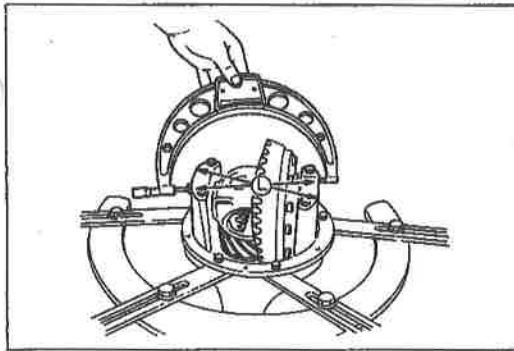


STEERING SYSTEM

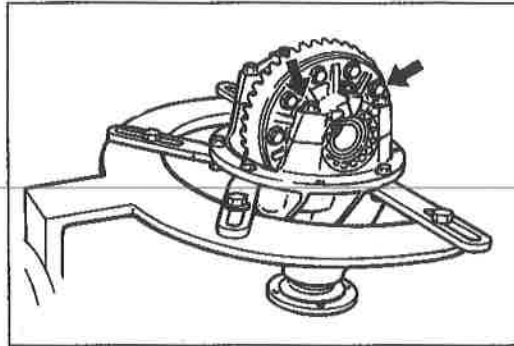
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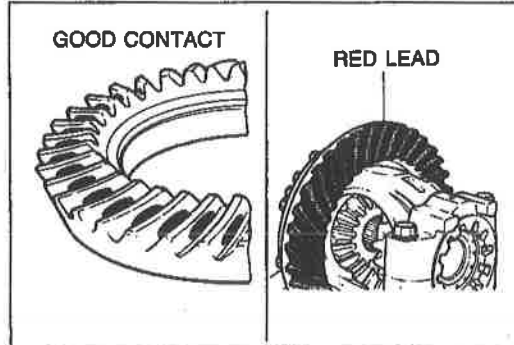
DIFFERENTIAL (FRONT AND REAR)



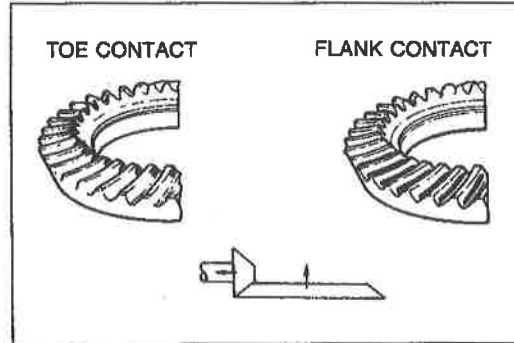
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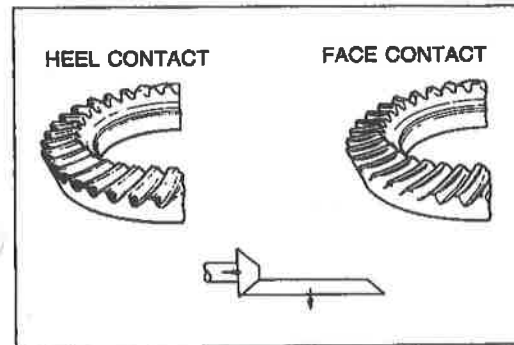
2BU0MX-056



9BU0MX-148



4EG09X-067



5BU08X-071

- (4) After adjusting the backlash, tighten the adjustment screws equally until the distance between both pilot sections on the bearing caps becomes the standard distance (L).

Standard distance

M-size differential:

185.43—185.50mm (7.3004—7.3031 in)

P-size differential:

204.43—204.50mm (8.0484—8.0512 in)

Note

When adjusting the differential bearing preload, be careful not to affect the backlash of the drive pinion gear and ring gear.

- (5) Tighten the bearing cap bolts to the specified torque.

Tightening torque

M-size differential:

37—52 N·m (3.8—5.3 m·kg, 27—38 ft·lb)

P-size differential:

73—107 N·m (7.4—10.9 m·kg, 54—79 ft·lb)

21. The inspection and adjustment procedure is as follows:

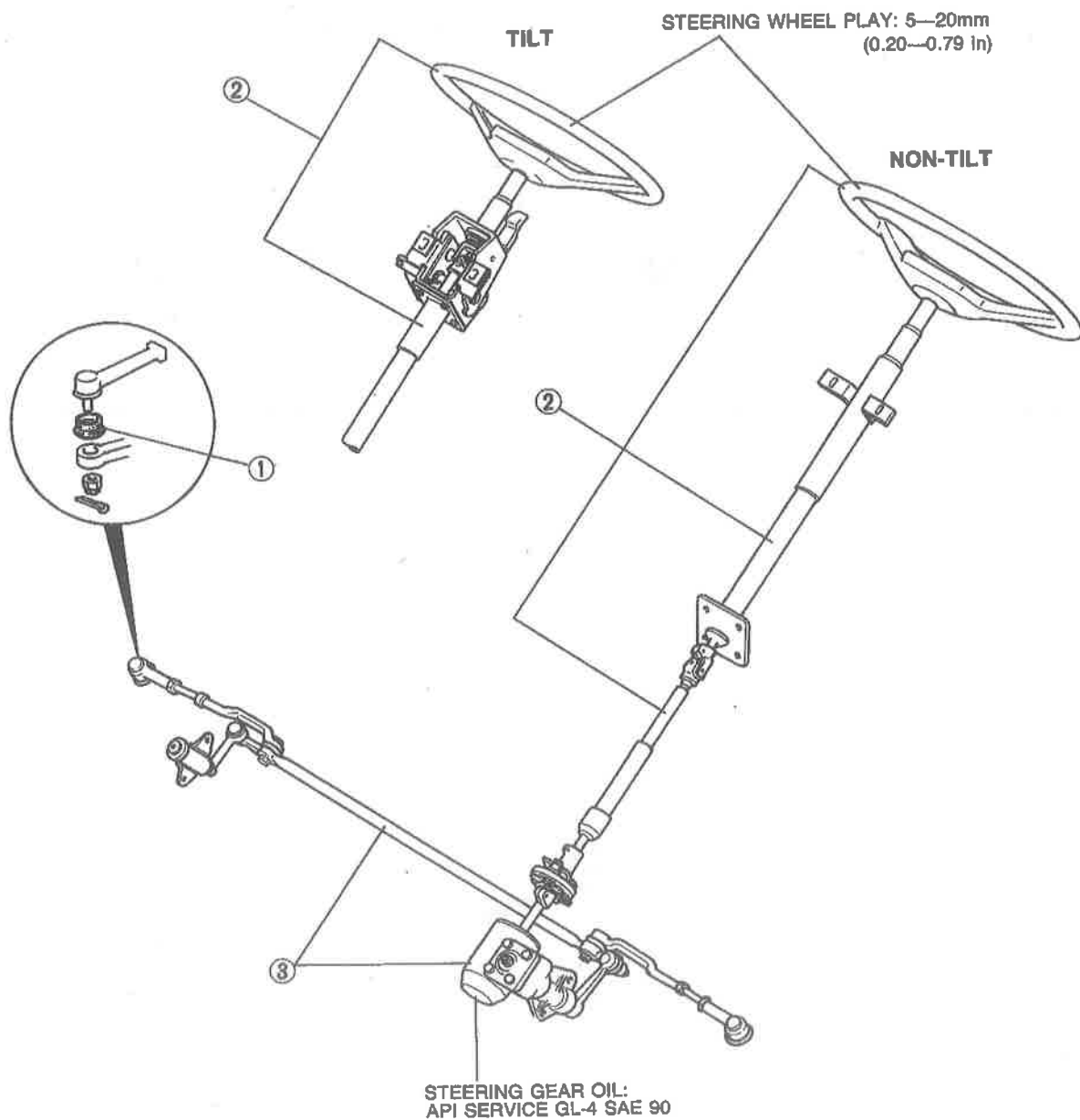
- (1) Coat both surfaces of 6—8 teeth of the ring gear uniformly with a thin coat of red lead.
- (2) While moving the ring gear back and forth by hand, rotate the drive pinion several times and check the tooth contact.
- (3) If the tooth contact is correct, wipe off the coating of red lead.
- (4) If it is not correct, adjust the pinion height and then the backlash.

- (a) Toe-and-flank contact
Replace the spacer with a thinner one, and move the drive pinion outward.

- (b) Heel-and-face contact
Replace the spacer with a thicker one, and bring the drive pinion in closer.

INDEX

B2200 MANUAL STEERING

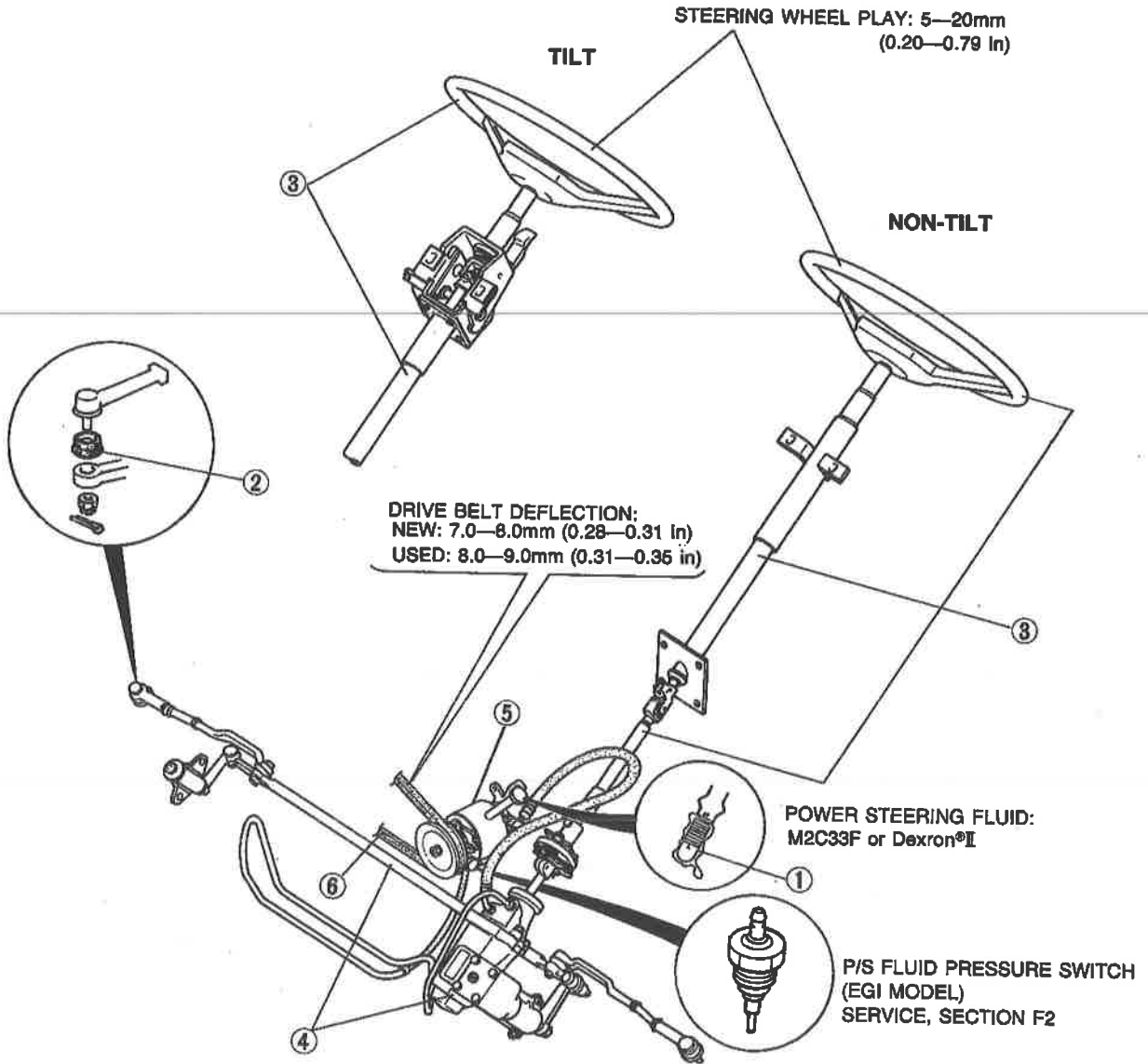


OBUONX-002

1. Boot	
Replacement	page N- 7
2. Steering wheel and column	
On-vehicle inspection	page N- 9
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3. Steering gear and linkage	
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B2200 POWER STEERING

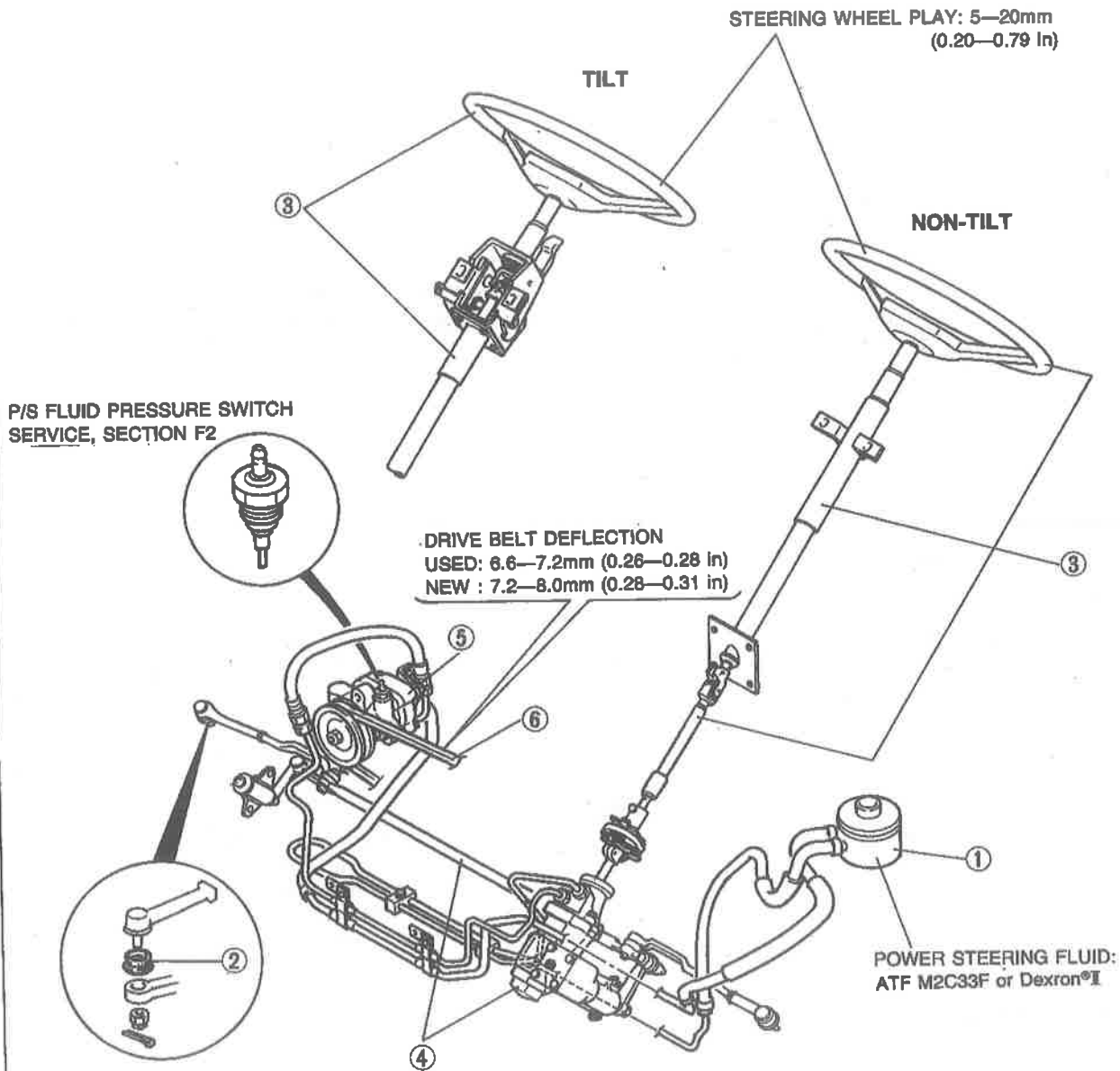


- 1. Power steering fluid
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- 4. Steering gear and linkage
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B2800I POWER STEERING



1BU0NX-003

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- 6. Drive belt
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OUTLINE

SPECIFICATIONS

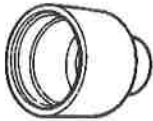

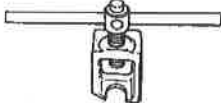



Item	Model	B2200		B2600i
		Manual	Power	Power
Steering wheel	Outer diameter	mm (in)		
	Lock-to-lock	turns		
Steering shaft and joint	Shaft type	Collapsible, non-tilt or tilt		
	Joint type	Cross-joint and rubber coupling		
	Tilt stroke	mm (in)		
Steering gear	Type	Ball nut		
	Gear ratio	21—25 : 1		
Oil	Type	API service GL-4 SAE 90		
	Capacity*	liters (US qt, Imp qt)		
Power steering	Assist type	—		
		Engine speed sensing		

* Power steering: complete system

2BU0NX-001

MANUAL STEERING

PREPARATION

49 1243 785 Installer, dust boot		49 0118 850C Puller, ball joint		49 0223 695E Puller, pitman arm	
49 1391 580 Wrench, locknut		49 UB39 585A Adjust wrench		49 0180 510B Attachment, steering worm bearing preload measurement	

2BU0NX-029

N

TROUBLESHOOTING GUIDE

Problem	Possible Cause	Remedy	Page
Steering "heavy"	Poor lubrication of or foreign material in steering ball joints	Lubricate or replace	N- 7
	Poor lubrication of or foreign material in upper or lower arm ball joints	Lubricate or replace	Section R
	Stuck or damaged steering ball joints	Replace	N- 7
	Stuck or damaged upper or lower arm ball joints	Replace	Section R
	Improperly adjusted steering worm shaft preload	Adjust	N-16
	Damaged steering gear	Replace	N-12
	Malfunctioning steering shaft joint	Replace	N-10
	Improperly adjusted wheel alignment	Adjust	Section R
	Malfunctioning steering gear	Repair or replace	N-12
	Incorrect tire pressures	Adjust	Section Q
Insufficient oil in steering gear box	Lubricate	N-12	
Steering wheel effort uneven	Malfunctioning steering gear	Repair or replace	N-12
	Steering shaft contacting something	Repair or replace	N-10
	Steering linkage not operating smoothly	Repair or replace	N-12

TROUBLESHOOTING GUIDE (Cont'd)

Problem	Possible Cause	Remedy	Page
Excessive steering wheel play	Improperly adjusted front wheel bearing preload Worn steering gear Worn or damaged steering shaft joints Loose gear box mounting bolts Improperly adjusted steering gear backlash	Adjust Replace Replace Tighten Adjust	Section M N-12 N-10 N-12 N-17
Steering wheel pulls to one side	Deformed steering linkage Incorrect tire pressures Unevenly worn tires Weakened front spring Worn or damaged stabilizer Dragging brake Deformed knuckle arm Improperly adjusted wheel alignment Improperly adjusted front wheel bearing preload	Replace Adjust Replace Replace Replace Repair Replace Adjust Adjust	N-12 Section Q — Section R Section R — Section M Section R Section M
Poor steering wheel return	Incorrect tire pressures Stuck or damaged steering ball joints Stuck or damaged upper or lower arm ball joints Improperly adjusted front wheel alignment Improperly adjusted steering worm shaft preload Steering shaft contacting something	Adjust Replace Replace Adjust Adjust Repair or replace	Section Q N- 7 Section R Section R N-16 N-10
General instability while driving	Deformed steering linkage Incorrect tire pressures Damaged or unbalanced wheel Worn or damaged steering shaft joints Improperly adjusted steering worm shaft preload Weakened front spring Worn or damaged stabilizer Malfunctioning shock absorber Improperly adjusted wheel alignment Improperly adjusted wheel bearing preload	Replace Adjust Adjust or replace Replace Adjust Replace Replace Replace Adjust Adjust	N-12 Section Q Section Q N-10 N-16 Section R Section R Section R Section R Section R
"Shimmy" occurs (Steering wheel vibrates left/right)	Deformed steering linkage Loose gear box mounting bolts Stuck or damaged steering ball joints Stuck or damaged upper or lower arm ball joints Excessive tire and wheel runout Loose lug nuts Unbalanced wheel Incorrect tire pressures Unevenly worn tires Malfunctioning shock absorber Loose shock absorber mounting bolts Cracked or worn suspension bushings Damaged or worn front wheel bearing Improperly adjusted front wheel alignment	Replace Tighten Replace Replace Replace Tighten Adjust or replace Adjust Replace Replace Tighten Replace Replace Adjust	N-12 N-12 N- 7 Section R — Section Q Section Q Section Q — Section R Section R Section R Section M Section R
Abnormal noise from steering system	Improperly adjusted steering gear box backlash Loose steering gear box Malfunction inside steering gear Obstruction near steering column Loose steering linkage Worn steering shaft joints	Adjust Tighten Replace Repair or replace Tighten or replace Replace	N-17 N-12 N-12 — N-12 N-10

0BU0NX-005

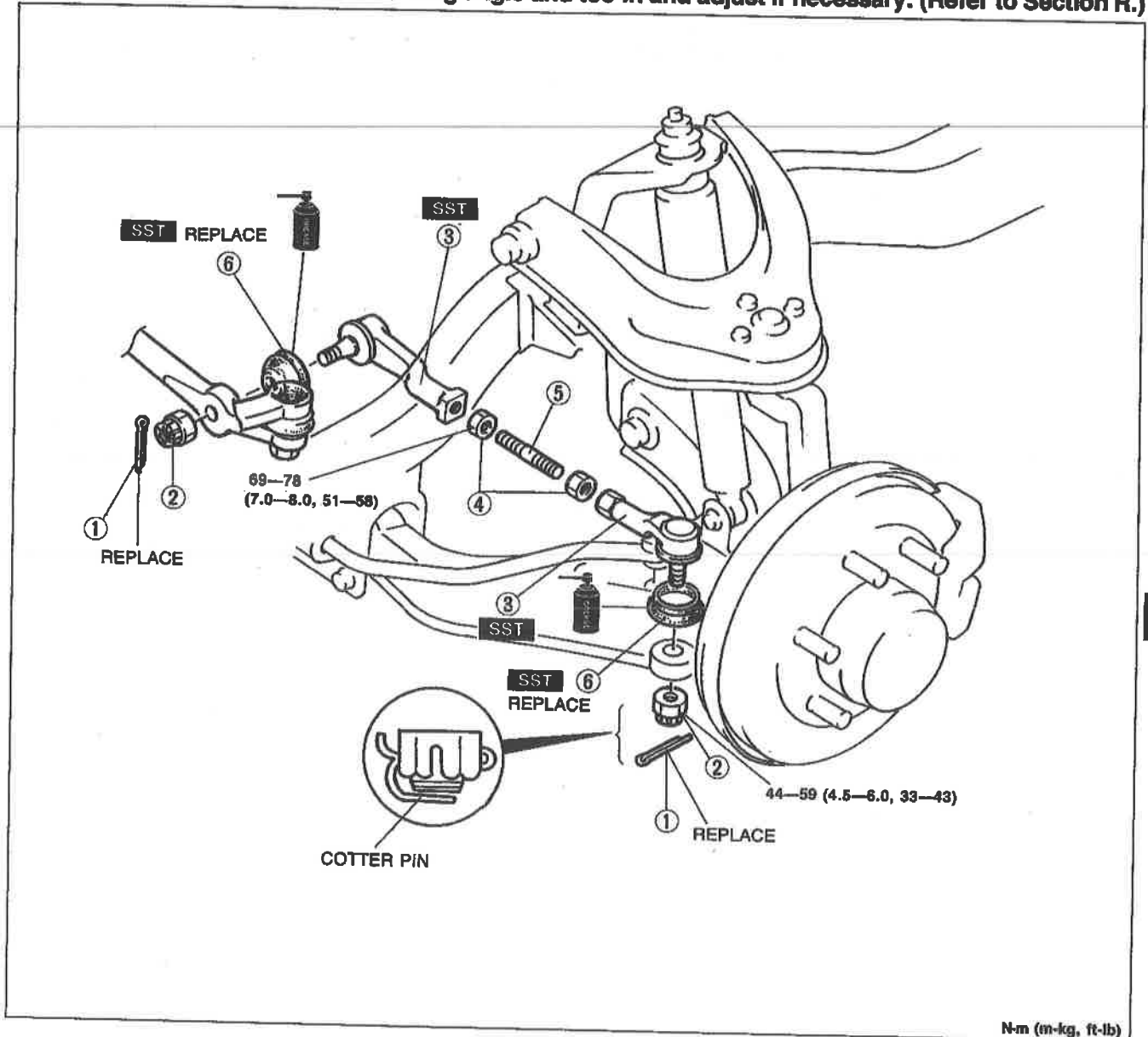
**BOOT
Replacement**

1. Loosen the wheel lug nuts.
2. Jack up the front of the vehicle and support it with safety stands.
3. Remove the wheel.
4. Remove the ball joint boot in the order shown in the figure, referring to **Removal Note**.
5. Install a new boot in the reverse order of removal, referring to **Installation Note**.
6. Install the wheel.

**Tighten torque: Non-styled wheel 88—118 N·m (9—12 m·kg, 65—87 ft·lb)
 Styled wheel 118—147 N·m (12—15 m·kg, 87—108 ft·lb)**

Note

After replacement, check the turning angle and toe-in and adjust if necessary. (Refer to Section R.)



N·m (m·kg, ft·lb)
 2BU0NX-002

1. Cotter pin
2. Nut
3. Ball joint (Inner or outer)
 Removal Note page N-8
4. Locknut

5. Tie rod
6. Ball joint boot (Inner or outer)
 Removal Note page N-8
 Installation Note..... page N-8

Removal note**Ball joint (Inner or outer)**

1. With the nut protecting the ball joint stud, separate the ball joint from the steering knuckle or from the center link with the **SST**.

2. Mark the locknut and the tie-rod for reference during installation.
3. Loosen the locknut and remove the ball joint from the tie rod.

Ball joint boot (Inner or outer)

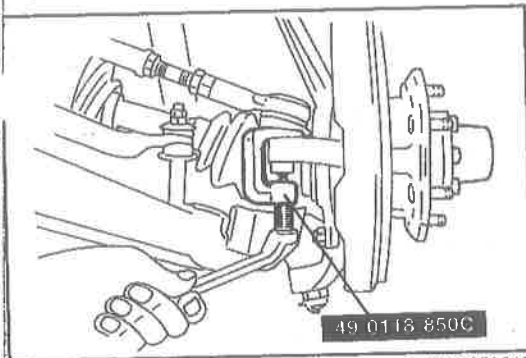
Secure the ball joint in a vise. Place a chisel against the boot and hold it at the angle shown. Remove the boot by tapping with a hammer.

Caution

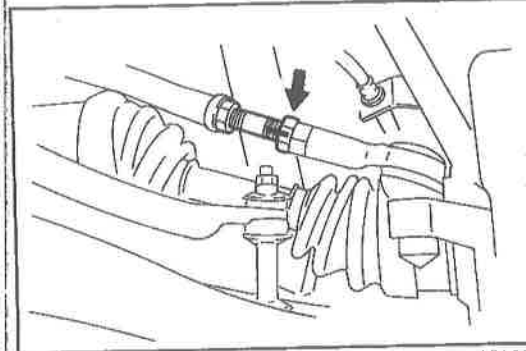
Be careful not to scar the area where the boot attaches to the ball joint.

Installation note**Ball joint boot (Inner or outer)**

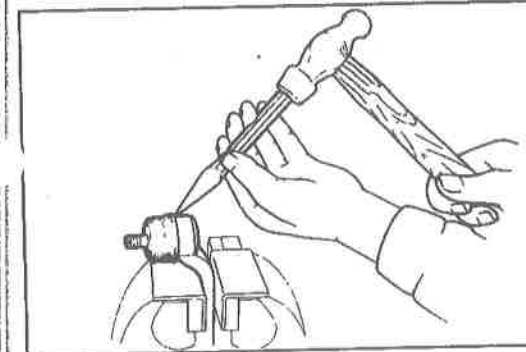
1. Wipe away the grease on ball stud.
2. Put a small amount of grease (lithium base, NLGI No.2) into the new boot and set it onto the ball joint. Press the boot onto the ball joint with the **SST**.
3. Wipe away any grease that has been expelled from the boot.



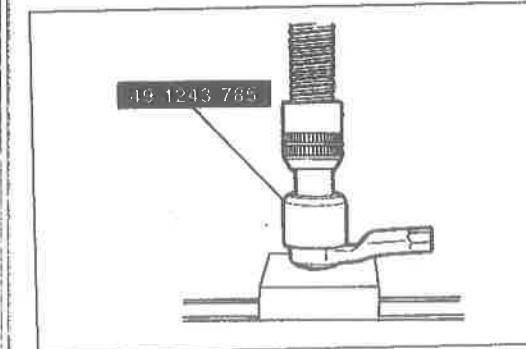
9BU0NX-010



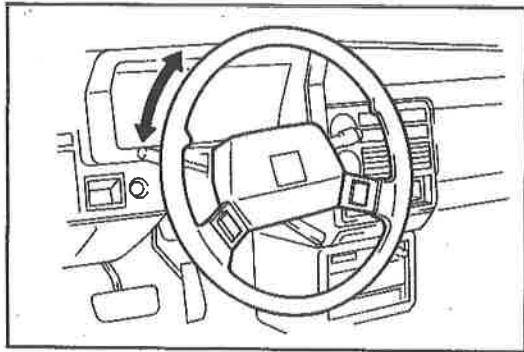
2BU0NX-030



9BU0NX-012



2BU0NX-003



9BU0NX-030

STEERING WHEEL AND COLUMN

On-vehicle Inspection

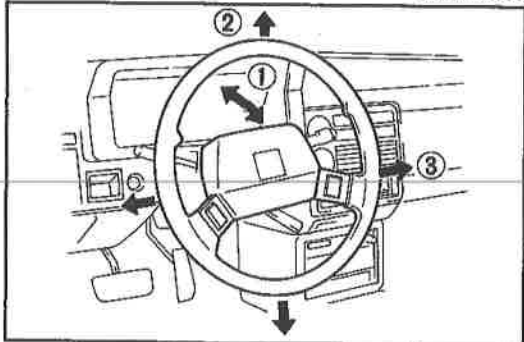
Steering wheel play

With the wheels in the straight-ahead position, gently turn the steering wheel to the left and right to determine if play is within specification.

Play: 5—20mm (0.20—0.79 in)

Note

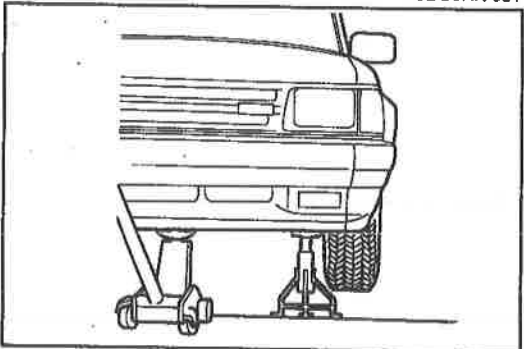
If play exceeds specification, either the steering joints are worn or the backlash of the steering gear is excessive.



9BU0NX-031

Looseness or play of steering wheel

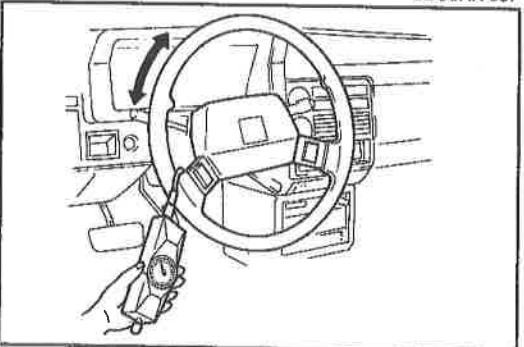
Move the steering wheel in directions ①, ②, and ③ to check for column bearing wear, steering shaft joint play, steering wheel looseness, and column looseness.



0BU0NX-007

Steering wheel effort

1. Jack up the vehicle and support vehicle with safety stands. Move the steering wheel to put the wheels in the straight-ahead position.



7BU10X-012

2. Measure the steering wheel effort by connecting a pull scale to the outer circumference of the steering wheel.

Steering wheel effort:

5—20 N (0.5—2.0 kg, 1—5 lb)

[during one turn of the steering wheel]

Note

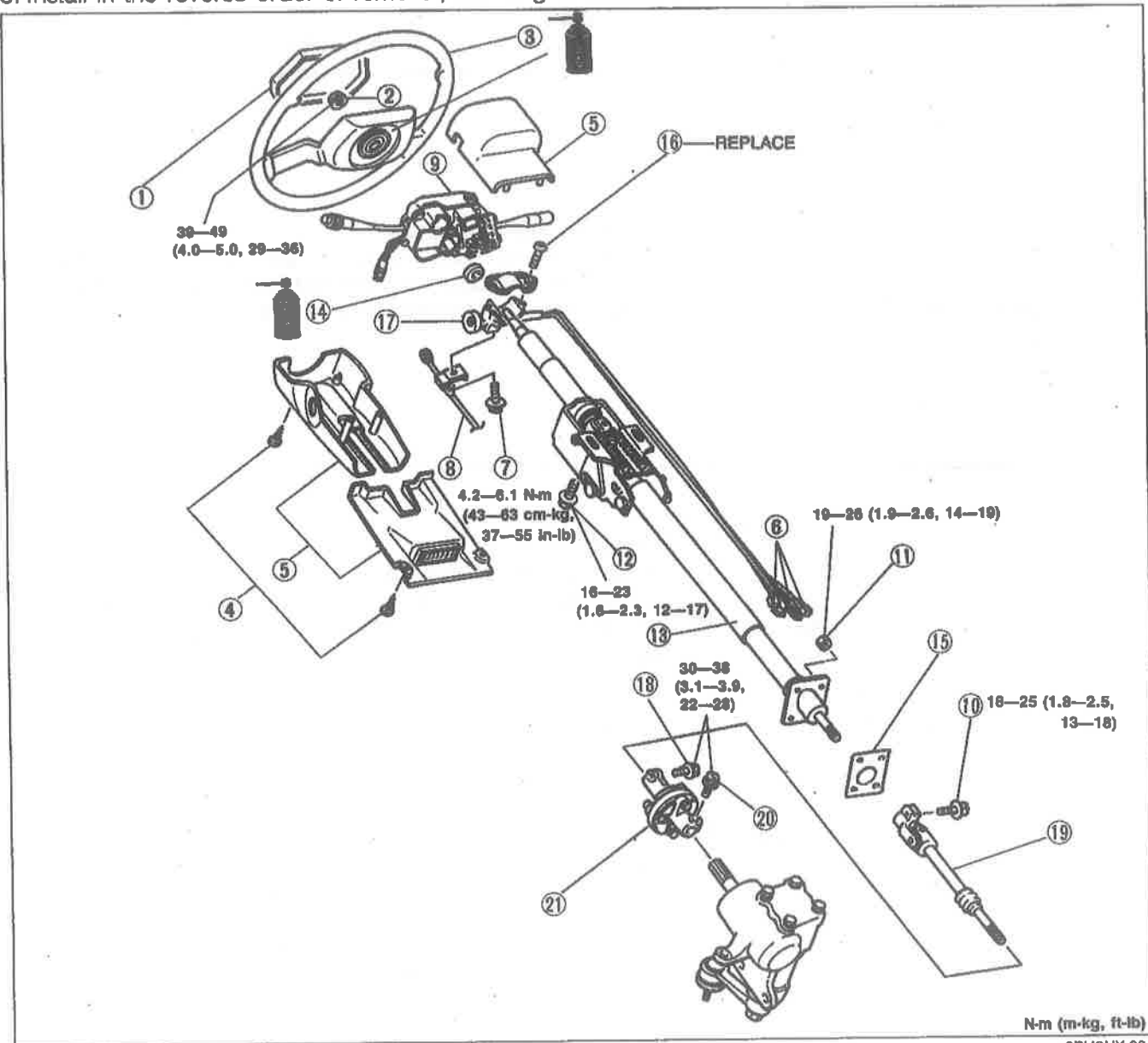
Measure after turning the steering wheel to the left and right 5 times or more.

3. If the measured effort exceeds specification, check the following: rotation-starting torque of the pinion, rotation torque of each ball joint, and seizure of each joint.



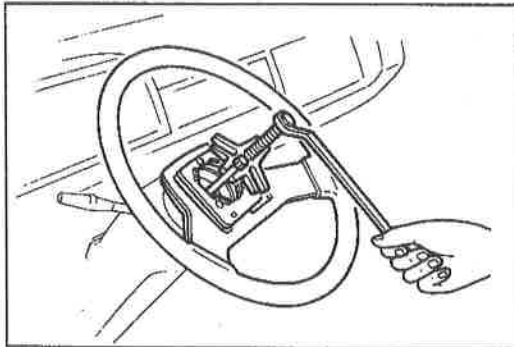
Removal, Inspection, and Installation

1. Remove in the order shown in the figure, referring to **Removal Note**.
2. Inspect all parts and repair or replace as necessary.
3. Install in the reverse order of removal, referring to **Installation Note**.



2BUJNX-004

- | | |
|--|---|
| 1. Horn cover | 14. Bearing |
| 2. Locknut | 15. Dust cover |
| 3. Steering wheel
Removal Note page N-11 | 16. Bolts |
| 4. Screws | 17. Steering lock assembly
Removal Note page N-11
Inspection..... page N-11
Installation Note..... page N-11 |
| 5. Column cover | 18. Bolt |
| 6. Combination switch connectors | 19. Intermediate shaft
Inspection..... page N-11 |
| 7. Bolt (A/T) | 20. Bolt |
| 8. Key-inter-lock cable (A/T) | 21. Rubber coupling
Inspection..... page N-11 |
| 9. Combination switch | |
| 10. Bolt | |
| 11. Nuts | |
| 12. Bolts | |
| 13. Steering shaft assembly
Inspection..... page N-11 | |



9BU0NX-034

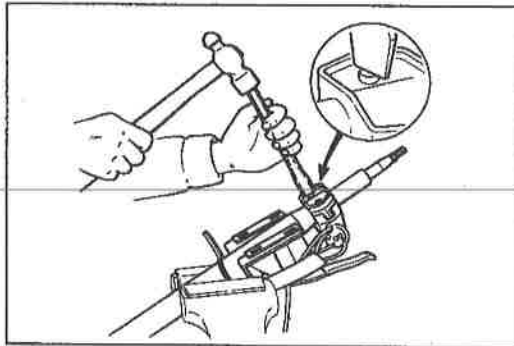
Removal note

Steering wheel

Remove the steering wheel with a suitable puller.

Caution

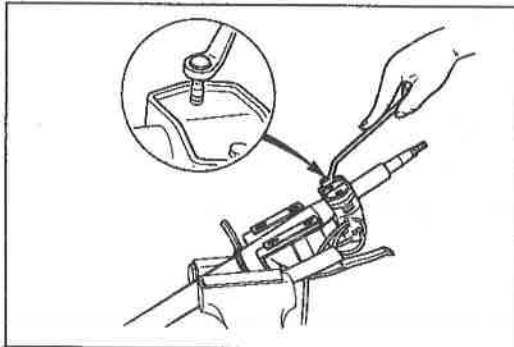
Do not try to remove the steering wheel by hitting the shaft with a hammer. The column will collapse.



2BU0NX-005

Steering lock assembly

Use a chisel to make a groove in the head of each steering lock installation bolts. Remove the bolts with a screwdriver; then remove the steering lock assembly.

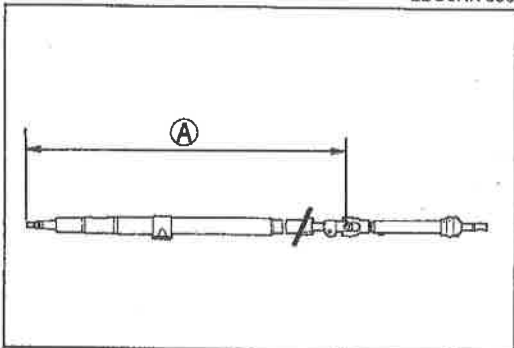


2BU0NX-006

Installation note

Steering lock assembly

Install the steering lock assembly on the jacket. Install steering lock installation new bolts, and tighten them until the heads break off.



2BU0NX-007

Inspection

Check for the following and repair or replace as necessary.

1. Dimensions of steering shaft

Standard dimensions (A) :

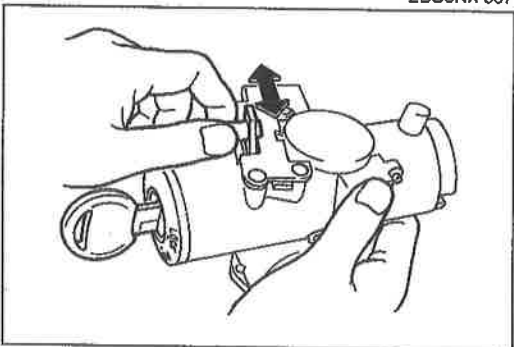
833.8 ± 1.0mm (32.8 ± 0.04 in)

2. Operation of intermediate shaft joint

3. Worn of rubber coupling.

4. Steering lock assembly (Automatic transmission only)

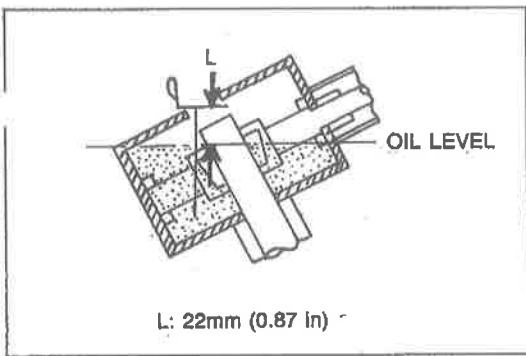
Verify that the cable connector does not move when the key is in the LOCK position and that it moves freely with the key in other positions.



2BU0NX-008

Steering wheel

With the wheel into straight-ahead position.



STEERING GEAR AND LINKAGE

On-vehicle Inspection

Steering gear oil level

1. Remove the oil filler port plug.
2. Prepare a simple wire dipstick.
3. Insert the dipstick through the oil filler port.
4. Pull out the dipstick and measure the L dimension.
Add the specified gear oil if necessary.

Standard L dimension: 22mm (0.87 in)

Specified gear oil: API service GL-4 SAE 90

5. Install the oil filler port plug.

Removal, Inspection, and Installation

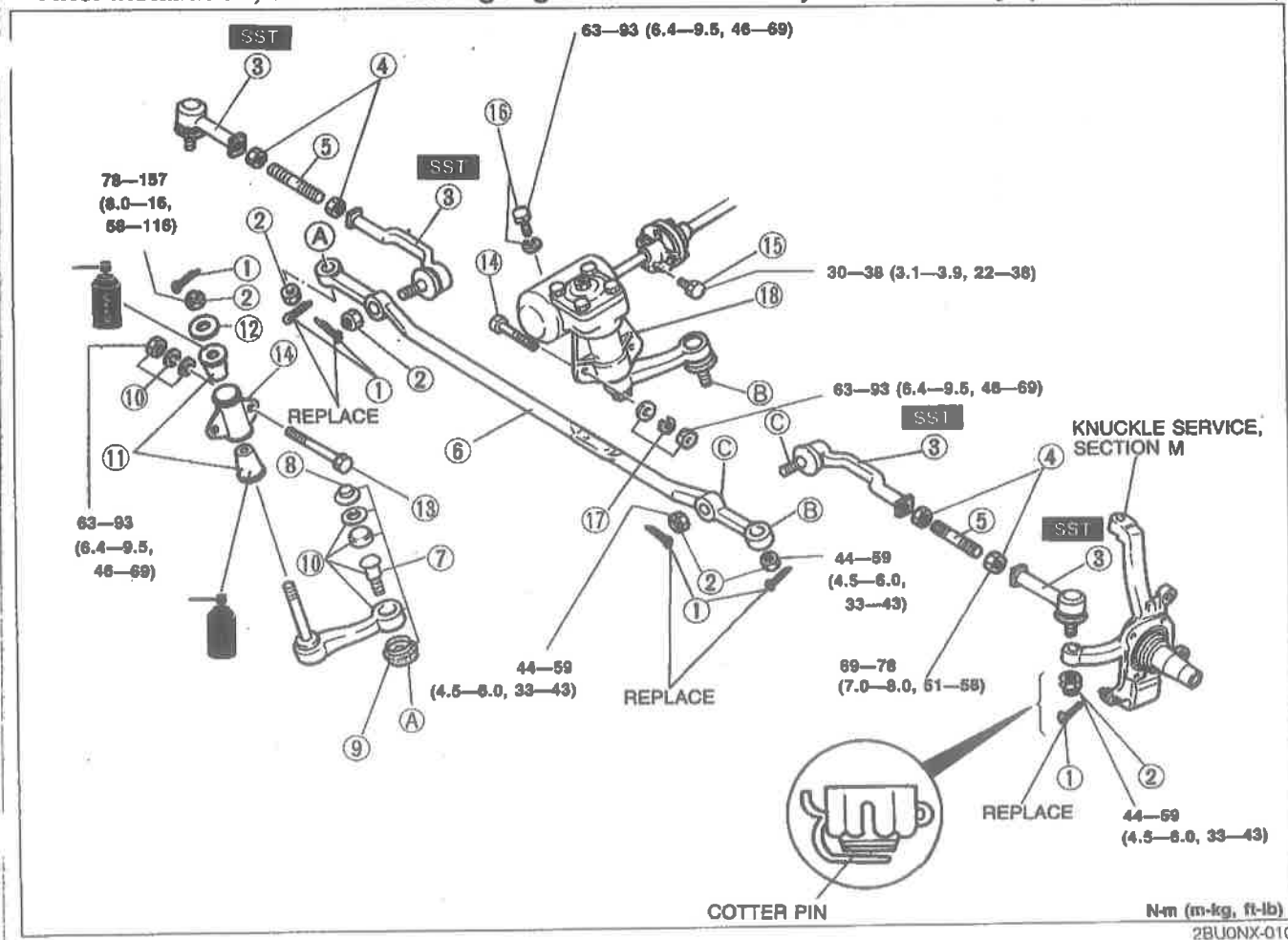
1. Loosen the wheel lug nuts.
2. Jack up the front of the vehicle and support it with safety stands.
3. Remove the wheels.
4. Remove in the order shown in the figure, referring to **Removal Note**.
5. Install in the reverse order of removal.
6. Install the wheel.

Tightening torque: Non-styled wheel 88—118 N·m (9—12 m·kg, 65—87 ft·lb)
Styled wheel 118—147 N·m (12—15 m·kg, 87—108 ft·lb)

7. Inspect all parts and repair or replace as necessary.

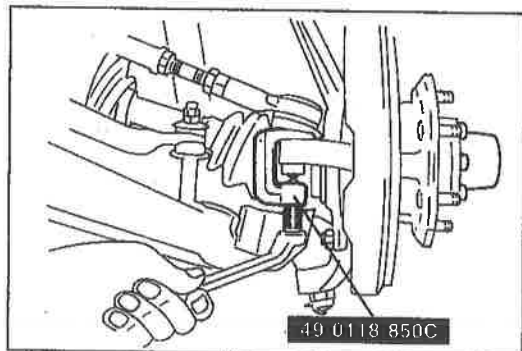
Note

After installation, check the turning angle and toe-in and adjust if necessary. (Refer to Section R.)



- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Cotter pin 2. Nut 3. Ball joint
Removal Note..... page N-8, 13
Check for damage or poor operation 4. Locknut 5. Tie rod 6. Center link
Check for damage or cracks 7. Idler arm assembly
Check for damage or poor operation 8. Idler cap 9. Ball joint dust seal | <ol style="list-style-type: none"> 10. Idler arm 11. Washer 12. Rubber bushing
Check for wear or damage 13. Bolts, nuts, and washers 14. Idler arm bracket 15. Bolt 16. Bolt and washer 17. Bolts, nuts, and washers 18. Steering gear assembly
Disassembly, Inspection, and
Assembly..... page N-14 |
|--|---|

2BU0NX-011



9BU0NX-017

Removal note

Ball joint, pitman arm, and idler arm

With the **SST**, separate the ball joint from the knuckle and from the center link (C—C), the pitman arm from the center link (B—B), and the idler arm from the center link (A—A).

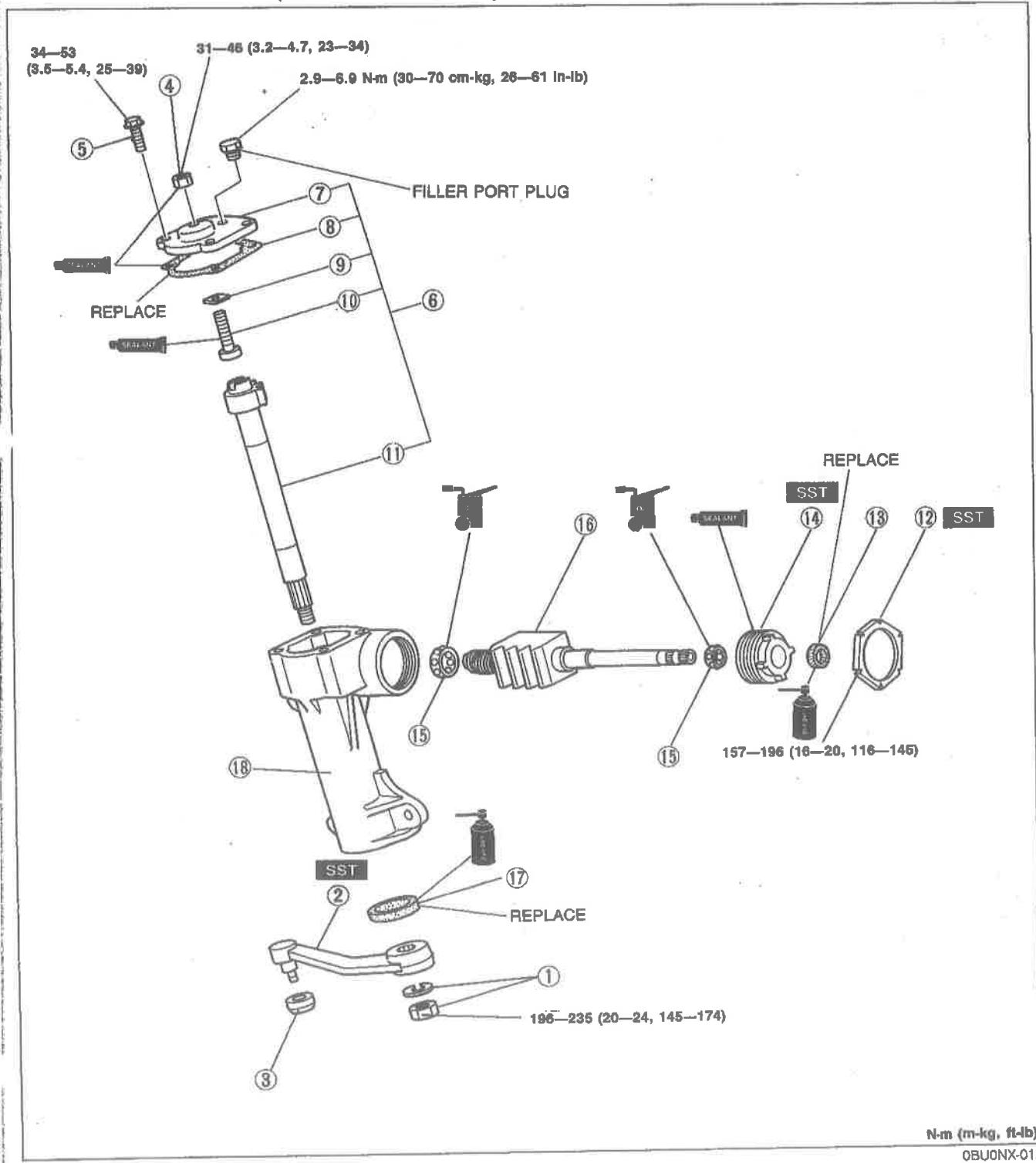
Disassembly, Inspection, and Assembly

1. Disassemble in the order shown in the figure, referring to **Disassembly Note**.
2. Assemble in the reverse order of disassembly, referring to **Assembly Note**.
3. Inspect all parts and repair or replace as necessary.

Note

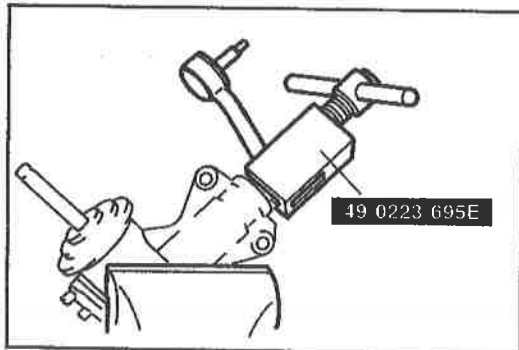
- a) Before disassembling, clean thoroughly and drain the gear oil through the filler port.
- b) After assembly, fill the gear box with gear oil.

Gear oil specification: API Service GL-4, SAE 90
{ Amount: 0.34 liter (0.36 US qt, 0.30 Imp qt) }



- | | |
|---|--|
| <ul style="list-style-type: none"> 1. Nut and washer 2. Pitman arm
Disassembly Note below
Check for damage or cracks 3. Dust boot
Check for wear or damage 4. Locknut 5. Bolts 6. Sector shaft assembly
Disassembly Note below
Assembly Note page N-16 7. Side cover 8. Gasket 9. Adjustment shim 10. Adjusting screw 11. Sector shaft
Check for damage or deformation | <ul style="list-style-type: none"> 12. Locknut
Disassembly Note below 13. Oil seal 14. Adjusting nut
Disassembly Note page N-16 15. Bearing
Check for sticking, abnormal noise, or poor operation 16. Worm ball nut assembly
Check for poor rotation or play in axial direction 17. Oil seal 18. Gear housing
Check for damage or deformation |
|---|--|

2BU0NX-012

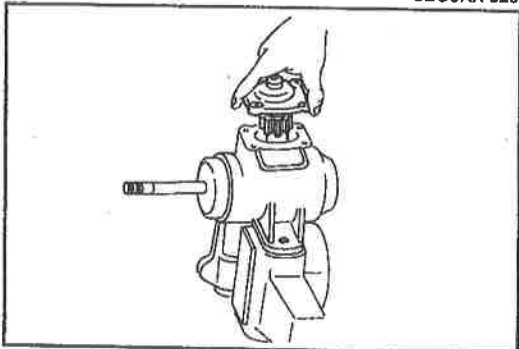


9BU0NX-020

Disassembly note

Pitman arm

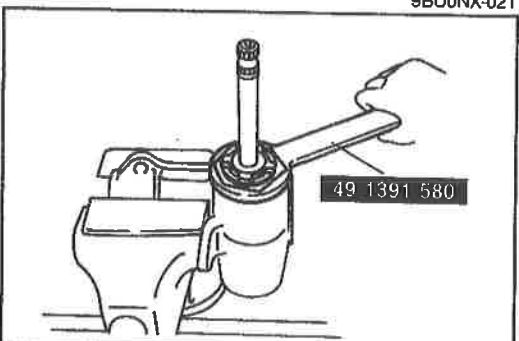
Separate the pitman arm from the gear box with the **SST**.



9BU0NX-021

Sector shaft assembly

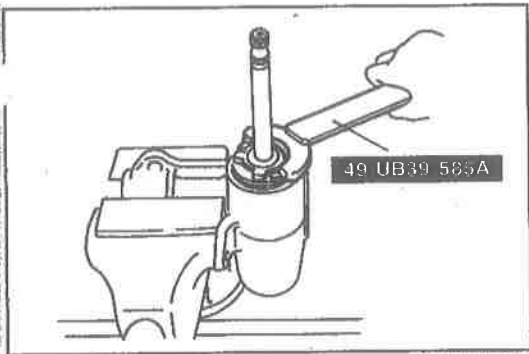
1. Set the sector shaft in the center position.
2. Tap the lower portion of the sector shaft with a plastic hammer to loosen the shaft.
3. Lift the sector shaft assembly out of the gear housing.



9BU0NX-022

Locknut

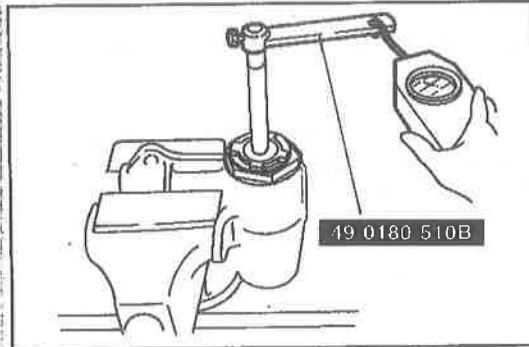
Remove the locknut with the **SST**.



9BU0NX-023

Adjusting nut

Remove the adjusting nut with the **SST**.

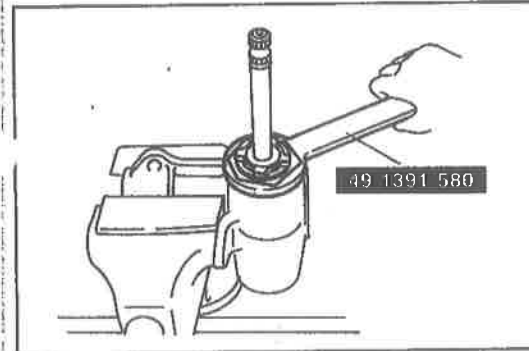


9BU0NX-024

Assembly note
Worm shaft preload
Inspection

Measure the worm shaft preload with the **SST** and a pull scale before the sector shaft is installed.

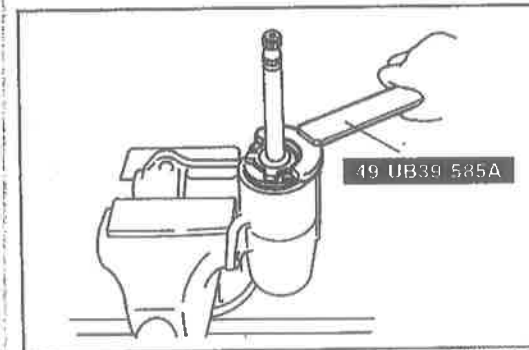
Worm shaft preload (without sector shaft)
Pull scale reading: 3—6 N (0.3—0.6 kg, 0.7—1.3 lb)



9BU0NX-025

Adjustment

1. Loosen the locknut with the **SST**.

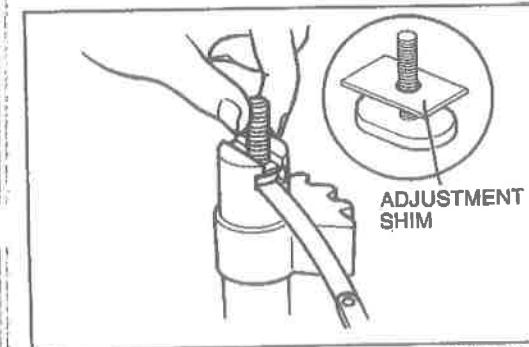


2BU0NX-013

2. Turn the adjusting nut with the **SST**.

3. Tighten the locknut to the specified torque with the **SST** used in Step 1.

Locknut tightening torque:
157—196 N·m (16—20 m·kg, 116—145 ft·lb)



9BU0NX-027

Sector shaft assembly

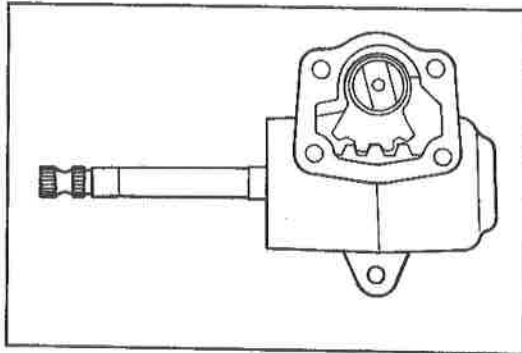
1. Set the adjusting screw and the adjustment shim in the T groove.
2. Measure the clearance in the axial direction.
3. If the clearance exceeds specification, adjust it with available adjustment shims supplied in the adjustment shim kit.

Clearance in axial direction:

0—0.1mm (0—0.004 in)

Available adjustment shims:

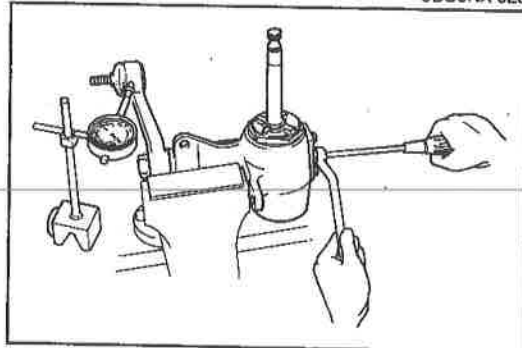
**1.97mm (0.077 in), 2.00mm (0.079 in),
 2.03mm (0.079 in), 2.06mm (0.081 in),
 2.09mm (0.082 in)**



9BU0NX-028

4. After making the clearance adjustment, install the sector shaft assembly so that the sector shaft and the ball nut are centered.
5. Check the worm shaft preload.

Worm shaft preload (after sector shaft installed)
Pull scale reading: 6—11 N (0.6—1.1 kg, 1.3—2.4 lb)



9BU0NX-029

Steering gear backlash

Turn the adjusting screw to adjust the steering gear backlash.



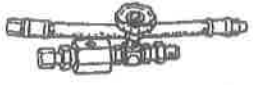






Note

Adjust the backlash with the steering gear in the center position. Otherwise, the backlash becomes excessively small, and gears may be damaged.

Backlash: 0mm

ENGINE SPEED SENSING POWER STEERING

PREPARATION SST

<p>49 1232 670A</p> <p>Gauge set, power steering</p> 	<p>49 1232 672</p> <p>Gauge (Part of 49 1232 670A)</p> 	<p>49 1232 673</p> <p>Valve body (Part of 49 1232 670A)</p> 
<p>49 H002 671</p> <p>Adapter, power steering gauge</p> 	<p>49 B032 302</p> <p>Adapter, power steering gauge</p> 	<p>49 0118 850C</p> <p>Puller, ball joint</p> 
<p>49 0223 695E</p> <p>Puller, pitman arm</p> 	<p>49 0180 510B</p> <p>Attachment steering worm bearing preload measuring</p> 	<p>49 W023 585A</p> <p>Adjust wrench</p> 

1BU0NX-011

TROUBLESHOOTING GUIDE

Problem	Possible Cause	Remedy	Page
Steering "heavy"	Poor lubrication of or foreign material of steering ball joints	Lubricate or replace	N- 7
	Poor lubrication of or foreign material of upper or lower arm ball joints	Lubricate or replace	Section R
	Stuck or damaged steering ball joints	Replace	N- 7
	Stuck or damaged upper or lower arm ball joints	Replace	Section R
	Improperly adjusted steering gear preload	Adjust	N-28
	Damaged steering gear	Replace	N-24
	Malfunctioning steering shaft joint	Replace	N-10
	Improperly adjusted wheel alignment	Adjust	Section R
	Malfunctioning steering gear	Repair or replace	N-24
	Incorrect tire pressure	Adjust	Section Q
	Loose or damaged drive belt	Adjust or replace	N-31
	Low fluid level or air in fluid	Add fluid or bleed air	N-21
	Leakage of fluid	Repair or replace	N-20
Insufficient oil pump pressure	Repair or replace	N-30, 31	
Clogged pipe or hose	Replace	—	
Steering wheel effort is uneven	Malfunctioning steering gear	Replace	N-24
	Steering shaft contacting something	Repair or replace	N-10
	Steering linkage does not operate smoothly	Repair or replace	N-24
	Loose belt	Adjust	N-29
Excessive steering wheel play	Improperly adjusted front wheel bearing preload	Adjust	Section M
	Worn steering gear	Replace	N-24
	Worn or damaged steering shaft joints	Replace	N-10
	Loose steering gear box mounting bolts	Tighten	N-24

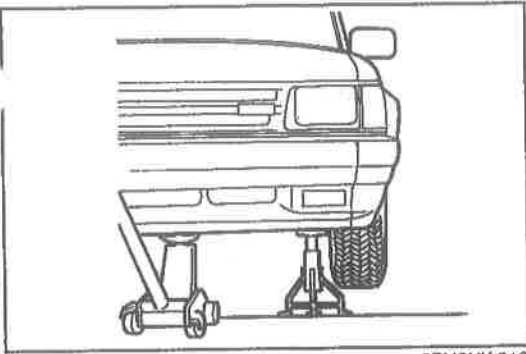
ENGINE SPEED SENSING POWER STEERING

N

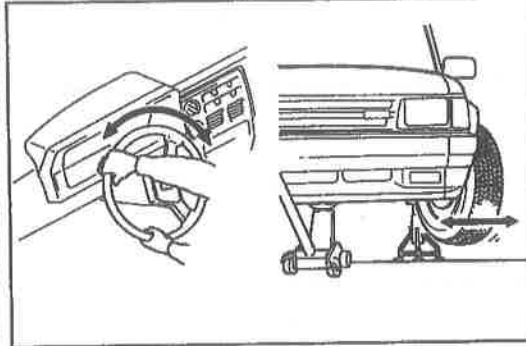
TROUBLESHOOTING GUIDE (Cont'd)

Problem	Possible Cause	Remedy	Page
Steering wheel pulls to one side	Deformed steering linkage Incorrect tire pressures Unevenly worn tires Weakened front spring Worn or damaged stabilizer Dragging brake Deformed knuckle arm Improperly adjusted wheel alignment Improperly adjusted wheel bearing preload	Replace Adjust Replace Replace Replace Repair Replace Adjust Adjust	N-24 Section Q — Section R Section R — Section M Section R Section M
Poor steering wheel return	Incorrect tire pressures Stuck or damaged steering ball joints Stuck or damaged upper or lower arm ball joints Improperly adjusted front wheel alignment Improperly adjusted steering gear preload Steering shaft contacting something	Adjust Replace Replace Adjust Adjust Repair or replace	Section Q N- 7 Section R Section R N-28 N-10
General instability while driving	Deformed steering linkage Incorrect tire pressures Damaged or unbalanced wheel Worn or damaged steering shaft joints Improperly adjusted steering gear preload Weakened front spring Worn or damaged stabilizer Malfunctioning shock absorber Improperly adjusted wheel alignment Improperly adjusted wheel bearing preload	Replace Adjust Adjust or replace Replace Adjust Replace Replace Replace Adjust Adjust	N-24 Section Q Section Q N-10 N-28 Section R Section R Section R Section R Section M
"Shimmy" occurs (Steering wheel vibrates left/right)	Deformed steering linkage Loose steering gear box mounting bolts Stuck or damaged steering ball joint Stuck or damaged upper or lower arm ball joint Excessive tire and wheel runout Loose lug nuts Unbalanced wheel Incorrect tire pressures Unevenly worn tires Malfunctioning shock absorber Loose shock absorber mounting bolts Cracked or worn suspension bushings Damaged or worn front wheel bearing Improperly adjusted front wheel alignment	Replace Tighten Replace Replace Replace Tighten Adjust or replace Adjust Replace Replace Tighten Replace Replace Adjust	N-24 N-24 N- 7 Section R — Section Q Section Q Section Q — Section R Section R Section R Section R Section M Section R
Abnormal noise from steering system	Loose oil pump Loose steering gear box Loose oil pump bracket Loose oil pump pulley nut Belt loose/tight Air intake Malfunction inside steering gear Malfunctioning oil pump Obstruction near steering column Loose steering linkage Worn steering shaft joints	Tighten Tighten Tighten Tighten Adjust Bleed air Replace Replace Repair or replace Tighten or replace Replace	N-29, 30 N-24 — N-29, 30 N-31 N-20 N-24 N-29, 30 — N-24 N-10
Fluid leakage	Problem at hose coupling Damaged or clogged hose Damaged reserve tank Overflow Malfunctioning oil pump Malfunctioning steering gear box	Repair or replace Replace Replace Bleed air or adjust fluid level Replace Replace	— — — N-20 Section R N-24

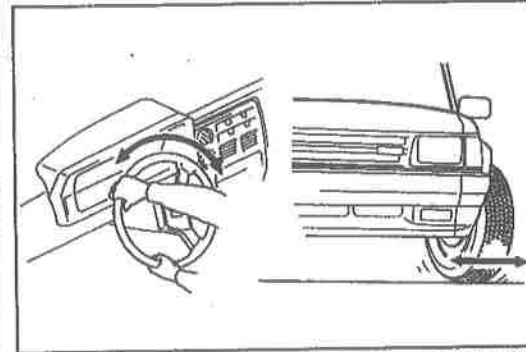
2BU0NX-014



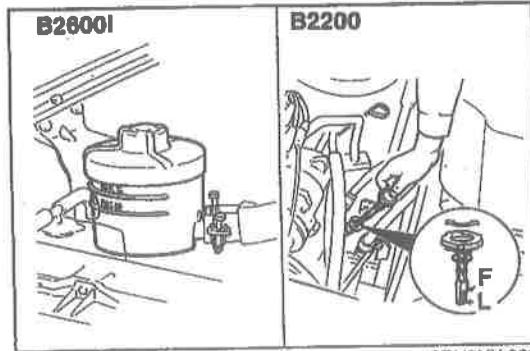
0BU0NX-016



63U10X-015



9BU0NX-067



9BU0NX-068

AIR BLEEDING

1. Jack up the front of the vehicle and support it with safety stands.

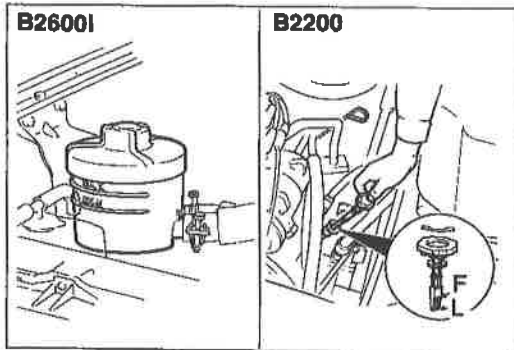
2. Check the fluid and add some if necessary. Turn the steering wheel fully left and right several times.

- 3. Recheck the fluid and add as required. Let the vehicle down.
- 4. Start the engine and run it at idle speed. Turn the steering wheel again fully left and right several times. If a noise is heard in the oil line, air is still present.
- 5. Put the wheels in the straight-ahead position, and turn off the engine. The fluid level in the pump should not increase; if it does, air is present. Repeat Step 4 if necessary.

6. Recheck the fluid level, and inspect for leaks.

Caution

If the air bleeding is incomplete, raise the oil temperature to about 50—80°C (122—176°F) (the oil temperature will rise when the steering wheel is turned right and left), stop the engine, and perform Step 4 for five to ten minutes. Air can be completely bled by repeating this operation.



2BU0NX-015

POWER STEERING FLUID

On-vehicle Inspection

Inspection of power steering fluid level

Check the power steering fluid level, and add fluid to the specified level if necessary.

Caution

Use only specified power steering fluid.

Fluid specification:

ATF M2C33F of Dexron® II

Inspection of fluid leakage

Start the engine. Turn the steering wheel fully left and right to apply fluid pressure; then check for fluid leakage.

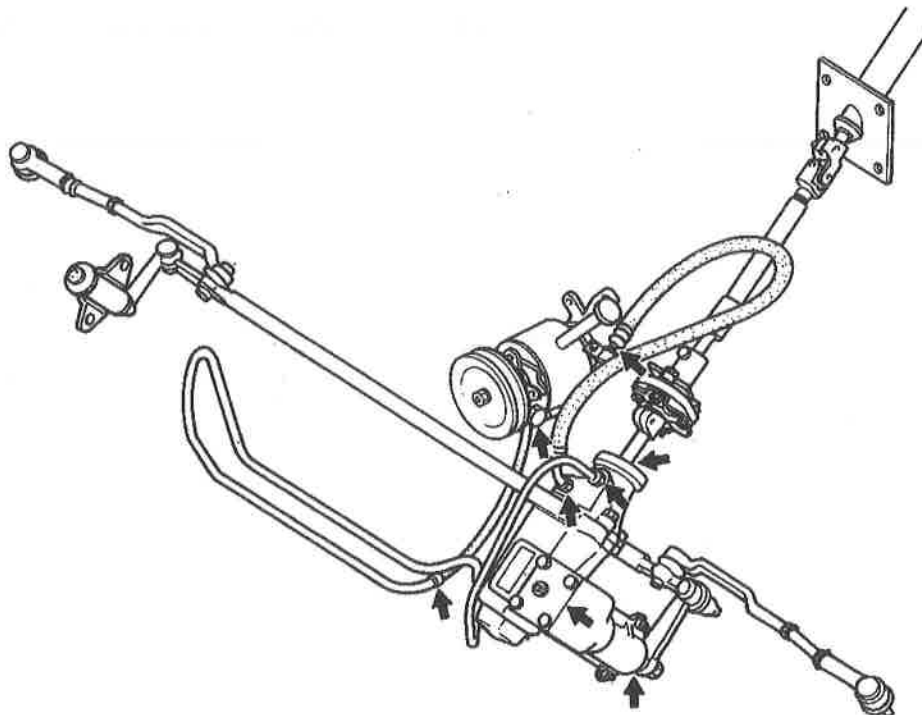
Caution

To prevent damage to the steering system, do not keep the steering wheel in the fully turned position for more than 15 seconds.

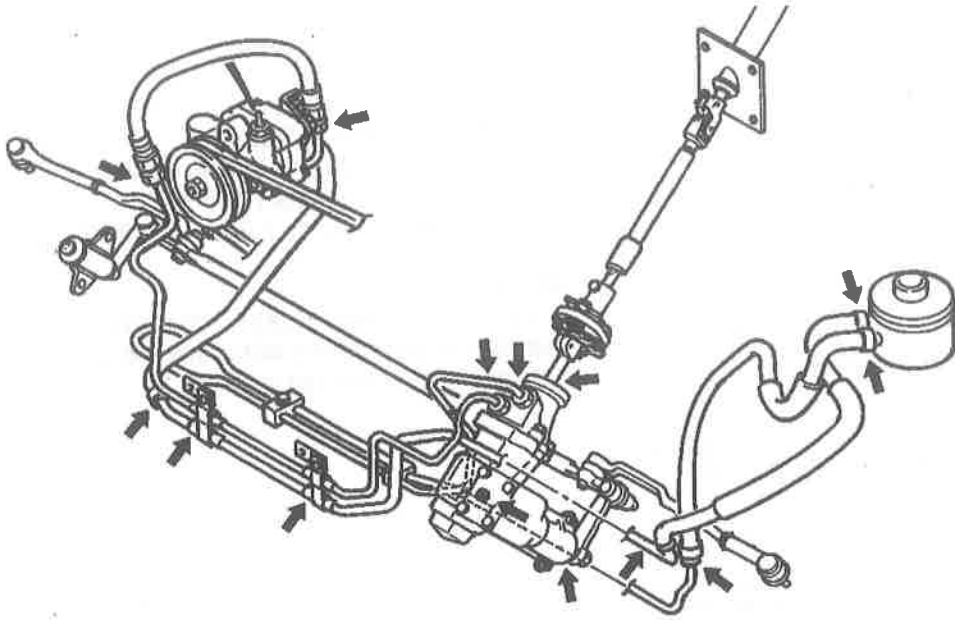
Note

The points where fluid leakage may occur are indicated by arrows in the figure.

B2200



B2600i

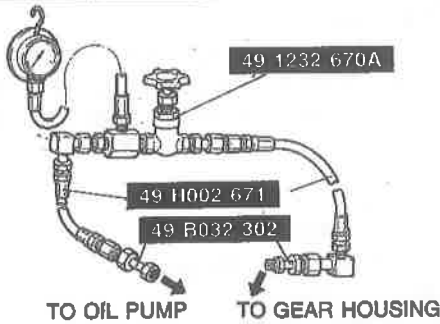


Inspection of fluid pressure

1. Assemble the **SST** as shown in the figure.

Tightening torque:

39—49 N·m (4.0—5.0 m·kg, 29—36 ft·lb)



9BU0NX-044

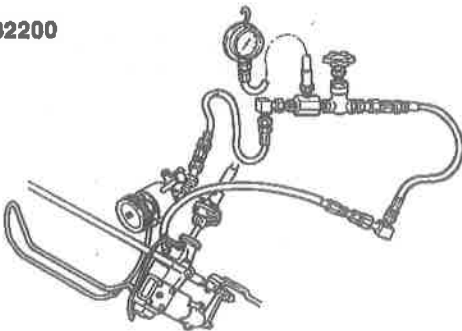
2. Disconnect the high-pressure hose of the oil pump side, and attach the **SST**.

Note

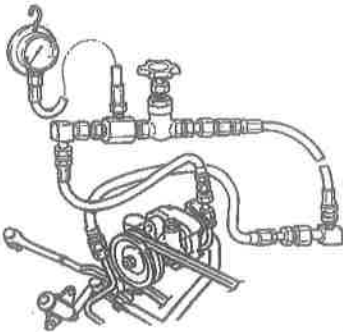
Before disconnecting the hose, mark the connections for proper reinstallation.

3. Bleed the air from the system. (Refer to page N-20.)
4. Open the gauge valve fully. Start the engine and turn the steering wheel fully left and right to raise the fluid temperature to **50—60°C (122—140°F)**.

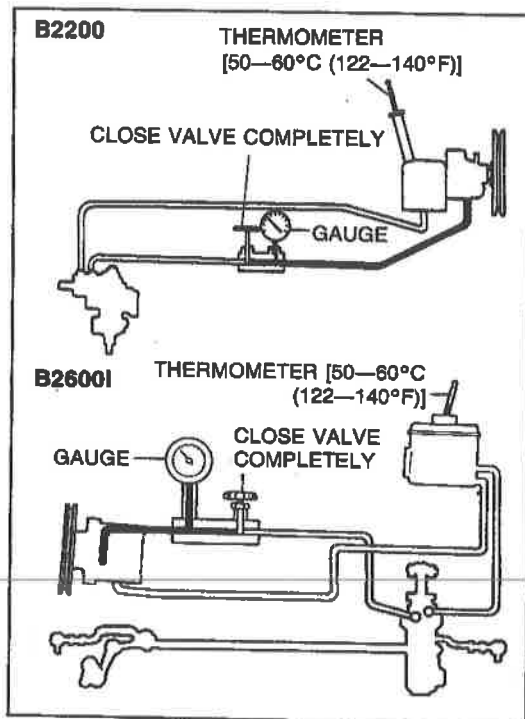
B2200



B2600i



0BU0NX-018



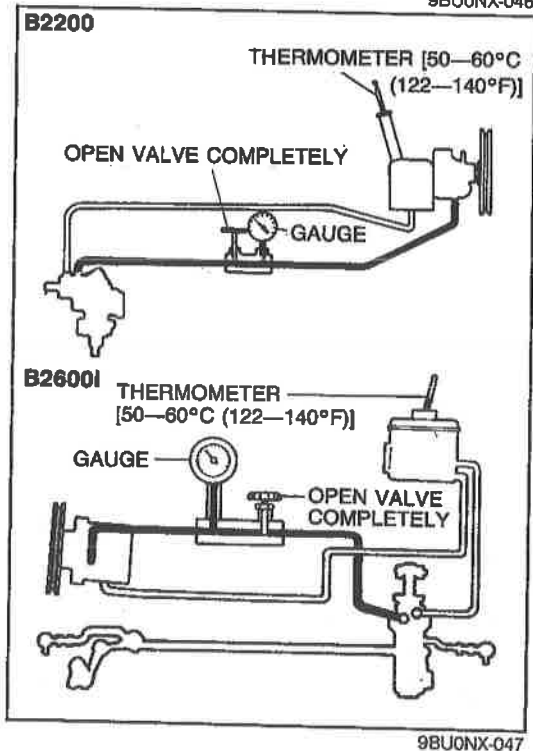
- Close the gauge valve completely. Increase the engine speed to **1,000—1,500 rpm** and measure the fluid pressure generated by the oil pump. If the pressure is below specification, replace the oil pump assembly.

Oil pump fluid pressure:

- (B2200) 8,584—9,320 kPa (87.5—95 kg/cm², 1,244—1,351 psi)
- (B2600i) 9,320—9,810 kPa (95—100 kg/cm², 1,351—1,422 psi)

Warning

If the valve is left closed for more than 15 seconds, the fluid temperature will increase excessively and adversely affect the oil pump.



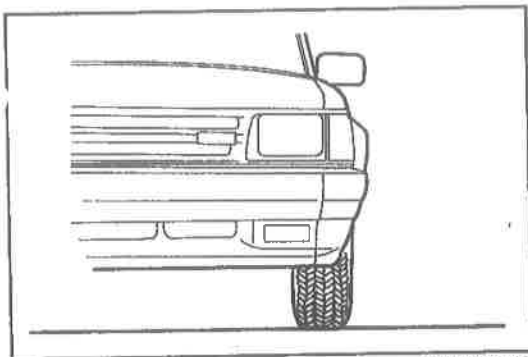
- Open the gauge valve fully again and increase the engine speed to **1,000—1,500 rpm**.
- Turn the steering wheel fully to the left and right and measure the fluid pressure generated by the gear housing. If the pressure is below specification, replace the gear housing assembly.

Gear housing fluid pressure:

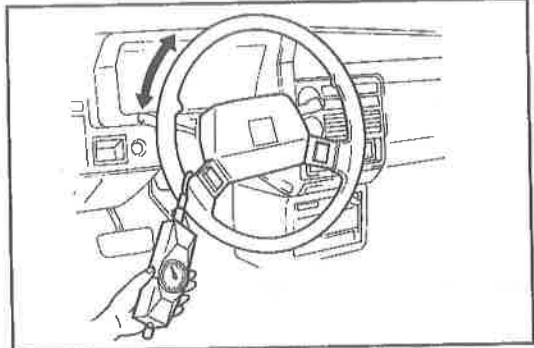
- (B2200) 8,584—9,320 kPa (87.5—95 kg/cm², 1,244—1,351 psi)
- (B2600i) 9,320—9,810 kPa (95—100 kg/cm², 1,351—1,422 psi)

Warning

If the steering wheel is kept in the fully turned position for more than 15 seconds, the fluid temperature will rise excessively and adversely affect the oil pump.



0BU0NX-019



2BU0NX-016

STEERING WHEEL AND COLUMN**On-vehicle Inspection****Steering wheel effort**

1. With the vehicle on a hard level surface, move the steering wheel to put the wheels in the straight-ahead position.
2. Start the engine and warm the power steering fluid to **50—60°C (122—140°F)**.
3. Attach a pull scale to the outer circumference of the steering wheel. Then, starting with the wheels in the straight-ahead position, check the steering effort required to turn the steering wheel to the left and right.

**Steering wheel effort: 40 N (4.1 kg, 9 lb) or less
[during one turn of the steering wheel]**

4. If the measured value exceeds specification, check the following: fluid level, air in system, fluid leakage at hose or connections, function of oil pump and steering gear box, and tire pressures.

STEERING GEAR AND LINKAGE**Removal, Inspection, and Installation**

1. Loosen the wheel lug nuts.
2. Jack up the front of the vehicle and support it with safety stands.
3. Remove the wheel.
4. Remove in the order shown in the figure, referring to **Removal Note**.
5. Install in the reverse order of removal.
6. Install the wheel.

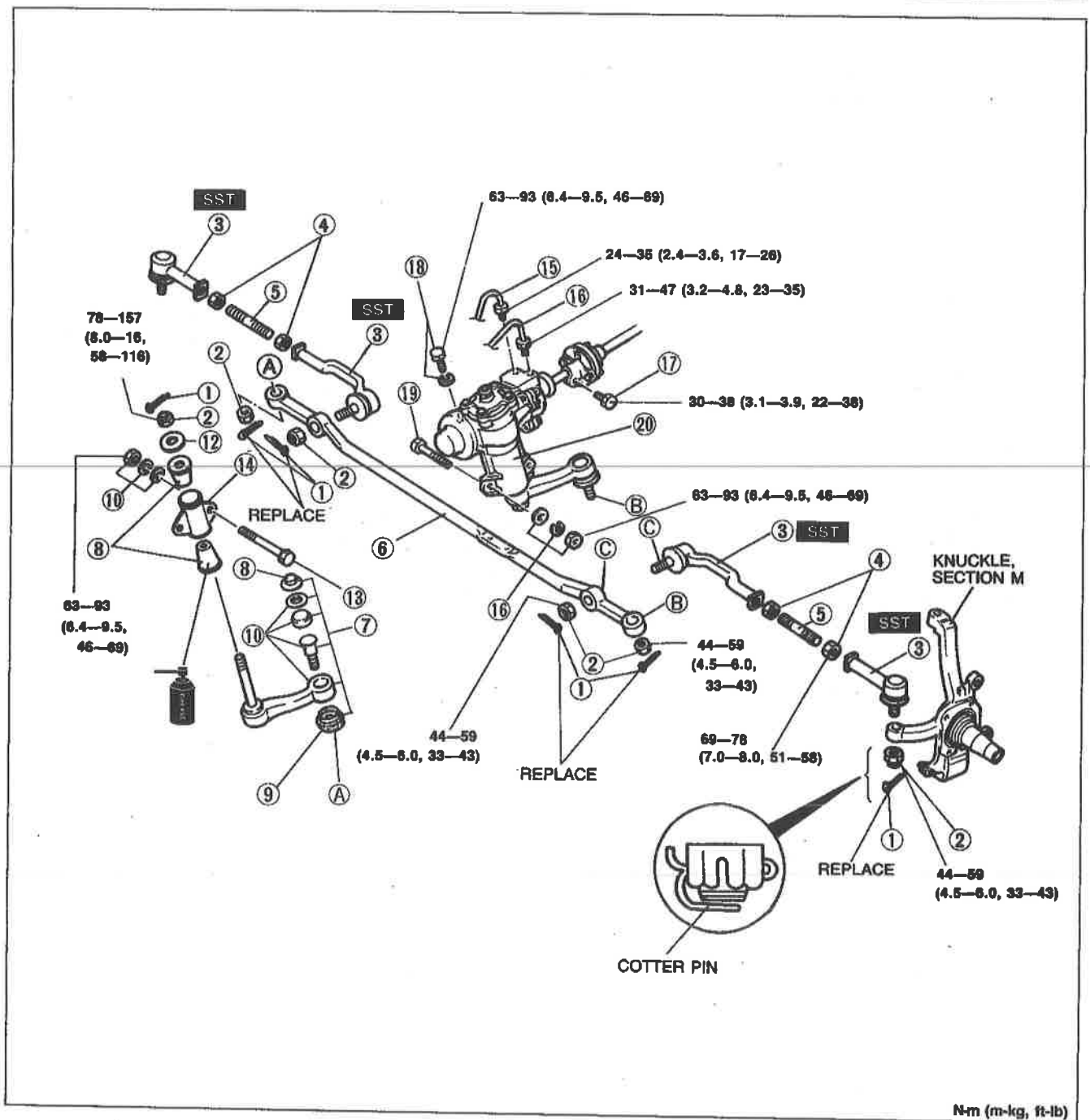
**Tightening torque: Non-styled wheel 88—118 N·m (9—12 m·kg, 65—87 ft·lb)
Styled wheel 118—147 N·m (12—15 m·kg, 87—108 ft·lb)**

7. Inspect all parts and repair or replace as necessary.

Note

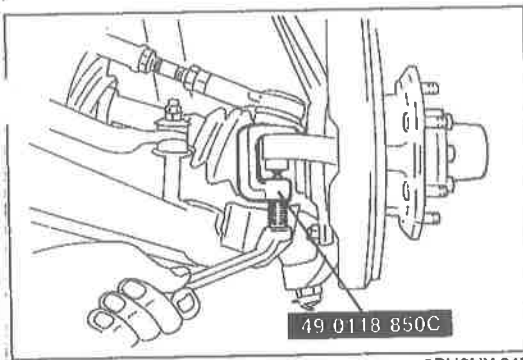
- a) The power steering fluid will leak out when the return pipe and/or the pressure pipe is disconnected. Prepare a suitable container for it to drain into.
- b) After installation: (1) Bleed air from the power steering system (2) Check the power steering fluid level and add fluid if necessary. (3) Check the system for fluid leakage. (4) Check the turning angle and toe-in and adjust if necessary. (Refer to Section R.)

2BU0NX-017



N·m (m·kg, ft·lb)
2BU0NX-018

- | | |
|---|--|
| <ul style="list-style-type: none"> 1. Cotter pin 2. Nut 3. Ball joint Removal Note page N-26 Check for damage or poor operation 4. Locknut 5. Tie rod 6. Center link Check for damage or cracks 7. Idler arm assembly Check for damage or poor operation 8. Idler cap 9. Ball joint dust seal 10. Idler arm | <ul style="list-style-type: none"> 11. Washer 12. Rubber bushing Check for wear or damage 13. Bolts, nuts, and washers 14. Idler arm bracket 15. Pressure pipe 16. Return pipe 17. Bolt 18. Bolt and washer 19. Bolts, washers, and nuts 20. Steering gear assembly Disassembly, Inspection, and Assembly..... page N-26 |
|---|--|



9BUONX-017

Removal note

Ball joint, pitman arm and idler arm

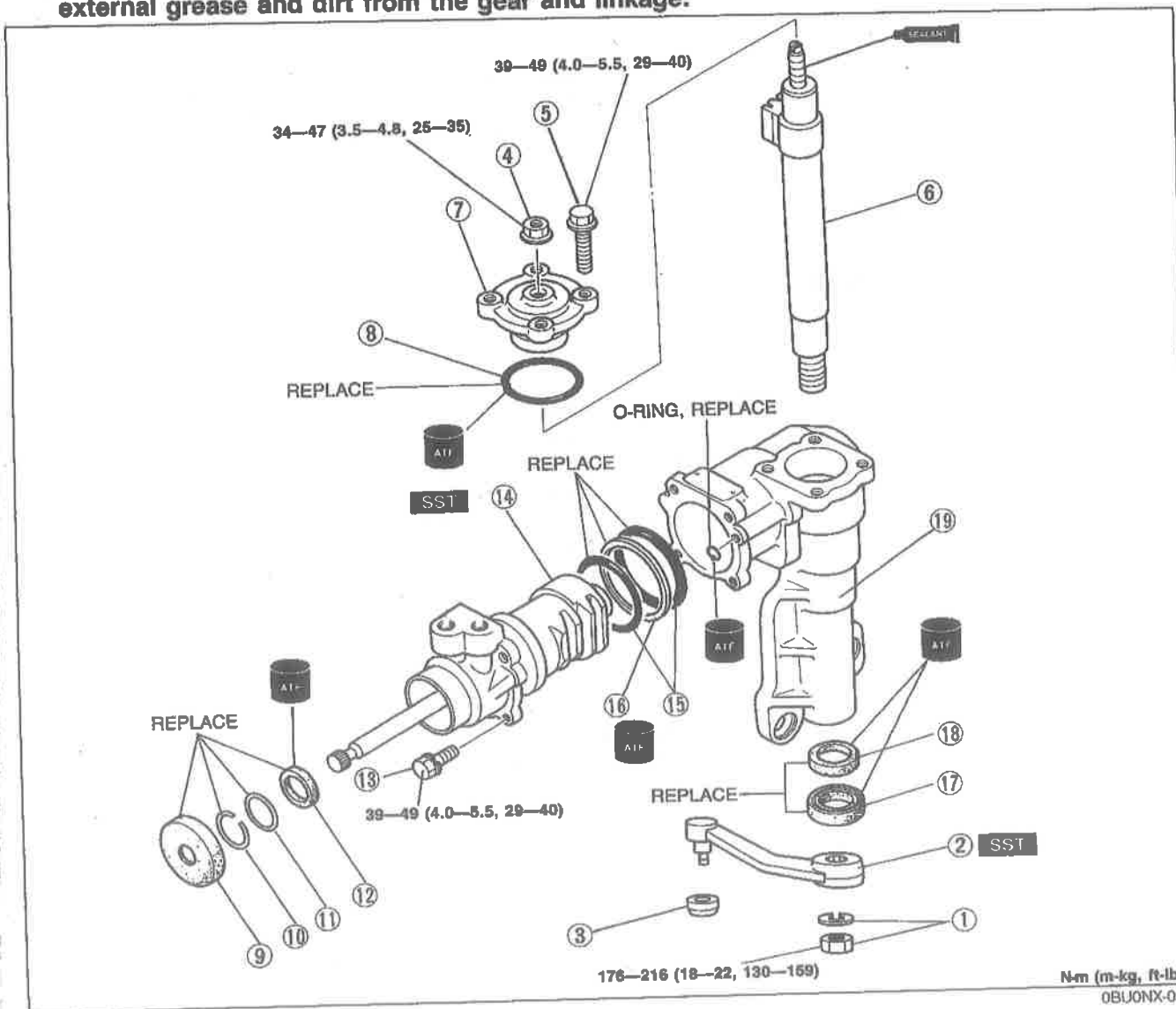
With the **SST**, separate the ball joint from the knuckle and from the center link (C—C), the pitman arm from the center link (B—B), and the idler arm from the center link (A—A).

Disassembly, Inspection, and Assembly

1. Disassemble in the order shown in the figure, referring to **Disassembly Note**.
2. Assemble in the reverse order of disassembly, referring to **Assembly Note**.
3. Inspect all parts and repair or replace as necessary.

Caution

- a) In order to prevent the entrance of dirt, all disassembly and assembly should be done in a clean area.
- b) Before disassembly, plug the openings of all pipe installation fittings, and then remove all external grease and dirt from the gear and linkage.

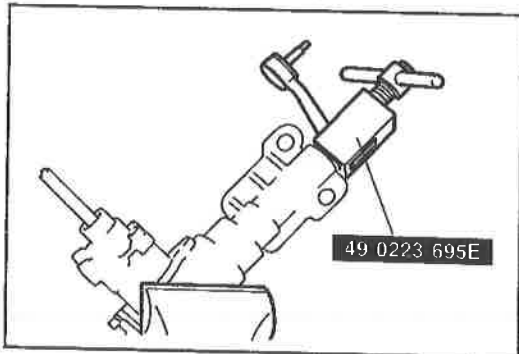


N-m (m-kg, ft-lb)

9BUONX-022

- | | |
|--|--|
| 1. Nut and washer | 10. Snap ring |
| 2. Pitman arm
Disassembly Note below
Check for damage or cracks | 11. Washer |
| 3. Dust boot
Check for wear or damage | 12. Oil seal |
| 4. Locknut
Loosen; remove after removing sector shaft | 13. Bolts |
| 5. Bolts | 14. Valve and piston assembly
Assembly Note..... below
Check for cracks or deformation |
| 6. Sector shaft
Disassembly Note below
Check for damage or deformation | 15. O-ring |
| 7. Side cover | 16. Piston seal ring |
| 8. O-ring | 17. Dust cover |
| 9. Dust cover | 18. Oil seal |
| | 19. Gear housing
Check for cracks or deformation |

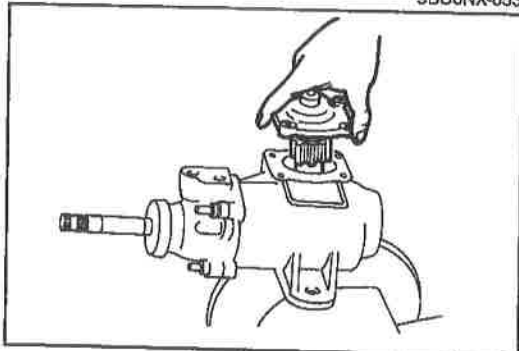
2BU0NX-019



9BU0NX-053

Disassembly note Pitman arm

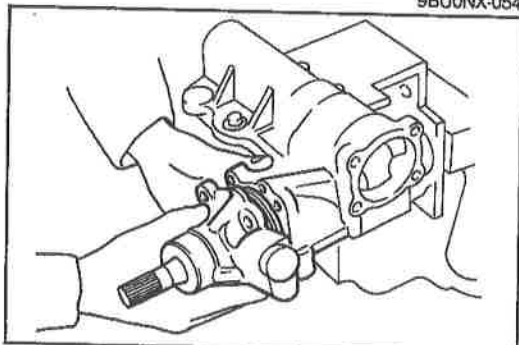
Separate the pitman arm from the gear housing with the **SST**.



9BU0NX-054

Sector shaft

1. Loosen the locknut.
2. Remove the side cover attaching bolts.
3. Set the sector shaft in the center position.
4. Tap the lower portion of the sector shaft with a plastic hammer to loosen the shaft.
5. Lift the sector shaft out of the gear housing.



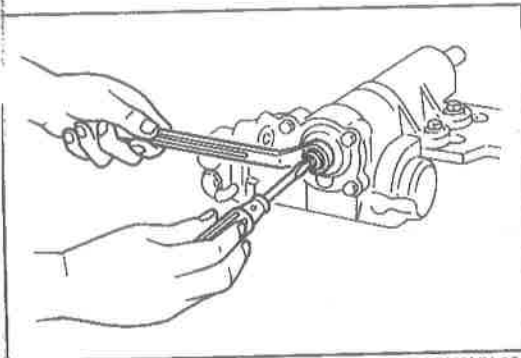
9BU0NX-055

Assembly note Valve and piston assembly

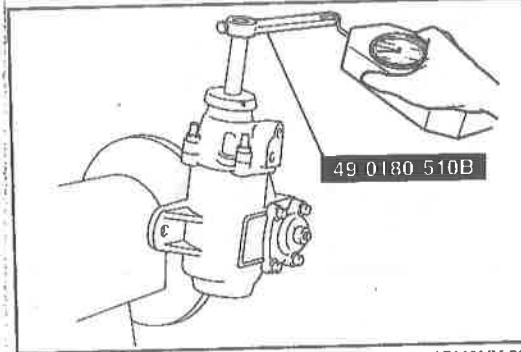
Insert the valve and piston assembly into the gear housing.

Caution

- a) Do not scratch the piston seal ring and new O-ring against the housing.
- b) Insert the piston while slightly turning it to the left and right to prevent damage of the new O-ring and the new seal ring.



0BU0NX-024



2BU0NX-020

Preload adjustment

1. Position the worm shaft in the center position.
2. Set the sector shaft adjusting screw so that the preload at that position is **5.9—8.8 N (0.6—0.9 kg, 1.3—2.0 lb)**.

Note

a) Use the SST when measuring the preload.

b) The preload at the center position must be **2.0—3.9 N (0.2—0.4 kg, 0.4—0.9 lb)** higher than the preload when the worm shaft is turned **360°** to the left and right.

3. If the specified preload is not obtained, once again disassemble the steering gearbox; check the gears for dirt and foreign material, and check the installation of the oil seal. After checking, reassemble the gearbox, and once again adjust the preload.
4. After making the setting, tighten the sector shaft adjusting screw locknut to the specified torque.

Tightening torque:

34—47 N·m (3.5—4.8 m·kg, 25—35 ft·lb)

OIL PUMP**Removal and Installation**

1. Jack up the front of the vehicle and support it with safety stands.
2. Remove in the order shown in the figure, referring to **Removal Note**.
3. Install in the reverse order of removal, referring to **Installation Note**.
4. Inspect all parts and repair or replace as necessary.

Note

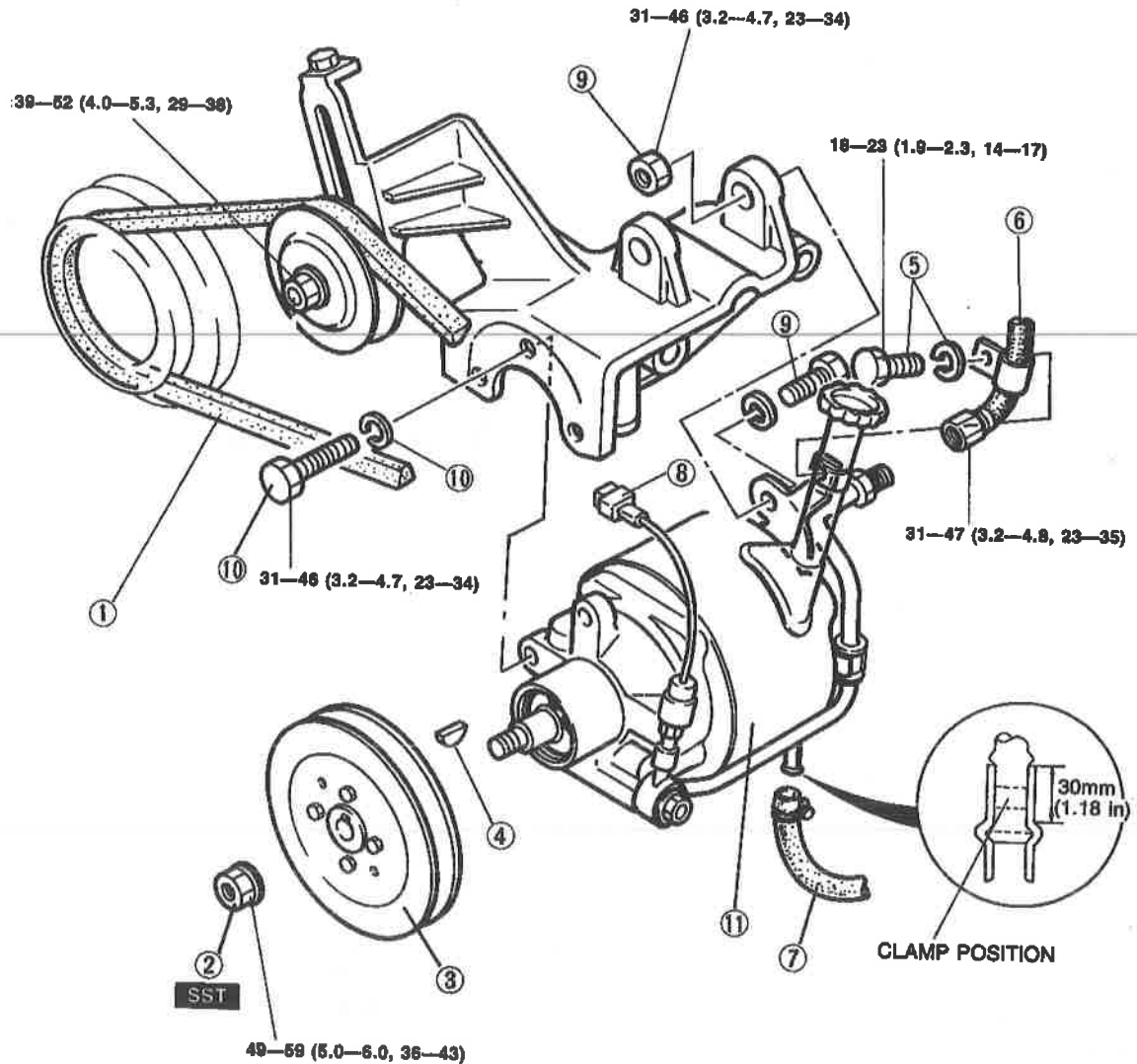
a) The power steering fluid will leak out when the return hose and/or the pressure hose is disconnected. Prepare a suitable container for it to drain into.

b) After installation:

- (1) Check the oil pump drive belt (tension) and adjust it if necessary. (Refer to page N-29.)
- (2) Bleed air from the power steering system.
- (3) Check for fluid leakage.

2BU0NX-021

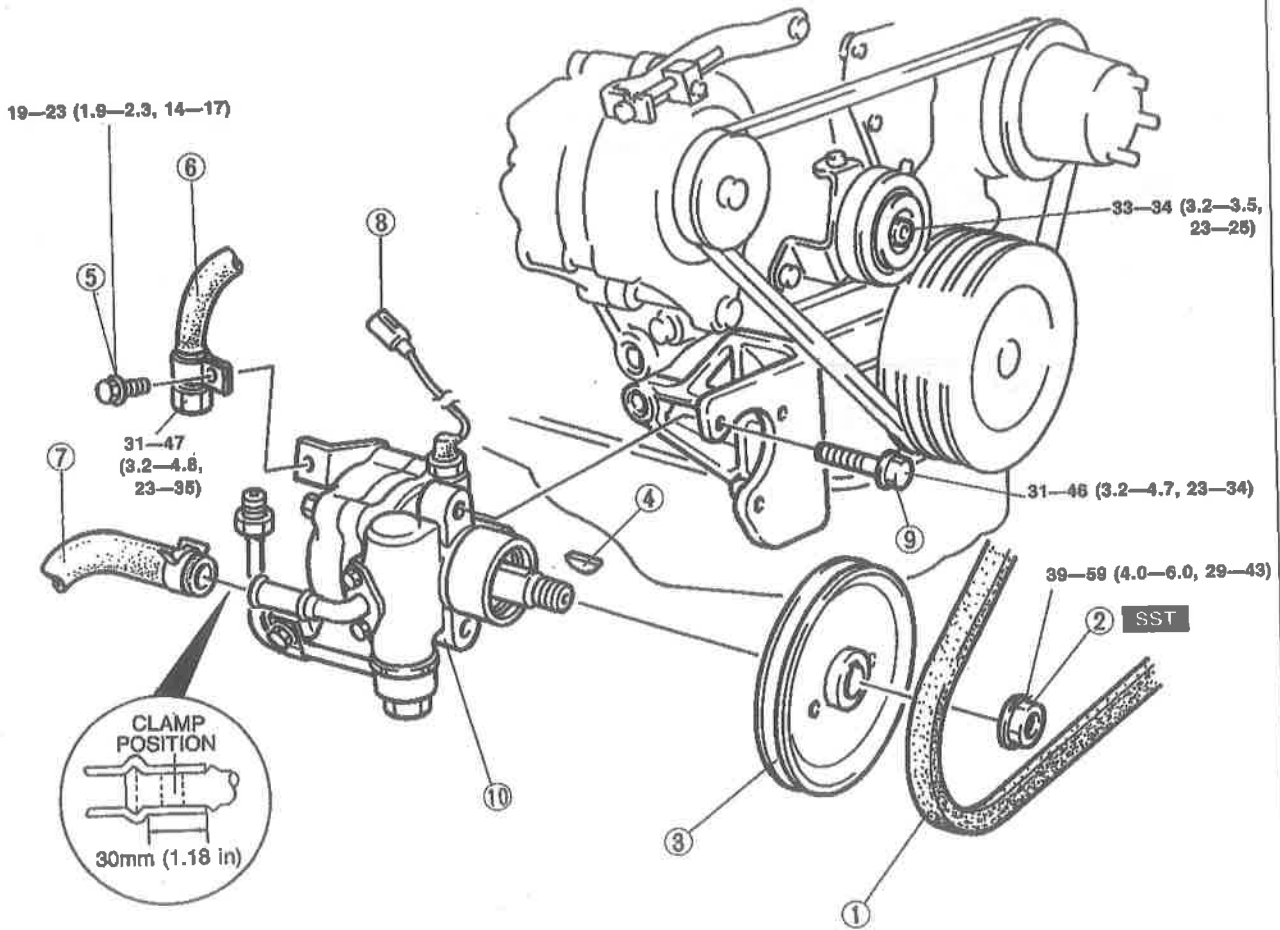
B2200



N·m (m·kg, ft·lb)
2BU0NX-022

- | | |
|--|---|
| <p>1. Drive belt
Removal Note page N-31
Inspection and adjustment..... page N-35
Check for damage or wear</p> <p>2. Locknut
Removal Note page N-31</p> <p>3. Oil pump pulley</p> <p>4. Key</p> <p>5. Bolt and washer</p> | <p>6. Pressure hose</p> <p>7. Return hose</p> <p>8. Fluid pressure switch coupler (EGI model)</p> <p>9. Bolt, washer, and nut</p> <p>10. Bolts and washers</p> <p>11. Oil pump assembly
Check for damage or deformation
Disassembly, Inspection,
and Assembly page N-32</p> |
|--|---|

B2600i

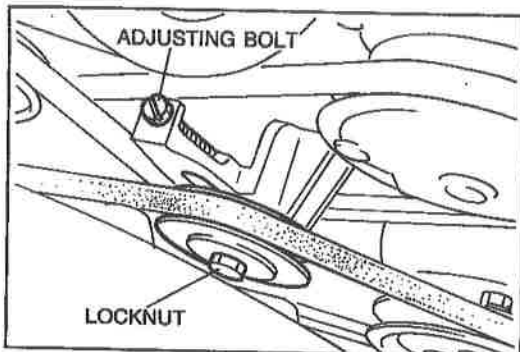


N·m (m·kg, ft·lb)

2BU0NX-023

- 1. Drive belt
Removal Note page N-31
Inspection and adjustment..... page N-35
Check for damage or wear
- 2. Locknut
Removal Note page N-31
- 3. Oil pump pulley
- 4. Key
- 5. Bolt

- 6. Pressure hose
- 7. Return hose
- 8. Fluid pressure switch coupler
- 9. Bolts and washers
- 10. Oil pump assembly
Check for damage or deformation
Disassembly, Inspection,
and Assembly page N-34

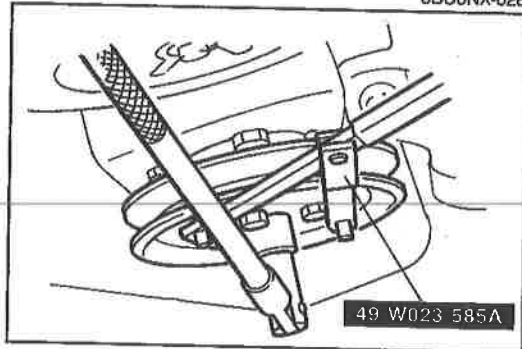


OBU0NX-028

Removal note

Drive belt

Loosen the idler pulley locknut and turn the adjusting bolt to loosen the oil pump drive belt.



OBU0NX-029

Locknut

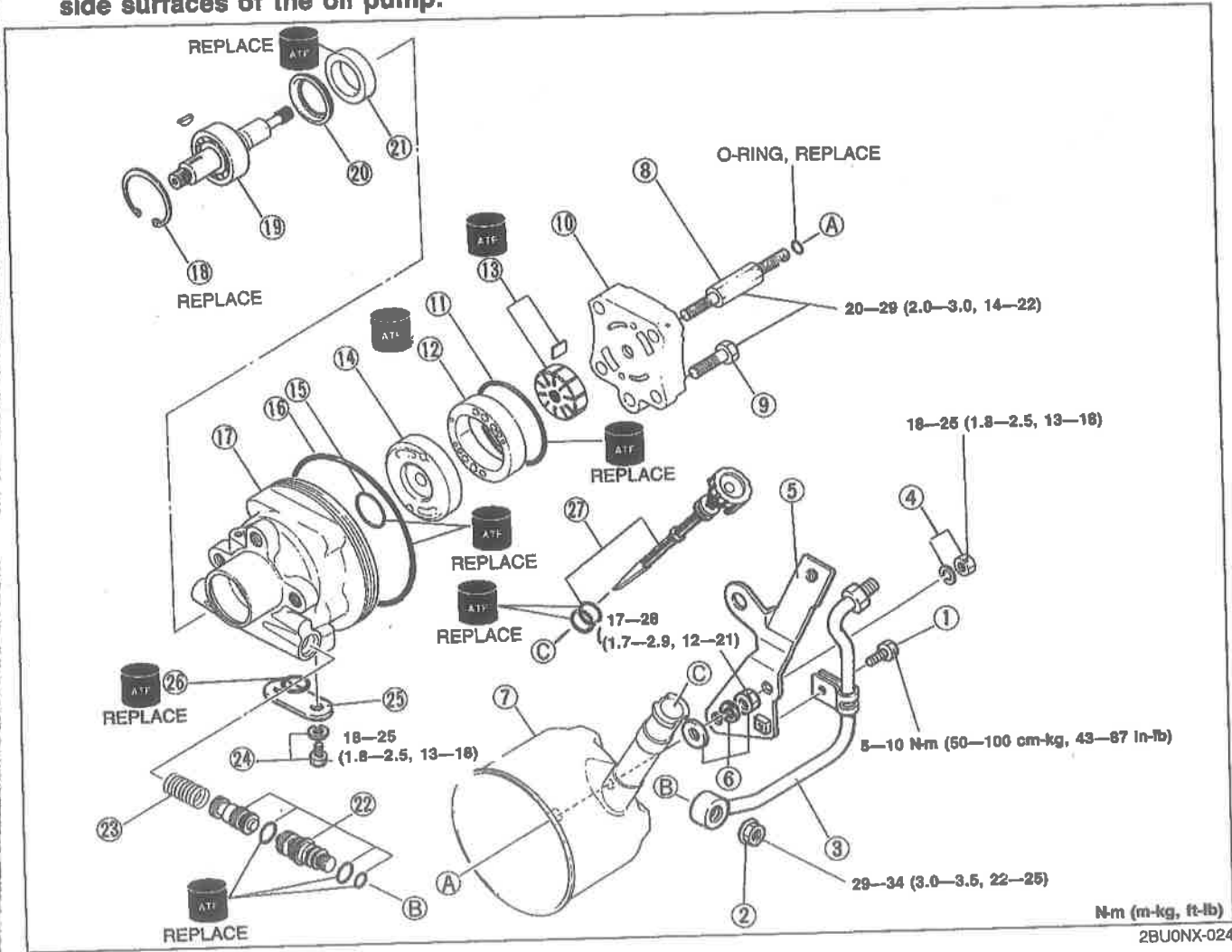
Remove the oil pump pulley locknut while holding the pulley with the **SST**.

Disassembly, Inspection, and Assembly (B2200)

1. The following procedure is for replacement of O-ring and oil seal and bearing. Replace the pump assembly if other repairs are necessary.
2. Disassemble in the order shown in the figure.
3. Inspect all parts and replace as necessary.
4. Assemble in the reverse order of disassembly, referring to **Assembly Note**.

Note

- a) To prevent the entry of dirt, disassemble and assemble in a clean area.
- b) Before disassembly, plug the pipe installation hole; then remove all oil and dirt from the outside surfaces of the oil pump.

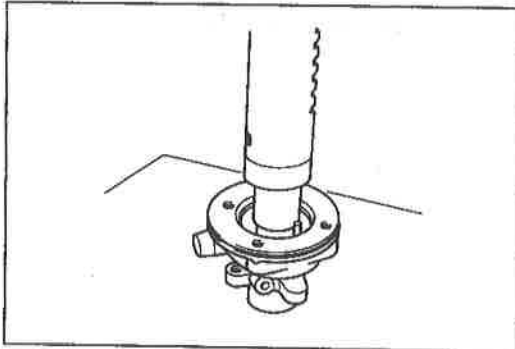


N-m (m-kg, ft-lb)
2BUONX-024

- 1. Bolt
- 2. Nut
- 3. Hose connector assembly
- 4. Nut and washer
- 5. Bracket
- 6. Nut and washer
- 7. Oil tank
- 8. Bolt
- 9. Bolts
- 10. Rear body
Inspect for damage
- 11. O-ring
- 12. Cam ring

- 13. Rotor and vanes
Inspect friction surface for wear or damage
Assembly Note
..... page N-33
- 14. Pressure plate
- 15. O-ring
- 16. O-ring
- 17. Front body
Inspect for damage
- 18. Snap ring
- 19. Bearing and drive shaft
Inspect friction surface for wear

- 20. Retaining ring
- 21. Oil seal
Assembly Note
..... page N-33
- 22. Control valve and O-ring
Inspect for damage
- 23. Spring
- 24. Bolts and washers
- 25. Connector
- 26. O-ring
- 27. Level gauge and O-ring

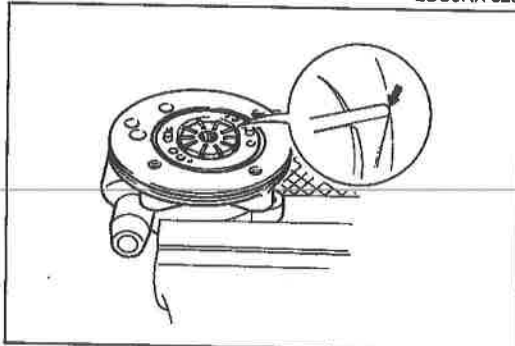


2BU0NX-025

Assembly note

Oil seal

Use a press and piece of pipe [outer diameter 28mm (1.102 in), inner diameter 18mm (0.079 in)] to press in a new oil seal.



2BU0NX-026

Vanes

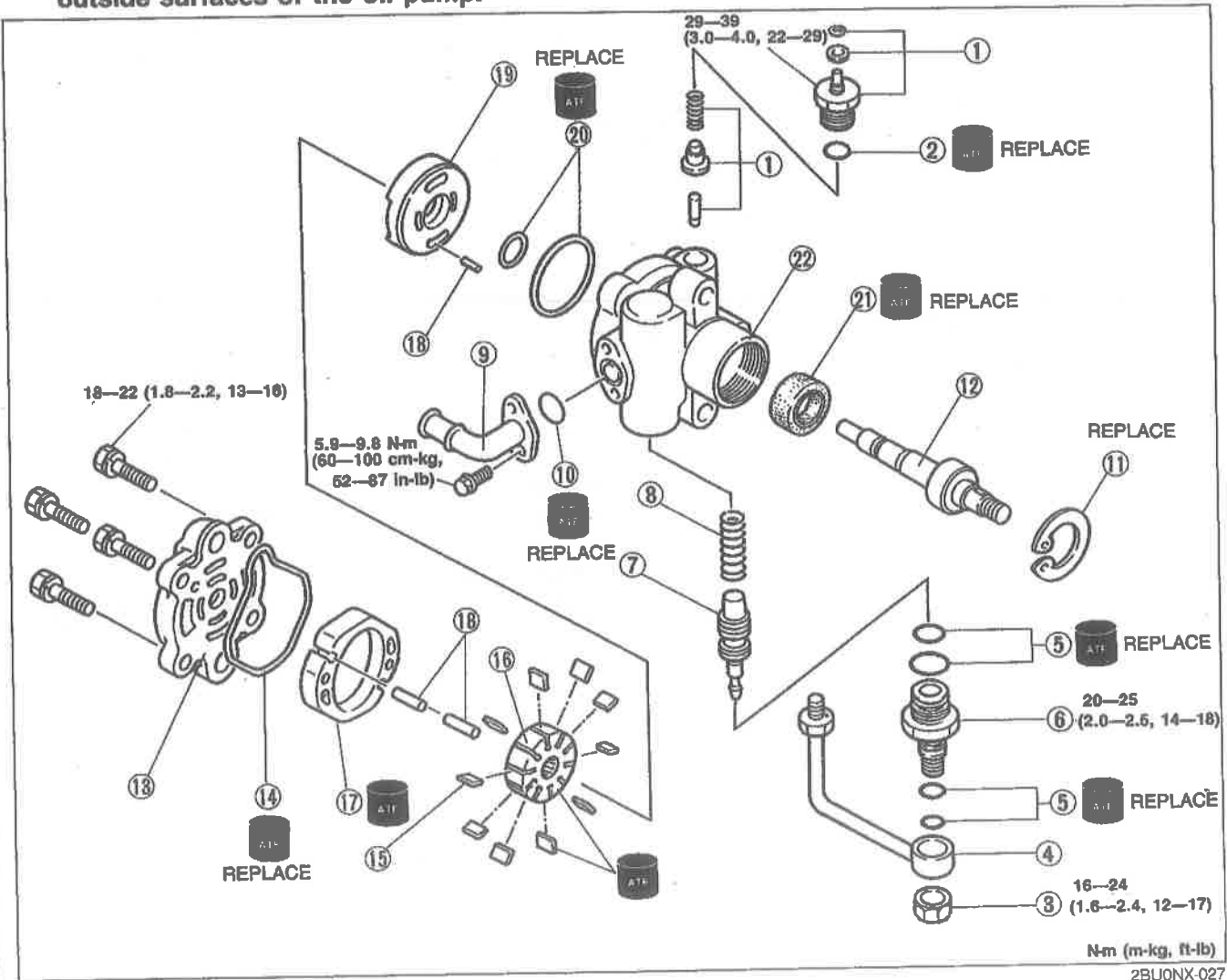
As shown, attach the vanes to the rotor so that the rounded end contacts the cam.

Disassembly, Inspection, and Assembly (B2600I)

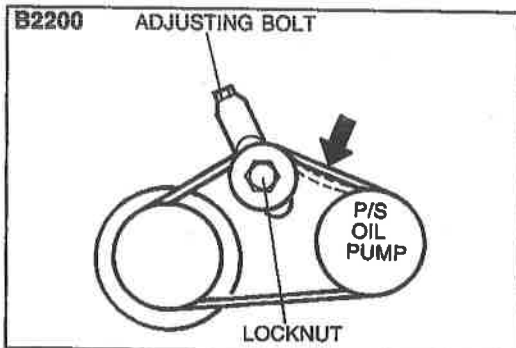
1. The following procedure is for replacement of O-ring and oil seal and bearing. Replace the pump assembly if other repairs are necessary.
2. Disassemble in the order shown in the figure.
3. Inspect all parts and replace as necessary.
4. Assemble in the reverse order of disassembly.

Note

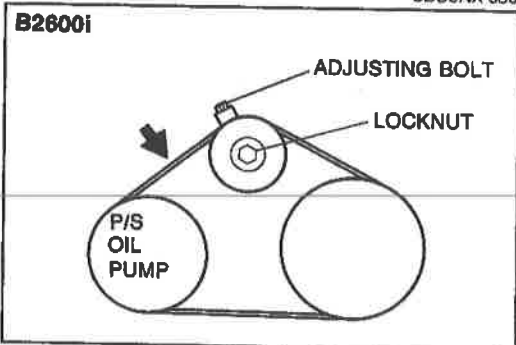
- In order to prevent the entry of dirt, disassemble and assemble in a clean area.
- Before disassembly, plug the pipe installation hole, and then remove all oil and dirt from the outside surfaces of the oil pump.



- | | | |
|---|--|--|
| 1. Pressure switch | 12. Bearing and shaft assembly
Inspect for wear or damage | 17. Cam ring
Inspect for wear or damage |
| 2. O-ring | 13. Rear body
Inspect for damage | 18. Pin |
| 3. Nut | 14. Oil seal | 20. O-ring |
| 4. Connector | 15. Vanes
Inspect for wear or damage | 21. Oil seal |
| 5. O-ring | 16. Rotor
Inspect for wear or damage | 22. Front body
Inspect for damage |
| 6. Connector bolt | | |
| 7. Control valve assembly
Inspect for damage | | |
| 8. Spring
Inspect for deterioration | | |
| 9. Suction pipe | | |
| 10. O-ring | | |
| 11. Snap ring | | |



0BU0NX-030



9BU0NX-058

DRIVE BELT

Inspection and Adjustment

Inspection

Check that the drive belt deflection (tension) is within specification.

Deflection

(Depressed with 98N [10 kg, 22 lb] force)

mm (in)

	New	Used
B2200	7.0—8.0 (0.28—0.31)	8.0—9.0 (0.31—0.35)
B2600i	6.6—7.2 (0.26—0.28)	7.2—8.0 (0.28—0.31)

Tension

N (kg, lb)

	New	Used
B2200	245—294 (25—30, 55—66)	196—245 (20—25, 44—55)
B2600i	412—471 (42—48, 92.4—105.6)	353—402 (36—41, 79.2—90.2)

Note

Belt tension can be measured among any pulleys.

Adjustment

1. Loosen the idler pulley locknut.
2. Adjust the deflection (tension) by turning the adjusting bolt.
3. Tighten the locknut to the specified torque.

Tightening torque

B2200 : 39—52 N·m (4.0—5.3 m·kg, 29—38 ft·lb)
B2600i: 33—34 N·m (3.2—3.5 m·kg, 23—25 ft·lb)

2BU0NX-028