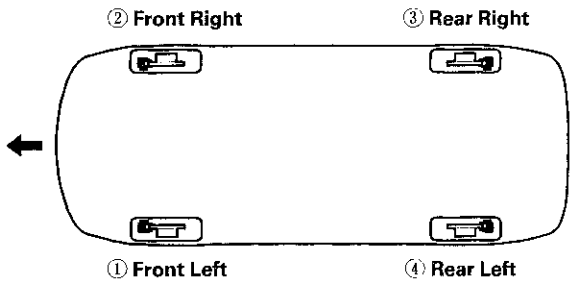
1. Make sure the brake fluid level in the reservoir (A) is at the MAX (upper) level line (B).



2. Have someone slowly pump the brake pedal several times, then apply steady pressure.
3. Start the bleeding at the driver's side of the front brake system.

   NOTE: Bleed the calipers in the sequence shown.

BLEEDING SEQUENCE:



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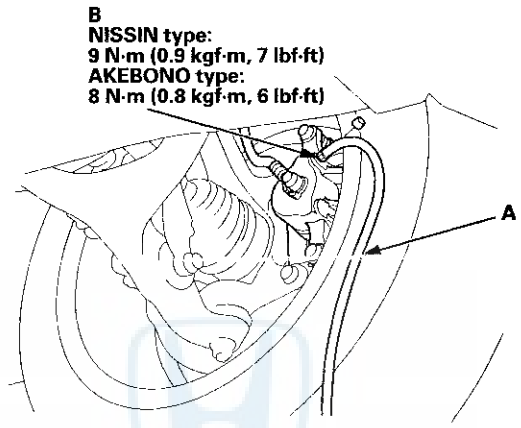
Brake System Bleeding (cont'd)

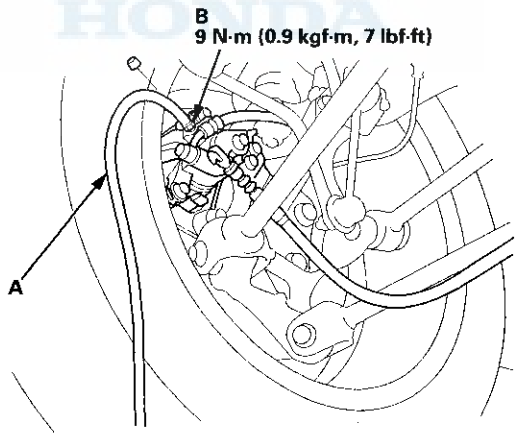
4. Attach a length of clear drain tube (A) to the bleed screw (B), then loosen the bleed screw to allow air to escape from the system. Then tighten the bleed screw securely.

   NOTE: The illustrations show the NISSIN type.

   Front

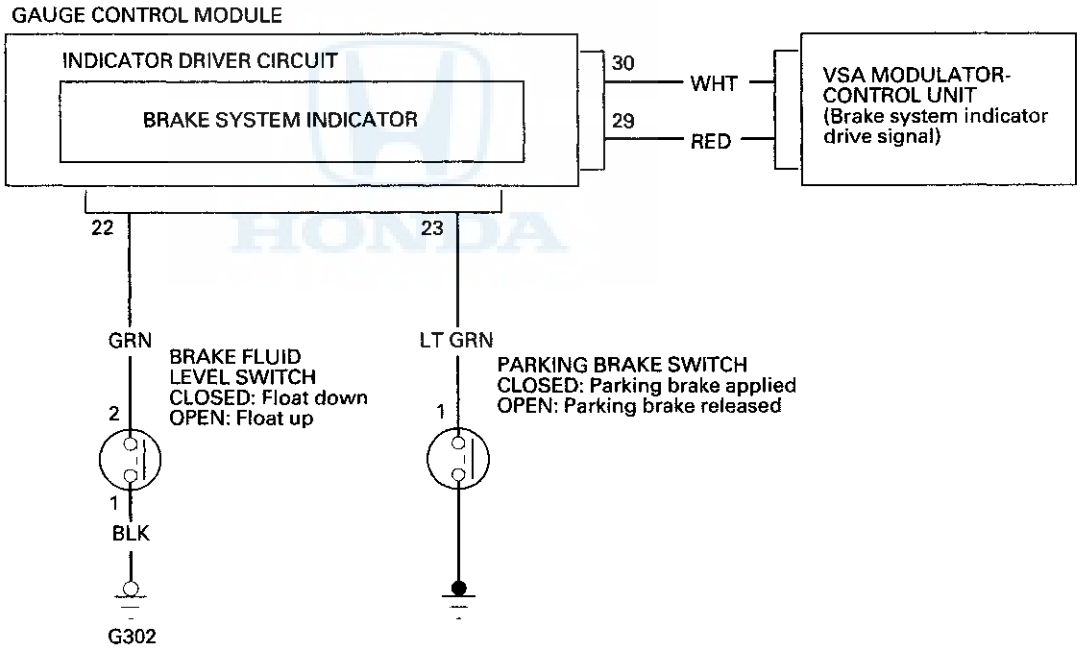


   Rear



5. Refill the master cylinder reservoir to the MAX (upper) level line.
6. Repeat the procedure for each brake circuit until there are no air bubbles in the fluid.

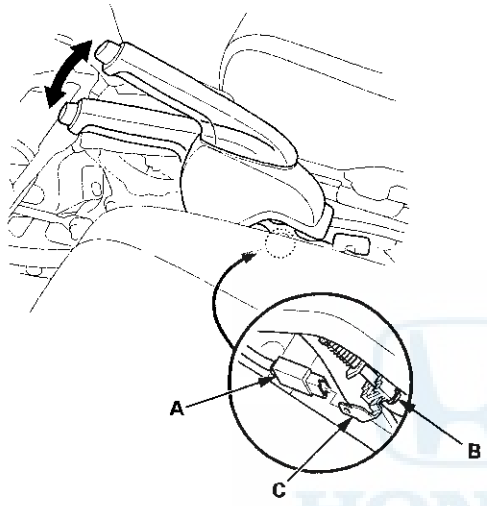
Brake System Indicator Circuit Diagram



Parking Brake Switch Test

NOTE: If both the ABS/VSA indicator and the brake system indicator come on at the same time, check the VSA system for DTC's first (see page 19-48).

1. Remove the center console (see page 20-158).
2. Disconnect the parking brake switch connector (A) from the parking brake switch (B).



3. Check for continuity between the switch terminal (C) and body ground.
   - With the parking brake lever pulled, there should be continuity.
   - With the parking brake lever released, there should be no continuity.

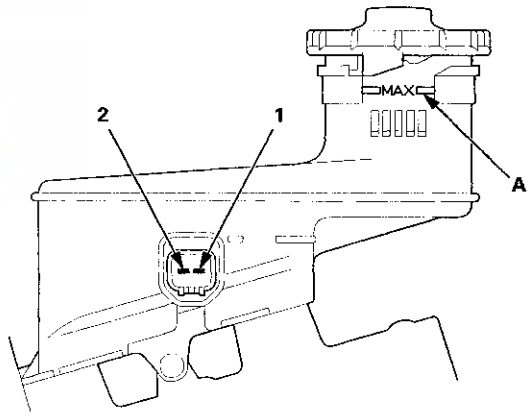
   NOTE: If the parking brake switch and the brake fluid level switch are OK, but the brake system indicator does not function, do the gauge control module self-diagnostic function (see page 22-332).
4. Reconnect the parking brake switch connector.
5. Install the center console (see page 20-158).

Brake Fluid Level Switch Test

NOTE: If both the ABS/VSA indicator and the brake system indicator come on at the same time, check the VSA system for DTC's first (see page 19-48).

1. Disconnect the brake fluid level switch connector.
2. Check for continuity between the terminals (1) and (2) with the float in the down position and in the up position.

   NOTE:
   - Remove the brake fluid completely from the reservoir. With the float down, there should be continuity.
   - Fill the reservoir with brake fluid to the MAX (upper) level (A). With the float up, there should be no continuity.
   - If the parking brake switch and brake fluid level switch are OK, but the brake system indicator does not function, do the gauge control module self-diagnostic function (see page 22-332).



3. Reconnect the brake fluid level switch connector.

Front Brake Pad Inspection and Replacement

Special Tools Required
Brake Caliper Piston Compressor 07AAE-SEPA101

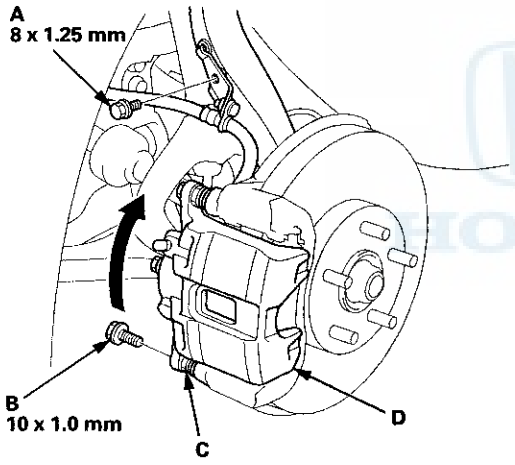
⚠CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

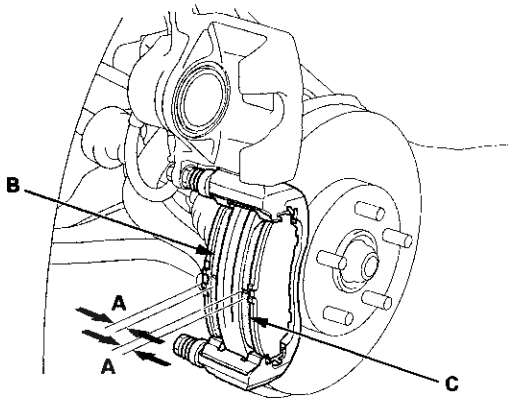
Inspection - NISSIN Type

1. Raise and support the vehicle (see page 1-13).
2. Remove the front wheels.
3. Remove the brake hose mounting bolt (A).

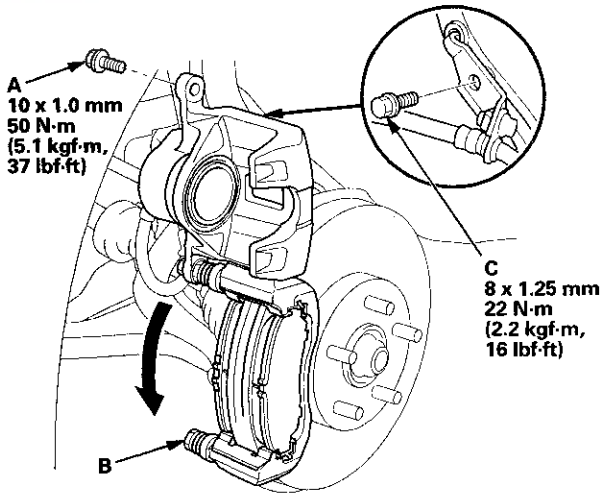


4. Remove the flange bolt (B) while holding the caliper pin (C) with a wrench. Be careful not to damage the pin boot, and pivot the caliper (D) up out of the way. Check the hose and pin boots for damage and deterioration.
5. Check the thickness (A) of the inner pad (B) and the outer pad (C). Do not include the thickness of the backing plate.

Brake pad thickness:
Standard: 10.5—11.2 mm (0.41—0.44 in)
Service limit: 1.6 mm (0.06 in)



6. If any part of the brake pad thickness is less than the service limit, replace the front brake pads as a set.
7. Pivot the caliper down into position. Install the flange bolt (A), and tighten it to the specified torque while holding the caliper pin (B) with a wrench being careful not to damage the pin boot.



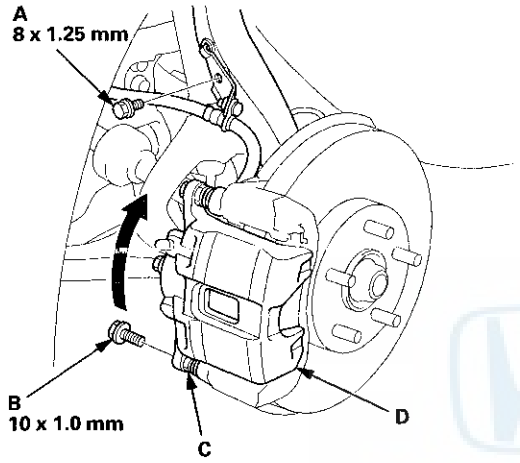
8. Install the brake hose mounting bolt (C).
9. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheels.

(cont'd)

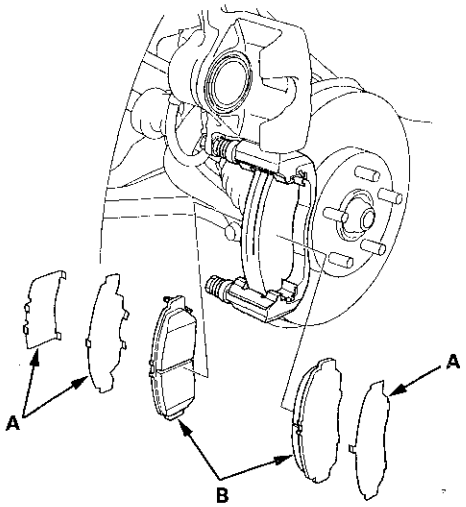
Front Brake Pad Inspection and Replacement (cont'd)

Replacement - NISSIN Type

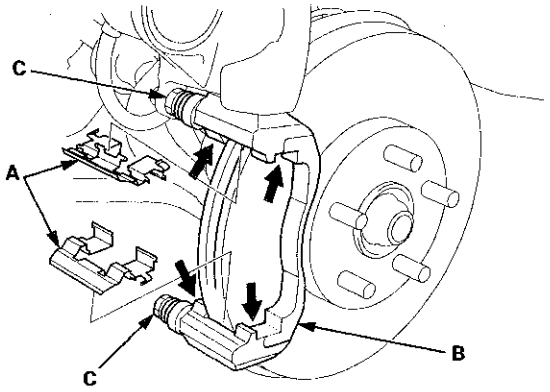
1. Remove some brake fluid from the master cylinder.
2. Raise and support the vehicle (see page 1-13).
3. Remove the front wheels.
4. Remove the brake hose mounting bolt (A).



5. Remove the flange bolt (B) while holding the caliper pin (C) with a wrench. Be careful not to damage the pin boot, and pivot the caliper (D) up out of the way. Check the hose and the pin boots for damage and deterioration.
6. Remove the pad shims (A) and the brake pads (B).

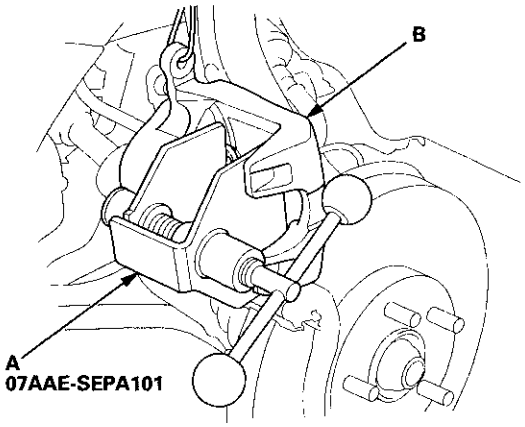


7. Remove the pad retainers (A).



8. Clean the caliper bracket (B) thoroughly; remove any rust, and check for grooves and cracks. Verify that the caliper pins (C) move in and out smoothly. Clean and lube if needed.
9. Inspect the brake disc for runout, thickness, parallelism (see page 19-19), and check for damage and cracks.
10. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the retainer mating surface of the caliper bracket (indicated by the arrows).
11. Install the pad retainers. Wipe excess assembly paste off the retainers. Keep the assembly paste off the brake disc and the brake pads.

12. Install the brake caliper piston compressor tool (A) on the caliper body (B).

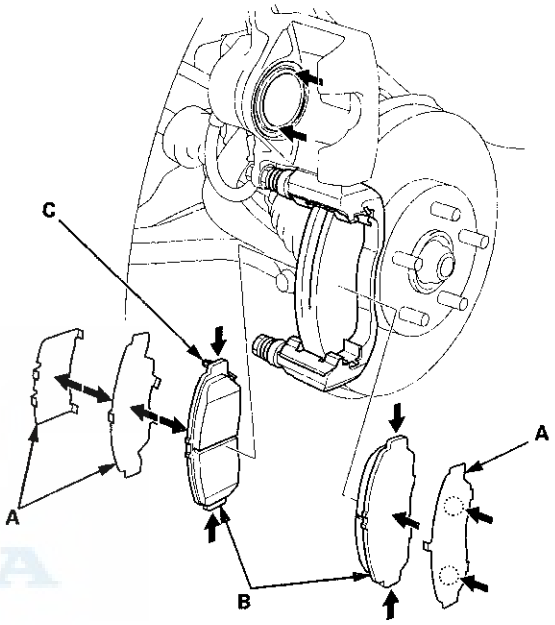


13. Press in the piston with the brake caliper piston compressor tool so the caliper will fit over the brake pads. Make sure the piston boot is in position to prevent damaging it when pivoting the caliper down.

    NOTE: Be careful when pressing in the piston; brake fluid might overflow from the master cylinder's reservoir. If brake fluid gets on any painted surface, wash it off immediately with water.

14. Remove the brake caliper piston compressor tool.

15. Apply a thin coat of M-77 assembly paste (P/N 08798- 9010) to the pad side of the shims (A), the back of the brake pads (B) and the other areas indicated by the arrows. Wipe excess assembly paste off the pad shims and the brake pads friction material. Keep grease and assembly paste off the brake disc and the brake pads. Contaminated brake disc or brake pads reduce stopping ability.

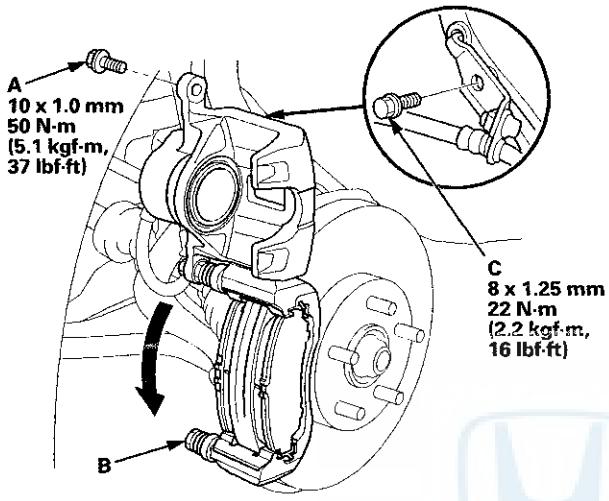


16. Install the brake pads and the pad shims correctly. Install the brake pad with the wear indicator (C) on the upper inside. If you are reusing the brake pads, always reinstall the brake pads in their original positions to prevent a temporary loss of braking efficiency.

(cont'd)

Front Brake Pad Inspection and Replacement (cont'd)

17. Pivot the caliper down into position. Install the flange bolt (A), and tighten it to the specified torque while holding the caliper pin (B) with a wrench being careful not to damage the pin boot.



18. Install the brake hose mounting bolt (C).
19. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheels.
20. Press the brake pedal several times to make sure the brakes work.

    NOTE: Engagement may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

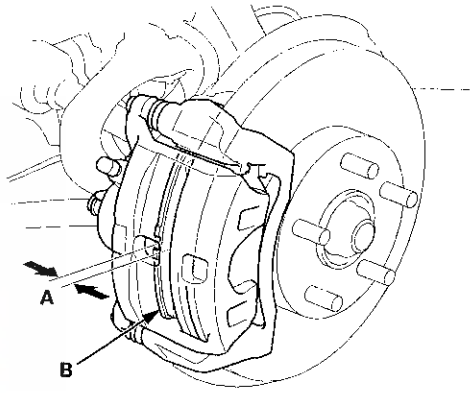
21. Add brake fluid as needed.
22. After installation, check for leaks at hose and line joints or connections, and retighten if necessary. Test-drive the vehicle, then recheck for leaks (see page 19-39).

Inspection - AKEBONO Type

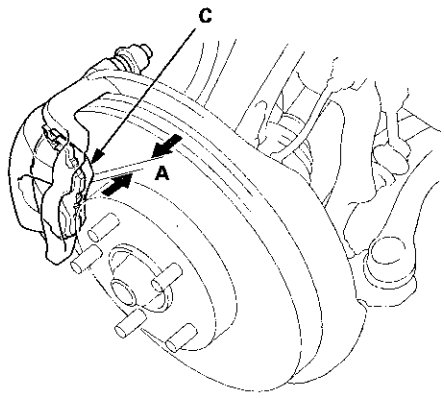
1. Raise and support the vehicle (see page 1-13).
2. Remove the front wheels.
3. Check the thickness (A) of the inner pad (B) and the outer pad (C). Do not include the thickness of the backing plate.

Brake pad thickness:
Standard: 10.5—10.8 mm (0.41—0.43 in)
Service limit: 1.6 mm (0.06 in)

Inner pad



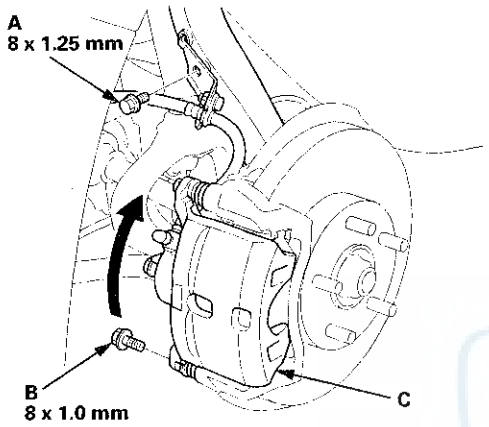
Outer pad



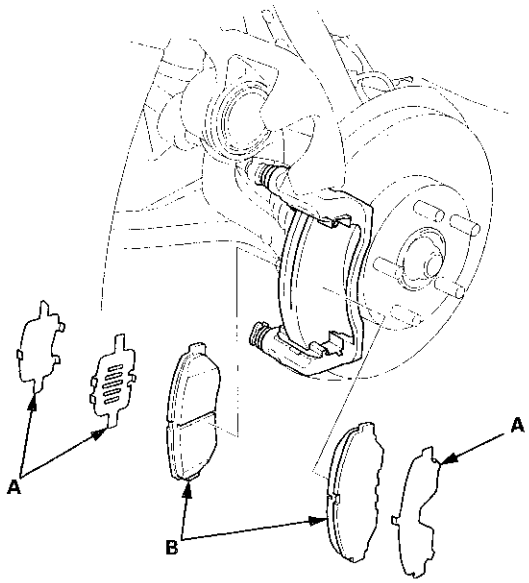
4. If any part of the brake pad thickness is less than the service limit, replace the front brake pads as a set.
5. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheels.

Replacement - AKEBONO Type

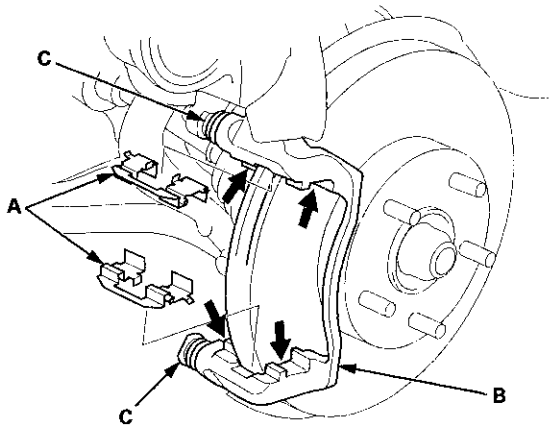
1. Remove some brake fluid from the master cylinder.
2. Raise and support the vehicle (see page 1-13).
3. Remove the front wheels.
4. Remove the brake hose mounting bolt (A).



5. Remove the flange bolt (B), and pivot the caliper (C) up out of the way. Check the hose and the pin boots for damage and deterioration.
6. Remove the pad shims (A) and the brake pads (B).



7. Remove the pad retainers (A).

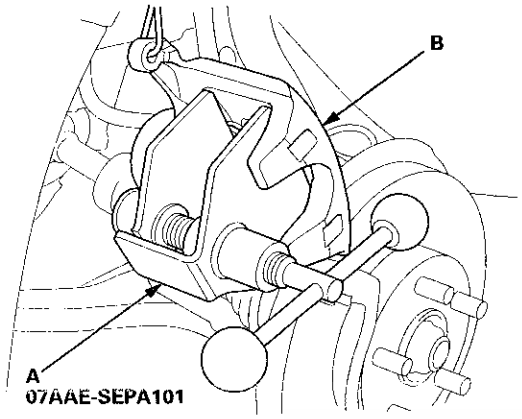


8. Clean the caliper bracket (B) thoroughly; remove any rust, and check for grooves and cracks. Verify that the caliper pins (C) move in and out smoothly. Clean and lube if needed.
9. Inspect the brake disc for runout, thickness, parallelism (see page 19-19), and check for damage and cracks.
10. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the retainer mating surface of the caliper bracket (indicated by the arrows).
11. Install the pad retainers. Wipe excess assembly paste off the retainers. Keep the assembly paste off the brake disc and the brake pads.

(cont'd)

Front Brake Pad Inspection and Replacement (cont'd)

12. Install the brake caliper piston compressor tool (A) on the caliper body (B).

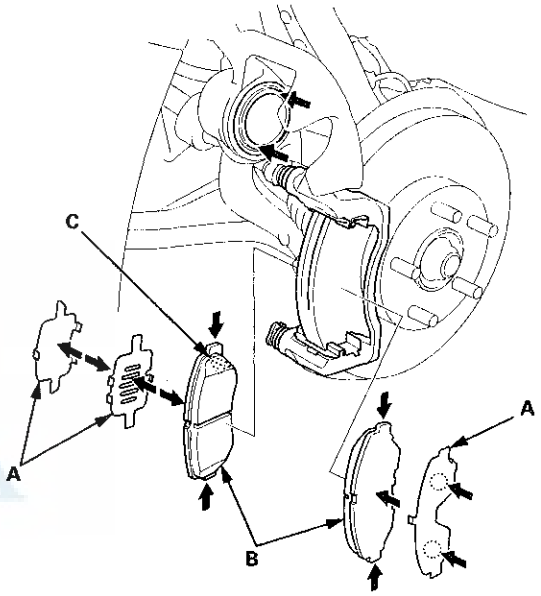


13. Press in the piston with the brake caliper piston compressor tool so the caliper will fit over the brake pads. Make sure the piston boot is in position to prevent damaging it when pivoting the caliper down.

    NOTE: Be careful when pressing in the piston; brake fluid might overflow from the master cylinder's reservoir. If brake fluid gets on any painted surface, wash it off immediately with water.

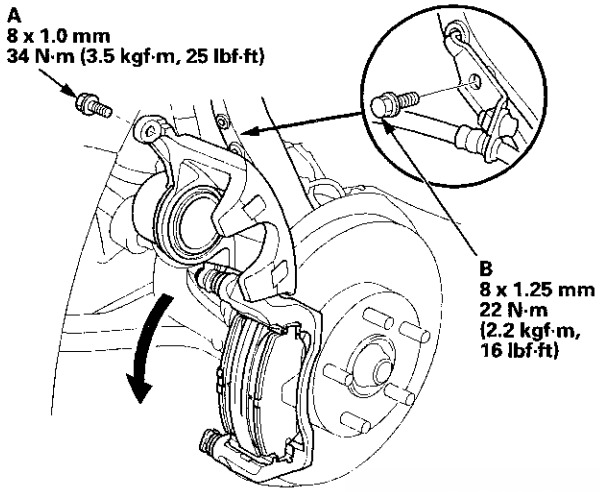
14. Remove the brake caliper piston compressor tool.

15. Apply a thin coat of M-77 assembly paste (P/N 08798- 9010) to the pad side of the shims (A), the back of the brake pads (B) and the other areas indicated by the arrows. Wipe excess assembly paste off the pad shims and the brake pads friction material. Keep grease and assembly paste off the brake disc and the brake pads. Contaminated brake disc or brake pads reduce stopping ability.



16. Install the brake pads and the pad shims correctly. Install the brake pad with the wear indicator (C) on the upper inside. If you are reusing the brake pads, always reinstall the brake pads in their original positions to prevent a temporary loss of braking efficiency.

17. Pivot the caliper down into position. Install the flange bolt (A), and tighten it to the specified torque.



18. Install the brake hose mounting bolt (B).
19. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheels.
20. Press the brake pedal several times to make sure the brakes work.

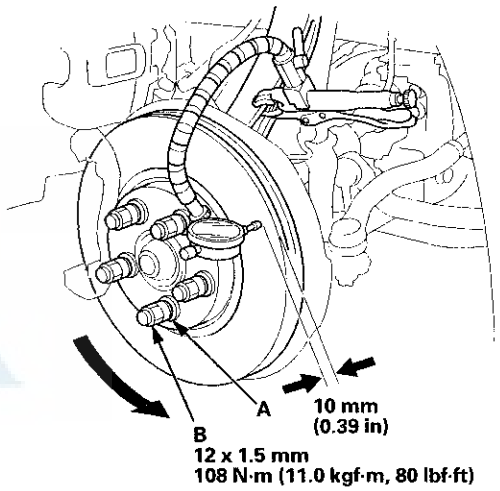
    NOTE: Engagement may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

21. Add brake fluid as needed.
22. After installation, check for leaks at hose and line joints or connections, and retighten if necessary. Test-drive the vehicle, then recheck for leaks (see page 19-39).

Front Brake Disc Inspection

Runout

1. Raise and support the vehicle (see page 1-13).
2. Remove the front wheels.
3. Remove the brake pads: NISSIN type (see page 19-14), AKEBONO type (see page 19-17).
4. Inspect the brake disc to wheel surface for damage and cracks. Clean the brake disc thoroughly, and remove all rust.
5. Install suitable flat washers (A) and the wheel nuts (B), and tighten the wheel nuts to the specified torque to hold the brake disc securely against the hub.



6. Set up the dial gauge against the brake disc as shown, and measure the runout at 10 mm (0.39 in) from the outer edge of the brake disc.

Brake disc runout:
Service limit: 0.04 mm (0.0016 in)

(cont'd)

Front Brake Disc Inspection (cont'd)

7. If the brake disc is beyond the service limit, refinish the brake disc with a Honda-approved commercially available on-car brake lathe.

   Max. refinishing limit:
   NISSIN type: 26.0 mm (1.02 in)
   AKEBONO type: 21.0 mm (0.83 in)

   NOTE:
   - If the brake disc is beyond the service limit for refinishing, replace it (see page 19-21).
   - If the brake disc is replaced with a new one, check the new disc for runout. If the new disc is out of specification, refinish the disc.

8. Install the brake pads: NISSIN type (see page 19-14), AKEBONO type (see page 19-17).

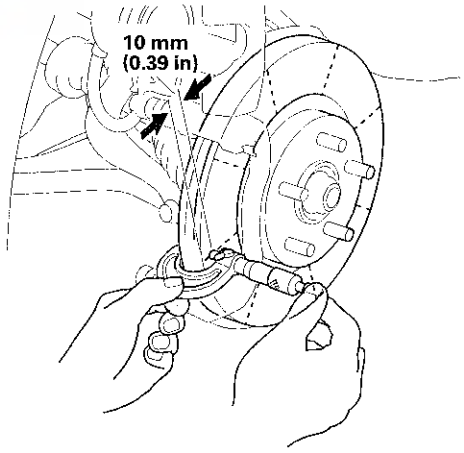
9. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheels.

Thickness and Parallelism

1. Raise and support the vehicle (see page 1-13).
2. Remove the front wheels.
3. Remove the brake pads: NISSIN type (see page 19-14), AKEBONO type (see page 19-17).
4. Using a micrometer, measure the brake disc thickness at eight points, about 45 ° apart and 10 mm (0.39 in) in from the outer edge of the brake disc. Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

   Brake disc thickness:
   Standard:
   NISSIN type: 27.9—28.1 mm (1.10—1.11 in)
   AKEBONO type: 22.9—23.1 mm (0.90—0.91 in)
   Max. refinishing limit:
   NISSIN type: 26.0 mm (1.02 in)
   AKEBONO type: 21.0 mm (0.83 in)
   Brake disc parallelism: 0.015 mm (0.0006 in) max.

   NOTE: This is the maximum allowable difference between the thickness measurements.



5. If the brake disc is beyond the service limit for parallelism, refinish the brake disc with a Honda-approved commercially available on-car brake lathe.

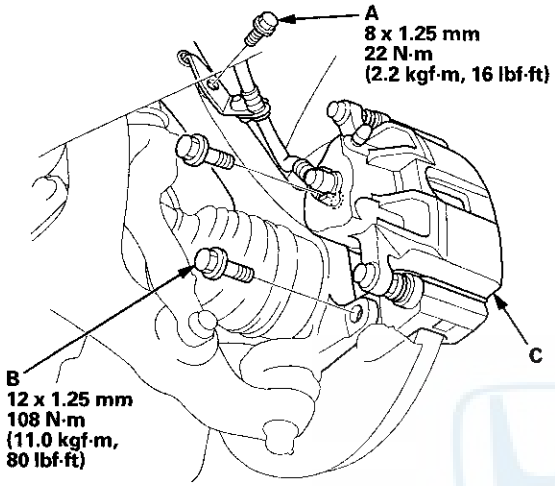
   NOTE: If the brake disc is beyond the service limit for refinishing, replace it (see page 19-21).

6. Install the brake pads: NISSIN type (see page 19-14), AKEBONO type (see page 19-17).
7. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheels.

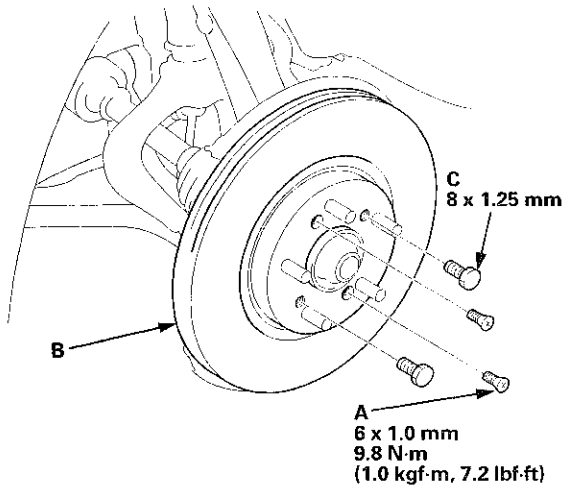
Front Brake Disc Replacement

NOTE: Keep any grease off the brake disc and the brake pads.

1. Raise and support the vehicle (see page 1-13).
2. Remove the front wheel.
3. Remove the brake hose mounting bolt (A).



4. Remove the brake caliper bracket mounting bolts (B), then remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or the 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 brake disc flathead screws (A).



6. Remove the brake disc (B) from the front hub.

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

7. Install the brake disc in the reverse order of removal.

   NOTE: Before installing the brake disc, clean the mating surfaces between the front hub and the inside of the brake disc.

8. Inspect the brake disc runout (see page 19-19).
9. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheel.

Front Brake Caliper Overhaul

⚠CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

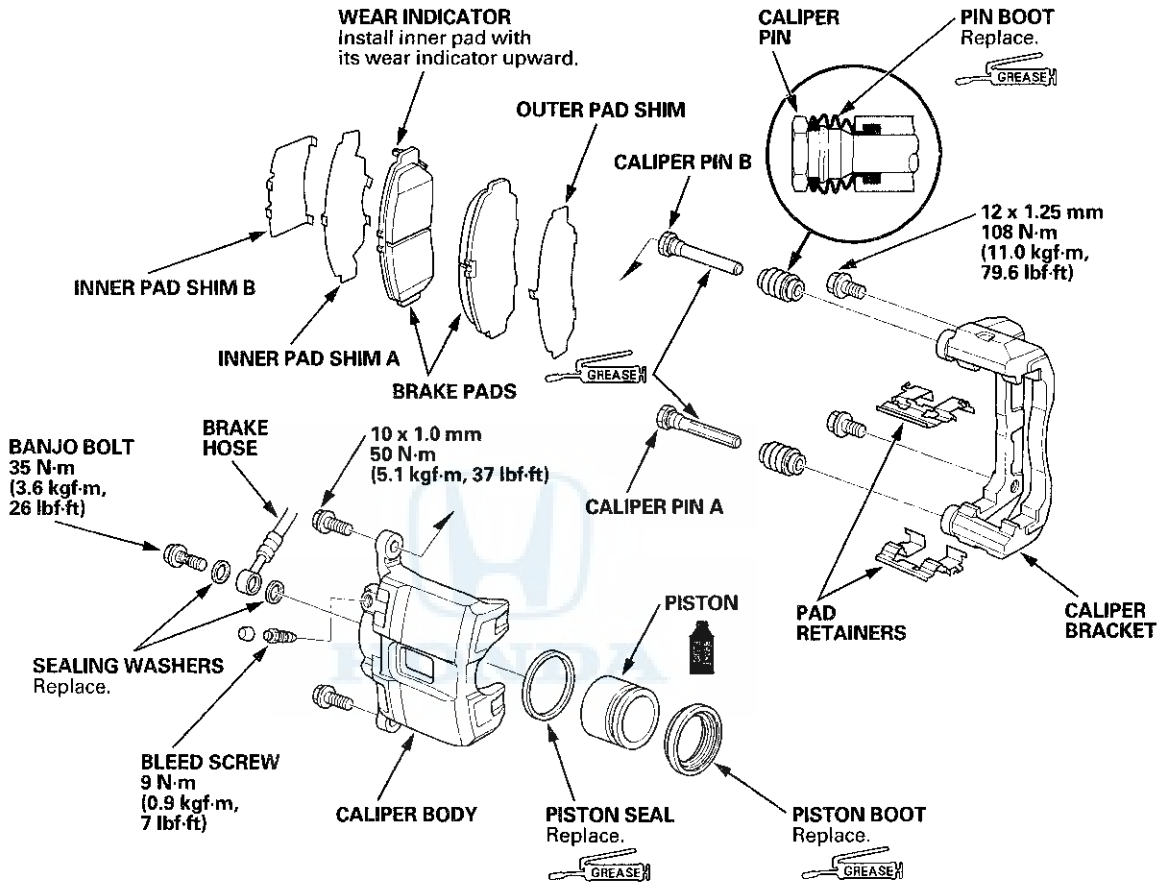
NISSIN Type

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

NOTE: Make sure that the caliper pins are installed correctly. Upper caliper pin B and lower caliper pin A are different. If these caliper pins are installed in the wrong location, it will cause vibration, uneven or rapid brake pad wear, and possibly uneven tire wear.

- Do not spill brake fluid on the vehicle; it may damage the paint. If brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with clean rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets in the brake fluid.
- Make sure no grease or oil gets on the brake discs or the pads.
- When reusing brake pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid. Use only new Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Coat the piston, the piston seal groove, and the caliper bore with clean brake fluid.
- Use recommended greases in the front caliper set.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.

GREASE : Honda silicone grease (P/N 08C30-B0234M)



(cont'd)

Front Brake Caliper Overhaul (cont'd)

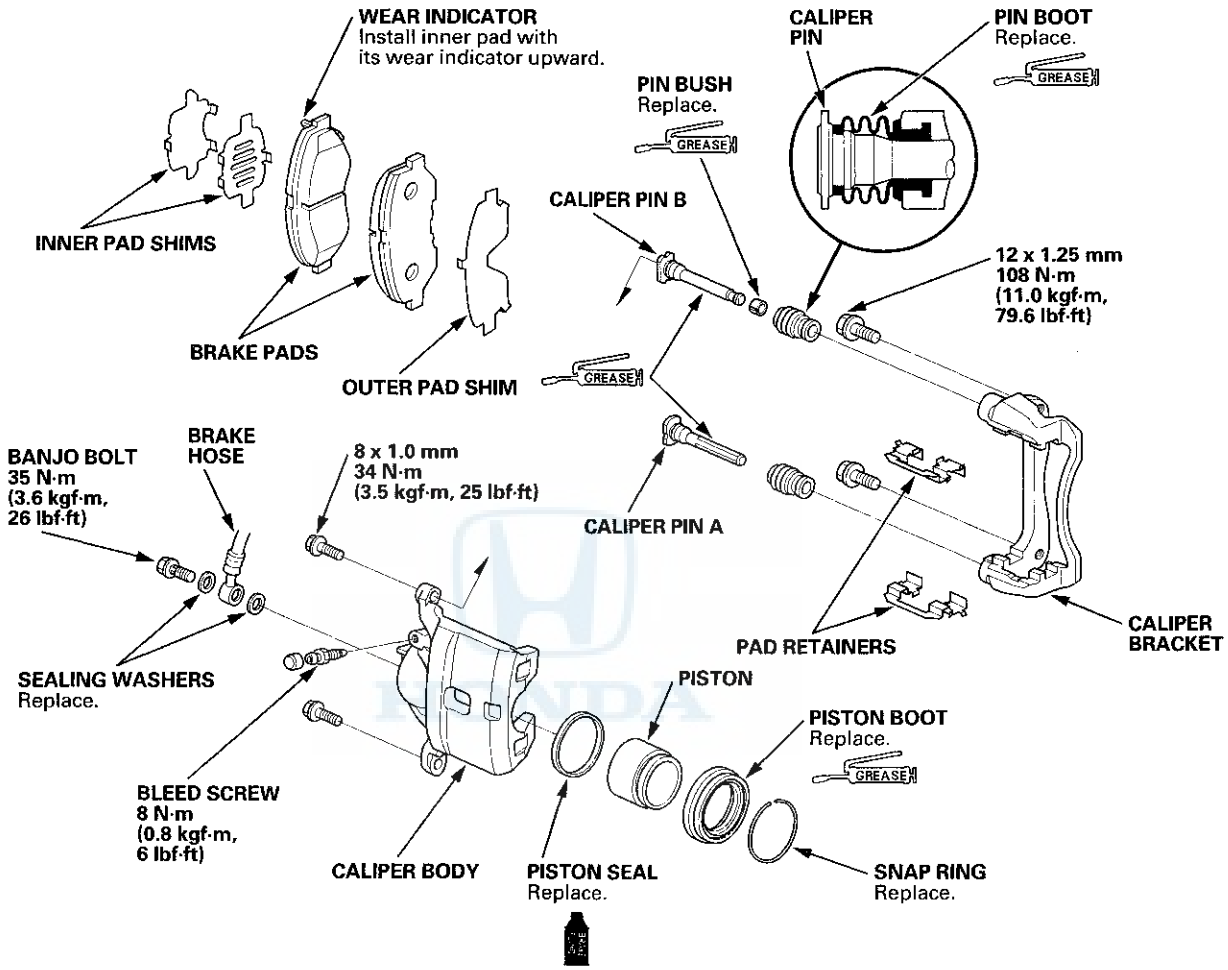
AKEBONO Type

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

NOTE: Make sure that the caliper pins are installed correctly. Upper caliper pin B and lower caliper pin A are different. If these caliper pins are installed in the wrong location, it will cause vibration, uneven or rapid brake pad wear, and possibly uneven tire wear.

- Do not spill brake fluid on the vehicle; it may damage the paint. If brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with clean rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets in the brake fluid.
- Make sure no grease or oil gets on the brake discs or the pads.
- When reusing brake pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid. Use only new Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Coat the piston, the piston seal groove, and the caliper bore with clean brake fluid.
- Use recommended greases in the front caliper set.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.

GREASE : Honda silicone grease (P/N 08C30-B0234M)

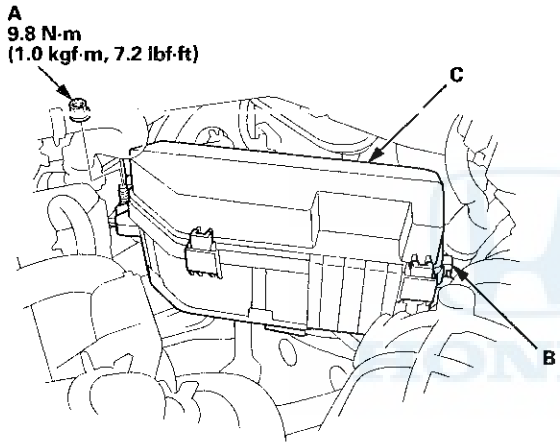


Master Cylinder Replacement

NOTICE

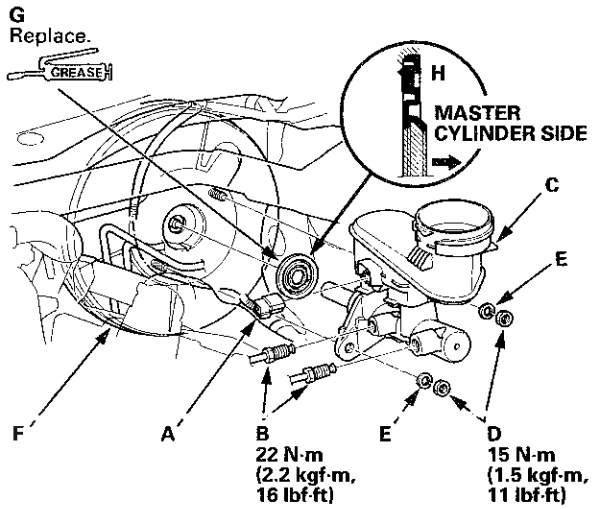
- Do not spill brake fluid on the vehicle; it may damage the paint. If brake fluid gets on the paint, wash it off immediately with water.
- Be careful not to damage or bend the brake lines during removal and installation.
- After removal, plug the ends of the hoses and the joints to prevent spilling brake fluid.

1. Remove the under-hood fuse/relay box mount nut (A) and release the clip (B), then move the under-hood fuse/relay box (C) aside.



2. Remove the reservoir cap and the brake fluid from the master cylinder reservoir with a syringe.

3. Disconnect the brake fluid level switch connector (A).



4. Disconnect the brake lines (B) from the master cylinder (C). To prevent spills, cover the hose joints with clean rags or shop towels.

5. Remove the master cylinder mounting nuts (D) and the washers (E).

6. Remove the master cylinder from the brake booster (F). Be careful not to bend or damage the brake lines when removing the master cylinder.

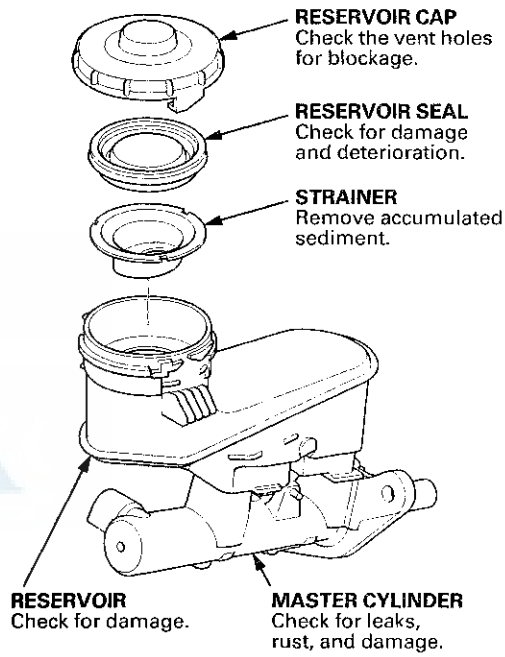
7. Remove the rod seal (G) from the master cylinder.

   NOTE: During installation, set a new rod seal onto the master cylinder with its grooved side (H) toward the master cylinder.

8. Install the master cylinder in the reverse order of removal, and note these items:
   - Coat the inner bore lip and the outer circumference of the new rod seal with the Shin-Etsu silicone grease (P/N 08798-9013).
   - Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.
   - Check the brake pedal height and free play after installing the master cylinder, and adjust it if necessary (see page 19-6).
9. Bleed the brake system (see page 19-9).
10. Spin the wheels to check for brake drag.

Master Cylinder Inspection

1. Remove the master cylinder (see page 19-26).
2. Inspect and note these items:
   - Before reassembling, check that all parts are free of dirt and other foreign particles.
   - Do not try to disassemble the master cylinder assembly. Replace the master cylinder assembly with a new part, if necessary.
   - Do not allow dirt or foreign matter to contaminate the brake fluid.



3. Install the master cylinder (see page 19-26).

Brake Booster Test

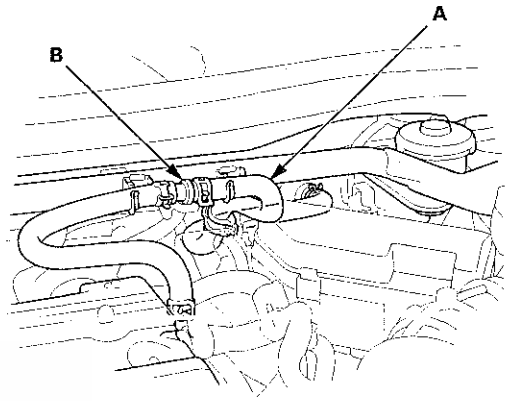
Functional Test

1. With the ignition switch in LOCK (0), press the brake pedal several times to deplete the vacuum reservoir, then press the brake pedal hard and hold it for 15 seconds. If the brake pedal sinks, either the master cylinder is bypassing internally or the brake system is leaking. Inspect the brake hoses and lines (see page 19-39).
2. Start the engine with the brake pedal pressed. If the brake pedal sinks slightly, the vacuum booster is operating normally. If the brake pedal height does not vary, do the brake system test (see page 19-4).

Leak Test

1. Press the brake pedal with the engine running, then turn the ignition switch to LOCK (0). The brake pedal height should not vary while pressed for 30 seconds.
   - If the pedal height rises, go to step 6.
   - If it does not rise, go to step 2.
2. Start the engine and let it idle for 30 seconds. Turn the ignition switch to LOCK (0), and wait 30 seconds. Press the brake pedal several times using normal pressure. When the pedal is first pressed, it should be low. On consecutive applications, the pedal height should gradually rise.
   - If it rises, the booster is OK.
   - If it does not rise, go to step 3.
3. Disconnect the brake booster vacuum hose (A) at the booster. The check valve (B) is built into the hose.

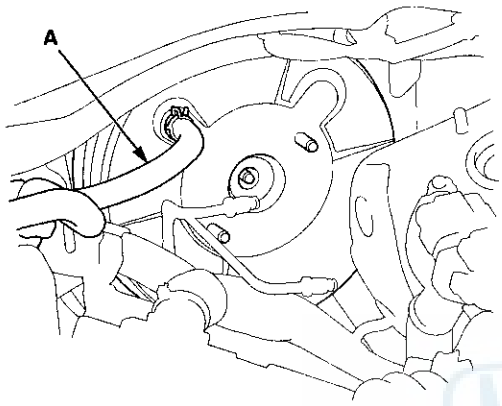
   NOTE: If the check valve is faulty, replace the brake booster vacuum hose/check valve as an assembly.



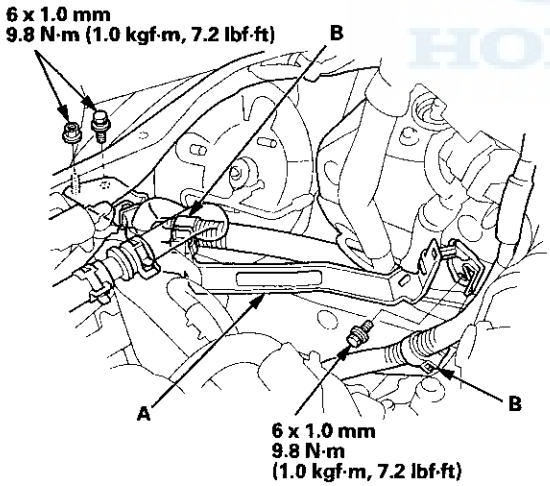
4. Start the engine, and let it idle. There should be vacuum available.
   - If no vacuum is available, the check valve is not working properly. Replace the brake booster vacuum hose and the check valve, and retest.
   - If vacuum is found, go to step 5.
5. With the ignition switch in LOCK (0), reconnect the vacuum hose to the brake booster.
6. Start the engine, and then pinch the brake booster vacuum hose between the check valve and the booster.
7. Turn the ignition switch to LOCK (0), and wait 30 seconds. Press the brake pedal several times using normal pressure. When the pedal is first pressed, it should be low. On consecutive applications, the pedal height should gradually rise.
   - If the pedal position does not vary, inspect the seal between the master cylinder and the booster. If the seal is OK, replace the brake booster.
   - If the pedal position varies, replace the brake booster vacuum hose/check valve as an assembly.

Brake Booster Replacement

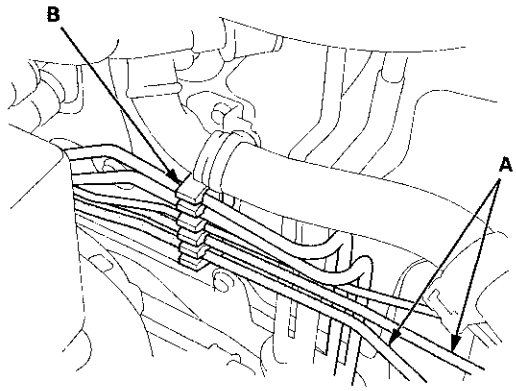
1. Remove the cowl cover (see page 20-278).
2. Remove the strut brace (if equipped) (see page 20-306).
3. Remove the master cylinder (see page 19-26).
4. Disconnect the brake booster vacuum hose (A) from the brake booster.



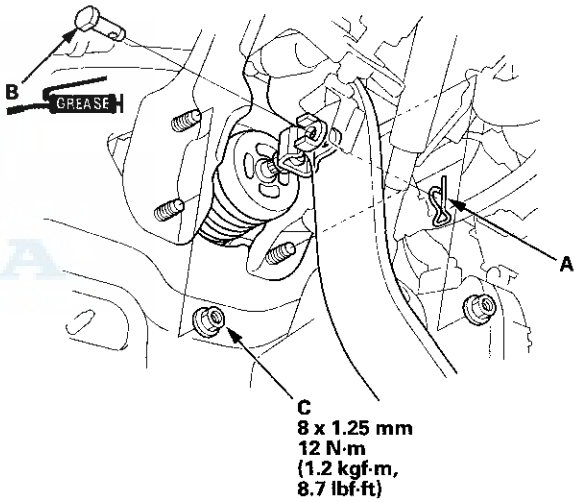
5. Remove the under-hood fuse/relay box bracket (A), then remove the engine wire harness clamps (B).



6. Remove the brake lines (A) from the hose clamp (B).



7. Remove the lock pin (A) and the clevis pin (B), then disconnect the yoke from the brake pedal.



8. Remove the brake booster mounting nuts (C).

(cont'd)

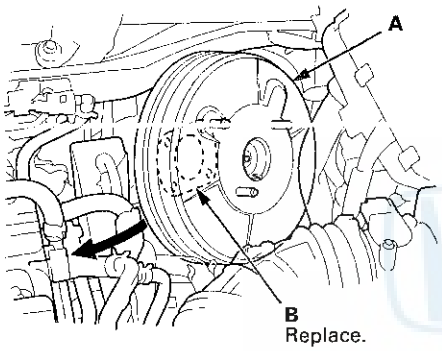
Brake Booster Replacement (cont'd)

9. Remove the brake booster (A) from the engine compartment.

NOTICE

- Be careful not to damage the brake booster mounting surfaces and the threads on the booster studs.
- Be careful not to bend or damage the brake lines.

NOTE: Use the new brake booster gasket (B) during reassembly.



10. Install the brake booster in the reverse order of removal, and note these items:
    - Install the master cylinder after installing the brake booster (see page 19-26).
    - Check the brake pedal height and free play after installing the master cylinder, and adjust it if necessary (see page 19-6).
    - Bleed the brake system (see page 19-9).

Rear Brake Pad Inspection and Replacement

⚠CAUTION

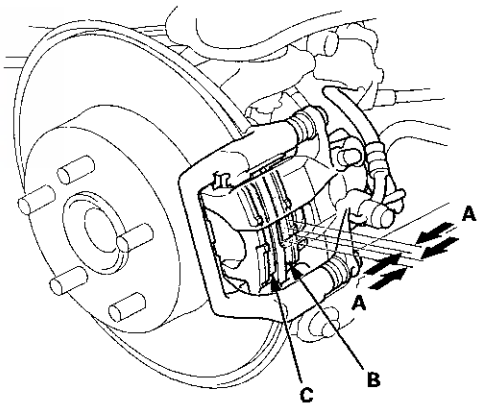
Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Inspection

1. Raise and support the vehicle (see page 1-13).
2. Remove the rear wheels.
3. Check the thickness (A) of the inner pad (B) and the outer pad (C). Do not include the thickness of the backing plate.

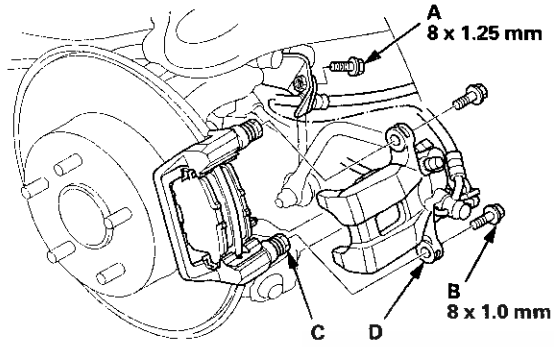
Brake pad thickness:
Standard: 8.3—9.0 mm (0.33—0.35 in)
Service limit: 1.0 mm (0.04 in)



4. If any part of the brake pad thickness is less than the service limit, replace the rear brake pads as a set.
5. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the rear wheels.

Replacement

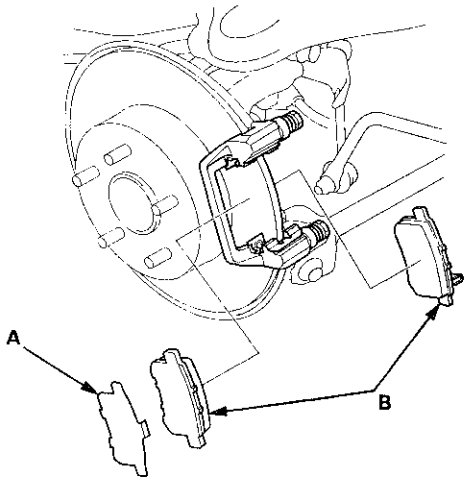
1. Remove some brake fluid from the master cylinder.
2. Raise and support the vehicle (see page 1-13).
3. Remove the rear wheels.
4. Remove the brake hose mounting bolt (A).



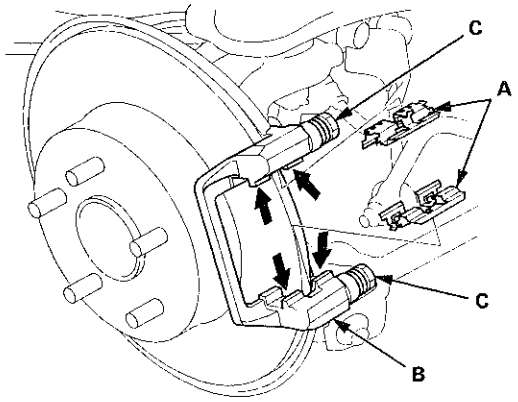
5. Remove the flange bolts (B) while holding respective caliper pins (C) with a wrench. Be careful not to damage the pin boot, and remove the caliper (D). Check the hose, the pin boots, and the parking brake cable boots for damage and deterioration.

   NOTE: Do not twist the brake hose and the parking brake cable to prevent damage.

6. Remove the pad shim (A) and the brake pads (B).



7. Remove the pad retainers (A).

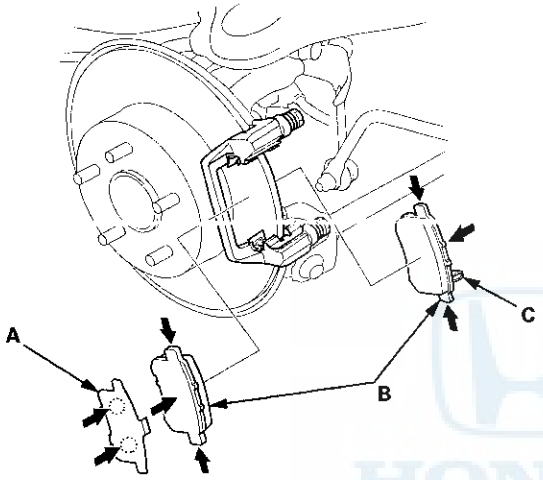


8. Clean the caliper bracket (B) thoroughly; remove any rust, and check for grooves and cracks. Verify that the caliper pins (C) move in and out smoothly. Clean and lube if needed.
9. Inspect the brake disc for runout, thickness, parallelism (see page 19-33), and check for damage and cracks.
10. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the retainer mating surface of the caliper bracket (indicated by the arrows).
11. Install the pad retainers. Wipe excess assembly paste off the retainers. Keep the assembly paste off the brake disc and the brake pads.

(cont'd)

Rear Brake Pad Inspection and Replacement (cont'd)

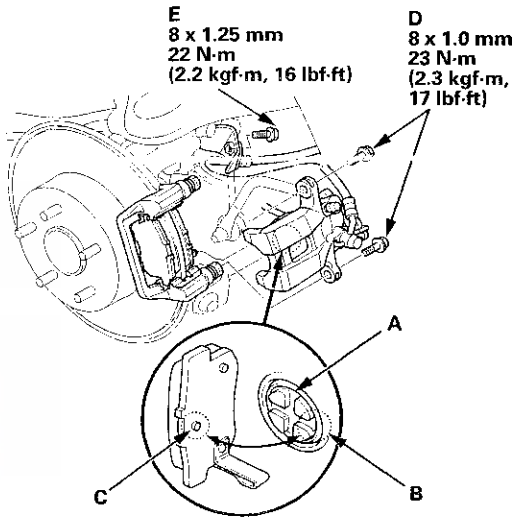
12. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the pad side of the shim (A), the back of the brake pads (B), and the other areas indicated by the arrows. Wipe excess assembly paste off the pad shim and the brake pads friction material. Keep grease and assembly paste off the brake disc and the brake pads. Contaminated brake disc or brake pads reduce stopping ability.



13. Install the brake pads and pad shim correctly. Install the brake pad with the wear indicator (C) on the bottom inside. If you are reusing the brake pads, always reinstall the brake pads in their original positions to prevent a temporary loss of braking efficiency.

14. Rotate the caliper piston (A) clockwise into the cylinder, then align the cutout (B) in the piston with the tab (C) on the inner pad by turning the piston back. Lubricate the boot with rubber grease to avoid twisting the piston boot. If the piston boot is twisted, back it out so it is positioned properly.

    NOTE: Be careful when moving the piston back in the caliper; brake fluid might overflow from the master cylinder's reservoir. If brake fluid gets on any painted surface, wash it off immediately with water.



15. Install the caliper. Install the flange bolts (D), and tighten it to the specified torque while holding the respective caliper pins with a wrench being careful not to damage the pin boots and parking brake cable boots.

16. Install the brake hose mounting bolt (E).

17. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the rear wheels.

18. Press the brake pedal several times to make sure the brakes work.

    NOTE: Engagement may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

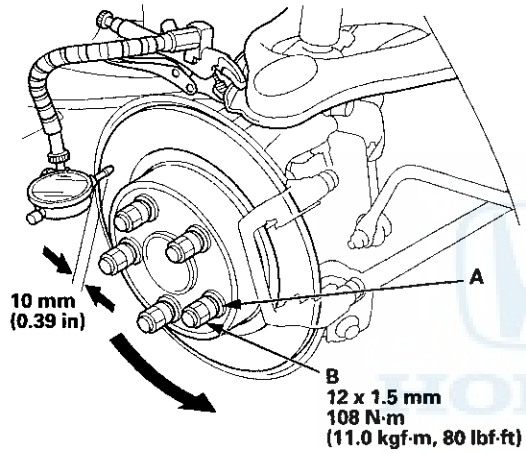
19. Add brake fluid as needed.

20. After installation, check for leaks at hose and line joints or connections, and retighten if necessary. Test-drive the vehicle, then recheck for leaks (see page 19-39).

Rear Brake Disc Inspection

Runout

1. Raise and support the vehicle (see page 1-13).
2. Remove the rear wheels.
3. Remove the brake pads (see page 19-31).
4. Inspect the brake disc to wheel surface for damage and cracks. Clean the brake disc thoroughly, and remove all rust.
5. Install suitable flat washers (A) and the wheel nuts (B), and tighten the wheel nuts to the specified torque to hold the brake disc securely against the hub.



6. Set up the dial gauge against the brake disc as shown, and measure the runout at 10 mm (0.39 in) from the outer edge of the brake disc.

   Brake disc runout:
   Service limit: 0.04 mm (0.0016 in)

7. If the brake disc is beyond the service limit, refinish the brake disc with a Honda-approved commercially available on-car brake lathe.

   Max. refinishing limit: 8.0 mm (0.31 in)

   NOTE:
   - If the brake disc is beyond the service limit for refinishing, replace it (see page 19-34).
   - If the brake disc is replaced with a new one, check the new disc for runout. If the new disc is out of specification, refinish the disc.

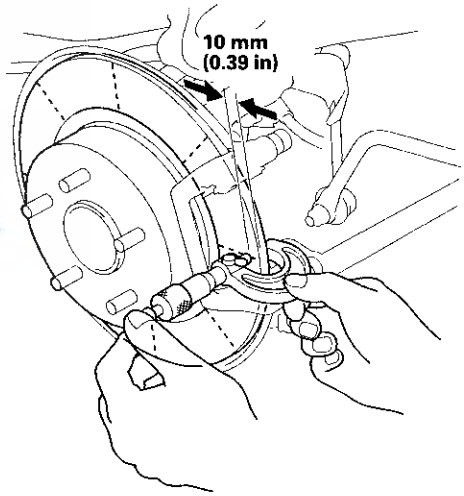
8. Install the brake pads (see page 19-31).
9. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the rear wheels.

Thickness and Parallelism

1. Raise and support the vehicle (see page 1-13).
2. Remove the rear wheels.
3. Remove the brake pads (see page 19-31).
4. Using a micrometer, measure the brake disc thickness at eight points, about 45 ° apart and 10 mm (0.39 in) in from the outer edge of the brake disc. Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

   Brake disc thickness:
   Standard: 8.9—9.1 mm (0.35—0.36 in)
   Max. refinishing limit: 8.0 mm (0.31 in)
   Brake disc parallelism:
   0.015 mm (0.0006 in) max.

   NOTE: This is the maximum allowable difference between the thickness measurements.



5. If the brake disc is beyond the service limit for parallelism, refinish the brake disc with a Honda-approved commercially available on-car brake lathe.

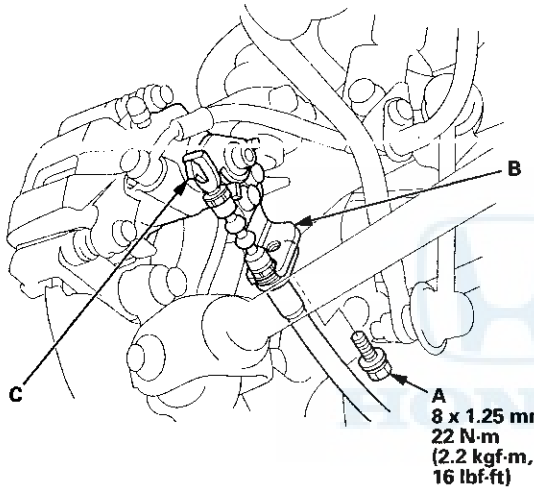
   NOTE: If the brake disc is beyond the service limit for refinishing, replace it (see page 19-34).

6. Install the brake pads (see page 19-31).
7. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the rear wheels.

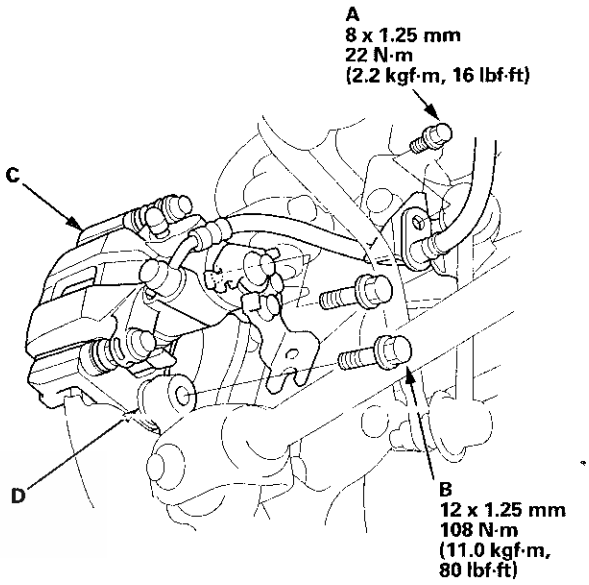
Rear Brake Disc Replacement

NOTE: Keep any grease off the brake disc and the brake pads.

1. Raise and support the vehicle (see page 1-13).
2. Remove the rear wheel.
3. Release the parking brake lever fully.
4. Loosen the parking brake cable adjusting nut (see page 19-8).
5. Remove the flange bolt (A) from the arm (B).



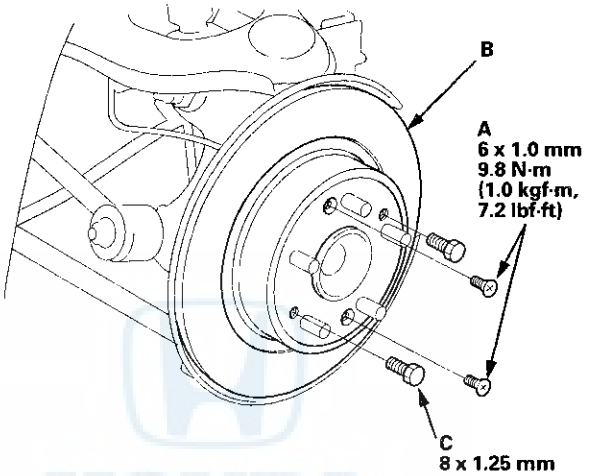
6. Disconnect the parking brake cable from the lever (C).
7. Remove the brake hose mounting bolt (A).



8. 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 and the parking brake cable excessively.

   NOTE: Make sure the washers (D) are in position on reassembly, if they are removed (see step 8 on page 18-39).

9. Remove the brake disc flathead screws (A).



10. Remove the brake disc (B) from the hub bearing unit.

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

11. Install the brake disc in the reverse order of removal, and note these items:
    - Adjust the parking brake (see page 19-8).
    - Before installing the brake disc, clean the mating surfaces between the hub bearing unit and the inside of the brake disc.

12. Inspect the brake disc runout (see page 19-33).

13. After install the brake caliper, make sure the clearance between the lower arm B and the parking brake cable is more than 5 mm (0.20 in).

14. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the rear wheel.

Rear Brake Caliper Overhaul

⚠CAUTION

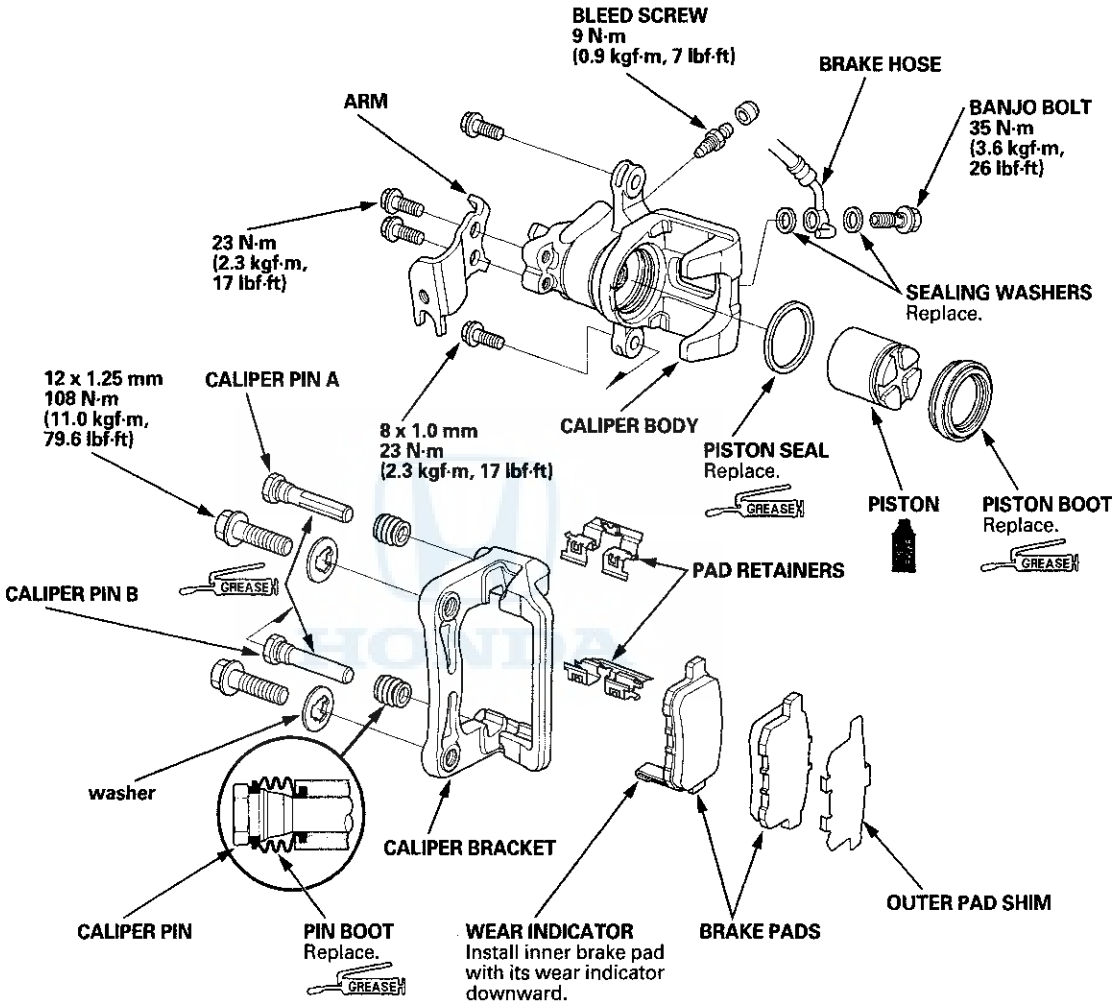
Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

NOTE: Make sure that the caliper pins are installed correctly. Upper caliper pin A and lower caliper pin B are different. If these caliper pins are installed in the wrong location, it will cause vibration, uneven or rapid brake pad wear, and possibly uneven tire wear.

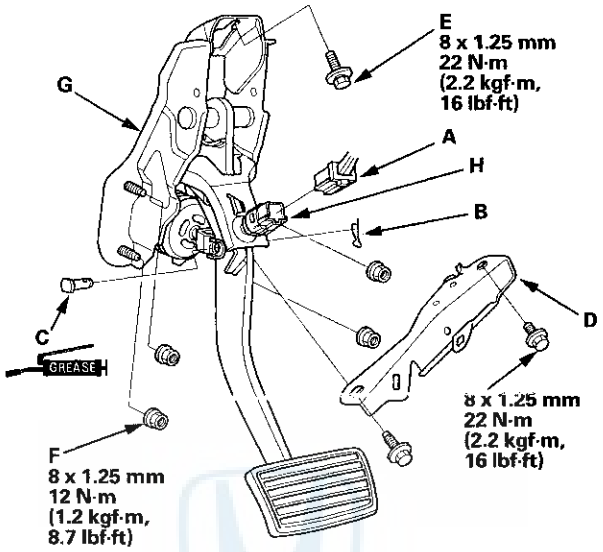
- Do not spill brake fluid on the vehicle; it may damage the paint. If brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with clean rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets in the brake fluid.
- Make sure no grease or oil gets on the brake discs or the pads.
- When reusing brake pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid. Use only new Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Coat the piston, the piston seal groove, and the caliper bore with clean brake fluid.
- Use recommended greases in the rear caliper set.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.

GREASE : Honda silicone grease (P/N 08C30-B0234M)



Brake Pedal Replacement

1. Disconnect the brake pedal position switch connector (A).

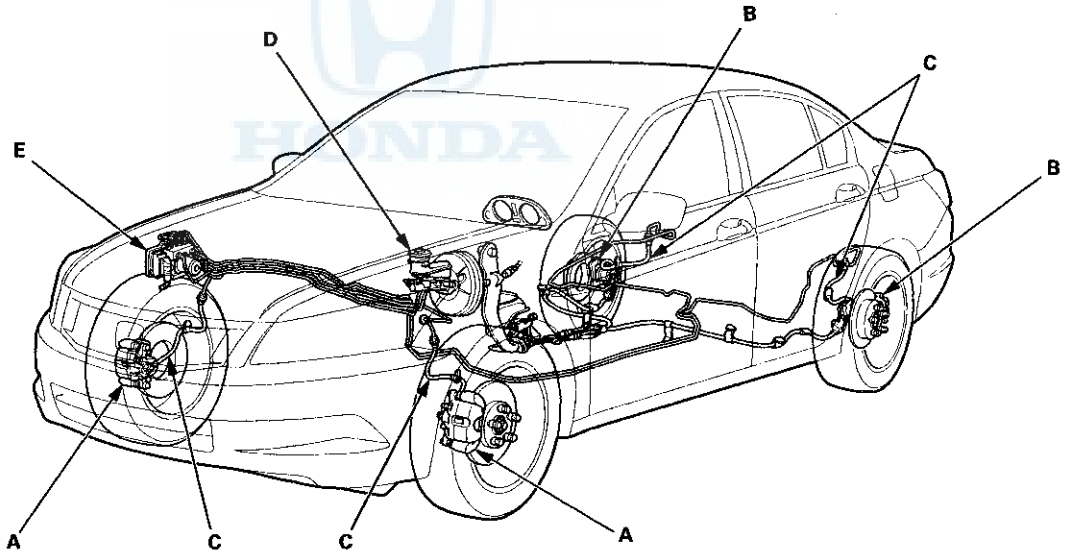


2. Remove the lock pin (B) and the clevis pin (C).
3. Remove the brake pedal support member (D).
4. Remove the brake pedal bracket mounting bolt (E) and nuts (F).
5. Remove the brake pedal with bracket (G).
6. Remove the brake pedal position switch (H) by turning it 45° counterclockwise.
7. Install in the reverse order of removal.
8. Adjust the brake pedal and the brake pedal position switch (see page 19-6).

Brake Hose and Line Inspection

1. Inspect the brake hoses for damage, deterioration, leaks, interference, and twisting.
2. Check the brake lines for damage, rusting, and leaks. Also check for bent brake lines.
3. Check for leaks at hose and line joints and connections, and retighten if necessary.
4. Check the master cylinder and the VSA modulator-control unit for damage and leaks.

Connection Point	Component	Connected to	Specified Torque Value	Note
A	Front brake caliper	Brake hose	35 N·m (3.6 kgf·m, 26 lbf·ft)	Banjo bolt
		Bleed screw (NISSIN type)	9 N·m (0.9 kgf·m, 7 lbf·ft)	
		Bleed screw (AKEBONO type)	8 N·m (0.8 kgf·m, 6 lbf·ft)	
B	Rear brake caliper	Brake hose	35 N·m (3.6 kgf·m, 26 lbf·ft)	Banjo bolt
		Bleed screw	9 N·m (0.9 kgf·m, 7 lbf·ft)	
C	Brake hose	Brake line	15 N·m (1.5 kgf·m, 11 lbf·ft)	Flare nut
D	Master cylinder	Brake line	22 N·m (2.2 kgf·m, 16 lbf·ft)	Flare nut
E	VSA modulator-control unit	Brake line (12 mm nut)	22 N·m (2.2 kgf·m, 16 lbf·ft)	Flare nut
		Brake line (10 mm nut)	15 N·m (1.5 kgf·m, 11 lbf·ft)	

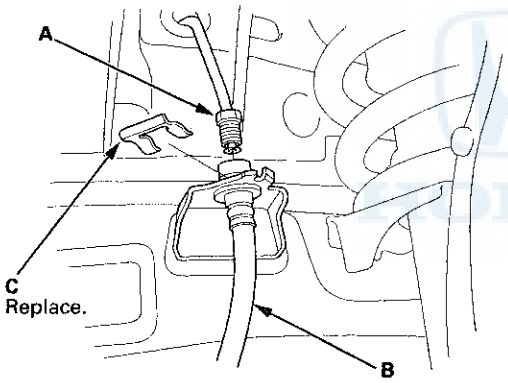


Brake Hose Replacement

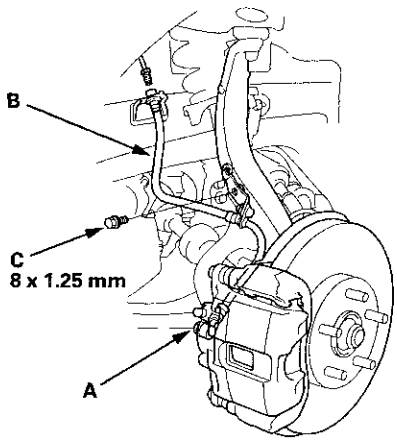
NOTE:
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Do not spill brake fluid on the vehicle; it may damage the paint. If brake fluid gets on the paint, wash it off immediately with water.
- After removal, plug the ends of the hoses and the joints to prevent spilling brake fluid.

Front

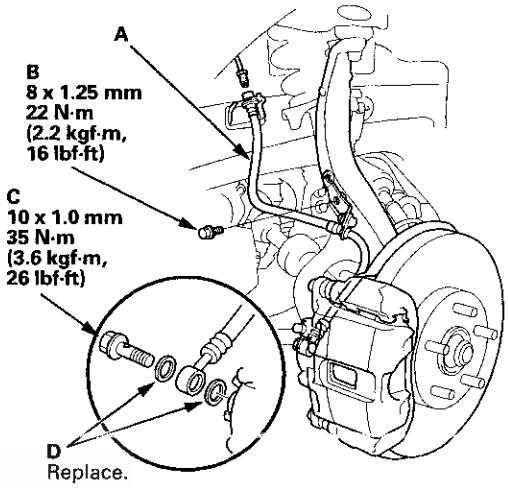
1. Raise and support the vehicle (see page 1-13).
2. Remove the front wheel.
3. Disconnect the brake line (A) from the brake hose (B), then remove the brake hose clip (C).



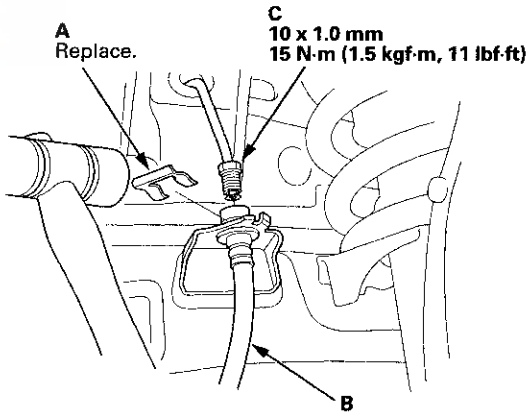
4. Remove the banjo bolt (A), and disconnect the brake hose (B) from the caliper.



5. Remove the brake hose mounting bolt (C), then remove the brake hose.
6. Install the brake hose (A) with the mounting bolt (B).



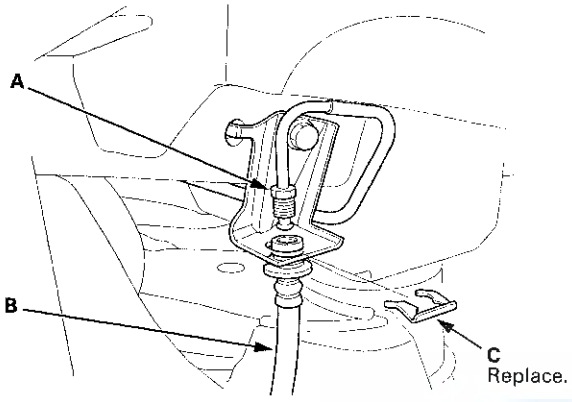
7. Connect the brake hose to the caliper with the banjo bolt (C) and new sealing washers (D).
8. Install the new brake hose clip (A) to the brake hose (B) on the bracket, then connect the brake line (C). Do not twist the brake hose.



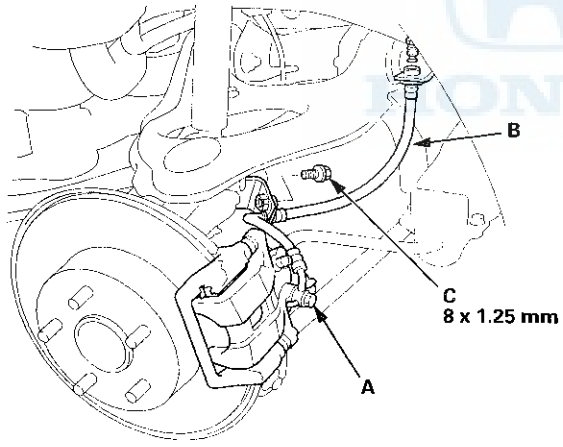
9. After installing the brake hose, bleed the brake system (see page 19-9).
10. Do the following checks:
    - Check the brake hose and line joint for leaks, and tighten if necessary.
    - Check the brake hoses for interference and twisting.
11. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheel.

Rear

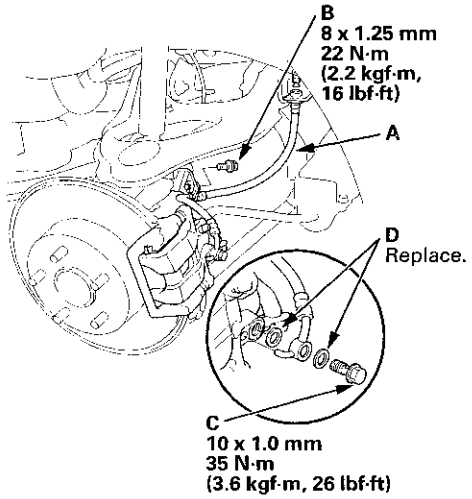
1. Raise and support the vehicle (see page 1-13).
2. Remove the rear wheel.
3. Disconnect the brake line (A) from the brake hose (B), then remove the brake hose clip (C).



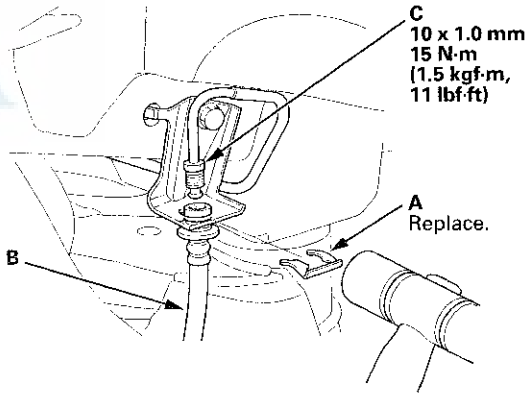
4. Remove the banjo bolt (A), and disconnect the brake hose (B) from the caliper.



5. Remove the brake hose mounting bolt (C), then remove the brake hose.
6. Install the brake hose (A) with the mounting bolt (B).



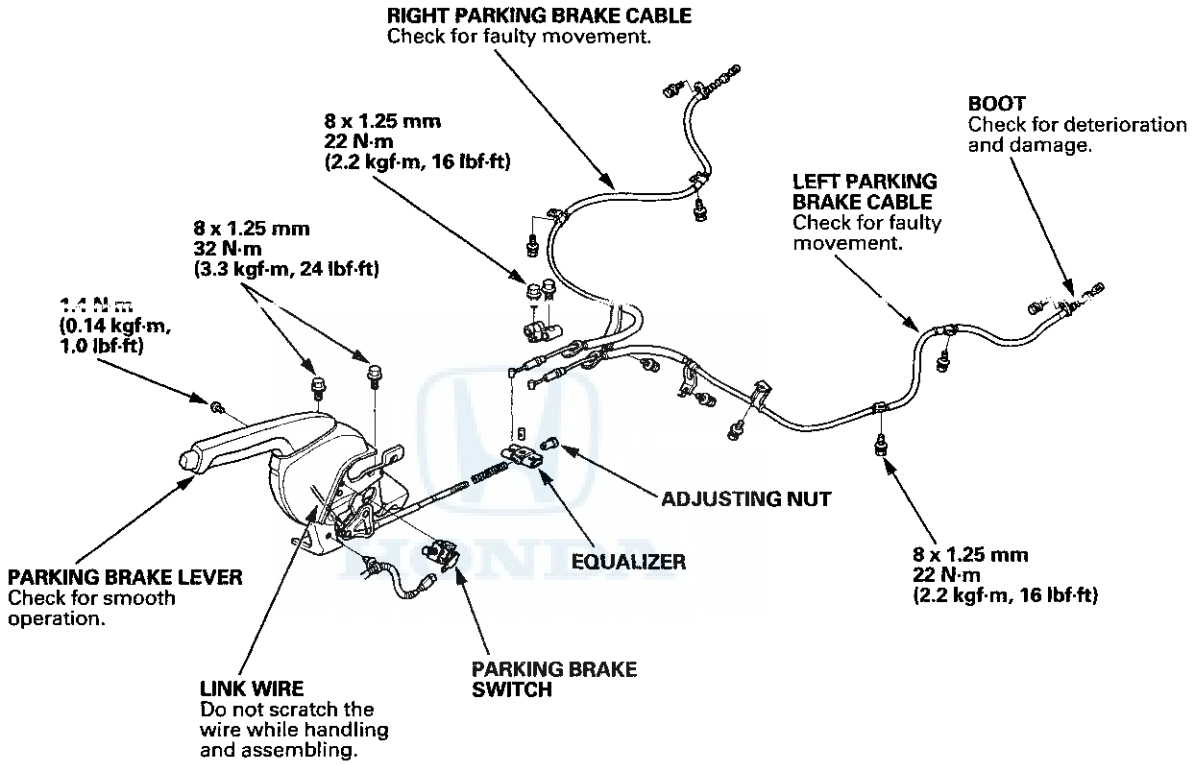
7. Connect the brake hose to the caliper with the banjo bolt (C) and new sealing washers (D).
8. Install the new brake hose clip (A) to the brake hose (B) on the bracket, then connect the brake line (C). Do not twist the brake hose.



9. After installing the brake hoses, bleed the brake system (see page 19-9).
10. Do the following checks:
    - Check the brake hose and line joint for leaks, and tighten if necessary.
    - Check the brake hose for interference and twisting.
11. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the rear wheel.

Parking Brake Cable Replacement

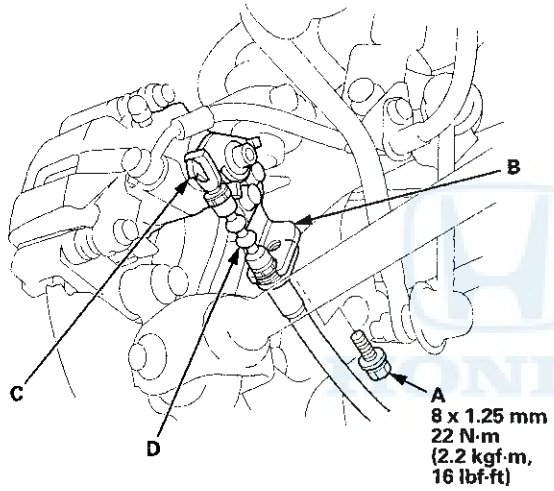
Exploded View



NOTE:

- The parking brake cables must not be bent or distorted. This will lead to stiff operation and premature cable failure.
- Refer to the Exploded View as needed during this procedure.

1. Release the parking brake lever fully.
2. Loosen the parking brake cable adjusting nut (see page 19-8).
3. Remove the flange bolt (A) from the arm (B).



4. Disconnect the parking brake cable from the lever (C).
5. Remove the parking brake cable mounting hardware, then remove the cable.
6. Install the parking brake cable in the reverse order of removal, and note these items:
   - Be careful not to bend or distort the cable and boot (D).
   - Make sure the clearance between the lower arm B and parking brake cable is more than 5 mm (0.20 in).
   - Adjust the parking brake (see page 19-8).

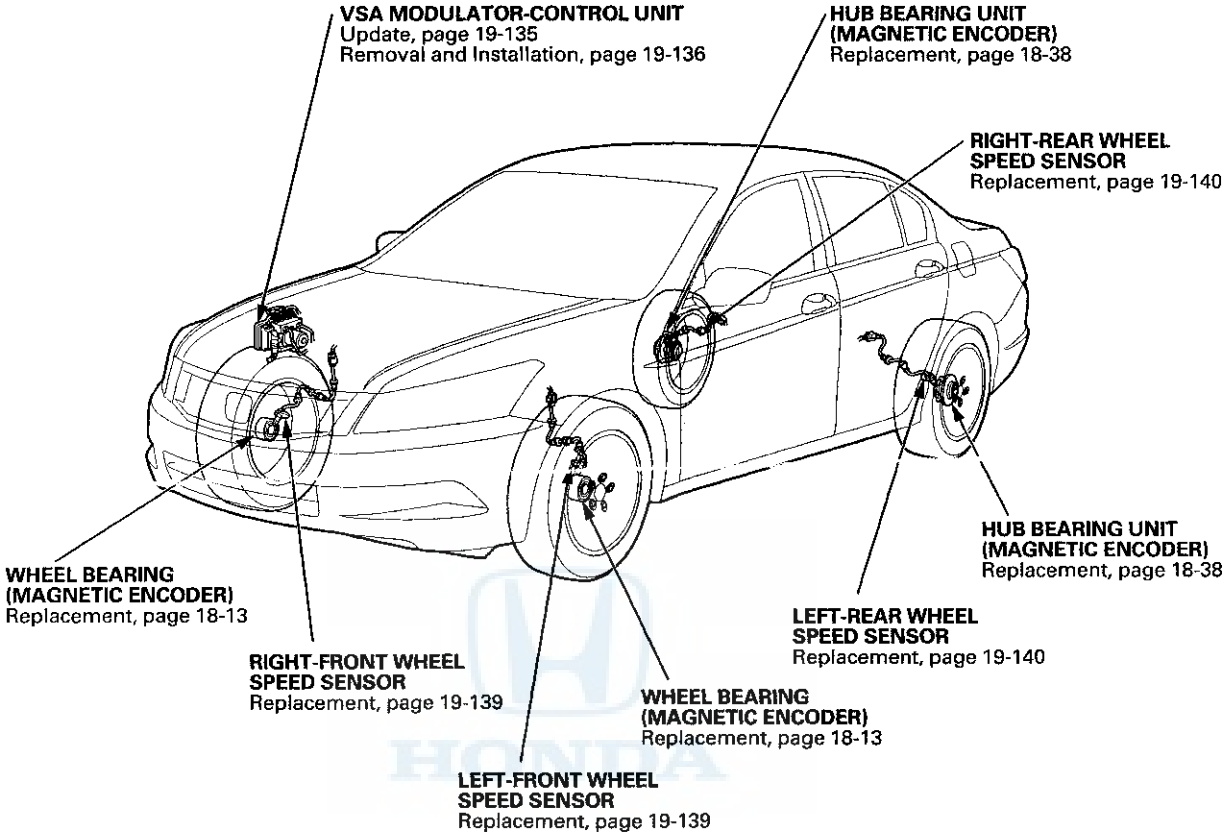
HONDA

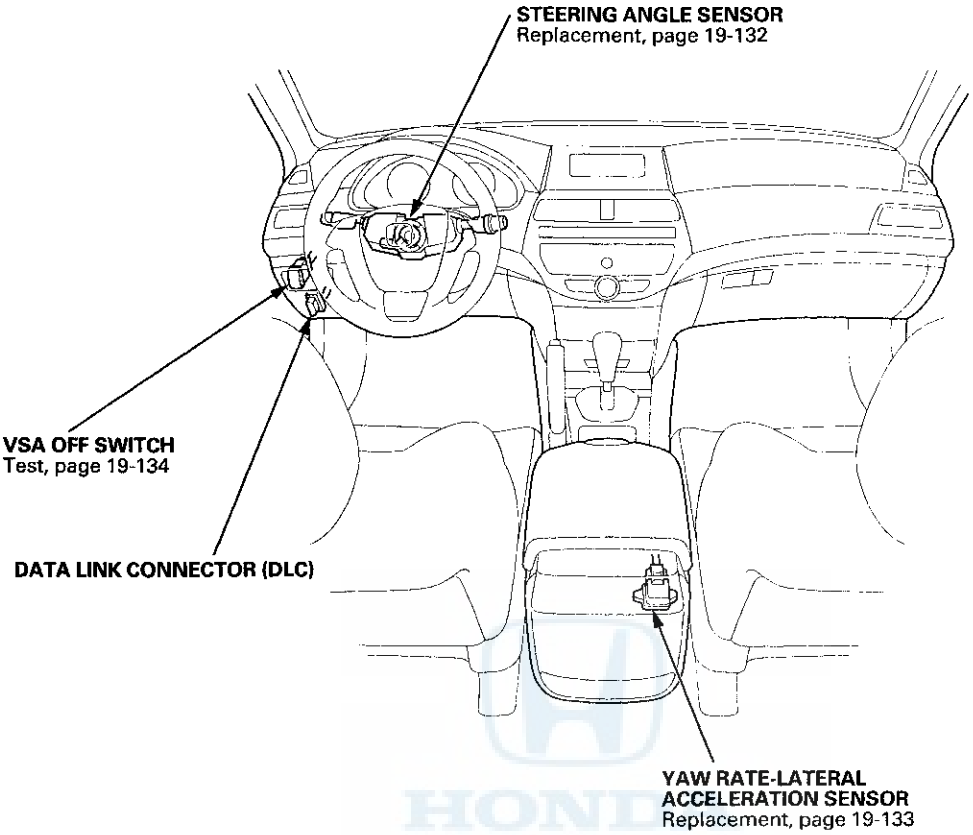
Brakes

VSA System Components

VSA System Components

Component Location Index




STEERING ANGLE SENSOR
Replacement, page 19-132
VSA OFF SWITCH
Test, page 19-134
DATA LINK CONNECTOR (DLC)
YAW RATE-LATERAL
ACCELERATION SENSOR
Replacement, page 19-133

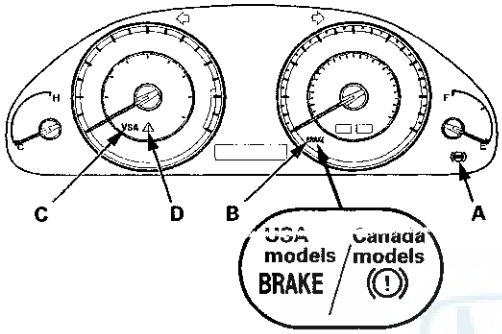
VSA System Components

General Troubleshooting Information

System Indicator

This system has four indicators:

- ABS indicator (A)
- Brake system indicator (B)
- VSA indicator (C)
- VSA activation indicator (D)



When the system is OK, each indicator comes on for about 2 seconds after turning the ignition switch to ON (II), then goes off.

When the system detects a problem, a DTC will set and, depending upon the failure, the VSA modulator-control unit determines which indicator(s) will turn on. If the problem goes away (system returns to normal), the indicator(s) will be controlled in the following way depending upon the DTC that was set:

- The indicator(s) will come on and stay on when the ignition switch is ON (II).
- The indicator(s) will automatically go off.
- The indicator(s) will go off after the vehicle is driven.

ABS Indicator

The ABS indicator comes on when the ABS function is lost. The brakes still work like a conventional system.

Brake System Indicator

The brake system indicator comes on when the EBD function is lost, the parking brake is applied, and/or the brake fluid level is low.

NOTE: If two or more wheel speed sensors fail, the brake system indicator comes on.

VSA Indicator

The VSA indicator comes on when the VSA function is lost.

VSA Activation Indicator

The VSA activation indicator blinks when the VSA function is activating. The VSA activation indicator comes on and stays on when the VSA is turned OFF by using the VSA OFF switch, or when the VSA function is lost.

Diagnostic Trouble Code (DTC)

- The memory can hold all DTCs. However, when the same DTC is detected more than once, the more recent DTC is written over the earlier one. Therefore, when the same problem is detected repeatedly, it is memorized as a single DTC.
- The DTCs are indicated in ascending number order, not in the order they occur.
- The DTCs are memorized in an EEPROM in the VSA modulator-control unit. Therefore, the memorized DTCs cannot be erased by disconnecting the battery. Do the specified procedures to clear the DTCs.

Self-diagnosis

- Self-diagnosis can be classified into two categories:
  - Initial diagnosis: Done right after the ignition switch is turned to ON (II) and until the ABS and VSA indicators go off.
  - Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned to LOCK (0).
- When the system detects a problem, the VSA modulator-control unit shifts to fail-safe mode.

Kickback

The pump motor operates when the VSA modulator-control unit is functioning, and the fluid in the reservoir is forced out to the master cylinder, causing kickback at the brake pedal.

Pump Motor

- The pump motor operates when the VSA modulator-control unit is functioning.
- The VSA modulator-control unit checks the pump motor operation one time after completing initial diagnosis during regular diagnosis when the vehicle is driven over 9 mph (15 km/h).

Brake Fluid Replacement/Air Bleeding

Brake fluid replacement and air bleeding procedures are identical to the procedures used on vehicles without the VSA system (see page 19-9).

How to Troubleshoot DTCs

The troubleshooting procedures assume that the cause of the problem is still present and the ABS and/or VSA indicator is still on. Following a troubleshooting procedure for a code that has been cleared but does not reset can result in incorrect diagnosis.

NOTE: Always troubleshoot powertrain DTCs first.

1. Question the customer about the conditions when the problem occurred, and try to reproduce the same conditions for troubleshooting. Find out when the ABS and/or VSA indicator came on, such as during activation, after activation, when the vehicle was traveling at a certain speed, etc. If necessary, have the customer demonstrate the concern.
2. When the ABS or VSA indicator does not come on during the test-drive, check for loose connectors, poor contact of the terminals, etc. in the circuit indicated by the DTC before you start troubleshooting.
3. After troubleshooting, or the repairs are done, clear the DTCs, and test-drive the vehicle under the same conditions that originally set the DTCs. Make sure the ABS and VSA indicators do not come on.
4. Check for DTCs from other systems which are connected via F-CAN. If there are DTCs that are related to F-CAN, one possible cause was that the ignition switch was turned to ON (II) with the VSA modulator-control unit connector disconnected. Clear the DTCs. Check for powertrain DTCs first.

Intermittent Failures

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If you cannot reproduce the condition, check for loose connections and terminals. Also check for ground and power connections related to the circuit that you are troubleshooting.

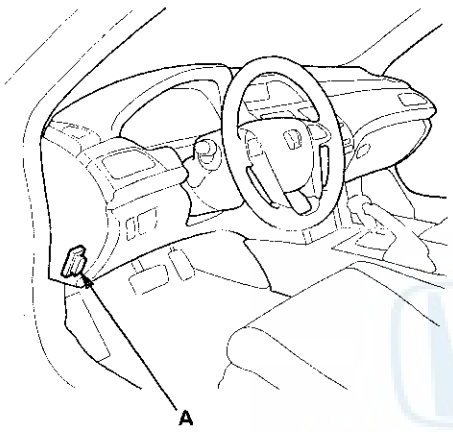
(cont'd)

General Troubleshooting Information (cont'd)

How to Use the HDS (Honda Diagnostic System)

NOTE: Make sure the battery is in good condition and fully charged.

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



2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-181).
4. Check the diagnostic trouble code (DTC) for all systems, troubleshoot the powertrain DTCs first and note it. Then refer to the indicated DTC's troubleshooting, and do the appropriate troubleshooting procedure.

   NOTE:
   - The HDS communication will be stopped when the vehicle speed is at 31 mph (50 km/h) or more.
   - The HDS reads the DTC, the current data, and other system data.
   - For specific operations, refer to the Help menu that came with the HDS.

How to Retrieve DTCs

1. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) under the driver's side of the dashboard.
2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't troubleshoot the DLC circuit (see page 11-181).
4. Follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the DTC troubleshooting. Do the all systems DTC check, and troubleshoot any powertrain DTCs first.
5. Turn the ignition switch to LOCK (0).

How to Clear DTCs

1. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) under the driver's side of the dashboard.
2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't troubleshoot the DLC circuit (see page 11-181).
4. Clear the DTC(s) by following the screen prompts on the HDS.
5. Turn the ignition switch to LOCK (0).

DTC Troubleshooting Index

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator	Note
11	-13	Right-front Wheel Speed Sensor Circuit Malfunction	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-71)
	-14	Right-front Wheel Speed Sensor Power Source Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-75)
12	-11	Right-front Wheel Speed Sensor Electrical Noise or Intermittent Interruption	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-76)
	-12	Right-front Wheel Speed Sensor Short to the Other Sensor Circuit	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-77)
	-21	Right-front Wheel Speed Sensor Installation Error	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-78)
	-22	Right-front Wheel Speed Sensor Installation Error (19 mph (30 km/h) or More)	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-79)
	-23	Right-front Wheel Speed Sensor Installation Error (0 to 9 mph (0 to 15 km/h))	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-79)
13	-13	Left-front Wheel Speed Sensor Circuit Malfunction	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-71)
	-14	Left-front Wheel Speed Sensor Power Source Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-75)
14	-11	Left-front Wheel Speed Sensor Electrical Noise or Intermittent Interruption	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-76)
	-12	Left-front Wheel Speed Sensor Short to the Other Sensor Circuit	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-77)
	-21	Left-front Wheel Speed Sensor Installation Error	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-78)
	-22	Left-front Wheel Speed Sensor Installation Error (19 mph (30 km/h) or More)	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-79)
	-23	Left-front Wheel Speed Sensor Installation Error (0 to 9 mph (0 to 15 km/h))	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-79)
15	-13	Right-rear Wheel Speed Sensor Circuit Malfunction	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-71)
	-14	Right-rear Wheel Speed Sensor Power Source Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-75)
16	-11	Right-rear Wheel Speed Sensor Electrical Noise or Intermittent Interruption	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-76)
	-12	Right-rear Wheel Speed Sensor Short to the Other Sensor Circuit	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-77)
	-21	Right-rear Wheel Speed Sensor Installation Error	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-78)
	-22	Right-rear Wheel Speed Sensor Installation Error (19 mph (30 km/h) or More)	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-79)
	-23	Right-rear Wheel Speed Sensor Installation Error (0 to 9 mph (0 to 15 km/h))	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-79)
17	-13	Left-rear Wheel Speed Sensor Circuit Malfunction	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-71)
	-14	Left-rear Wheel Speed Sensor Power Source Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-75)
18	-11	Left-rear Wheel Speed Sensor Electrical Noise or Intermittent Interruption	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-76)
	-12	Left-rear Wheel Speed Sensor Short to the Other Sensor Circuit	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-77)
	-21	Left-rear Wheel Speed Sensor Installation Error	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-78)
	-22	Left-rear Wheel Speed Sensor Installation Error (19 mph (30 km/h) or More)	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-79)
	-23	Left-rear Wheel Speed Sensor Installation Error (0 to 9 mph (0 to 15 km/h))	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-79)
21	-11	Right-front Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-80)
22	-11	Left-front Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-80)

*1: Brake system indicator turns ON when two or more wheels fail.
*2: A/T

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator	Note
23	-11	Right-rear Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-80)
24	-11	Left-rear Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-80)
25	-12	Yaw Rate Sensor Internal Circuit Malfunction (Open, Short)	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-81)
	-13	Yaw Rate Sensor Internal Circuit Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-81)
	-17	Yaw Rate-Lateral Acceleration Sensor Power Source Voltage Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-81)
	-18	Yaw Rate-Lateral Acceleration Sensor Internal Circuit Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-81)
	-21	Yaw Rate Sensor Neutral Position Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-82)
	-22	Yaw Rate Sensor Stuck	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-82)
	-23	Yaw Rate Sensor Circuit Intermittent Interruption	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-82)
	-24	Yaw Rate Sensor Gain Low	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-83)
	-25	Yaw Rate Sensor Gain High	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-83)
26	-12	Lateral Acceleration Sensor Internal Circuit Malfunction (Open, Short)	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-81)
	-13	Lateral Acceleration Sensor Internal Circuit Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-81)
	-21	Lateral Acceleration Sensor Neutral Position Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-83)
	-22	Lateral Acceleration Sensor Stuck	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-84)
	-23	Lateral Acceleration Sensor Circuit Intermittent Interruption	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-83)
	-24	Lateral Acceleration Sensor Gain Low	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-83)
	-25	Lateral Acceleration Sensor Gain High	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-83)
27	-11	Steering Angle Sensor DIAG Signal Error (Initial)	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-84)
	-21	Steering Angle Sensor Stuck Neutral Position	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-86)
	-22	Steering Angle Sensor Stuck Offset Position	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-86)
	-23	Steering Angle Sensor Counter Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-87)
	-24	Steering Angle Sensor Exchange Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-89)
	-26	Steering Angle Sensor DIAG Signal Error (Main)	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-84)

*1: Brake system indicator turns ON when two or more wheels fail.
*2: A/T

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator	Note
31	-01	ABS Right-front Inlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-02	ABS Right-front Inlet Solenoid Valve Malfunction (Initial Feedback Signal)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-11	ABS Right-front Inlet Solenoid Valve Malfunction (Feedback Signal)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-21	ABS Right-front Inlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-22	ABS Right-front Inlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-23	ABS Right-front Inlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-24	ABS Right-front Inlet Solenoid Valve Malfunction (Feedback Signal/Solenoid Stuck ON)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
32	-01	ABS Right-front Outlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-21	ABS Right-front Outlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-22	ABS Right-front Outlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-23	ABS Right-front Outlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
33	-01	ABS Left-front Inlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-02	ABS Left-front Inlet Solenoid Valve Malfunction (Initial Feedback Signal)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-11	ABS Left-front Inlet Solenoid Valve Malfunction (Feedback Signal)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-21	ABS Left-front Inlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-22	ABS Left-front Inlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-23	ABS Left-front Inlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-24	ABS Left-front Inlet Solenoid Valve Malfunction (Feedback Signal/Solenoid Stuck ON)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
34	-01	ABS Left-front Outlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-21	ABS Left-front Outlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-22	ABS Left-front Outlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-23	ABS Left-front Outlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
35	-01	ABS Right-rear Inlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-02	ABS Right-rear Inlet Solenoid Valve Malfunction (Initial Feedback Signal)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-11	ABS Right-rear Inlet Solenoid Valve Malfunction (Feedback Signal)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-21	ABS Right-rear Inlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-22	ABS Right-rear Inlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-23	ABS Right-rear Inlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-24	ABS Right-rear Inlet Solenoid Valve Malfunction (Feedback Signal/Solenoid Stuck ON)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)

*1: Brake system indicator turns ON when two or more wheels fail.
*2: A/T

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator	Note
36	-01	ABS Right-rear Outlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-21	ABS Right-rear Outlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-22	ABS Right-rear Outlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-23	ABS Right-rear Outlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
37	-01	ABS Left-rear Inlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-02	ABS Left-rear Inlet Solenoid Valve Malfunction (Initial Feedback Signal)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-11	ABS Left-rear Inlet Solenoid Valve Malfunction (Feedback Signal)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-21	ABS Left-rear Inlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-22	ABS Left-rear Inlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-23	ABS Left-rear Inlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-24	ABS Left-rear Inlet Solenoid Valve Malfunction (Feedback Signal/Solenoid Stuck ON)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
38	-01	ABS Left-rear Outlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-21	ABS Left-rear Outlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-22	ABS Left-rear Outlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
	-23	ABS Left-rear Outlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-89)
41	-21	Right-front Wheel Lock	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-90)
42	-21	Left-front Wheel Lock	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-90)
43	-21	Right-rear Wheel Lock	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-90)
44	-21	Left-rear Wheel Lock	ON	ON/OFF*1	ON	ON	DTC Troubleshooting (see page 19-90)
51	-11	Motor Lock	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-91)
	-12	Motor Drive Circuit Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-92)
	-13	Motor Drive Circuit Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-91)
52	-12	Motor Stuck OFF	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-94)
53	-01	Motor Relay Stuck ON 1	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-95)
	-12	Motor Relay Stuck ON 2	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-95)
54	-03	Fail-safe Relay 1 Stuck ON	ON	ON	ON	ON	DTC Troubleshooting (see page 19-96)
	-04	Fail-safe Relay 1 Stuck OFF (Initial)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-96)
	-21	Fail-safe Relay 1 Stuck OFF (Main)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-96)

*1: Brake system indicator turns ON when two or more wheels fail.
*2: A/T

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator	Note
56	-01	Initial VIG FET Stuck OFF (Initial)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-98)
	-02	Initial VIG FET Stuck ON	ON	ON	ON	ON	DTC Troubleshooting (see page 19-98)
	-11	VIG FET Stuck OFF (Main)	ON	ON	ON	ON	DTC Troubleshooting (see page 19-98)
61	-01	VSA Modulator-control Unit Initial IG Low Voltage	ON	ON	ON	ON	DTC Troubleshooting (see page 19-98)
	-21	VSA Modulator-control Unit Power Source Low Voltage 1	ON	ON	ON	ON	DTC Troubleshooting (see page 19-98)
	-22	VSA Modulator-control Unit Power Source Low Voltage 2	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-98)
	-23	VSA Modulator-control Unit Power Source Low Voltage 3	ON	ON	ON	ON	DTC Troubleshooting (see page 19-98)
62	-21	VSA Modulator-control Unit IG High Voltage	ON	ON	ON	ON	DTC Troubleshooting (see page 19-99)
64	-11	Steering Angle Sensor Power Circuit Low Voltage	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-100)
	-12	Steering Angle Sensor Power Circuit High Voltage	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-101)
65	-21	Brake Fluid Level Stuck ON	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-102)
66	-11	Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-104)
	-12	Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-105)
	-14	Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-104)
	-15	Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-107)
	-16	Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-104)
	-17	Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-104)
	-18	Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-104)
	-19	Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-104)
68	-21	Brake Pedal Position Switch Stuck OFF	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-108)
	-22	Brake Pedal Position Switch Stuck ON	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-111)

*1: Brake system indicator turns ON when two or more wheels fail.
*2: A/T

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DTC Troubleshooting Index (cont'd)

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator	Note
71	-21	Right-front or Left-rear Different Diameter Tire Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-113)
	-22	Left-front or Right-rear Different Diameter Tire Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-113)
	-23	Right-front and Right-rear Different Diameter Tire Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-113)
	-24	Left-front and Left-rear Different Diameter Tire Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-113)
	-25	Right-front and Left-front Different Diameter Tire Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-113)
	-26	Right-rear and Left-rear Different Diameter Tire Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-113)
	-27	Right-front or Left-rear Different Diameter Tire Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-113)
	-28	Left-front or Right-rear Different Diameter Tire Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-113)
	-29	Right-front and Right-rear Different Diameter Tire Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-113)
	-2A	Left-front and Left-rear Different Diameter Tire Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-113)
	-2B	Right-front and Left-front Different Diameter Tire Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-113)
	-2C	Right-rear and Left-rear Different Diameter Tire Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-113)
81	-01	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-02	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-03	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-05	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-06	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-07	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-11	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-115)
	-21	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-22	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-23	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-24	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-25	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-31	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-32	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-33	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-35	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-36	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-37	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)

*1: Brake system indicator turns ON when two or more wheels fail.
*2: A/T

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator	Note
81	-38	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-39	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-3A	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-3C	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-3D	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-116)
	-3E	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-116)
	-42	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-51	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-116)
	-52	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-115)
	-53	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-116)
	-54	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-115)
	-55	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-116)
	-56	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-115)
	-57	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-116)
	-58	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-115)
	-59	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-116)
	-71	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	OFF	ON	ON	DTC Troubleshooting (see page 19-114)
	-72	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
	-80	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-114)
83	-13	ECM/PCM Communication Error (Engine Malfunction)	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-118)
	-14*2	PCM Communication Error (A/T Malfunction)	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-118)
84	-21	VSA Sensor Neutral Position not Writing	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-119)

*1: Brake system indicator turns ON when two or more wheels fail.
*2: A/T

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator	Note
86	-01	F-CAN Bus-off Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-119)
	-11	F-CAN Communication With ECM/PCM Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-121)
	-21	F-CAN Communication With Engine Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-121)
	-22	F-CAN Communication With Engine Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-121)
	-23	F-CAN Communication With Engine Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-121)
	-24	F-CAN Communication With Engine Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-121)
	-25	F-CAN Communication With Engine Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-121)
	-31	F-CAN Communication With Gauge Control Module Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-122)
	-41*2	F-CAN Communication With EAT Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-121)
	-71	F-CAN Communication With Yaw Rate-Lateral Acceleration Sensor Malfunction	OFF	OFF	ON	ON	DTC Troubleshooting (see page 19-124)
107	-22	Central Processing Unit (CPU) Internal Circuit Malfunction	OFF	OFF	OFF	ON	DTC Troubleshooting (see page 19-126)
108	-21	Steering Angle Sensor Malfunction	OFF	OFF	OFF	ON	DTC Troubleshooting (see page 19-126)
121	-01	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
	-02	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
	-11	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
	-21	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
	-24	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
122	-01	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
	-21	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
	-22	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
	-23	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
123	-01	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
	-02	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
	-11	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
	-21	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
	-24	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
124	-01	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
	-21	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
	-22	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)
	-23	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	DTC Troubleshooting (see page 19-127)

*1: Brake system indicator turns ON when two or more wheels fail.
*2: A/T

Symptom Troubleshooting Index

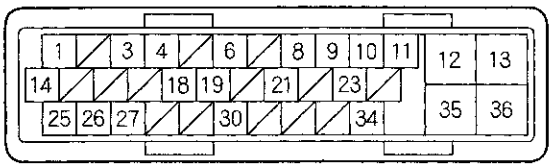
When the vehicle has one of these symptoms, check for VSA diagnostic trouble codes (DTCs) with the HDS. If there are no DTCs, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure
HDS does not communicate with the VSA modulator-control unit or the vehicle	Troubleshoot the DLC circuit (see page 11-181).
VSA activation indicator does not come on at start-up (bulb check)	1. Do the gauge control module troubleshooting (see page 22-332). 2. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135), or substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If it is OK, the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136).
VSA activation indicator does not go off, and no DTCs are stored	1. Symptom troubleshooting (see page 19-128). 2. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135), or substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If it is OK, the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136).
ABS indicator, brake system indicator, and VSA indicator do not come on	1. Do the gauge control module troubleshooting (see page 22-332). 2. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135), or substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If it is OK, the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136).
ABS indicator, brake system indicator, and VSA indicator do not go off	1. Check for F-CAN DTCs, and troubleshoot and repair those first (see page 11-3). 2. Symptom troubleshooting (see page 19-129). 3. Do the gauge control module troubleshooting (see page 22-3).

VSA System Components

System Description

VSA Modulator-Control Unit Inputs and Outputs for 36P Connector (Connector Disconnected)



Wire side of female terminals

Terminal number	Wire color	Terminal sign	Description	Signal
1	RED	CAN-L	F-CAN communication circuit	——
3	LT BLU	K-LINE	Communication with HDS	
4	PUR	RR-GND	Detects right-rear wheel speed sensor signal	
6	GRN	FL-GND	Detects left-front wheel speed sensor signal	
8	RED	RL-GND	Detects left-rear wheel speed sensor signal	
9	ORN	SVCC	Power source for the steering angle sensor	With ignition switch ON (II): about 5.0 V
10	PUR	FR-GND	Detects right-front wheel speed sensor signal	——
11	GRN	STR-A	Detects steering angle sensor signal	
12	WHT	FSR +B	Power source for the fail-safe relay	Battery voltage (about 12 V) at all times
13	RED	MR +B	Power source for the motor relay	Battery voltage (about 12 V) at all times
14	WHT	CAN-H	F-CAN communication circuit	——
18	PNK	RR +B	Detects right-rear wheel speed sensor signal	
19	ORN	FL +B	Detects left-front wheel speed sensor signal	

Terminal number	Wire color	Terminal sign	Description	Signal
21	BLU	RL +B	Detects left-rear wheel speed sensor signal	———
23	LT GRN	FR +B	Detects right-front wheel speed sensor signal	
25	RED	WEN	Detects write enable signal	
26	BLU	STR-D	Detects steering angle sensor signal	
27	LT GRN	STR-B	Detects steering angle sensor signal	
30	GRY	IG1	Power source for activating the system	With ignition switch ON (II): battery voltage (about 12 V)
34	BRN	SGND	Ground for the steering angle sensor	———
35	BLK	GND	Ground for the VSA modulator-control unit	Continuity to ground
36	BLK	MR-GND	Ground for the pump motor	Continuity to ground

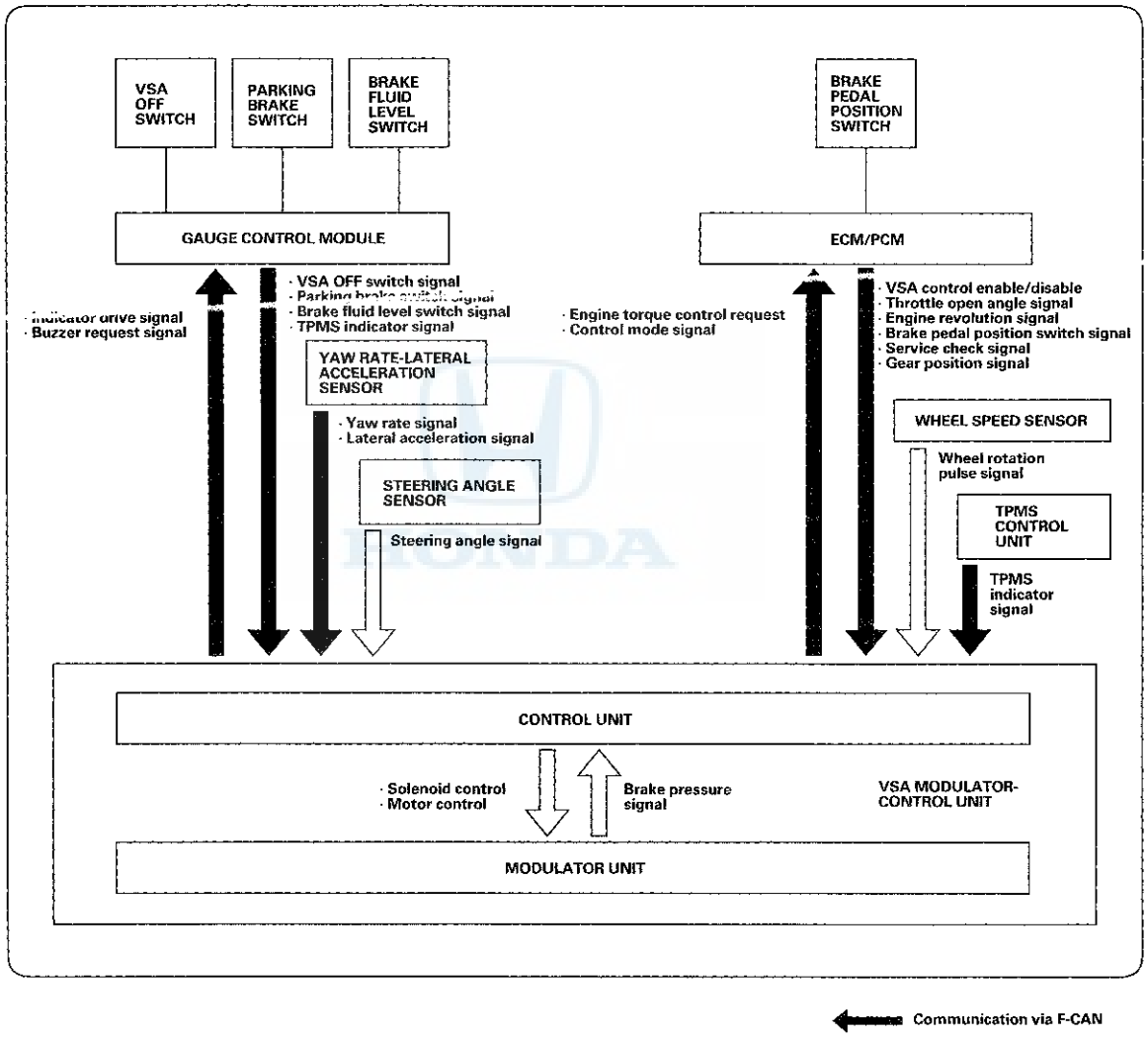
(cont'd)

VSA System Components

System Description (cont'd)

System Outline

This system is composed of the VSA modulator-control unit, the wheel speed sensors, the steering angle sensor, the yaw rate-lateral acceleration sensor, and the system indicators in the gauge control module. The VSA modulator-control unit controls the ABS, EBD, TCS, VSA, and brake assist with the brake pressure of each wheel and reduces engine torque.

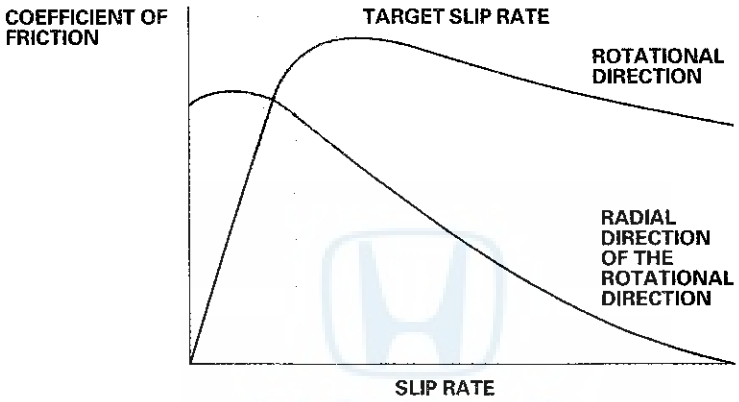


ABS (Anti-lock Brake System) Features

Anti-lock Control

Without ABS, when the brake pedal is pressed while driving, the wheels sometimes lock before the vehicle comes to a stop. In such an event, the maneuverability of the vehicle is reduced if the front wheels are locked, and the stability of the vehicle is reduced if the rear wheels are locked, creating an extremely unstable condition. With ABS, the system precisely controls the slip rate of the wheels to ensure maximum grip force from the tires, and it thereby ensures maneuverability and stability of the vehicle. The ABS calculates the slip rate of the wheels based on the four wheel speeds, and then it controls the brake fluid pressure to reach the target slip rate.

Grip force of tire and road surface

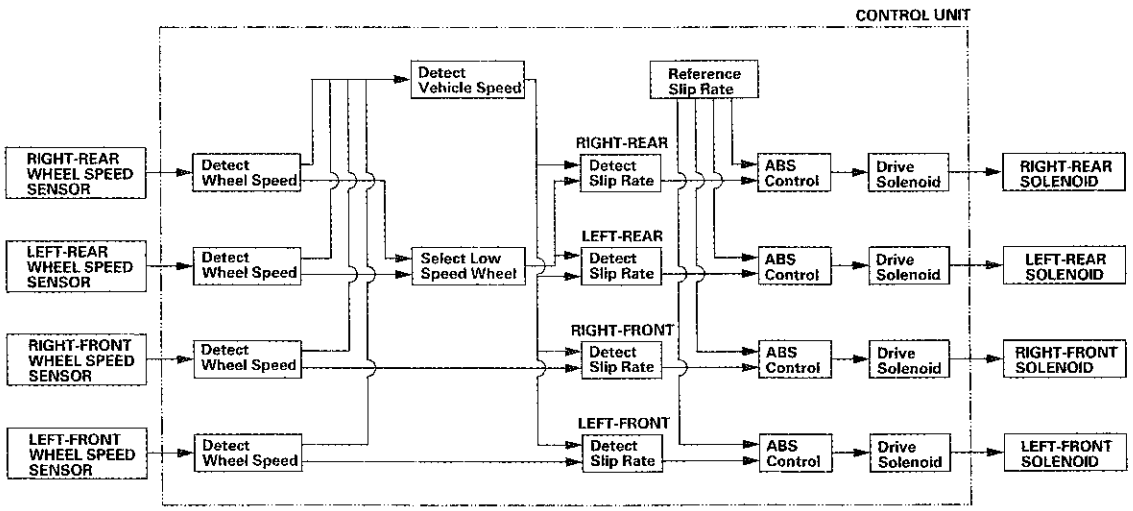


Main Control

The control unit detects the wheel speed based on the wheel speed sensor signals it receives, then it calculates the vehicle speed based on the detected wheel speed. The control unit detects the vehicle speed during deceleration based on the wheel speeds.

The control unit calculates the slip rate of each wheel, and transmits the control signal to the modulator unit solenoid valve when the slip rate is high.

The hydraulic control has three modes: Pressure intensifying, pressure reducing, and pressure retaining.



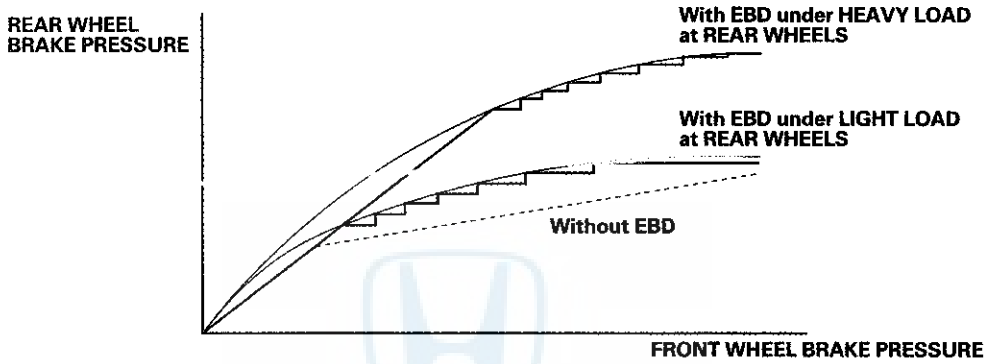
(cont'd)

VSA System Components

System Description (cont'd)

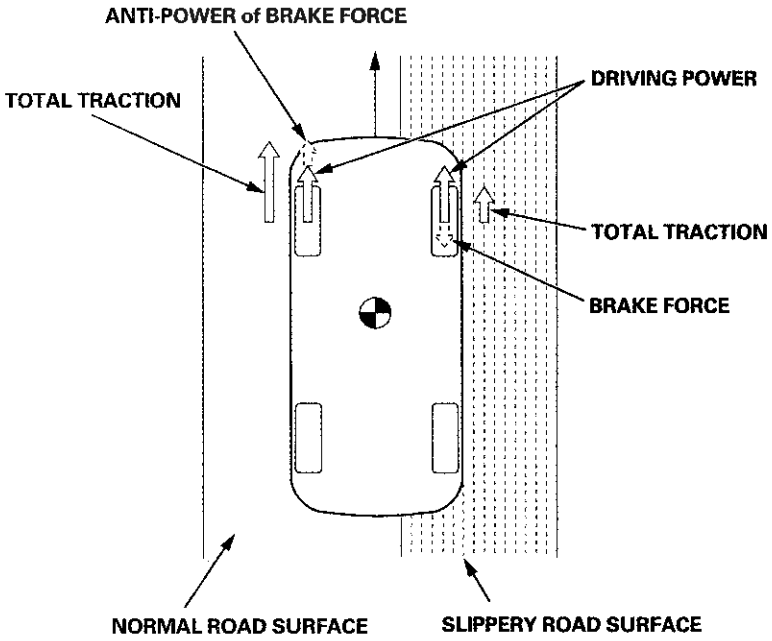
EBD (Electronic Brake Distribution) Features

The EBD feature helps control vehicle braking by adjusting the rear brake force in accordance with the rear wheel load before the ABS operates. Based on the wheel speed sensor signals, the control unit uses the modulator to control the rear brakes individually. When the rear wheel speed is less than the front wheel speed, the VSA modulator-control unit retains the current rear brake fluid pressure by closing the inlet valve in the modulator. As the rear wheel speed increases and approaches the front wheel speed, the VSA modulator-control unit increases the rear brake fluid pressure by momentarily opening the inlet valve. This whole process is repeated very rapidly. While this is happening, kickback may be felt at the brake pedal, you may also hear a muted buzzing sound from the VSA modulator-control unit. This is nomal.



TCS (Traction Control System) Features

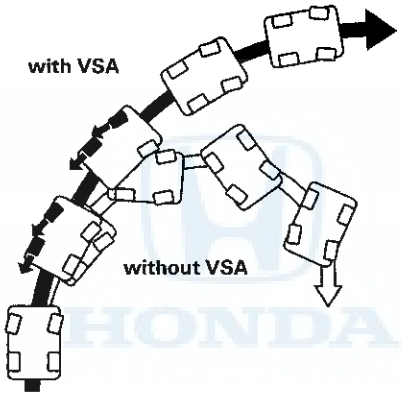
When a drive wheel loses traction on a slippery road surface and starts to spin, the VSA modulator-control unit applies brake pressure to the spinning wheel and sends an engine torque control request to the ECM/PCM to slow the spinning wheel and keep traction.



VSA (Vehicle Stability Assist) System Features

Oversteer control

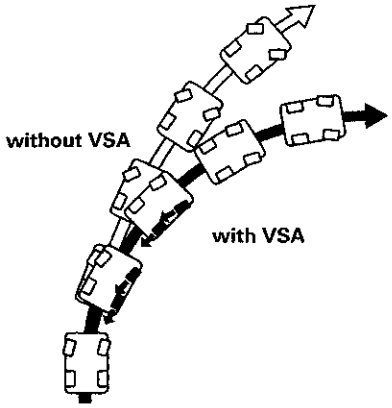
Applies the brakes to the front and rear outside wheels



The brake makes the yaw rate opposite to the turning direction

Understeer control

- Applies the brakes to the front and rear inside wheels
- Controls the engine torque when accelerating



The brake increases the yaw rate toward the turning direction

The throttle control effect:
· Reduces vehicle speed
· Increases cornering force

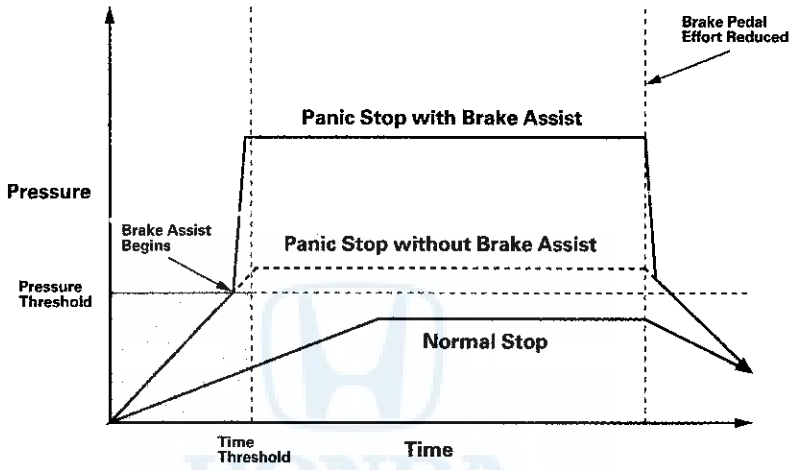
System Description (cont'd)

Brake Assist Features

Brake assist helps ensure that any driver can achieve the full braking potential of the vehicle by increasing brake system pressure in a panic situation, bringing the vehicle into a full ABS stop.

If during a panic stop the VSA modulator-control unit determines that the brake system pressure increases above a threshold in less than a certain amount of time, the VSA modulator-control unit engages brake assist.

Because the brake system pressure crossed the pressure threshold before the time threshold had expired, the VSA modulator-control unit goes into brake assist mode.

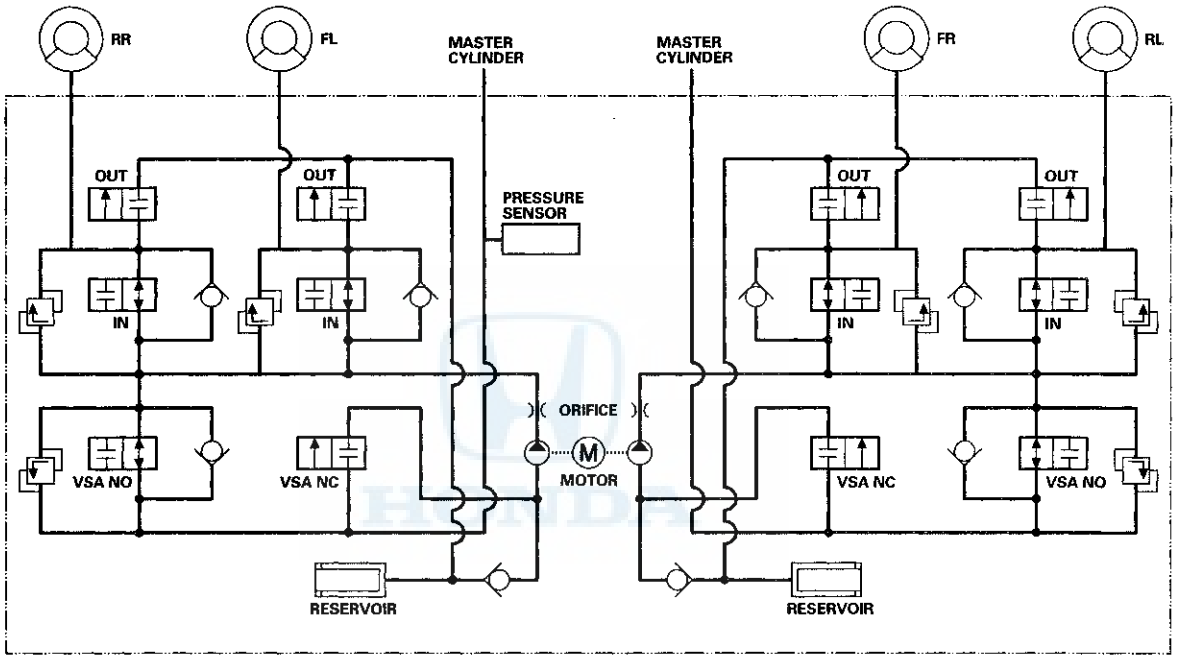


Modulator Unit

The modulator unit consists of the inlet solenoid valve, the outlet solenoid valve, the VSA NO (normally open) solenoid valve, the VSA NC (normally closed) solenoid valve, the reservoir, the pump, and the pump motor.

The hydraulic control has three modes of ABS action; pressure intensifying, pressure retaining, and pressure reducing. Pressure intensifying mode (VSA) is a combination of the TCS, VSA, and brake assist action.

The hydraulic circuit is an independent four channel type, one channel for each wheel.



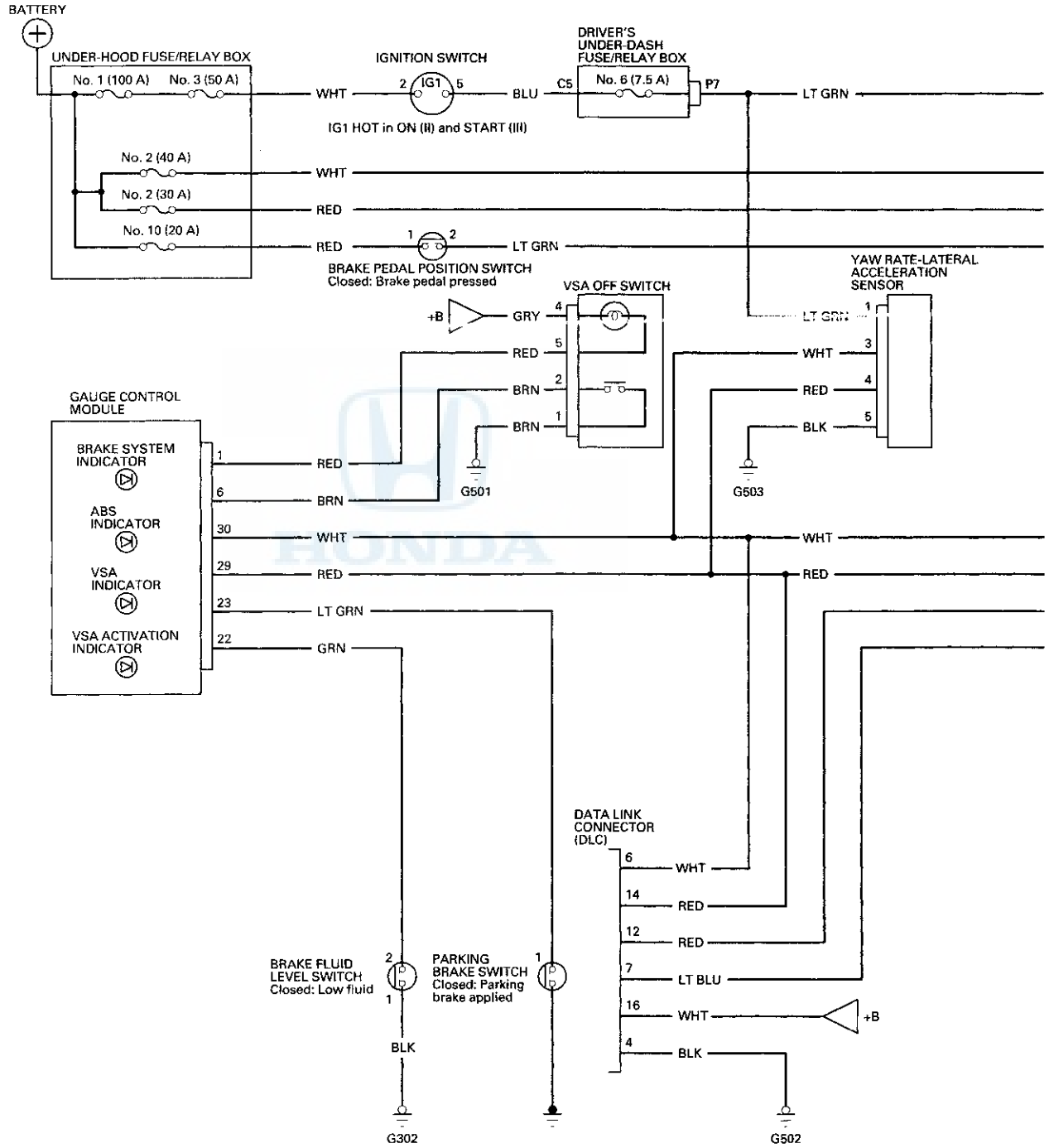
IN: INLET SOLENOID VALVE (NORMALLY OPEN)
OUT: OUTLET SOLENOID VALVE (NORMALLY CLOSED)

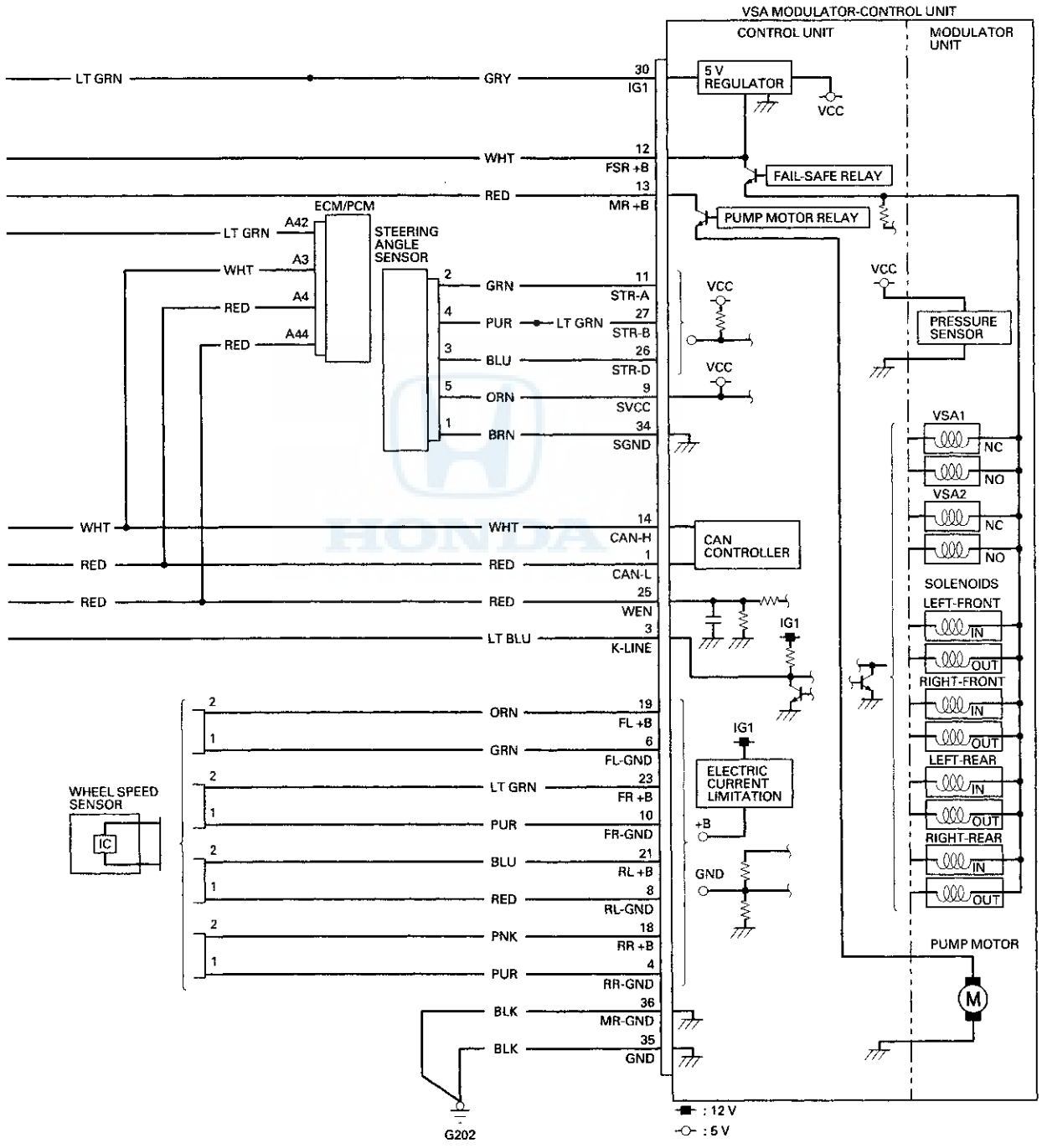
Mode	VSA NO Valve	VSA NC Valve	Inlet Solenoid Valve	Outlet Solenoid Valve	Brake Fluid
Pressure intensifying mode	open	closed	open	closed	Master cylinder fluid is pumped out to the caliper.
Pressure retaining mode	open	closed	closed	closed	Caliper fluid is retained by the inlet and outlet valves.
Pressure reducing mode	open	closed	closed	open	• Caliper fluid flows through the outlet valve to the reservoir. • The motor pumps the reservoir fluid through the damping chamber to the master cylinder*.
Pressure intensifying mode (VSA)	closed	open	open	closed	• Master cylinder fluid is pumped out by pump with motor through VSA NC valve to the caliper. • Caliper fluid pressure exceeds master cylinder pressure.

*: The motor will keep running until the operation of the anti-lock brake control is finished with the first pressure reducing mode.

VSA System Components

Circuit Diagram



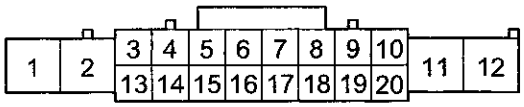

VSA MODULATOR-CONTROL UNIT
CONTROL UNIT
MODULATOR UNIT
LT GRN
GRY
30
IG1
5 V REGULATOR
VCC
WHT
12
FSR +B
FAIL-SAFE RELAY
RED
13
MR +B
PUMP MOTOR RELAY
ECM/PCM
STEERING ANGLE SENSOR
LT GRN
A42
WHT
A3
RED
A4
RED
A44
2
GRN
11
STR-A
4
PUR
LT GRN
27
STR-B
3
BLU
26
STR-D
5
ORN
9
SVCC
1
BRN
34
SGND
VCC
VCC
PRESSURE SENSOR
VCC
VSA1
NC
NO
VSA2
NC
NO
SOLENOIDS
LEFT-FRONT
IN
OUT
RIGHT-FRONT
IN
OUT
LEFT-REAR
IN
OUT
RIGHT-REAR
IN
OUT
WHT
WHT
14
CAN-H
RED
RED
1
CAN-L
RED
RED
25
WEN
LT BLU
3
K-LINE
CAN CONTROLLER
IG1
IG1
ELECTRIC CURRENT LIMITATION
+B
GND
WHEEL SPEED SENSOR
IC
2
ORN
19
FL +B
1
GRN
6
FL-GND
2
LT GRN
23
FR +B
1
PUR
10
FR-GND
2
BLU
21
RL +B
1
RED
8
RL-GND
2
PNK
18
RR +B
1
PUR
4
RR-GND
BLK
36
MR-GND
BLK
35
GND
PUMP MOTOR
M
G202
: 12 V
: 5 V

(cont'd)

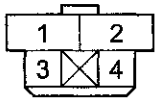
VSA System Components

Circuit Diagram (cont'd)

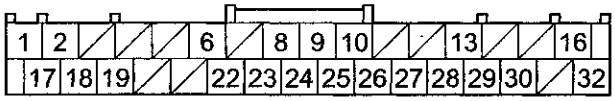
DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR P (20P)



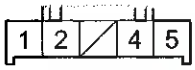
BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



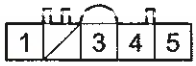
GAUGE CONTROL MODULE 32P CONNECTOR



VSA OFF SWITCH 5P CONNECTOR



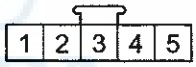
YAW RATE-LATERAL ACCELERATION SENSOR 5P CONNECTOR



BRAKE FLUID LEVEL SWITCH 2P CONNECTOR

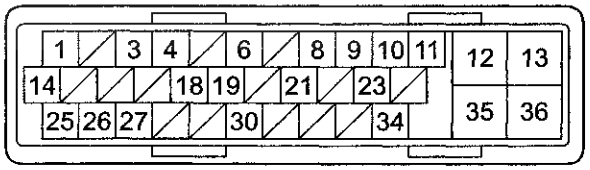
PARKING BRAKE SWITCH 1P CONNECTOR

STEERING ANGLE SENSOR 5P CONNECTOR



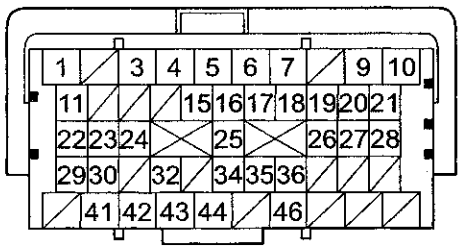
WHEEL SPEED SENSOR 2P CONNECTOR

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR

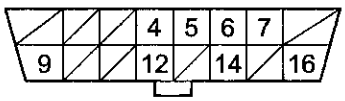


Wire side of female terminals

ECM/PCM CONNECTOR A (49P)



DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

DTC Troubleshooting

DTC 11-13: Right-front Wheel Speed Sensor Circuit Malfunction

DTC 13-13: Left-front Wheel Speed Sensor Circuit Malfunction

DTC 15-13: Right-rear Wheel Speed Sensor Circuit Malfunction

DTC 17-13: Left-rear Wheel Speed Sensor Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

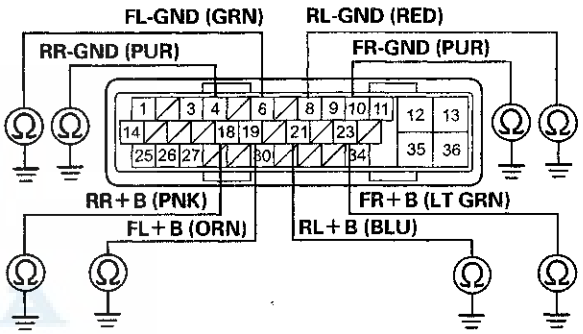
   Is DTC 11-13, 13-13, 15-13, and/or 17-13 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).
7. Check for continuity between body ground and the appropriate wheel speed sensor +B and GND terminals of the VSA modulator-control unit 36P connector individually (see table).

DTC	Appropriate Terminal	
	+B	GND
11-13 Right-front	No. 23	No. 10
13-13 Left-front	No. 19	No. 6
15-13 Right-rear	No. 18	No. 4
17-13 Left-rear	No. 21	No. 8

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Go to step 8.

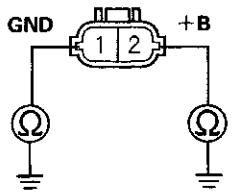
NO–Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

8. Disconnect the appropriate wheel speed sensor 2P connector (see page 19-139).
9. On the sensor side, check for continuity between body ground and wheel speed sensor 2P connector terminals No. 1 and No. 2 individually.

WHEEL SPEED SENSOR 2P CONNECTOR



Terminal side of male terminals

Is there continuity?

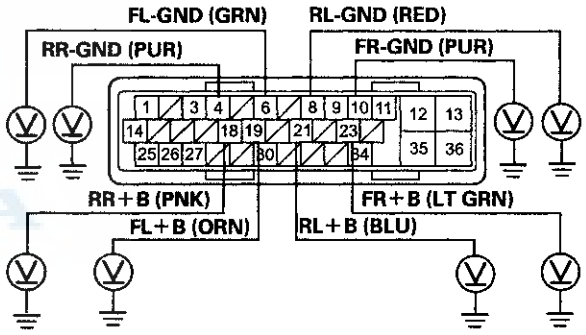
YES–Replace the wheel speed sensor (see page 19-139).■

NO–Repair a short to body ground in the wire between the VSA modulator-control unit and the wheel speed sensor.■

10. Turn the ignition switch to ON (II).
11. Measure the voltage between body ground and the appropriate wheel speed sensor +B and GND terminals of the VSA modulator-control unit 36P connector individually (see table).

DTC	Appropriate Terminal	
	+B	GND
11-13 Right-front	No. 23	No. 10
13-13 Left-front	No. 19	No. 6
15-13 Right-rear	No. 18	No. 4
17-13 Left-rear	No. 21	No. 8

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR



Wire side of female terminals

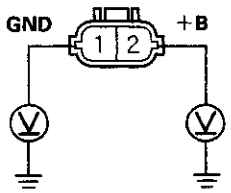
Is there 0.1 V or more?

YES–Go to step 12.

NO–Go to step 16.

12. Turn the ignition switch to LOCK (0).
13. Disconnect the appropriate wheel speed sensor 2P connector (see page 19-139).
14. Turn the ignition switch to ON (II).
15. On the sensor side, measure the voltage between body ground and wheel speed sensor 2P connector terminals No. 1 and No. 2 individually.

WHEEL SPEED SENSOR 2P CONNECTOR



Terminal side of male terminals

Is there 0.1 V or more?

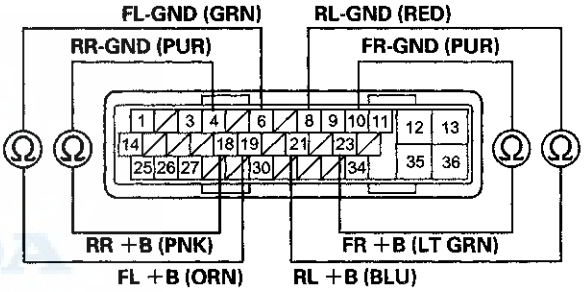
YES–Replace the wheel speed sensor (see page 19-139).■

NO–Repair a short to power in the wire between the VSA modulator-control unit and the appropriate wheel speed sensor.■

16. Turn the ignition switch to LOCK (0).
17. Disconnect the appropriate wheel speed sensor 2P connector (see page 19-139).
18. Check for continuity between the appropriate VSA modulator-control unit 36P connector wheel speed sensor +B and GND terminals (see table).

DTC	Appropriate Terminal	
	+B	GND
11-13 Right-front	No. 23	No. 10
13-13 Left-front	No. 19	No. 6
15-13 Right-rear	No. 18	No. 4
17-13 Left-rear	No. 21	No. 8

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Repair a short in the wires between the appropriate wheel speed sensor and the VSA modulator-control unit.■

NO–Go to step 19.

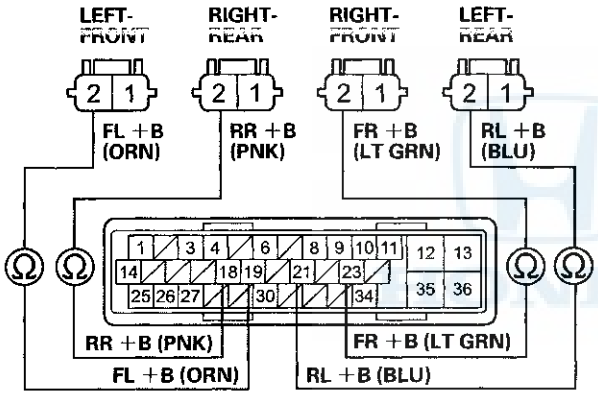
(cont'd)

DTC Troubleshooting (cont'd)

19. Check for continuity between the appropriate VSA modulator-control unit 36P connector terminal and the wheel speed sensor 2P connector terminal (see table).

DTC	VSA Modulator-control Unit 36P Connector Terminal	Appropriate Wheel Speed Sensor 2P Connector Terminal
11-13	No. 23	Right-front
13-13	No. 19	Left-front
15-13	No. 18	Right-rear
17-13	No. 21	Left-rear

WHEEL SPEED SENSOR 2P CONNECTOR
Terminal side of female terminals



VSA MODULATOR-CONTROL UNIT 36P CONNECTOR
Wire side of female terminals

Is there continuity?

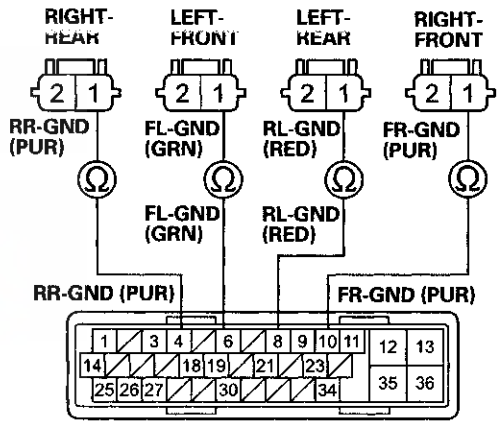
YES–Go to step 20.

NO–Repair an open in the wire between the appropriate wheel speed sensor and the VSA modulator-control unit.■

20. Check for continuity between the appropriate VSA modulator-control unit 36P connector terminal and the wheel speed sensor 2P connector terminal (see table).

DTC	VSA Modulator-control Unit 36P Connector Terminal	Appropriate Wheel Speed Sensor 2P Connector Terminal
11-13	No. 10	Right-front
13-13	No. 6	Left-front
15-13	No. 4	Right-rear
17-13	No. 8	Left-rear

WHEEL SPEED SENSOR 2P CONNECTOR
Terminal side of female terminals



VSA MODULATOR-CONTROL UNIT 36P CONNECTOR
Wire side of female terminals

Is there continuity?

YES–Go to step 21.

NO–Repair an open in the wire between the appropriate wheel speed sensor and the VSA modulator-control unit.■

21. Substitute a known-good wheel speed sensor (see page 19-139).
22. Reconnect all connectors.
23. Turn the ignition switch to ON (II).
24. Clear the DTC with the HDS.
25. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
26. Check for DTCs with the HDS.

    Is DTC 11-13, 13-13, 15-13, and/or 17-13 indicated?

    YES–Go to step 27.

    NO–Replace the original wheel speed sensor (see page 19-139).■
27. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest softwear, substitute a known-good VSA modulator-control unit (see page 19-136).
28. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
29. Check for DTCs with the HDS.

    Is DTC 11-13, 13-13, 15-13, and/or 17-13 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 11-14: Right-front Wheel Speed Sensor Power Source Malfunction

DTC 13-14: Left-front Wheel Speed Sensor Power Source Malfunction

DTC 15-14: Right-rear Wheel Speed Sensor Power Source Malfunction

DTC 17-14: Left-rear Wheel Speed Sensor Power Source Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

    Is DTC 11-14, 13-14, 15-14, and/or 17-14 indicated?

    YES–Go to step 5.

    NO–Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
5. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
6. Turn the ignition switch to ON (II).
7. Check for DTCs with the HDS.

    Is DTC 11-14, 13-14, 15-14, and/or 17-14 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC Troubleshooting (cont'd)

DTC 12-11: Right-front Wheel Speed Sensor Electrical Noise or Intermittent Interruption

DTC 14-11: Left-front Wheel Speed Sensor Electrical Noise or Intermittent Interruption

DTC 16-11: Right-rear Wheel Speed Sensor Electrical Noise or Intermittent Interruption

DTC 18-11: Left-rear Wheel Speed Sensor Electrical Noise or Intermittent Interruption

NOTE: These DTCs may be caused by electrical interference. Check for aftermarket devices installed in the vehicle when these DTC are indicated.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

   Is DTC 12-11, 14-11, 16-11, and/or 18-11 indicated?

   YES–If DTC 12-12, 14-12, 16-12, or 18-12 is indicated at the same time, do the DTC 12-12, 14-12, 16-12, or 18-12 troubleshooting first (see page 19-77). If DTC 12-12, 14-12, 16-12, or 18-12 is not indicated, go to step 5.

   NO–If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, there is an intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
5. Turn the ignition switch to LOCK (0).
6. Check that the appropriate wheel speed sensor is properly mounted (see page 19-139).

DTC	Appropriate Wheel Speed Sensor
12-11	Right-front
14-11	Left-front
16-11	Right-rear
18-11	Left-rear

   Is the wheel speed sensor installation OK?

   YES–Go to step 7.

   NO–Reinstall the wheel speed sensor, and check the mounting position (see page 19-139).■
7. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
8. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.
9. Check for DTCs with the HDS.

   Is DTC 12-11, 14-11, 16-11, and/or 18-11 indicated?

   YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

   NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 12-12: Right-front Wheel Speed Sensor Short to the Other Sensor Circuit

DTC 14-12: Left-front Wheel Speed Sensor Short to the Other Sensor Circuit

DTC 16-12: Right-rear Wheel Speed Sensor Short to the Other Sensor Circuit

DTC 18-12: Left-rear Wheel Speed Sensor Short to the Other Sensor Circuit

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle at 13 mph (20 km/h) or more, and go a distance of 328 ft (100 m) or more.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

   Is DTC 12-12, 14-12, 16-12, and/or 18-12 indicated?

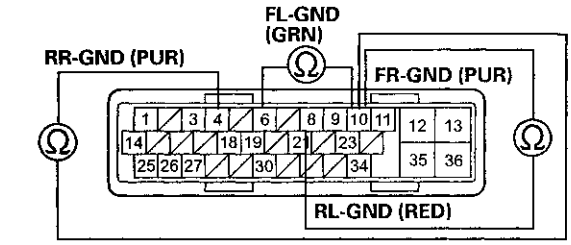
   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).
7. Check for continuity between the appropriate VSA modulator-control unit 36P connector wheel speed sensor GND terminals (see table).

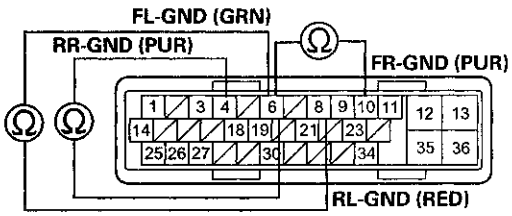
DTC	VSA Modulator-control Unit 36P Connector Terminal			
	Appropriate Terminal	Other Terminals		
12-12	No. 10	No. 6	No. 4	No. 8
14-12	No. 6	No. 10	No. 4	No. 8
16-12	No. 4	No. 10	No. 6	No. 8
18-12	No. 8	No. 10	No. 6	No. 4

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR

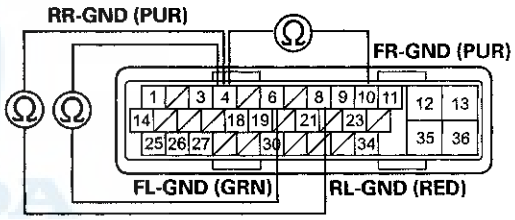
DTC 12-12



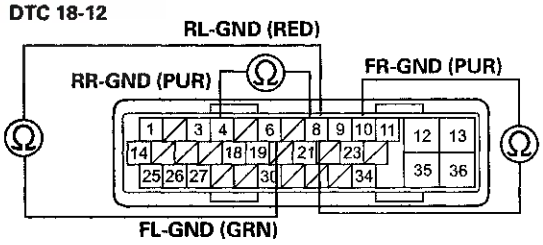
DTC 14-12



DTC 16-12



DTC 18-12



Wire side of female terminals

Is there continuity?

YES–Repair a short in the wires between the appropriate wheel speed sensor and the VSA modulator-control unit.■

NO–Go to step 8.

(cont'd)

DTC Troubleshooting (cont'd)

8. Reconnect the VSA modulator-control unit 36P connector.
9. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
10. Test-drive the vehicle at 13 mph (20 km/h) or more, and go a distance of 328 ft (100 m) or more.

    NOTE: Drive the vehicle on the road, not on a lift.

11. Check for DTCs with the HDS.

    Is DTC 12-12, 14-12, 16-12, and/or 18-12 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 12-21: Right-front Wheel Speed Sensor Installation Error

DTC 14-21: Left-front Wheel Speed Sensor Installation Error

DTC 16-21: Right-rear Wheel Speed Sensor Installation Error

DTC 18-21: Left-rear Wheel Speed Sensor Installation Error

1. Test-drive the vehicle at 7 mph (10 km/h) or more.

   NOTE: Drive the vehicle on the road, not on a lift.

2. Check the RIGHT FRONT, LEFT FRONT, RIGHT REAR, LEFT REAR WHEEL SPEED in the VSA DATA LIST with the HDS.

   Are all four values the same?

   YES–Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■

   NO–Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Check that the appropriate wheel speed sensor is properly mounted (see page 19-139).

DTC	Appropriate Wheel Speed Sensor
12-21	Right-front
14-21	Left-front
16-21	Right-rear
18-21	Left-rear

Is the wheel speed sensor installation OK?

YES–Replace the appropriate wheel speed sensor (see page 19-139).■

NO–Reinstall the wheel speed sensor, and check the mounting position (see page 19-139).■

DTC 12-22: Right-front Wheel Speed Sensor Installation Error (19 mph (30 km/h) or More)

DTC 14-22: Left-front Wheel Speed Sensor Installation Error (19 mph (30 km/h) or More)

DTC 16-22: Right-rear Wheel Speed Sensor Installation Error (19 mph (30 km/h) or More)

DTC 18-22: Left-rear Wheel Speed Sensor Installation Error (19 mph (30 km/h) or More)

1. Test-drive the vehicle between 19 mph (30 km/h) and 31 mph (50 km/h) for 70 seconds or more.

   NOTE: Drive the vehicle on the road, not on a lift.

2. Check the RIGHT FRONT, LEFT FRONT, RIGHT REAR, LEFT REAR WHEEL SPEED in the VSA DATA LIST with the HDS.

   Are all four values the same?

   YES–Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■

   NO–Go to step 3.

3. Turn the ignition switch to LOCK (0).

4. Check that the appropriate wheel speed sensor is properly mounted (see page 19-139).

DTC	Appropriate Wheel Speed Sensor
12-22	Right-front
14-22	Left-front
16-22	Right-rear
18-22	Left-rear

Is the wheel speed sensor installation OK?

YES–Replace the appropriate wheel speed sensor (see page 19-139).■

NO–Reinstall the wheel speed sensor, and check the mounting position (see page 19-139).■

DTC 12-23: Right-front Wheel Speed Sensor Installation Error (0 to 9 mph (0 to 15 km/h))

DTC 14-23: Left-front Wheel Speed Sensor Installation Error (0 to 9 mph (0 to 15 km/h))

DTC 16-23: Right-rear Wheel Speed Sensor Installation Error (0 to 9 mph (0 to 15 km/h))

DTC 18-23: Left-rear Wheel Speed Sensor Installation Error (0 to 9 mph (0 to 15 km/h))

1. Test-drive the vehicle between 1 mph (1 km/h) and 9 mph (15 km/h).

   NOTE: Drive the vehicle on the road, not on a lift.

2. Check the RIGHT FRONT, LEFT FRONT, RIGHT REAR, LEFT REAR WHEEL SPEED in the VSA DATA LIST with the HDS.

   Are all four values the same?

   YES–Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■

   NO–Go to step 3.

3. Turn the ignition switch to LOCK (0).

4. Check that the appropriate wheel speed sensor is properly mounted (see page 19-139).

DTC	Appropriate Wheel Speed Sensor
12-23	Right-front
14-23	Left-front
16-23	Right-rear
18-23	Left-rear

Is the wheel speed sensor installation OK?

YES–Replace the appropriate wheel speed sensor (see page 19-139).■

NO–Reinstall the wheel speed sensor, and check the mounting position (see page 19-139).■

DTC Troubleshooting (cont'd)

DTC 21-11: Right-front Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)

DTC 22-11: Left-front Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)

DTC 23-11: Right-rear Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)

DTC 24-11: Left-rear Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle at 13 mph (20 km/h) or more, and go a distance of 328 ft (100 m) or more.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

   Is DTC 21-11, 22-11, 23-11, and/or 24-11 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
5. Turn the ignition switch to LOCK (0).
6. Inspect the appropriate magnetic encoder for damage, debris, and correct installation.

DTC	Appropriate Magnetic Encoder	Note
21-11	Right-front	Remove the driveshaft outboard joint from the appropriate wheel hub (see page 18-14).
22-11	Left-front	
23-11	Right-rear	Remove the hub bearing unit (see page 18-39).
24-11	Left-rear	

Is the magnetic encoder surface OK?

YES–Remove the debris from the magnetic encoder, or replace the wheel bearing (front) or the hub bearing unit (rear):

- Front: Replace the wheel bearing (see page 18-14).■
- Rear: Replace the hub bearing unit (see page 18-39).■

NO–Clean dust or dirt from the appropriate magnetic encoder surface on the wheel bearing or the hub bearing unit, then go to step 1 and recheck. If the DTC is still present, replace the appropriate wheel bearing or hub bearing unit.

DTC 25-12: Yaw Rate Sensor Internal Circuit Malfunction (Open, Short)

DTC 25-13: Yaw Rate Sensor Internal Circuit Malfunction

DTC 25-18: Yaw Rate-Lateral Acceleration Sensor Internal Circuit Malfunction

DTC 26-12: Lateral Acceleration Sensor Internal Circuit Malfunction (Open, Short)

DTC 26-13: Lateral Acceleration Sensor Internal Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 25-12, 25-13, 25-18, 26-12, or 26-13 indicated?

   YES–Replace the yaw rate-lateral acceleration sensor (see page 19-133).■

   NO–Intermittent failure, the system is OK at this time.■

DTC 25-17: Yaw Rate-Lateral Acceleration Sensor Power Source Voltage Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 25-17 indicated?

   YES–If DTC 61-01, 61-21, 61-22, 61-23, and/or 62-21 is indicated at the same time, check the battery performance (see page 22-90), and do the alternator and regulator circuit troubleshooting first (see page 4-27). If DTC 61-01, 61-21, 61-22, 61-23, and/or 62-21 is not indicated at the same time, replace the yaw rate-lateral acceleration sensor (see page 19-133).■

   NO–Intermittent failure, the system is OK at this time.■

VSA System Components

DTC Troubleshooting (cont'd)

DTC 25-21: Yaw Rate Sensor Neutral Position Malfunction

DTC 25-23: Yaw Rate Sensor Circuit Intermittent Interruption

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Wait 60 seconds or more.
5. Check for DTCs with the HDS.

   Is DTC 25-21 or 25-23 indicated?

   YES–Replace the yaw rate-lateral acceleration sensor (see page 19-133).■

   NO–Intermittent failure, the system is OK at this time.■

DTC 25-22: Yaw Rate Sensor Stuck

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle at 7 mph (10 km/h) or more.

   NOTE: Drive the vehicle on the road, not on a lift.

4. Check for DTCs with the HDS.

   Is DTC 25-22 indicated?

   YES–Go to step 5.

   NO–If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time.■

5. Test-drive the vehicle. Check the YAW RATE S in the VSA DATA LIST with the HDS while driving in corners.

   Does the indicated value change?

   YES–Intermittent failure, the system is OK at this time.■

   NO–Replace the yaw rate-lateral acceleration sensor (see page 19-133).■

DTC 25-24: Yaw Rate Sensor Gain Low

DTC 25-25: Yaw Rate Sensor Gain High

DTC 26-24: Lateral Acceleration Sensor Gain Low

DTC 26-25: Lateral Acceleration Sensor Gain High

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle at 10 mph (15 km/h) or more.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

   Is DTC 25-24, 25-25, 26-24, or 26-25 indicated?

   YES–Replace the yaw rate-lateral acceleration sensor (see page 19-133).■

   NO–Intermittent failure, the system is OK at this time.■

DTC 26-21: Lateral Acceleration Sensor Neutral Position Malfunction

DTC 26-23: Lateral Acceleration Sensor Circuit Intermittent Interruption

NOTE: While doing this troubleshooting, avoid vibration or shaking of the vehicle.

1. Park the vehicle on a flat and level surface.
2. Turn the ignition switch to ON (II).
3. Clear the DTC with the HDS.
4. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
5. Wait 60 seconds or more.
6. Check for DTCs with the HDS.

   Is DTC 26-21 or 26-23 indicated?

   YES–Replace the yaw rate-lateral acceleration sensor (see page 19-133).■

   NO–Intermittent failure, the system is OK at this time.■

DTC Troubleshooting (cont'd)

DTC 26-22: Lateral Acceleration Sensor Stuck

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle at 7 mph (10 km/h) or more.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

   Is DTC 26-22 indicated?

   YES–Go to step 5.

   NO–If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time.■
5. Test-drive the vehicle. Check the LATERAL ACCELERATION SENSOR in the VSA DATA LIST with the HDS while driving around corners.

   Does the indicated value change?

   YES–Intermittent failure, the system is OK at this time.■

   NO–Replace the yaw rate-lateral acceleration sensor (see page 19-133).■

DTC 27-11: Steering Angle Sensor DIAG Signal Error (Initial)

DTC 27-26: Steering Angle Sensor DIAG Signal Error (Main)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

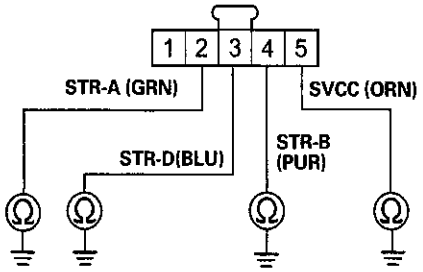
   Is DTC 27-11 or 27-26 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time. Check for loose terminals between the steering angle sensor 5P connector and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the steering angle sensor 5P connector (see page 19-132).
7. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).

8. Check for continuity between body ground and steering angle sensor 5P connector terminals No. 2, No. 3, No. 4, and No. 5 individually.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

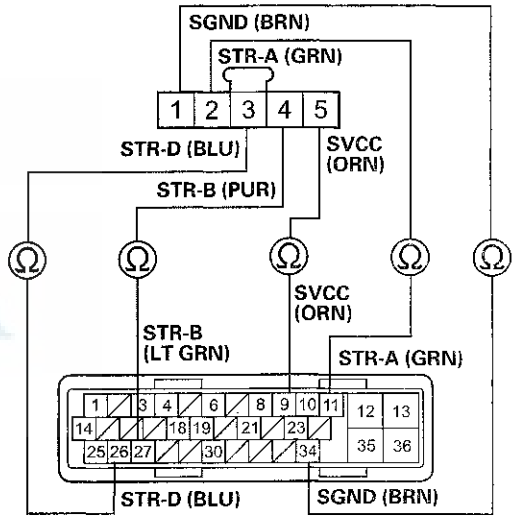
YES–Repair a short to body ground in the wire between the steering angle sensor and the VSA modulator-control unit.■

NO–Go to step 9.

9. Check for continuity between the VSA modulator-control unit 36P connector terminal and the steering angle sensor 5P connector terminal individually (see table).

Sign	VSA Modulator-control Unit 36P Connector Terminal	Steering Angle Sensor 5P Connector Terminal
SVCC	No. 9	No. 5
STR-A	No. 11	No. 2
STR-D	No. 26	No. 3
STR-B	No. 27	No. 4
SGND	No. 34	No. 1

STEERING ANGLE SENSOR 5P CONNECTOR
Wire side of female terminals



VSA MODULATOR-CONTROL UNIT 36P CONNECTOR
Wire side of female terminals

Is there continuity?

YES–Go to step 10.

NO–Repair an open in the wire between the steering angle sensor and the VSA modulator-control unit.■

(cont'd)

DTC Troubleshooting (cont'd)

10. Substitute a known-good steering angle sensor (see page 19-132).
11. Reconnect all connectors.
12. Turn the ignition switch to ON (II).
13. Clear the DTC with the HDS.
14. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
15. Check for DTCs with the HDS.

    Is DTC 27-11 or 27-26 indicated?

    YES–Go to step 16.

    NO–Replace the original steering angle sensor (see page 19-132).■
16. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
17. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
18. Check for DTCs with the HDS.

    Is DTC 27-11 or 27-26 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 27-21: Steering Angle Sensor Stuck Neutral Position

DTC 27-22: Steering Angle Sensor Stuck Offset Position

1. Turn the ignition switch to ON (II).
2. Turn the steering wheel left and right 90 degrees or more. Check the STEERING ANGLE in the VSA DATA LIST with the HDS.

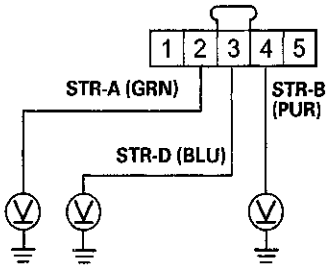
   Is there +90 ° or more, and −90 ° or less?

   YES–Intermittent failure, the system is OK at this time. Check for loose terminals between the steering angle sensor 5P connector and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■

   NO–Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Disconnect the steering angle sensor 5P connector (see page 19-132).
5. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).
6. Turn the ignition switch to ON (II).

7. Measure the voltage between body ground and steering angle sensor 5P connector terminals No. 2, No. 3, and No. 4 individually.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES–Repair a short to power in the wire between the steering angle sensor and the VSA modulator-control unit.■

NO–Replace the steering angle sensor (see page 19-132).■

DTC 27-23: Steering Angle Sensor Counter Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Start the engine.
5. Turn the steering wheel from lock to lock several times.
6. Check for DTCs with the HDS.

   Is DTC 27-23 indicated?

   YES–Go to step 7.

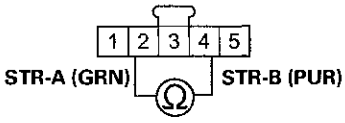
   NO–Intermittent failure, the system is OK at this time. Check for loose terminals between the steering angle sensor 5P connector and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
7. Turn the ignition switch to LOCK (0).
8. Disconnect the steering angle sensor 5P connector (see page 19-132).
9. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between steering angle sensor 5P connector terminals No. 2 and No. 4.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

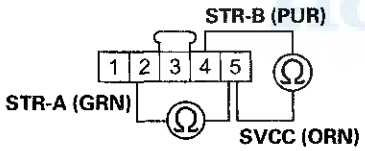
Is there continuity?

YES Repair a short in the wires between the steering angle sensor and the VSA modulator-control unit.■

NO–Go to step 11.

11. Check for continuity between steering angle sensor 5P connector terminals No. 5 and No. 2, and No. 5 and No. 4 individually.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

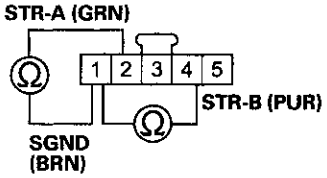
Is there continuity?

YES–Repair a short in the wires between the steering angle sensor and the VSA modulator-control unit.■

NO–Go to step 12.

12. Check for continuity between steering angle sensor 5P connector terminals No. 1 and No. 2, and No. 1 and No. 4 individually.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Repair a short in the wires between the steering angle sensor and the VSA modulator-control unit.■

NO–Replace the steering angle sensor (see page 19-132).■

DTC 27-24: Steering Angle Sensor Exchange Malfunction

1. Turn the ignition switch to ON (II), and set the front wheels to the straight ahead position.
2. Turn the steering wheel one turn to the left. Check the STEERING ANGLE in the VSA DATA LIST with the HDS.

   Is there about 288 degrees to 432 degrees positive?

   YES–Intermittent failure, the system is OK at this time.■

   NO–Replace the steering angle sensor (see page 19-132).■

DTC 31-xx*: ABS Right-front Inlet Solenoid Valve Malfunction

DTC 32-xx*: ABS Right-front Outlet Solenoid Valve Malfunction

DTC 33-xx*: ABS Left-front Inlet Solenoid Valve Malfunction

DTC 34-xx*: ABS Left-front Outlet Solenoid Valve Malfunction

DTC 35-xx*: ABS Right-rear Inlet Solenoid Valve Malfunction

DTC 36-xx*: ABS Right-rear Outlet Solenoid Valve Malfunction

DTC 37-xx*: ABS Left-rear Inlet Solenoid Valve Malfunction

DTC 38-xx*: ABS Left-rear Outlet Solenoid Valve Malfunction

*: Any two-character subcode (see table)

Subcode	Malfunction	Note (DTC)
01	Solenoid Initial Pulse	31-01, 32-01, 33-01, 34-01, 35-01, 36-01, 37-01, 38-01
02	Initial Feedback Signal	31-02, 33-02, 35-02, 37-02
11	Feedback Signal	31-11, 33-11, 35-11, 37-11
21	Solenoid Pulse	31-21, 32-21, 33-21, 34-21, 35-21, 36-21, 37-21, 38-21
22	Solenoid Speculative	31-22, 32-22, 33-22, 34-22, 35-22, 36-22, 37-22, 38-22
23	Solenoid Stuck ON	31-23, 32-23, 33-23, 34-23, 35-23, 36-23, 37-23, 38-23
24	Feedback Signal/Solenoid Stuck ON	31-24, 33-24, 35-24, 37-24

(cont'd)

DTC Troubleshooting (cont'd)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 31-xx, 32-xx, 33-xx, 34-xx, 35-xx, 36-xx, 37-xx, or 38-xx indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time.■
5. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
6. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
7. Check for DTCs with the HDS.

   Is DTC 31-xx, 32-xx, 33-xx, 34-xx, 35-xx, 36-xx, 37-xx, or 38-xx indicated?

   YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

   NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 41-21: Right-front Wheel Lock

DTC 42-21: Left-front Wheel Lock

DTC 43-21: Right-rear Wheel Lock

DTC 44-21: Left-rear Wheel Lock

The DTCs may be indicated under these conditions:

- The vehicle goes into a spin.
- The ABS or VSA continues to operate for a long time.
- Snow, dirt, or debris build-up on the wheel speed sensor or magnetic encoder.
- Misadjusted brake pedal position switch.
- Contaminated brake fluid.

1. Drive the vehicle until the brakes drag or until the pedal is high and hard. This can take 20 or more brake pedal applications during an extended test-drive.
2. With the engine running, raise and support the vehicle (see page 1-13), then spin the appropriate wheel by hand.

DTC	Appropriate Wheel
41-21	Right-front
42-21	Left-front
43-21	Right-rear
44-21	Left-rear

   Is there brake drag?

   YES–Repair the brake drag (see page 19-5).■

   NO–Go to step 3.
3. Check that the appropriate wheel speed sensor is properly mounted (see page 19-139).

   Is the wheel speed sensor installation OK?

   YES–Go to step 4.

   NO–Reinstall the wheel speed sensor, and check the mounting position (see page 19-139).■

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle at 7 mph (10 km/h) for 20 seconds or more.

   NOTE: Drive the vehicle on the road, not on a lift.

7. Check for DTCs with the HDS.

   Is DTC 41-21, 42-21, 43-21, and/or 44-21 indicated?

   YES–Go to step 8.

   NO–If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time. Refer to intermittent failures troubleshooting (see page 19-49).■

8. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
9. Test-drive the vehicle at 7 mph (10 km/h) for 20 seconds or more.

   NOTE: Drive the vehicle on the road, not on a lift.

10. Check for DTCs with the HDS.

    Is DTC 41-21, 42-21, 43-21, and/or 44-21 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 51-11: Motor Lock

DTC 51-13: Motor Drive Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Wait 5 seconds.
5. Operate any one of the four solenoids, as listed, in the VSA FUNCTION TEST five times with the HDS.

-LFT FT SOLENOID
-RT FT SOLENOID
-LFT REAR SOLENOID
-RT REAR SOLENOID

6. Check for DTCs with the HDS.

   Is DTC 51-11 or 51-13 indicated?

   YES–Go to step 7.

   NO–Intermittent failure, the system is OK at this time.■

7. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
8. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
9. Wait 5 seconds.

(cont'd)

DTC Troubleshooting (cont'd)

10. Operate any one of the four solenoids, as listed, in the VSA FUNCTION TEST five times with the HDS.

-LFT FT SOLENOID
-RT FT SOLENOID
-LFT REAR SOLENOID
-RT REAR SOLENOID

11. Check for DTCs with the HDS.

    Is DTC 51-11 or 51-13 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 51-12: Motor Drive Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

    Is DTC 51-12 indicated?

    YES–Go to step 5.

    NO–Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■

5. Turn the ignition switch to LOCK (0).
6. Check the No. 2 (30 A) fuse in the under-hood fuse/relay box.

    Is the fuse blown?

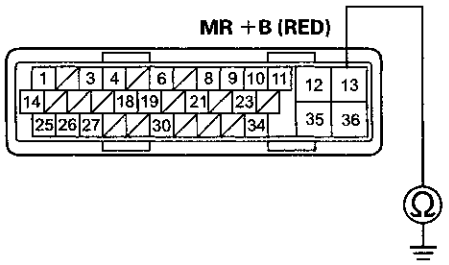
    YES–Go to step 7.

    NO–Reinstall the checked fuse, then go to step 14.

7. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).

8. Check for continuity between VSA modulator-control unit 36P connector terminal No. 13 and body ground.

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Repair a short to body ground in the wire between the No. 2 (30 A) fuse in the under-hood fuse/relay box and the VSA modulator-control unit.■

NO–Install a new No. 2 (30 A) fuse in the under-hood fuse/relay box, then go to step 9.

9. Reconnect the VSA modulator-control unit 36P connector.
10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
13. Check for DTCs with the HDS.

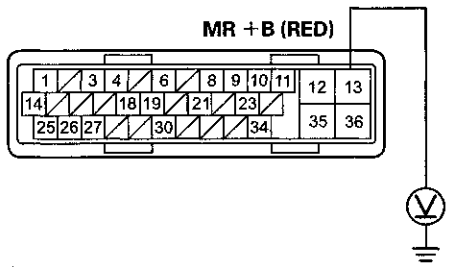
Is DTC 51-12 indicated?

YES–Replace the VSA modulator-control unit (see page 19-136).■

NO–The troubleshooting is complete.■

14. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).
15. Measure the voltage between VSA modulator-control unit 36P connector terminal No. 13 and body ground.

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES–Go to step 16.

NO–Repair an open in the wire between the No. 2 (30 A) fuse in the under-hood fuse/relay box and the VSA modulator-control unit.■

(cont'd)

DTC Troubleshooting (cont'd)

16. Reconnect the VSA modulator-control unit 36P connector.
17. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
18. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
19. Check for DTCs with the HDS.

    Is DTC 51-12 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 52-12: Motor Stuck OFF

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Operate any one of the four solenoids, as listed, in the VSA FUNCTION TEST five times with the HDS.

-LFT FT SOLENOID
-RT FT SOLENOID
-LFT REAR SOLENOID
-RT REAR SOLENOID

5. Check for DTCs with the HDS.

   Is DTC 52-12 indicated?

   YES–Go to step 6.

   NO–Intermittent failure, the system is OK at this time.■

6. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
7. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
8. Operate any one of the four solenoids, as listed, in the VSA FUNCTION TEST five times with the HDS.

-LFT FT SOLENOID
-RT FT SOLENOID
-LFT REAR SOLENOID
-RT REAR SOLENOID

9. Check for DTCs with the HDS.

   Is DTC 52-12 indicated?

   YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

   NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 53-01: Motor Relay Stuck ON 1

DTC 53-12: Motor Relay Stuck ON 2

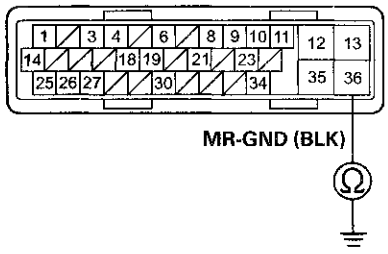
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 53-01 or 53-12 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).
7. Check for continuity between VSA modulator-control unit 36P connector terminal No. 36 and body ground.

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Go to step 8.

NO–Repair an open in the wire between the VSA modulator-control unit and body ground (G202).■

(cont'd)

DTC Troubleshooting (cont'd)

8. Reconnect the VSA modulator-control unit 36P connector.
9. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
10. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
11. Check for DTCs with the HDS.

    Is DTC 53-01 or 53-12 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 54-03: Fail-safe Relay 1 Stuck ON

DTC 54-04: Fail-safe Relay 1 Stuck OFF (Initial)

DTC 54-21: Fail-safe Relay 1 Stuck OFF (Main)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

    Is DTC 54-03, 54-04, or 54-21 indicated?

    YES–Go to step 5.

    NO–Intermittent failure, the system is OK at this time.■
5. Turn the ignition switch to LOCK (0).
6. Check the No. 2 (40 A) fuse in the under-hood fuse/relay box.

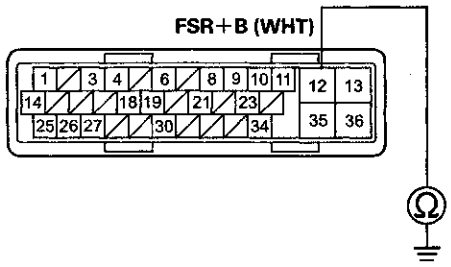
    Is the fuse blown?

    YES–Go to step 7.

    NO–Reinstall the checked fuse, then go to step 14.
7. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).

8. Check for continuity between VSA modulator-control unit 36P connector terminal No. 12 and body ground.

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Repair a short to body ground in the wire between the No. 2 (40 A) fuse in the under-hood fuse/relay box and the VSA modulator-control unit.■

NO–Install a new No. 2 (40 A) fuse in the under-hood fuse/relay box, then go to step 9.

9. Reconnect the VSA modulator-control unit 36P connector.
10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
13. Check for DTCs with the HDS.

    Is DTC 54-03, 54-04, or 54-21 indicated?

    YES–Replace the VSA modulator-control unit (see page 19-136).

    NO–The troubleshooting is complete.■

14. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
15. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
16. Check for DTCs with the HDS.

    Is DTC 54-03, 54-04, or 54-21 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC Troubleshooting (cont'd)

DTC 56-01: Initial VIG FET Stuck OFF (Initial)

DTC 56-02: Initial VIG FET Stuck ON

DTC 56-11: VIG FET Stuck OFF (Main)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 56-01, 56-02, or 56-11 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time.■
5. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
6. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
7. Check for DTCs with the HDS.

   Is DTC 56-01, 56-02, or 56-11 indicated?

   YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

   NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 61-01: VSA Modulator-control Unit Initial IG Low Voltage

DTC 61-21: VSA Modulator-control Unit Power Source Low Voltage 1

DTC 61-22: VSA Modulator-control Unit Power Source Low Voltage 2

DTC 61-23: VSA Modulator-control Unit Power Source Low Voltage 3

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then start the engine.
4. Check for DTCs with the HDS.

   Is DTC 61-01, 61-21, 61-22, or 61-23 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
5. Check and note BATTERY voltage in the VSA DATA LIST with the HDS.
6. Using a voltmeter, measure and note the voltage across the battery terminals.

   NOTE: If the voltage is below 9.5 V, check the battery (see page 22-90), and troubleshoot the alternator regulator circuit (see page 4-27).

7. Compare the voltage noted in step 5 to the voltage in step 6.

   Is the difference between the two voltage readings less then 3 V?

   YES–Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49). If the code resets after clearing, go to step 8.

   NO–Go to step 8.

8. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).

9. Turn the ignition switch to LOCK (0), then start the engine.

10. Check for DTCs with the HDS.

    Is DTC 61-01, 61-21, 61-22, or 61-23 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 62-21: VSA Modulator-control Unit IG High Voltage

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

2. Clear the DTC with the HDS.

3. Turn the ignition switch to LOCK (0), then start the engine.

4. Check for DTCs with the HDS.

   Is DTC 62-21 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time.■

5. Check and note BATTERY voltage in the VSA DATA LIST with the HDS.

6. Using a voltmeter, measure and note the voltage accross the battery terminals.

   NOTE: If the voltage is more than 15.1 V, troubleshoot the alternator regulator circuit (see page 4-27).

7. Compare the voltage noted in step 5 to the voltage in step 6.

   Is the difference between the two voltage readings less than 3 V?

   YES–Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49). If the code resets after clearing, go to step 8.■

   NO–Go to step 8.

(cont'd)

DTC Troubleshooting (cont'd)

8. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
9. Turn the ignition switch to LOCK (0), then start the engine.
10. Check for DTCs with the HDS.

    Is DTC 62-21 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 64-11: Steering Angle Sensor Power Circuit Low Voltage

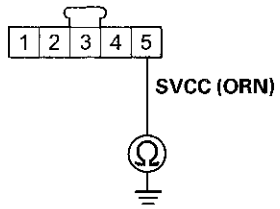
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

    Is DTC 64-11 indicated?

    YES–Go to step 5.

    NO–Intermittent failure, the system is OK at this time.■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the steering angle sensor 5P connector (see page 19-132).
7. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).
8. Check for continuity between steering angle sensor 5P connector terminal No. 5 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Repair a short to body ground in the wire between the steering angle sensor and the VSA modulator-control unit.■

NO–Go to step 9.

9. Reconnect all connectors.
10. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
11. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
12. Check for DTCs with the HDS.

    Is DTC 64-11 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 64-12: Steering Angle Sensor Power Circuit High Voltage

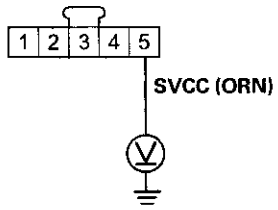
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

    Is DTC 64-12 indicated?

    YES–Go to step 5.

    NO–Intermittent failure, the system is OK at this time. Check for loose terminals between the steering angle sensor 5P connector and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the steering angle sensor 5P connector (see page 19-132).
7. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).
8. Turn the ignition switch to ON (II).
9. Measure the voltage between steering angle sensor 5P connector terminal No. 5 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES–Repair a short to power in the wire between the steering angle sensor and the VSA modulator-control unit.■

NO–Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

10. Turn the ignition switch to LOCK (0).
11. Reconnect all connectors.
12. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
13. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
14. Check for DTCs with the HDS.

    Is DTC 64-12 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 65-21: Brake Fluid Level Stuck ON

NOTE: Bleeding the brake system while the ignition switch is ON can cause this DTC.

1. Check the brake fluid level in the master cylinder reservoir.

   Is the brake fluid level OK?

   YES–Go to step 2.

   NO–Do the brake pad inspection: Front (see page 19-13), rear (see page 19-30), check for brake fluid leaks or replace worn brake pads, then go to step 2 and recheck.
2. Turn the ignition switch to ON (II).
3. Clear the DTC with the HDS.
4. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
5. Check for DTCs with the HDS.

   Is DTC 65-21 indicated?

   YES–Go to step 6.

   NO–Intermittent failure, the system is OK at this time.■
6. Release the parking brake.
7. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
8. Check the brake system indicator in the gauge control module.

   Does the indicator come on then go off?

   YES–Go to step 13.

   NO–Go to step 9.
9. Check the BRAKE FLUID LEVEL SWITCH in the VSA DATA LIST with the HDS.

   Does the HDS indicate the BRAKE FLUID LEVEL SWITCH as OFF?

   YES–Substitute a known-good gauge control module (see page 22-351), then go to step 1 and recheck. If no DTCs are indicated, replace the original gauge control module (see page 22-351).

   NO–Go to step 10.

10. Disconnect the brake fluid level switch 2P connector (see step 3 on page 19-26), then check the BRAKE FLUID LEVEL SWITCH in the VSA DATA LIST.

    Does the HDS indicate OFF?

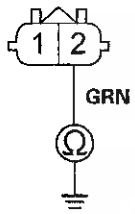
    YES–Replace the brake master cylinder (the brake fluid level switch is included) (see page 19-26).

    NO–Go to step 11.

11. Disconnect the gauge control module 32P connector (see page 22-347).

12. Check for continuity between brake fluid level switch 2P connector terminal No. 2 and body ground.

BRAKE FLUID LEVEL SWITCH 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Repair a short to body ground in the wire between the gauge control module and the brake fluid level switch.■

NO–Substitute a known-good gauge control module (see page 22-351), then go to step 1 and recheck. If no DTCs are indicated, replace the original gauge control module (see page 22-351).■

13. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).

14. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.

15. Check for DTCs with the HDS.

    Is DTC 65-21 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 2.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC Troubleshooting (cont'd)

DTC 66-11: Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction

DTC 66-14: Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction

DTC 66-16: Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction

DTC 66-17: Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction

DTC 66-18: Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction

DTC 66-19: Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 66-11, 66-14, 66-16, 66-17, 66-18, or 66-19 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time.■
5. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
6. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
7. Check for DTCs with the HDS.

   Is DTC 66-11, 66-14, 66-16, 66-17, 66-18, or 66-19 indicated?

   YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

   NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 66-12: Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction

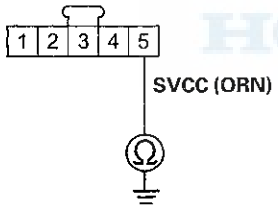
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 66-12 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time.■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the steering angle sensor 5P connector (see page 19-132).
7. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).
8. Check for continuity between steering angle sensor 5P connector terminal No. 5 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

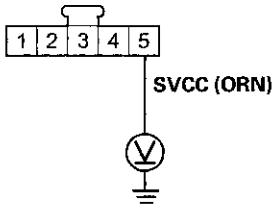
Is there continuity?

YES–Repair a short to body ground in the wire between the steering angle sensor and the VSA modulator-control unit.■

NO–Go to step 9.

9. Turn the ignition switch to ON (II).
10. Measure the voltage between steering angle sensor 5P connector terminal No. 5 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES–Repair a short to power in the wire between the steering angle sensor and the VSA modulator-control unit.■

NO–Go to step 11.

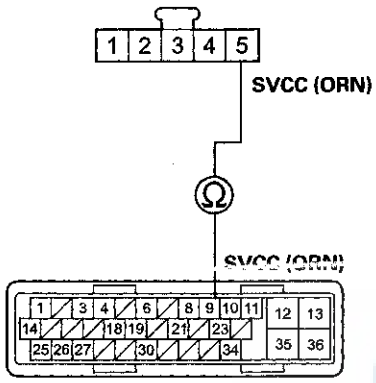
11. Turn the ignition switch to LOCK (0).

(cont'd)

DTC Troubleshooting (cont'd)

12. Check for continuity between VSA modulator-control unit 36P connector terminal No. 9 and steering angle sensor 5P connector terminal No. 5.

STEERING ANGLE SENSOR 5P CONNECTOR
Wire side of female terminals



VSA MODULATOR-CONTROL UNIT 36P CONNECTOR
Wire side of female terminals

Is there continuity?

YES–Go to step 13.

NO–Repair an open in the wire between the steering angle sensor and the VSA modulator-control unit.■

13. Reconnect all connectors.
14. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
15. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
16. Check for DTCs with the HDS.

Is DTC 66-12 indicated?

YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 66-15: Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction

NOTE: Brake fluid leaks from brake system can cause this DTC. Check for brake fluid leaks first.

1. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.

2. Turn the ignition switch to LOCK (0).
3. Raise and support the vehicle (see page 1-13).
4. Turn all four wheels by hand.

   Is there brake drag?

   YES–Repair the brake drag (see page 19-5).■

   NO–Go to step 5.

5. Turn the ignition switch to ON (II).
6. Check the BRAKE PRESS in the VSA DATA LIST with the HDS while moving the brake pedal.

   Does the indicated value change?

   YES–Intermittent failure, the system is OK at this time.■

   NO–Go to step 7.

7. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
8. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
9. Check for DTCs with the HDS.

   Is DTC 66-15 indicated?

   YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

   NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC Troubleshooting (cont'd)

DTC 68-21: Brake Pedal Position Switch Stuck OFF

NOTE: Troubleshoot any fuel and emissions DTCs first.

1. Start the engine.
2. Check the BRAKE PRESS in the VSA DATA LIST with the HDS. Do not press the brake pedal.

   Is there 10 MPa or less?

   YES–Go to step 3.

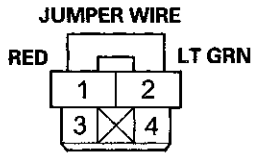
   NO–Check for brake drag (see page 19-5) or a misadjusted brake pedal position switch (see page 19-6). If they are normal, go to step 25.
3. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS while moving the brake pedal.

   Does it indicate ON when the pedal is pressed, and OFF when the pedal is released?

   YES–Intermittent failure, the system is OK at this time. Check for loose terminals between the brake pedal position switch 4P connector, ECM/PCM connector A (49P), and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■

   NO–Go to step 4.
4. Turn the ignition switch to LOCK (0).
5. Disconnect the brake pedal position switch 4P connector (see page 19-6).
6. Connect the brake pedal position switch 4P connector terminals No. 1 and No. 2 with a jumper wire.

BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

7. Turn the ignition switch to ON (II).
8. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS.

   Does it indicate ON?

   YES–Check the brake pedal position switch adjustment (see page 19-6). If it is OK, replace the brake pedal position switch (see page 19-6).■

   NO–Go to step 9.
9. Disconnect the jumper wire.

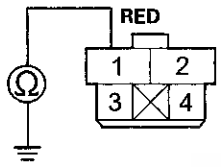
10. Turn the ignition switch to LOCK (0).
11. Check the No. 10 (20 A) fuse in the under-hood fuse/ relay box.

    Is the fuse blown?

    YES–Go to step 12.

    NO–Reinstall the checked fuse, then go to step 21.
12. Check for continuity between brake pedal position switch 4P connector terminal No. 1 and body ground.

BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

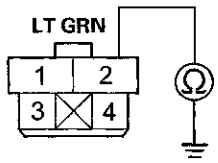
Is there continuity?

YES–Repair a short to body ground in the wire between the No. 10 (20 A) fuse in the under-hood fuse/ relay box and the brake pedal position switch.■

NO–Go to step 13.

13. Short the SCS line with the HDS.
14. Disconnect ECM/PCM connector A (49P) (see page 11-204).
15. Check for continuity between brake pedal position switch 4P connector terminal No. 2 and body ground.

BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Repair a short to body ground in the wire between the brake pedal position switch and the ECM/PCM.■

NO–Install a new No. 10 (20 A) fuse in the under-hood fuse/ relay box, then go to step 16.

16. Reconnect all connectors.
17. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
18. Clear the DTC with the HDS.
19. Test-drive the vehicle at 7 mph (10 km/h) or more.

    NOTE: Drive the vehicle on the road, not on a lift.

(cont'd)

DTC Troubleshooting (cont'd)

20. Check for DTCs with the HDS.

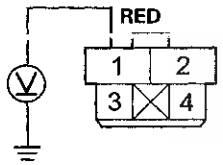
    Is DTC 68-21 indicated?

    YES–Check for loose terminals in the ECM/PCM connector A (49P). If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then retest. If the ECM/PCM was substituted, go to step 1.

    NO–The troubleshooting is complete.■

21. Measure the voltage between brake pedal position switch 4P connector terminal No. 1 and body ground.

BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES–Go to step 22.

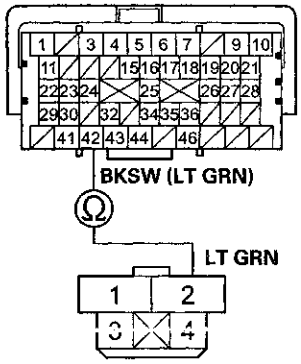
NO–Repair an open in the wire between the No. 10 (20 A) fuse in the under-hood fuse/ relay box and the brake pedal position switch.■

22. Short the SCS line with the HDS.

23. Disconnect ECM/PCM connector A (49P) (see page 11-204).

24. Check for continuity between brake pedal position switch 4P connector terminal No. 2 and ECM/PCM connector A (49P) terminal No. 42.

ECM/PCM CONNECTOR A (49P)
Terminal side of female terminals



BRAKE PEDAL POSITION SWITCH 4P CONNECTOR
Wire side of female terminals

Is there continuity?

YES–Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7), then go to step 1 and recheck. If DTCs are not indicated, ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-204).

NO–Repair an open in the wire between the ECM/PCM and the brake pedal position switch.■

25. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
26. Test-drive the vehicle at 7 mph (10 km/h) or more.

    NOTE: Drive the vehicle on the road, not on a lift.
27. Check for DTCs with the HDS.

    Is DTC 68-21 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 68-22: Brake Pedal Position Switch Stuck ON

1. Start the engine.
2. Check the BRAKE PRESS in the VSA DATA LIST with the HDS. Do not press the brake pedal.

   Is there 10 MPa or more?

   YES–Check the brake pedal height (see page 19-6). If the brake pedal height is OK, go to step 10.

   NO–Go to step 3.
3. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS while moving the brake pedal.

   Does it indicate ON when the pedal is pressed, and OFF when the pedal is released?

   YES–Intermittent failure, the system is OK at this time.■

   NO–Go to step 4.
4. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS, and disconnect the brake pedal position switch 4P connector (see page 19-6).

   Does the indicator change from ON to OFF?

   YES–Replace the brake pedal position switch (see page 19-6).■

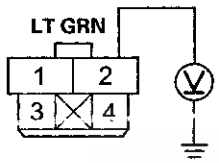
   NO–Go to step 5.

(cont'd)

DTC Troubleshooting (cont'd)

5. Turn the ignition switch to LOCK (0).
6. Short the SCS line with the HDS.
7. Disconnect ECM/PCM connector A (49P) (see page 11-204).
8. Turn the ignition switch to ON (II).
9. Measure the voltage between brake pedal position switch 4P connector terminal No. 2 and body ground.

BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES–Repair a short to power in the wire between the ECM/PCM and the brake pedal position switch.■

NO–Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7), then go to step 1 and recheck. If DTCs are not indicated, ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-204).

10. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
11. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
12. Check for DTCs with the HDS.

Is DTC 68-22 indicated?

YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 71-21: Right-front or Left-rear Different Diameter Tire Malfunction

DTC 71-22: Left-front or Right-rear Different Diameter Tire Malfunction

DTC 71-23: Right-front and Right-rear Different Diameter Tire Malfunction

DTC 71-24: Left-front and Left-rear Different Diameter Tire Malfunction

DTC 71-25: Right-front and Left-front Different Diameter Tire Malfunction

DTC 71-26: Right-rear and Left-rear Different Diameter Tire Malfunction

DTC 71-27: Right-front or Left-rear Different Diameter Tire Malfunction

DTC 71-28: Left-front or Right-rear Different Diameter Tire Malfunction

DTC 71-29: Right-front and Right-rear Different Diameter Tire Malfunction

DTC 71-2A: Left-front and Left-rear Different Diameter Tire Malfunction

DTC 71-2B: Right-front and Left-front Different Diameter Tire Malfunction

DTC 71-2C: Right-rear and Left-rear Different Diameter Tire Malfunction

NOTE: The DTC will be indicated when the vehicle has a different diameter tire(s) compared to the other tires.

1. Check the tires for proper inflation and the correct size (see page 18-5).
2. Turn the ignition switch to ON (II).
3. Clear the DTC with the HDS.
4. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.
5. Check for DTCs with the HDS.

   Is DTC 71-21, 71-22, 71-23, 71-24, 71-25, 71-26, 71-27, 71-28, 71-29, 71-2A, 71-2B, or 71-2C indicated?

   YES–Replace tires as needed until all their diameters match (see page 18-5).■

   NO–Intermittent failure, the system is OK at this time.■

DTC Troubleshooting (cont'd)

DTC 81-xx*: Central Processing Unit (CPU) Internal Circuit Malfunction

*: Any two-character subcode (Except these combinations: DTC 81-07, 81-11, 81-3D, 81-3E, 81-51, 81-52, 81-53, 81-54, 81-55, 81-56, 81-57, 81-58, and 81-59)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 81-xx indicated?

   YES–If DTC 81-07, 81-11, 81-3D, 81-3E, 81-51, 81-52, 81-53, 81-54, 81-55, 81-56, 81-57, 81-58, or 81-59 is indicated at the same time, do the appropriate troubleshooting first. If DTC 81-07, 81-11, 81-3D, 81-3E, 81-51, 81-52, 81-53, 81-54, 81-55, 81-56, 81-57, 81-58, or 81-59 is not indicated, go to step 5.

   NO–Intermittent failure, the system is OK at this time.■
5. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
6. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
7. Check for DTCs with the HDS.

   Is DTC 81-xx indicated?

   YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

   NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 81-07: Central Processing Unit (CPU) Internal Circuit Malfunction

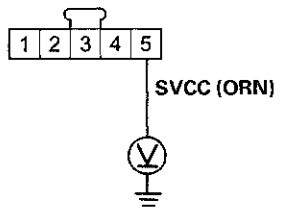
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 81-07 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time.■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the steering angle sensor 5P connector (see page 19-132).
7. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).
8. Turn the ignition switch to ON (II).
9. Measure the voltage between steering angle sensor 5P connector terminal No. 5 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES–Repair a short to power in the wire between the steering angle sensor and the VSA modulator-control unit.■

NO–Go to step 10.

10. Turn the ignition switch to LOCK (0).
11. Reconnect all connectors.
12. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
13. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
14. Check for DTCs with the HDS.

    Is DTC 81-07 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 81-11: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-52: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-54: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-56: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-58: Central Processing Unit (CPU) Internal Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

   Is DTC 81-11, 81-52, 81-54, 81-56, or 81-58 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time.■
5. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
6. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.
7. Check for DTCs with the HDS.

   Is DTC 81-11, 81-52, 81-54, 81-56, or 81-58 indicated?

   YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

   NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC Troubleshooting (cont'd)

DTC 81-3D: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-3E: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-59: Central Processing Unit (CPU) Internal Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Turn the steering wheel from lock to lock several times.
5. Check for DTCs with the HDS.

   Is DTC 81-3D, 81-3E, or 81-59 indicated?

   YES–Go to step 6.

   NO–Intermittent failure, the system is OK at this time.■
6. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
7. Start the engine.
8. Turn the steering wheel from lock to lock several times.
9. Check for DTCs with the HDS.

   Is DTC 81-3D, 81-3E, or 81-59 indicated?

   YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

   NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 81-51: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-53: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-55: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-57: Central Processing Unit (CPU) Internal Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

   Is DTC 81-51, 81-53, 81-55, or 81-57 indicated?

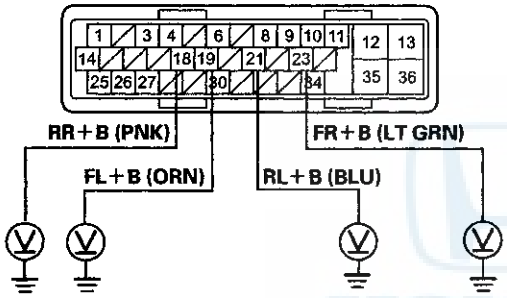
   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time.■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).
7. Turn the ignition switch to ON (II).

8. Measure the voltage between body ground and the appropriate VSA modulator-control unit 36P connector terminals (see table).

DTC	VSA Modulator-control Unit 36P Connector Terminal
81-51	No. 23
81-53	No. 19
81-55	No. 18
81-57	No. 21

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES–Repair a short to power in the wire between the appropriate wheel speed sensor and the VSA modulator-control unit.■

NO–Go to step 9.

9. Turn the ignition switch to LOCK (0).
10. Reconnect the VSA modulator-control unit 36P connector.
11. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
12. Test-drive the vehicle.

    NOTE: Drive the vehicle on the road, not on a lift.

13. Check for DTCs with the HDS.

    Is DTC 81-51, 81-53, 81-55, or 81-57 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC Troubleshooting (cont'd)

DTC 83-13: ECM/PCM Communication Error (Engine Malfunction)

DTC 83-14: PCM Communication Error (A/T Malfunction)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

   Is DTC 83-13 or 83-14 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time. Check for loose terminals between ECM/PCM connector A (49P) and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
5. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
6. Clear the DTC with the HDS.
7. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.
8. Check for DTCs with the HDS.

   Is DTC 83-13 or 83-14 indicated?

   YES–Go to step 9.

   NO–If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-204).■
9. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
10. Test-drive the vehicle.

    NOTE: Drive the vehicle on the road, not on a lift.
11. Check for DTCs with the HDS.

    Is DTC 83-13 or 83-14 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 84-21: VSA Sensor Neutral Position not Writing

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see page 19-133).
4. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
5. Check for DTCs with the HDS.

   Is DTC 84-21 indicated?

   YES–Go to step 6.

   NO–The system is OK at this time.■
6. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
7. Do the VSA sensor neutral position memorization (see page 19-133).
8. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
9. Check for DTCs with the HDS.

   Is DTC 84-21 indicated?

   YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

   NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 86-01: F-CAN Bus-off Malfunction

NOTE: Troubleshoot the fuel and emissions DTCs first.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 86-01 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time. Check for loose terminals between ECM/PCM connector A (49P) and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
5. Turn the ignition switch to LOCK (0).
6. Short the SCS line with the HDS.
7. Disconnect ECM/PCM connector A (49P) (see page 11-204).
8. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).

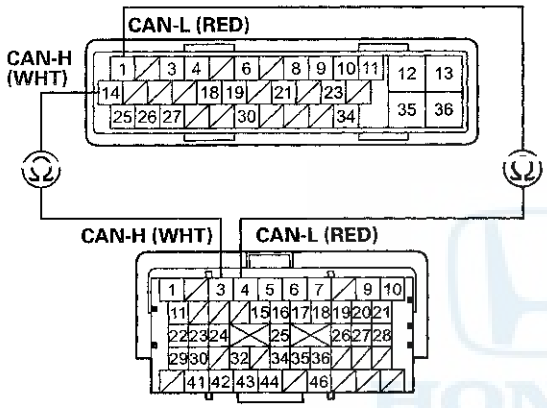
(cont'd)

DTC Troubleshooting (cont'd)

9. Check for continuity between VSA modulator-control unit 36P connector terminal and ECM/PCM connector A (49P) terminal (see table).

Sign	VSA Modulator-control Unit 36P Connector Terminal	ECM/PCM Connector A (49P) Terminal
CAN-L	No. 1	No. 4
CAN-H	No. 14	No. 3

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR
Wire side of female terminals



ECM/PCM CONNECTOR A (49P)
Terminal side of female terminals

Is there continuity?

YES–Go to step 10.

NO–Repair an open in the wire between the ECM/PCM and the VSA modulator-control unit.■

10. Reconnect all connectors.
11. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
12. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
13. Check for DTCs with the HDS.

Is DTC 86-01 indicated?

YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 86-11: F-CAN Communication With ECM/PCM Malfunction

DTC 86-21: F-CAN Communication With Engine Malfunction

DTC 86-22: F-CAN Communication With Engine Malfunction

DTC 86-23: F-CAN Communication With Engine Malfunction

DTC 86-24: F-CAN Communication With Engine Malfunction

DTC 86-25: F-CAN Communication With Engine Malfunction

DTC 86-41: F-CAN Communication With EAT Malfunction

NOTE: Troubleshoot the fuel and emissions DTCs first.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle at 7 mph (10 km/h) or more.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

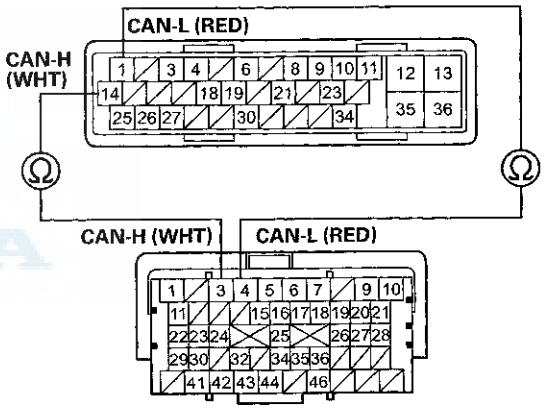
   Is DTC 86-11, 86-21, 86-22, 86-23, 86-24, 86-25, and/or 86-41 indicated?

   YES–If DTC 86-01 is indicated at the same time, do the DTC 86-01 troubleshooting first (see page 19-119). If DTC 86-01 is not indicated, go to step 5.

   NO–If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time. Check for loose terminals between ECM/PCM connector A (49P) and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
5. Turn the ignition switch to LOCK (0).
6. Short the SCS line with the HDS.
7. Disconnect ECM/PCM connector A (49P) (see page 11-204).
8. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).
9. Check for continuity between the VSA modulator-control unit 36P connector terminal and ECM/PCM connector A (49P) terminal (see table).

Sign	VSA Modulator-control Unit 36P Connector Terminal	ECM/PCM Connector A (49P) Terminal
CAN-L	No. 1	No. 4
CAN-H	No. 14	No. 3

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR
Wire side of female terminals



ECM/PCM CONNECTOR A (49P)
Terminal side of female terminals

Is there continuity?

YES–Go to step 10.

NO–Repair an open in the wire between the ECM/PCM and the VSA modulator-control unit.■

(cont'd)

DTC Troubleshooting (cont'd)

10. Reconnect all connectors.
11. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
12. Clear the DTC with the HDS.
13. Test-drive the vehicle at 7 mph (10 km/h) or more.

    NOTE: Drive the vehicle on the road, not on a lift.
14. Check for DTCs with the HDS.

    Is DTC 86-11, 86-21, 86-22, 86-23, 86-24, 86-25, and/or 86-41 indicated?

    YES–Go to step 15.

    NO–If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-204).■
15. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
16. Test-drive the vehicle at 7 mph (10 km/h) or more.

    NOTE: Drive the vehicle on the road, not on a lift.
17. Check for DTCs with the HDS.

    Is DTC 86-11, 86-21, 86-22, 86-23, 86-24, 86-25, and/or 86-41 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 86-31: F-CAN Communication With Gauge Control Module Malfunction

NOTE: Troubleshoot the fuel and emissions DTCs first.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 86-31 indicated?

   YES–If DTC 86-01 is indicated at the same time, do the DTC 86-01 troubleshooting first (see page 19-119). If DTC 86-01 is not indicated, go to step 5.

   NO–If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time. Check for loose terminals between the gauge control module 32P connector and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
5. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.

   Does the gauge indicators come on?

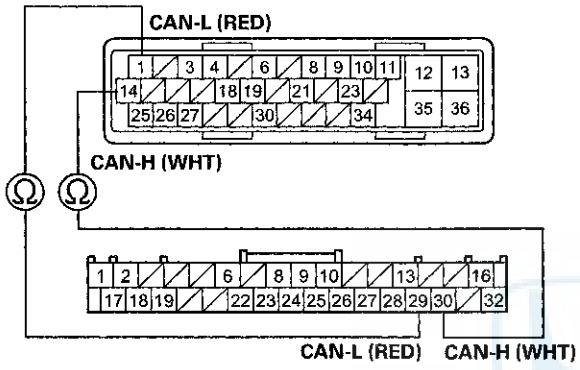
   YES–Go to step 6.

   NO–Do the gauge control module troubleshooting (see page 22-332).■
6. Turn the ignition switch to LOCK (0).
7. Disconnect the gauge control module 32P connector (see page 22-351).
8. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).

9. Check for continuity between the VSA modulator-control unit 36P connector terminal and gauge control module 32P connector terminal (see table).

Sign	VSA Modulator-control Unit 36P Connector Terminal	Gauge Control Module 32P Connector Terminal
CAN-L	No. 1	No. 29
CAN-H	No. 14	No. 30

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR
Wire side of female terminals



GAUGE CONTROL MODULE 32P CONNECTOR
Wire side of female terminals

Is there continuity?

YES–Check for loose terminals in the gauge control module 32P connector. If necessary, substitute a known-good gauge control module (see page 22-351), then go to step 1 and recheck. If no DTCs are indicated, replace the original gauge control module (see page 22-351). If DTC 86-31 resets, go to step 10.

NO–Repair an open in the wire between the gauge control module and the VSA modulator-control unit.■

10. Reconnect all connectors.
11. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
12. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
13. Check for DTCs with the HDS.

Is DTC 86-31 indicated?

YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC Troubleshooting (cont'd)

DTC 86-71: F-CAN Communication With Yaw Rate-Lateral Acceleration Sensor Malfunction

NOTE: Troubleshoot the fuel and emissions DTCs first.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

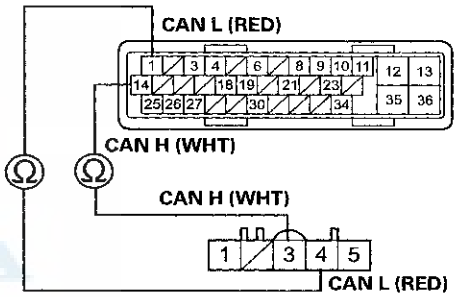
   Is DTC 86-71 indicated?

   YES–If DTC 86-01 is indicated at the same time, do the DTC 86-01 troubleshooting first (see page 19-119). If DTC 86-01 is not indicated, go to step 5.

   NO–If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time. Check for loose terminals at the yaw rate-lateral acceleration sensor 5P connector and the VSA modulator-control unit 36P connector. Refer to intermittent failures troubleshooting (see page 19-49).■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the yaw rate-lateral acceleration sensor 5P connector (see page 19-133).
7. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).
8. Check for continuity between the VSA modulator-control unit 36P connector terminal and the yaw rate-lateral acceleration sensor 5P connector terminal (see table).

Sign	VSA Modulator-control Unit 36P Connector Terminal	Yaw Rate-lateral Acceleration Sensor 5P Connector Terminal
CAN-L	No. 1	No. 4
CAN-H	No. 14	No. 3

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR
Wire side of female terminals



YAW RATE-LATERAL ACCELERATION SENSOR 5P CONNECTOR
Wire side of female terminals

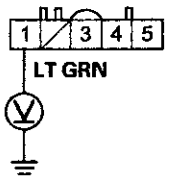
Is there continuity?

YES–Go to step 9.

NO–Repair an open in the wire between the yaw rate-lateral acceleration sensor and the VSA modulator-control unit.■

9. Turn the ignition switch to ON (II).
10. Measure the voltage between yaw rate-lateral acceleration sensor 5P connector terminal No. 1 and body ground.

YAW RATE-LATERAL ACCELERATION SENSOR 5P CONNECTOR



Wire side of female terminals

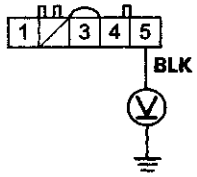
Is there battery voltage?

YES–Go to step 11.

NO–Repair an open in the wire between the No. 6 (7.5 A) fuse in the driver's under-dash fuse/relay box and the yaw rate-lateral acceleration sensor.■

11. Turn the ignition switch to LOCK (0).
12. Reconnect the yaw rate-lateral acceleration sensor 5P connector.
13. Turn the ignition switch to ON (II).
14. Measure the voltage between yaw rate-lateral acceleration sensor 5P connector terminal No. 5 and body ground.

YAW RATE-LATERAL ACCELERATION SENSOR 5P CONNECTOR



Wire side of female terminals

Is there 0.1 V or less?

YES–Replace the yaw rate-lateral acceleration sensor (see page 19-133).■

NO–Repair an open in the wire between the yaw rate-lateral acceleration sensor and body ground (G503).■

DTC Troubleshooting (cont'd)

DTC 107-22: Central Processing Unit (CPU) Internal Circuit Malfunction

1. Turn the ignition switch to LOCK (0) to cool the VSA modulator-control unit, and wait 1 hour or more.
2. Turn the ignition switch to ON (II).
3. Clear the DTC with the HDS.
4. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
5. Check for DTCs with the HDS.

   Is DTC 107-22 indicated?

   YES–Go to step 6.

   NO–The system is OK at this time.■
6. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
7. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
8. Check for DTCs with the HDS.

   Is DTC 107-22 indicated?

   YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

   NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 108-21: Steering Angle Sensor Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

   Is DTC 108-21 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time.■
5. Turn the ignition switch to LOCK (0).
6. Substitute a known-good steering angle sensor (see page 19-132).
7. Turn the ignition switch to ON (II).
8. Clear the DTC with the HDS.
9. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.
10. Check for DTCs with the HDS.

    Is DTC 108-21 indicated?

    YES–Go to step 11.

    NO–Replace the original steering angle sensor (see page 19-132).■

11. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
12. Test-drive the vehicle.

    NOTE: Drive the vehicle on the road, not on a lift.
13. Check for DTCs with the HDS.

    Is DTC 108-21 indicated?

    YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

    NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

DTC 121-xx*: VSA Solenoid Valve Malfunction

DTC 122-xx*: VSA Solenoid Valve Malfunction

DTC 123-xx*: VSA Solenoid Valve Malfunction

DTC 124-xx*: VSA Solenoid Valve Malfunction

*: Any two-character subcode (see table)

DTC		Sectional	Valve
121	-01	Right-front and left-rear	Regulator
	-02		
	-11		
	-21		
	-24		
122	-01		Suction
	-21		
	-22		
	-23		
123	-01	Left-front and right-rear	Regulator
	-02		
	-11		
	-21		
	-24		
124	-01		Suction
	-21		
	-22		
	-23		

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 121-xx, 122-xx, 123-xx, or 124-xx indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time.■

(cont'd)

DTC Troubleshooting (cont'd)

5. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).
6. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
7. Check for DTCs with the HDS.

   Is DTC 121-xx, 122-xx, 123-xx, or 124-xx indicated?

   YES–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

   NO–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136). If any other DTCs are indicated, go to the indicated DTCs troubleshooting.■

Symptom Troubleshooting

VSA activation indicator does not go off, and no DTCs are stored

NOTE: If the VSA modulator was replaced prior to the activation indicator turning on, do the VSA sensor neutral position memorization (see page 19-133).

1. Turn the ignition switch to ON (II).
2. Check the VSA activation indicator for several seconds when the ignition switch is turned to ON (II).

   Does the indicator come on then go off?

   YES–The system is OK at this time.■

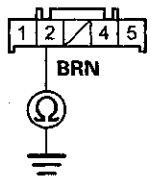
   NO–Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Disconnect the VSA OFF switch 5P connector (see page 19-134).
5. Check the VSA OFF switch (see page 19-134).

   Is the VSA OFF switch OK?

   YES–Go to step 6.

   NO–Replace the VSA OFF switch (see page 19-134).■
6. Disconnect the gauge control module 32P connector (see page 22-351).
7. Check for continuity between VSA OFF switch 5P connector terminal No. 2 and body ground.

VSA OFF SWITCH 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Repair a short to body ground in the wire between the gauge control module and the VSA OFF switch.■

NO–Substitute a known-good gauge control module (see page 22-351), then go to step 1 and recheck. If it is OK, replace the original gauge control module (see page 22-351).■

ABS indicator, brake system indicator, and VSA indicator do not go off

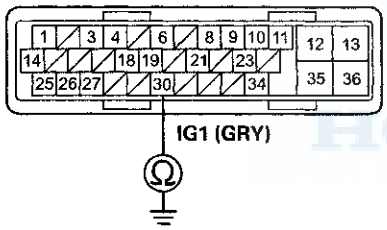
1. Turn the ignition switch to LOCK (0).
2. Check the No. 6 (7.5 A) fuse in the driver's under-dash fuse/relay box.

   Is the fuse blown?

   YES–Go to step 3.

   NO–Reinstall the checked fuse, then go to step 9.
3. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).
4. Disconnect the yaw rate-lateral acceleration sensor 5P connector (see page 19-133).
5. Check for continuity between VSA modulator-control unit 36P connector terminal No. 30 and body ground.

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Repair a short to body ground in the wire between the No. 6 (7.5 A) fuse in the driver's under-dash fuse/relay box and the VSA modulator-control unit or the yaw rate-lateral acceleration sensor.■

NO–Install a new No. 6 (7.5 A) fuse in the driver's under-dash fuse/relay box, then go to step 6.

6. Reconnect all connectors.
7. Turn the ignition switch to ON (II).
8. Check the ABS indicator, the brake system indicator and the VSA indicator for several seconds when the ignition switch is turned to ON (II).

   Do the indicators come on then go off?

   YES–The troubleshooting is complete.■

   NO–Replace the VSA modulator-control unit (see page 19-136).■
9. Do the gauge control module troubleshooting (see page 22-332).

   Is the gauge control module OK?

   YES–Go to step 10.

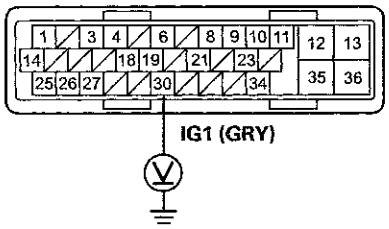
   NO–Substitute a known good gauge control module (see page 22-351). If it is OK, replace the original gauge control module (see page 22-351).
10. Disconnect the VSA modulator-control unit 36P connector (see step 3 on page 19-137).
11. Turn the ignition switch to ON (II).

(cont'd)

Symptom Troubleshooting (cont'd)

12. Measure the voltage between VSA modulator-control unit 36P connector terminal No. 30 and body ground.

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR



Wire side of female terminals

Is there battery voltage?

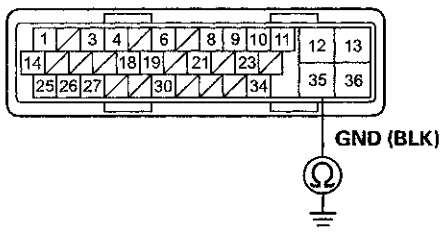
YES–Go to step 13.

NO–Repair an open in the wire between the No. 6 (7.5 A) fuse in the driver's under-dash fuse/relay box and the VSA modulator-control unit.■

13. Turn the ignition switch to LOCK (0).

14. Check for continuity between VSA modulator-control unit 36P connector terminal No. 35 and body ground.

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR



Wire side of female terminals

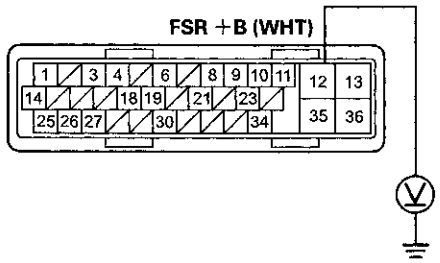
Is there continuity?

YES–Go to step 15.

NO–Repair an open in the wire between the VSA modulator-control unit and body ground (G202).■

15. Measure the voltage between VSA modulator-control unit 36P connector terminal No. 12 and body ground.

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES–Go to step 16.

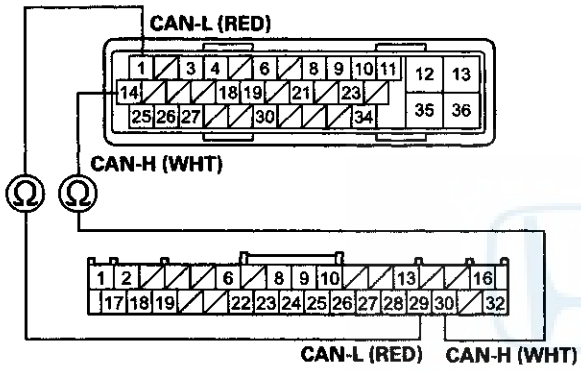
NO–Repair an open in the wire between the No. 2 (40 A) fuse in the under-hood fuse/relay box and the VSA modulator-control unit.■

16. Disconnect the gauge control module 32P connector (see page 22-351).

17. Check for continuity between the VSA modulator-control unit 36P connector terminal and gauge control module 32P connector terminal (see table).

Sign	VSA Modulator-control Unit 36P Connector Terminal	Gauge Control Module 32P Connector Terminal
CAN-L	No. 1	No. 29
CAN-H	No. 14	No. 30

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR
Wire side of female terminals



GAUGE CONTROL MODULE 32P CONNECTOR
Wire side of female terminals

Is there continuity?

YES–Go to step 18.

NO–Repair an open in the wire between the gauge control module and the VSA modulator-control unit.■

18. Reconnect all connectors.

19. Update the VSA modulator-control unit if it does not have the latest software (see page 19-135). If the unit already has the latest software, substitute a known-good VSA modulator-control unit (see page 19-136).

20. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.

21. Check the ABS indicator, the brake system indicator and the VSA indicator for several seconds when the ignition switch is turned to ON (II).

Does the indicators come on then go off?

YES–If the VSA modulator-control unit was updated, troubleshooting is complete. If the VSA modulator-control unit was substituted, replace the original VSA modulator-control unit (see page 19-136).■

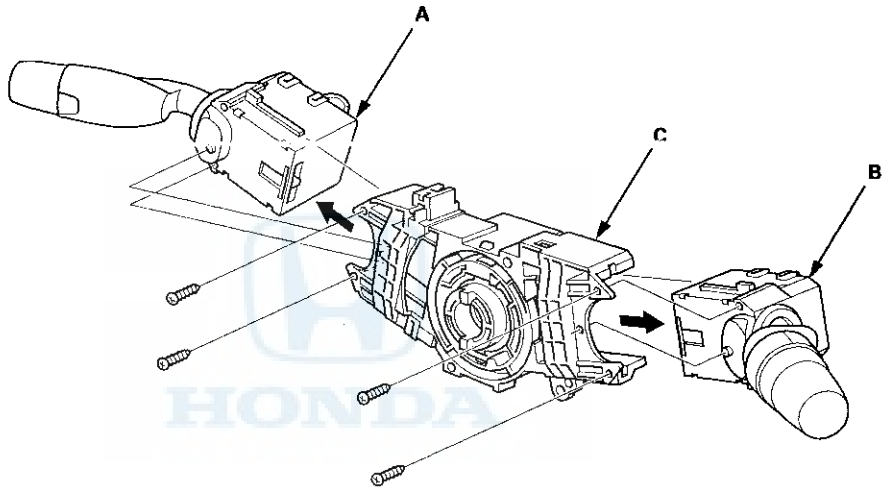
NO–Check for loose terminals in the VSA modulator-control unit 36P connector. If the VSA modulator-control unit was updated, substitute a known-good VSA modulator-control unit (see page 19-136), then retest. If the VSA modulator-control unit was substituted, go to step 1.

Steering Angle Sensor Replacement

SRS components are located in this area. Review the SRS component locations: 4-door (see page 24-21), 2-door (see page 24-23) and the precautions and procedures (see page 24-25).

NOTE: Do not damage or drop the combination switch as the steering angle sensor is sensitive to shock and vibration.

1. With the wheels in the straight ahead position and the steering wheel centered, remove the steering wheel (see page 17-6).
2. Remove the steering column covers (see page 20-181) and the cable reel (see page 24-225).
3. Remove the combination switch assembly (see step 7 on page 17-11).
4. Remove the combination light switch (A) and the wiper/washer switch (B) from the combination switch body assembly (C).



5. Install the combination switch body assembly in the reverse order of removal.

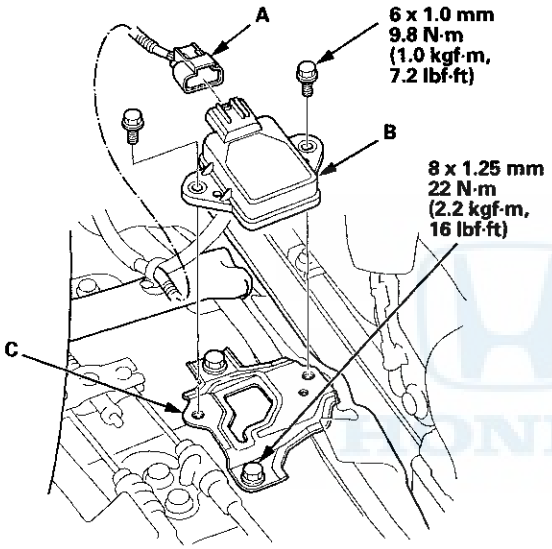
   NOTE:
   - Do not remove the steering angle sensor from the combination switch body.
   - When installing the cable reel, set the turn signal canceling sleeve position so that the arrow points straight up (see page 24-226).
   - Note that the tightening order is specified for the combination switch mounting screws (see page 17-12).

Yaw Rate-Lateral Acceleration Sensor Replacement

NOTE:

- Do not damage or drop the sensor as it is sensitive.
- Do not use power tools when replacing the sensor.

1. Turn the ignition switch to LOCK (0).
2. Remove the center console (see page 20-158).
3. Disconnect the yaw rate-lateral acceleration sensor 5P connector (A), then remove the yaw rate-lateral acceleration sensor (B).

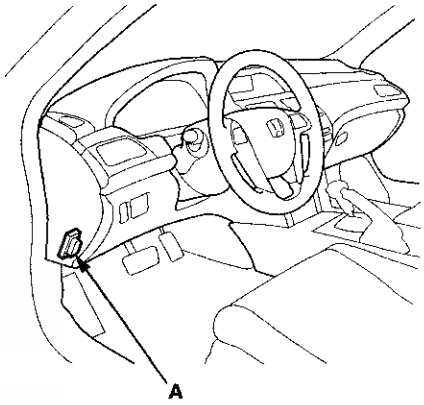


4. Check for deformation in the bracket (C). If necessary replace it.
5. Install the yaw rate-lateral acceleration sensor in the reverse order of removal.
6. Do the VSA sensor neutral position memorization (see page 19-133).

VSA Sensor Neutral Position Memorization

NOTE: Do not press the brake pedal during this procedure.

1. Park the vehicle on a flat and level surface, with the steering wheel in the straight ahead position.
2. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) (A) under the driver's side of the dashboard.

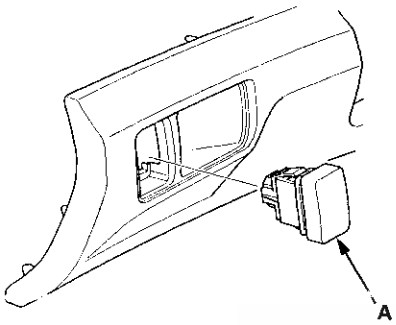


3. Turn the ignition switch to ON (II).
4. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-181).
5. Select VSA ADJUSTMENT with the HDS, and follow the screen prompts.

   NOTE: See the HDS Help menu for specific instructions.
6. Turn the ignition switch to LOCK (0).

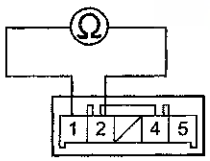
VSA Off Switch Test

1. Turn the ignition switch to LOCK (0).
2. Remove the driver's dashboard lower cover (see page 20-166).
3. Push out the VSA OFF switch (A) from the driver's dashboard lower cover.



4. Check for continuity between the VSA OFF switch 5P connector terminals No. 1 and No. 2. There should be continuity when the button is pressed, and no continuity when the button is released.

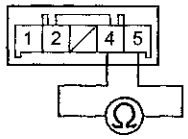
VSA OFF SWITCH 5P CONNECTOR



Terminal side of male terminals

5. Check for continuity between VSA OFF switch 5P connector terminals No. 4 and No. 5. There should be continuity at all times.

VSA OFF SWITCH 5P CONNECTOR



Terminal side of male terminals

6. Install the VSA OFF switch in the reverse order of removal.

VSA Modulator-Control Unit Update

Special Tools Required

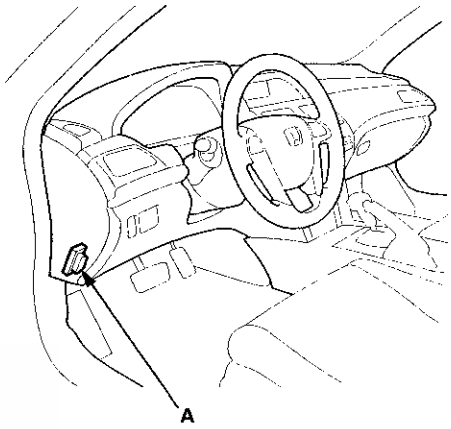
- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA-600 and an iN workstation with the latest HDS software version

Any one of the above updating tools can be used.

NOTE:

- Use this procedure when you need to update the VSA modulator-control unit at anytime.
- Make sure the HDS/iN workstation has the latest HDS software version.
- Before you update the VSA modulator-control unit, make sure the battery in the vehicle is fully charged, and connect a jumper battery (not a battery charger) to maintain system voltage.
- Never turn the ignition switch to LOCK (0) or ACC (I) during the update. If there is a problem with the update, leave the ignition switch ON (II).
- To prevent VSA modulator-control unit damage, do not operate anything electrical (headlights, audio system, brakes, A/C, power windows, door locks, etc.) during the update.
- To ensure the latest program is installed, do a VSA modulator-control unit update whenever the VSA modulator-control unit is substituted or replaced.
- You cannot update a VSA modulator-control unit with a program it already has. It will only accept a new program.
- High temperature in the engine compartment might cause the VSA modulator-control unit to become too hot to run the update. If the engine has been running before this procedure, open the hood and cool the engine compartment.
- If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) light came on or was flashing during the update, leave the ignition switch ON (II) when you disconnect the HIM from the data link connector (DLC). This will prevent VSA modulator-control unit damage.
- DTCs stored in memory are cleared when the VSA modulator-control unit is updated.

1. Turn the ignition switch to ON (II), but do not start the engine.
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't, troubleshooting the DLC circuit (see page 11-181).
4. Select the update mode, and follow the screen prompts to update the VSA modulator-control unit.
5. If the software in the VSA modulator-control unit is the latest, disconnect the HDS/HIM/GNA600 from the DLC. If the software in the VSA modulator-control unit is not the latest, follow the instructions on the screen.
6. Do the VSA sensor neutral position memorization procedure (see page 19-133).

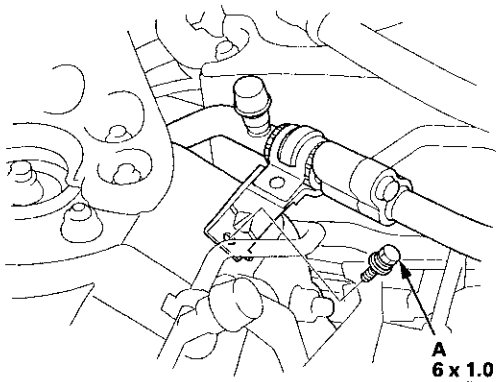
VSA Modulator-Control Unit Removal and Installation

NOTE:

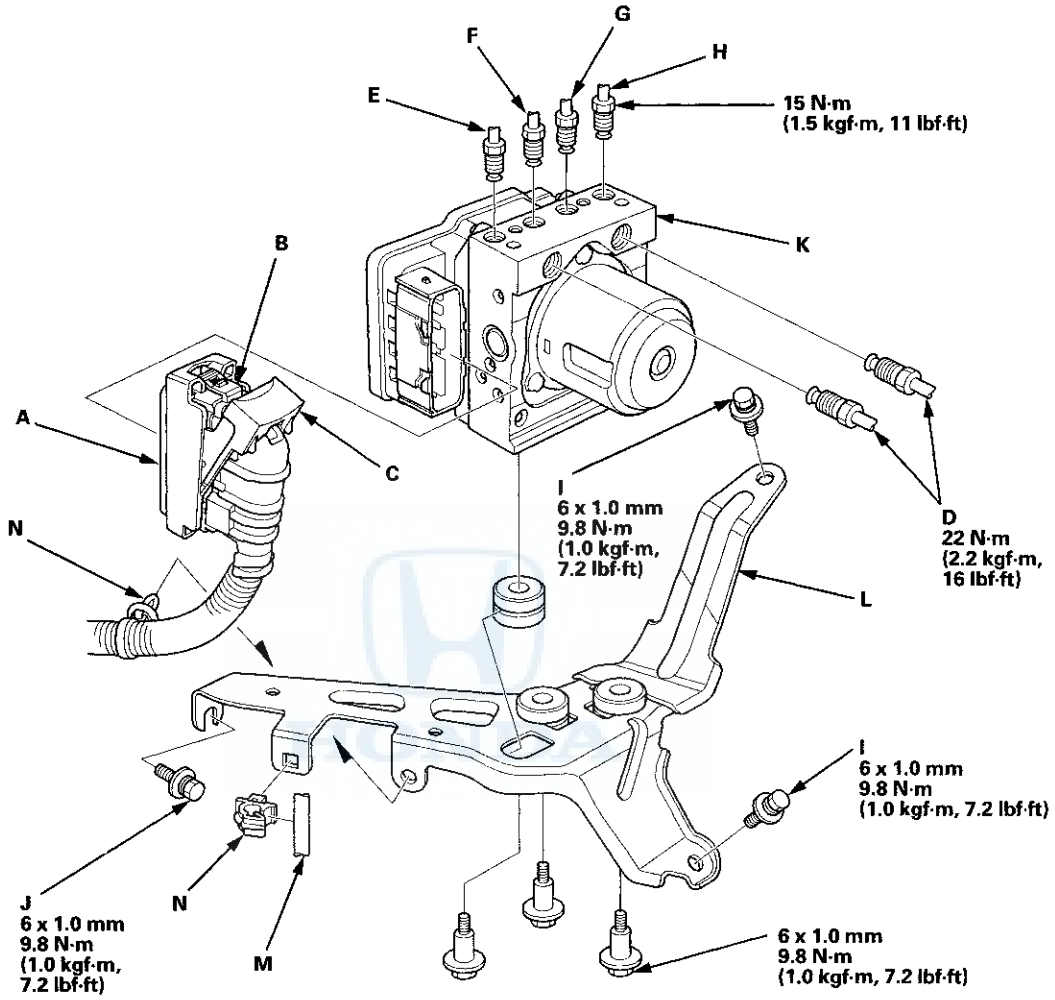
- Do not spill brake fluid on the vehicle; it may damage the paint. If brake fluid gets on the paint, wash it off immediately with water.
- Be careful not to damage or deform the brake lines during removal and installation.
- After removal, plug the ends of the hoses and joints to prevent spilling brake fluid.

Removal

1. Turn the ignition switch to LOCK (0).
2. Remove the suction line mounting bolt (A) from the bracket.



3. Disconnect the VSA modulator-control unit 36P connector (A) by pushing the lock (B) and pulling down the lever (C); the connector disconnects itself.



4. Disconnect the six brake lines from the VSA modulator-control unit.

   NOTE: Brake lines are connected to the master cylinder (D) and to the left-rear (E), the right-front (F), the left-front (G), and the right-rear (H) brake systems.

5. Remove the 6 x 12 mm flange bolts (I) and 6 x 16 mm flange bolt (J), then remove the VSA modulator-control unit (K) with the bracket (L) from the body.

6. Remove the A/C receiver line (M) from the bracket, then remove the clips (N).

7. Remove the VSA modulator-control unit from the bracket.

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VSA Modulator-Control Unit Removal and Installation (cont'd)

Installation

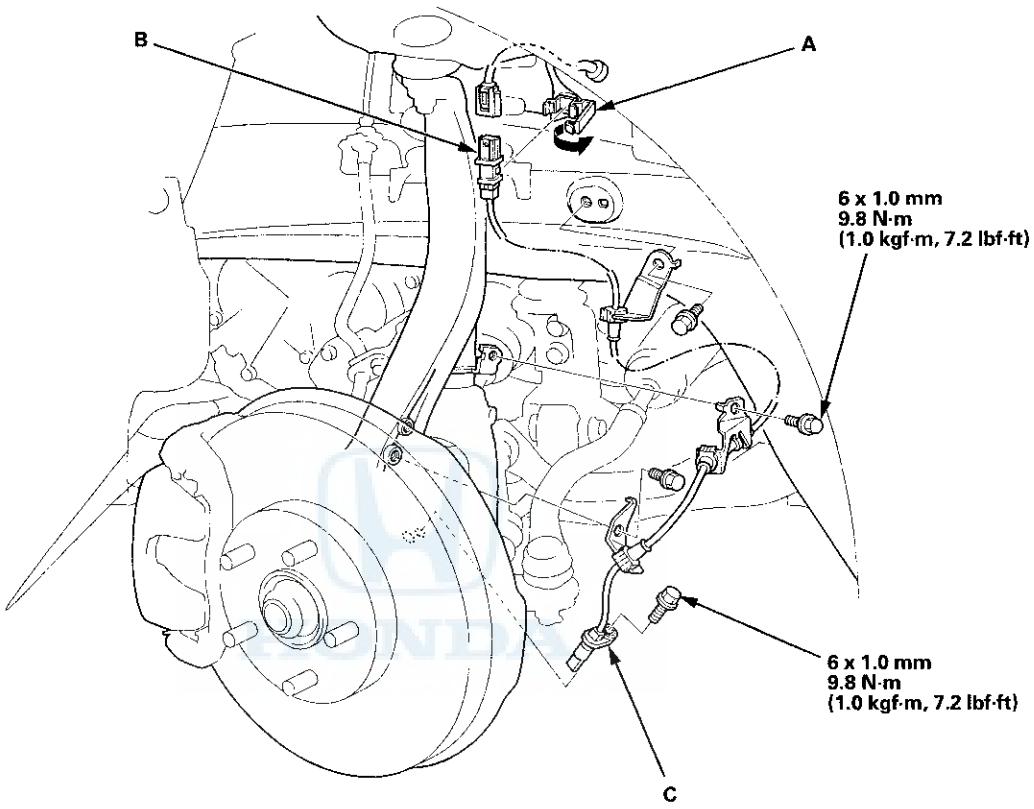
1. Install the VSA modulator-control unit onto the bracket.
2. Install the clips to the bracket, then install the receiver line.
3. Install the bracket with the VSA modulator-control unit to the body.
4. Reconnect the six brake lines, then tighten the flare nuts to the specified torque.
5. Align the connecting surface of the VSA modulator-control unit 36P connector to the VSA modulator-control unit.
6. Pull up the lever of the VSA modulator-control unit 36P connector, then confirm the connector is fully seated.
7. Install the suction line mount bolt to the bracket.
8. Bleed the brake system (see page 19-9).
9. Do the VSA modulator-control unit update (see page 19-135).
10. Do the VSA sensor neutral position memorization procedure (see page 19-133).
11. Start the engine, and make sure the ABS and the VSA indicators go off.
12. Test-drive the vehicle, and make sure the ABS and the VSA indicators do not come on.

    NOTE: If the brake pedal is spongy, there may be air trapped in the modulator which could then be induced into the normal brake system during modulation. Bleed the brake system again (see page 19-9).

Wheel Speed Sensor Replacement

Front

1. Turn the ignition switch to LOCK (0).
2. Release the clamp (A), then disconnect the wheel speed sensor connector (B).



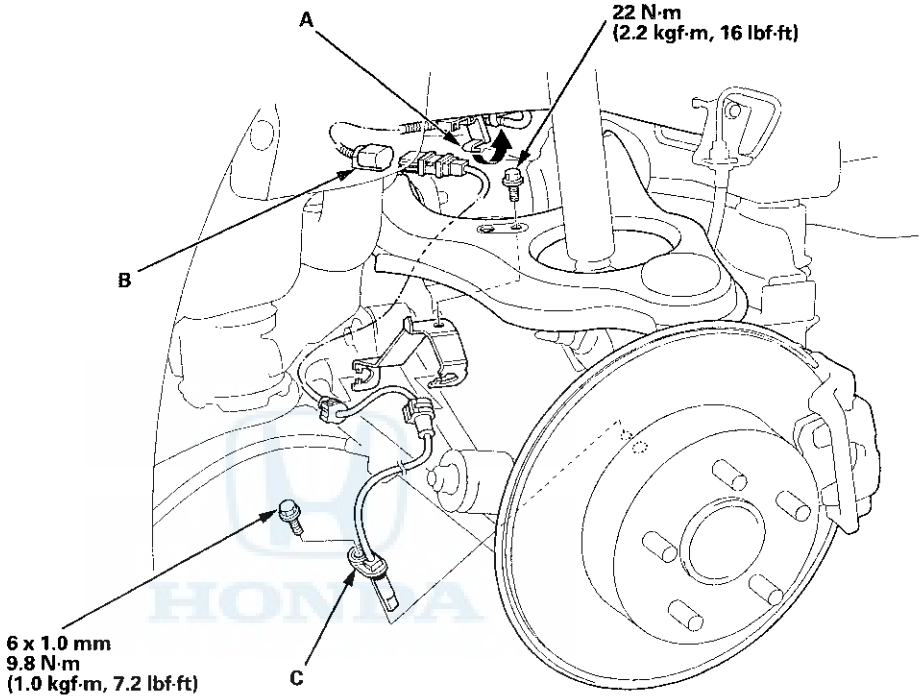
3. Remove the bolts and the wheel speed sensor (C).
4. Install the wheel speed sensor in the reverse order of removal, and note these items:
   - Do not twist the sensor wires.
   - If the wheel speed sensor comes in contact with the wheel bearing, it is faulty.
   - Make sure there is no debris in the sensor mounting hole.
5. Start the engine, and make sure the ABS and the VSA indicators go off.
6. Test-drive the vehicle, and make sure the ABS and the VSA indicators do not come on.

(cont'd)

Wheel Speed Sensor Replacement (cont'd)

Rear

1. Turn the ignition switch to LOCK (0).
2. Release the clamp (A), then disconnect the wheel speed sensor connector (B).



3. Remove the clamps, the bolt, and the wheel speed sensor (C).
4. Install the wheel speed sensor in the reverse order of removal, and note these items:
   - Do not twist the sensor wires.
   - If the wheel speed sensor comes in contact with the hub bearing unit, it is faulty.
   - Make sure there is no debris in the sensor mounting hole.
5. Start the engine, and make sure the ABS and the VSA indicators go off.
6. Test-drive the vehicle, and make sure the ABS and the VSA indicators do not come on.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If body maintenance is required)

The Accord SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags, side airbags, and/or side curtain airbags.
- Do not bump or impact the SRS unit, front impact sensors, side impact sensors, or rear safing sensor, especially when the ignition switch is in ON (II), or for at least 3 minutes after the ignition switch is turned to LOCK (0); otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, center console, dashboard, dashboard lower cover, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.