

Brakes (Anti-Lock Brake System)

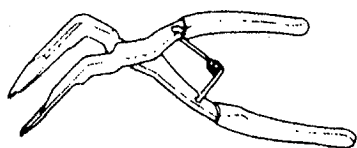
Special Tools	19-2	Parking Brake	19-27
Illustrated Index	19-3	ALB Description	
Pedal Height		Features/Construction/	
Adjustment	19-4	Operation	19-28
Parking Brake		Circuit Diagram	19-38
Adjustment	19-4	Wiring/Connector Location	19-40
Front Brakes		ALB Checker	
Index/Inspection	19-5	Function Test	19-41
Front Brake Pads		Wheel Sensor Signal	
Inspection/Replacement	19-6	Confirmation	19-43
Front Caliper		Troubleshooting	
Disassembly	19-8	Anti-Lock Brake System	
Reassembly	19-9	Indicator Light	19-44
Front Brake Disc		Symptom-to-System Chart	19-46
Run-Out Inspection	19-9	Flowcharts	19-47
Thickness and Parallelism		Hydraulic System	
Inspection	19-10	Hydraulic Connections	19-61
Bleeding	19-10	Relieving Accumulator/	
Master Cylinder and Brake Booster		Line Pressure	19-62
Index/Torque	19-12	Modulator/Solenoid Unit	
Master Cylinder		Index/Torque	19-63
Inspection	19-13	Solenoid Leak Test	19-64
Brake Booster		Solenoid Flushing	19-65
Tests	19-14	Power Unit	
Pushrod Clearance Adjustment	19-15	Torque/Inspection	19-66
Rear Brakes		Accumulator/Pressure Switch	
Torque/Inspection	19-16	Index/Torque	19-67
Rear Brake Pads		Accumulator/Pressure Switch	
Inspection/Replacement	19-17	Removal	19-68
Rear Brake Disc		Accumulator Disposal	19-68
Run-Out Inspection	19-19	Bleeding	19-69
Thickness and Parallelism		★ Electronic Components	
Inspection	19-20	Control Unit Replacement	19-70
Rear Caliper		Relays Inspection	19-71
Disassembly	19-20	Pulsers/Sensors	
Reassembly	19-23	Inspection	19-71
Brake Hoses/Pipes	19-26	Replacement	19-72



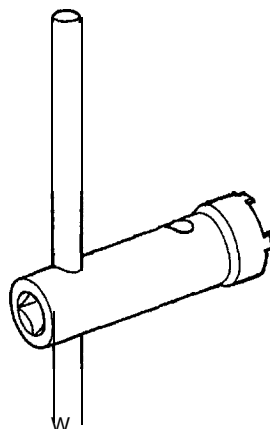
Al

Special Tools

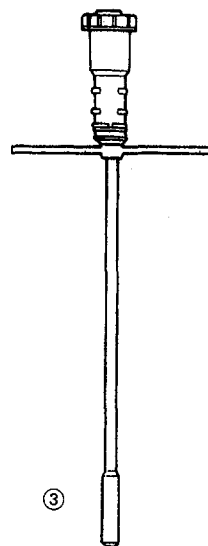
Ref. No.	Tool Number	Description	Q'ty	Page Reference
①	07914-SA50001	Snap Ring Pliers	1	19-21, 24
②	07916-6390001	Locknut Wrench	1	19-20, 25
③	07HAA-SG00100 or 07HAA-SG00101	Bleeder-T Wrench	1	19-62, 69
④	07HAE-SG00100	Brake Spring Compressor	1	19-21, 24
⑤	07JAG-SD40100	Pushrod Adjustment Gauge	1	19-15
⑥	07HAJ-SG00100	ALB Checker (US)	1	19-41, 43, 69
	07HAJ-SG00200	ALB Checker (Canada)	1	19-41, 43, 69
⑦	07KAZ-001000A	Window Switch	1	19-65



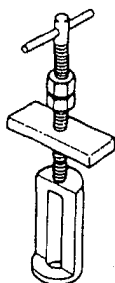
①



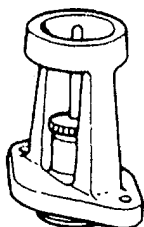
②



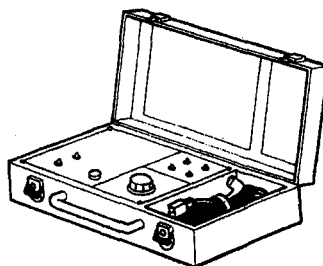
③



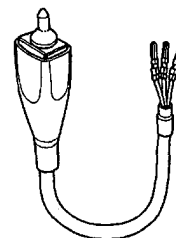
④



⑤

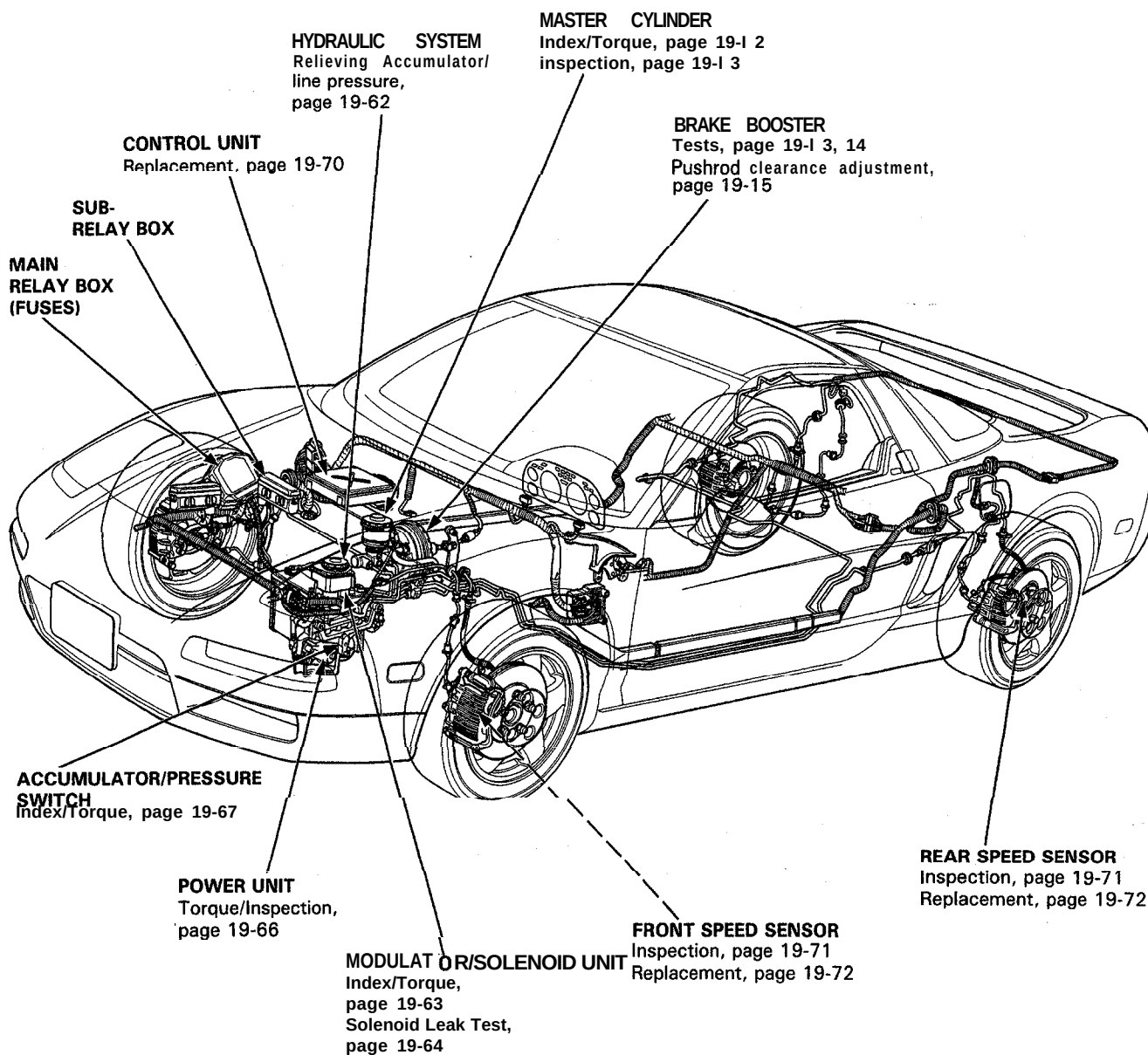


⑥ NOTE: Use 07HAJ-SG00100 (US) or 07HAJ-SG00200 (Canada) ALB Checker only.



⑦

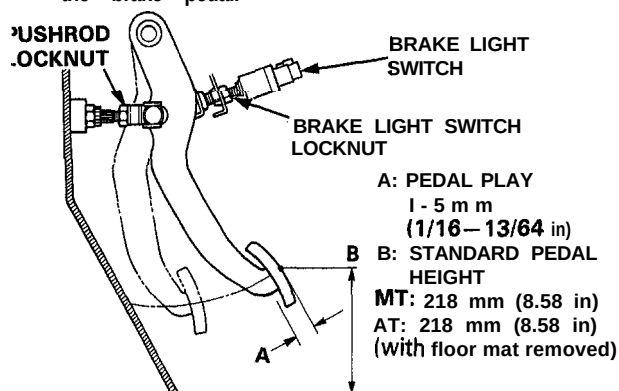
⚠ WARNING The accumulator contains high-pressure nitrogen gas, do not puncture, expose to flame or attempt to disassemble the accumulator or it may explode; severe personal injury may result.



Pedal Height

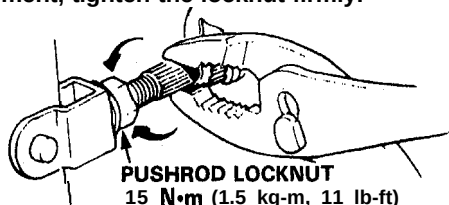
Adjustment

1. Loosen the brake light switch locknut and back off the brake light switch until it is no longer touching the brake pedal.



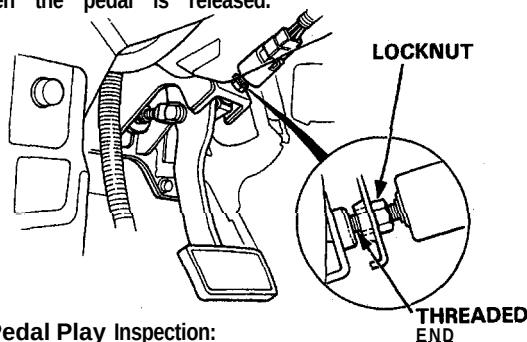
NOTE: Start the engine, and pump the brake pedal several times. Measure the brake pedal height while the pedal is applied for five second or more.

2. Loosen the pushrod locknut and screw the pushrod in or out with pliers until the standard pedal height from the floor is 218 mm (8.58 in). After adjustment, tighten the locknut firmly.



3. Screw in the brake light switch until its plunger is fully depressed (threaded end touching the pad on the pedal arm). Then back off the switch 1/2 turn and tighten the locknut firmly.

CAUTION: Check that the brake lights go off when the pedal is released.



Brake Pedal Play Inspection:
Stop the engine and inspect the play by pushing the pedal by hand.

Brake Pedal Play: 1-5 mm (1/16 - 13/64 in)

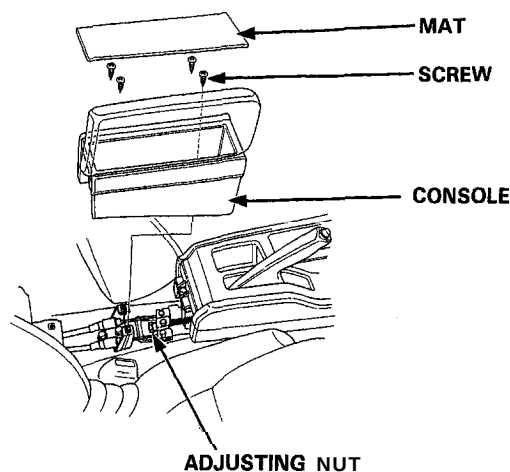
NOTE: Do not adjust the pedal height with the pushrod depressed.

CAUTION: If the pedal free play is out of specification, brake drag may occur.

Parking Brake

Adjustment

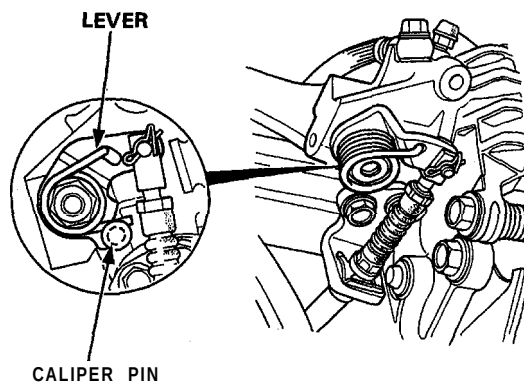
1. Remove the console mat, the four screws and the console box.



NOTE: After rear brake caliper servicing, loosen the parking brake adjusting nut, start the engine and depress the brake pedal several times to set the self-adjusting brakes before adjusting the brake pedal.

WARNING Block the front wheels before jacking up the each side of the car.

2. Raise the rear wheels off the ground.
3. Make sure the lever of the rear brake caliper contacts the brake caliper pin.
4. Pull the parking brake lever up one notch.
5. Tighten the adjusting nut until the rear wheels drag slightly when turned.
6. Release the parking lever and check that the rear wheels do not drag when turned. Readjust if necessary.
7. With the equalizer properly adjusted, the rear brakes should be fully applied when the parking brake lever is pulled up 10 to 14 clicks.



Front Brakes

Index/Inspection

⚠ WARNING

- Never use an air hose or dry brush to clean brake assemblies.
- Use an OSHA-approved vacuum cleaner, to avoid breathing brake dust.
- Contaminated brake discs or pads reduce stopping ability.

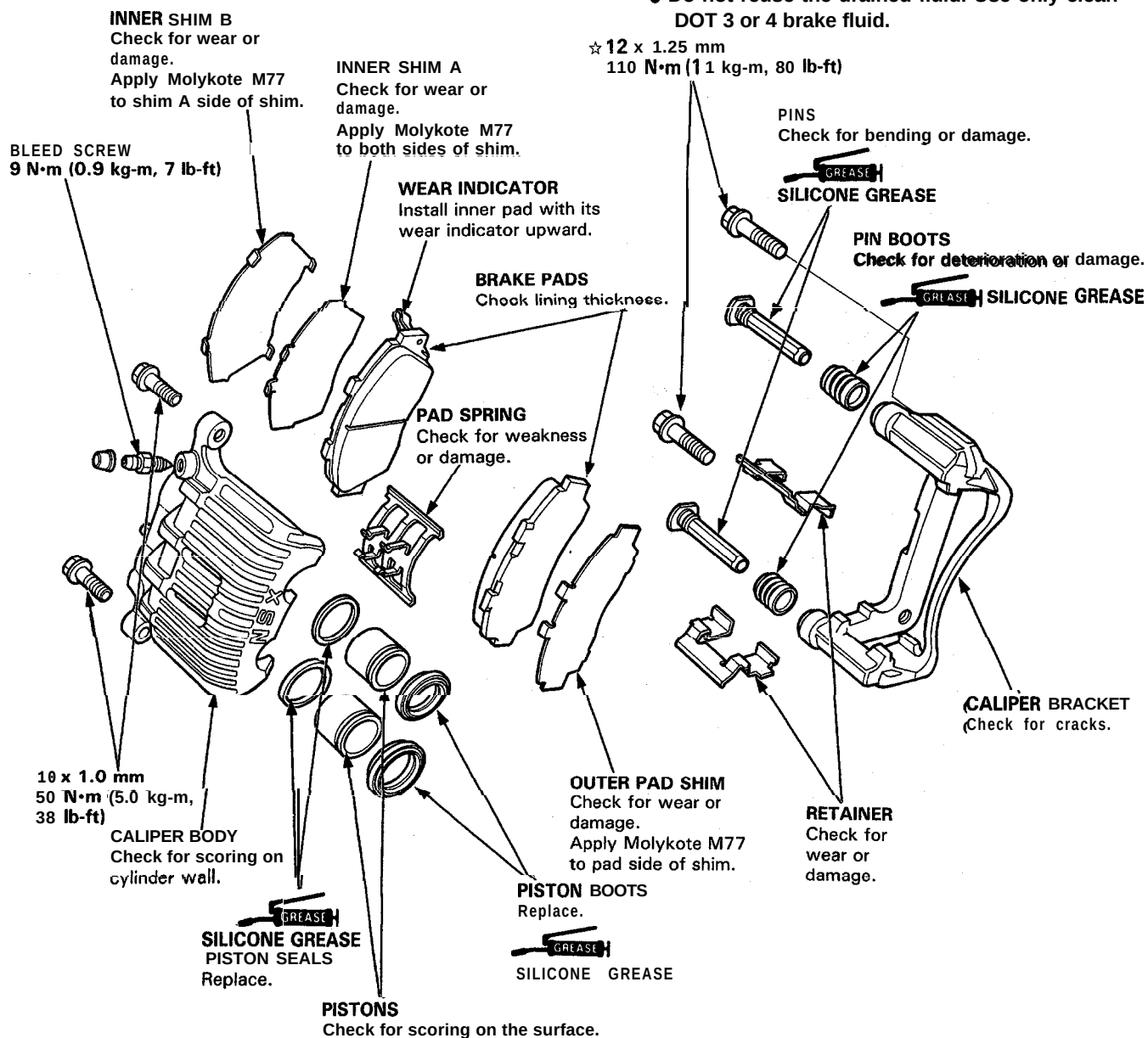
NOTE:

- Coat piston, piston seal, and caliper bore with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.

☆ : CORROSION RESISTANT BOLT

CAUTION:

- Do not spill brake fluid on the car; it may damage the paint: if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with 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 dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid. Use only clean DOT 3 or 4 brake fluid.



Front Brake Pads

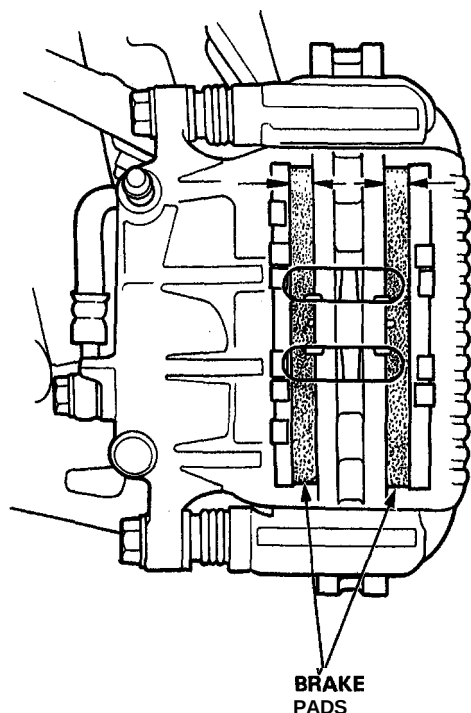
Inspection/Replacement

⚠ WARNING

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

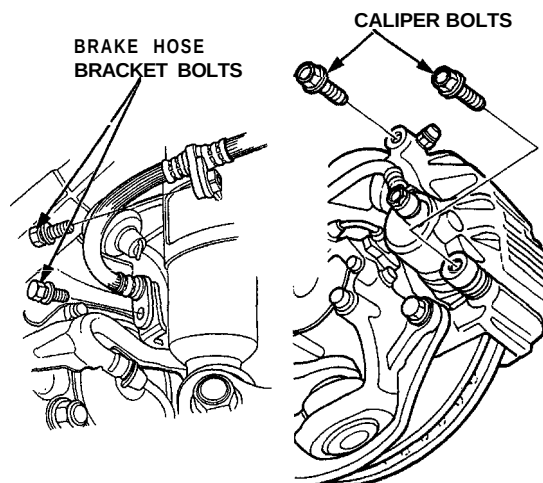
1. Loosen the front wheel lug nuts slightly, then raise each side of the car and support on safety stands (page 1-6 through 8). Remove the front wheels.
2. If the brake pad thickness is less than service limit at step 5, replace the front pads as a set.

NOTE: Engagement of the brake 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.



3. Remove the two brake hose bracket bolts. Remove the two caliper bolts and move the caliper out of the way.

CAUTION: Support the caliper with a piece of wire so that it does not hang from the brake hose.

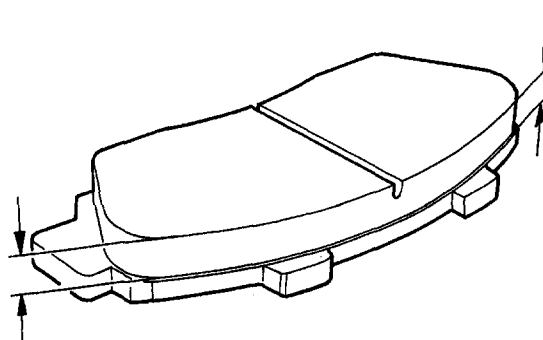


4. Remove the pad shims, pad retainers and pads.
5. Using a vernier caliper, measure the thickness of each brake pad lining.

Brake Pad Thickness:

Standard: 11 mm (0.43 in)

Service Limit: 1.6 mm (0.06 in)

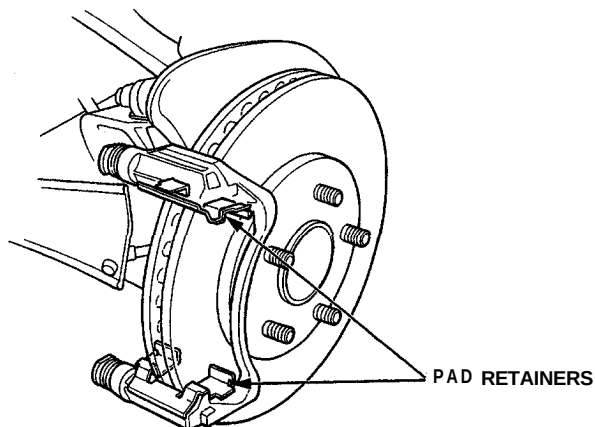


NOTE: Measurement does not include pad backing thickness.

6. Clean the caliper thoroughly; remove any rust, and check for grooves or cracks.

7. Install the pad retainers.

⚠ WARNING When reusing the pads, always reinstall the brake pads in their original positions to prevent loss of braking efficiency.



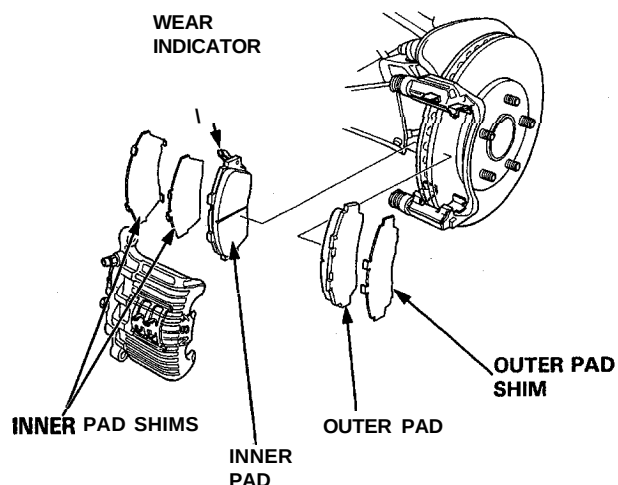
8. Apply Molykote M77 to both sides of the inner shims A and the back of the pads. Wipe excess grease off the shims.

9. Install the brake pads.

NOTE:

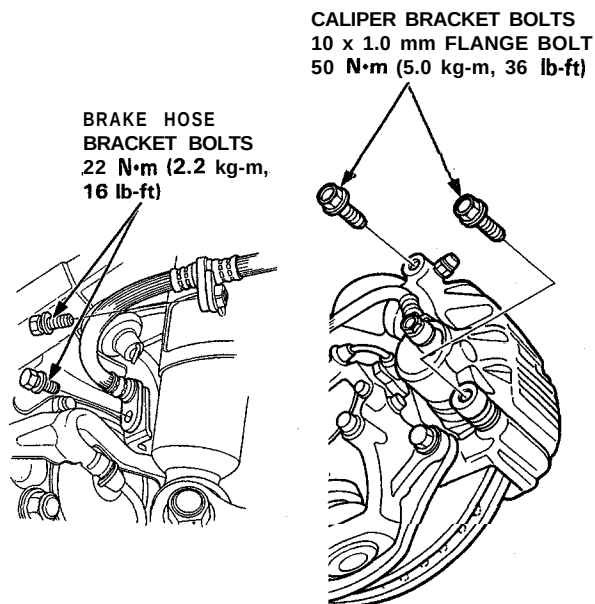
- Install the inner pad with its wear indicator facing upward.
- Apply Molykote M77 to the shims (page 19-5). Wipe excess grease off the shims.

10. Install the brake pad shims correctly.



11. Push in the pistons so that the caliper will fit over the pads.

12. Set the caliper down into position, then install the brake hose bracket bolts and the caliper bolts. Tighten the bolts to the specified torque.



13. Depress the brake pedal several times to make sure the brakes work, then road-test.

NOTE: Clean the mating surface of the wheel and hub before installing the wheel.

⚠ WARNING Contaminated brake discs or pads reduce stopping ability. Keep grease off the discs or pads.

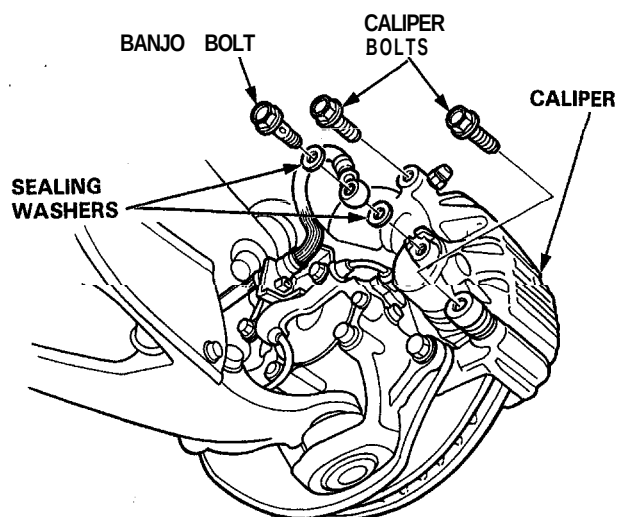
Front Caliper

Disassembly

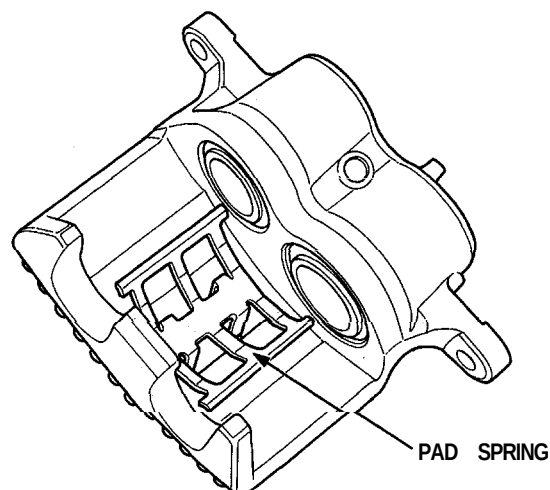
CAUTION:

- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Use only clean DOT 3 or 4 brake fluid.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not spill brake fluid on the car, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

1. Remove the banjo bolt and disconnect the brake hose from the caliper.
2. Remove the caliper bolts, then remove the caliper.



3. Remove the pad spring from the caliper body.

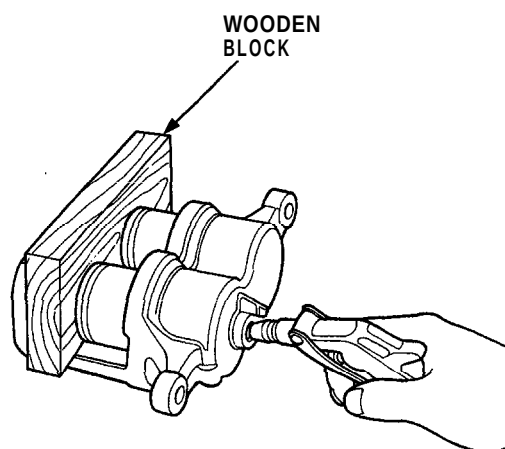


4. If necessary, apply compressed air to the caliper fluid inlet to get the pistons out. Place a shop rag or wooden block as shown to cushion the pistons when there are expelled.

Use low pressure air in short spurts.
Remove the pistons from the caliper.

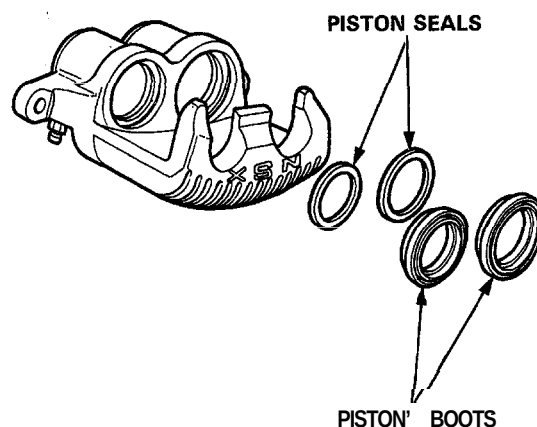
⚠ WARNING

- Do not place your fingers in front of the piston.
- Do not use high air pressure; use an OSHA-approved 30 PSI nozzle.



5. Remove the piston boots and piston seals.

CAUTION: Take care not to damage the cylinders.



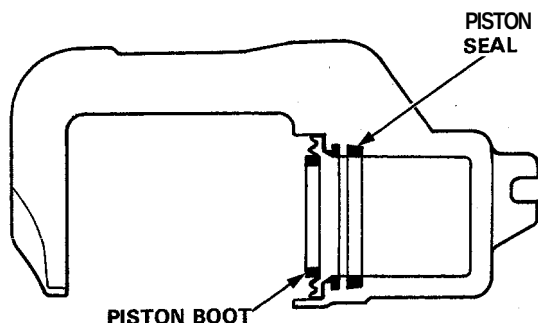
Front Brake Disc

Reassembly

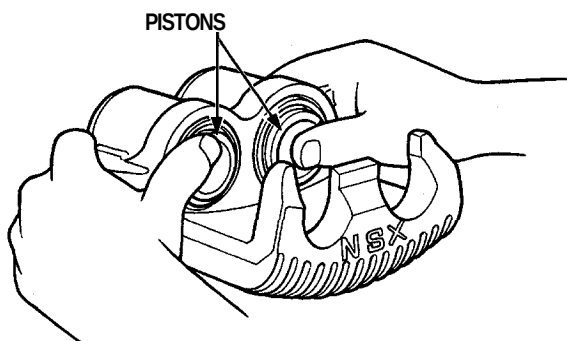
CAUTION:

- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Use only clean DOT3 or 4 brake fluid.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not spill brake fluid on the car; it may damage the paint, if brake fluid does contact the paint; wash it off immediately with water.

1. Clean the pistons and caliper bores with brake fluid and inspect for wear or damage.
2. Apply silicone grease to new piston seals, then install the piston seals in the cylinder grooves.
3. Apply silicone grease to new piston boots, then install the piston boots in the cylinder grooves.



4. Lubricate the caliper cylinders and pistons with brake fluid, then install the pistons in the cylinders with the dished end facing in.



5. Reinstall the caliper in the reverse order of removal.

⚠ WARNING

Always reinstall the brake pads in their original positions to prevent loss of braking efficiency.

6. Fill the brake reservoir up and bleed the brake system (page 19-10).

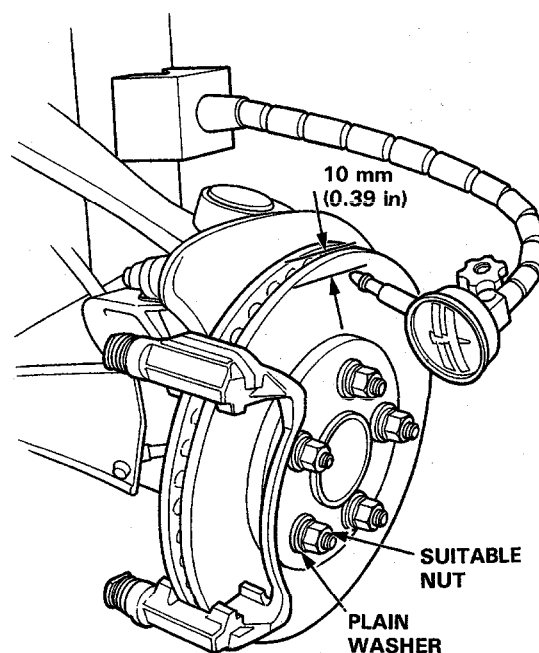
Run-Out Inspection

1. Raise each side of the car and support on safety stand (page 1-6 through 8). Remove the front wheels.
2. Remove the brake disc pads (page 19-6).
3. Inspect the disc surface for cracks, and rust. Clean the disc thoroughly and remove all rust.
4. Use suitable nuts (12 x 1.5 mm) and plain washers to hold the disc securely against the hub, then mount a dial indicator as shown.

Brake Disc Runout:

Service Limit: 0.10 mm (0.004 in)

5. If the disc is beyond the service limit, refinish the rotor.

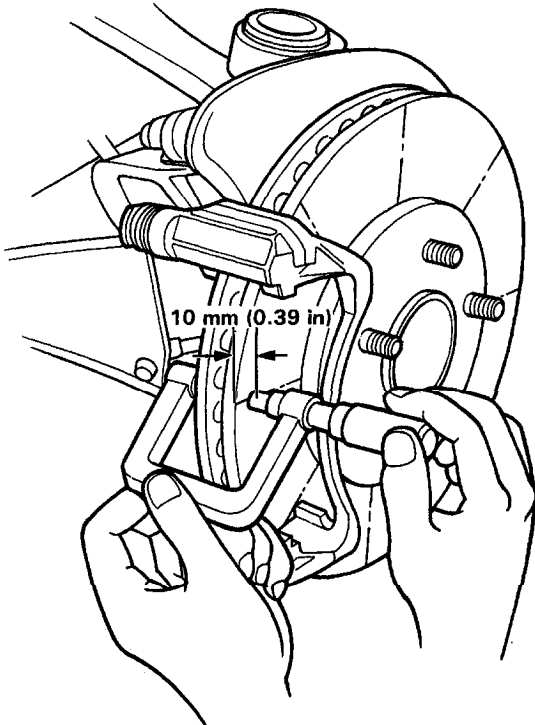


NOTE: A new disc should be refinished if its runout is greater than 0.10 mm (0.004 in).

Front Brake Disc

Thickness and Parallelism Inspection

1. Raise each side of the car and support on safety stands (page I-6 through 8). Remove the front wheels.
2. Remove the brake disc pads (page 19-6).
3. Using a micrometer, measure disc thickness at eight points, approximately 45° apart and 10 mm (0.39 in) in from the outer edge of the disc.



Brake disc thickness:

Standard: 28 mm (1.10 in)

Max. Refinishing Limit: 26 mm (1.02 in)

Brake Disc Parallelism:

The difference between any thickness measurements should not be more than 0.015 mm (0.0006 in).

4. If the disc is beyond the limits for thickness or parallelism, refinish the rotor.

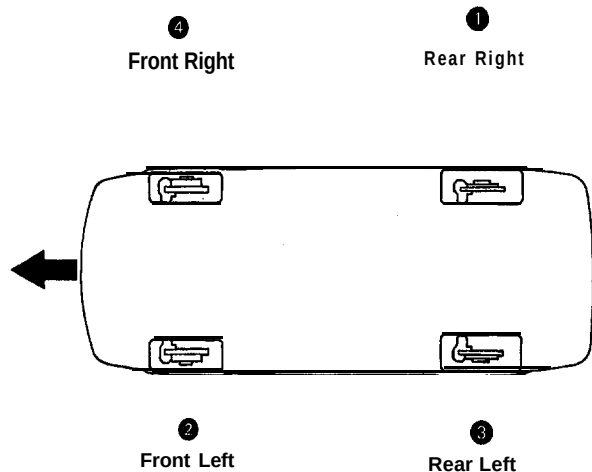
Bleeding

CAUTION:

- Use only clean DOT3 or 4 brake fluid.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not spill brake fluid on the car, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

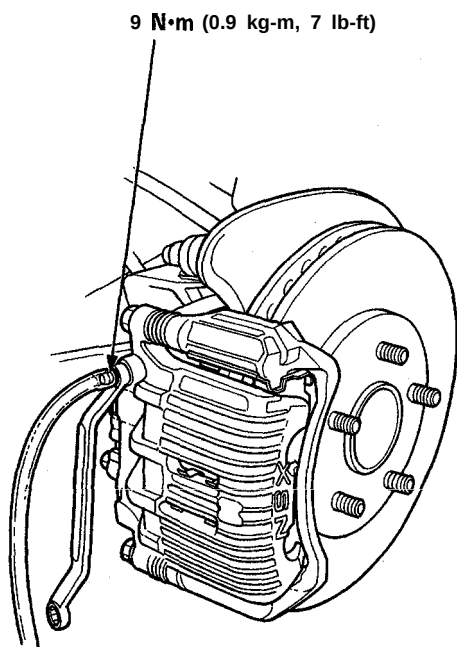
NOTE: The reservoir on the master cylinder must be full at the start of bleeding procedure, and checked after bleeding each brake caliper. Add fluid as required. Use only clean DOT3 or 4 brake fluid.

BLEEDING SEQUENCE

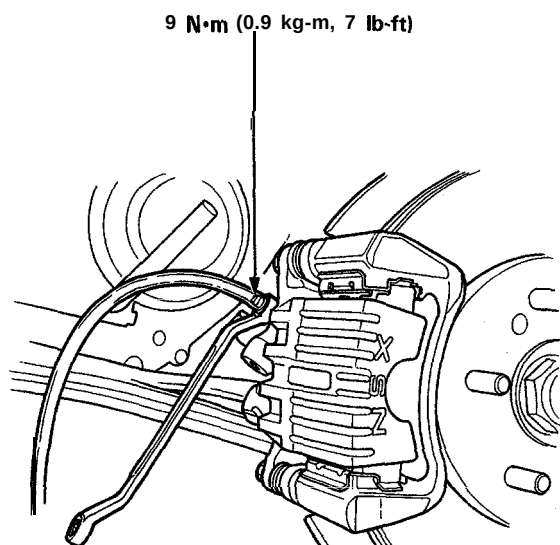


1. Have someone slowly pump the brake pedal several times, then apply steady pressure.
2. Loosen the brake bleed screw to allow air to escape from the system. Then tighten the bleed screw securely.
3. Repeat the procedure for each wheel in the sequence shown above, until air bubbles no longer appear in the fluid.

FRONT

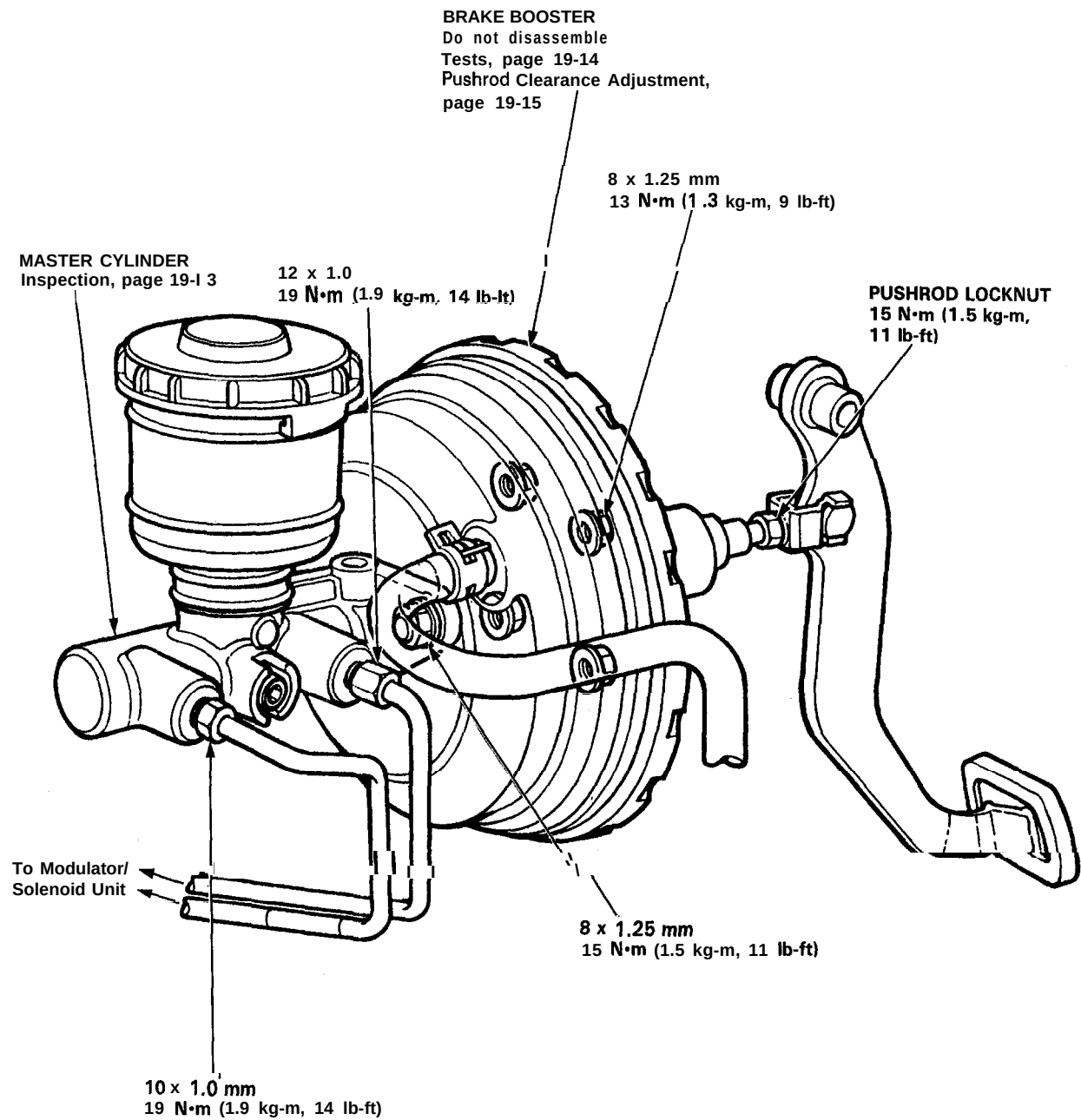


REAR



Master Cylinder and Brake Booster

Index/Torque

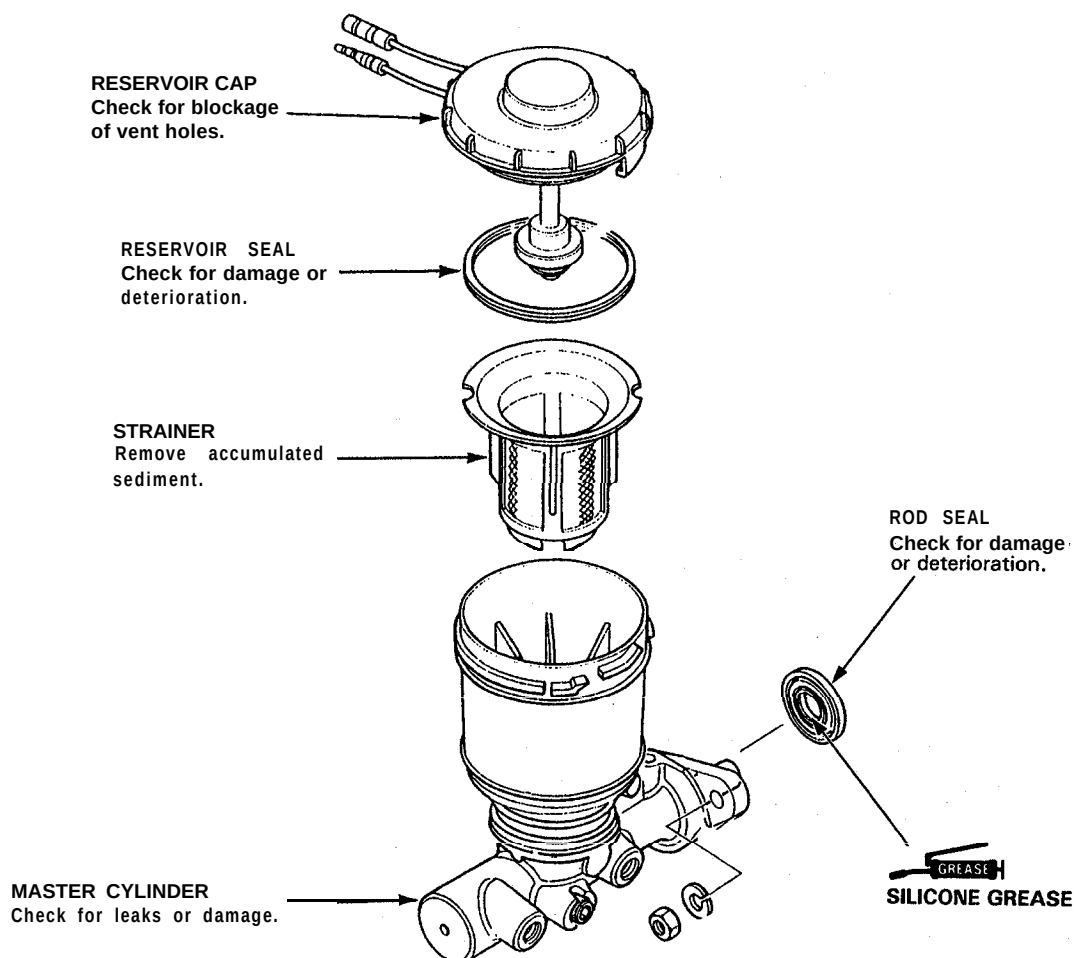


Master Cylinder

Inspection

CAUTION:

- Be careful not to bend or damage the brake pipe when removing the master cylinder.
- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Before reassembling, check that all parts are free of dust and other foreign particles.
- Do not try to disassemble the master cylinder assembly. Replace the master cylinder assembly with a new part if necessary.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid. Use only clean DOT3 or 4 Brake fluid.
- When connecting the brake pipes, make sure that there is no interference between the brake pipes and other parts.



Brake Booster

• Tests

Functional Test

1. With the engine stopped, depress the brake pedal several times, then depress the pedal hard and hold that pressure for 15 seconds. If the pedal sinks, the master cylinder, brake line or a brake caliper is faulty.
2. Start the engine with the pedal depressed. If the pedal sinks slightly, the vacuum booster is working. If the pedal height does not vary, the booster or check valve is faulty.

Leak Test

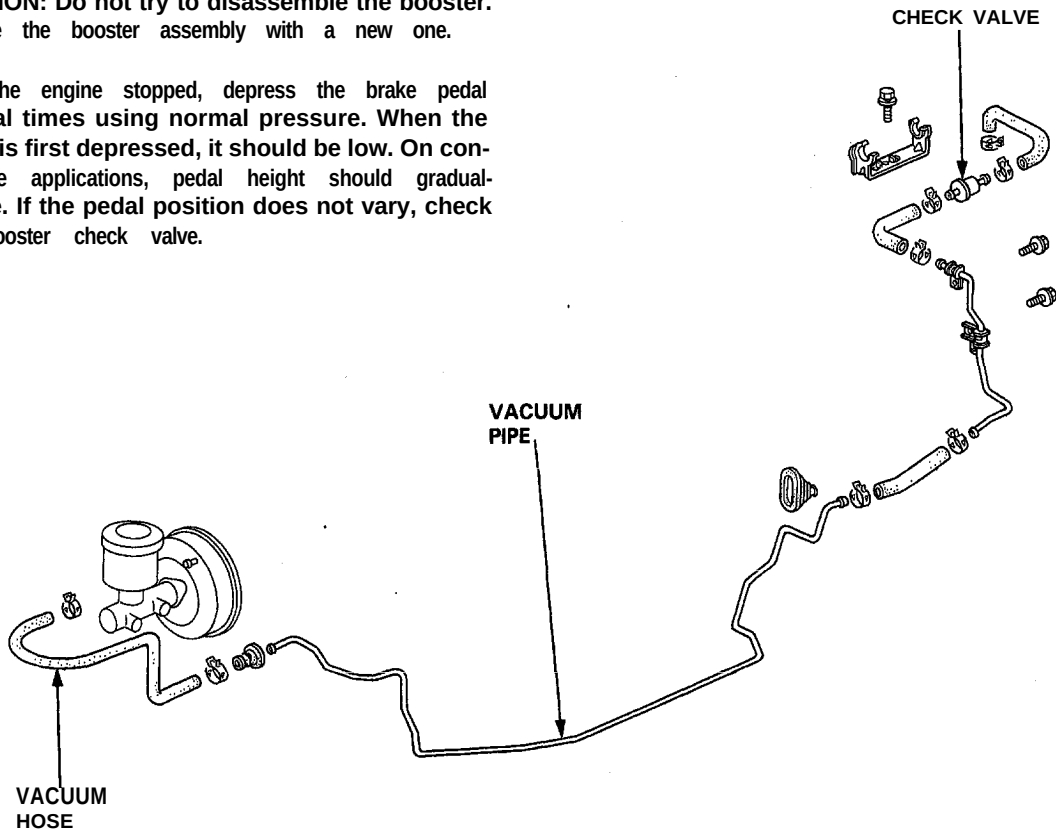
1. Depress the brake pedal with the engine running, then stop the engine. If the pedal height does not vary while depressed for 30 seconds, the vacuum booster is OK. If the pedal rises, the booster is faulty.

CAUTION: Do not try to disassemble the booster. Replace the booster assembly with a new one.

2. With the engine stopped, depress the brake pedal several times using normal pressure. When the pedal is first depressed, it should be low. On consecutive applications, pedal height should gradually rise. If the pedal position does not vary, check the booster check valve.

Check Valve Test

1. Disconnect the brake booster vacuum hose at the booster.
2. Start the engine and let it idle. There should be vacuum available. If no vacuum is available, the check valve is not working correctly. Replace the check valve and retest.

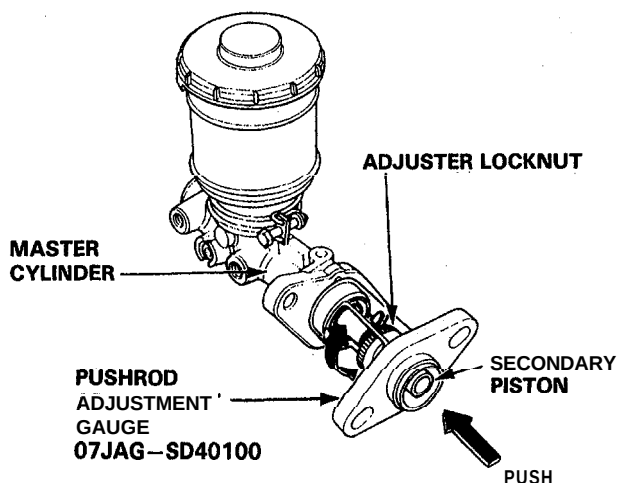


Brake Booster

• Pushrod Clearance Adjustment

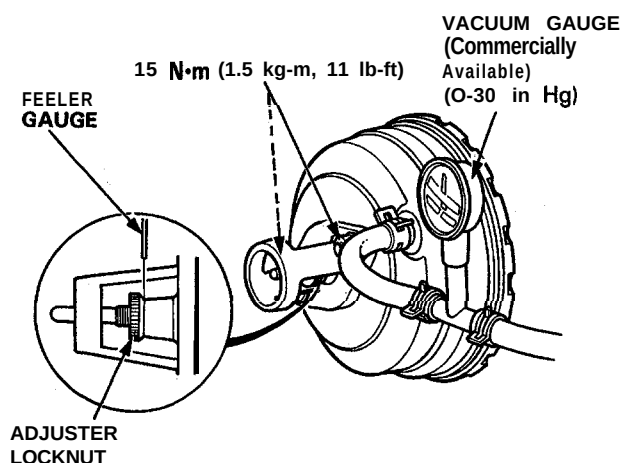
NOTE: Master cylinder pushrod-to-piston clearance must be checked and adjustments made, if necessary, before installing master cylinder.

1. Using the special tool, adjust bolt so the top of it is flush with end of master cylinder piston.



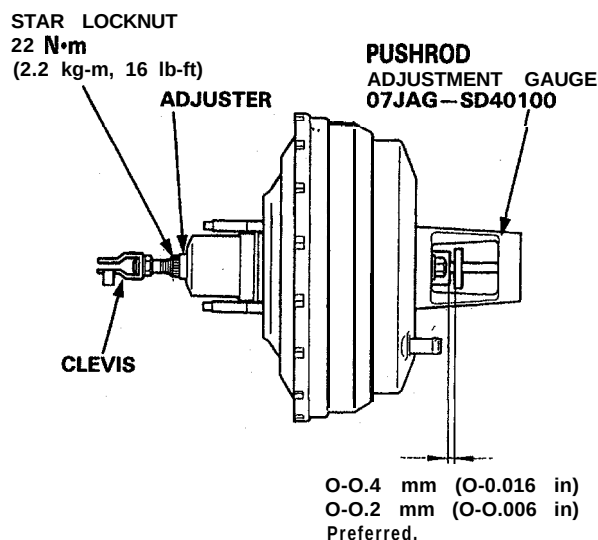
2. Without disturbing the adjusting bolt's position, install the special tool upside down on the booster.
3. Install the master cylinder nuts and tighten to the specified torque.
4. Connect the booster in-line with a vacuum gauge (O-30 in Hg) to the booster's engine vacuum supply, and maintain an engine speed that will deliver 500 mm Hg (20 in Hg) vacuum.
5. With a feeler gauge, measure the clearance between the gauge body and the adjusting nut as shown.

Clearance: O-0.4 mm (O-0.016 in)
Preferred: O-0.2 mm (O-0.008 in)



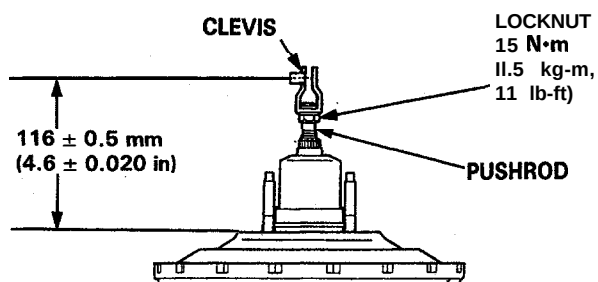
6. If clearance is incorrect, loosen the star locknut and turn the adjuster in or out to adjust. Hold the clevis while adjusting.

7. Tighten the star locknut securely.
Remove the special tool and install a new master cylinder rod seal in the booster.



NOTE: If the clearance between the gauge body and adjusting nut is 0 mm, the pushrod-to-piston clearance is 0.4 mm. If the clearance between the gauge body and adjusting nut is 0.4 mm, the pushrod-to-piston clearance is 0 mm.

8. Adjust the pushrod length as shown if necessary.



9. After adjustment, loosen the clevis end pushrod locknut and turn the pushrod to obtain the correct pedal height.

Standard Pedal Height From Floor:
Manual Transmission: 218 mm (8.58 in)
Automatic Transmission: 218 mm (8.58 in) (with floor mat removed)
The pedal should have 1-5 mm free play.

10. Adjust the brake light switch (page 19-4).

Rear Brakes

Torque/Inspection

⚠ WARNING

- Never use an air hose or dry brush to clean brake assemblies.
- Use an OSHA-approved vacuum cleaner, to avoid breathing brake dust.
- Contaminated brake discs or pads reduce stopping ability.

 : BRAKE CYLINDER GREASE (P/N 08733-B020E) OR EQUIVALENT
RUBBER GREASE

 : SILICONE GREASE

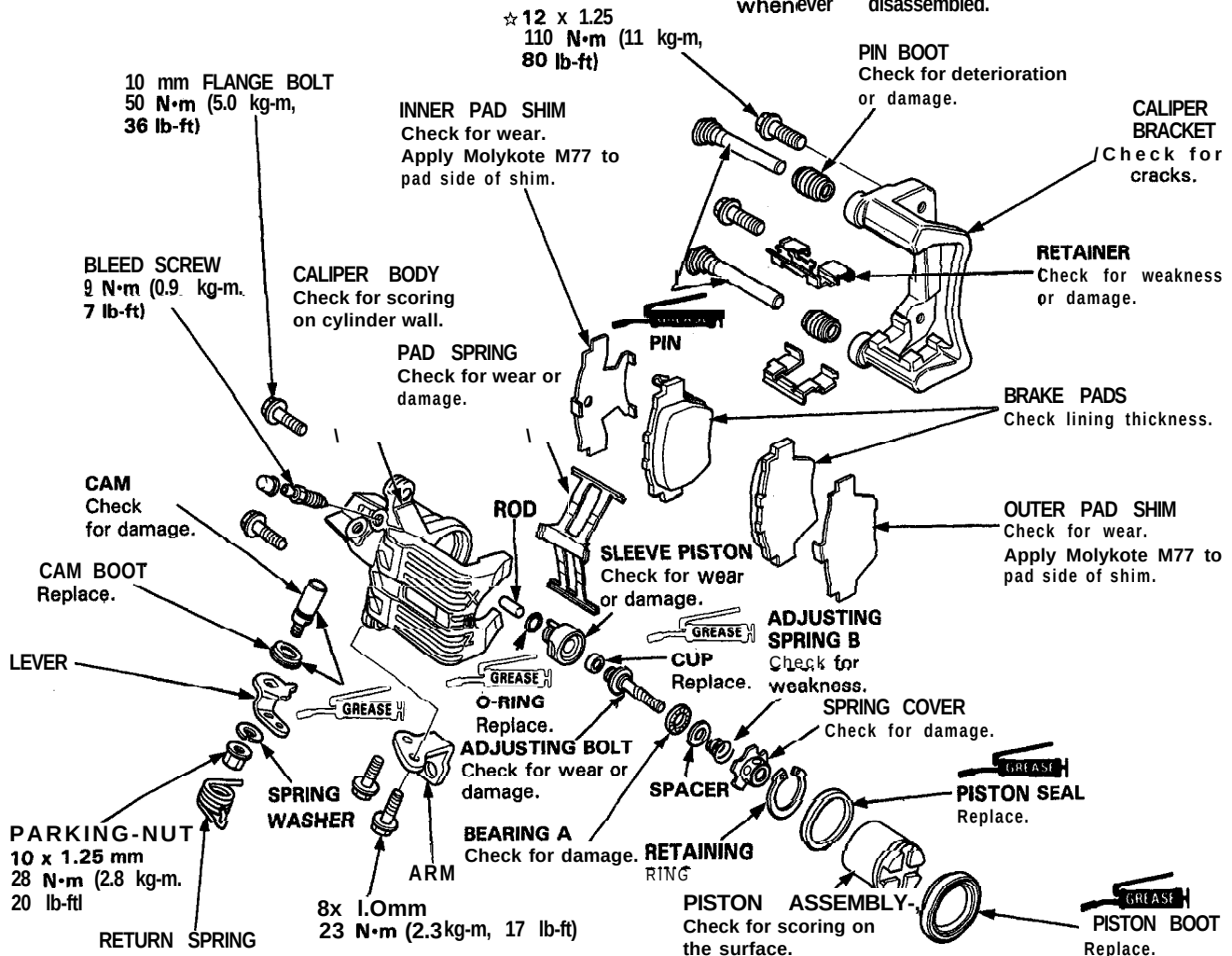
☆: CORROSION RESISTANT BOLT

CAUTION:

- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with 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 dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid. Use only clean DOT3 or 4 Brake fluid.

NOTE:

- Coat piston, piston seal, and caliper bore with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.



Rear Brake Pads

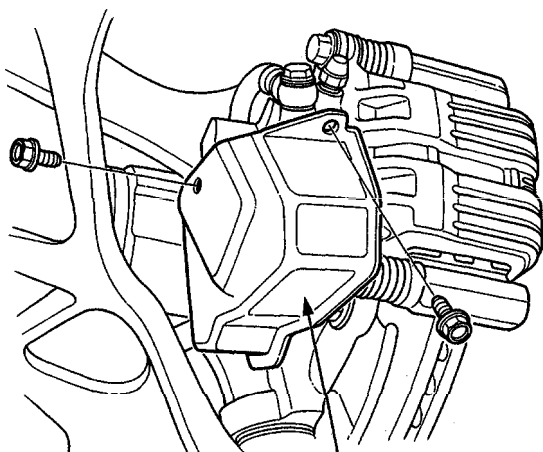
Inspection/Replacement

⚠ WARNING

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

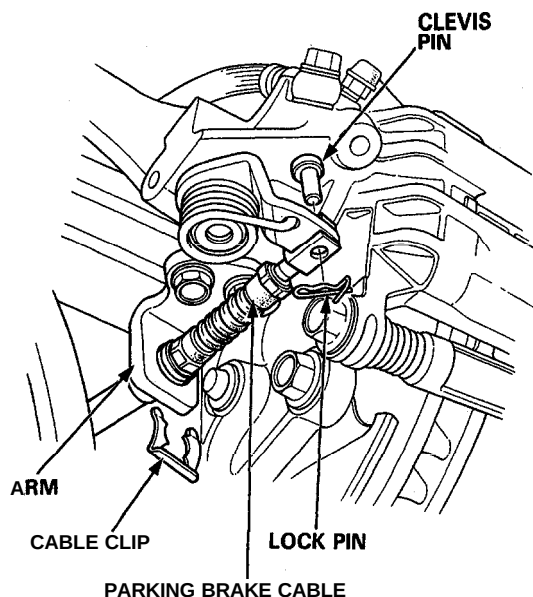
1. Loosen the rear wheel lug nuts slightly, then raise each side of the car and support on safety stands (page 1-6 through 8). Remove the rear wheels.

2. Remove the caliper shield.



CALIPER SHIELD

3. Remove the lock pin and clevis pin. Remove the cable clip and disconnect the cable from the arm.

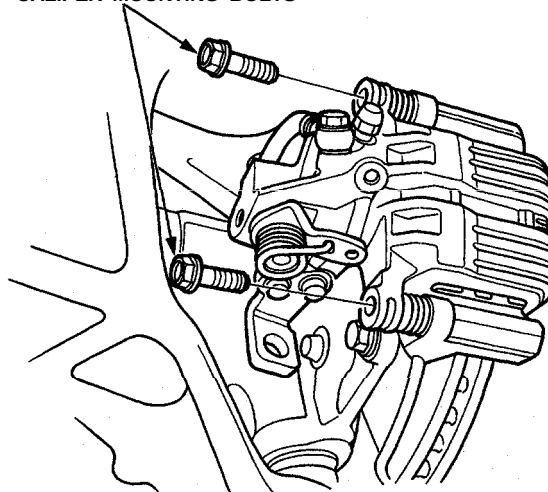


4. Remove the two caliper mounting bolts and the caliper from the bracket.

CAUTION:

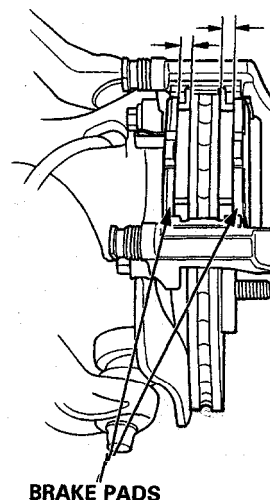
- Thoroughly clean the outside of the caliper to prevent dust and dirt from entering inside.
- Support the caliper with a piece of wire so that it does not hang from the brake hose.

CALIPER MOUNTING BOLTS



If lining thickness is less than service limit at step 6, replace the rear pads as a set.

NOTE: Engagement of the brake 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.



BRAKE PADS

(cont'd)

Rear Brake Pads

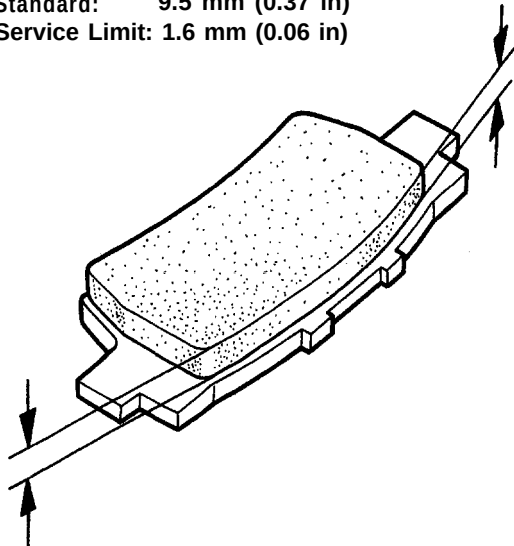
Inspection/Replacement (cont'd)

5. Remove the pad shims, pads and pad retainers.
6. Using a vernier caliper, measure the thickness of each brake pad lining.

Brake Pad Thickness:

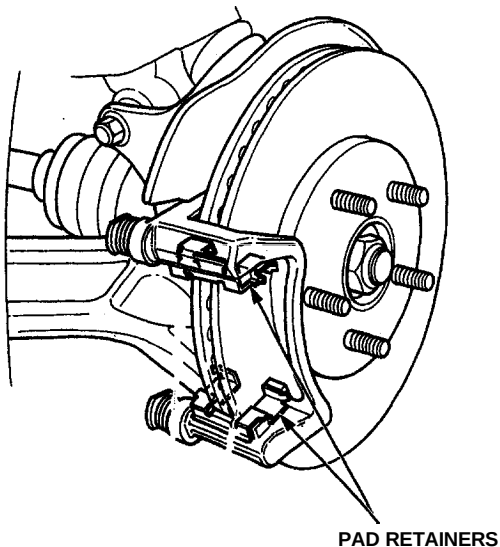
Standard: 9.5 mm (0.37 in)

Service Limit: 1.6 mm (0.06 in)



NOTE: Measurement does not include pad backing thickness.

7. Clean the caliper thoroughly; remove any rust, and check for grooves or cracks.
8. Make sure that the pad retainers are installed in the correct positions.



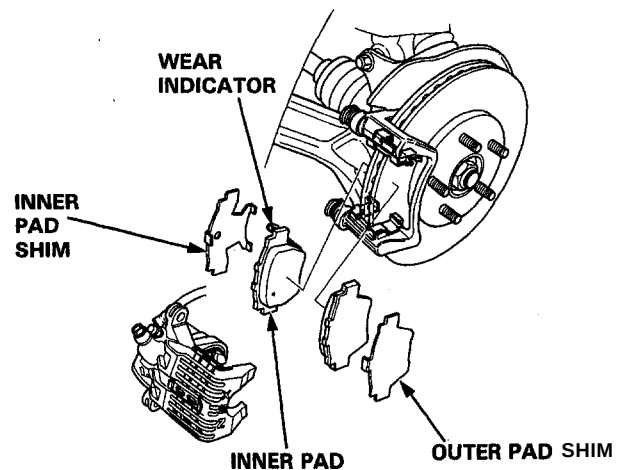
9. Install the new brake pads and pad shims on caliper bracket.

⚠ WARNING

- When reusing the pads, always reinstall the brake pads in their original positions to prevent loss of braking efficiency.
- A contaminated brake discs or pads reduces stopping ability. Keep grease off the discs and pads.

NOTE:

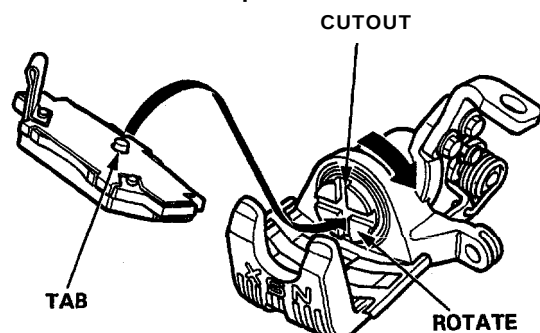
- Apply a Molykote 77 to the shims (page 1 Q-I 6). Wipe excess grease off the shims.
- Install the inner pad with its wear indicator facing upward.
- Make sure that the pad spring is installed onto the caliper body.



10. Rotate the caliper piston clockwise into place in the cylinder, then align the cutout in the piston with the tab on the inner pad by turning back the piston back.

CAUTION: Lubricate the boot with silicone grease to avoid twisting the piston boot. If the piston boot is twisted, back it out so it sits properly.

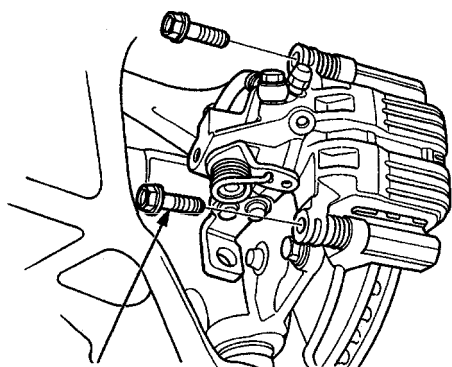
11. Install the brake caliper.



Rear Brake Disc

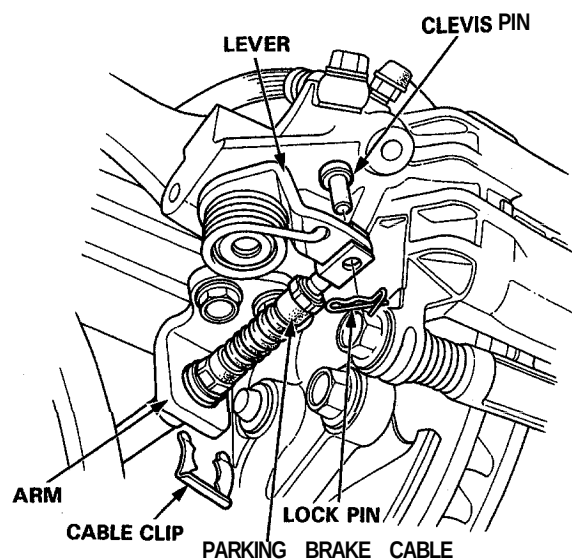
Run-Out Inspection

12. Install and tighten the two caliper mounting bolts.

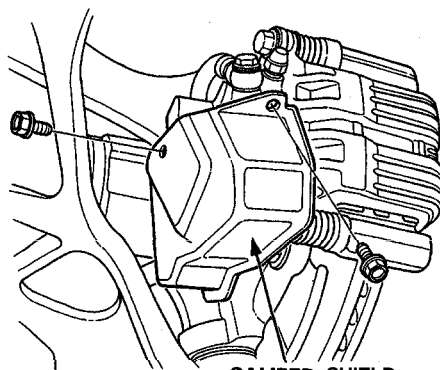


CALIPER MOUNTING BOLT
110 mm FLANGE BOLT)
50 N·m (5.0 kg-m, 36 lb-ft)

13. Insert the cable through the arm and connect the cable to the lever with the clevis pin and lock pin. Install the cable clip securely.



14. Install the caliper shield.



CALIPER SHIELD

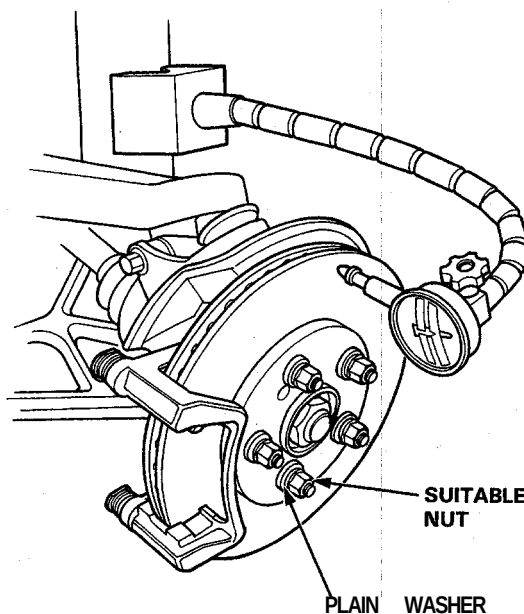
NOTE: Clean the mating surfaces of the wheel and hub before installing the wheel.

1. Raise each side of the car and, support on safety stands (page I-6 through 8). Remove the rear wheels.
2. Remove the brake pads (page 19-I 7).
3. Inspect the disc surface for grooves, cracks, and rust. Clean the disc thoroughly and remove all rust.
4. Use suitable nuts (1 2 x 1.5 mm) and plain washers to hold the disc securely against the hub, then mount a dial indicator as shown.

Brake Disc Runout:
Service Limit: 0.10 mm (0.004 in)

Max. Refinishing Limit: 19 mm (0.75 in)

5. If the disc is beyond the service limit, refinish the rotor.

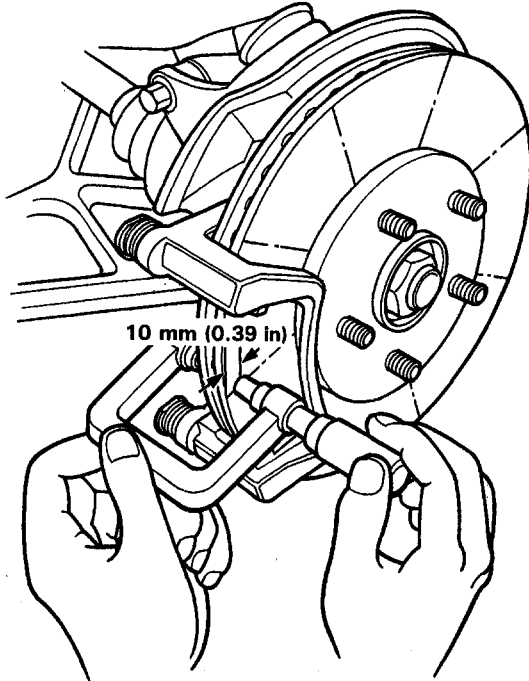


NOTE: A new disc should be refinished if its runout is greater than 0.1 mm (0.004 in).

Rear Caliper

Thickness and Parallelism Inspection

1. Raise both sides of the car and support on safety stands (page I-6 through 8).
Remove the rear wheels.
2. Move the caliper and pads out of the way as described on the preceding page.
3. Using a micrometer, measure disc thickness at eight points, approximately 45° apart and 10 mm (0.39 in) in from the outer edge of the disc.



Brake Disc Thickness:

Standard: 21 mm (0.83 in)

Max. Refinishing Limit: 19 mm (0.75 in)

Brake Disc Parallelism:

The difference between any thickness measurements should not be more than 0.015 mm (0.0006 in).

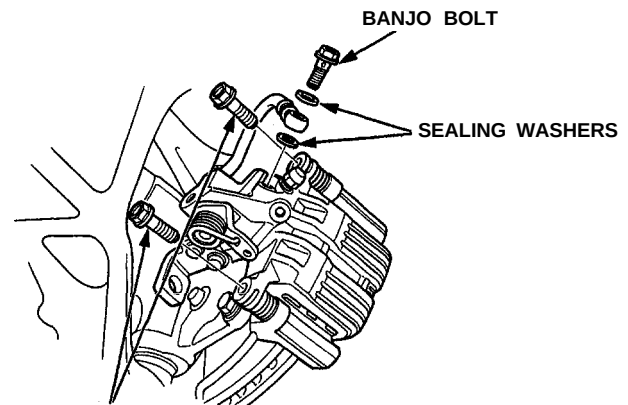
4. If the disc is beyond the limits for thickness or parallelism, refinish the rotor.

Disassembly

CAUTION:

- Make sure all parts are clean before reassembly.
- Use only new replacement parts.
- Use only DOT3 or 4 clean brake fluid.
- Do not allow dirt or other foreign matter to contaminate the brake fluid.
- Do not mix different brands of brake fluid.
- Avoid spilling brake fluid on painted, plastic or rubber surfaces as it can damage the finish.
Wash spilled brake fluid off immediately with clean water.

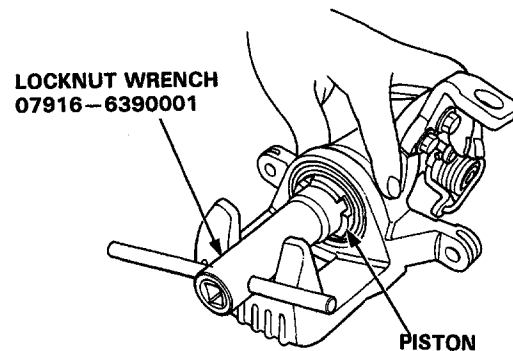
1. Remove the caliper shield (page 19-17).
2. Disconnect the parking cable (page 19-17).
3. Remove the banjo bolt and two sealing washers.
4. Remove the two caliper mounting bolts and caliper body from the bracket.



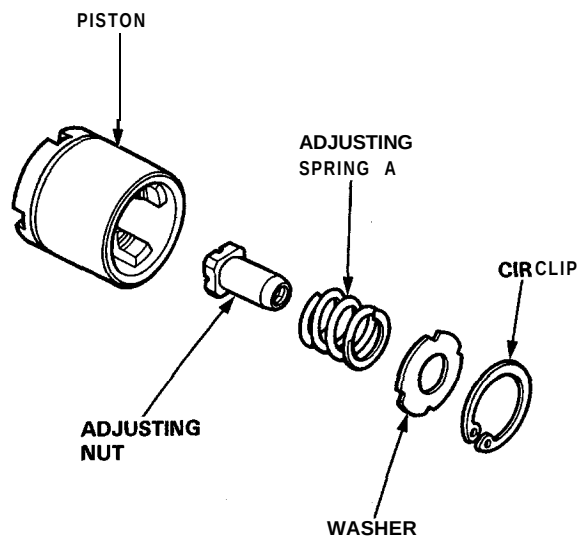
CALIPER MOUNTING BOLTS

5. Remove the pad spring from the caliper.
6. Remove the piston and piston boot while rotating the piston.

CAUTION: Avoid damaging the piston and piston boot.

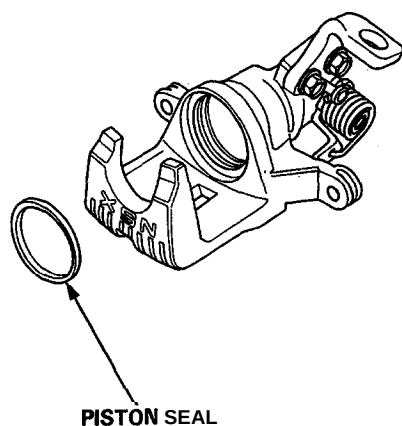


7. Remove the circlip, washer, adjusting spring A, and the adjusting nut from the piston.

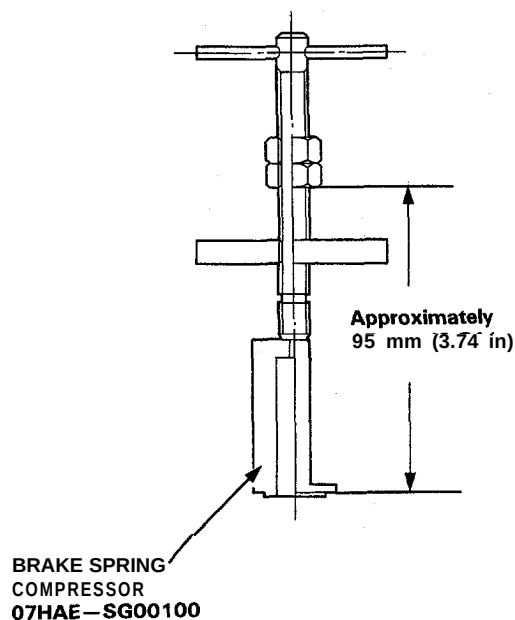


8. Remove the piston seal.

CAUTION: Take care not to damage the cylinder bore.

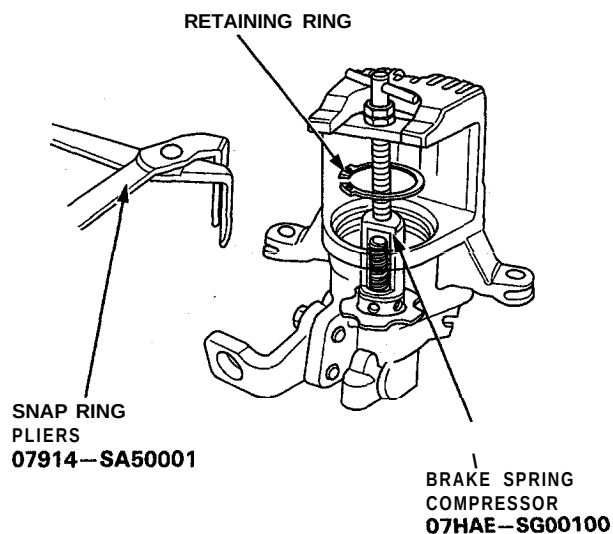


9. Adjust the special tool as shown.



10. Install the special tool between the caliper body and spring guide as shown.

11. Compress the adjusting spring B by turning the shaft of the special tool, then remove the retaining ring with snap ring pliers.



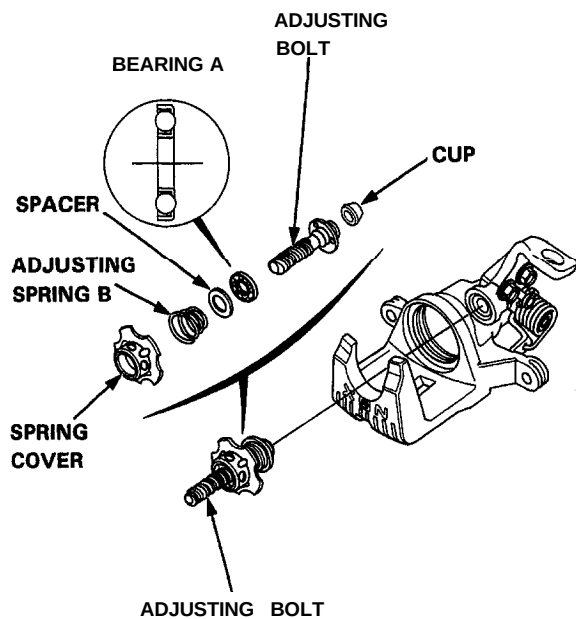
(cont'd)

Rear Caliper

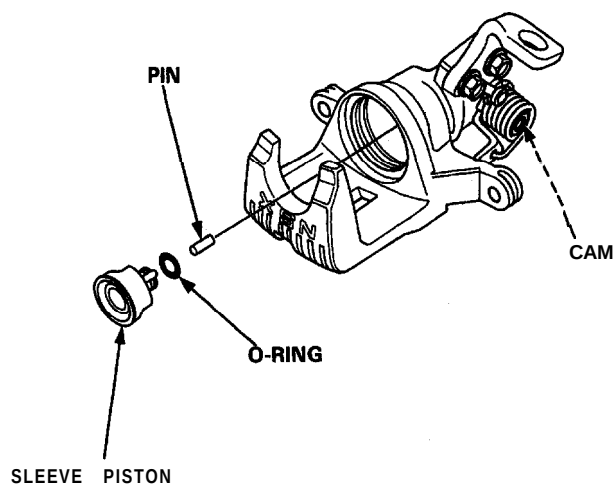
Disassembly (cont'd)

12. Remove the adjusting bolt.

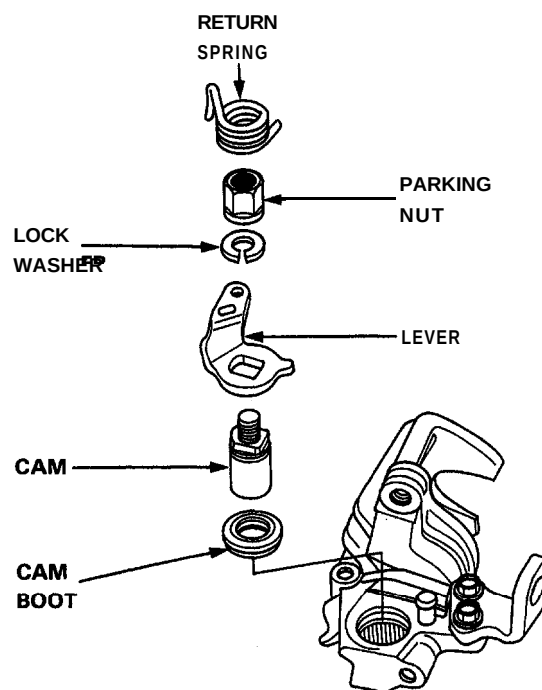
13. Remove the spring cover, adjusting spring B, spacer, bearing A and cup from the adjusting bolt.



14. Remove the sleeve piston, and remove the pin from the cam.



15. Remove the return spring, parking nut, lock washer, lever, cam and cam boot.



Reassembly

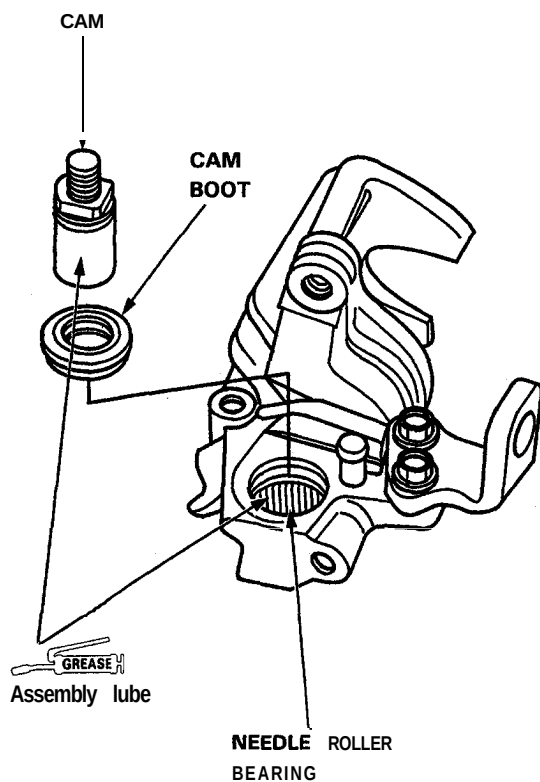
CAUTION:

- Make sure **all** parts are clean before reassembly.
- Use only new replacement parts.
- Use only clean DOT3 or 4 brake fluid.
- Do not allow dirt or other foreign matter to contaminate the brake fluid.
- Do not mix different brands of brake fluid.
- Avoid spilling brake fluid on painted, plastic or rubber surfaces as it can damage the finish.
Wash spilled brake fluid off immediately with clean water.

1. Pack all cavities of the needle bearing with a commercially available assembly lube
2. Coat the *new* cam boot with a commercially available assembly lube and install in the caliper.
3. Install the cam with threaded end facing up.

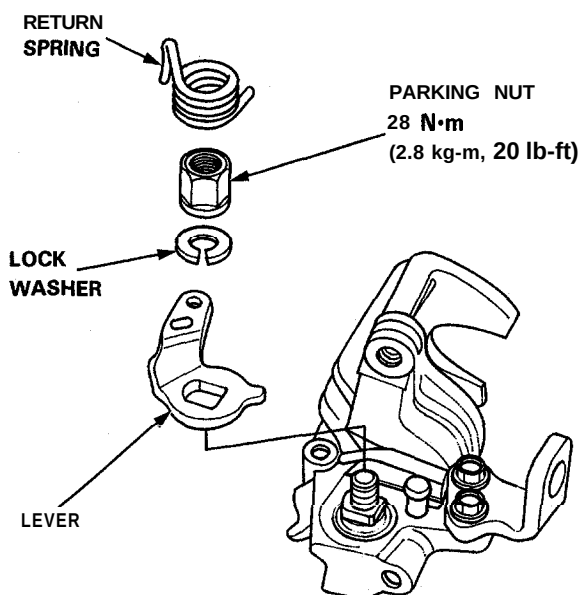
CAUTION:

- Avoid damaging the cam boot since it must be installed before the cam.
- When installing the cam, do not allow the cam boot lips to turn outside in.

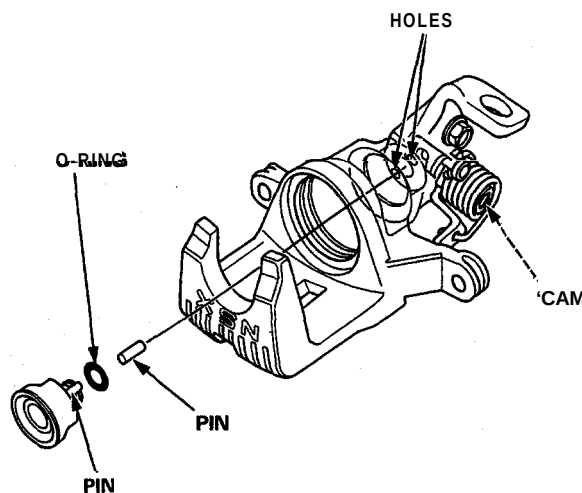


4. Install the lever, lock washer and parking nut, then tighten the parking nut.

5. Install the return spring.



6. Install the pin in the cam.
7. Install a new O-ring on the sleeve piston.
8. Install the sleeve piston so the hole in the bottom of the piston is aligned with the pin in the cam, and two pins on the piston are aligned with the holes in the caliper.



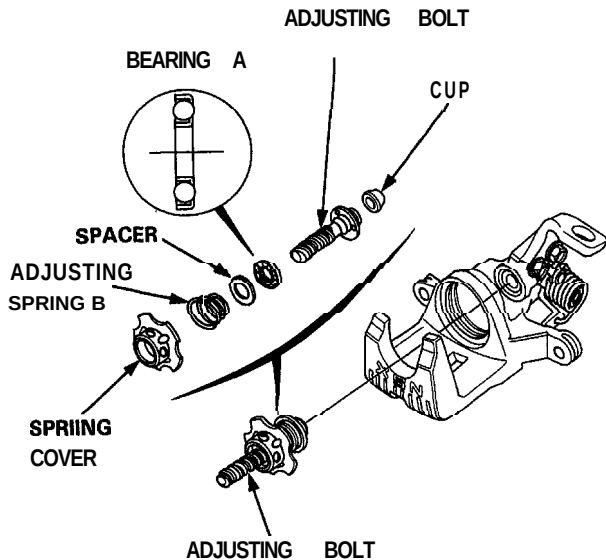
(cont'd)

Rear Caliper

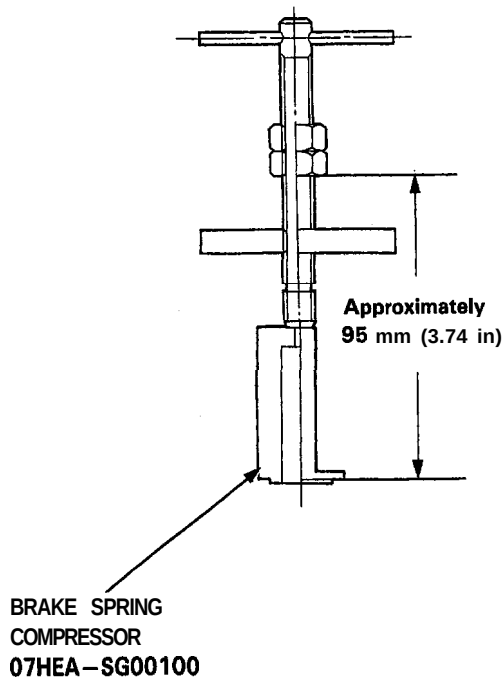
Reassembly (cont'd)

9. Install a new cup with its groove facing the bearing A side on the adjusting bolt.
10. Fit the bearing A, spacer, adjusting spring B and spring cover on the adjusting bolt, and install in the caliper cylinder.

NOTE: Install the bearing A with its open end facing the spacer.



11. Adjust the special tool as shown.



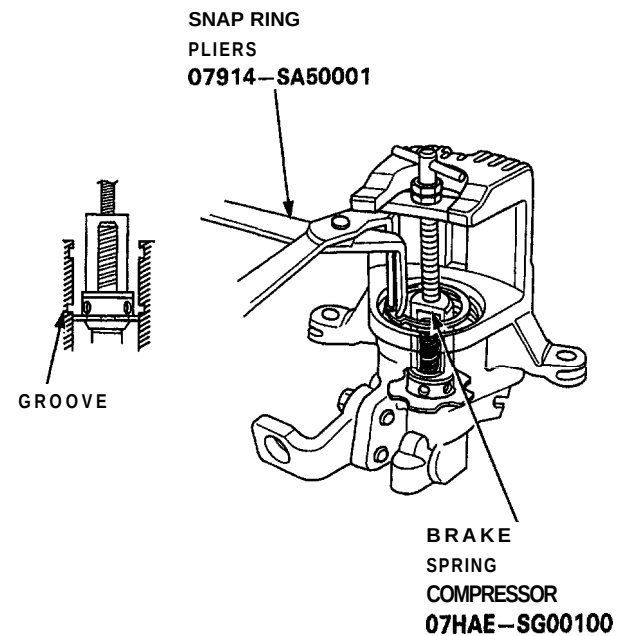
12. Install the special tool as shown.

13. Compress the spring until it bottoms out.

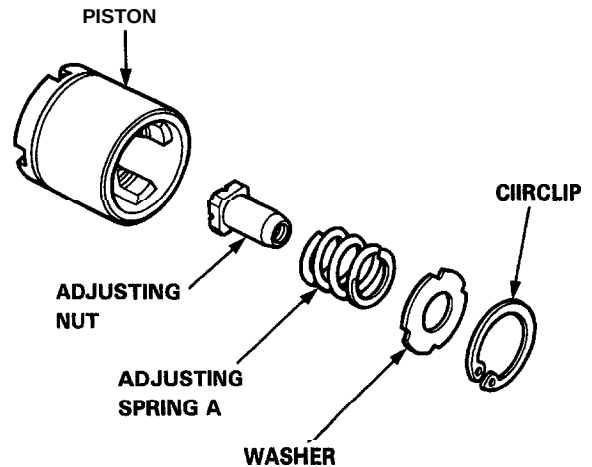
14. Check that the flared end of the spring cover is below the retaining ring groove.

15. Install the retaining ring then remove the brake spring compressor.

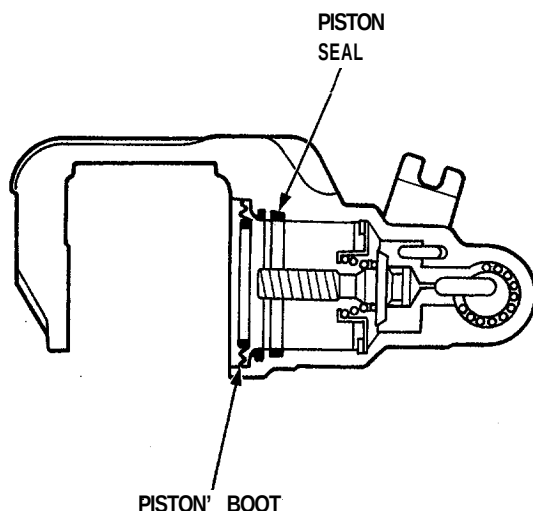
NOTE: Check that the retaining ring is seated in the groove properly.



16. Install the adjusting nut, adjusting spring A, and washer, then secure with the circlip.

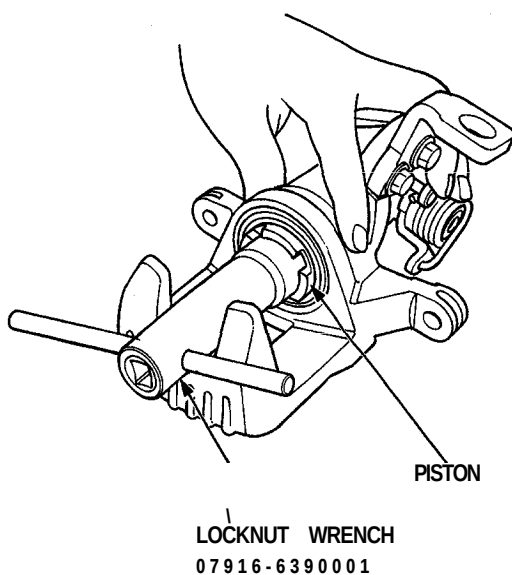


17. Coat the new piston seal and piston boot with silicone grease and install them in the caliper.



18. Coat the outside of the piston with silicone grease, and install it on the adjusting bolt while rotating it clockwise.

CAUTION: Avoid damaging the piston boot.



19. Install the brake pad retainers and brake pads.
20. Install the pad spring on the caliper.
21. Install the caliper on the caliper bracket and tighten the caliper mounting bolts.
22. Connect the brake hose to the caliper with new sealing washers and tighten the banjo bolt.
23. Connect the parking brake cable to the arm on the caliper.
24. Fill the brake reservoir up and bleed the brake system (page 19-10).
25. Operate the brake pedal several times, then adjust the parking brake lever.

NOTE: Before adjustments, make sure the parking brake arm on the caliper touches the pin.

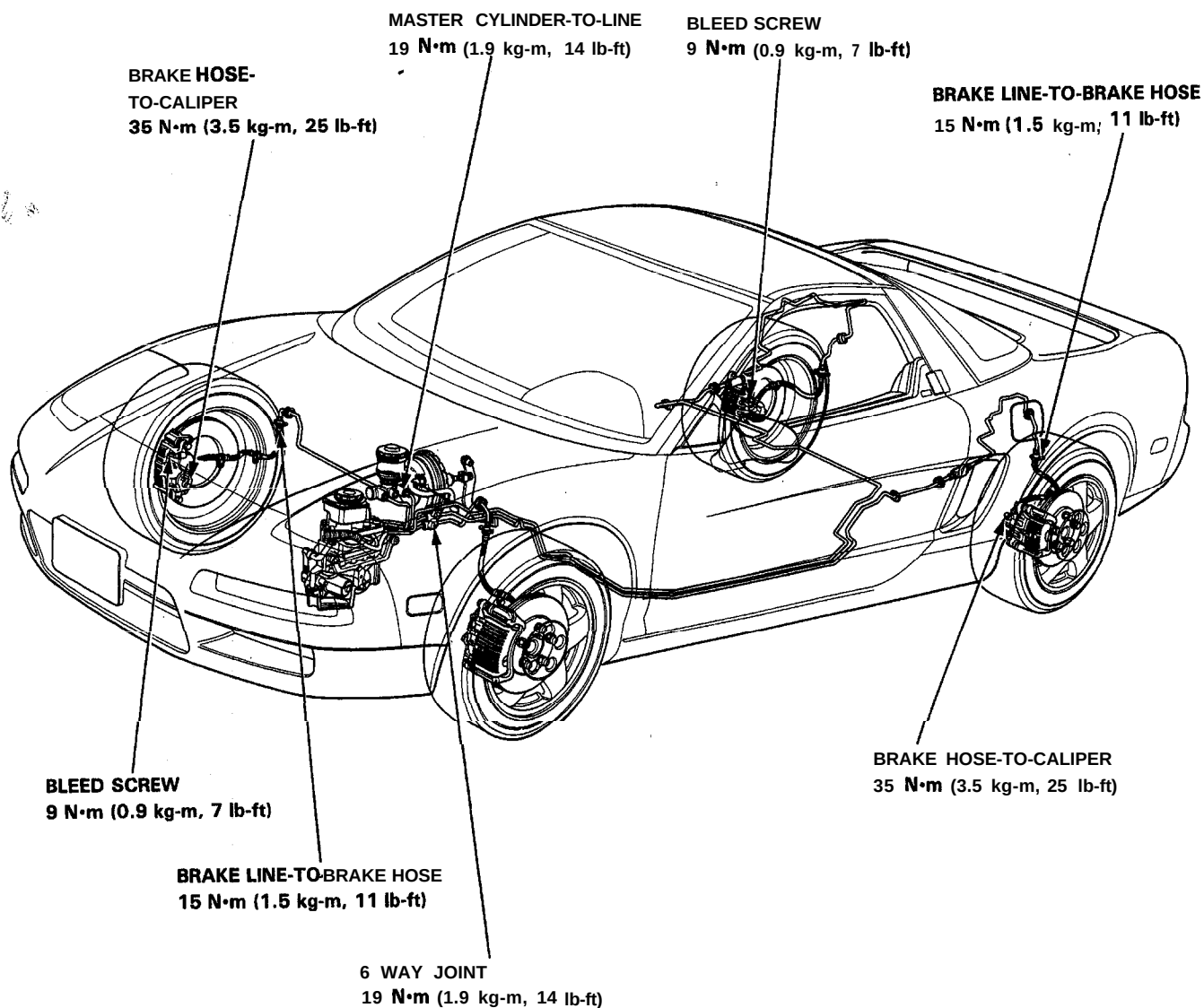
26. Install the caliper shield and tighten the bolts.

Brake Hoses/Pipes

Inspection

1. Inspect the brake hoses for damage, leaks, interference or twisting.
2. Check the brake lines for damage, rusting or leakage. Also check for bent brake lines.
3. Check for leaks at hose and line joints or connections, and retighten if necessary.

CAUTION: Replace the brake hose clip whenever the brake hose is serviced.

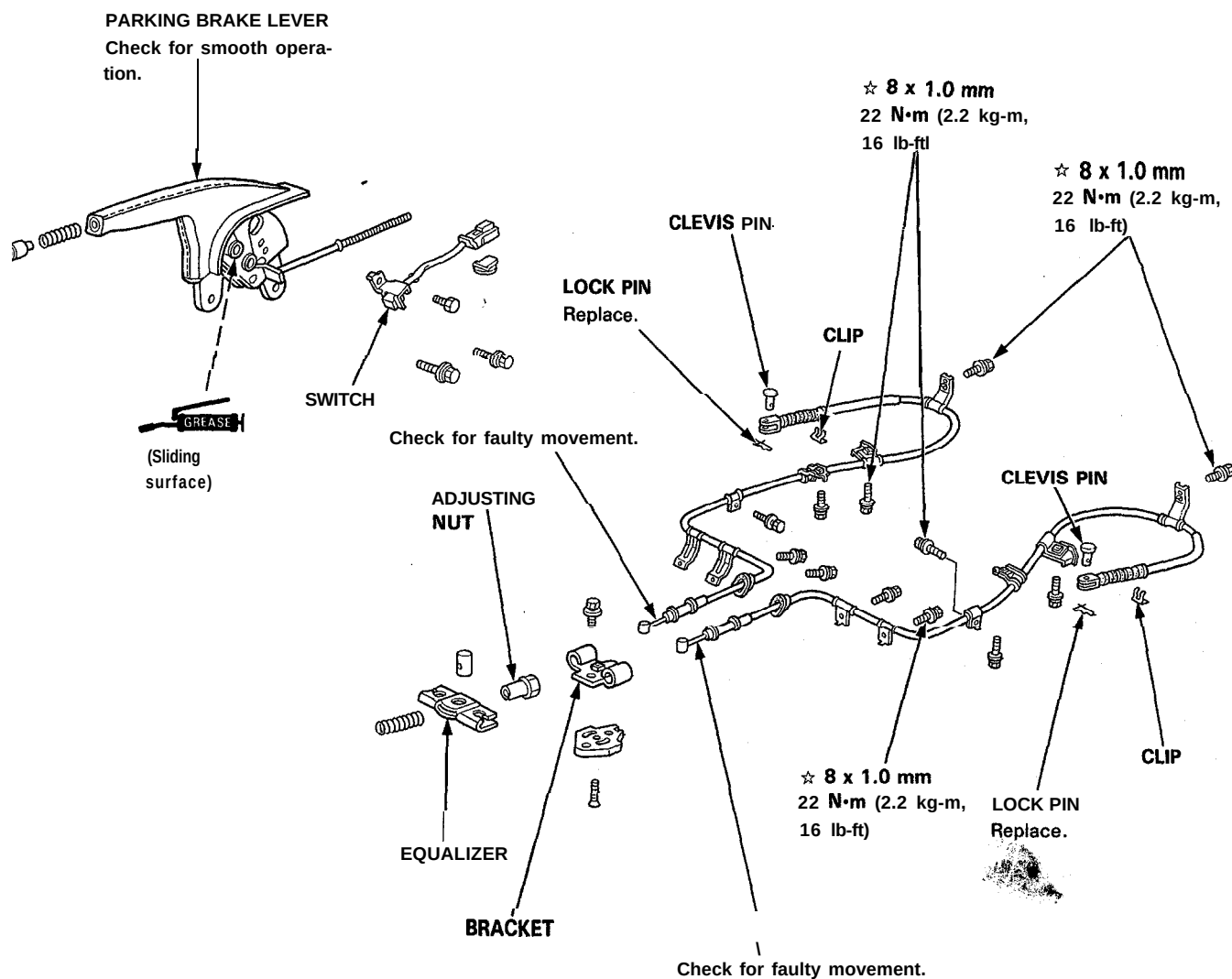


Parking Brake



- Disassembly and Reassembly

☆ : CORROSION RESISTANT BOLT



ALB Description

Features/Construction/Operation

General

In a conventional brake system, if the brake pedal is depressed excessively, the wheels can lock before the vehicle comes to a stop. In such a case, the stability of the vehicle is reduced if the rear wheels are locked, and maneuverability of the vehicle is reduced if the front wheels are locked, creating an extremely unstable condition.

The Anti-Lock Brake system modulates the pressure of the brake fluid applied to each caliper, thereby preventing the locking of the wheels, whenever the wheels are likely to be locked due to excessive braking. It then restores normal hydraulic pressure when there is no longer any possibility of wheel locking.

4 Channel Anti-Lock Brake system Features

- Increased braking stability can be achieved regardless of changing driving conditions.
- The maneuverability of the vehicle is improved as the system prevents the front wheels from locking.
- When the anti-lock brake system goes into action, kick-back is felt on the brake pedal.
- The anti-lock brake system is equipped with a self-diagnosis function. When an abnormality is detected, the system indicator light comes on.

The location of the system's trouble can be diagnosed from the frequency of the system indicator light display blinks.

- This system has individual control of the front and rear wheels.

Braking force is controlled on each of the four wheels independently, resulting in optimum braking effects on the four wheels.

The system has a fail-safe function that allows normal braking if there's a problem with the anti-lock brake system.

- DIFFERENCES BETWEEN THE 3 CHANNEL AND 4 CHANNEL ANTI-LOCK BRAKE SYSTEM

Items	3 Channel	4 Channel
Gear Pulser	Front: 50 Rear: 50	Front: 47 Rear: 50
Control Unit	12 and 18 pins	18 and 20 pins
Modulator Solenoid Unit	4 Pistons 3 Solenoid Valves	4 Pistons 4 Solenoid Valves
Service Check Connector	No	Yes
System Control Method	Front wheels controlled independently. Rear wheels controlled commonly	Four wheels controlled independently.
Rear Brakes are provided with PCV function (Proportioning Control Valve)	Yes	No

Construction

In addition to the conventional braking system, the anti-lock brake system is composed of: gear pulsers attached to the rotating part of individual wheels; speed sensors, which generate pulse signals in correspondence to the revolution of the gear pulsers; control unit, which controls the working of the anti-lock brake system by performing calculations based on the signals from the individual speed sensors and the individual switches; modulator unit, which adjusts the hydraulic pressure applied to each caliper on the basis of the signals received from the control unit; an accumulator, in which high-pressure brake fluid is stored; a pressure switch, which detects the pressure in the accumulator and transmits signals to the control unit; a power unit, which supplies the high-pressure working fluid to the accumulator by means of a pump; a motor relay for driving the power unit; a fail-safe relay, which cuts off the solenoid valve ground circuit when the fail-safe device is at work; and, an anti-lock brake system indicator light.

Master Cylinder

1. Construction

A tandem master cylinder is adopted for the master cylinder in order to improve safety of the braking system. In addition, a center valve method is introduced so as to match the anti-lock brake system operation.

The master cylinder has one reservoir tank which is connected to the cylinder sections by two small holes. It has two pistons-primary and secondary, which are criss-cross connected with the calipers so that the fluid pressure works separately on each system (front right wheel & rear left wheel, and front left wheel & rear right wheel).

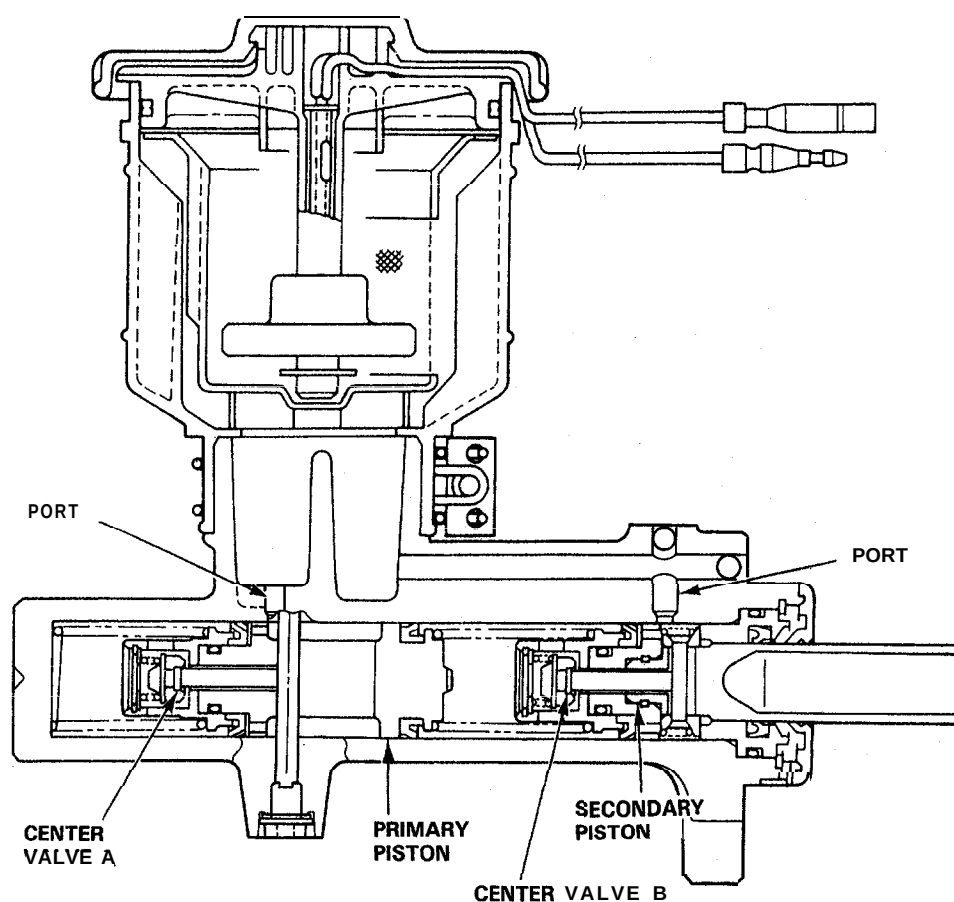
A stop bolt for controlling movement of the primary piston is provided at the side of the master cylinder body.

A reed switch for detecting the brake fluid volume is also provided on the cap of the reservoir tank.

2. Operation

When the brake pedal is depressed, the secondary piston is pushed through the brake booster and the center valve B is closed so that the fluid pressure is generated on the secondary side. At the same time, the primary piston is pushed by the secondary fluid pressure and the center valve A is closed so that braking fluid pressure is generated both on the primary and secondary sides.

When the brake pedal is released, the primary and secondary pistons are returned to the original position by the brake fluid pressure and piston spring.



(cont'd)

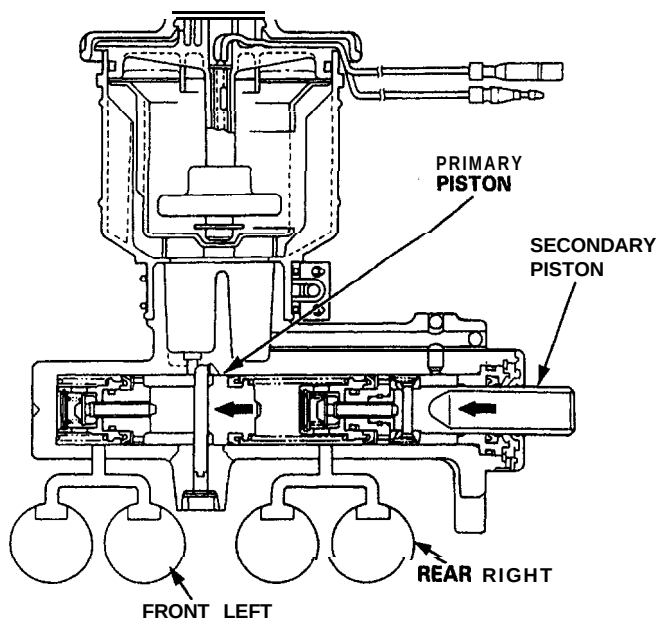
ALB Description

-Features/Construction/Operation (cont'd)

3. Responses when fluid is leaking

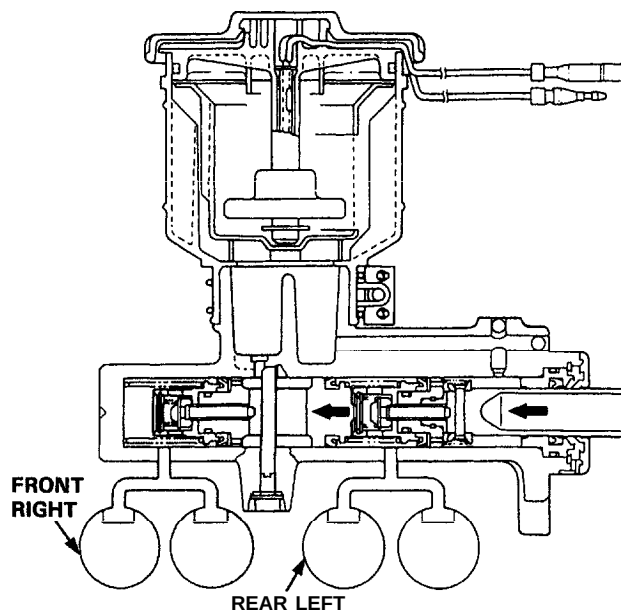
(1) In case of leaking from the primary system

Since the fluid pressure on the primary side does not rise, the primary piston is pushed by the fluid pressure of the secondary piston and the tension of the piston spring until the end hits on the cylinder; the braking is performed by the fluid pressure on the secondary side.



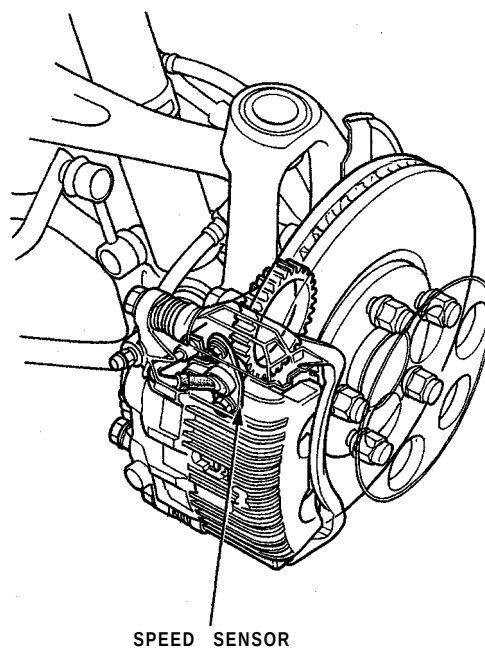
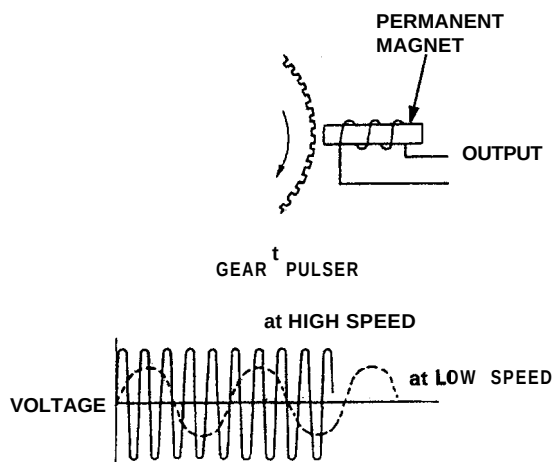
(2) In case of leaking from the secondary system

The secondary piston does not produce fluid pressure, keeps moving ahead, hits on the end surface of the primary piston so that the primary piston is pushed under the same condition as an ordinary rod; the **braking** is performed by the fluid pressure on the primary side.



Speed Sensor

The speed sensor is a contactless type and it detects the rotating speeds of a wheel. It is composed of a permanent magnet and coil. When the gear pulsers attached to the rotating parts of each wheel (rear wheel: outboard joint of the driveshaft, front: hub bearing unit) turn, the magnetic flux around the coil in the speed sensor alternates, generating voltages with frequency in proportion to wheel rotating speed. These pulses are inputted into the control unit and the control unit identifies the wheel speeds.



(cont'd)

ALB Description

Features/Construction/Operation (cont'd)

Control Unit

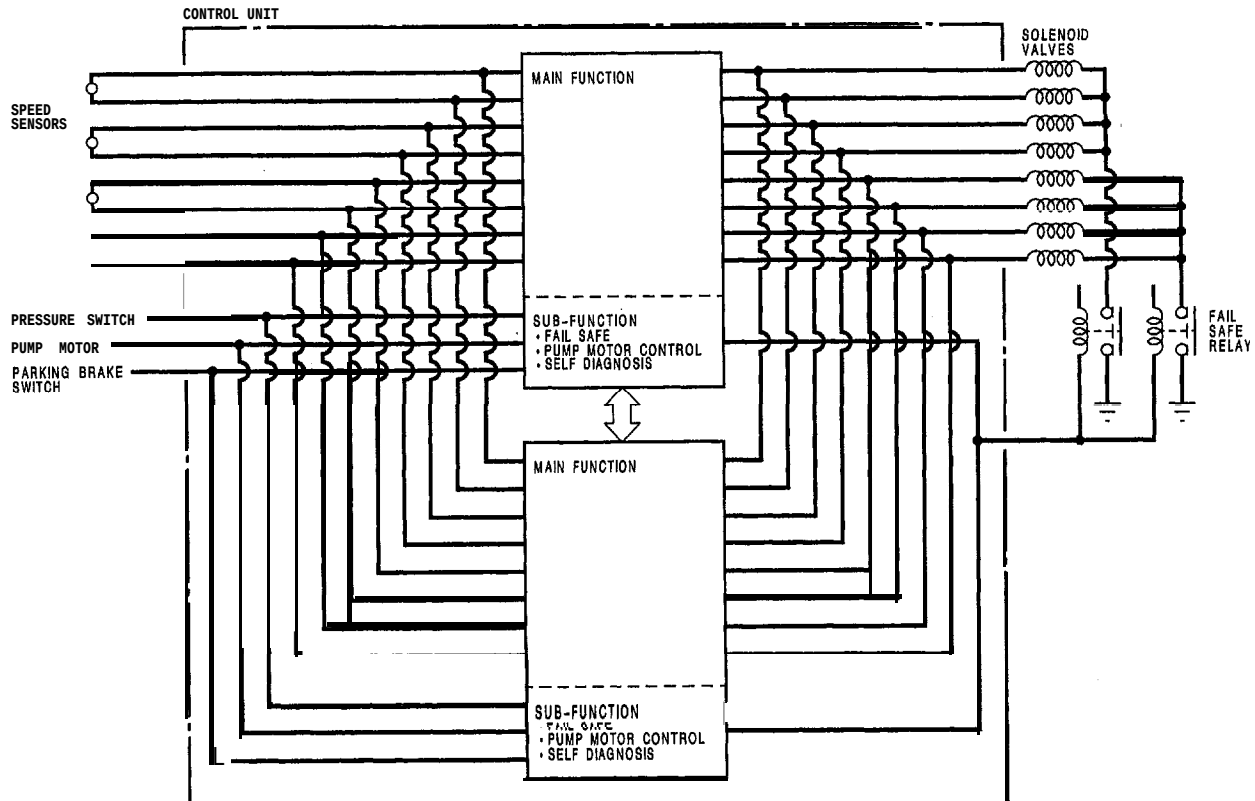
The control unit consists of a main function section, which controls the operation of anti-lock brake system, and sub-function, which controls the pump motor and "self-diagnosis."

1. Main Function

The main function section of the control unit performs calculations on the basis of the signals from each speed sensor and controls the operation of the anti-lock brake system by putting into action the solenoid valves in the modulator unit for each front and rear brake.

2. Sub-Function

The sub-function section gives driving signals to the pump motor and also gives "self-diagnosis" signals, necessary for backing up the anti-lock brake system.



Self-Diagnostic Function

Since the anti-lock brake system modulates the braking pressure when a wheel is about to lock, regardless of the driver's intention, the system operation and the braking power will be impaired if there is a malfunction in the system. To prevent this possibility, at speeds above 10 km/h (6 mph), the self diagnosis function, monitors the main system functions. When an abnormality is detected, the anti-lock brake system indicator light goes on.

There is also a check mode of the self-diagnosis system itself: when the ignition switch is first turned on, the anti-lock brake system indicator light comes on and stays on for a few seconds after the engine starts, to signify that the self-diagnosis system is functional.

Fail-Safe Function

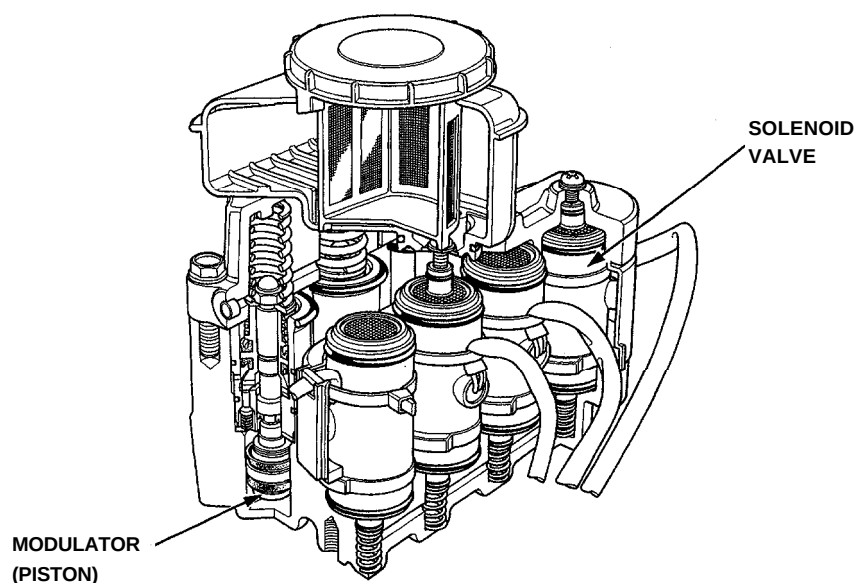
If an abnormality is detected, the control unit turns off the fail-safe relays and motor relay. In this condition the anti-lock brake system is prevented from functioning, yet the basic brake system continues to operate normally.

The Anti-lock Brake System Indicator Light Comes On

1. When the fluid pressure pump runs more than 120 seconds.
2. When the parking brake is applied for more than 30 seconds while the vehicle is being driven.
3. When the rear wheel(s) is (are) locked more than a specified time.
4. When the wheel rotation signal is not transmitted due to faulty wire or sensor.
5. When the operation time of the solenoid valve(s) exceeds a predetermined value and the control unit finds an open in the solenoid circuit.
6. When the output signals from both main functions in the control unit are not transmitted to the solenoid valve(s).

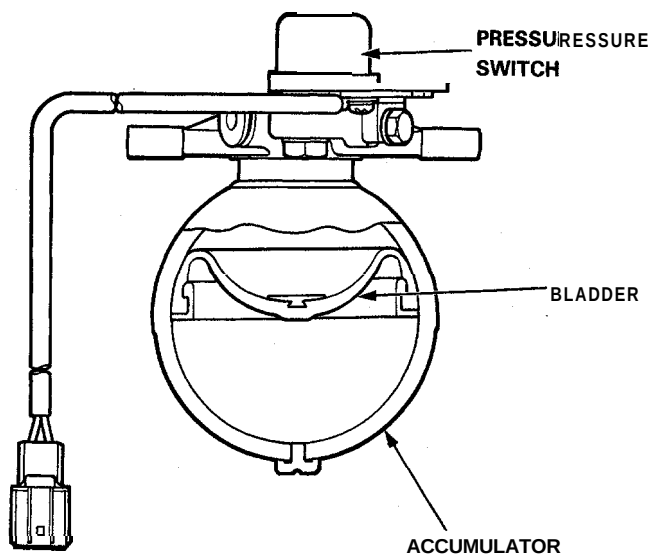
Modulator Unit

Modulators and solenoid valves for each wheel are integrated in the modulator unit. The modulators for front and rear brakes are of independent construction. The solenoid valve features quick response (5 ms or less). The inlet and outlet valves are integrated in the solenoid valve unit.



Accumulator

The accumulator is a pneumatic type which accumulates high-pressure brake fluid fed from the pump incorporated in the power unit. When the anti-lock brake system operates, the accumulator feeds high-pressure brake fluid to the modulator valve via the inlet side of the solenoid valve.



(cont'd)

ALB Description

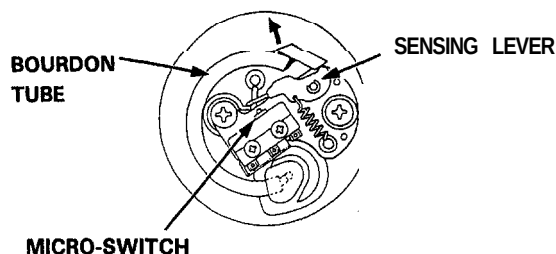
Features/Construction/Operation (cont'd)

Pressure Switch

The pressure switch monitors the pressure accumulation (pressure from the pump) in the accumulator and is turned off when the pressure becomes lower than a prescribed level. When the pressure switch is turned off, the switching signal is sent to the control unit. Upon receiving the signal, the control unit activates the pump motor relay to operate the motor. If the pressure doesn't reach the prescribed value, the system indicator light is turned on.

Operation

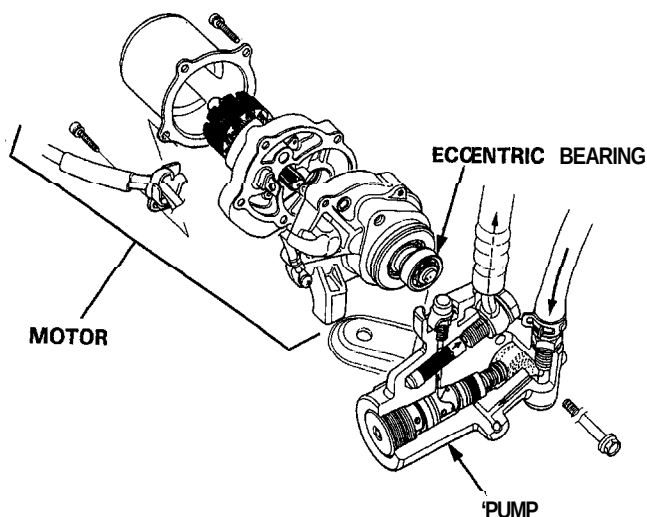
When the pressure in the accumulator rises, the Bourdon tube in the pressure switch deforms outwards. When the free end of the Bourdon tube moves more than the prescribed amount, the micro-switch is activated by the force of the spring attached to the sensing lever. When the pressure in the accumulator decreases due to anti-lock brake system operations, the Bourdon tube moves in the direction opposite to the one described above, and the micro-switch is eventually turned off. Upon receiving this signal, the control unit activates the motor relay to operate the motor.



Power Unit

The power unit is composed of a motor and a plunger-type pump. This unit transmits the revolution of the motor to the plunger by way of an eccentric bearing and supplies high-pressure brake fluid to the accumulator by the effect of the reciprocating movement of the plunger.

When the pressure in the accumulator drops below the prescribed pressure level, the pressure switch gives an OFF-signal. The control unit turns the motor relay ON to start the operation of the pump, upon the reception of this signal and a signal from the wheel sensor that the vehicle is running at a speed greater than 10 km/h. When the pressure in the accumulator attains the prescribed pressure, the control unit turns the motor relay OFF approximately three seconds after the unit receives an ON-signal from the pressure switch. By this, the high-pressure in the accumulator is maintained. The control unit turns the pump off and lights the system indicator light if the accumulator pressure does not reach the prescribed level after the pump has run continuously for 120 seconds.

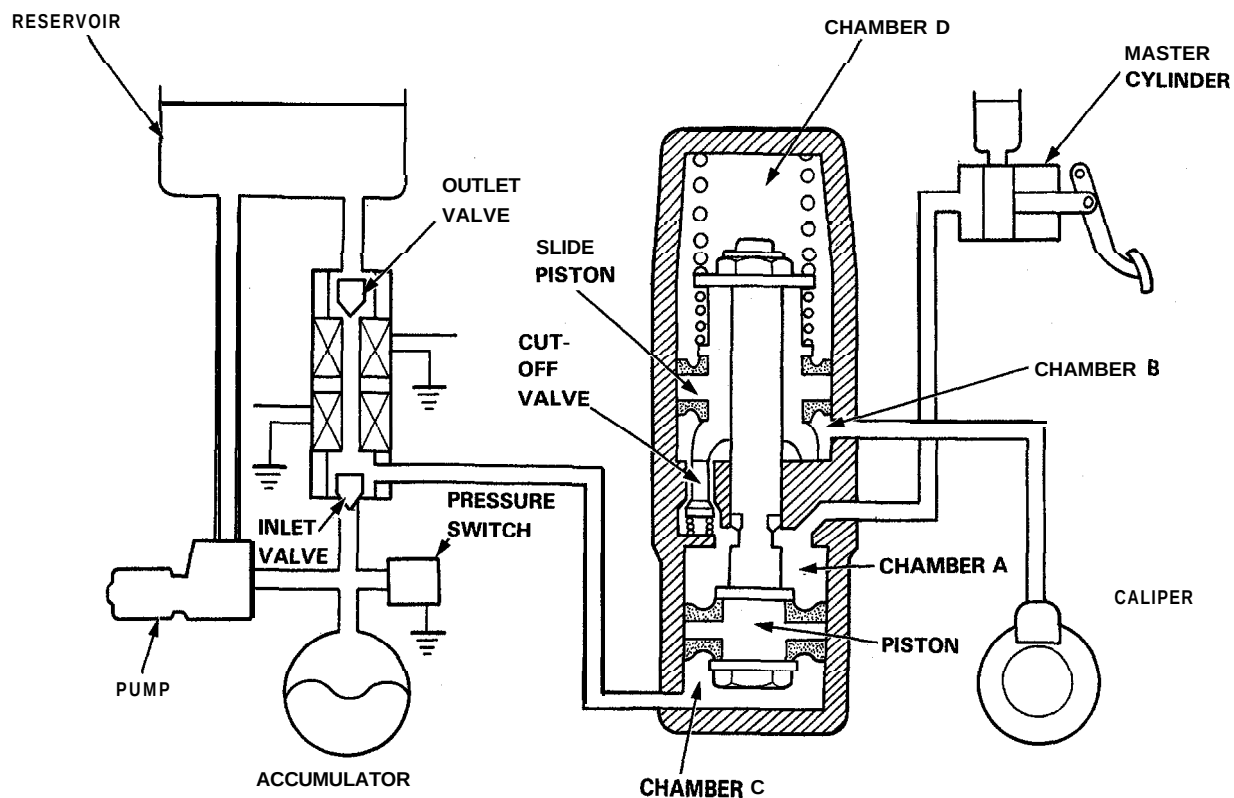


Operation

1. Ordinary Braking Function

In ordinary brake operations, the cut-off out valve in the modulator is open to transmit the hydraulic pressure from the master cylinder to the brake calipers via the chamber A and the chamber B.

The chamber C is connected to the reservoir through the outlet valve which is normally open. It is also connected to the hydraulic pressure source (pump, accumulator, pressure switch, etc.) via the inlet valve which is normally closed. The chamber D serves as an air chamber. Under these conditions, the pressures of the chambers C and D are maintained at about the atmospheric pressure, permitting regular braking operations.



(cont'd)

ALB Description

Features/Construction/Operation (cont'd)

If brake inputs (force exerted on brake pedal) are excessively large and a possibility of wheel locking occurs, the control unit operates the solenoid valve, closing the outlet valve and opening the inlet valve. As a result, the high pressure is directed into chamber C, the piston is pushed upward, causing the slide piston to move upward and the cut-off valve to close.

As the cut-off valve closes, the flow from the master cylinder to the caliper is interrupted, the volume of chamber B, which is connected to the caliper, increases, and the fluid pressure in the caliper declines.

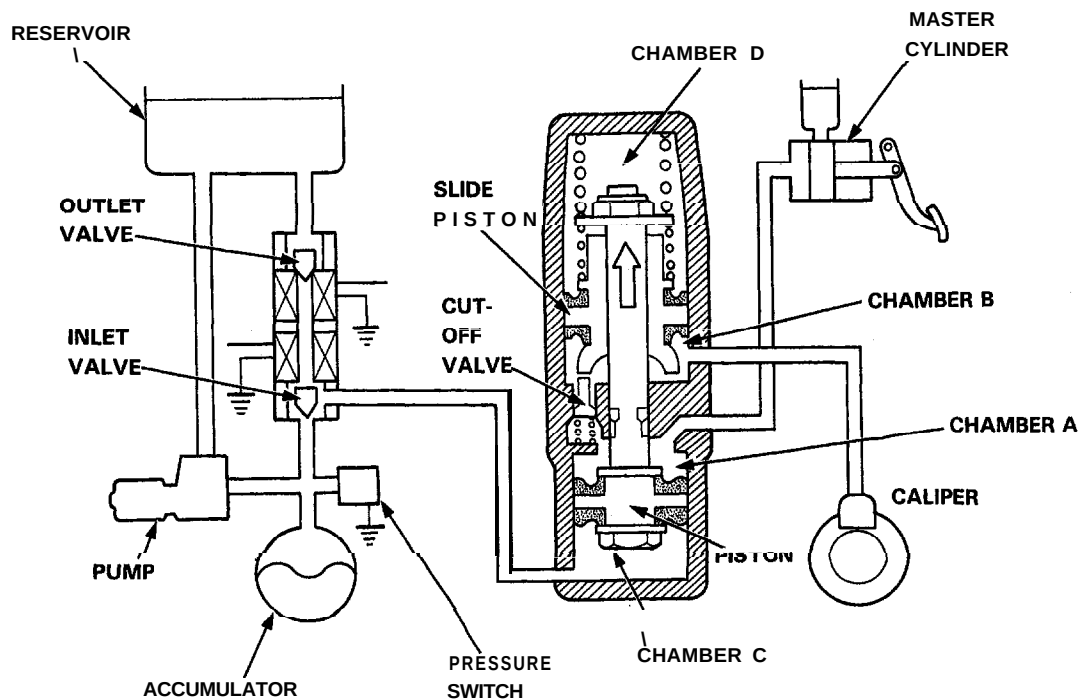
When both of the two valves, inlet and outlet, are closed (when only the outlet valve is activated) the pressure in the caliper is maintained constant.

When the possibility of wheel locking ceases, it is necessary to restore the pressure in the caliper. The solenoid valve is therefore turned off (outlet valve: open, inlet valve closed).

Process	Caliper Pressure	Outlet Valve		Inlet Valve	
		Electric Power	Hydraulic Circuit	Electric Power	Hydraulic Circuit
Caliper pressure declining	Down	O N	Close	ON	Open
Caliper pressure constant	H o l d -	O N	Close	OFF	Close
Caliper pressure increasing	Up	O F F	Open	OFF	Close

Slide Piston Function

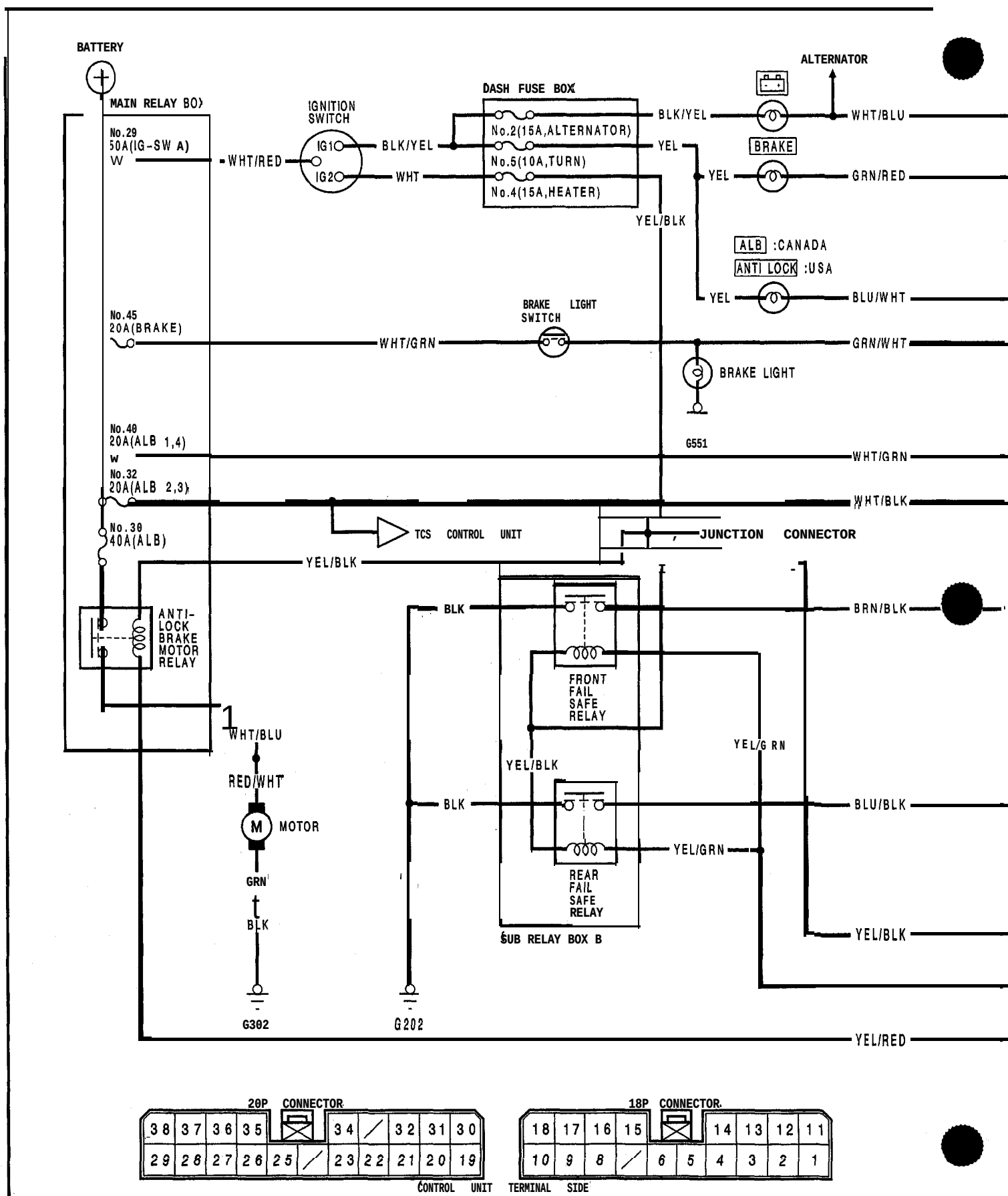
When the car is used on rough roads where the tires sometimes lose adhesion, the anti-lock brake system may function excessively, causing an excessively large volume of brake fluid to flow into the chamber C. As this occurs, the piston is moved excessively, resulting in an abnormal loss of pressure in the chamber B. In order to overcome this problem, the slide piston is kept in the proper position by the spring force to avoid a negative pressure in the chamber B.

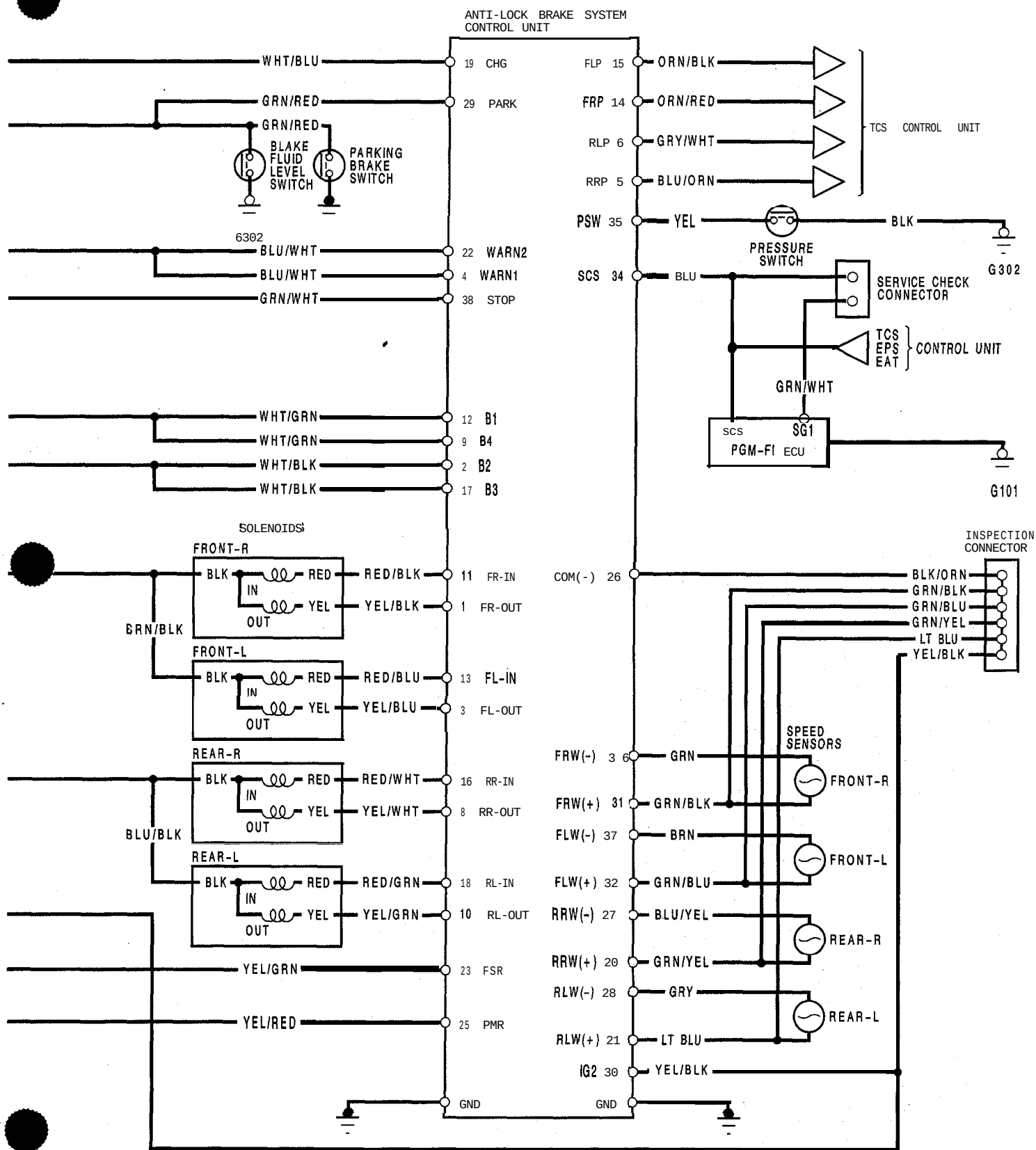


Kickback

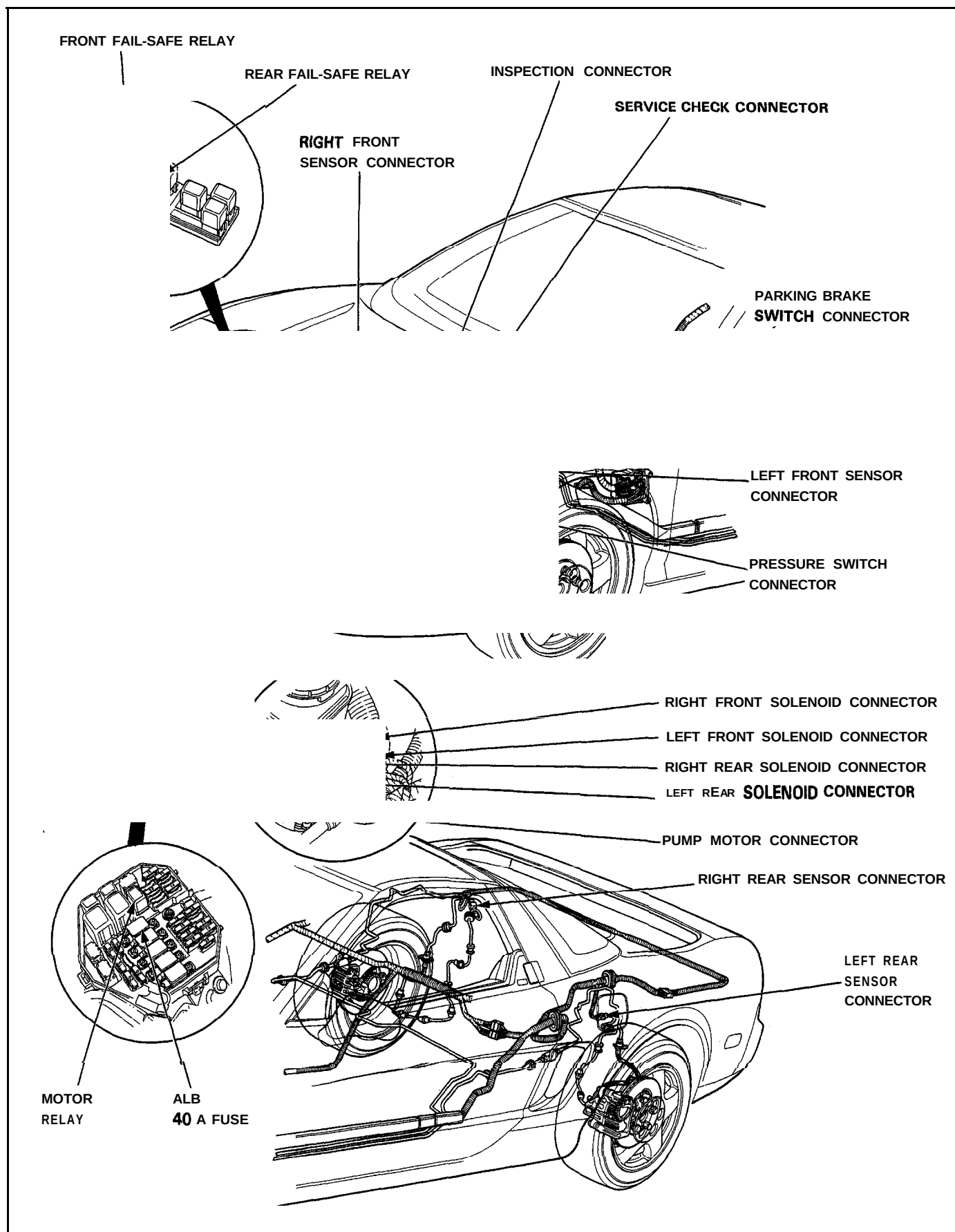
When anti-lock brake system is functioning, the piston moves upward, the volume of chamber B increases, and the fluid pressure on the caliper side is reduced. At the same time, the volume of chamber A is reduced and the brake fluid is returned to the master cylinder. When the brake fluid is pushed back to the master cylinder, the driver can feel the functioning of the anti-lock brake system because the brake pedal is kicked back.

Circuit Diagram





Wiring/Connector Location



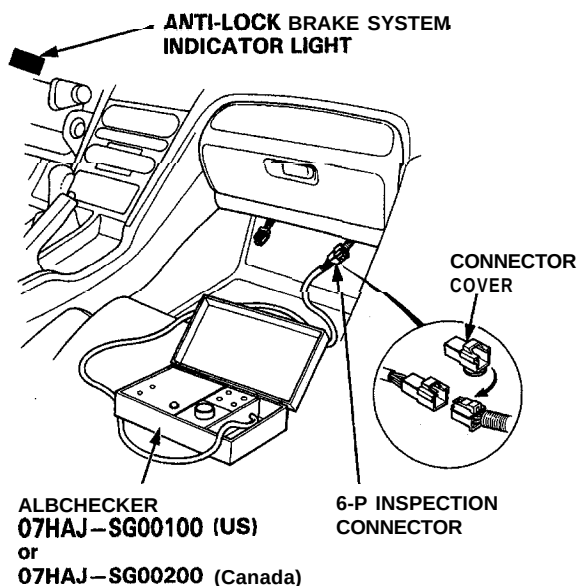
Function Test

NOTE:

- The ALB checker is designed to confirm proper operation of the anti-lock brake system by simulating each system function and operating condition. Before using the checker, confirm that the anti-lock brake system indicator light is not indicating some other problem with the system. The light should go on when the ignition is first turned on and then go off and stay off one second after the engine is started.
- The checker should be used through modes, 1-5, to confirm proper operation of the system, in any one of the following situations:
 - After replacing any anti-lock brake system component.
 - After replacing or bleeding the system fluid (0 mode not necessary).
 - After any body or suspension repair that may have affected the sensors or their wiring.
- The procedure for modes 1-5 are on this page and 19-42, mode 0 (wheel sensor signal) is on page 19-43.
- Use the following models of the ALB checkers:
 - 07HAJ—SG00100 (US)
 - 07HAJ—SG00200 (CANADA)

⚠ WARNING Disconnect the ALB checker before driving the car. A collision can result from a reduction, or complete loss, of braking ability causing severe personal injury or death.

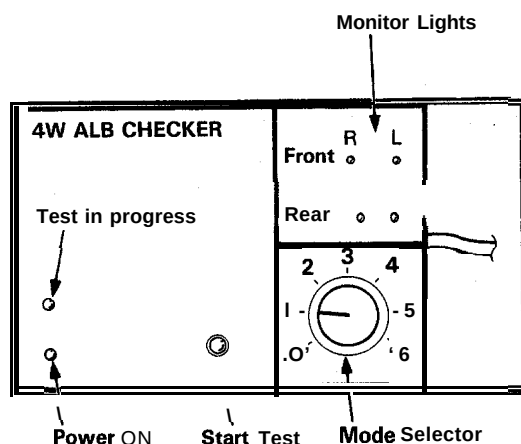
1. With the ignition switch off, disconnect the 6-P inspection connector from the connector cover located under the glove box and connect the 6-P inspection connector to the ALB checker.



NOTE: Place the vehicle on level ground with the wheels blocked, put the transmission in neutral for manual transmission models, and in P for automatic transmission models.

2. Start the engine and release the parking brake.
3. Operate the ALB checker as follows,
 - (1) Turn the Mode Selector switch to "1".
 - (2) Push the Start Test switch:
 - The test in progress light should come ON.
 - In one or two more seconds, all four monitor lights should come on (If not the checker is faulty).
 - The anti-lock brake system indicator light should not come ON (If it comes on the checker harness to the 6-P connector connection is faulty).

NOTE: When test in progress indicator light ON, don't turn the Mode Selector switch.



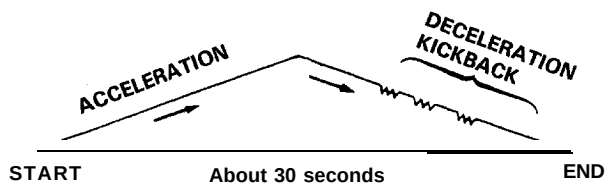
(cont'd)

ALB Checker

Function Test (cont'd)

4. Turn the Mode Selector switch further to "2".
5. Depress the brake pedal firmly and push the Start Test switch
The anti-lock brake system indicator light should not go on while the Test in Progress light is ON. There should be kickback on the brake pedal. If not as described, go to troubleshooting, page 19-44.

NOTE: The operation sequence simulated by Modes 2, 3, 4 and 5:



6. Turn the Mode Selector switch to 3, 4 and 5.
Perform step 5 for each of the test mode positions.

Mode 1:

Sends the simulated driving signal 0 km/h (0 mph) → 180 km/h (112.5 mph) → 0 km/h (0 mph) of each wheel to the control unit to check the control unit self diagnosis circuit. There should be NO kickback.

Mode 2:

Sends the driving signal of each wheel, then sends the lock signal of the rear left wheel to the control unit. There should be kickback.

Mode 3:

Sends the driving signal of each wheel, then sends the lock signal of the rear right wheel to the control unit. There should be kickback.

Mode 4:

Sends the driving signal of each wheel, then sends the lock signal of the front left wheel to the control unit. There should be kickback.

Mode 5:

Sends the driving signal of each wheel, then sends the lock signal of the front right wheel to the control unit. There should be kickback.

NOTE: If little or no kickback is felt from the brake pedal in modes 2-5, repeat the function test of modes 1-5 several times before beginning to troubleshoot other parts of the system.

Mode 6:

Not used on this model.

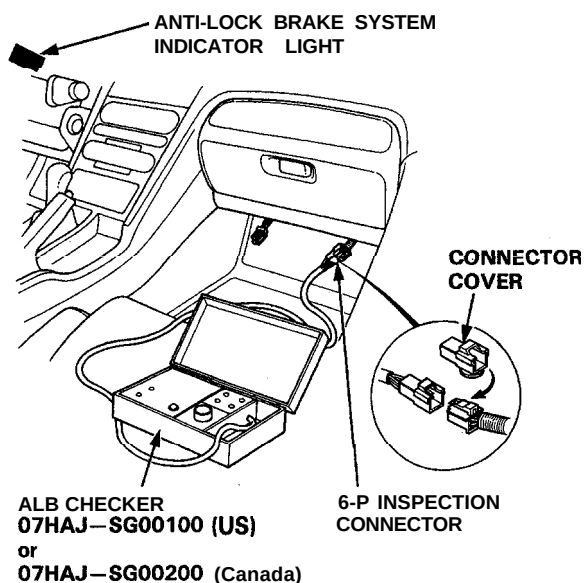
Inspection points:

1. The anti-lock brake system indicator light goes ON in mode 1.
 - Check the wiring. If it is in good condition, the control unit is faulty.
 - If anti-lock brake system indicator light goes on 120 seconds later but the power unit stops, refer to page 19-47.
2. There are no kickback in modes 2 through 5.
 - Faulty pressure switch (remains ON)
 - Shorted wires
 - Faulty or disconnected power unit connector
 - Faulty power unit relay
3. Weak kickback in modes 2 through 5.
 - Bleed high pressure circuits.
4. Power unit stops in mode 1 but it does not stop and there are no kickback in modes 2 through 5.
 - Brake fluid leakage
 - Bleed power unit
 - Clogged power unit outlet
 - Clogged or deteriorated power unit hose

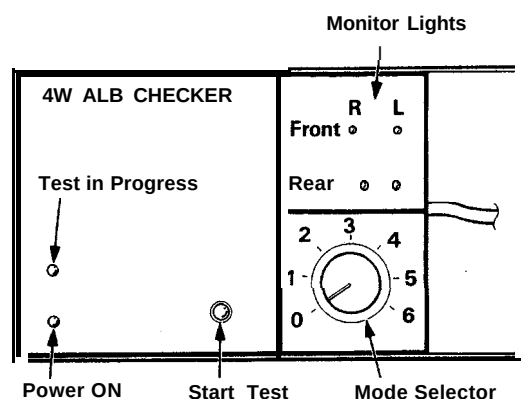
Wheel Sensor Signal Confirmation

NOTE: Use the ALB checker (mode 0) to confirm proper wheel sensor operation.

1. Disconnect the 6-P inspection connector from the connector cover located under the glove box and connect the 6-P inspection connector to the ALB checker.



2. Raise the car so that all four wheels are off the ground and support on safety stands (see page 1-6 through 8).
3. Turn the ignition switch ON.
4. Turn the Mode Selector switch to "0".



5. With the transmission in neutral, rotate each wheel briskly (one revolution per second) by hand, and confirm that its respective monitor light on the checker blinks as the wheels rotates.

NOTE:

- Rotating a wheel too slowly will produce only a weak blink of its monitor light that may be difficult to see.
- In bright sunlight, the monitor light may be difficult to see. Perform tests in a shaded area.
- In some instances, it may not be possible to spin the rear wheels fast enough to get a monitor indication, if necessary, start the engine and slowly accelerate and decelerate the rear wheels. The monitor lights should blink indicating a good wheel sensor signal.

If any monitor light fails to blink, check the suspected sensor, its air gap and its wiring/connectors.

Troubleshooting

Anti-lock Brake System Indicator Light

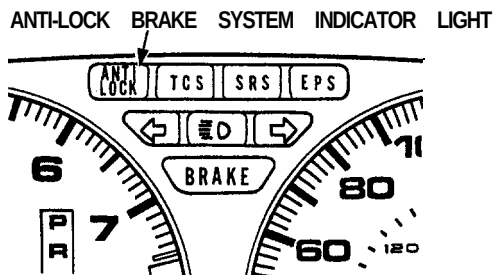
Temporary Driving Conditions:

1. The anti-lock brake system indicator light will come on and the control unit memorizes the problem under certain conditions.

NOTE: Problem codes explained on pages 19-46.

- The tire(s) adhesion is lost due to excessive cornering speed.
Problem codes: 5, 5-4, 5-8.
- The vehicle loses traction when starting from a stuck condition on a muddy, snowy, or sandy road.
Problem code: 4-1, 4-2, 4-4, 4-8.
- When the parking brake is applied for more than 30 seconds while the vehicle is being driven.
Problem code: 2.
- The vehicle is driven on extremely rough road.

The anti-lock brake system is OK, if the anti-lock brake system indicator light: goes off after the engine is restarted.



2. If you receive a customer's report that the anti-lock brake system indicator light sometimes comes on, check the system using the ALB checker to confirm whether there is any trouble in the system.
See page 19-41.
3. The anti-lock brake system indicator light will come on and the control unit will store a problem code when there is insufficient battery voltage to the control unit. An example would be when the battery is so weak that the car must be jump-started. After the battery is sufficiently recharged, the anti-lock system indicator light will work normally after the engine is stopped and restarted.

However, after recharging the battery, the problem code must be cleared from the control unit's memory by disconnecting the ALB 2.3 (No. 32) fuse for at least 3 seconds.

Anti-lock Brake System Indicator Light Circuit:

CAUTION: Use only the digital multimeter to check the system.

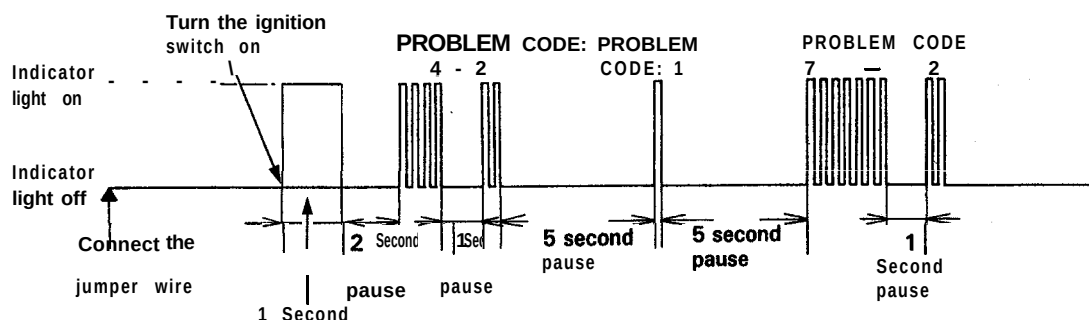
1. The indicator light, does not go on when the ignition switch is turned on.
Check the following items. If they are OK, check the control unit connectors.
If not loose or disconnected, install a new control unit and recheck:
 - Blown anti-lock brake system indicator light bulb.
 - Open circuit in YEL wire between No. 5 (10 A) fuse and gauge assembly.
 - Open circuit in BLU/WHT wire between gauge assembly and control unit.
 - Loose component grounding of the control unit to the body.
2. The anti-lock brake system indicator light remains ON or after the engine is started, however the anti-lock brake system indicator light does not blink any code or sub-code. Check the following items:
 - Loose or poor connection of the wire harness at the control unit.
 - Faulty ALB 2.3 (No. 32) fuse.
 - Open circuit in WHT/BLK wire between ALB 2.3 (No. 32) fuse and control unit.
 - Open circuit in YEL/BLK wire between fuse No. 4 (15 A) and fail safe relay(s).
 - Open or short circuit in the YEL/GRN wire between fail safe relay(s).
 - Short circuit in BLU/WHT wire between gauge assembly and control unit.
 - Open circuit in WHT/BLU wire between alternator and control unit.

If the problem is not found substitute a known-good control unit and recheck whether the warning light remains ON.

Comes on and remains on while running:

1. Stop the engine.
2. Turn the ignition switch on and make sure that the anti-lock brake system indicator light comes on.
3. Restart the engine and check the anti-lock brake system indicator light.
 - There is no problem in the anti-lock brake system, if the anti-lock brake system indicator light goes off.
 - Go to step 4, if the anti-lock brake system indicator light remains on.
4. Stop the engine.
5. Disconnect the service check connector from the connector cover located under the glove box. Connect the two terminals of the service check connector with a jumper wire.
6. Turn the ignition switch on, but do not start the engine.
7. Record the blinking frequency of the anti-lock brake system indicator light. The blinking frequency indicates the problem code.

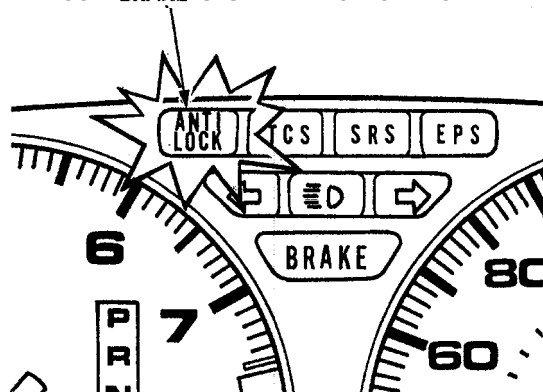
⚠ WARNING Before starting the engine, disconnect the jumper wire from the service check connector, or else the Check Engine light will stay on when the engine running.



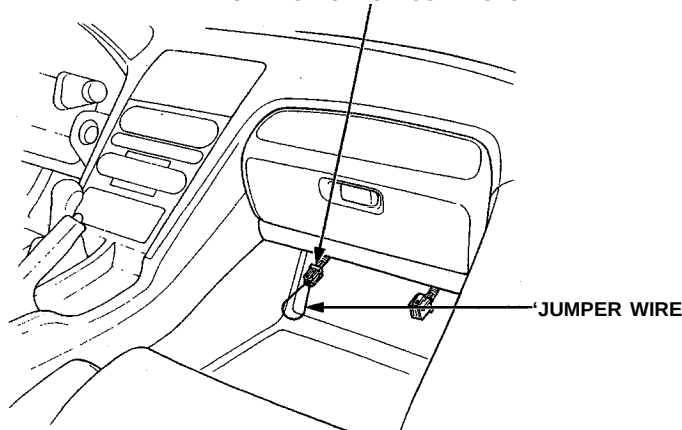
NOTE:

- The control unit can indicate three problem codes (one, two or three problems).
- If the anti-lock brake system indicator light does not light, see Troubleshooting of anti-lock brake system indicator Light Circuit page 19-44.
- If you miscount the blinking frequency, turn the ignition switch off, then turn on to blink the anti-lock brake system indicator light again.
- After the repair is completed, disconnect the ALB 2.3 (No. 32) fuse for at least 3 seconds to erase the control unit's memory. Then turn the ignition key on again and recheck.
- The memory is erased if the connector is disconnected from the control unit or the control unit is removed from the body.

ANTI-LOCK BRAKE SYSTEM INDICATOR LIGHT



SERVICE CHECK CONNECTOR



Troubleshooting

Symptom-to-System Chart

PROBLEM CODE		PROBLEMATIC COMPONENT/ SYSTEM	AFFECTED				See page	OTHER COMPONENT	See page
MAIN CODE	SUB CODE		FRONT RIGHT	FRONT LEFT	REAR RIGHT	REAR LEFT			
①	—	Hydraulic Controlled Components	—	—	—		19-47	— ALB fuse — Motor relay — Pressure Switch — Accumulator — Modulator	19-71
②	—	Parking brake switch-related problem	—	—	—	—	19-50	Brake fluid level switch BRAKE light	
③	①	Pulser(s)	0				19-71		
	②			0					
	④				0				
	⑧					○			
④	①	Speed sensor	0				19-51		
	②			0					
	④				0				
	⑧					○			
⑤	④	Speed sensor(s)			0	0	19-52	— Modulator	
	⑧				○				
	⑧					0			
⑥	①	Fail-safe relay	—	—	—	—	19-53 (Function Test)	Front or rear fail-safe relay	
	④		—	—	—	—		Front fail-safe relay Rear fail-safe relay	
⑦ ₇	①	Solenoid problem related (Open or short)	0				19-57		
	②			0				Rear fail-safe relay	
	④				0				
	⑧					0		Front fail-safe relay ALB 1.4 (No. 40) Fuse	

Troubleshooting

Flowcharts

Problem Code 1: Hydraulic Controlled Components.

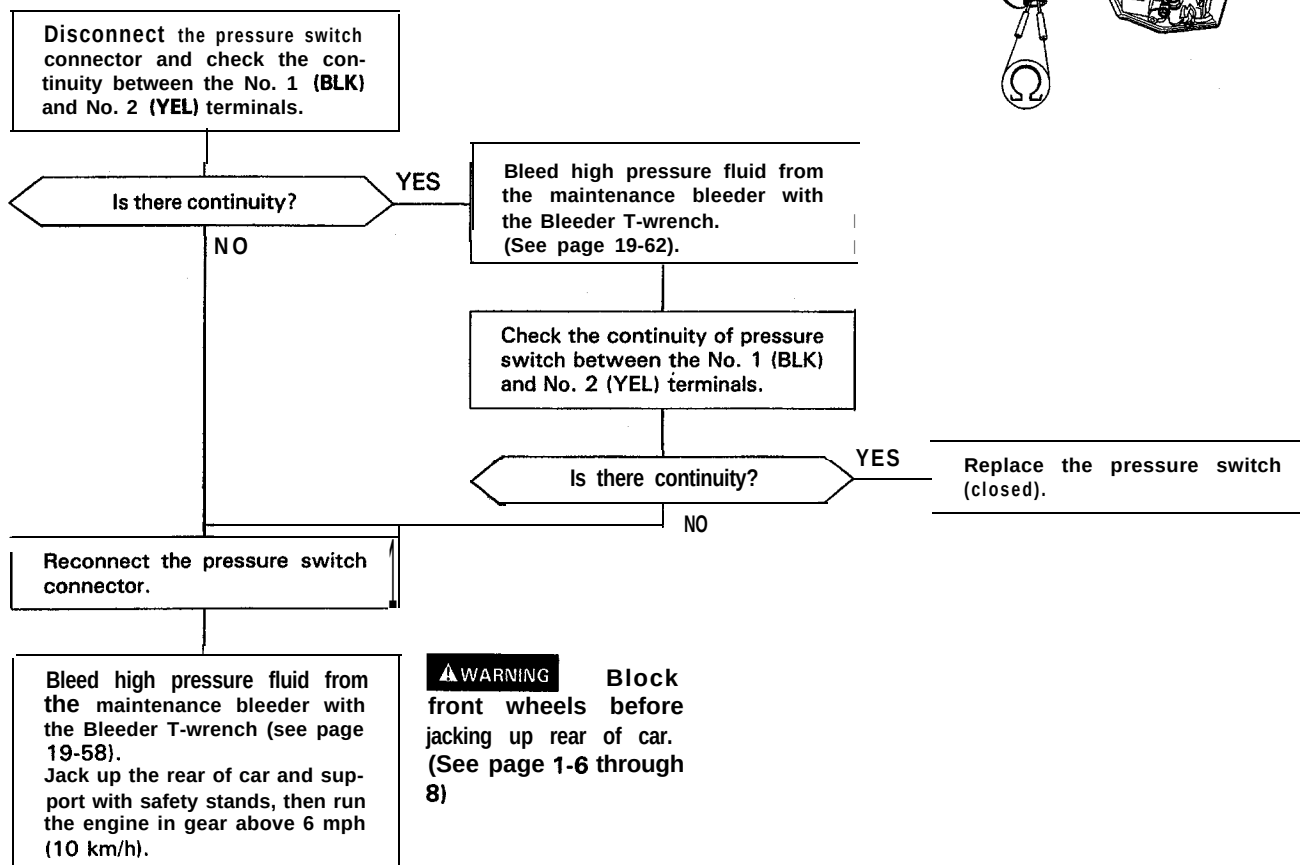
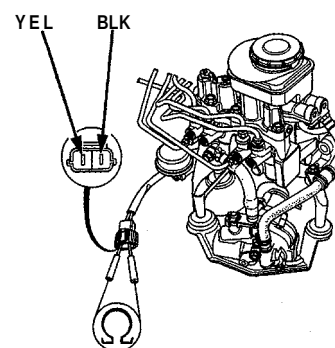
CAUTION: Use only the digital multimeter to check the system.

NOTE:

- The anti-lock brake system indicator light will remain on for about second after the ignition switch has been turned on to show that the system circuit is functioning.
- The anti-lock brake system indicator light does not blink when the following failures occur.
 - The contact points of the motor relay remain closed (the motor runs continuously even after the ignition key is removed).
 - YEL/RED wire is shorted or the control unit is internally shorted (the motor stops when the ignition switch is turned off).

Pre-test steps:

- Check the ALB 40A Fuse.
- Check all brake system hoses and pipes (low and high pressure) for signs of leaking, bending or kinking.
- Check reservoir fluid level, and if necessary, fill to the MAX level.



(To page 19-48)

(cont'd)

Troubleshooting

Flowcharts (cont'd)

(From page 19-47)

Does the pump motor run? YES (To page 19-49)

NO

Disconnect the 20P connector from the control unit.

Check for continuity between the No. 35 (YEL) terminal and body ground.

Is there continuity?

YES

Repair short in YEL wire between the control unit and pressure switch.

NO

Connect the No. 25 (YEL/RED) terminal to body ground using a jumper wire. Turn the ignition switch ON.

Does the pump motor run?

YES

Substitute a known-good control unit and recheck. If prescribed voltage is now available, replace the original control unit.

NO

Remove the pump motor relay and check the pump motor relay (page 19-71).

Does it work properly?

NO

Faulty pump motor relay.

YES

Connect the No. 2 (WHT/BLU) and No. 4 terminals using a jumper wire.

Does the pump motor run?

NO

(To page 19-50).

YES

Check for voltage between the No. 3 (YEL/BLK) terminal (+) and body ground (-).

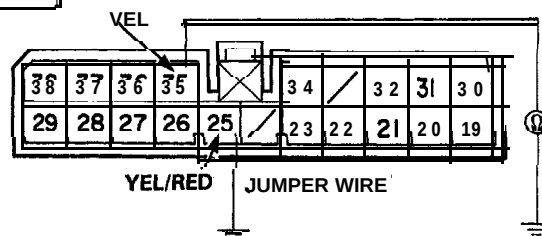
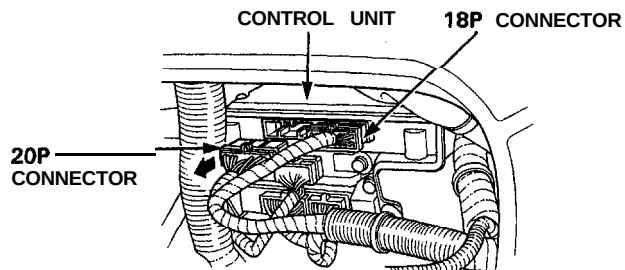
Is there battery voltage?

NO

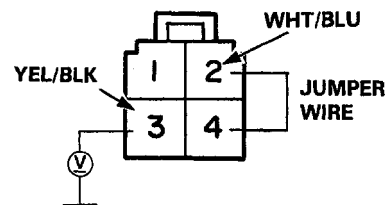
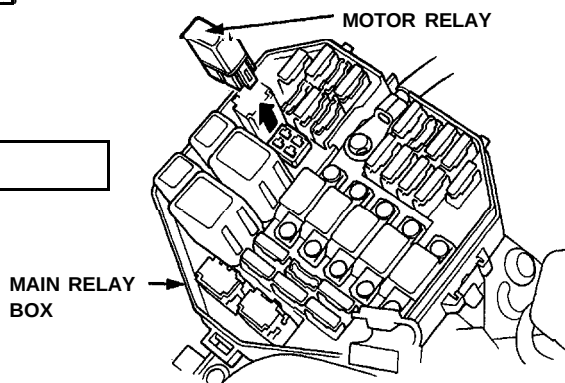
Repair open in YEL/BLK wire between the No. 4 fuse and pump motor relay.

YES

Repair open in YEL/RED wire between the control unit and pump motor relay.

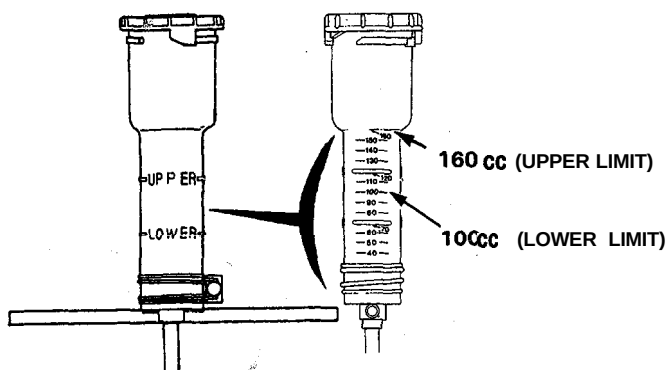
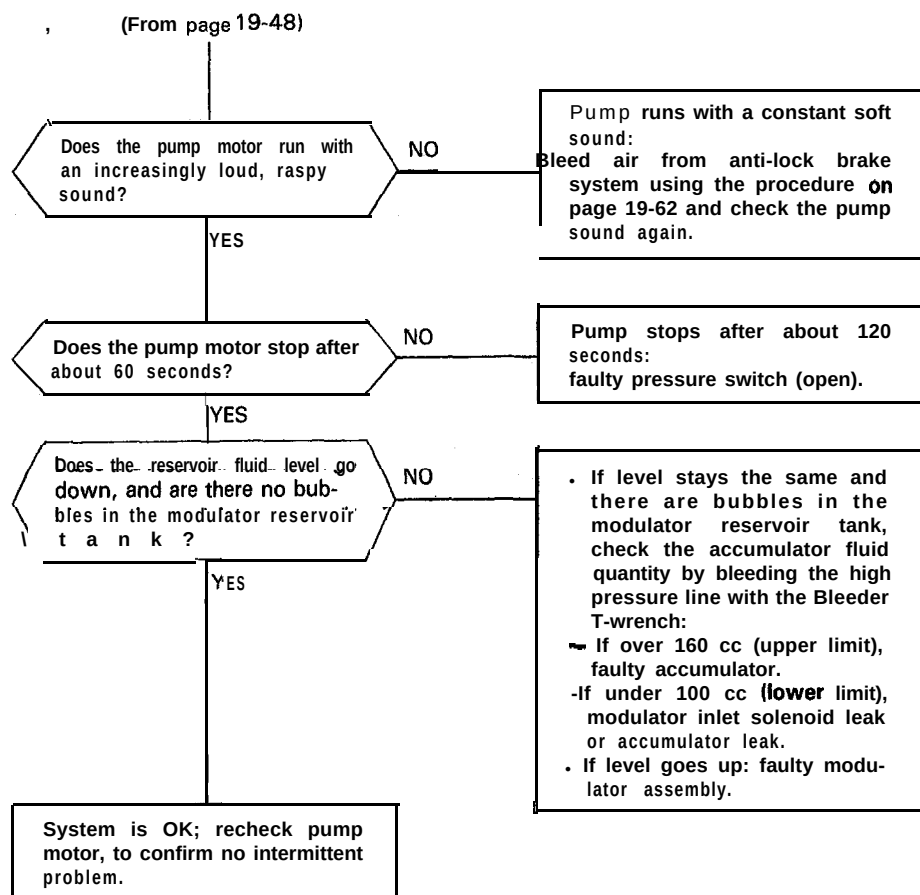


View from control unit terminal side.



View from terminal side.

CAUTION: If the motor runs disconnect the jumper wire immediately.

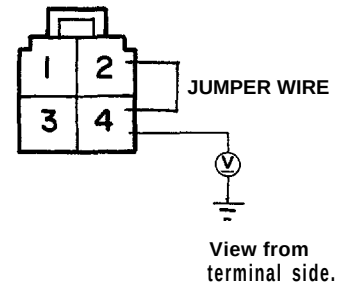
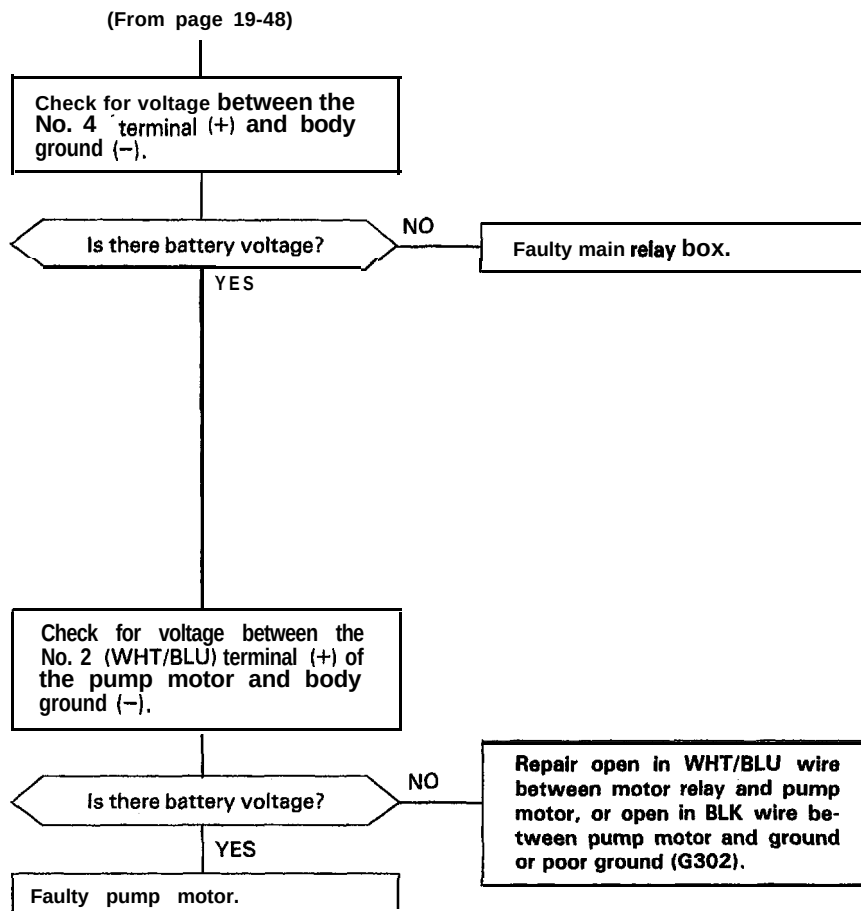


NOTE: The fluid enters the reservoir under pressure; wait 1 or 2 minutes for air bubbles to disappear and level to stabilize.

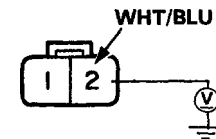
(cont'd)

Troubleshooting

Flowcharts (cont'd)



HARNESS SIDE CONNECTOR



Problem code 2: Parking Brake Switch Related Problem

If the parking brake has been released, the following items are possible causes. If they are OK, check the control unit connectors for good connection. If not loose or disconnected, substitute a known-good control unit and recheck.

NOTE: Before Troubleshooting Problem Code 2, remove the ALB 2,3 (No. 32) fuse for three seconds to clear the control unit's memory, then test drive the car.

If the anti-lock brake system indicator light stays off, the probability is that the car was driven with the parking brake applied.

- The parking brake is applied for more than 30 seconds while driving.
- The brake fluid level in the master cylinder is too low.
- GRN/RED wire is shorted between the **BRAKE** indicator light and parking brake switch.
- GRN/RED wire is shorted between the **BRAKE** indicator light and brake fluid level switch.
- The **BRAKE** indicator light is blown.
- GRN/RED has an open between the **BRAKE** indicator light and parking brake switch.
- GRN/RED has an open between the parking brake switch and control unit.

Problem Code 4-1 to 4-8: Speed Sensor

CAUTION: Use **only** the digital multimeter to check the system.

Disconnect the wire harness from speed sensor.

Check for resistance between the sensor terminals.

Is there 750–1200 Ω?

NO

Faulty speed sensor.

YES

Disconnect the 20P connector from the control unit.

Check each wire for continuity between the sensor and control unit:
 GRN/BLK: Front Right Positive
 GRNIBLU: Front Left Positive
 GRN/YEL: Rear Right Positive
 LT BLU: Rear Left Positive
 GRN: Front Right Negative
 BRN: Front Left Negative
 BLU/YEL: Rear Right Negative
 GRY: Rear Left Negative

Is there continuity?

NO

Repair open in sensor wire:
 GRNIBLK: Front Right Positive GRN: Front Right Negative
 GRNIBLU: Front Left Positive BRN: Front Left Negative
 GRN/YEL: Rear Right Positive BLU/YEL: Rear Right Negative
 LT BLU: Rear Left Positive GRY: Rear Left Negative

YES

Check for continuity to ground.

Is there continuity?

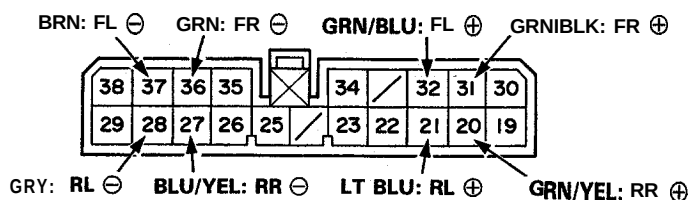
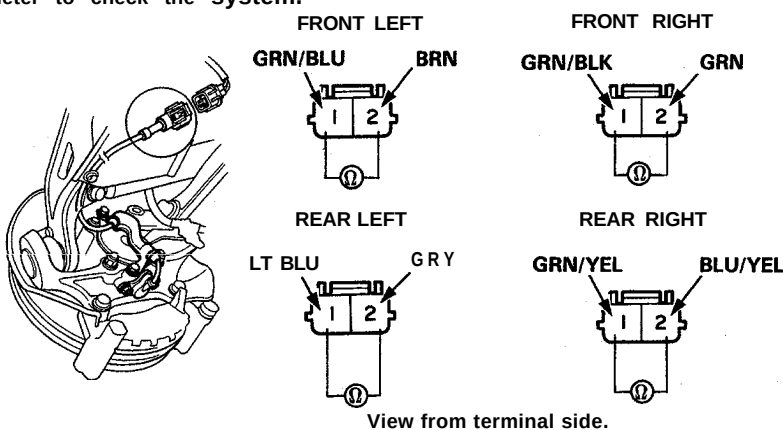
YES

Repair short in sensor wire.

NO

Check for loose control unit connectors. If necessary, substitute a known-good control unit and recheck.

SENSOR SIDE CONNECTOR



(cont'd)

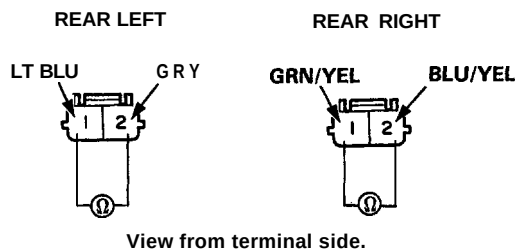
Troubleshooting

Flowcharts (cont'd)

Problem Code 5 to 5-8: Speed Sensor(s)

CAUTION: Use only the digital multimeter to check the system.

SENSOR SIDE CONNECTOR



Disconnect the wire harness from speed sensor.

Check for resistance between the sensor terminals.

Is there 750–1200 Ω ?

NO

Faulty speed sensor.

YES

Disconnect the 20 connector from the control unit.

Check each wire for continuity between the sensor and control unit:
GRN/YEL: Rear Right Positive
LT BLU: Rear Left Positive
BLU/YEL: Rear Right Negative
GRY: Rear Left Negative

Is there continuity?

NO

Repair open in sensor wire:
GRN/YEL: Rear Right Positive
LT BLU: Rear Left Positive
BLU/YEL: Rear Right Negative
GRY: Rear Left Negative

YES

Check for continuity to ground.

Is there continuity?

YES

Repair short in sensor wire.

NO

Reconnect the 20P connector to the control unit and connectors to the speed sensors.

Connect the ALB checker to the inspection connector.

Check for ALB function in MODE 2 and 3.

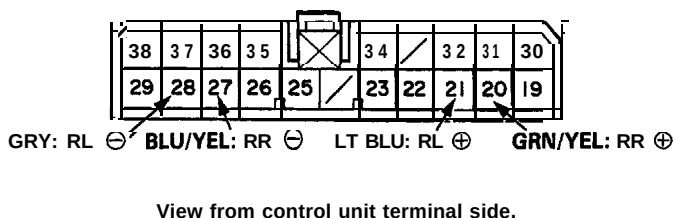
Does it work properly?

NO

Faulty modulator.

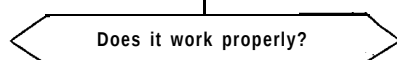
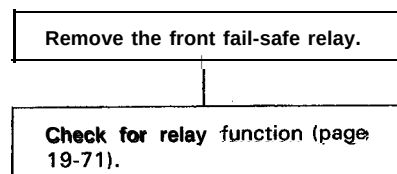
YES

Check for rear brake drag. If OK, substitute a known-good control unit and recheck.

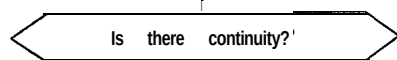
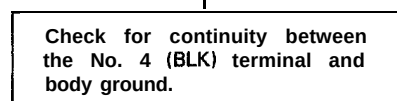


Problem Code 6-I : Front Fail-Safe Relay Circuit.

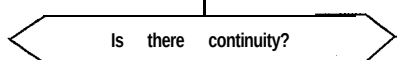
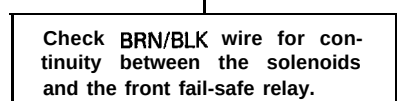
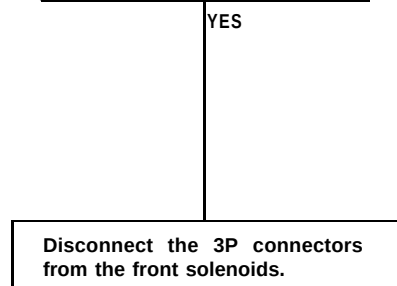
CAUTION: Use only the digital multimeter to check the system.



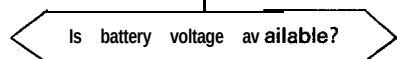
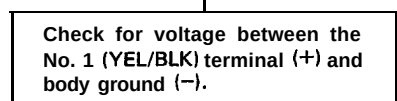
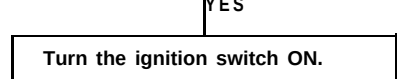
NO
Faulty front fail-safe relay.



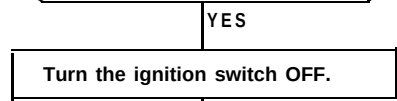
NO
Repair open in BLK wire between the fail-safe relay and ground or poor ground (G202).



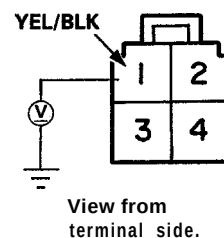
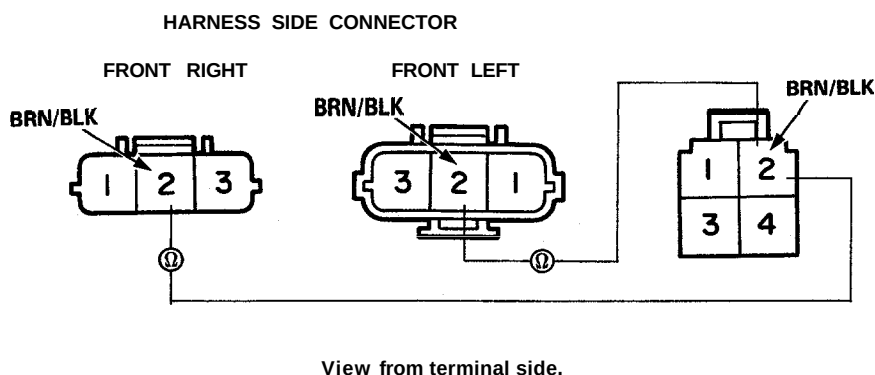
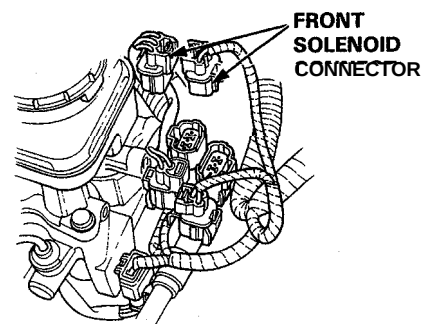
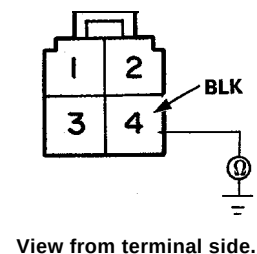
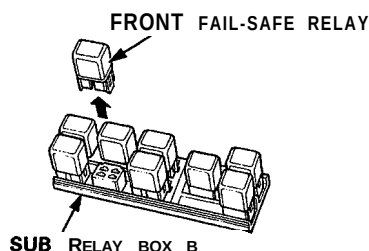
NO
Repair open in BRN/BLK wire between the solenoids and the front fail-safe relay.



NO
Repair open in YEL/BLK wire between the fail-safe relay and No. 4 fuse.



(To page 19-54)



(cont'd)

Troubleshooting

Flowcharts (cont'd)

(From page 19-53)

Check for resistance between the solenoid terminals:
No. 1 (RED) and No. 2 (BLK):
Front Right Inlet
No. 3 (RED) and No. 2 (BLK):
Front Left Inlet

Is there 1-3 Ω ?

NO

Faulty solenoid.

YES

Check for resistance between the solenoid terminals:
No. 3 (YEL) and No. 2 (BLK):
Front Right Outlet
No. 1 (YEL) and No. 2 (BLK):
Front Left Outlet

Is there 1-3 Ω ?

NO

Faulty solenoid.

YES

Disconnect the 20P and 18P connector from the control unit.

Check each wire for continuity to ground:
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet

Is there continuity?

YES

Repair short in wire:
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet

NO

Check YEL/GRN wire for continuity between the front fail-safe relay and control unit.

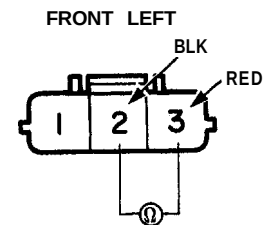
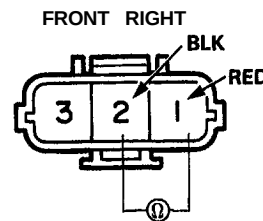
Is there continuity?

NO

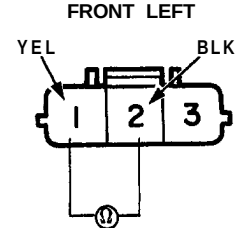
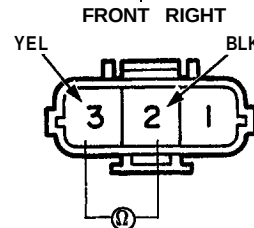
Repair open in YEL/GRN wire between the front fail-safe relay and control unit.

YES

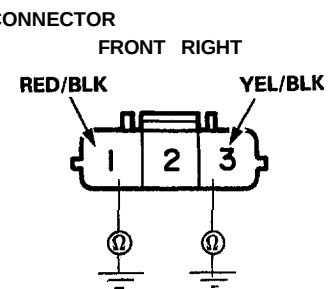
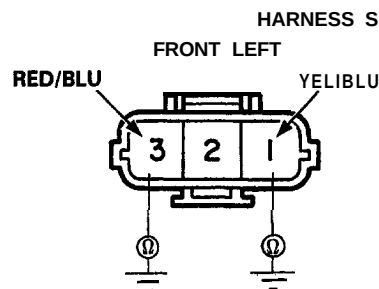
Check for loose control unit connectors. If necessary, substitute a known-good control unit end and recheck.



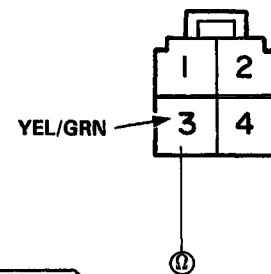
SOLENOID SIDE CONNECTOR
View from terminal side.



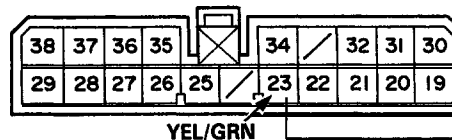
SOLENOID SIDE CONNECTOR
View from terminal side.



View from terminal side.



View from terminal side.



View from control unit terminal side.

Problem Code 6-4: Rear Fail-Safe Relay Circuit

CAUTION: Use only the digital multimeter to check the system.

Remove the rear fail-safe relay.

Check for relay function (page 19-71).

Does it work properly?

NO

Faulty rear fail-safe relay.

YES

Check for continuity between the No. 4 (BLK) terminal and body ground.

Is there continuity?

NO

Repair open in BLK wire between the relay and ground or poor ground (G202).

YES

Disconnect the 3P connectors from the rear solenoids.

Check BLU/BLK wire for continuity between the solenoids and rear fail-safe relay.

Is there continuity?

NO

Repair open in BLU/BLK wire between the solenoids and rear fail-safe relay.

YES

Turn the ignition switch ON.

Check for voltage between the No. 1 (YEL/BLK) terminal (+) and body ground (-).

Is battery voltage available?

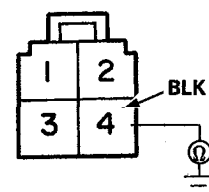
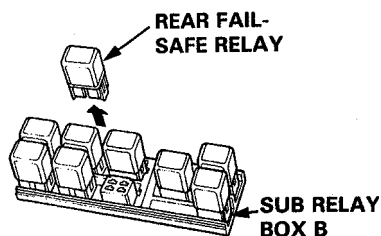
NO

Repair open in YEL/BLK wire between the relay and No. 4 fuse.

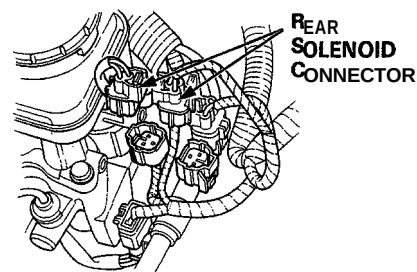
YES

Turn the ignition switch off.

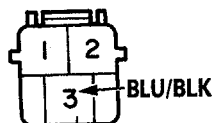
(To page 19-56)



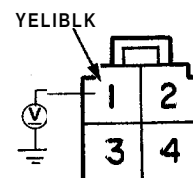
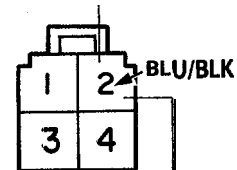
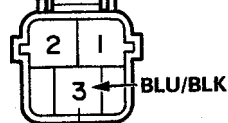
View from terminal side.



REAR RIGHT



REAR LEFT



View from terminal side.

(cont'd)

Troubleshooting

Flowcharts, (cont'd)

(From page 19-55)

Check for resistance between the solenoid terminals:
No. 1 (RED) and No. 3 (BLK):
Rear Right inlet
No. 2 (RED) and No. 3 (BLK):
Rear Left Inlet

Is there 1-3 Ω ?

NO

Faulty solenoid.

YES

Check for resistance between the solenoid terminals:
No. 2 (YEL) and No. 3 (BLK):
Rear Right Outlet
No. 1 (YEL) and No. 3 (BLK):
Rear Left Outlet

Is there 1-3 Ω ?

NO

Faulty solenoid.

YES

Disconnect the 20P and 18P connectors from the control unit.

Check each wire for continuity between the control unit and rear solenoid:

RED/WHT: Rear Right Inlet
YEL/WHT: Rear Right Outlet
RED/GRN: Rear Left Inlet
YEL/GRN: Rear Left Outlet

Is there continuity?

NO

Repair open in wire between the solenoid and control unit:
RED/WHT: Rear Right Inlet
YEL/WHT: Rear Right Outlet
RED/GRN: Rear Left Inlet
YEL/GRN: Rear Left Outlet

YES

Check YEL/GRN wire for continuity between the rear fail-safe relay and control unit.

Is there continuity?

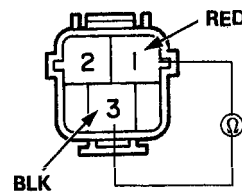
NO

Repair open in YEL/GRN wire between the rear fail-safe relay and control unit.

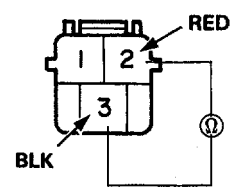
YES

Check for loose control unit connectors. If necessary, substitute a known-good control unit and recheck.

REAR RIGHT

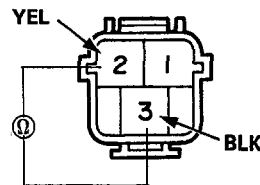


REAR LEFT

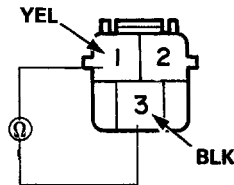


SOLENOID SIDE CONNECTOR
View from terminal side.

REAR RIGHT

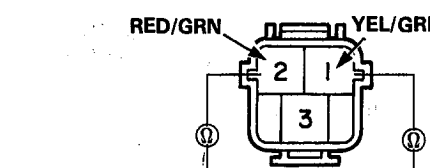


REAR LEFT

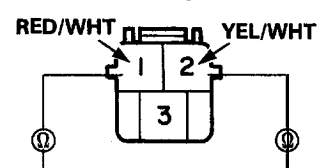


SOLENOID SIDE CONNECTOR
View from terminal side.

REAR LEFT



REAR RIGHT

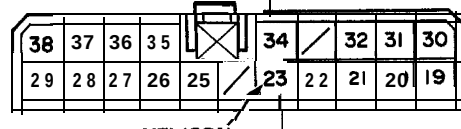
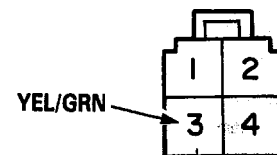


RED/GRN

YEL/GRN

RED/WHT YEL/WHT
View from control unit terminal side.

View from terminal side.



YEL/GRN
View from control unit terminal side.

Problem Code 7-1 and 7-2 Front Solenoid Related Problem

CAUTION: Use only the digital multimeter to check the system.

Disconnect the 3P connectors from front solenoids.

Check for resistance between the solenoid terminals:
No. 1 (RED) and No. 2 (BLK):
Front Right Inlet
No. 3 (RED) and No. 2 (BLK):
Front Left Inlet

Is there 1-3 Ω ?

NO
Faulty solenoid.

YES

Check for resistance between the solenoid terminals:
No. 3 (YEL) and No. 2 (BLK):
Front Right Outlet
No. 1 (YEL) and No. 2 (BLK):
Front Left Outlet

Is there 1-3 Ω ?

NO
Faulty solenoid.

YES

Disconnect the 18P connector from control unit.

Check each wire for continuity between the control unit and front solenoid:
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet

Is there continuity?

NO
Repair open in wire:
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet

YES

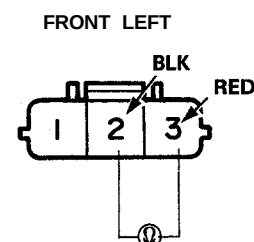
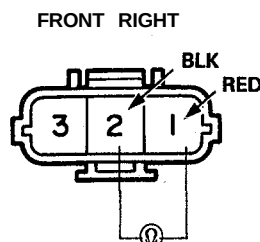
Check each wire continuity between control unit and body ground:
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet

Is there continuity?

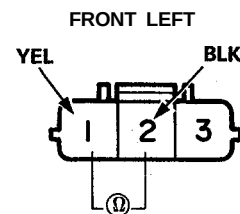
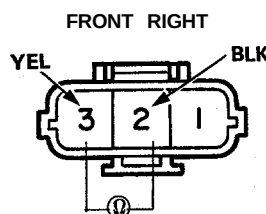
YES
Repair short in wire:
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet

NO

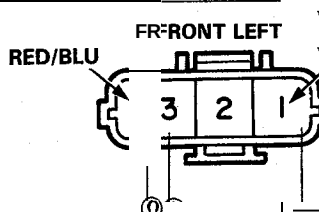
(To page 19-58)



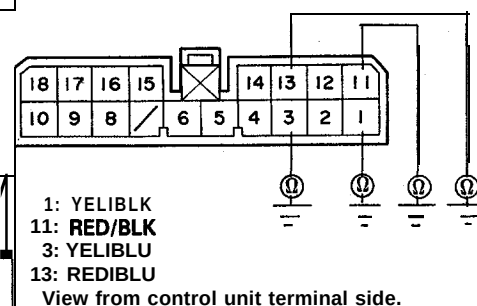
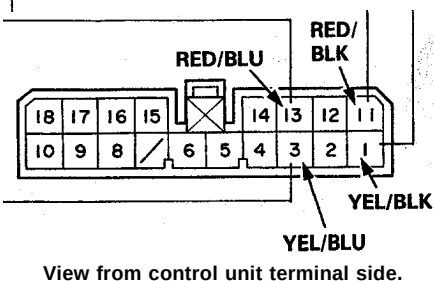
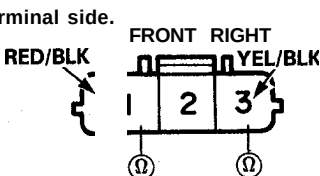
SOLENOID SIDE CONNECTOR
View from terminal side.



SOLENOID CONNECTOR
View from terminal side.



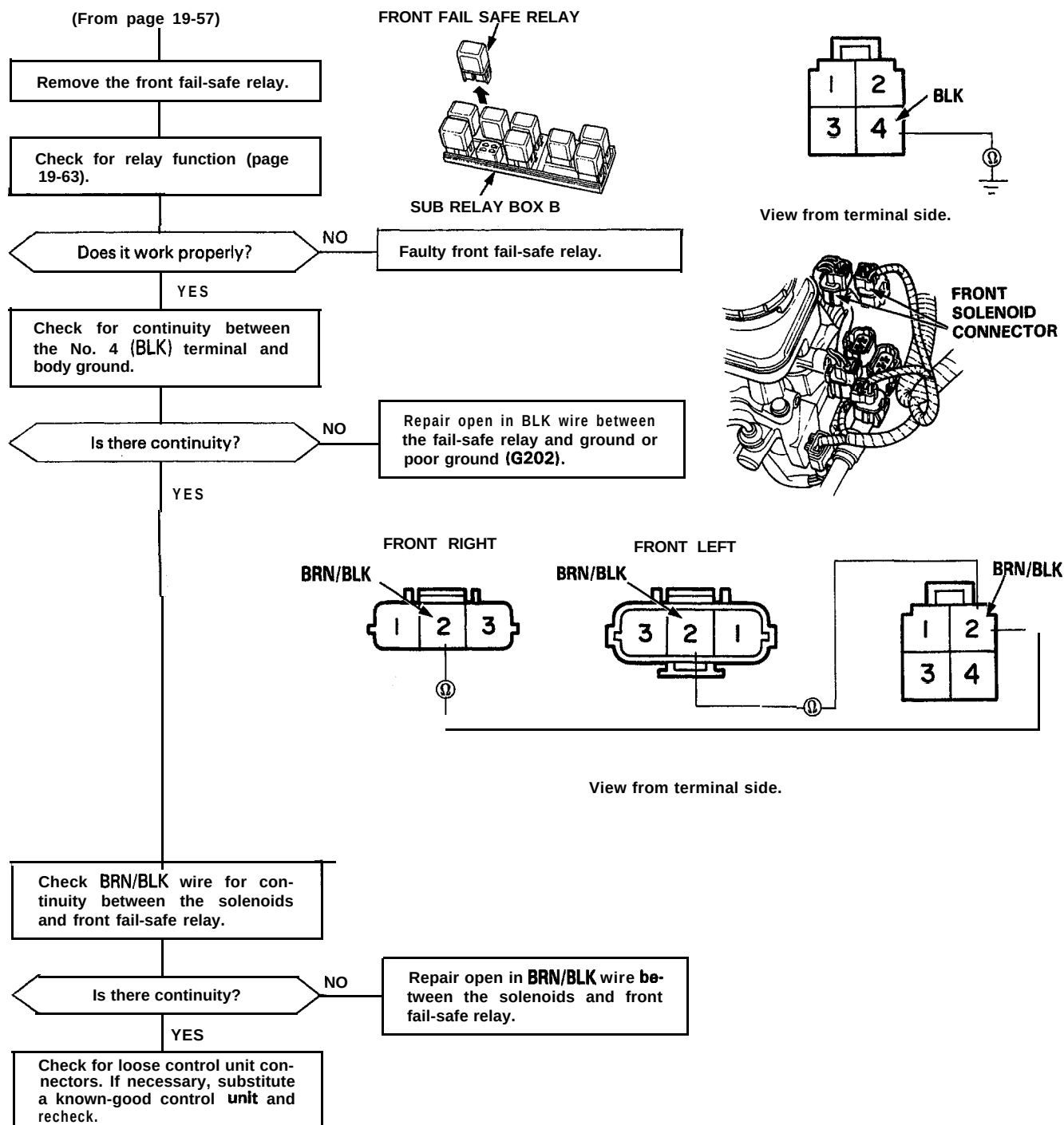
View from terminal side.



(cont'd)

Troubleshooting

Flowcharts (cont'd)



Problem Code 7-4, 7-8: Rear Solenoid Problem

CAUTION: Use only the digital multimeter to check the system.

Disconnect the 3P connectors from rear solenoid.

Check for resistance between the solenoid terminals:
No. 1 (RED) and No. 3 (BLK):
Rear Right Inlet
No. 2 (RED) and No. 3 (BLK):
Rear Left Inlet

Is there 1-3 Ω ?
NO
YES

Faulty solenoid.

Check for resistance between the solenoid terminals:
No. 2 (YEL) and No. 3 (BLK):
Rear Right Outlet
No. 1 (YEL) and No. 3 (BLK):
Rear Left Outlet

Is there 1-3 Ω ?
NO
YES

Faulty solenoid.

Disconnect the 18P connector from the control unit.

Check each wire for continuity between the control unit and body ground:
RED/WHT: Rear Right Inlet
YEL/WHT: Rear Right Outlet
RED/GRN: Rear Left Inlet
YEL/GRN: Rear Left Outlet

Is there continuity?
NO
YES

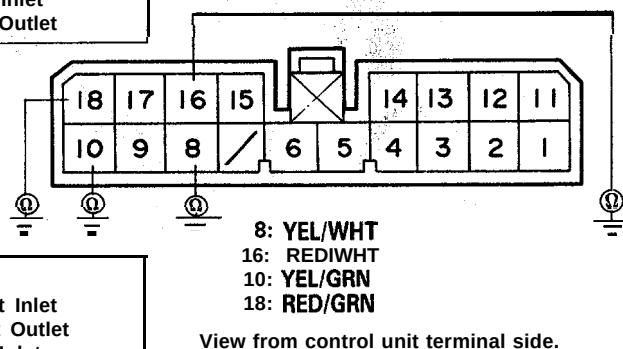
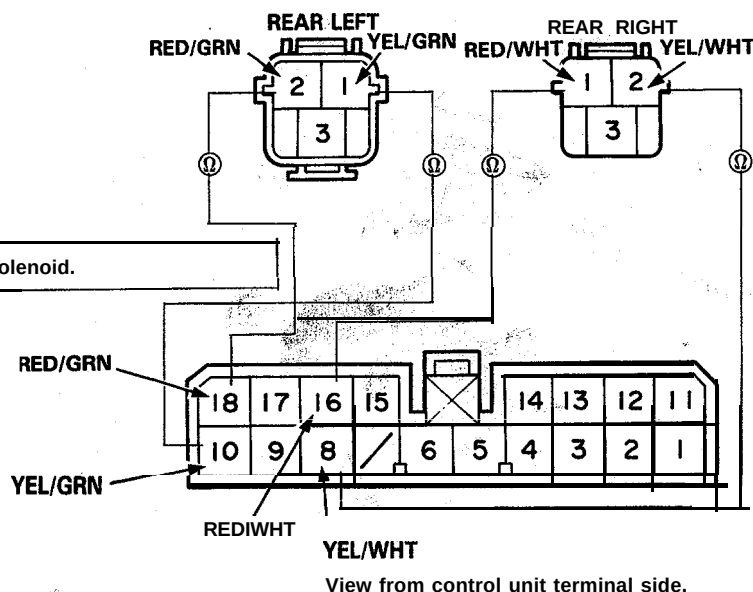
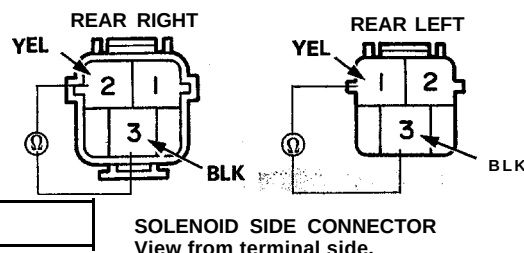
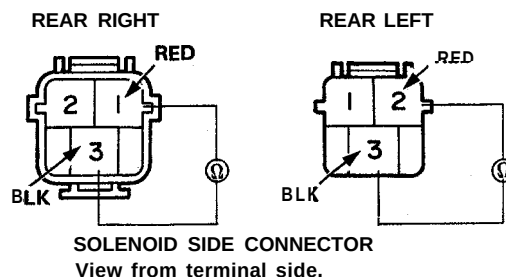
Repair open in wire between the rear solenoid and control unit:
RED/WHT: Rear Right Inlet
YEL/WHT: Rear Right Outlet
RED/GRN: Rear Left Inlet
YEL/GRN: Rear Left Outlet

Check each wire for continuity between the control unit and body ground:
REDIWHT: Rear Right Inlet
YELIWHT: Rear Right Outlet
REDGRN: Rear Left Inlet
YELGRN: Rear Left Outlet

Is there continuity?
YES
NO

Repair short in wire:
REDIWHT: Rear Right Inlet
YELIWHT: Rear Right Outlet
REDGRN: Rear Left Inlet
YELGRN: Rear Left Outlet

(To page 19-60)

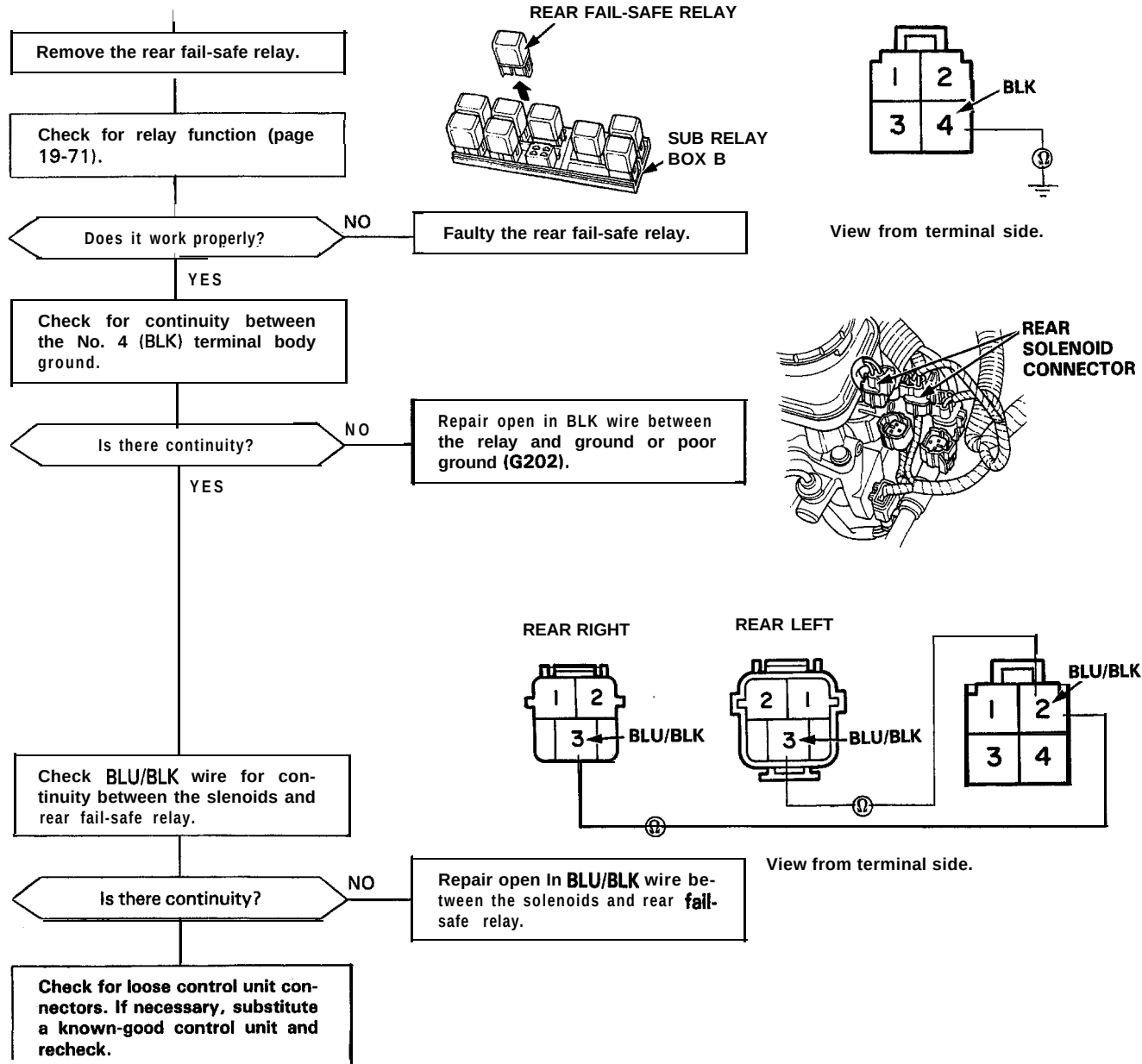


(cont'd)

Troubleshooting

— Flowcharts (cont'd)

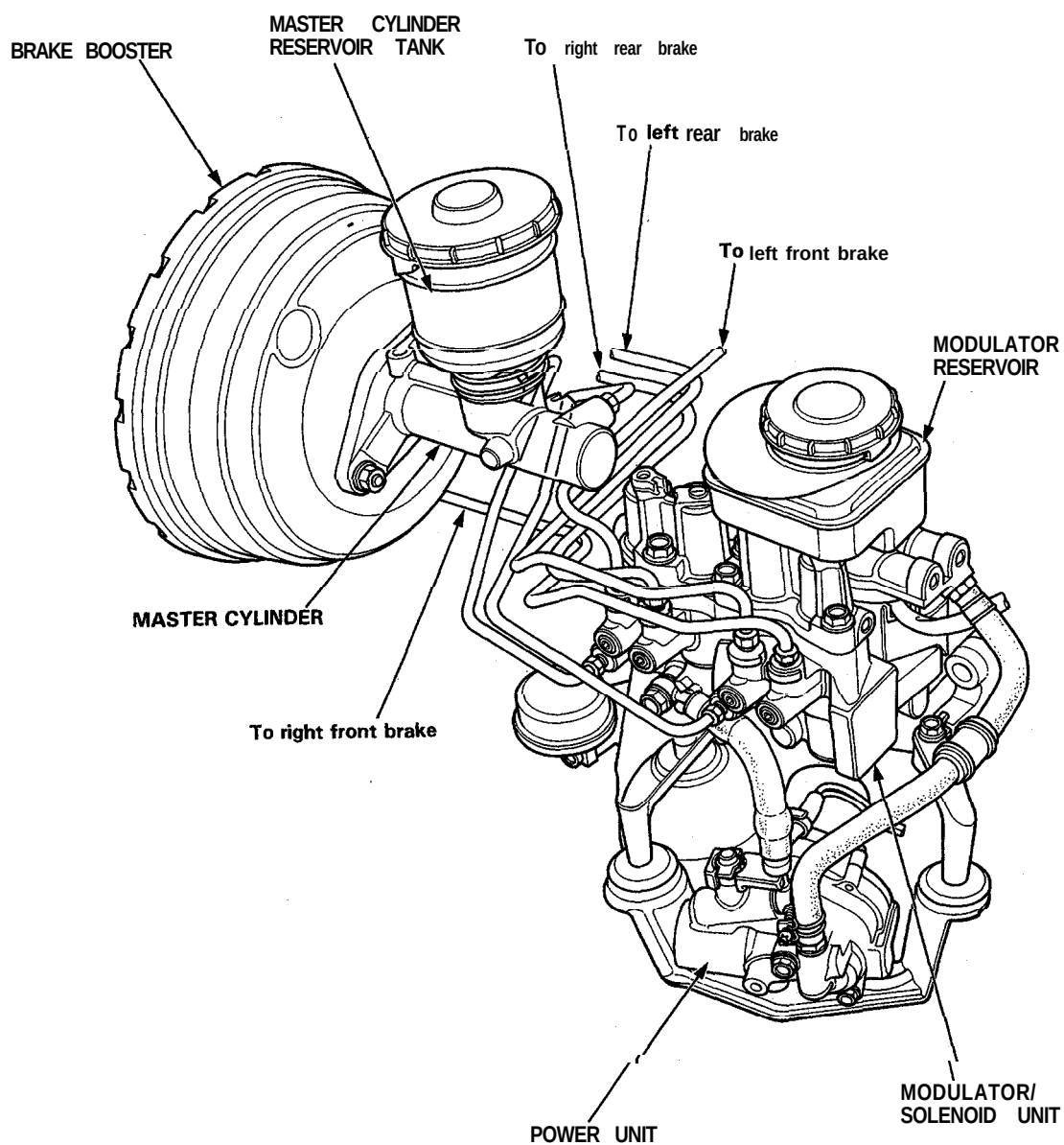
(From page 19-59)



Hydraulic System

Hydraulic Connections

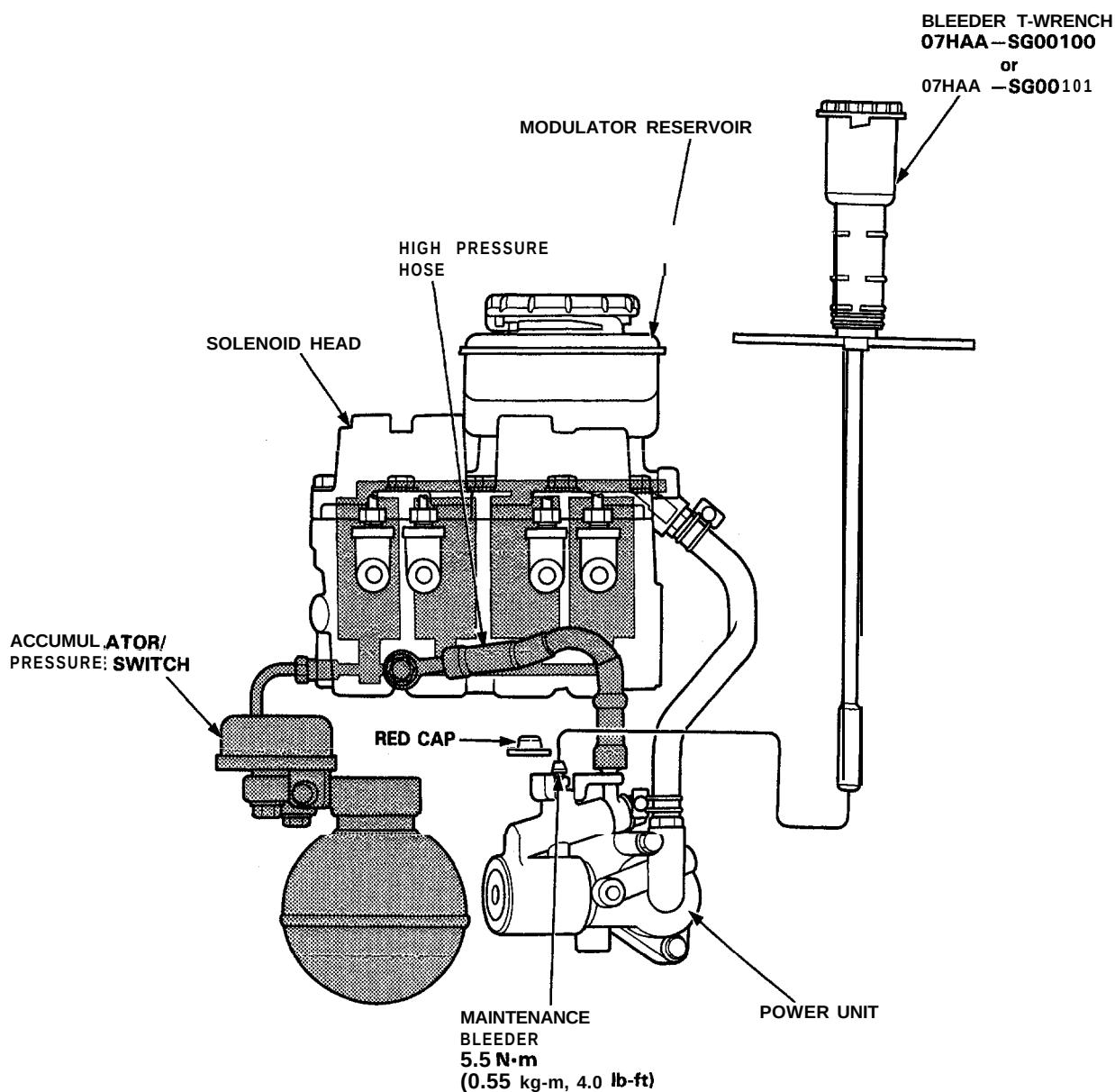
CAUTION: Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.



Relieving Accumulator/Line Pressure

⚠ WARNING Use the Bleeder T-Wrench before disassembling the parts shaded in the illustration.

1. Drain the brake fluid from the master cylinder and modulator reservoir thoroughly.
2. Remove the red cap from the bleeder on the top of the power unit.
3. Install the special tool on the bleeder screw and turn it out slowly 90° to collect high pressure fluid into reservoir. Turn the special tool out one complete turn to drain the brake fluid thoroughly.
4. Retighten the bleeder screw and discard the fluid.
5. Reinstall the red cap.



Modulator/Solenoid Unit

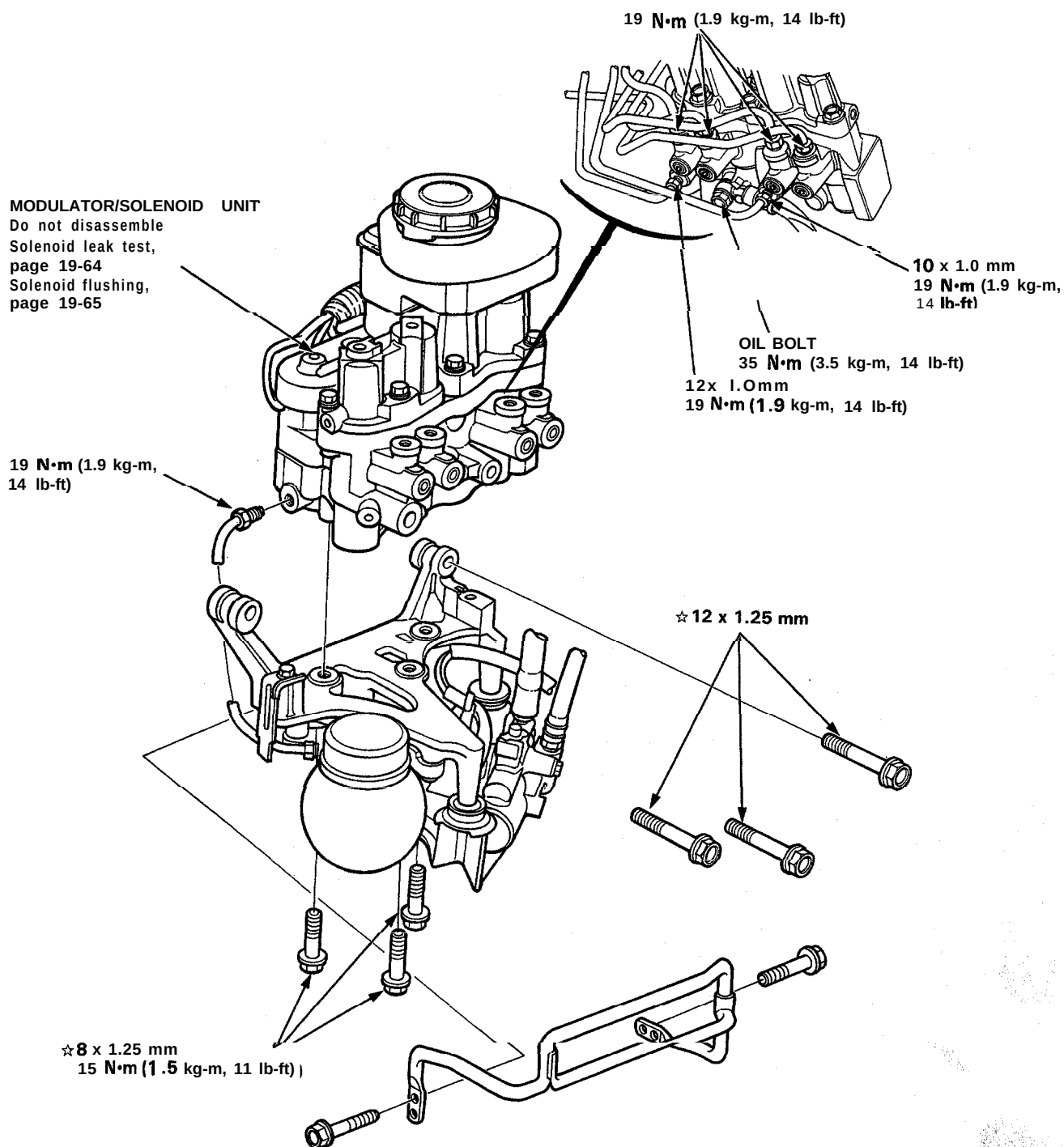


Index/Torque

CAUTION:

- Do not damage the brake pipes when removing the spare tire and modulator/solenoid unit.
- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

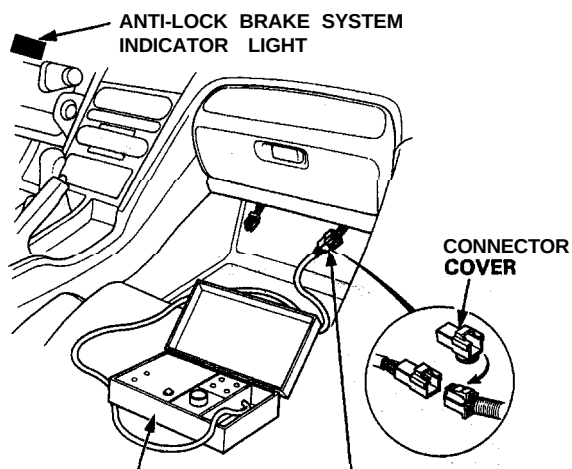
☆ : CORROSION RESISTANT BOLT



Modulator/Solenoid Unit

Solenoid Leak Test

1. Disconnect the 6-P inspection connector (PNK) from the connector cover located under the glove box and connect the inspection connector to the ALB checker.



ALB CHECKER
07HAJ-SG00100 (US)
or
07HAJ-SG00200 (Canada)

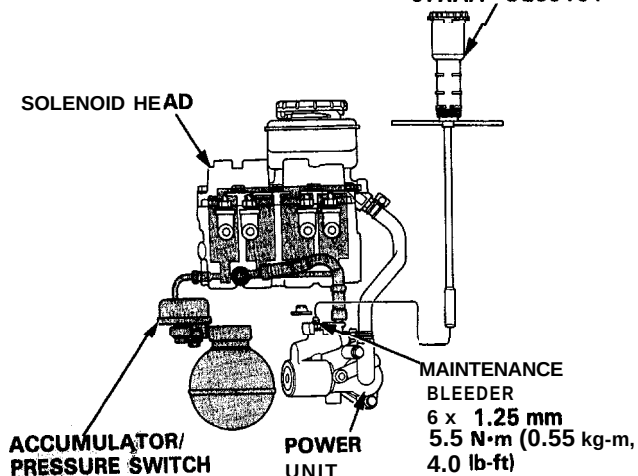
CAUTION: Place the vehicle on level ground with the wheels blocked. Put the transmission in neutral for manual transmission models, and in P for automatic transmission models.

2. Remove the modulator reservoir filter, then fill the modulator reservoir to the MAX level.

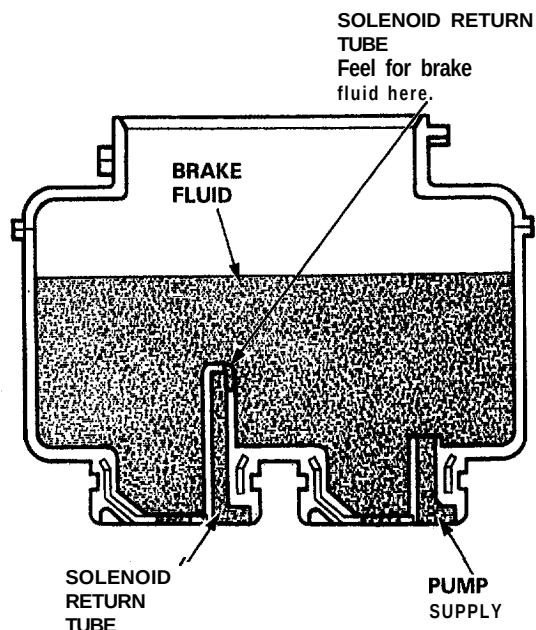
NOTE: Do not reuse aerated brake fluid that has been bled from the power unit.

3. Bleed high pressure fluid from the maintenance bleeder with the special tool.

BLEEDER T-WRENCH
07HAA-SG00100
or
07HAA-SG00101



4. Start the engine and release the parking brake.
5. Turn the Mode Selector to 1 and press the Start Test button.
6. While the ALB pump is running, place your finger over the top of the solenoid return tube in the modulator reservoir.



- If you can feel back fluid coming from the return tube, one of the solenoids is leaking. Go to Solenoid Flushing.
- If you can feel brake fluid coming from the return tube, one of the solenoids is leaking. Go to step 7.
- If you can't feel brake fluid coming from the return tube, the solenoids are OK. Reinstall the modulator reservoir filter and refill the reservoir to the MAX level.

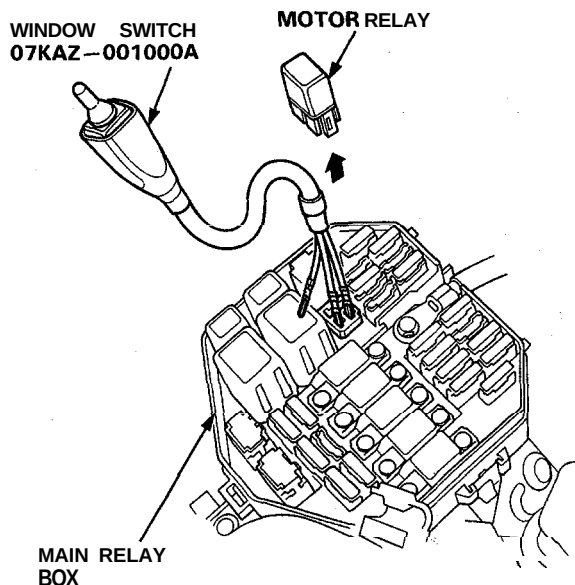
7. Bleed high-pressure fluid from the maintenance bleeder with the special tool, then run through modes 3 and 6 with the ALB checker. Repeat this three or four times.

8. Repeat steps 5 and 6.

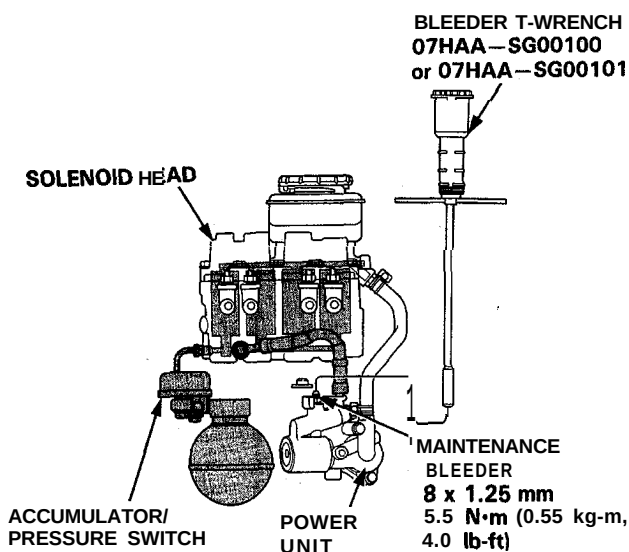
- If the solenoid leakage has stopped, reinstall the modulator reservoir filter and refill the reservoir to the MAX level.
- If one of the solenoids is still leaking, replace the modulator/solenoid unit.

-Solenoid Flushing

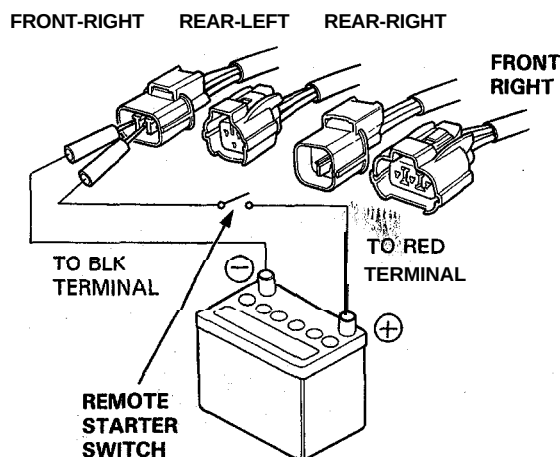
1. Remove the ALB pump relay from the main relay box. (Location: page 19-40)
2. install the auxiliary window switch (07KAZ-001000A) into the two motor relay cavities in the relay box.



3. Disconnect the four modulator solenoid connectors.
4. Bleed any high-pressure fluid from the maintenance bleeder with the Bleeder T-Wrench, then retighten the bleeder.



5. Connect the RED terminal from one solenoid to the battery positive (+) terminal with a remote starter switch. Connect the BLK terminal from the same solenoid to the battery negative (-) terminal with a jumper lead as shown.



6. Press the auxiliary switch to run the pump. After the pump has run for about five seconds, press and release the remote starter switch three or four times to open and close the solenoid. Continue running the pump for about 30 seconds, then release the auxiliary switch and open and close the solenoid another three or four times.
7. Repeat steps 4-6 for the other two solenoids.
8. Reconnect the solenoids and the pump relay.
9. Connect the ALB Checker and turn the Mode Selector to "1". Start the engine and release the parking brake. Push the Start Test button on the ALB Checker.
10. While the ALB pump is running, place your finger over the top of the solenoid return tube in the modulator reservoir and check for leaks.

- If a solenoid is still leaking, replace the modulator/solenoid unit.

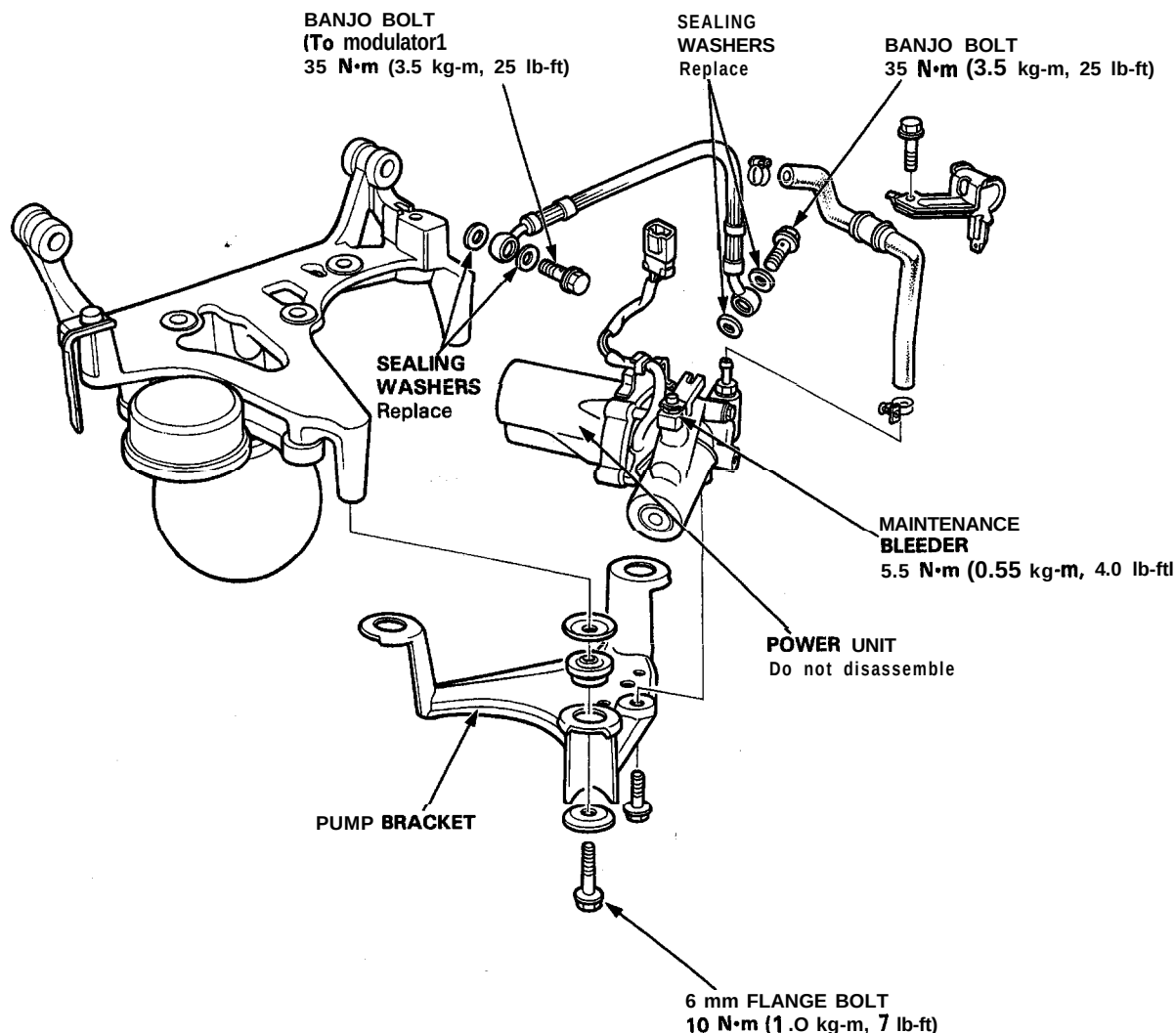
Power Unit

Torque/Inspection

CAUTION:

- Do not attempt to disassemble the power unit except for those components shown in this illustration.
- Do not spill brake fluid on the car; it may damage the paint: if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with 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 dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid.
Use only clean DOT 3 or 4 brake fluid.



Accumulator/Pressure Switch

Index/Torque

CAUTION:

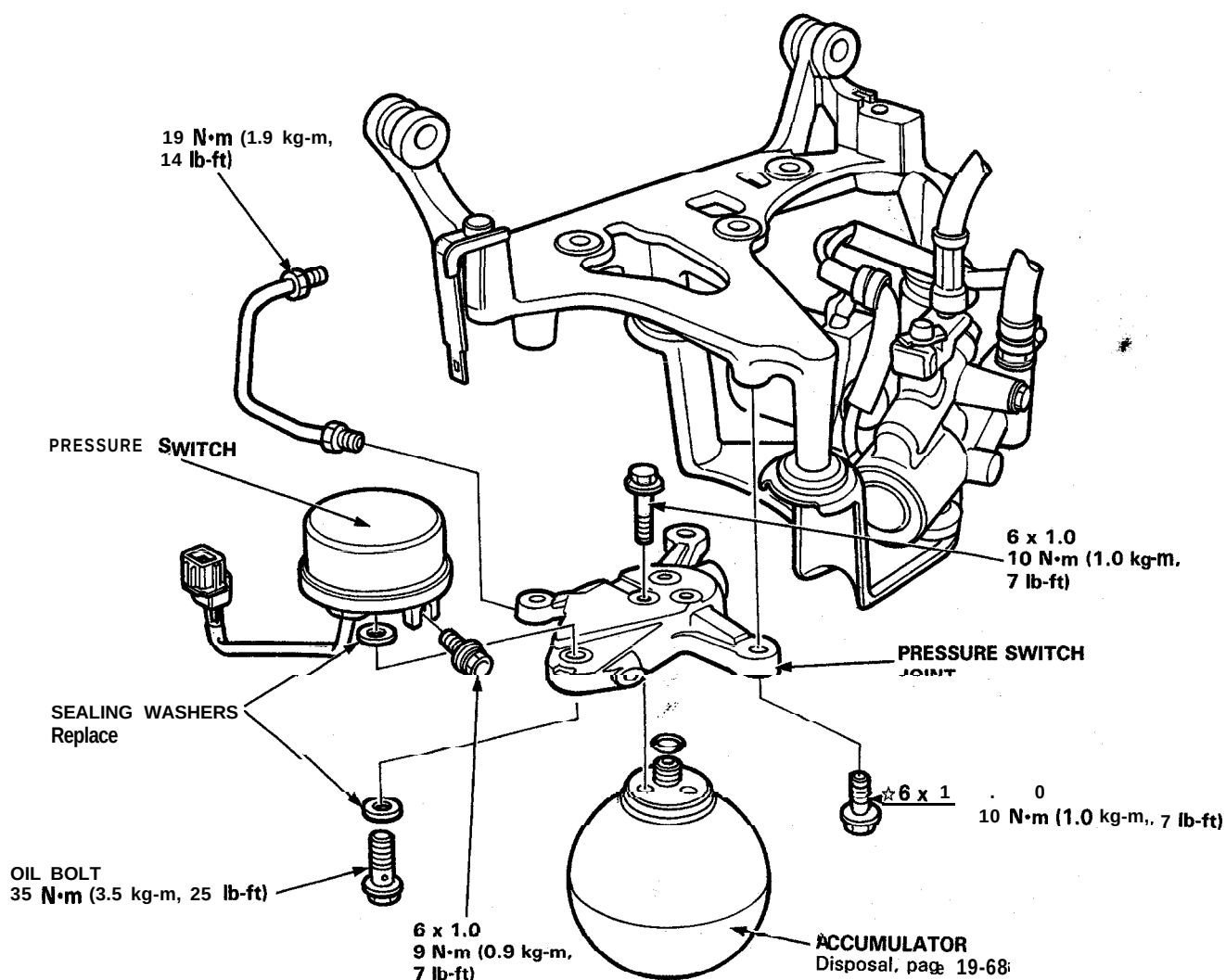
- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Before disassembling the accumulator unit, Bleed the high pressure brake fluid out from the system using the Bleeder T-Wrench. (page 19-62)

- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid.
Use only clean DOT 3 or 4 brake fluid.

NOTE: Replace the O-ring with a new one before rassembley.

⚠ WARNING The accumulator contains high pressure nitrogen gas, do not puncture, expose to flame, or attempt to disassemble the accumulator or it may explode; severe personal injury may result.

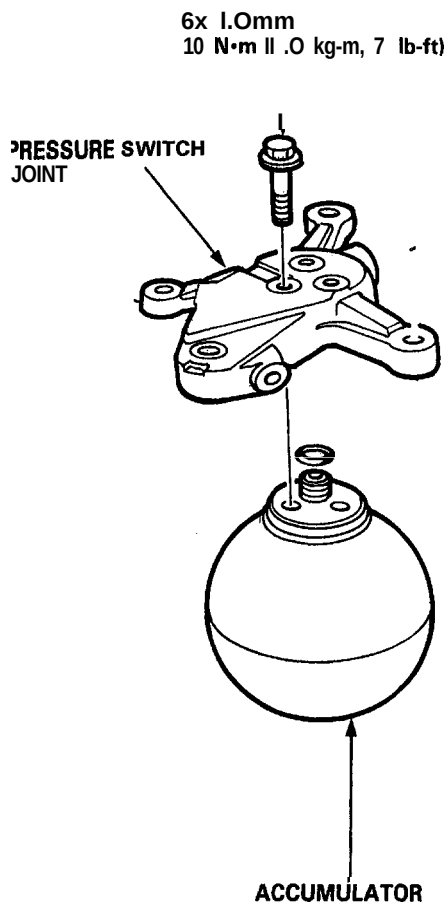
☆ : CURRENT CORROSION PROTECTION BOLT



Accumulator/Pressure Switch

Accumulator/Pressure Switch Removal

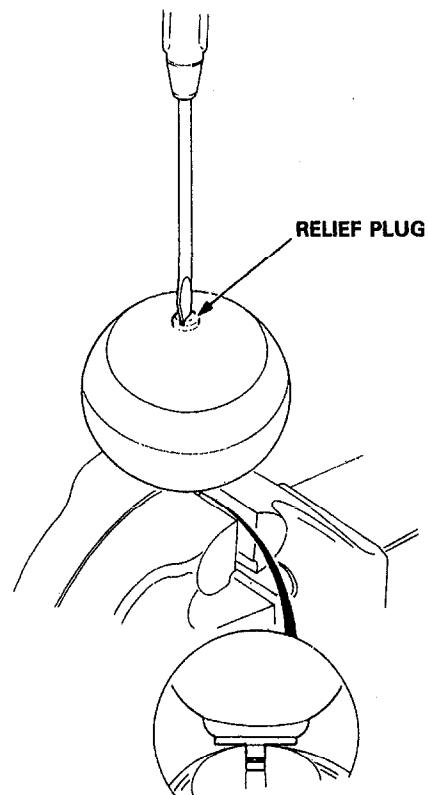
1. Drain the high pressure brake fluid from the power unit (see page 19-62).
2. Remove three 6 mm flange bolts, then remove the accumulator from the pressure switch joint.



Accumulator Disposal

⚠ WARNING The accumulator contains high pressure nitrogen gas, do not puncture, expose to flame, or attempt to disassemble the accumulator or it may explode: severe personal injury may result.

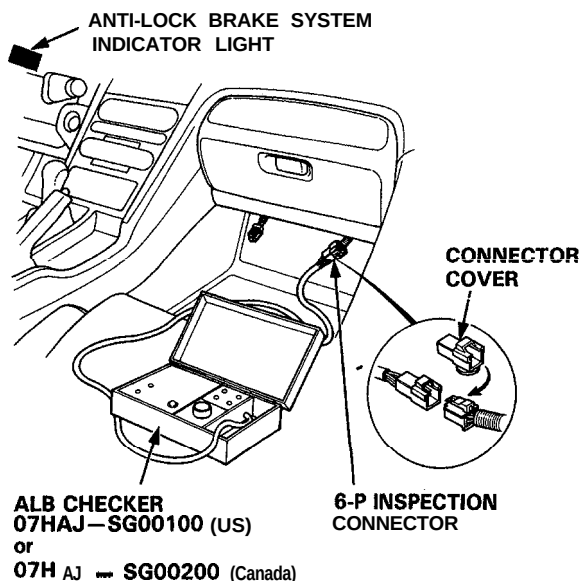
1. Secure the accumulator in a vise so that the relief plug points straight up.
2. Slowly turn the plug 3-1/2 turns and then wait 3 minutes for all pressure to escape.
3. Remove the plug completely and dispose of the accumulator unit.



Bleeding

-Air Bleeding with ALB Checker-

1. Disconnect the 6-P inspection connector (PNK) from the connector cover located under the glove box and connect the inspection connector to the ALB checker.

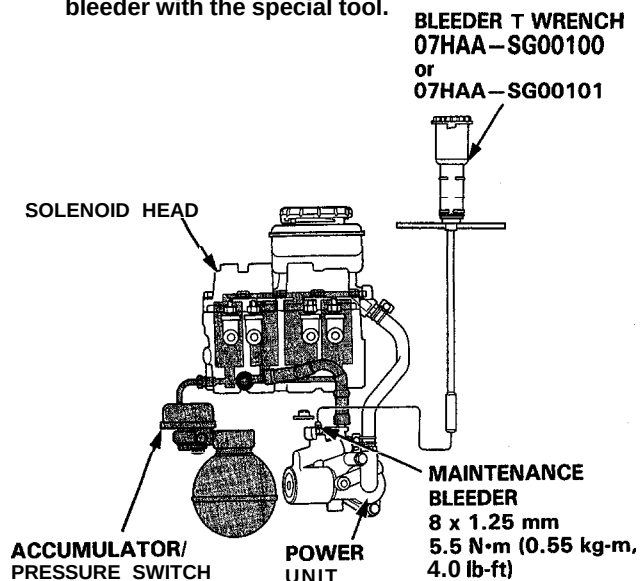


CAUTION: Place the vehicle on level ground with the wheels blocked. Put the transmission in neutral for manual transmission models, and in P for automatic transmission models.

2. Fill the modulator reservoir to the MAX level.

NOTE: Do not reuse aerated brake fluid that has been bled from the power unit.

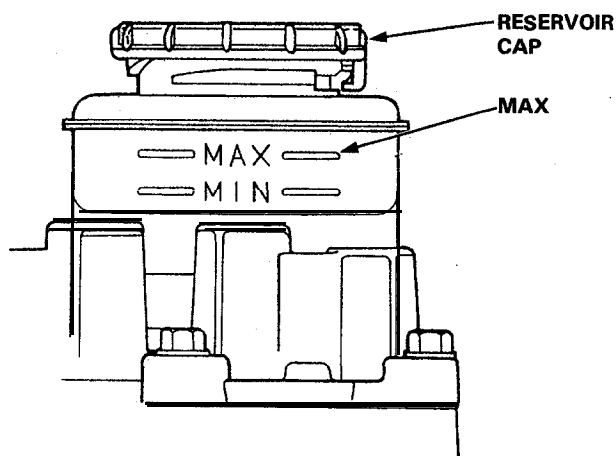
3. Bleed high pressure fluid from the maintenance bleeder with the special tool.



4. Start the engine and release the parking brake.

NOTE: Depress the brake pedal firmly while test in progress light in ON.

5. There should be at least two strong kickbacks. If not, repeat steps 2 through 5, as necessary.
6. Fill the modulator reservoir up to the MAX level.



7. Install the reservoir cap.

8. Check the anti-lock brake system function in all modes by using the AL8 checker.

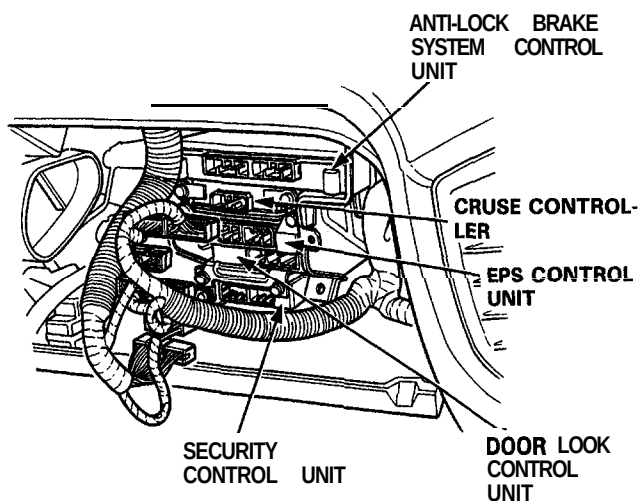
Electronic Components

-Control Unit Replacement-

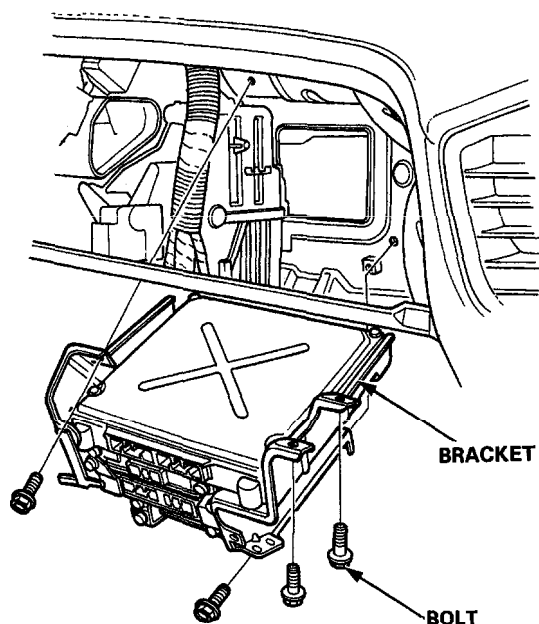
⚠ WARNING All SRS wire harnesses and connectors are colored yellow. Do not use electrical test equipment on these circuits.

CAUTION: Be careful not to damage the SRS wire harnesses when servicing the control unit.

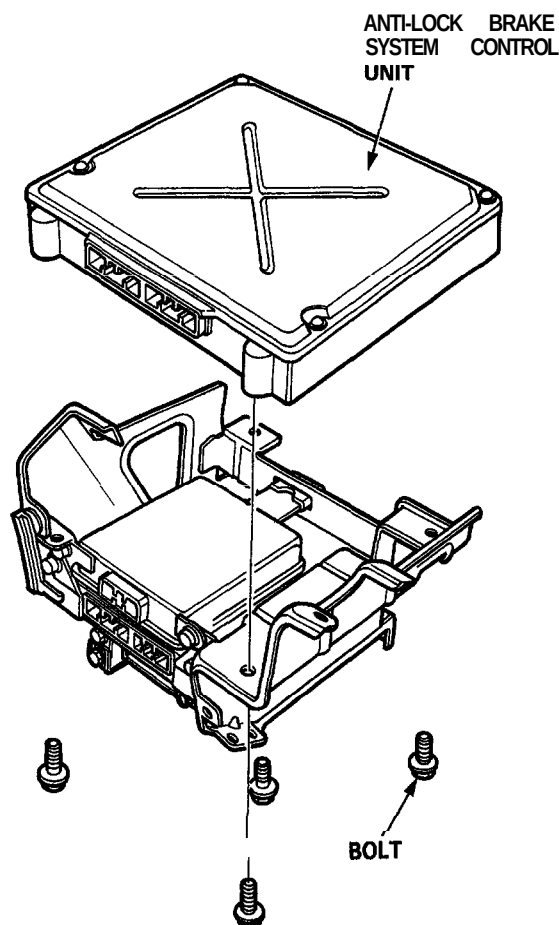
1. Disconnect the connectors from the control units.



2. Remove the four control unit bracket bolts, then remove the bracket with the control units.



3. Remove the control unit from the bracket.



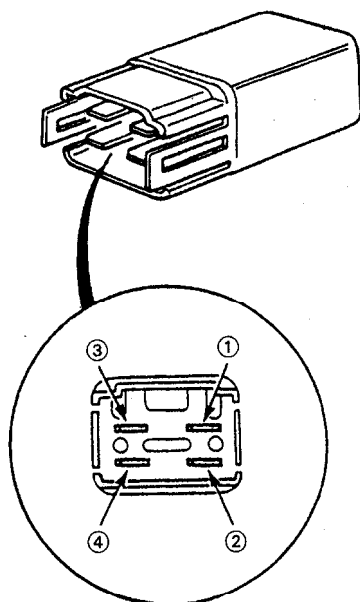
4. Install the new control unit in the reverse order of removal.

NOTE: Check the anti-lock brake system indicator light function by turning the ignition switch on.

Pulsers/Sensors

- Fail-Safe Relays/Motor Relay Inspection

1. Check for continuity between terminals ③ and ④. There should be no continuity.
2. Connect a 12 V battery across terminals ① and ②. There should be continuity between terminals ③ and ④.

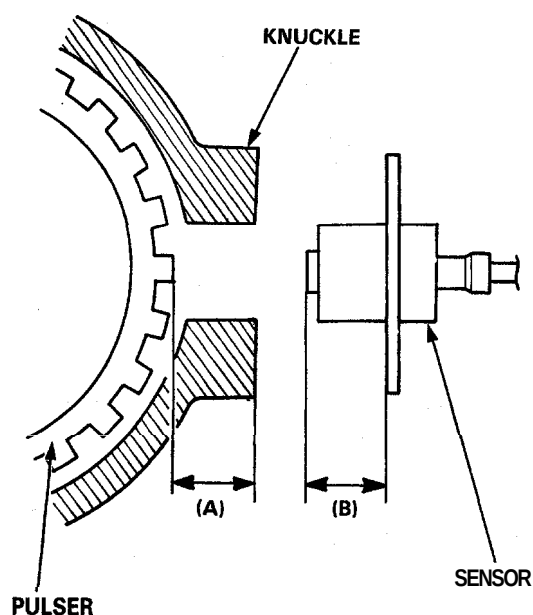


-Inspection

1. Check the pulser for chipped or damaged teeth.
2. Measure air gap between the sensor and pulser all the way around while rotating the driveshaft by hand.

(A) - (B) = Standard: 0.4 - 1.0 mm
(0.016-0.039 in.)

NOTE: If the gap exceeds 1.0 mm (0.039 in.), the probability is a distorted knuckle which should be replaced.



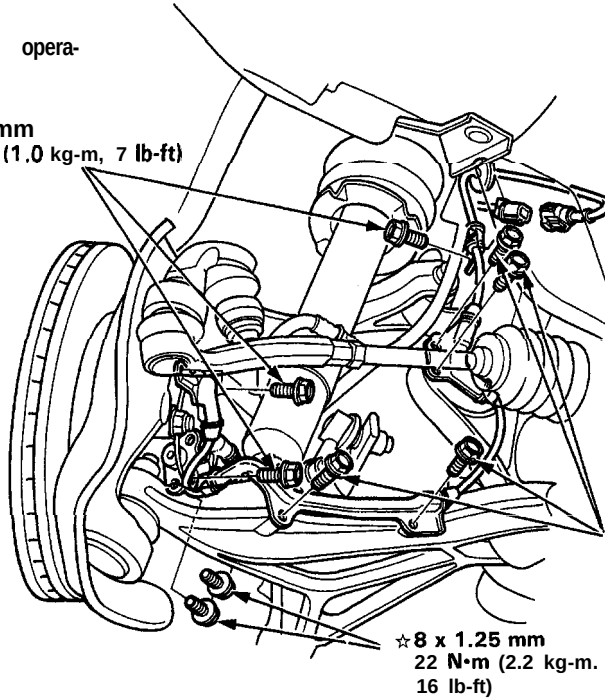
Pulsers/Sensors

-Front Sensor Replacement

NOTE:

- Be careful when installing the sensors to avoid twisting the wires.
- After sensor replacement confirm proper operation (page 19-43).

☆: CORROSION RESISTANT BOLT ☆6 x 1.0mm
10 N·m (1.0 kg-m, 7 lb-ft)



☆6 x 1.0mm
10 N·m (1.0 kg-m,
7 lb-ft)

☆8 x 1.25 mm
22 N·m (2.2 kg-m,
16 lb-ft)

-Rear Sensor Replacement

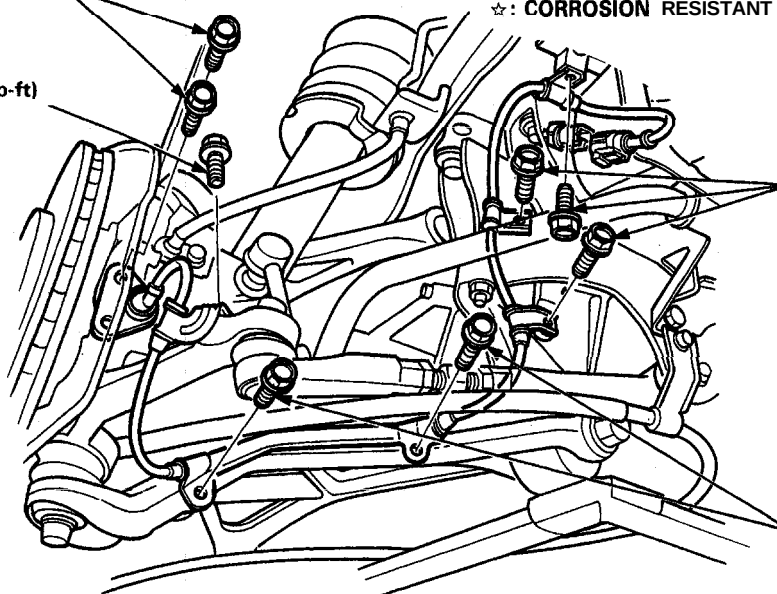
NOTE:

- Be careful when installing the sensors to avoid twisting the wires.
- After sensor replacement, confirm proper operation (page 19-43).

☆: CORROSION RESISTANT BOLT

☆8 x 1.25 mm
22 N·m (2.2 kg-m, 16 lb-ft)

☆6 x 1.0 mm
10 N·m (1.0 kg-m, 7 lb-ft)



☆6 x 1.0 mm
10 N·m (1.0 kg-m,
7 lb-ft)

☆6 x 10 mm
10 N·m (1.0 kg-m,
7 lb-ft)