BRAKE SYSTEM

SECTION BR

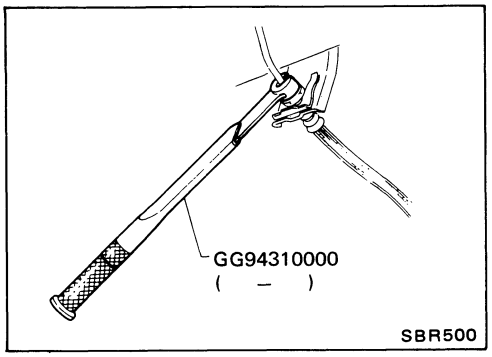
CONTENTS

Precautions

- Recommended fluid is brake fluid "DOT 3".
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas.
- To clean or wash all parts of master cylinder, disc brake caliper and wheel cylinder, use clean brake fluid.
- Never use mineral oils such as gasoline or kerosene. They will ruin the rubber parts of the hydraulic system.

WARNING:

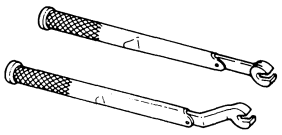
- Clean pad and shoe dust using a dust collector after cleaning with waste cloth.

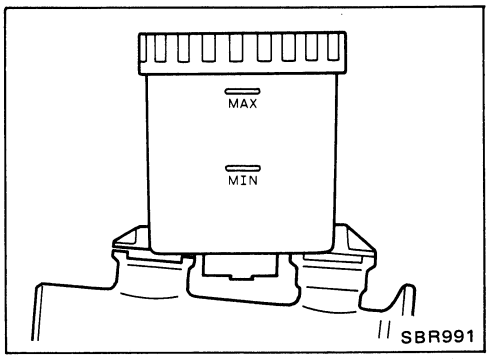


- Use Tool when removing and installing brake tube.

Preparation

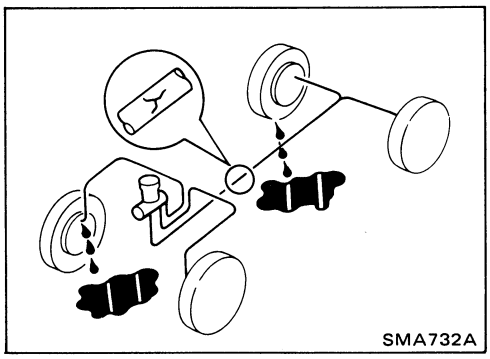
SPECIAL SERVICE TOOL

Tool number (Kent-Moore No.) Tool name	Description	
GG94310000 (–) Flare nut torque wrench		Removing and installing each brake piping



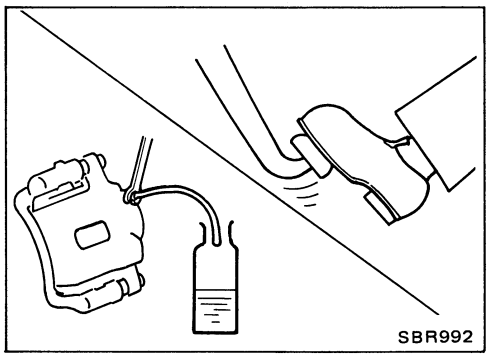
Checking Brake Fluid Level

- Check fluid level in reservoir tank. It should be between Max. and Min. lines on reservoir tank.
- If fluid level is extremely low, check brake system for leaks.



Checking Brake System

- Check brake lines (tubes and hoses) for evidence of cracks, deterioration or other damage. Replace any damaged parts.
  If leakage occurs around joints, retighten or, if necessary, replace damaged parts.
- Be sure to check for oil leakage by fully depressing brake pedal.

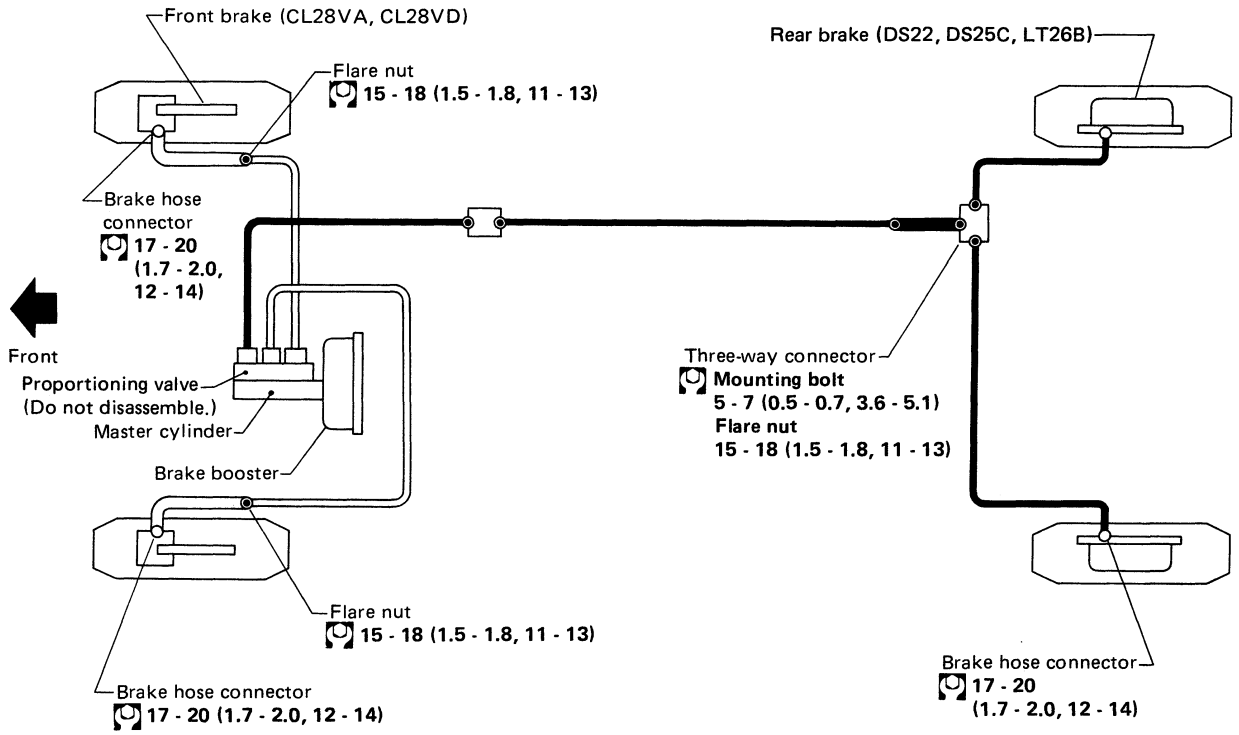


Changing Brake Fluid

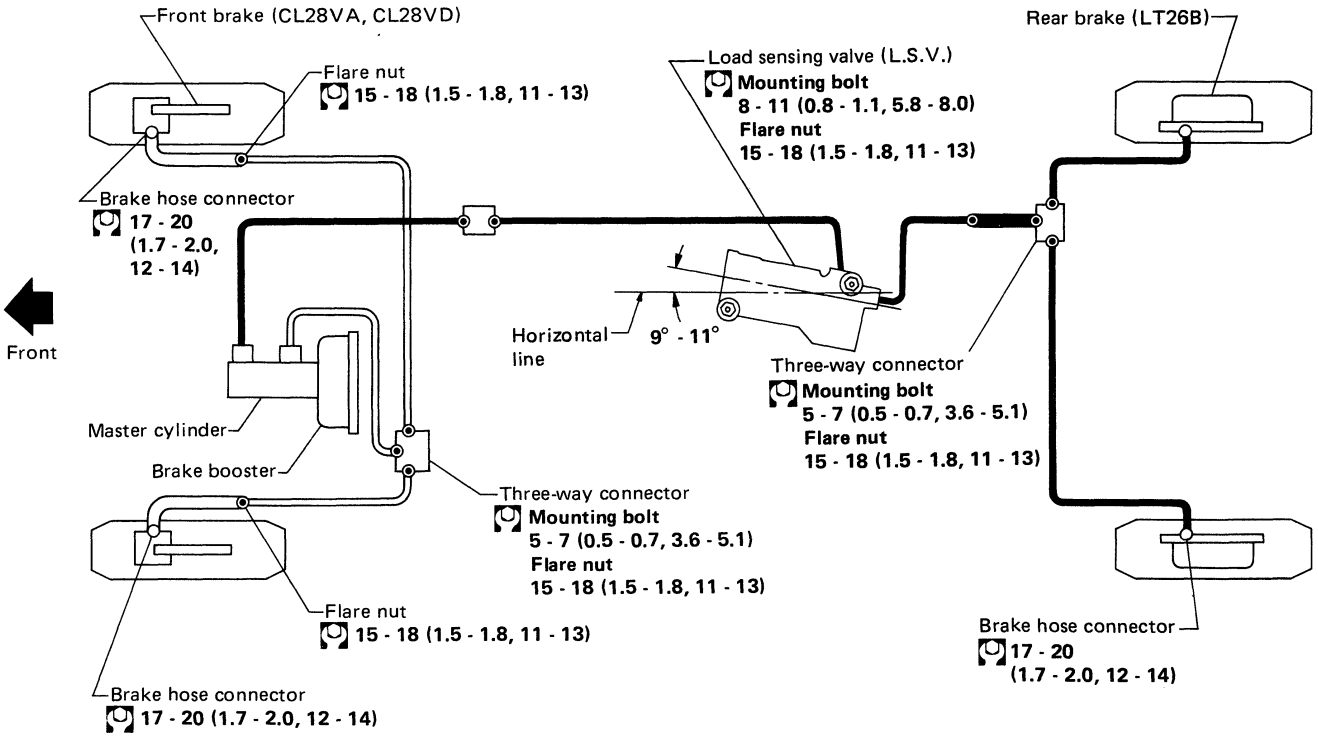
1. Drain brake fluid in each air bleeder valve.
2. Refill until new brake fluid comes out of each air bleeder valve.
   Use same procedure as in bleeding hydraulic system to refill brake fluid.
   Refer to Bleeding Procedure of BRAKE HYDRAULIC LINE.

- **Refill with recommended brake fluid "DOT 3".**
- **Never reuse drained brake fluid.**
- **Be careful not to splash brake fluid on painted areas.**

Model equipped with proportioning valve



Model equipped with L.S.V. (A-type)



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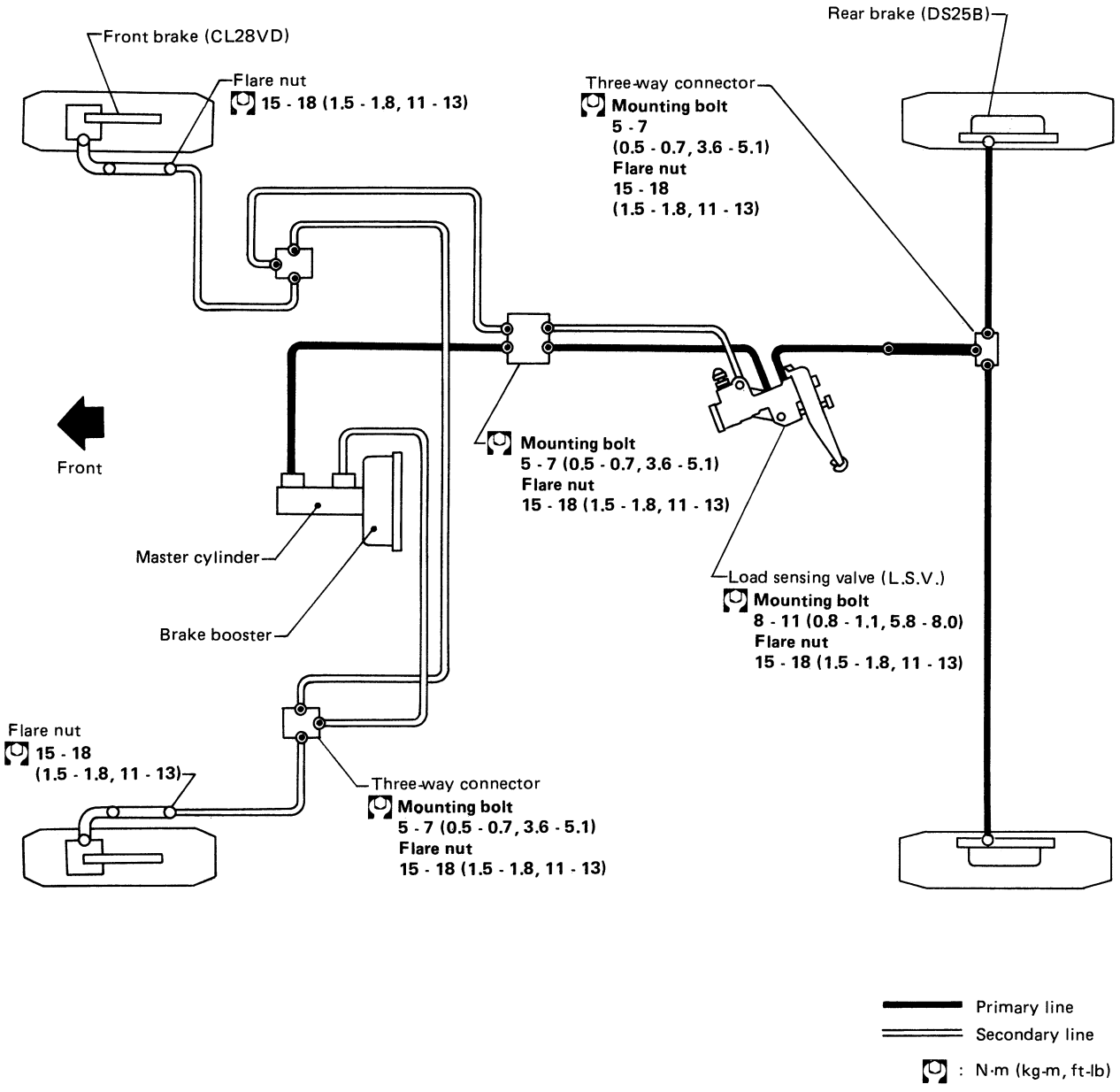
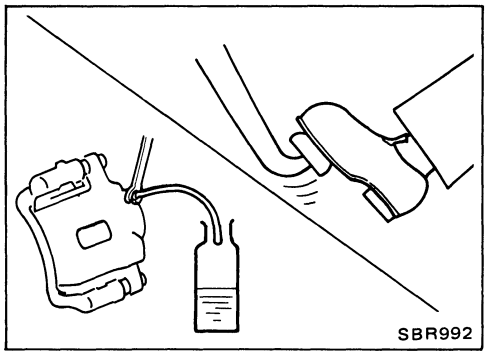
Model equipped with L.S.V. (B-type)



SBR169A


SBR992

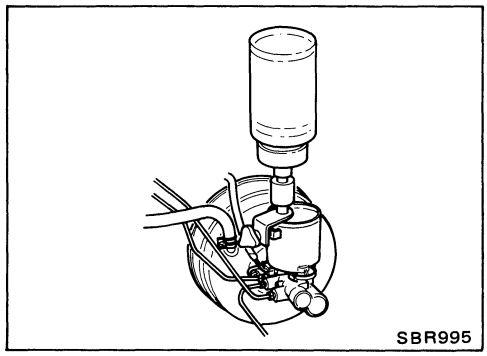
Bleeding Procedure

Model not equipped with L.S.V.

- Bleed air according to the following procedure:
  Left rear wheel cylinder → Right rear wheel cylinder → Left front caliper → Right front caliper

Model equipped with L.S.V.

- Bleed air according to the following procedure:
  L.S.V. air bleeder → Left rear wheel cylinder → Right rear wheel cylinder → Left front caliper → Right front caliper

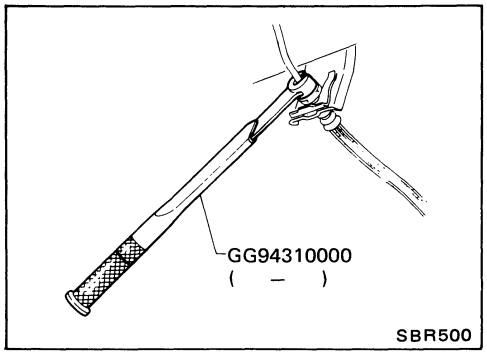

SBR995

- Connect a transparent vinyl tube to air bleeder valve of L.S.V., caliper or wheel cylinder.
- Carefully monitor brake fluid level at master cylinder during bleeding operation.
- Tighten air bleeder to the specified torque.

Removal and Installation

CAUTION:

a. **Use Tool when removing and installing brake tube.**



SBR500

b. **Cover openings to prevent entrance of dirt whenever disconnecting hydraulic line.**

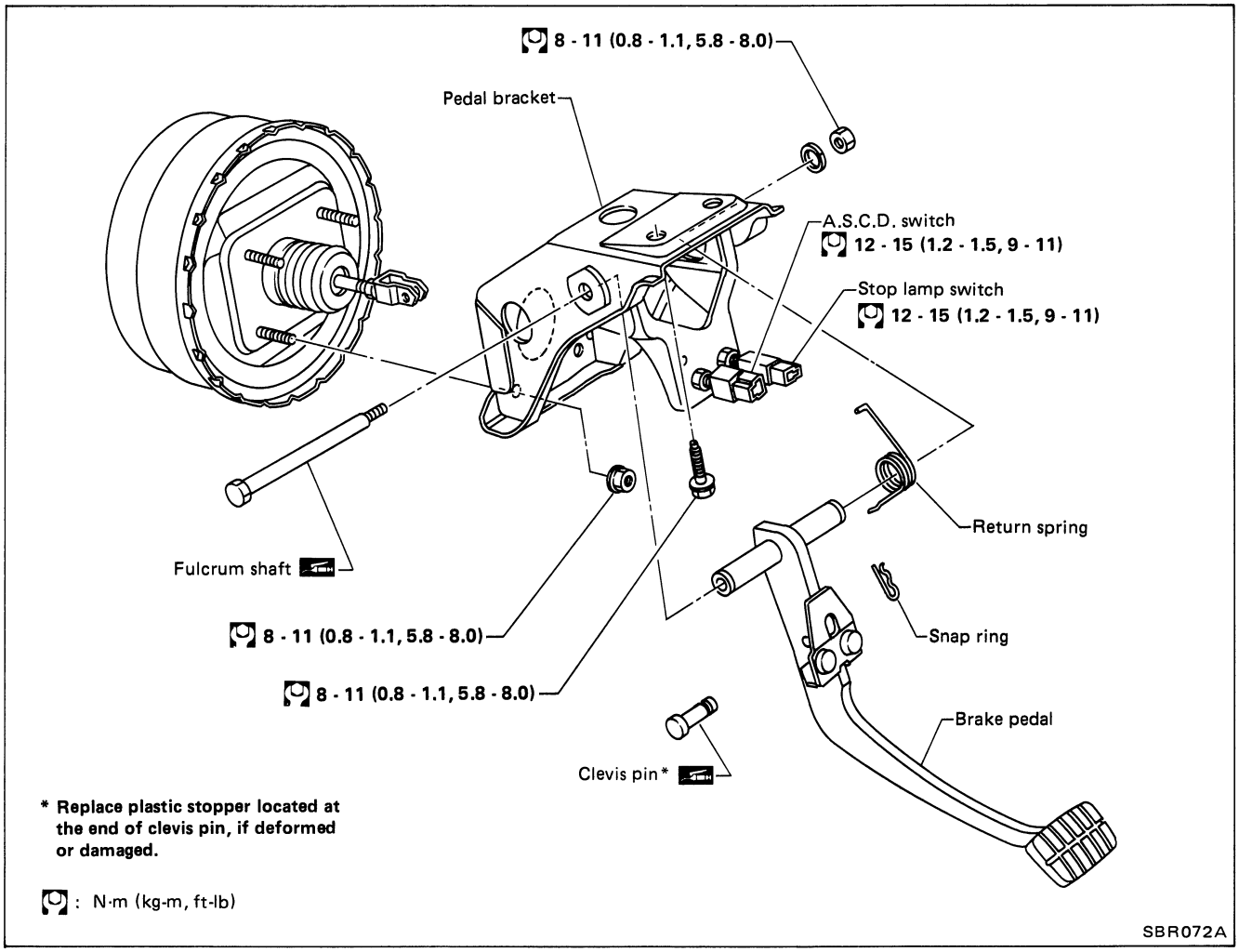
- To remove brake hose, first remove flare nut securing brake tube to hose, then withdraw lock spring. Next disconnect the other side.
- All hoses must be free from excessive bending, twisting and pulling.
- After installing brake lines, be sure to check for oil leakage by fully depressing brake pedal.

Inspection

Check brake lines (tubes and hoses) for evidence of cracks, deterioration or other damage. Replace any damaged parts.

If leakage occurs around joints, retighten or, if necessary, replace damaged parts.

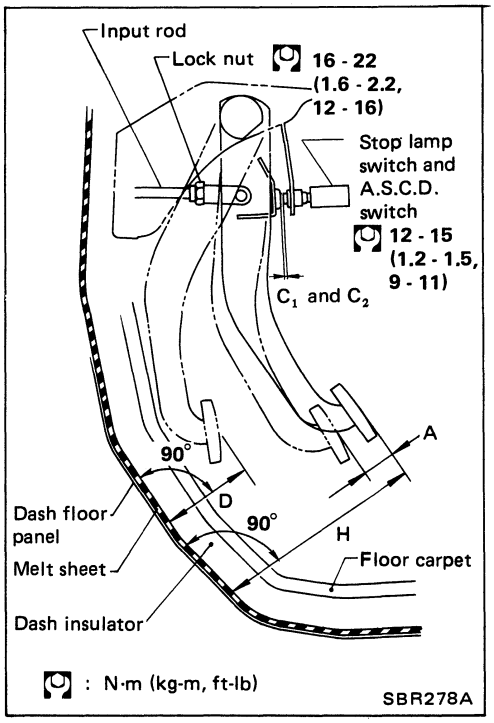
Removal and Installation

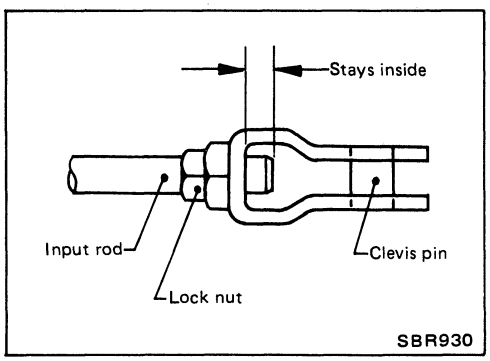


Inspection

Check brake pedal for the following items.

- Brake pedal bend
- Clevis pin deformation
- Crack of any welded portion





Adjustment

Check brake pedal free height from melt sheet. Adjust if necessary.

H: **Free height**
Refer to S.D.S.

D: **Depressed height**
Refer to S.D.S.
Under force of 490 N (50 kg, 110 lb) with engine running

C_1: **Clearance between pedal stopper and threaded end of stop lamp switch**
0.3 - 1.0 mm (0.012 - 0.039 in)

C_2: **Clearance between pedal stopper and threaded end of A.S.C.D. switch**
0.3 - 1.0 mm (0.012 - 0.039 in)

A: **Pedal free play**
1 - 3 mm (0.04 - 0.12 in)

1. Adjust pedal free height with brake booster input rod. Then tighten lock nut.

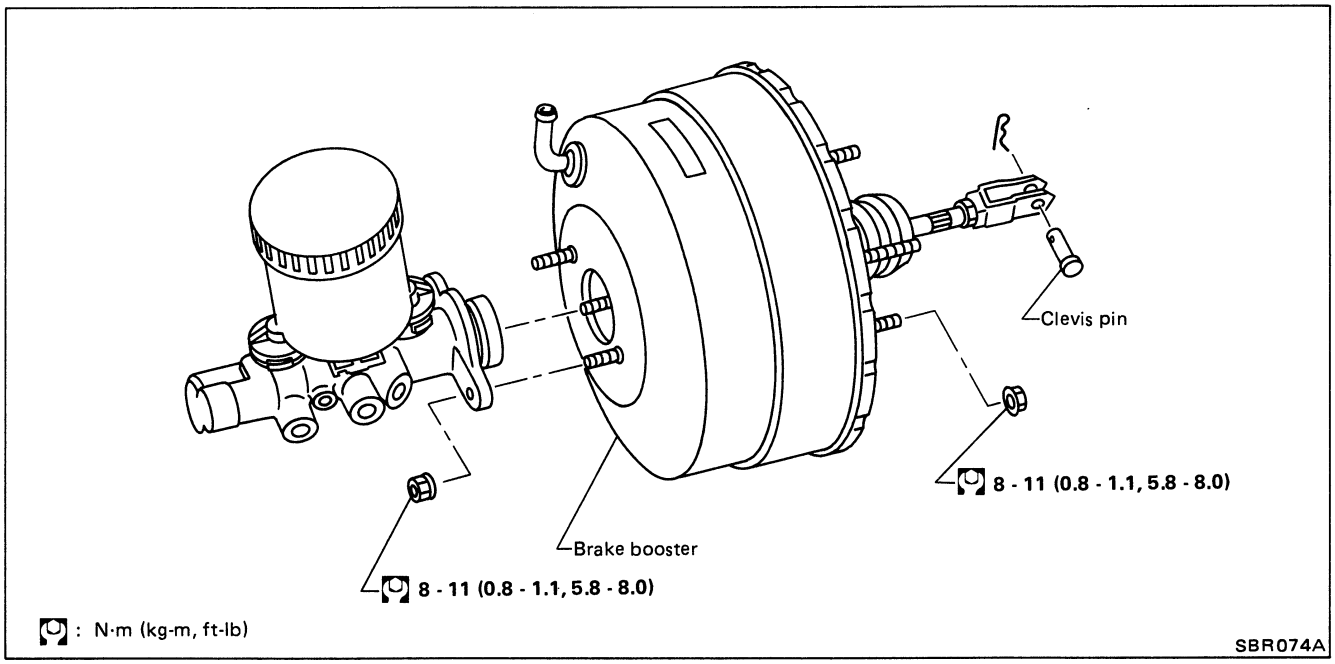
Make sure that the tip of input rod stays inside.

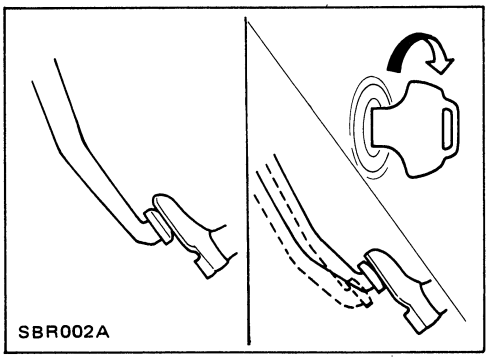
2. Adjust clearance "C_1" and "C_2" with stop lamp switch and A.S.C.D. switch respectively. Then tighten lock nuts.
3. Check pedal free play.

Make sure that stop lamp is off when pedal is released.

4. Check brake pedal depressed height with engine running.
   If depressed height is below the specified value, check brake system for leaks, accumulation of air or any damage components such as master cylinder, wheel cylinder, etc. Make the necessary repairs, if necessary.

Removal and Installation





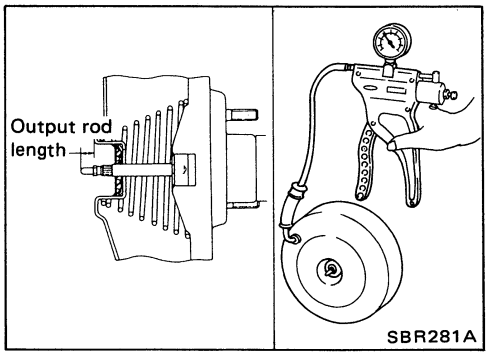
Inspection

OPERATING CHECK

- Depress brake pedal several times with engine off, then check that there is no change in pedal stroke.
- Depress brake pedal, then start engine. If pedal goes down slightly, operation is normal.

AIRTIGHT CHECK

- Start engine, then stop it in one or two minutes. Depress brake pedal several times slowly. If pedal goes further down the first time and gradually rises after second or third time, the booster is airtight.
- Depress brake pedal while engine is running, then stop engine with pedal depressed. If there is no change in pedal stroke for thirty seconds, brake booster is airtight.



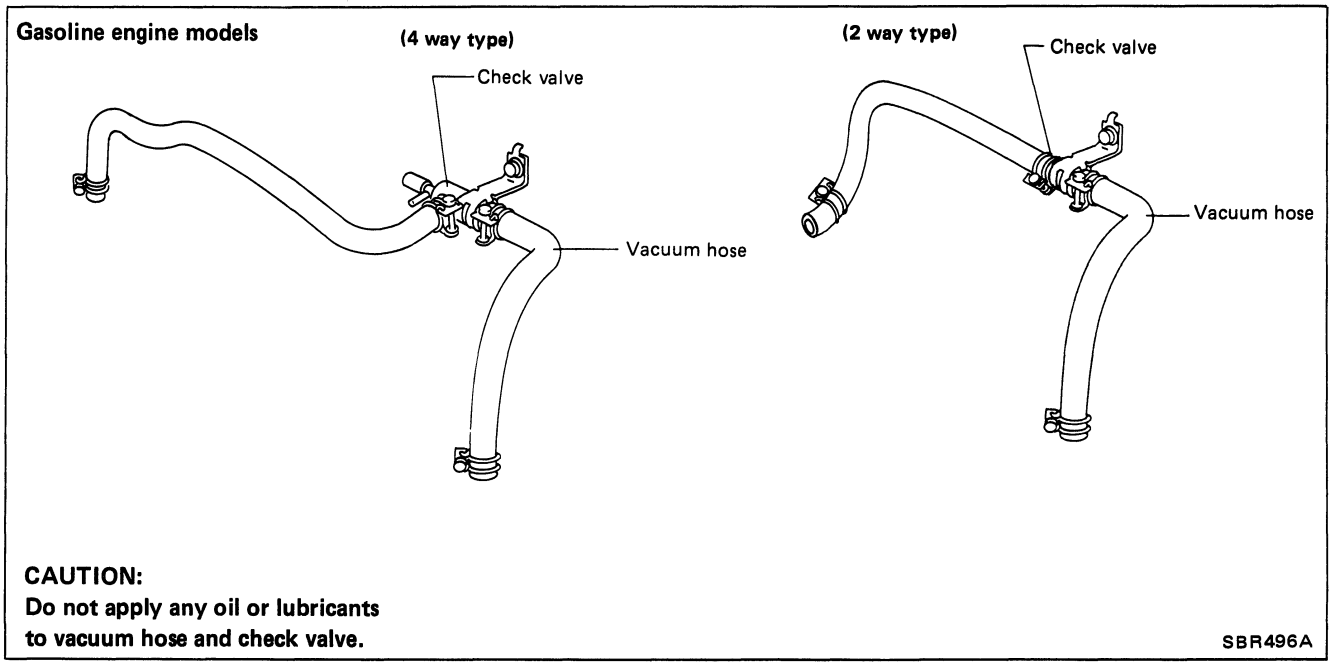
OUTPUT ROD LENGTH CHECK

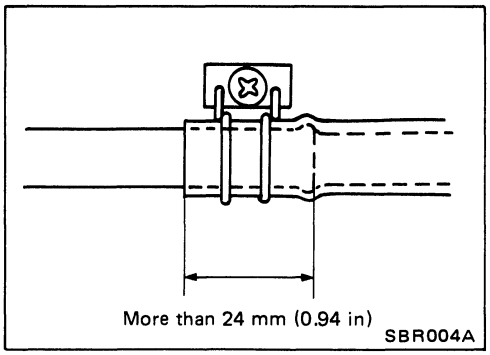
1. Supply brake booster with vacuum of −66.7 kPa (−500 mmHg, −19.69 inHg) using a handy vacuum pump.
2. Check output rod length.

Specified length:

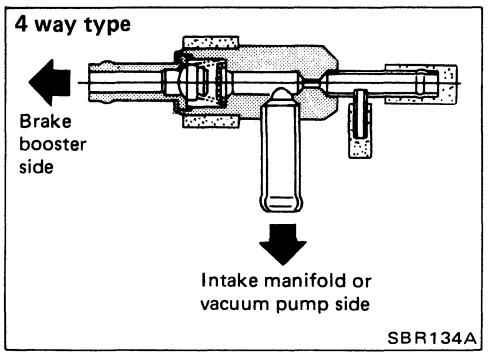
10.275 - 10.525 mm (0.4045 - 0.4144 in)

Removal and Installation

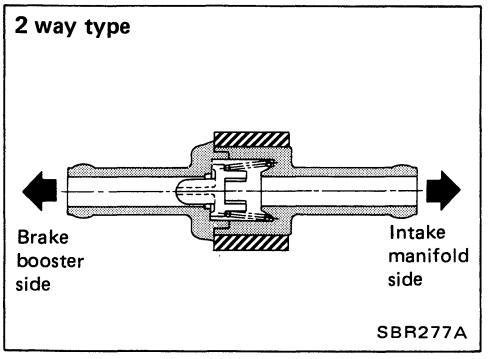


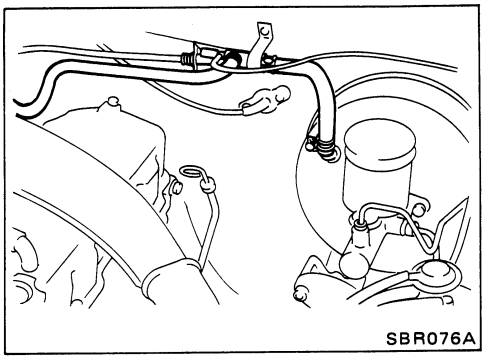


- Insert vacuum tube into vacuum hose more than 24 mm (0.94 in).



- Install check valve properly paying attention to its direction.

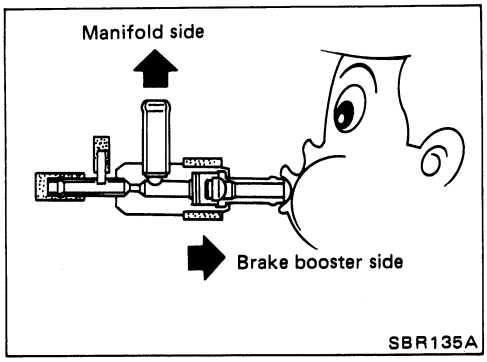



SBR076A

Inspection

HOSES AND CONNECTORS

- Check condition of vacuum hoses and connectors.
- Check vacuum hoses for air tightness.



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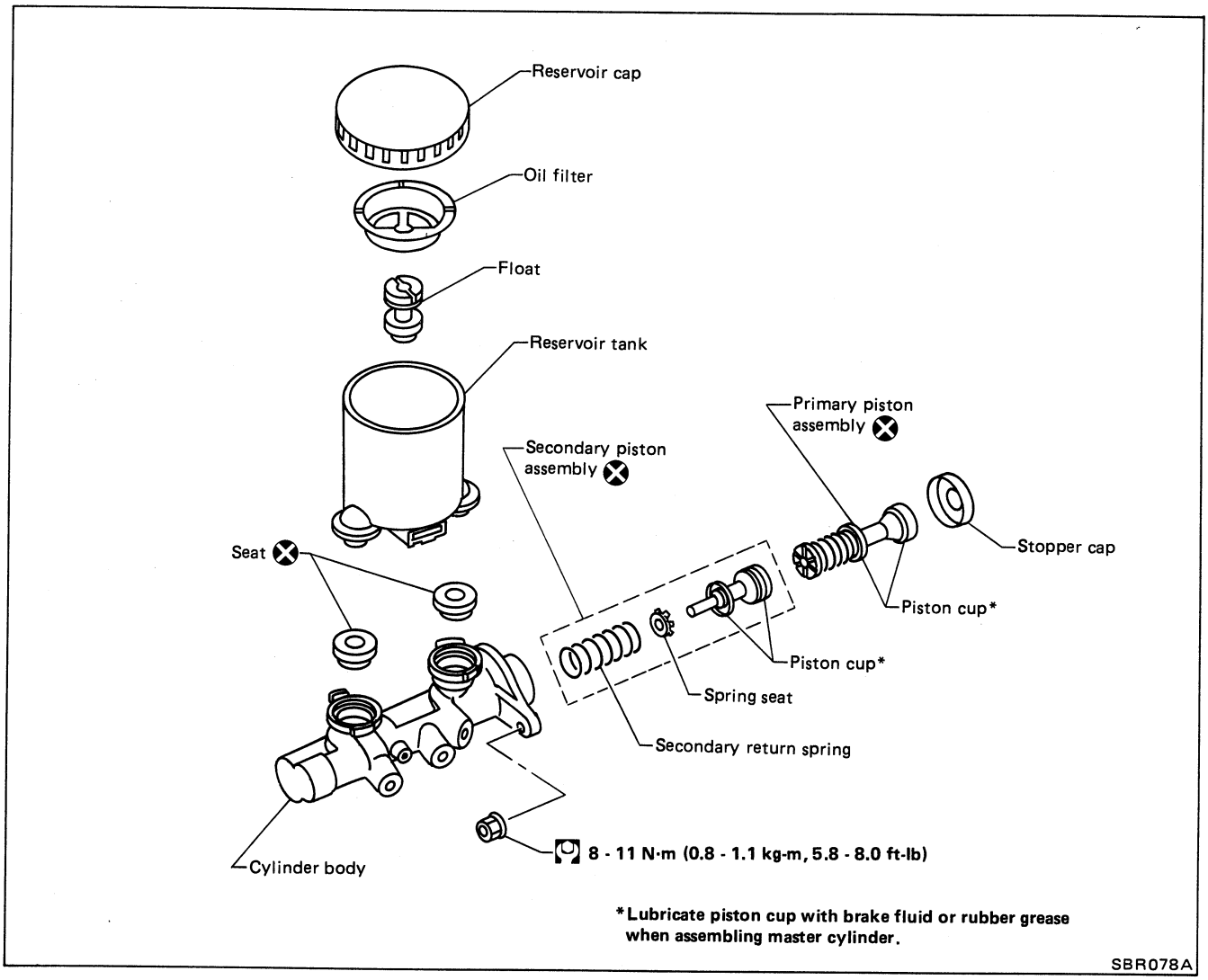
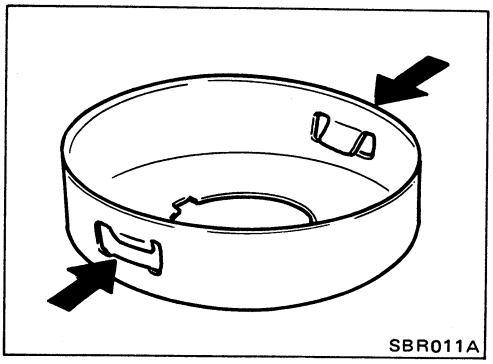
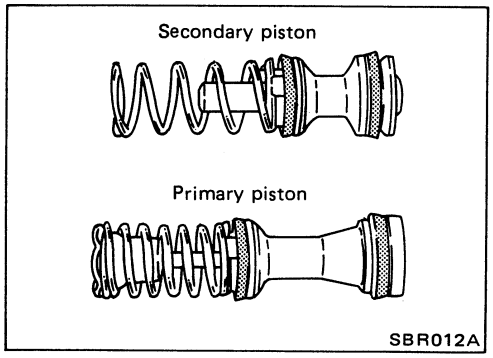
CHECK VALVE

- If valve does not open, replace check valve with a new one when pressure is applied to the brake booster side of check valve.



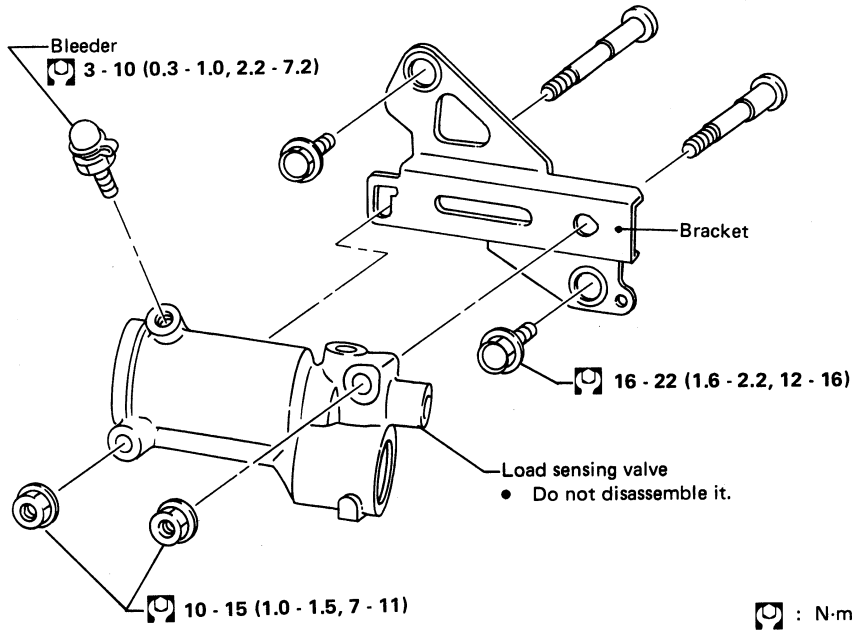


- Replace stopper if the claw is damaged or deformed.
- Bend claws inside when installing stopper.

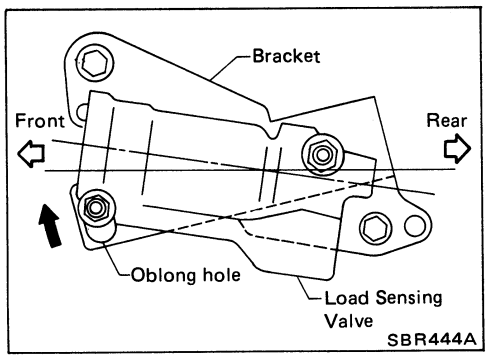


- Replace piston assembly when disassembled.
- Pay attention to the direction of piston cups.
- Check parts for wear or damage. Replace if any of the above conditions are observed.

Load Sensing Valve (A-type)

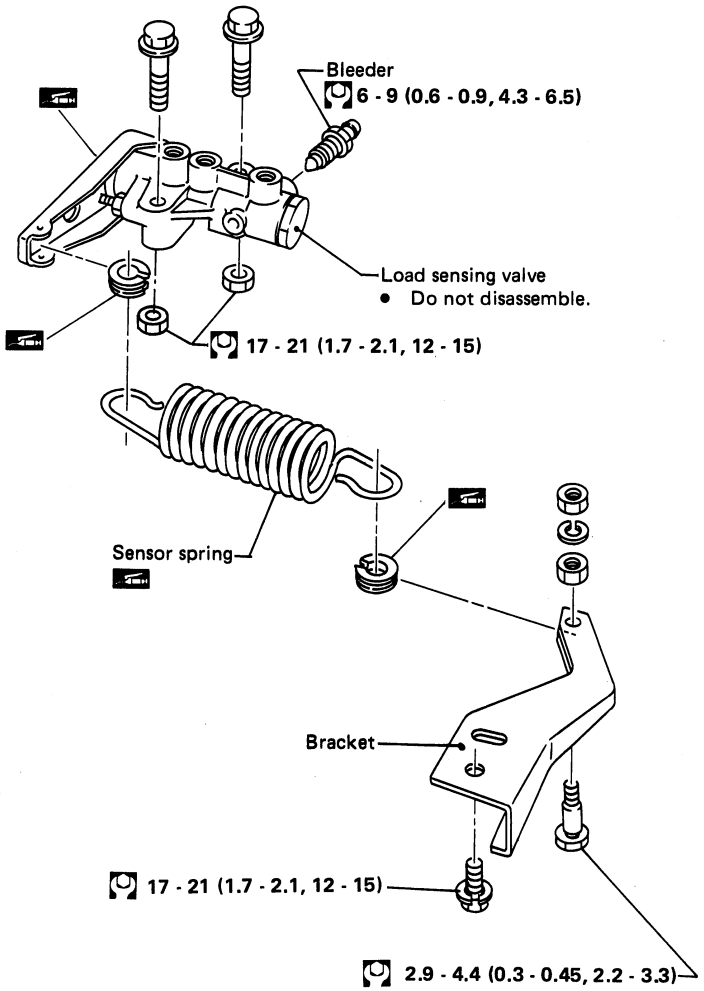


- Do not reuse Load Sensing Valve once it is disassembled.
- Replace damaged Load Sensing Valve as an assembly.



- When installing Load Sensing Valve to bracket, secure it to area above oblong hole.

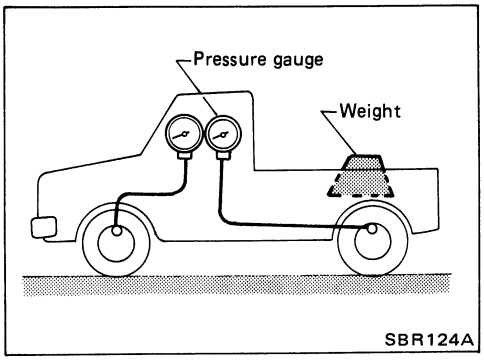
Load Sensing Valve (B-type)



: N·m (kg-m, ft-lb)

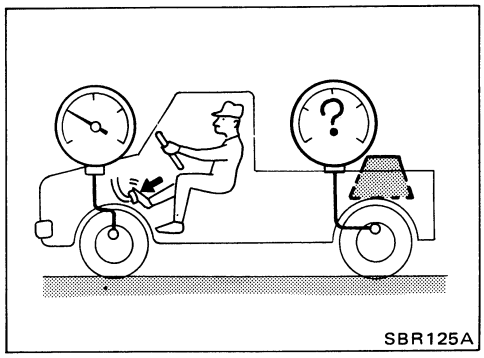
SBR123A

- Do not reuse Load Sensing Valve once it is disassembled.
- Replace damaged Load Sensing Valve as an assembly.
- When disassembling, apply multi-purpose grease to all rubbing areas.



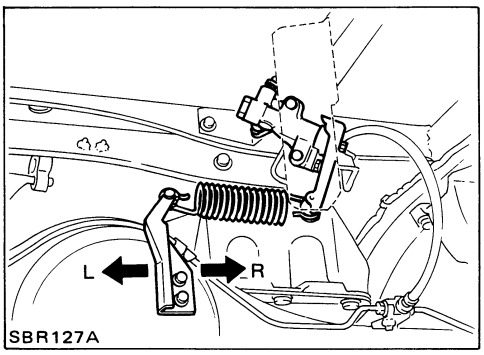
Inspection (L.S.V. B-type)

1. Set weight slowly on axle center.
   Weight: 100 kg (221 lb)
2. Install pressure gauge to front and rear brake.



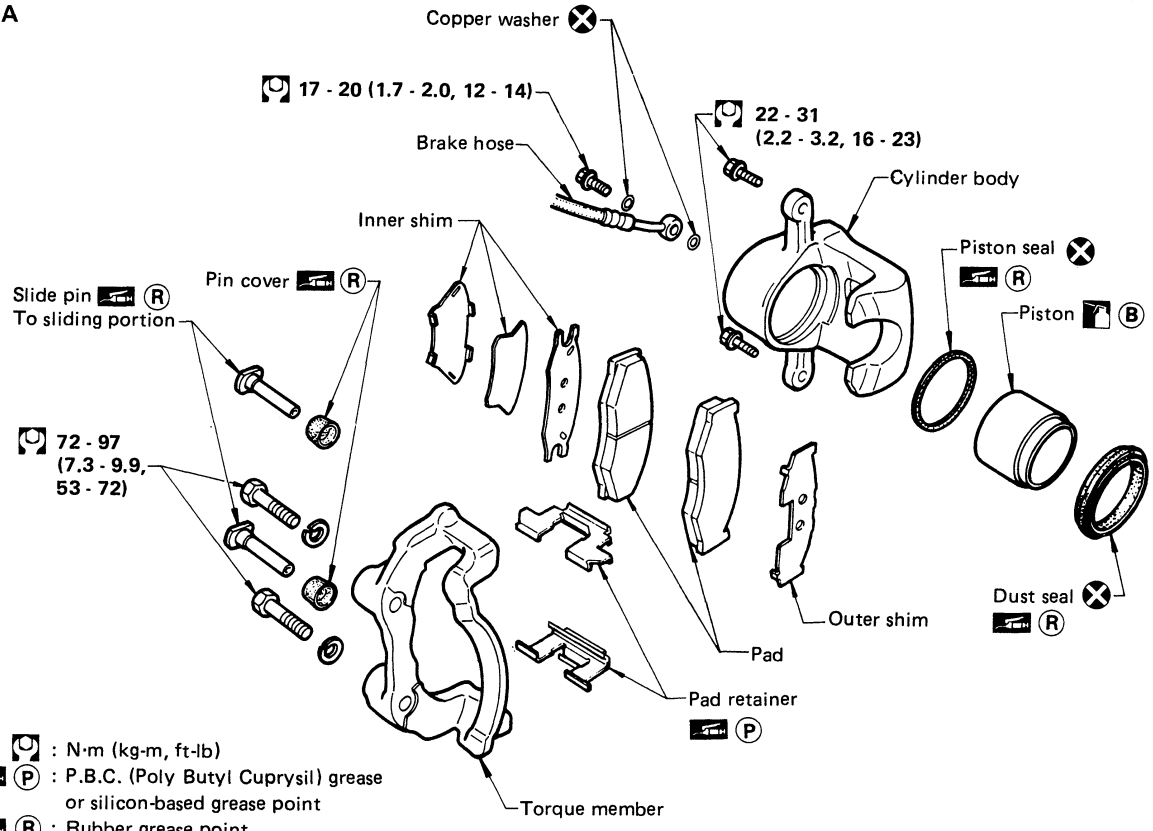
3. Raise front brake pressure to 4,904 kPa (50 kg/cm^2, 711 psi) and check rear brake pressure.
   Rear brake pressure:
   2,256 - 3,236 kPa
   (23 - 33 kg/cm^2, 327 - 469 psi)
4. Raise front brake pressure to 9,807 kPa (100 kg/cm^2, 1,422 psi) and check rear brake pressure.
   Rear brake pressure:
   3,138 - 4,511 kPa
   (32 - 46 kg/cm^2, 455 - 654 psi)

If rear brake pressure is not within specification, adjust bracket as follows:



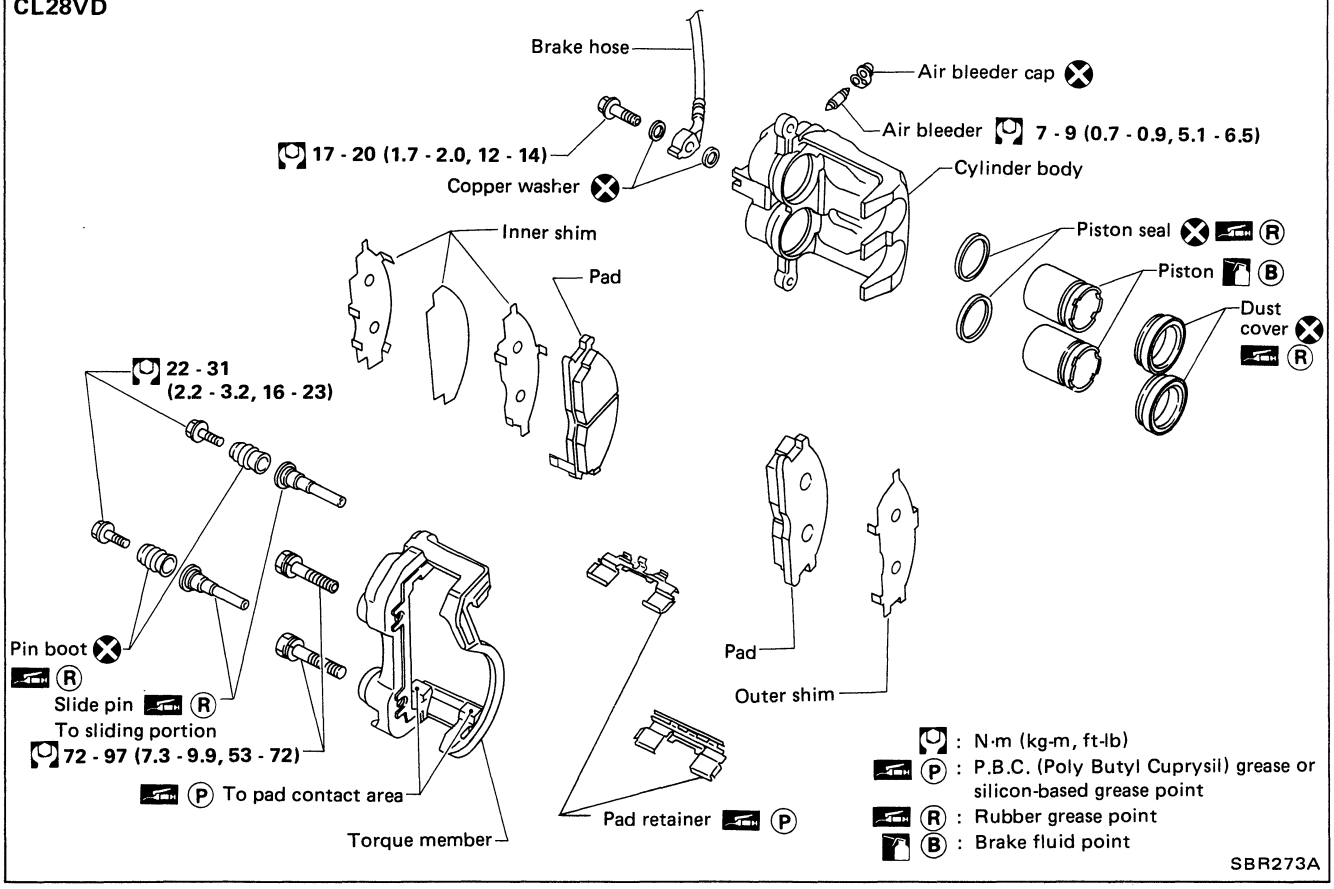
5. Adjust bracket to direction of **L** when rear brake pressure is above specification.
6. Adjust bracket to direction of **R** when rear brake pressure is below specification.
   Repeat steps (3) and (4) until rear brake pressure is within specification.

CL28VA

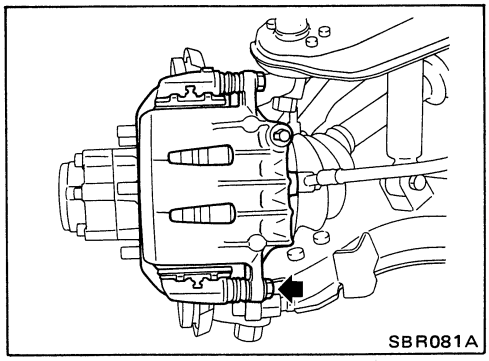


SBR272A

CL28VD

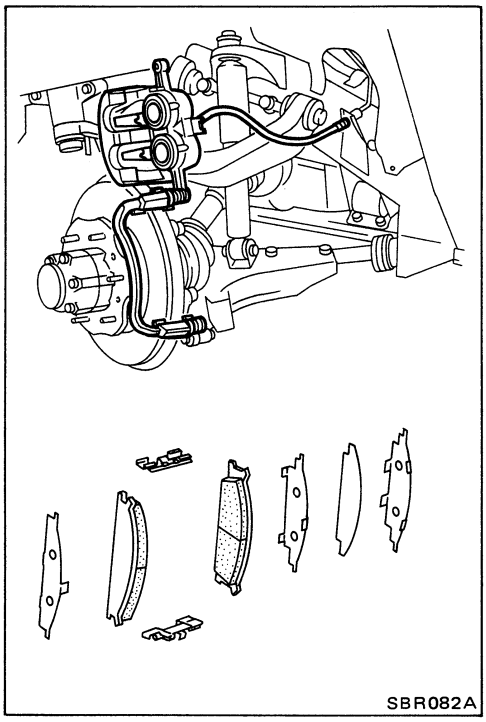


SBR273A


SBR081A

Pad Replacement

1. Remove pin bolt.


SBR082A

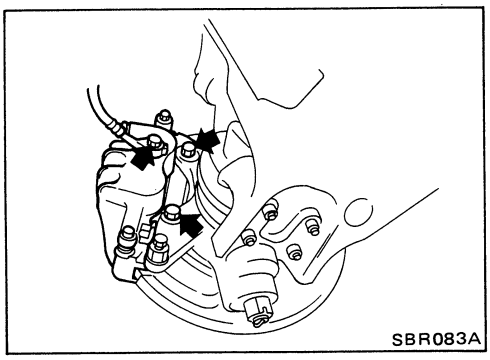
2. Swing cylinder body upward. Then remove pad retainers, and inner and outer shims.

CAUTION:

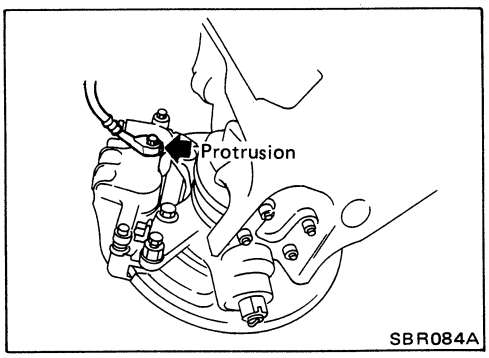
- **When cylinder body is swung up, do not depress brake pedal because piston will pop out.**
- **Be careful not to damage dust cover or get oil on rotor. Always replace shims when replacing pads.**

Removal and Installation

- Remove torque member fixing bolts and union bolt.


SBR083A

- Install brake hose to caliper securely.



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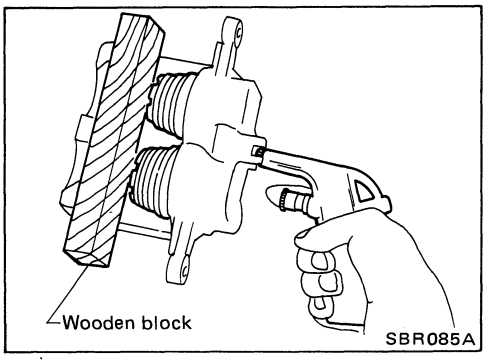
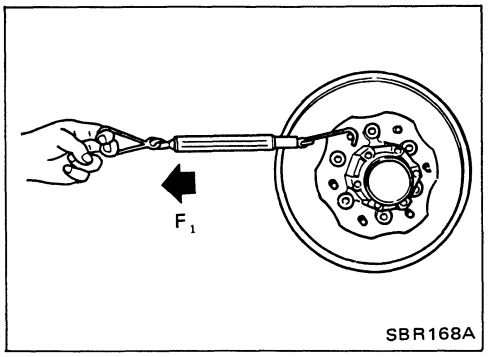


Disassembly

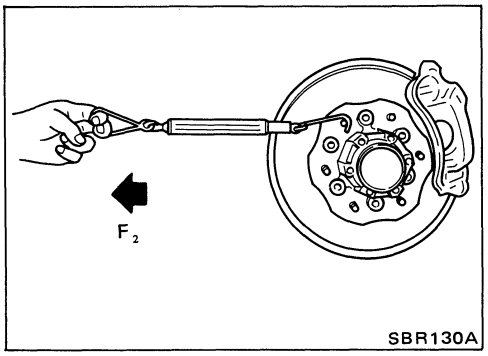
Push out piston with dust cover with compressed air.
For CL28VD (2-piston type), use a wooden block so that the 2 pistons come out evenly.



Inspection

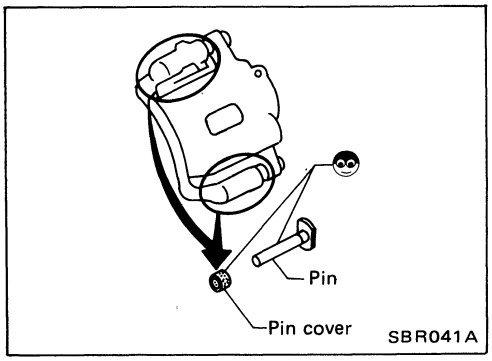
INSPECTION OF BRAKE DRAG FORCE

(1) Swing cylinder body upward.
(2) Make sure that wheel bearing is adjusted properly. Refer to section FA.
(3) Measure rotating force (F_1).



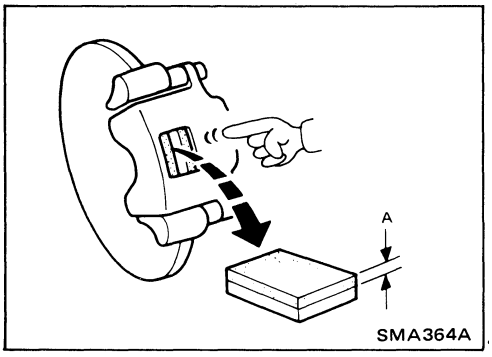
(4) Install caliper with pads to the original position.
(5) Depress brake pedal for 5 seconds.
(6) Release brake pedal, rotate disc rotor 10 revolutions.
(7) Measure rotating force (F_2).
(8) Calculate brake drag force by subtracting F_1 from F_2.

Maximum brake drag force ($F_2 - F_1$):
103.0 N (10.5 kg, 23.2 lb)



If it is not within specification, check pins and pin boots in caliper.

- **Make sure that wheel bearing is adjusted properly.**
- **Disc pads and disc rotor must be dried.**



DISC PAD

Check disc pad for wear or damage.

Pad wear limit (A):
2.0 mm (0.079 in)

Inspection (Cont'd)

CYLINDER BODY

- Check inside surface of cylinder for score, rust, wear, damage or presence of foreign materials. If any of the above conditions are observed, replace cylinder body.
- Minor damage from rust or foreign materials may be eliminated by polishing the surface with a fine emery paper. Replace cylinder body if necessary.

CAUTION:

Use brake fluid to clean. Never use mineral oil.

PISTON

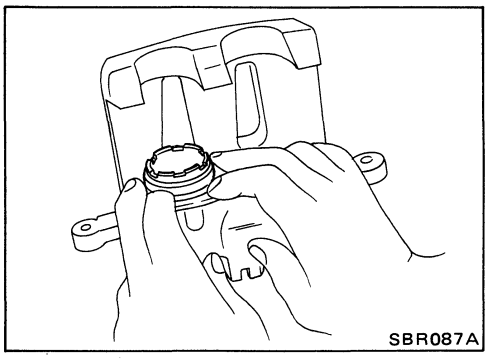
Check piston for score, rust, wear, damage or presence of foreign materials. Replace if any of the above conditions are observed.

CAUTION:

Piston sliding surface is plated. Do not polish with emery paper even if rust or foreign materials are stuck to sliding surface.

PIN, PIN BOLT AND PIN BOOT

Check for wear, cracks or other damage. Replace if any of the above conditions are observed.

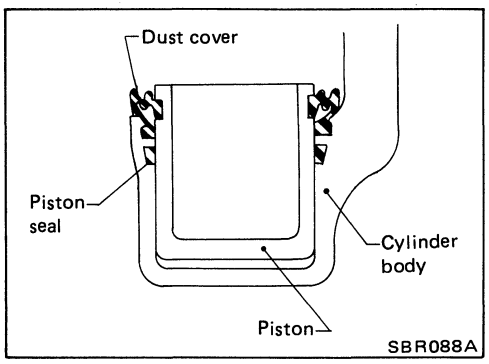

SBR087A

Assembly

- Insert piston seal into groove on cylinder body.
- With dust seal fitted to piston, install piston into cylinder body.

CAUTION:

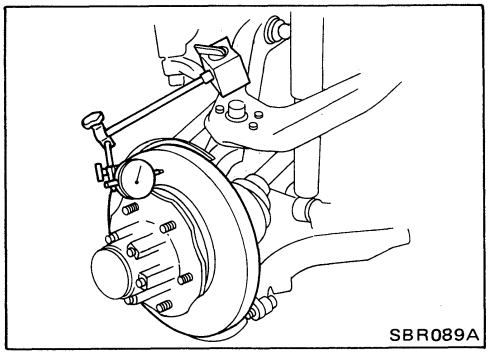
- **Secure dust seal properly.**



Inspection

RUBBING SURFACE

Check rotor for roughness, cracks or chips.

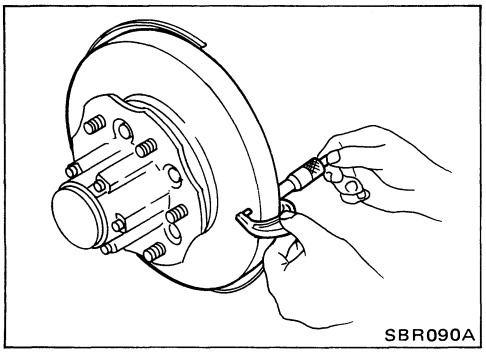

SBR089A

RUNOUT

Make sure that axial end play is within the specifications before measuring. Refer to section FA.

Rotor repair limit:

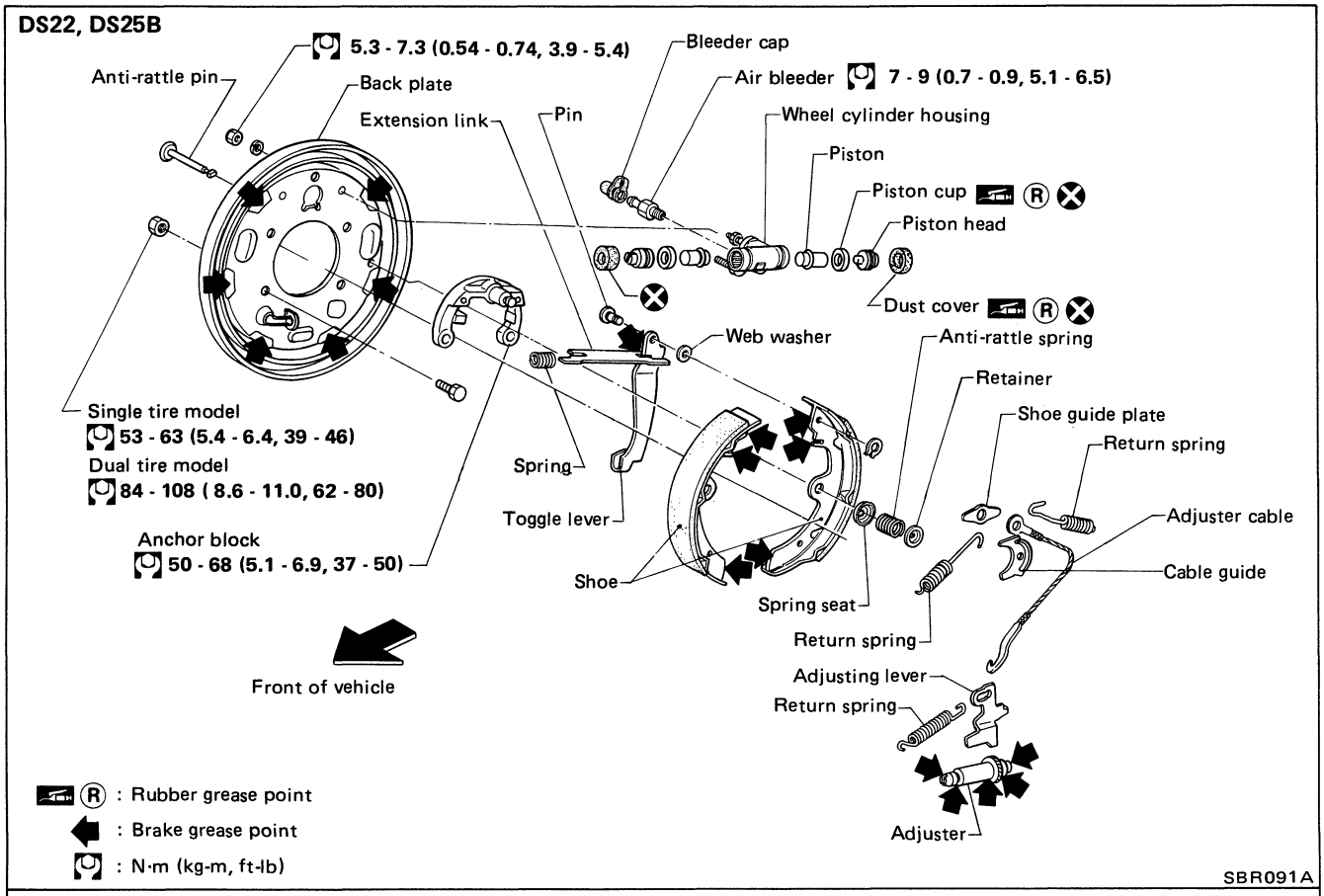
Maximum runout
(Total indicator reading at center of rotor pad contact surface)
0.07 mm (0.0028 in)

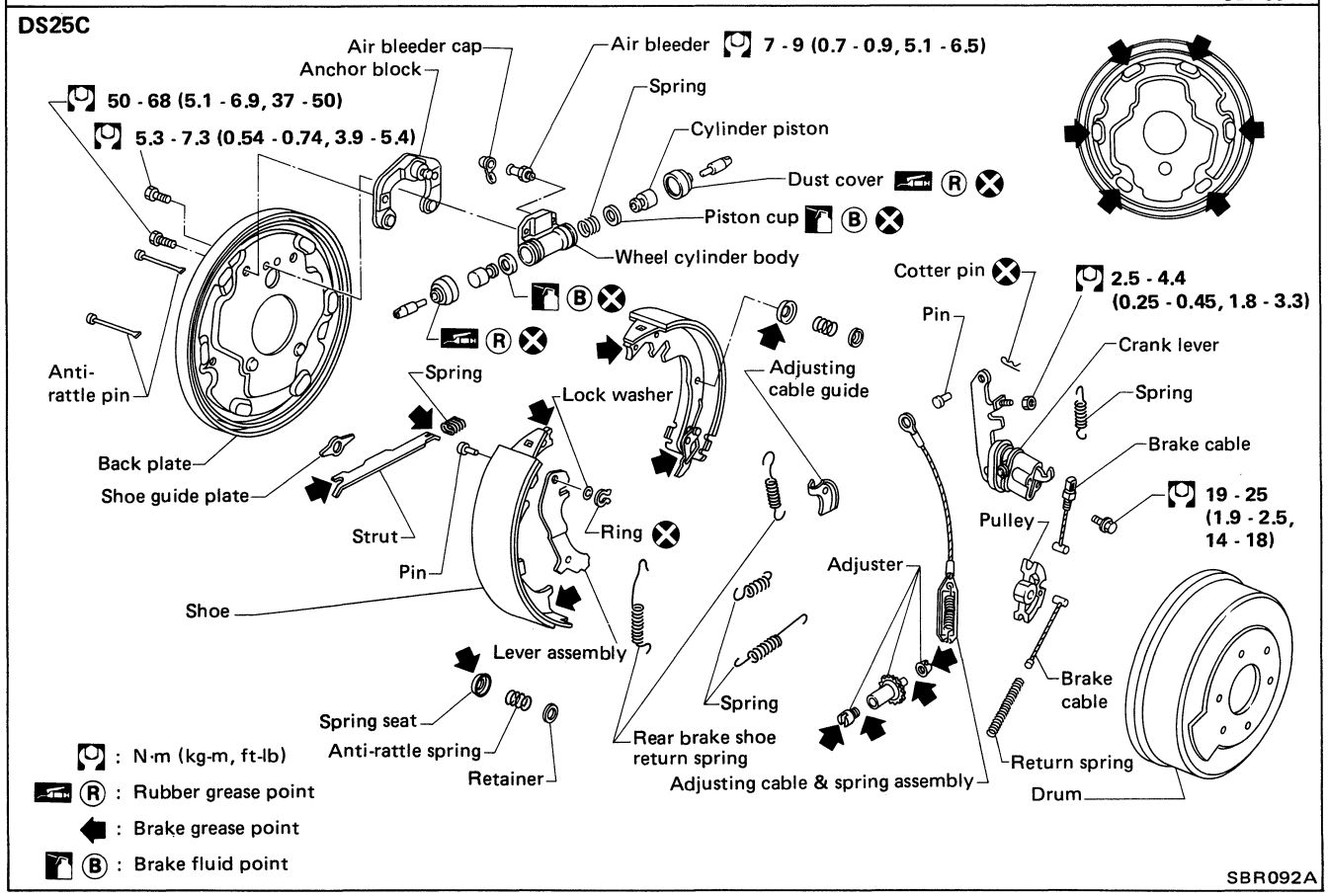

SBR090A

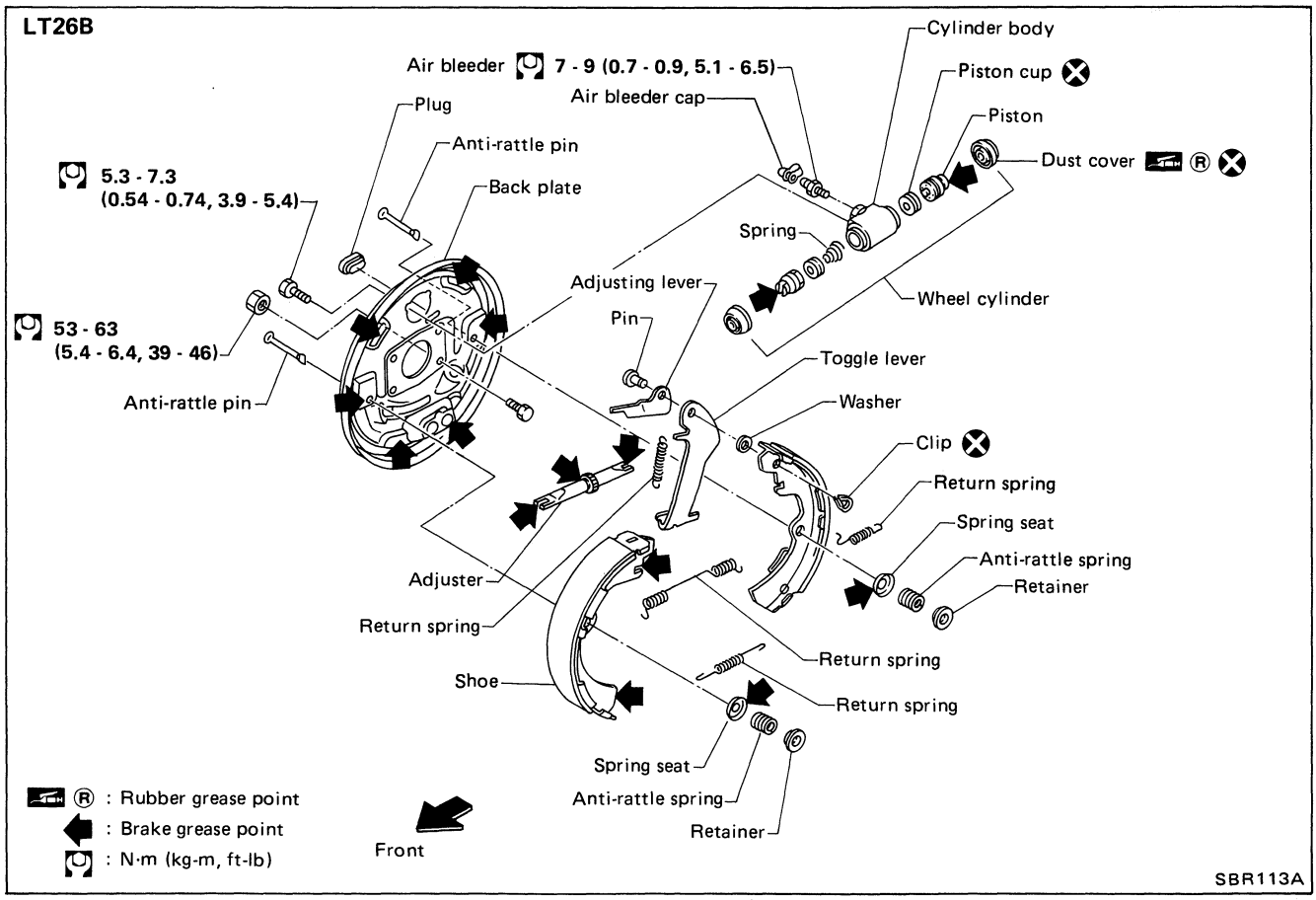
THICKNESS

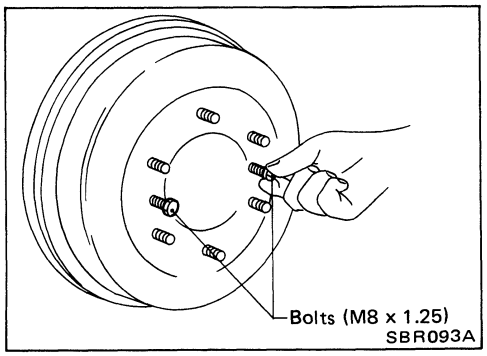
Rotor repair limit:

Minimum thickness
CL28VA 20.0 mm (0.787 in)
CL28VD 24.0 mm (0.945 in)


DS22, DS25B
5.3 - 7.3 (0.54 - 0.74, 3.9 - 5.4)
Anti-rattle pin
Back plate
Extension link
Pin
Bleeder cap
Air bleeder
7 - 9 (0.7 - 0.9, 5.1 - 6.5)
Wheel cylinder housing
Piston
Piston cup
Piston head
Dust cover
Web washer
Anti-rattle spring
Retainer
Shoe guide plate
Return spring
Adjuster cable
Cable guide
Single tire model
53 - 63 (5.4 - 6.4, 39 - 46)
Dual tire model
84 - 108 (8.6 - 11.0, 62 - 80)
Anchor block
50 - 68 (5.1 - 6.9, 37 - 50)
Spring
Toggle lever
Shoe
Spring seat
Return spring
Adjusting lever
Return spring
Adjuster
Front of vehicle
: Rubber grease point
: Brake grease point
: N·m (kg-m, ft-lb)
SBR091A

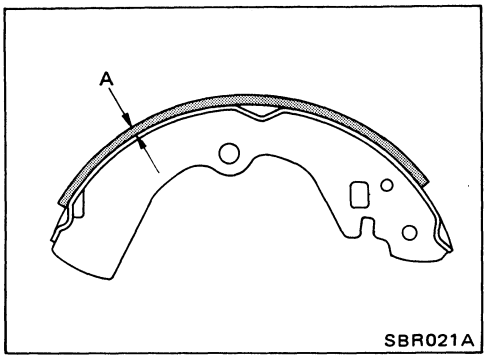

DS25C
Air bleeder cap
Anchor block
50 - 68 (5.1 - 6.9, 37 - 50)
5.3 - 7.3 (0.54 - 0.74, 3.9 - 5.4)
Air bleeder
7 - 9 (0.7 - 0.9, 5.1 - 6.5)
Spring
Cylinder piston
Dust cover
Piston cup
Wheel cylinder body
Cotter pin
2.5 - 4.4
(0.25 - 0.45, 1.8 - 3.3)
Pin
Crank lever
Spring
Brake cable
19 - 25
(1.9 - 2.5,
14 - 18)
Pulley
Anti-
rattle pin
Back plate
Shoe guide plate
Strut
Pin
Shoe
Spring
Lock washer
Adjusting
cable guide
Ring
Lever assembly
Spring seat
Anti-rattle spring
Retainer
Rear brake shoe
return spring
Spring
Adjuster
Adjusting cable & spring assembly
Brake
cable
Return spring
Drum
: N·m (kg-m, ft-lb)
: Rubber grease point
: Brake grease point
: Brake fluid point
SBR092A





Brake Drum Removal

- Release parking brake control lever fully.
- Tighten two bolts gradually if brake drum is hard to remove.



Shoe Replacement

- Measure lining thickness.

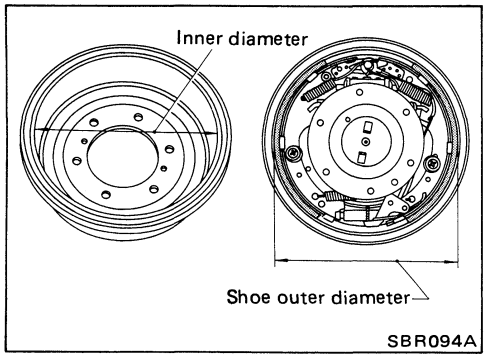
Lining wear limit (A):
1.5 mm (0.059 in)

Before installing new shoes, rotate nut until adjuster rod is at its shortest point.

After installation is completed, adjust shoe-to-drum clearance. Refer to Removal and Installation of Adjuster.

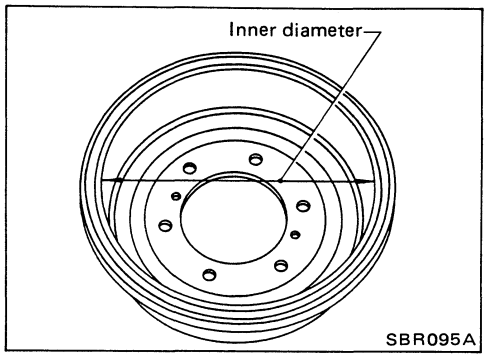
Wheel Cylinder Inspection

Check parts for score, wear or damage. Replace if any of the above conditions are observed.



Removal and Installation of Adjuster

When installing, measure inner diameter of the drum and adjust so that shoe outer diameter at its center is smaller than drum inner diameter by 0.25 to 0.4 mm (0.0098 to 0.0157 in) by rotating the adjuster. Then operate parking brake lever to adjust shoe clearance.



Drum Inspection

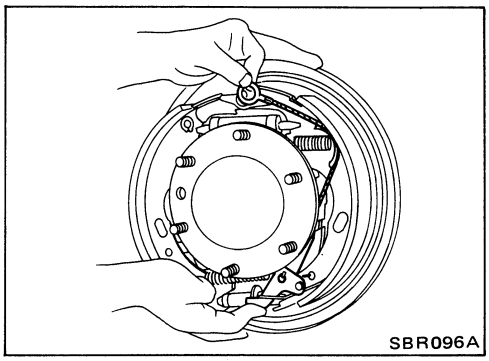
Standard inner diameter:
- **DS22 220.0 mm (8.66 in)**
- **DS25B, DS25C 254.0 mm (10.00 in)**
- **LT26B 260.0 mm (10.24 in)**

Maximum inner diameter:
- **DS22 221.5 mm (8.72 in)**
- **DS25B, DS25C 255.5 mm (10.06 in)**
- **LT26B 261.5 mm (10.30 in)**

Out-of-roundness (ellipticity):
- **0.03 mm (0.0012 in) or less**

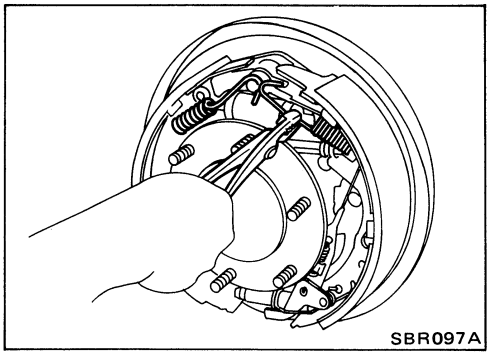
Radial runout (Total indicator reading):
- **0.05 mm (0.0020 in) or less**

- Contact surface should be finefinished with No. 120 to 150 emery paper.
- Using a drum racer, lathe brake drum if it shows score marks, partial wear or stepped wear.
- After brake drum has been completely reconditioned or replaced, check drum and shoes for proper contact pattern.


SBR096A

Shoe Installation

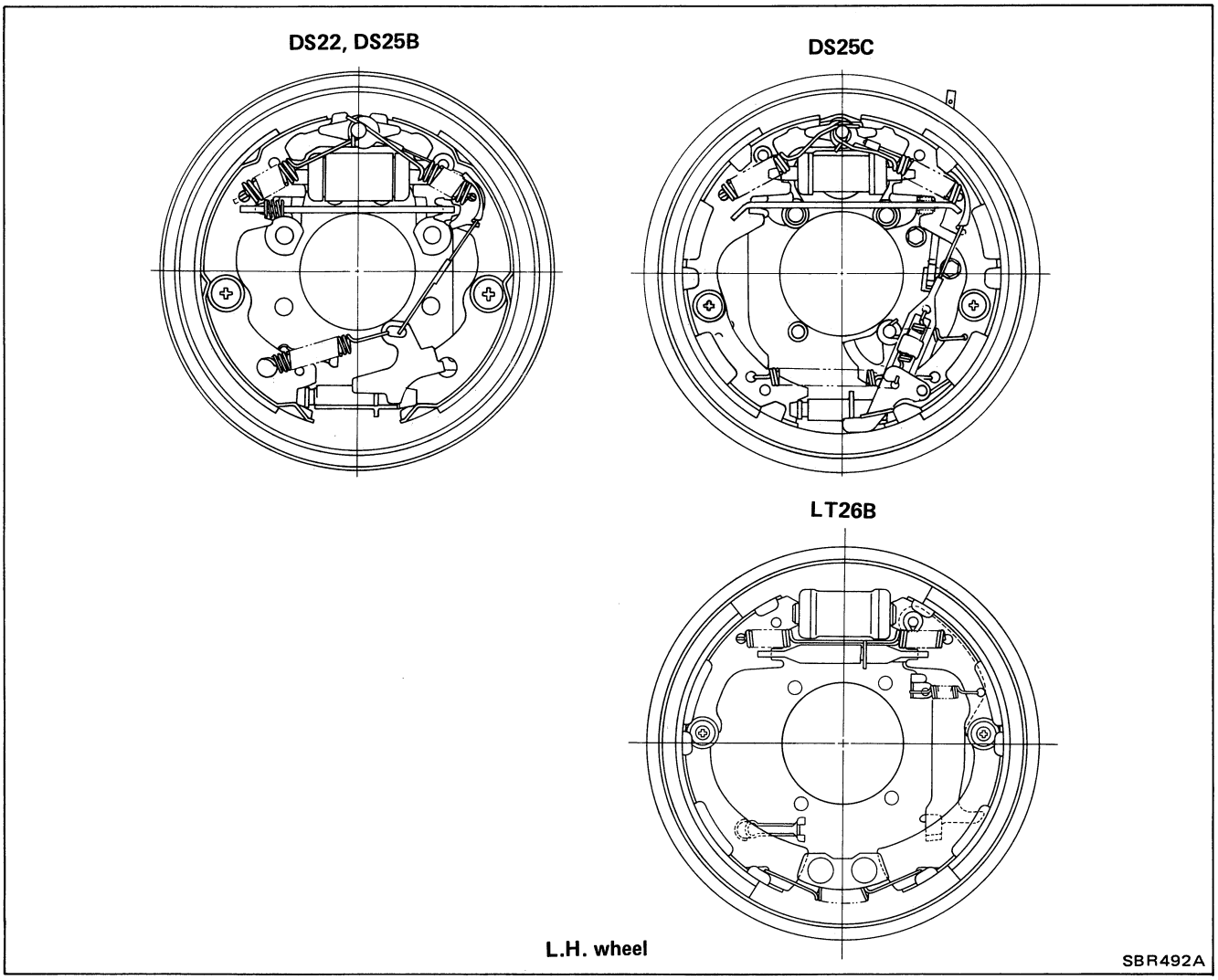
- Place adjuster cable by pulling adjusting lever upward.

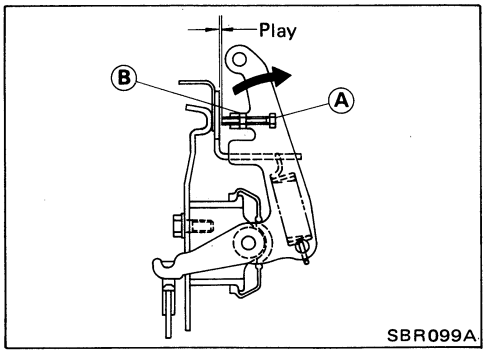

SBR097A

- Install return springs.

Shoe Installation (Cont'd)

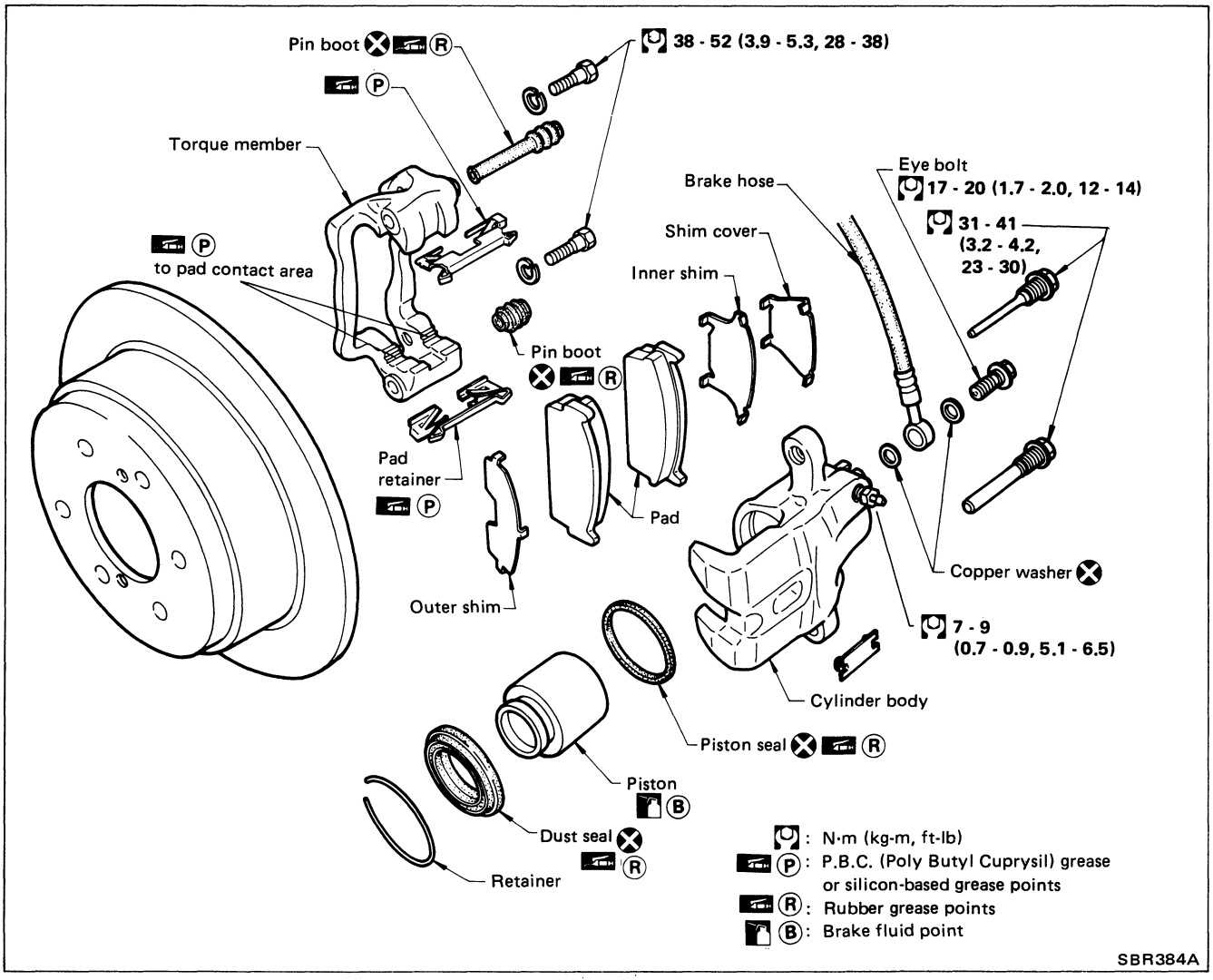
- Install all the parts by referring to the figure below.

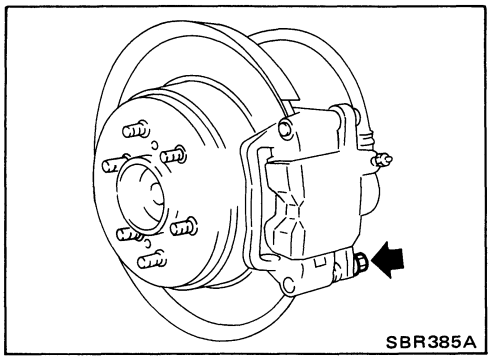




DS25C model

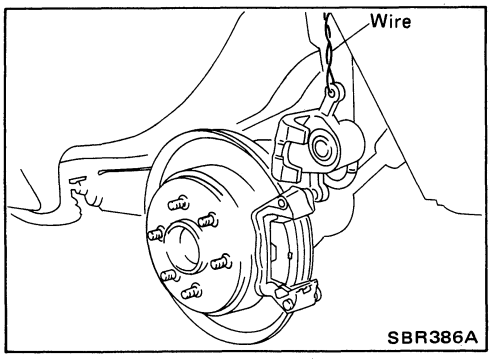
- After installing crank lever on back plate, make sure that there is no play between crank lever and back plate when pulling crank lever. If play exists, adjust bolt Ⓐ and lock nut Ⓑ.





Pad Replacement

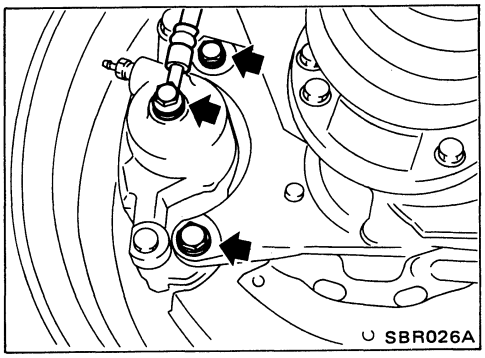
1. Remove guide pin.



2. Swing cylinder body upward. Then remove pad retainer and inner and outer shims.

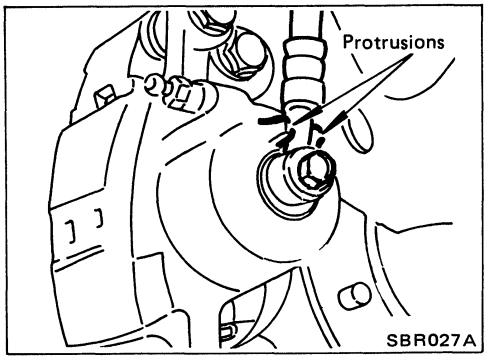
CAUTION:

- **When cylinder body is swung up, do not depress brake pedal because piston will pop out.**
- **Be careful not to damage dust seal or get oil on rotor. Always replace shims when replacing pads.**

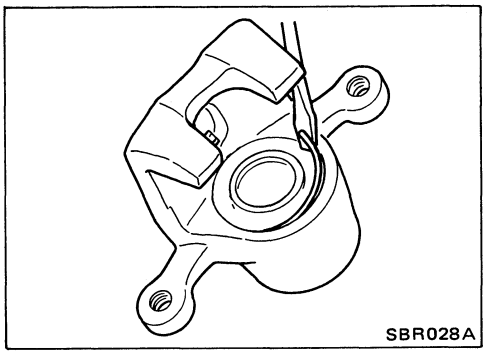


Removal and Installation

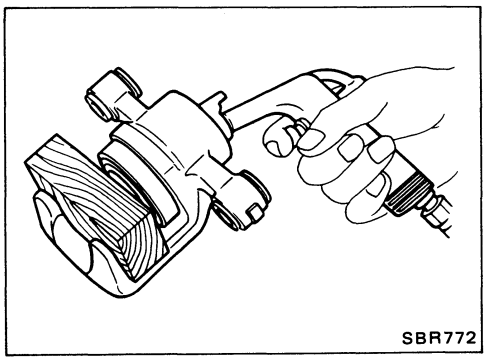
- Remove torque member fixing bolts and eye bolt.



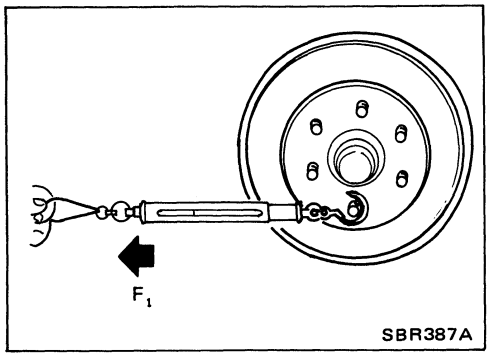
- Install brake hose to caliper securely.



- Remove retainer with a screwdriver.



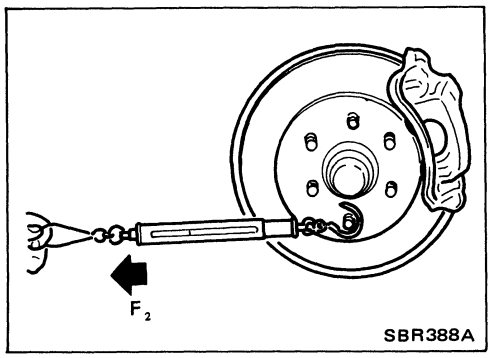
- Push out piston with dust seal with compressed air.



Inspection

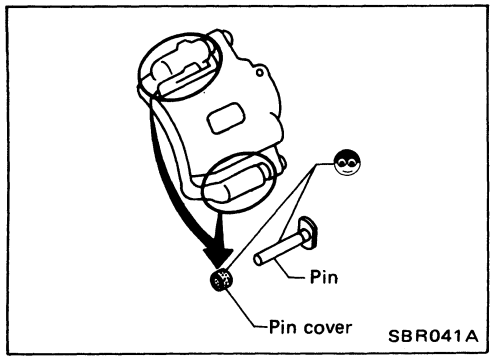
INSPECTION OF BRAKE DRAG FORCE

(1) Swing cylinder body upward.
(2) Make sure that wheel bearing is adjusted properly. Refer to section RA.
(3) Measure rotating force (F_1).



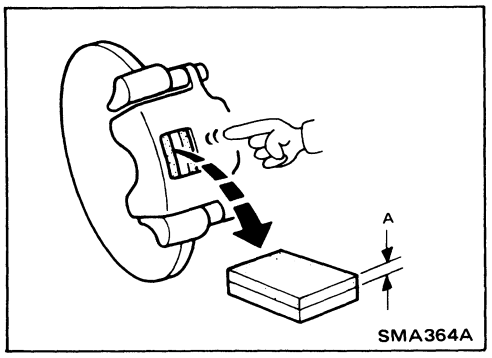
(4) Install caliper with pads to the original position.
(5) Depress brake pedal for 5 seconds.
(6) Release brake pedal, rotate disc rotor 10 revolutions.
(7) Measure rotating force (F_2).
(8) Calculate brake drag force by subtracting F_1 from F_2.

Maximum brake drag force ($F_2 - F_1$):
103.0 N (10.5 kg, 23.2 lb)



If it is not within specification, check pins and pin boots in caliper.

- Make sure that wheel bearing is adjusted properly.
- Disc pads and disc rotor must be dried.



DISC PAD

Check disc pad for wear or damage.

Pad wear limit (A):
2.0 mm (0.079 in)

CYLINDER BODY

- Check inside surface of cylinder body for score, rust, wear, damage or presence of foreign materials. If any of the above conditions are observed, replace cylinder body.
- Minor damage from rust of foreign materials may be eliminated by polishing surface with a fine emery paper. Replace cylinder body if necessary.

CAUTION:
Use brake fluid to clean. Never use mineral oil.

Inspection (Cont'd)

PISTON

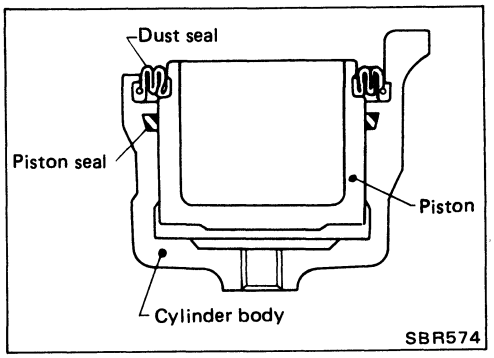
Check piston for score, rust, wear, damage or presence of foreign materials. Replace if any of the above conditions are observed.

CAUTION:

Piston sliding surface is plated. Do not polish with emery paper even if rust or foreign materials are stuck to sliding surface.

PIN, PIN BOLT, RETAINER, PISTON SEAL, DUST SEAL AND PIN BOOT

Check for wear, cracks or other damage. Replace if any of the above conditions are observed.



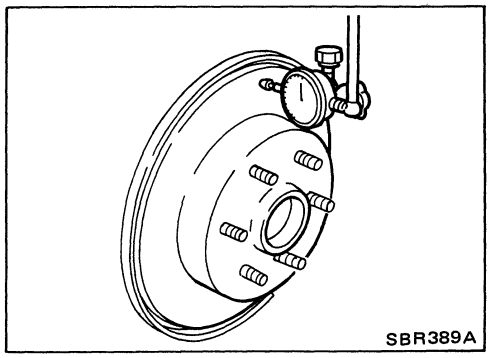
Assembly

- With dust seal fitted to piston, insert dust seal into groove on cylinder body and install piston.
- Properly secure dust seal.

Inspection

RUBBING SURFACE

Check rotor for roughness, cracks or chips. Repair or replace if necessary.


SBR389A

RUNOUT

Make sure that axial end play is within the specifications before measuring. Refer to section RA.

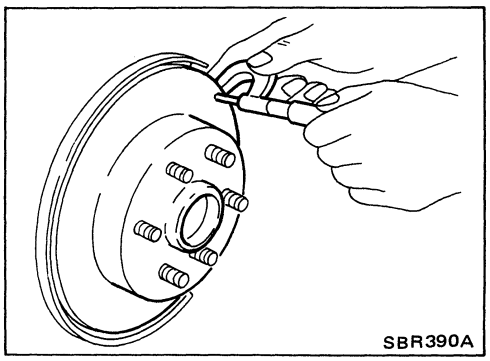
Then check runout with a dial gauge.

Rotor repair limit

Maximum runout

(Total indicator reading at center of rotor pad contact surface)

0.07 mm (0.0028 in)


SBR390A

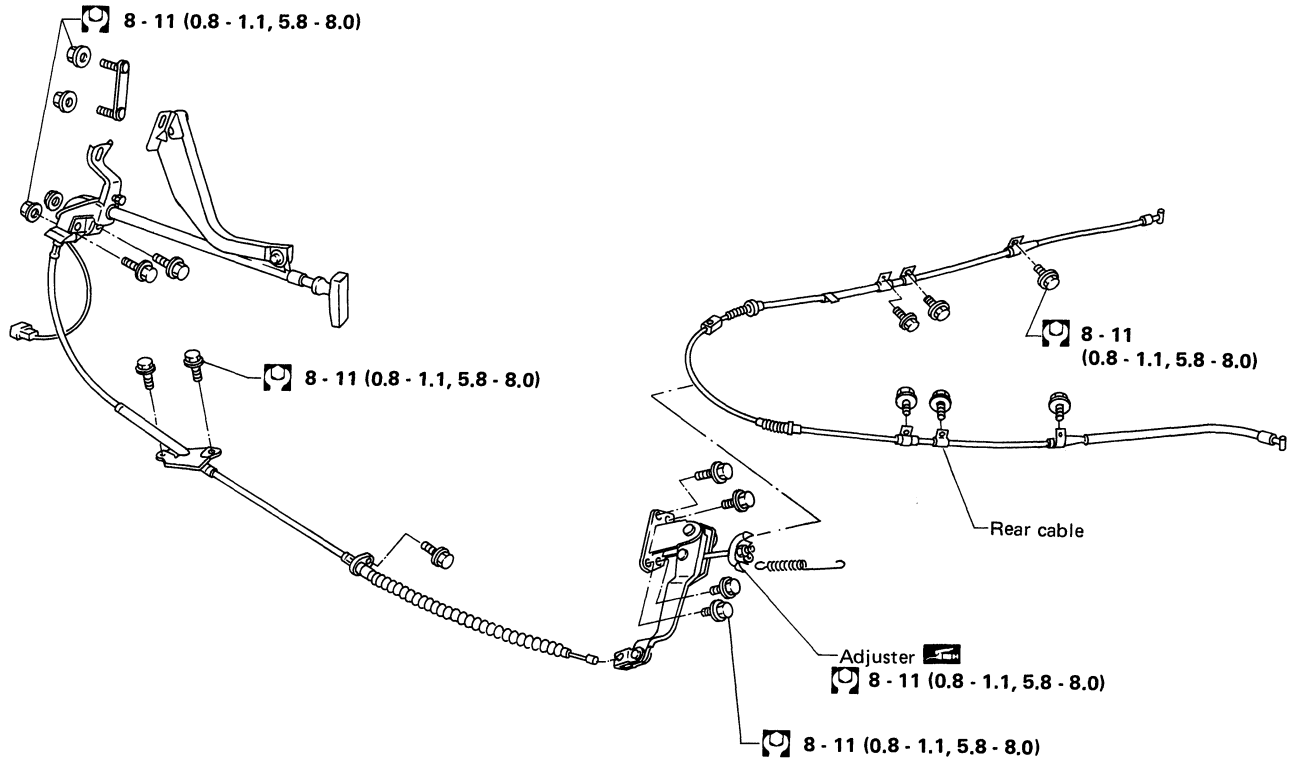
THICKNESS

Rotor repair limit:

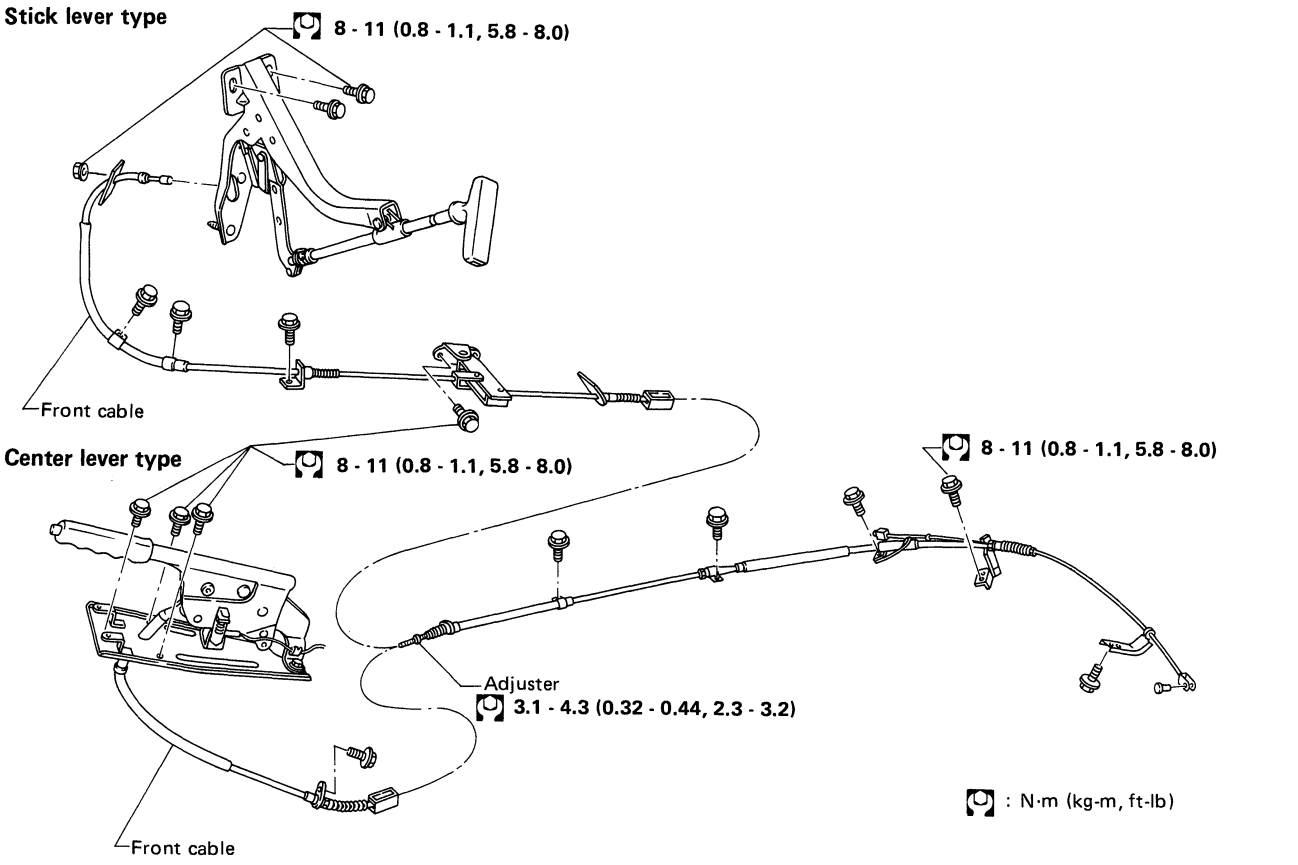
Minimum thickness

9.0 mm (0.354 in)

TRUCK-2WD

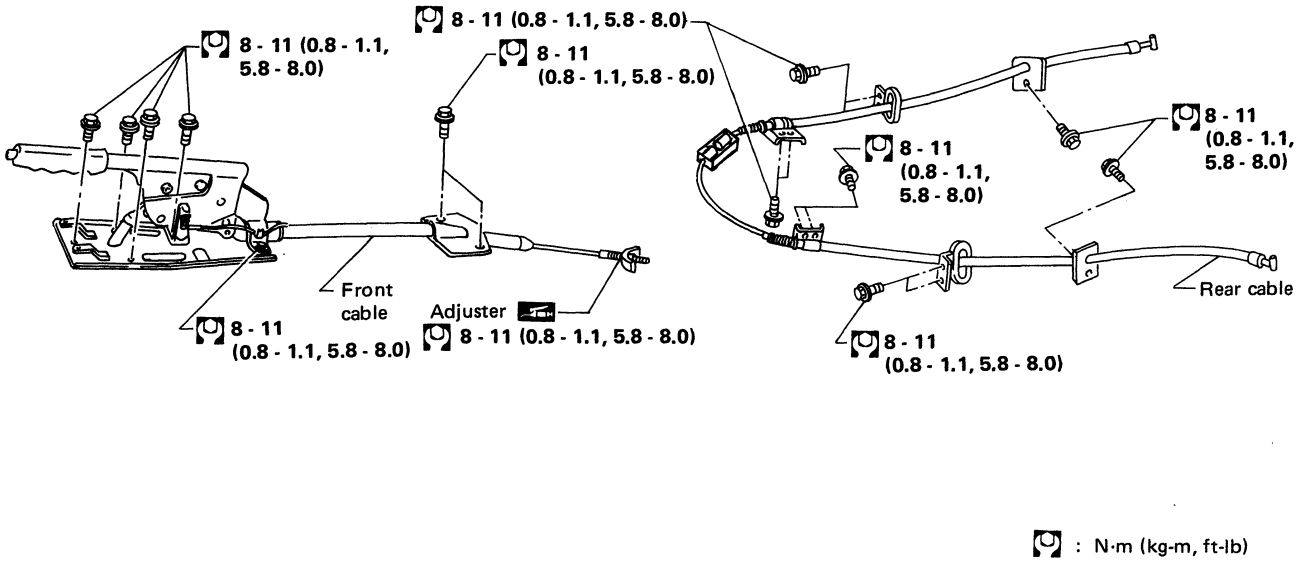


TRUCK-4WD



SBR100A

VAN & WAGON



Removal and Installation

- Be careful not to damage cable.
- Make sure there is no free play after installation.

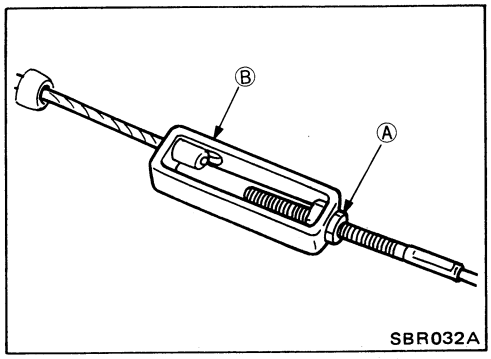
Inspection

1. Check control lever for wear or other damage. Replace if necessary.
2. Check wires for discontinuity or deterioration. Replace if necessary.
3. Check warning lamp and switch. Correct if necessary.
4. Check parts at each connecting portion and, if found deformed or damaged, replace.

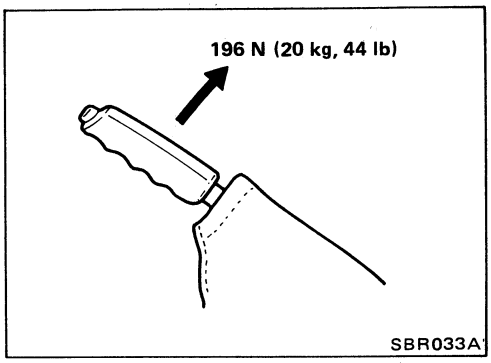
Adjustment

Adjust control lever stroke as follows:

Adjustment (Cont'd)



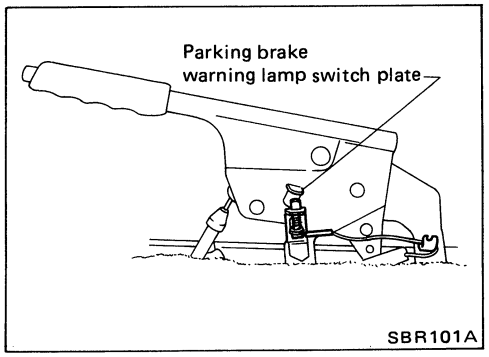
1. Loosen lock nut Ⓐ, rotate adjuster Ⓑ.
2. Tighten lock nut Ⓐ.



3. Pull control lever with specified amount of force. Check lever stroke and ensure smooth operation.

Number of notches:

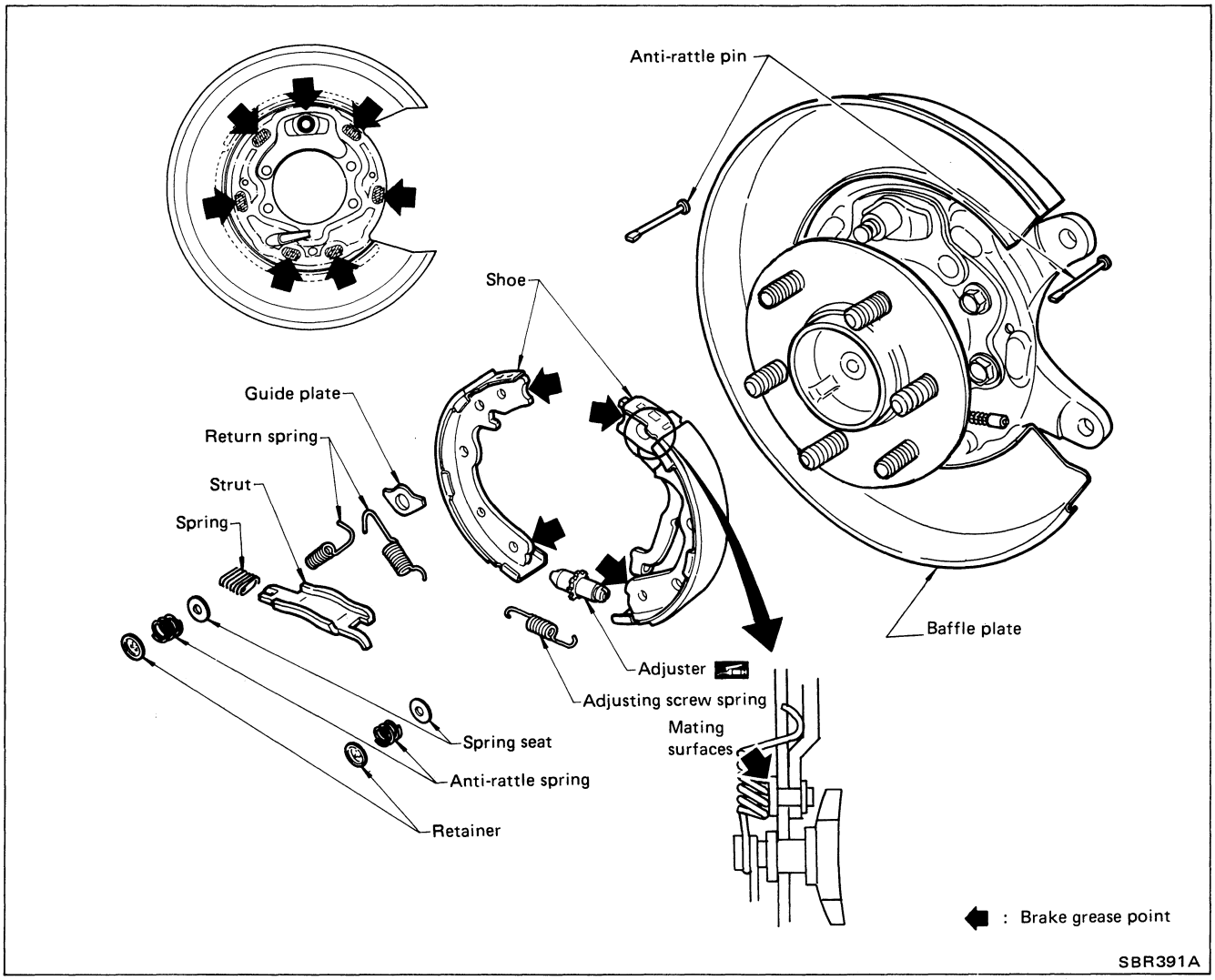
Truck	
Center lever type	**10 - 12**
Stick lever type	**10 - 12 (2WD)**
	9 - 11 (4WD)
Van & Wagon	
Center lever type	**7 - 9**

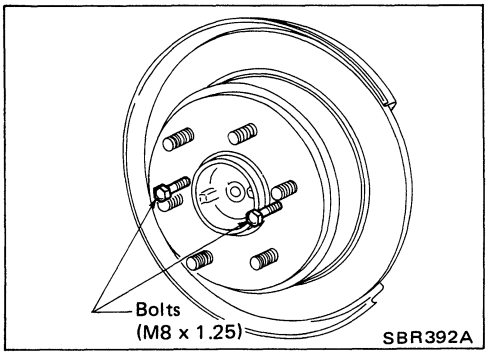


4. Bend parking brake warning lamp switch plate so that brake warning light comes on when ratchet at parking brake lever is pulled "A" notches and goes out when fully released.

Number of notches "A":

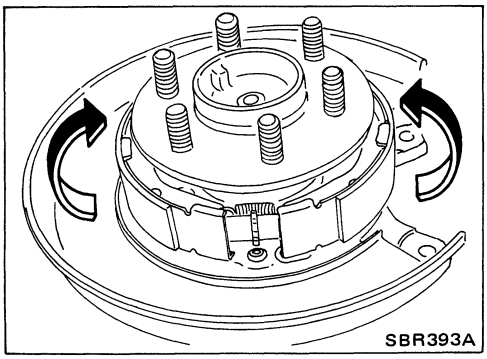
Truck	
Center lever type	**1**
Stick lever type	**2**
Van & Wagon	
Center lever type	**2**





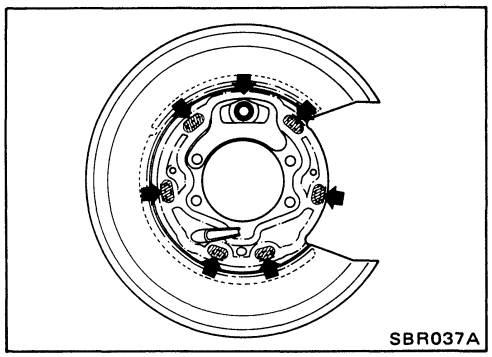
Shoe Replacement

1. Remove disc rotor (With parking drum brake).
   Tighten two bolts gradually if disc rotor is hard to remove.



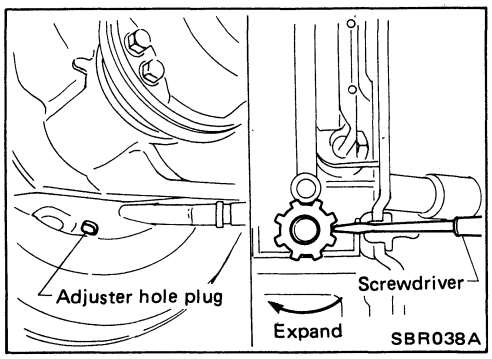
2. After removing retainer, remove spring by rotating shoes.
Be careful not to damage parking brake cable when separating it.

Shoe Replacement (Cont'd)


SBR037A

3. Apply brake grease to the contact areas shown at left.

Shoe Clearance Adjustment



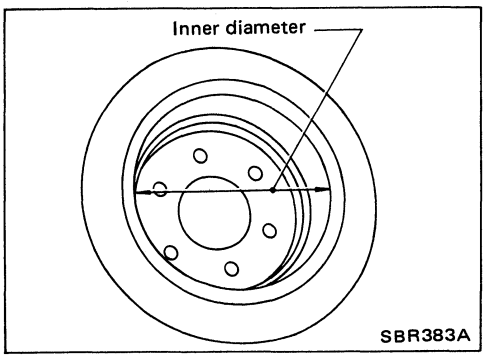
1. Remove adjuster hole plug, and turn down adjuster wheel with a screwdriver until shoe touches brake drum.

Make sure that parking control lever is released completely.

2. Return adjuster wheel 7 to 8 latches.
3. Install adjuster hole plug, and make sure that there is no drag between shoes and brake drum when rotating disc rotor.

Breaking in Drum and Lining

1. Set transfer lever in the "2H" position. Using either low or 2nd transmission speed, drive the unloaded vehicle at approximately 30 km/h (19 MPH) on a safe, level and dry road.
2. Depress the release button of parking brake lever, then pull the lever with a force of 98 N (10 kg, 22 lb).
3. While holding the lever back, continue to drive the vehicle 100 m (328 ft).
4. Repeat steps 1 through 3 two or three times.



Drum Inspection

Standard inner diameter:
190.0 mm (7.48 in)
Maximum inner diameter:
191.0 mm (7.52 in)
Out-of-roundness (ellipticity):
0.04 mm (0.0016 in)
Radial runout (Total indicator reading):
0.1 mm (0.004 in)

General Specifications

Model	2WD				4WD	4WD and 2WD
Engine	Z24i		VG30i		VG30i, Z24i	
Grade	Except STD Regular Bed	STD Regular Bed	Except Heavy Duty Cab & Chassis	Heavy Duty	Truck	Van & Wagon
Front brake						
Brake model	CL28VA		CL28VD			
Pad dimensions Width x thickness x length mm (in)	IN 43 x 11 x 126.5 (1.69 x 0.43 x 4.98) OUT 43 x 11 x 129 (1.69 x 0.43 x 5.08)		48.5 x 10 x 146.6 (1.909 x 0.39 x 5.77)			
Rotor outer diameter mm (in)	250 (9.84)		260 (10.24)		277 (10.91)	
Cylinder inner diameter mm (in)	60.6 (2.386)		42.8 (1.685) x 2			
Rear brake						
Brake model	LT26B			DS25B	DS25C	LT26B AD14VB*4 DS19HB*4
Cylinder inner diameter mm (in)	22.22 (7/8)		23.81 (15/16)	17.46 (11/16)		20.64 (13/16), 42.83 (1.6862) *4
Lining dimensions Width x thickness x length mm (in)	50 x 5.5 x 249.6 (1.97 x 0.217 x 9.83)			45 x 3.9 x 265.9 (1.77 x 0.154 x 10.47)	60 x 6 x 265.9 (2.36 x 0.24 x 10.47)	50 x 5.5 x 249.6 (1.97 x 0.217 x 9.83), 25.3 x 10 x 100.8 (0.996 x 0.39 x 3.97)*4, 30.0 x 3.0 x 182.3 (1.181 x 0.118 x 7.18)*4
Drum inner diameter /Rotor outer diameter mm (in)	260 (10.24)			254 (10.00)		260 (10.24), 286 (11.26)*4, 190 (7.48)*4
Master cylinder Inner diameter mm (in)	23.81 (15/16)		25.4 (1)	23.81 (15/16)		
Brake booster Model	M20T M195T	G23, M23	M195T, M20T			M195T M215T*4
Diaphragm diameter mm (in)	Pri 205 (8.07), 205 (8.07)*5 Sec 180 (7.09), 201 (7.91)*5	230 (9.06)	Pri 205 (8.07), 205 (8.07)*5 Sec 180 (7.09), 201 (7.91)*5			Pri 205 (8.07), 230 (9.06)*4 Sec 201 (7.91), 205 (8.07)*4
Control valve Type	P.V.*3		L.S.V.*1	L.S.V.*2	P.V.*3	
Split point x Reducing ratio kPa (kg/cm^2, psi) x ratio	2,452 (25, 356) x 0.1		(Variable) x 0.1	(Variable) x 0.23	1,961 (20, 284) x 0.1	2,942 (30, 427) x 0.2, 3,923 (40, 569) x 0.4*4

*1: Load sensing valve (A-type)
*2: Load sensing valve (B-type)
*3: Proportioning valve (within master cylinder)
*4: Option as sports package DS19HB for parking brake
*5: Model M20T type

Inspection and Adjustment

BRAKE PEDAL

Model	A/T	M/T
Free height "H" mm (in)	212 - 222 (8.35 - 8.74)	209 - 219 (8.23 - 8.62)
Depressed height "D" [Under force of 490 N (50 kg, 110 lb) with engine running] mm (in)	120 (4.72) or more	
Clearance between pedal stopper and threaded end of stop lamp switch "C_1" mm (in)	0.3 - 1.0 (0.012 - 0.039)	
Clearance between pedal stopper and threaded end of A.S.C.D. switch "C_2" mm (in)	0.3 - 1.0 (0.012 - 0.039)	
Pedal free play "A" mm (in)	1 - 3 (0.04 - 0.12)	

PARKING BRAKE

Type	Center lever type	Stick lever type
Number of notches when warning lamp switch comes on	2*1 2*2	1
Number of notches [When pulled under force of 196 N (20 kg, 44 lb)]	10 - 12*1 7 - 9*2	10 - 12 (2WD) 9 - 11 (4WD)

*1: Truck model
*2: Van & Wagon model

DISC BRAKE

Brake model	CL28VA	CL28VD	AD14VB
Pad replacement limit Minimum thickness mm (in)	2.0 (0.079)		
Rotor repair limit Maximum runout mm (in)	0.07 (0.0028)		
Minimum thickness mm (in)	20.0 (0.787)	24.0 (0.945)	16.0 (0.630)

DRUM BRAKE

Brake model	DS25B, DS25C	DS22	LT26B	DS19HB
Lining replacement limit Minimum thickness mm (in)	1.5 (0.059)			
Drum repair limit Inner diameter (Max.) mm (in)	255.5 (10.06)	221.5 (8.72)	261.5 (10.30)	191.0 (7.52)
Out-of-round mm (in)	0.03 (0.0012) or less			0.04 (0.0016)
Runout mm (in)	0.05 (0.0020) or less			0.1 (0.004)

Tightening Torque

Item	N·m	kg-m	ft-lb
Brake pedal			
Pedal bracket to body	8 - 11	0.8 - 1.1	5.8 - 8.0
Stop lamp switch lock nut	12 - 15	1.2 - 1.5	9 - 11
Brake booster			
Brake booster to body	8 - 11	0.8 - 1.1	5.8 - 8.0
Input rod lock nut	16 - 22	1.6 - 2.2	12 - 16
Brake booster to master cylinder	8 - 11	0.8 - 1.1	5.8 - 8.0
Three-way connector			
Three-way connector to brake tube	17 - 20	1.7 - 2.0	12 - 14
Three-way connector mounting bolt	5 - 7	0.5 - 0.7	3.6 - 5.1
Brake tube flare nut	15 - 18	1.5 - 1.8	11 - 13
Wheel cylinder air bleeder	7 - 9	0.7 - 0.9	5.1 - 6.5
Front disc brake			
Union bolt	17 - 20	1.7 - 2.0	12 - 14
Disc rotor to wheel hub	49 - 69	5.0 - 7.0	36 - 51
Torque member fixing bolt	72 - 97	7.3 - 9.9	53 - 72
Torque member to cylinder body	22 - 31	2.2 - 3.2	16 - 23
Baffle plate fixing bolt			
DS22	3.4 - 4.9	0.35 - 0.5	2.5 - 3.6
DS25B, LT26B, DS25C	6 - 11	0.6 - 1.1	4.3 - 8.0
Rear drum brake			
Wheel cylinder to back plate	5.3 - 7.3	0.54 - 0.74	3.9 - 5.4
Rear drum anchor block fixing bolt	50 - 68	5.1 - 6.9	37 - 50
Back plate fixing			
Single tire model	53 - 63	5.4 - 6.4	39 - 46
Dual tire model	84 - 108	8.6 - 11.0	62 - 80
Lock nut of crank lever	2.5 - 4.4	0.25 - 0.45	1.8 - 3.3
Rear disc brake			
Torque member fixing bolt	54 - 64	5.5 - 6.5	40 - 47
Torque member to cylinder body	22 - 31	2.2 - 3.2	16 - 23
Union bolt	17 - 20	1.7 - 2.0	12 - 14
Parking brake			
Control lever to body			
Center lever type	8 - 11	0.8 - 1.1	5.8 - 8.0
Stick lever type	8 - 11	0.8 - 1.1	5.8 - 8.0
Adjuster lock nut			
2WD	8 - 11	0.8 - 1.1	5.8 - 8.0
4WD (Truck)	3.1 - 4.3	0.32 - 0.44	2.3 - 3.2
(Van & Wagon)	8 - 11	0.8 - 1.1	5.8 - 8.0
Front cable clamp to body			
Center lever type	8 - 11	0.8 - 1.1	5.8 - 8.0
Stick lever type	8 - 11	0.8 - 1.1	5.8 - 8.0
Parking brake assembly fixing bolt	53 - 63	5.4 - 6.4	39 - 46
Crank lever support fixing bolt	19 - 25	1.9 - 2.5	14 - 18
L.S.V. (A-type)			
L.S.V. bracket to side member	16 - 22	1.6 - 2.2	12 - 16
L.S.V. mounting bolt	10 - 15	1.0 - 1.5	7 - 11
Air bleeder	3 - 10	0.3 - 1.0	2.2 - 7.2
L.S.V. (B-type)			
L.S.V. bracket to axle case	17 - 21	1.7 - 2.1	12 - 15
L.S.V. mounting bolt	17 - 21	1.7 - 2.1	12 - 15
Air bleeder	6 - 9	0.6 - 0.9	4.3 - 6.5