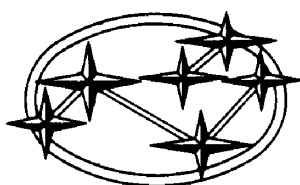


SUBARU

1988



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Schedule of Inspection and Maintenance Services

Continue periodic maintenance beyond 96,000 km (60,000 miles) or 60 months by returning to the first column of the maintenance schedule.

Symbols used

R : Replace

I : Inspect, adjust, correct or replace if necessary

P : Perform

(I) or (P) : Recommended service for safe vehicle operation

MAINTENANCE ITEM		MAINTENANCE INTERVAL [Number of months or km (miles), whichever occurs first.]								REMARKS
		Months	7.5	15	22.5	30	37.5	45	52.5	
		x 1,000 km	12	24	36	48	60	72	84	
		x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	
1	Drive belt(s) [Except camshaft] (Inspect drive belt tension)					I				R
2	Camshaft drive belt									R
3	Engine oil		R	R	R	R	R	R	R	See NOTE a).
4	Engine oil filter		R	R		R		R		See NOTE b).
5	Replace engine coolant and inspect cooling system, hoses and connections					(P)				P
6	Replace fuel filter and inspect fuel system hoses and connections					(P)				P See NOTE c).
7	Air filter elements (Air cleaner, PCV air filter)					R				R
8	Spark plug					R				R
9	Transmission/Differential (Front and Rear) lubricants (Gear oil)					I				See NOTE d).
10	Automatic transmission fluid	FWD vehicle				I				See NOTE e).
		4WD vehicle				R			R	
11	Brake fluid					R				R See NOTE f).
12	Disc brake pad and disc/Front and rear axle boots			I		I		I		I See NOTE g).
13	Brake lining and drum					I				I See NOTE g).
14	Inspect brake line and check operation of parking and service brake system			P		P		P		P
15	Clutch and hill-holder system			I		I		I		I Adjust pedal free play at 1,600 km (1,000 miles).
16	Steering and suspension			I		I		I		I See NOTE g).
17	Grease on front and rear wheel bearings									(I)

a. When the vehicle is used under severe driving conditions mentioned below*, the engine oil should be changed more often.

b. Change at first 12,000 km (7,500 miles) or 7.5 months, whichever occurs first. Afterwards, follow the table, i.e. change every 24,000 km (15,000 miles) or 15 months, whichever occurs first.

c. When the vehicle is used in extremely cold or hot weather areas, contamination of the filter may occur and replacement of filter should be performed as necessary.

d. When the vehicle is frequently operated under severe conditions, replacement should be performed every 48,000 km (30,000 miles).

e. When the vehicle is frequently operated under severe conditions, replacement should be performed every 24,000 km (15,000 miles).

f. When the vehicle is used under following areas, change fluid every 24,000 km (15,000 miles) or 15 months, whichever occurs first.

(1) High humid areas

(2) Mountainous areas

g. When the vehicle is used under severe driving conditions mentioned below*, inspection should be performed every 12,000 km (7,500 miles) or 7.5 months, whichever occurs first.

* Severe driving conditions:

(1) Repeated short distance driving (Item 3, 12 and 13 only)

(2) Driving on rough and/or muddy roads (Item 12, 13 and 16 only)

(3) Driving in dusty conditions

(4) Driving in extremely cold weather (Item 3 and 16 only)

(5) Driving in areas where roads salts or other corrosive materials are used. (Item 12, 13 and 16 only)

1

Drive Belt(s) [Except Camshaft] (Inspect drive belt tension)

MAINTENANCE INTERVAL [Number of months or km (miles), whichever occurs first]

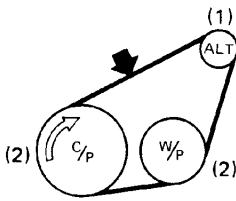
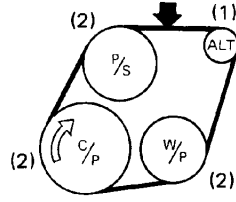
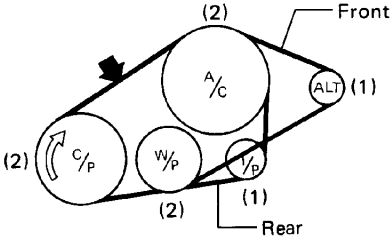
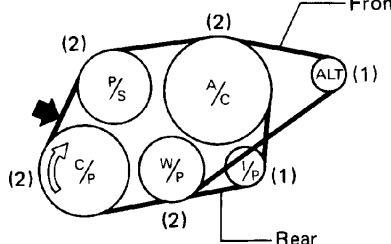
Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
				L				R

INSPECTION

1) Replace belts, if cracks, fraying or wear is found.

2) Check drive belt tension and adjust it if necessary by changing alternator installing position and/or idler pulley installing position.

1. 1800 cc model

Type	Pulley arrangement	Tension mm (in)/98 N (10 kg, 22 lb)	
		New belt	Existing belt
Basic model		8 – 10 (0.31 – 0.39)	9 – 11 (0.35 – 0.43)
Power steering equipped model		6 – 7 *1 (0.24 – 0.28)	7 – 9 (0.28 – 0.35)
Air conditioner equipped model		10 – 12 *2 (0.39 – 0.47)	
Power steering and air conditioner equipped model		6 – 8 *2 (0.24 – 0.31)	

Figures in parentheses refer to the number of grooves in pulleys.

C/P : Crankshaft pulley

P/S : Power steering oil pump pulley

W/P : Water pump pulley

A/C : Air conditioner compressor pulley

ALT : Alternator pulley

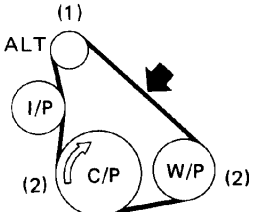
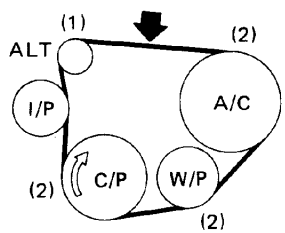
I/P : Idler pulley

Fig. 1

*1 Replace two belts simultaneously if the above fault is found on one of the two belts.

*2 When replacing belt with a new one, adjust its tension to the specification and then readjust it to the same specification after running engine for 5 minutes in consideration of its initial expansion.

2. 2700 cc model

Type	Pulley arrangement	Tension mm (in)/98 N (10 kg, 22 lb)	
		New belt	Existing belt
Basic model		8 – 10 (0.31 – 0.39)	9 – 11 (0.35 – 0.43)
Air conditioner equipped model		5.5 – 6.5* ² (0.217 – 0.256)	6.5 – 7.5 (0.256 – 0.295)

Figures in parentheses refer to the number of grooves in pulleys.

C/P : Crankshaft pulley A/C : Air conditioner compressor pulley
W/P : Water pump pulley I/P : Idler pulley
ALT : Alternator pulley

***1 Replace two belts simultaneously if the above fault is found on one of the two belts.**

***2 When replacing belt with a new one, adjust its tension to the specification and then readjust it to the same specification after running engine for 5 minutes in consideration of its initial expansion.**

Fig. 2

L1-551

REPLACEMENT

(1) Except XT6

[A] Alternator drive belt(s)

- 1) Loosen alternator mounting bolts and remove belt(s).

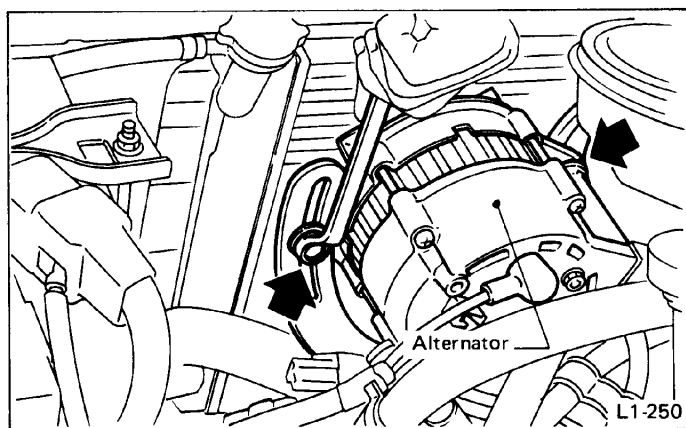


Fig. 3

L1-250

- 2) Install new belt(s) and tighten alternator installing bolts as to obtain the specified belt tension shown in the above table.
3) Wipe off any oil or water on belts and pulleys.

[B] Rear side belt (not driving alternator) on vehicles equipped with air conditioner.

- 1) Loosen bolt and special nut, securing idler pulley then remove belt.

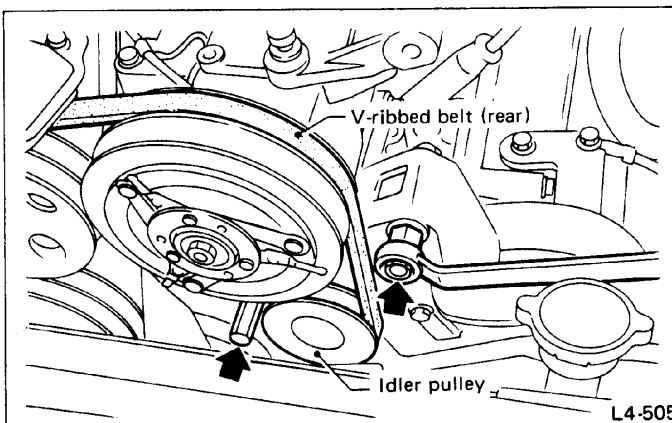


Fig. 4

L4-505

2) Attach new belt and apply proper tension to belt as shown above.

(2) XT6

- 1) Loosen lock nut. Using adjusting bolt, move idler pulley in the direction that loosens belt.
- 2) Replace belt with a new one.
- 3) Adjust belt adjusting bolt to tense belt properly. Then tighten lock nut.

Tightening torque:

34 – 44 N·m (3.5 – 4.5 kg-m, 25 – 33 ft-lb)

- 4) Tighten adjusting bolt by turning it counterclockwise.

Tightening torque:

4 – 6 N·m (0.4 – 0.6 kg-m, 2.9 – 4.3 ft-lb)

	Belt tension	
	Gauge	Belt tension [with 98 N (10 kg, 22 lb) force]
New	637 – 736 N (65 – 75 kg, 143 – 165 lb)	5.5 – 6.5 mm (0.217 – 0.256 in)
Used	441 – 637 N (45 – 65 kg, 99 – 143 lb)	6.5 – 7.5 mm (0.256 – 0.295 in)

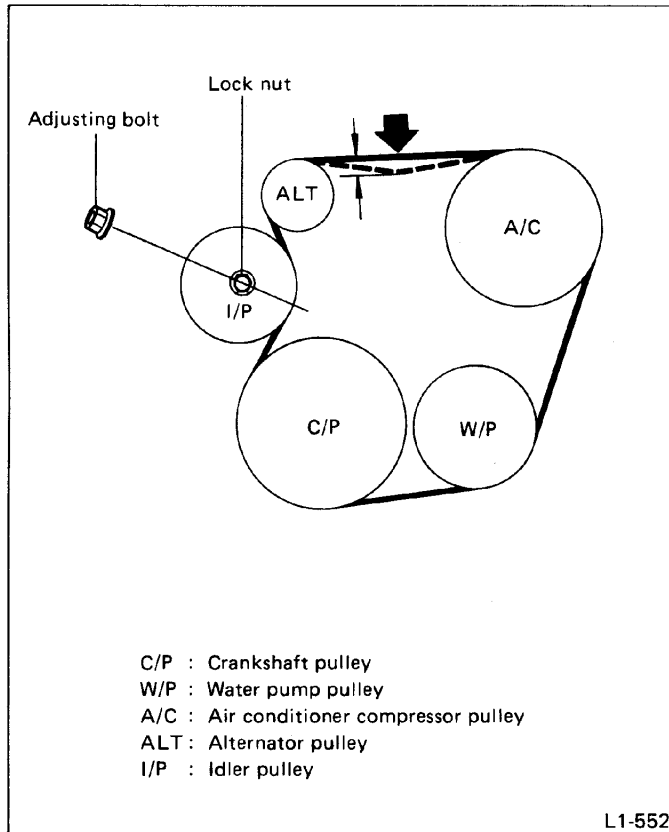


Fig. 5

- * Tighten a new belt in two steps. Tighten first by applying a force of 588 to 785 N (60 to 80 kg, 132 to 176 lb). Then retighten to specified value after idling engine for 5 minutes.

2

Camshaft Drive Belt

REPLACEMENT

- a. Before replacing timing belts, remove radiator fan.
- b. Timing belts should be replaced when engine is cold.
- c. Be extremely careful not to allow nuts, washers, and other foreign matters to enter belt cover.

REMOVAL

- 1) Loosen water pump pulley nut until it can be turned with fingers.
- 2) Loosen two alternator mounting bolts.
- 3) Detach V-belts.
- 4) Disconnect harness for oil pressure switch or oil pressure gauge.
- 5) Remove crankshaft pulley:
Loosen crank pulley bolt, and remove pulley. Use special tool "FLYWHEEL STOPPER CP" or "DRIVE PLATE STOPPER" to lock crank pulley.

Tool No.	Tool Name
498277000	FLYWHEEL STOPPER
498497000	DRIVE PLATE STOPPER

- 6) Remove water pump pulley and pulley cover by loosening four 6 mm nuts.
- 7) Remove level gauge guide together with level gauge by loosening one 8 mm bolt.
- 8) Remove right-hand and left-hand belt covers by loosening eight 6 mm bolts.
- 9) Remove front belt cover by loosening eight 6 mm bolts.
- 10) Remove timing belts:
 - (1) Loosen bolts securing tensioner on the side of #1 and #3 cylinders, and move tensioner upward completely. Then temporarily tighten bolts.
Use special tool "TENSIONER WRENCH" (499007000) to move up #2 and #4 side tensioner.
 - (2) Detach timing belt on the side of #1 and #3 cylinders.

MAINTENANCE INTERVAL

[Number of months or km (miles), whichever occurs first]

Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
								R

(3) Remove crankshaft sprocket CP.

(4) Detach timing belt on the side of #2 and #4 cylinders.

Put arrow mark to indicate the direction in which belts move before detaching belts.

INSTALLATION

Loosen the upper bolts ① and ③ by 1/2 turn in advance.

- 1) Install timing belts:
 - (1) Align center line of three lines scribed on flywheel with timing mark on flywheel housing by moving flywheel.
 - (2) Align timing mark scribed on left-hand camshaft sprocket with notch on belt cover.

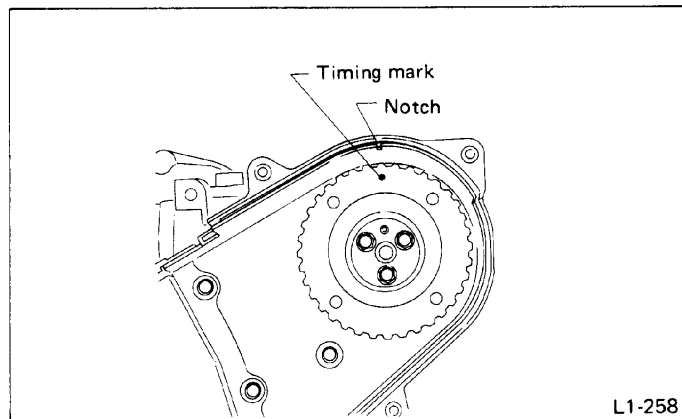


Fig. 6

- (3) Attach No. 2 timing belt to crankshaft sprocket, oil pump sprocket, idler CP, and camshaft sprocket in sequence. Be careful not to slacken belt.

- (4) Adjust tension of belt by loosening tensioner bolt ④ by 1/2 turn.

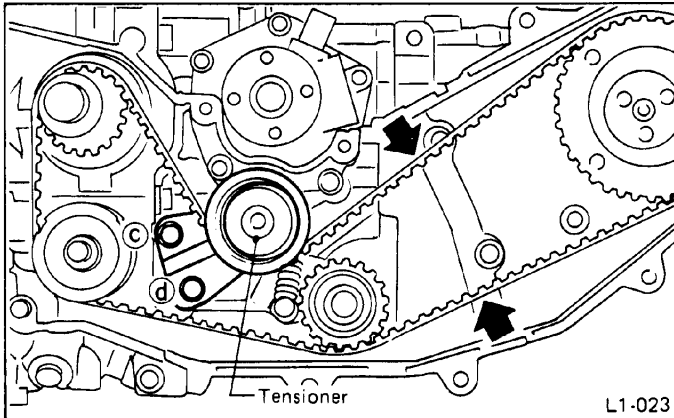


Fig. 7

- (5) Push timing belt with finger and ensure tensioner moves smoothly.

- (6) Using special tool "BELT TENSION WRENCH CP" (499437000), apply the specified torque counterclockwise to camshaft sprocket. Under this state, temporarily tighten tensioner bolt ④ and then temporarily tighten bolt ③.

Specified timing belt tension and torque to be applied to camshaft sprocket

Belt tension	Torque to be applied to camshaft sprocket
147 – 245 N (15 – 25 kg, 33 – 55 lb)	24 – 25 N·m (2.4 – 2.6 kg·m, 17 – 19 ft-lb)

When specified belt tension is applied to timing belt, notch of special tool "BELT TENSION WRENCH CP" will be aligned with belt cover notch. Timing under tensioned state can be ascertained by this method.

- (7) Sequentially tighten bolts ④ and ③ to the specified torque.

Tightening torque:

17.2 – 20.1 N·m
(1.75 – 2.05 kg·m, 12.7 – 14.8 ft-lb)

- (8) Be sure the three lines on flywheel and timing mark on camshaft sprocket are respectively positioned as specified in steps (1) and (2) above.

- (9) Rotate crankshaft clockwise one turn and align center line of scribed three lines on flywheel with timing mark on flywheel housing.

- (10) Install crankshaft sprocket CP.

- (11) Align timing mark of right-hand camshaft sprocket with notch on belt cover.

- (12) Attach timing belt to crankshaft sprocket and camshaft sprocket. Be careful not to slacken belt.

- (13) Loosen tensioner bolt ⑤ 1/2 turn, and apply tension to timing belt.

- (14) Push timing belt with finger to ensure smooth movement of tensioner.

- (15) Using special tool "BELT TENSION WRENCH CP" (499437000), apply the specified torque counterclockwise to camshaft sprocket. Under this state, temporarily tighten tensioner bolt ⑤ and then temporarily tighten bolt ⑥.

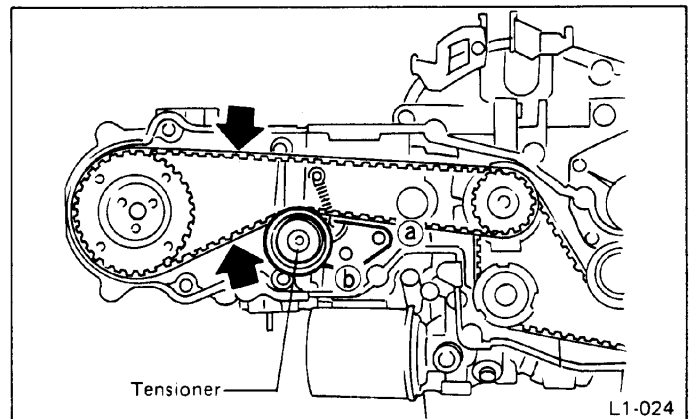


Fig. 8

- (16) Sequentially tighten bolts ⑥ and ⑥ to the specified torque.

Tightening torque:

17.2 – 20.1 N·m
(1.75 – 2.05 kg·m, 12.7 – 14.8 ft-lb)

- (17) Be sure the three lines on flywheel and timing mark on camshaft sprocket are respectively positioned as specified in steps (11) and (12) above.

- 2) Install front belt cover:

Attach front and rear belt cover sealings, and timing belt cover plug to front belt cover. Install it to cylinder block.

Be sure that no foreign matter such as nut, washer, etc. is left inside the belt cover.

3) Install crank pulley:

Lock crank pulley using special tool "FLYWHEEL STOPPER CP" or "DRIVE PLATE STOPPER", and tighten crank pulley bolt.

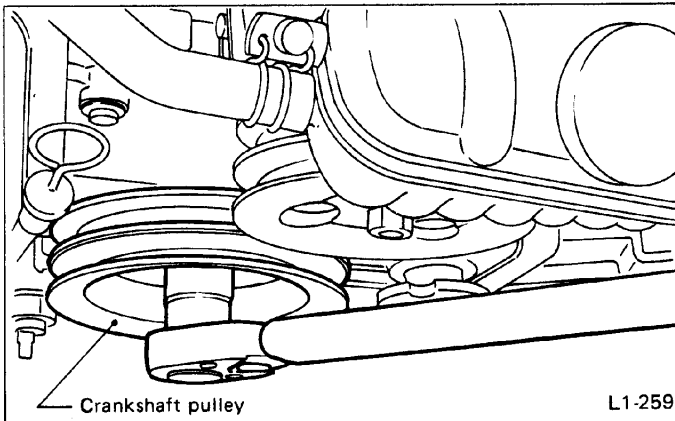


Fig. 9

Tightening torque:

89 – 107 N·m (9.1 – 10.9 kg-m, 66 – 79 ft-lb)

4) Install water pump pulley:

Assemble water pump pulley and pulley cover, and temporarily tighten bolts.

5) Install oil level No. 2 guide ASSY and oil level gauge CP. Coat O-ring with engine oil when installing.

6) Install V-belts.

7) Tighten water pump pulley bolt to the specified torque.

Tightening torque:

9.1 – 10.5 N·m (0.93 – 1.07 kg-m, 6.7 – 7.7 ft-lb)

8) Connect harness to oil pressure switch or oil pressure gauge and clamp harness to level gauge guide.

3

Engine Oil

MAINTENANCE INTERVAL

[Number of months or km (miles), whichever occurs first]

Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
	R	R	R	R	R	R	R	R

REPLACEMENT

- 1) Drain engine oil by loosening engine oil drain plug.

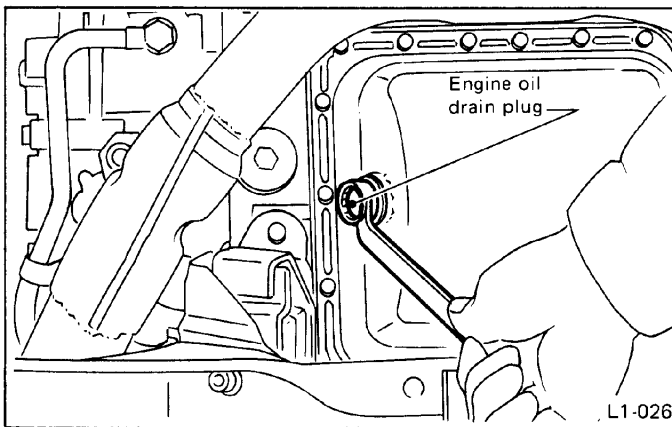


Fig. 10

- 2) Open engine oil filler cap for quick draining of the engine oil.

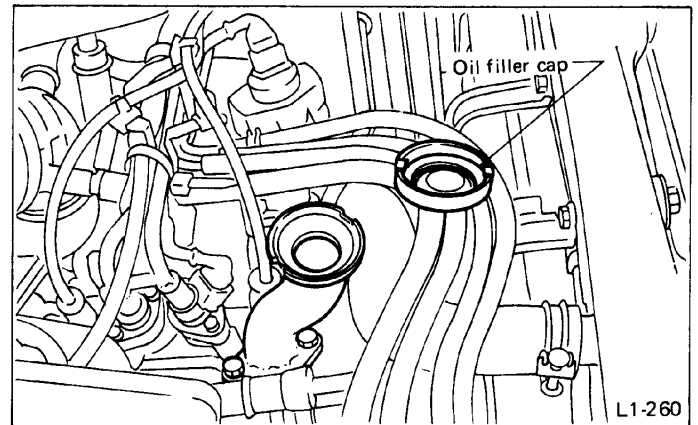


Fig. 11

- 3) Tighten engine oil drain plug after draining engine oil.

Tightening torque:

25 N·m (2.5 kg-m, 18 ft-lb)

- 4) Fill engine oil through filler pipe up to upper point on level gauge. Make sure that vehicle is placed level when checking oil level. Use engine oil of proper quality and viscosity, selected in accordance with the table below.

ITEM	API Classi- fication	SAE viscosity No. and Applicable Temperature					
		(° F)	-30	0	30	60	90
		(° C)	-34	-18	0	16	32
● Engine oil	SE	10W-30, 10W-40					
	SF	← 5W-30					

L1-445

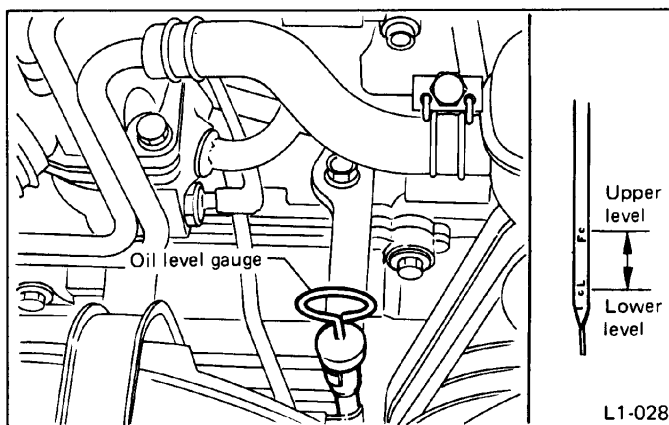
Fig. 12

The proper viscosity helps car get good cold and hot starting by reducing viscous friction and thus increasing cranking speed.

- SAE 5W-30 is not recommended for sustained high speed driving.
- If vehicle is used in desert areas or areas with very high temperatures or for other heavy duty applications, the following viscosity oils may be used:

“30, 40, 10W-50, 20W-40, 20W-50”

- When replenishing oil, it does not matter if the oil to be added is a different brand from that in the engine, however, use oil having the API classification and SAE viscosity No. designated by SUBARU.



L1-028

Fig. 13

Engine oil capacity:

Upper level

4.0ℓ (4.2 US qt, 3.5 Imp qt) (Except XT6)

5.0ℓ (5.3 US qt, 4.4 Imp qt) (XT6)

Lower level

3.0ℓ (3.2 US qt, 2.6 Imp qt) (Except XT6)

4.0ℓ (4.2 US qt, 3.5 Imp qt) (XT6)

- Close engine oil filler cap.
- Start engine and warm it up for a time.
- After stopping the engine, recheck the oil level. If necessary, add oil up to the upper point on level gauge.

4

Engine Oil Filter

MAINTENANCE INTERVAL [Number of months or km (miles), whichever occurs first]

Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
	R	R		R		R		R

REPLACEMENT

- 1) Remove oil filter with an oil filter wrench.
- 2) Get a new oil filter and apply a thin coat of engine oil to the seal rubber.
- 3) Install oil filter by turning it with hand, being careful not to damage seal rubber.
- 4) Tighten more approximately two thirds turn after the seal rubber contacts the oil pump case. Do not tighten excessively, or oil may leak.
- 5) After installing oil filter, run engine and make sure that no oil is leaking around seal rubber.

The filter element and filter case are permanently joined; therefore, interior cleaning is not necessary.

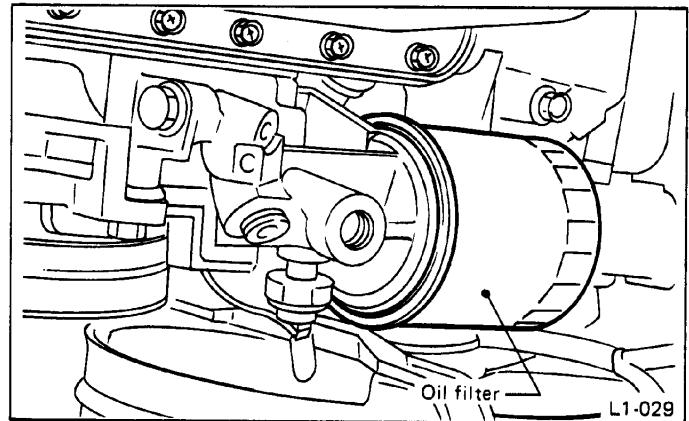


Fig. 14

5

Replace Engine Coolant and Inspect Cooling System, Hoses and Connections

REPLACEMENT

- 1) Pull out the end of drain tube to the underside of body from between undercover and skirt.

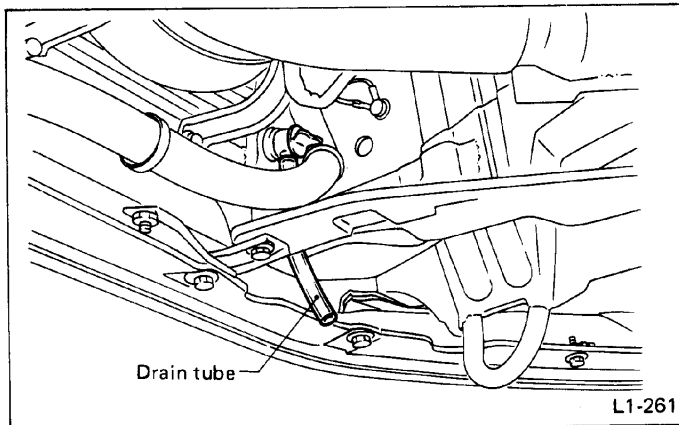


Fig. 15

- 2) Place a container under drain tube, and loosen drain plug.
- 3) Loosen radiator cap to drain coolant.
- 4) Drain coolant from reserve tank.

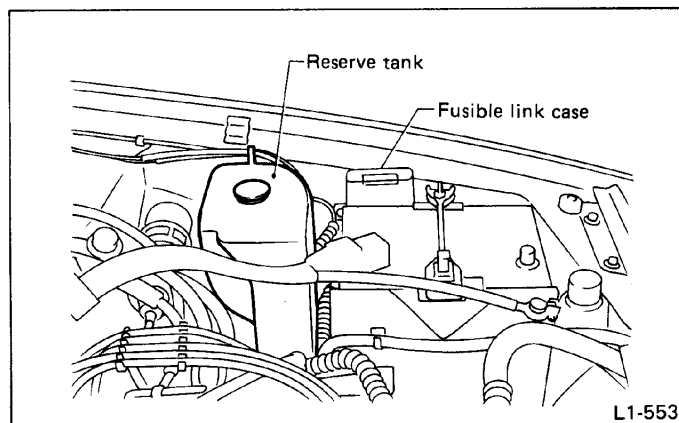


Fig. 16

MAINTENANCE INTERVAL

[Number of months or km (miles), whichever occurs first]

Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
				(P)				(P)

- 5) Remove drain plug on engine side, and drain coolant.

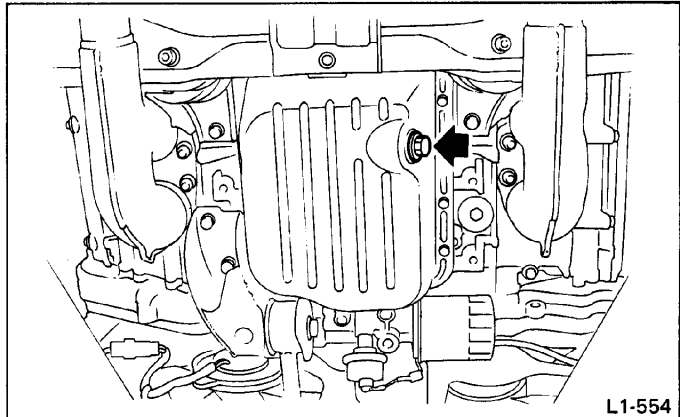


Fig. 17

- 6) Securely tighten engine side drain plugs.
- 7) Tighten radiator drain plug securely. (Drain tube may face downward.)
- 8) Install reserve tank to original position.
- 9) Carefully pour prepared coolant from radiator filler port to neck of filler, then pour into reserve tank up to "FULL" level.

Coolant capacity (Pour up to "FULL" level):

Approx. 5.5ℓ (5.8 US qt, 4.8 Imp qt) (Except XT6)

Approx. 7ℓ (7.4 US qt, 6.2 Imp qt) (XT6)

The SUBARU Genuine Coolant containing anti-freeze and anti-rust agents is especially made for SUBARU engine, which has an aluminum crankcase. Always use SUBARU Genuine Coolant, since other coolant may cause corrosion.

- 10) Securely install radiator cap.
- 11) Run engine for more than five minutes at 2,000 to 3,000 rpm. (Run engine until radiator becomes hot in order to purge air trapped in cooling system.)
- 12) Stop engine and wait until coolant temperature lowers. Then open radiator cap to check coolant level and add coolant up to radiator filler neck. Next, add coolant into reserve tank up to "FULL" level.

The radiator is of the pressurized type. Do not attempt to open the radiator cap immediately after the engine has been stopped.

13) After adding coolant, securely install radiator and reserve tank caps.

RELATIONSHIP OF SUBARU COOLANT CONCENTRATION AND FREEZING TEMPERATURE

The concentration and safe operating temperature of the SUBARU coolant is shown in the following diagram. Measuring the temperature and specific gravity of the coolant will provide this information.

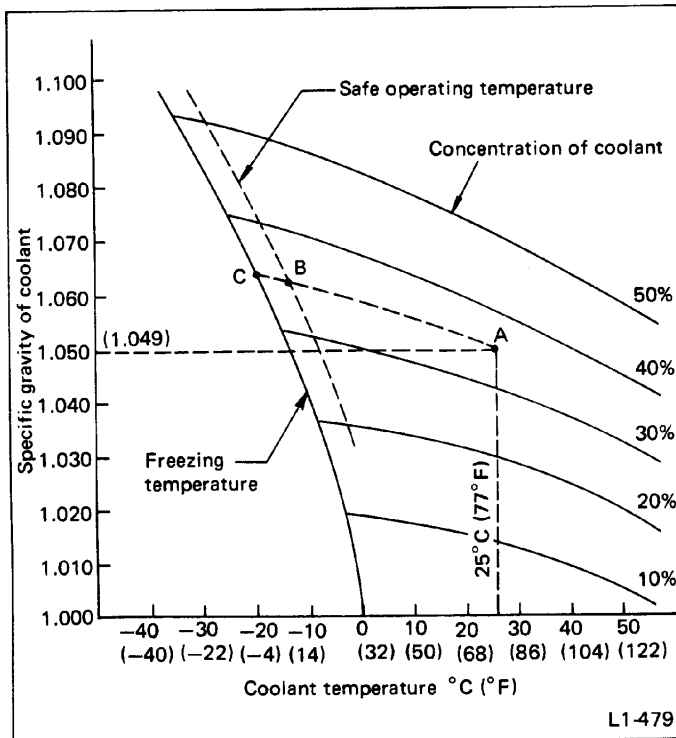


Fig. 18

[Example]

If the coolant temperature is 25°C (77°F) and its specific gravity is 1.049, the concentration is 35% (point A), the safe operating temperature is -14°C (7°F) (point B), and the freezing temperature is -20°C (-4°F) (point C).

PROCEDURE TO ADJUST THE CONCENTRATION OF THE COOLANT

To adjust the concentration of the coolant according to temperature, find the proper fluid concentration in the above diagram and replace the necessary amount of coolant with an undiluted solution of SUBARU genuine coolant (concentration 50%).

The amount of coolant that should be replaced can be determined using the following diagram.

(1) Except XT6

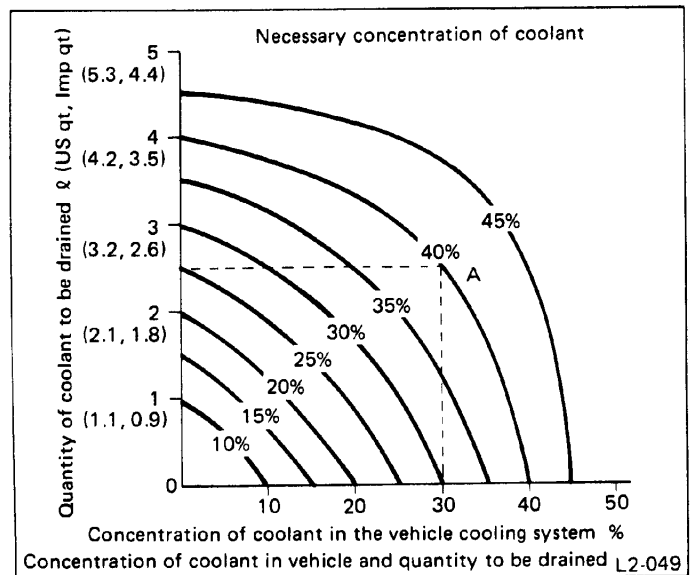


Fig. 19

[Example]

Assume that the coolant concentration must be increased from 30% to 40%. Find point A, where the 30% line of coolant concentration intersects with the 40% curve of the necessary coolant concentration, and read the scale on the vertical axis of the graph at height A. The quantity of coolant to be drained is 2.5 liters (2.6 US qt, 2.2 Imp qt). Drain 2.5 liters (2.6 US qt, 2.2 Imp qt) of coolant from the cooling system and add 2.5 liters (2.6 US qt, 2.2 Imp qt) of the undiluted solution of SUBARU coolant.

If a coolant concentration of 50% is needed, drain all the coolant and refill with the undiluted solution only.

(2) XT6

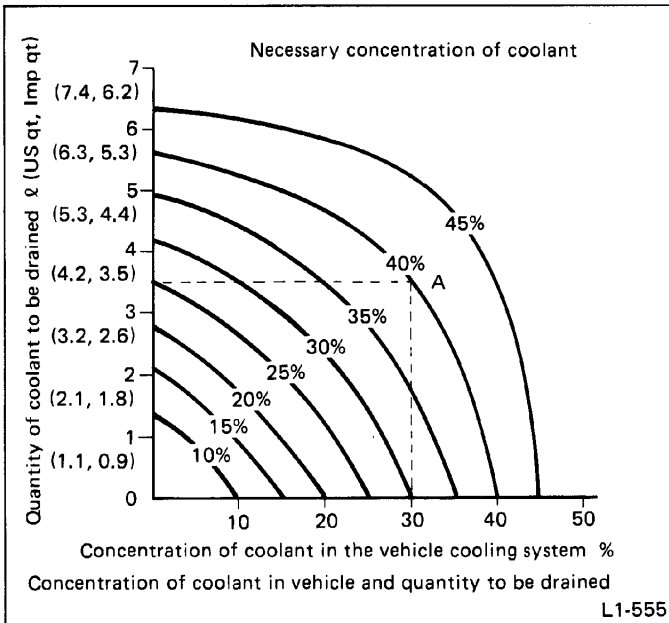


Fig. 20

[Example]

Assume that the coolant concentration must be increased from 30% to 40%. Find point A, where the 30% line of coolant concentration intersects with the 40% curve of the necessary coolant concentration, and read the scale on the vertical axis of the graph at height A. The quantity of coolant to be drained is 3.5 liters (3.7 US qt, 3.1 Imp qt). Drain 3.5 liters (3.7 US qt, 3.1 Imp qt) of coolant from the cooling system and add 3.5 liters (3.7 US qt, 3.1 Imp qt) of the undiluted solution of SUBARU coolant.

If a coolant concentration of 50% is needed, drain all the coolant and refill with the undiluted solution only.

Cap relief pressure:
88 kPa (0.9 kg/cm², 13 psi)

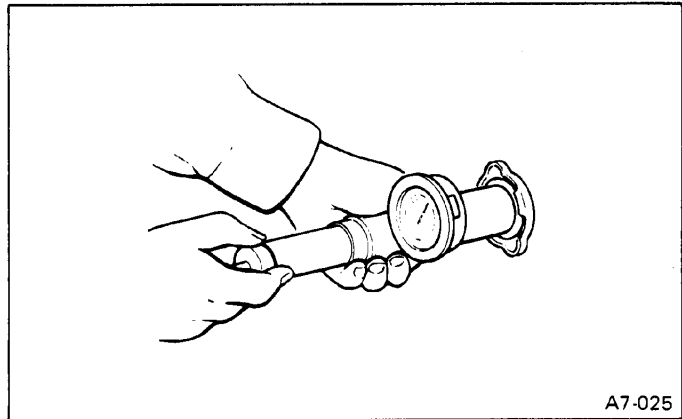


Fig. 21

5) Check the radiator for leakage.

Inspect radiator for leakage using a cap tester and applying a pressure of 157 kPa (1.6 kg/cm², 23 psi).

If a leakage is detected, repair or replace the radiator.

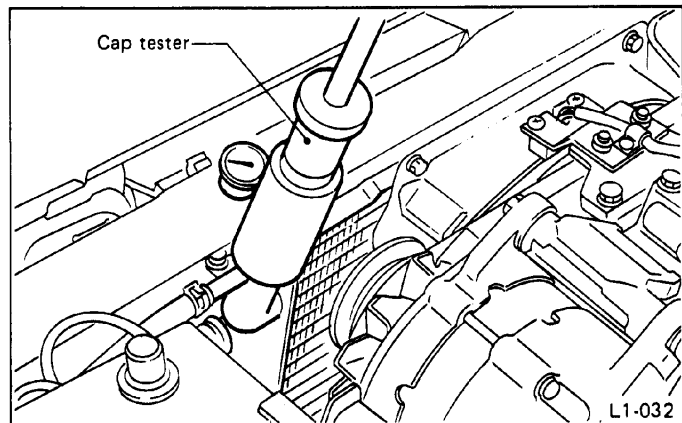


Fig. 22

INSPECTION

- 1) Check the radiator reserve tank and hoses for damage or clogging.
- 2) Check the hose connections for leakage.
- 3) Check the valve, spring and packing in the cap for damage.
- 4) Check rubber seal on cap for tears, cracks or deterioration after cleaning it.

Install the cap on a tester and if cap does not hold or does not release the specified pressure, replace cap.

6)* If the coolant temperature exceeds 86.5 to 89.5°C (188 to 193°F) while radiator is not so hot, check thermostat. (Except XT6)

If the coolant temperature exceeds 90 to 94°C (194 to 201°F) while radiator is not so hot, check thermostat. (XT6)

7)* If thermostat does not open at 86.5 to 89.5°C (188 to 193°F), replace it with a new one. (Except XT6)

If thermostat does not open at 90 to 94°C (194 to 201°F), replace it with a new one. (XT6)

8) If electric fan does not operate with coolant temperature above 93 to 97°C (199 to 207°F), check thermostwitch or fan motor.

* Refer to Chap. 2-5.

6

Replace Fuel Filter and Inspect Fuel System Hoses and Connections

MAINTENANCE INTERVAL [Number of months or km (miles), whichever occurs first]

Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
				(P)				P

REPLACEMENT

- a. Before starting the job, be sure to carry out the following.
- Place "No fire" signs near the working area.
 - Disconnect ground cable from battery.
- b. Be careful not to spill fuel on the floor.

MPFI

- 1) Removal
- (1) Before removing the hose, filter, pump, etc., be sure to release the fuel pressure, as follows:
- Disconnect the wiring connector of the fuel pump.
 - Crank the engine for more than five seconds.
- If the engine starts, let the engine run until it stops.
- After turning IG switch OFF, connect the wiring connector of the fuel pump.
- (2) Loosen the screw of the hose clamp and pull off the hose from the filter.

- (3) Remove the filter from the holder.

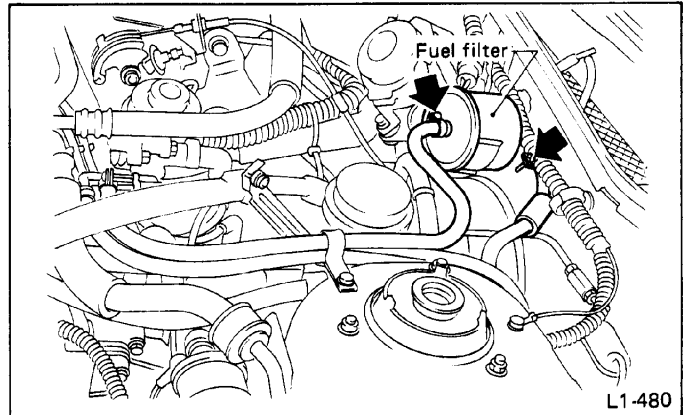


Fig. 23

- 2) Installation
- (1) Install the filter to the holder.
- (2) Connect the hose as illustrated below:

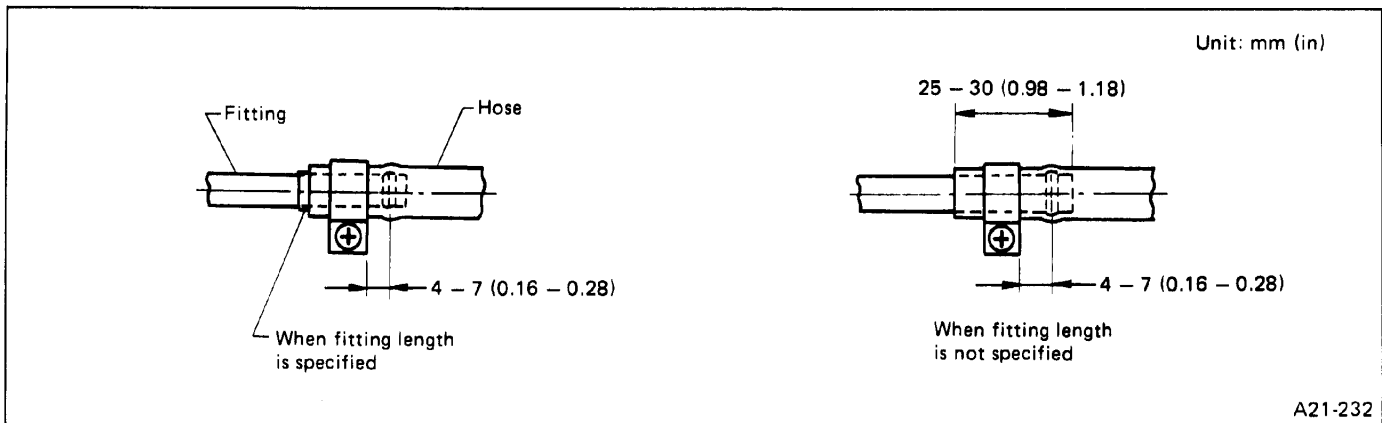


Fig. 24

- (3) Tighten the hose clamp screw to the specified torque.

Tightening torque:

1.0 – 1.5 N·m (0.1 – 0.15 kg·m, 0.7 – 1.1 ft·lb)

holder. Correct the hose position by removing any twist so that it will not interfere with the filter body or washer tank, before tightening the screw of the hose clamp.

- (4) If the hose is damaged at the clamping portion, replace the hose with a new one.
- (5) If the hose clamp is too deformed, replace with a new one.
- (6) Fit the hose to the filter, then install the filter to the

INSPECTION

FUEL PIPING AND CONNECTIONS

Check fuel piping and connections for leakage.

7

Air Filter Elements (Air cleaner, PCV air filter)

MAINTENANCE INTERVAL

[Number of months or km (miles), whichever occurs first]

Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
				R				R

REPLACEMENT

MPFI

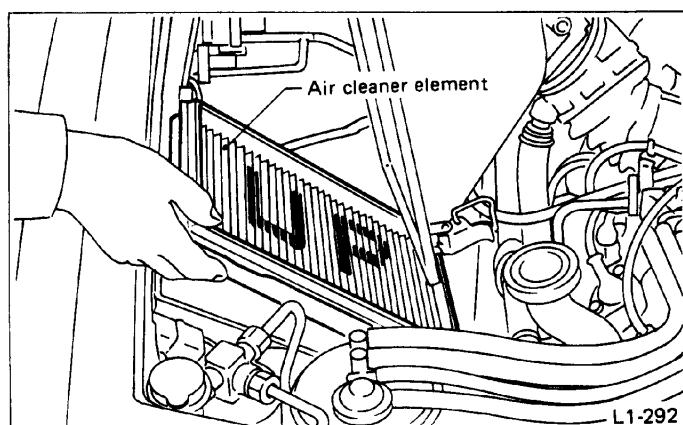


Fig. 25

- a. Do not attempt to clean the air cleaner element.
The filter paper of the element is wetted with a special non-inflammable slow-evaporating viscous liquid. It is resistant to cold weather and has a long service life. Dirt adhering to this filter paper forms porous laminations with the viscous liquid, which function as a filtration layer to reduce dust penetration into the filter paper. If this filter paper is cleaned, the filtration layer thus formed will be lost along with the viscous liquid.
- b. Under extremely dusty conditions, replace it more frequently.

8

Spark Plug

MAINTENANCE INTERVAL [Number of months or km (miles), whichever occurs first]

Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
				R				R

REPLACEMENT

Recommended spark plugs

For U.S.A.

NGK: BPR6ES-11

(or BPR5ES-11, BPR7ES-11)

Nippondenso: W20EPR-U11

(or W16EPR-U11, W22EPR-U11)

Champion: RN9YC-4

(or RN11YC-4)

For Canada

Champion: RN9YC-4

(or RN11YC-4)

When installing spark plugs on cylinder head, tighten to the specified torque.

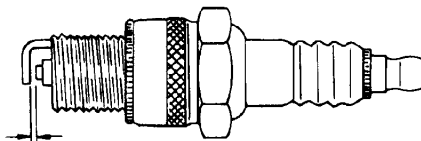
Tightening torque:

18 – 24 N·m (1.8 – 2.4 kg-m, 13 – 17 ft-lb)

Be sure to place the gasket between the cylinder head and spark plug.

Spark plug gap

1.0 – 1.1 mm (0.039 – 0.043 in)



1.0 – 1.1 mm (0.039 – 0.043 in)

Spark plug thread

Dia. = 14 mm (0.55 in)

Pitch = 1.25 mm (0.0492 in)

A9-163

Fig. 26

9

Transmission/ Differential (Front and rear) Lubricants (Gear oil)

MAINTENANCE INTERVAL

[Number of months or km (miles), whichever occurs first]

Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
				I				

INSPECTION

MANUAL TRANSMISSION

Inspect the transmission gear oil level. If the oil level is at the lower point or below, add some oil through the oil level gauge hole up to the upper point of gauge.

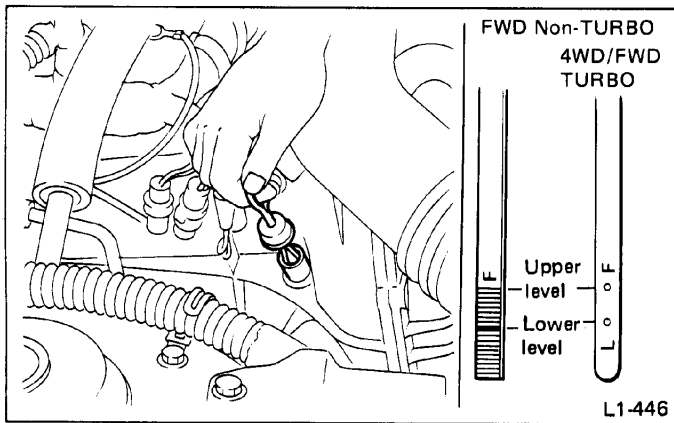


Fig. 27

FRONT DIFFERENTIAL (Automatic Transmission)

Oil level should be maintained between two points on the level gauge. If the oil level is at lower point or below, add some oil up to upper point.

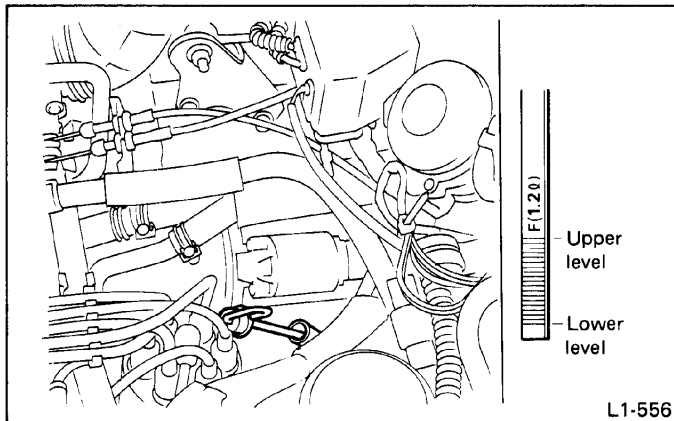


Fig. 28

REAR DIFFERENTIAL (4WD Vehicle)

Remove plug of filler hole and check the oil level. Oil level should be maintained fully to the filler hole.

If the oil level is below the mouth of filler hole, add some oil up to the mouth.

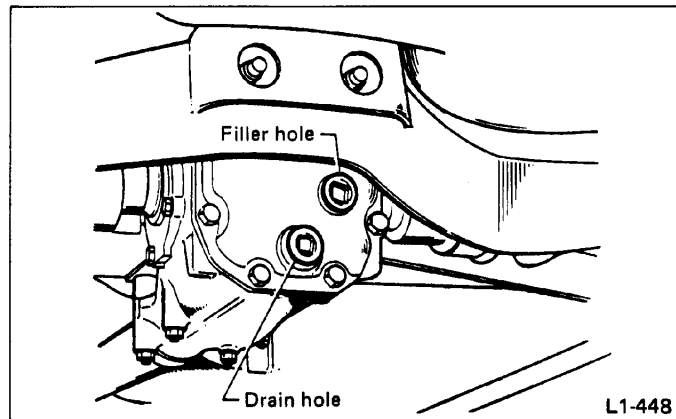


Fig. 29

Recommended oil

ITEM	API Classification	SAE Viscosity No. and Applicable Temperature					
		(°F)	-30	0	30	60	90
<ul style="list-style-type: none">• Transmission and differential gear oil• 4WD rear differential gear oil	GL-5	(°C)	-34	-18	0	16	32
		<p>The chart displays four horizontal bars representing different SAE viscosity grades and their applicable temperature ranges. The top bar is labeled '90' and has a right-pointing arrow. The second bar is labeled '85W' and has a left-pointing arrow. The third bar is labeled '80W' and has a left-pointing arrow. The bottom bar is labeled '75W-90, *80W-90' and has a double-headed arrow.</p>					

a. Each oil manufacturer has its base oil and additives. Thus, do not mix two or more brands.

b. * For differential gear oil (AT)

10 Automatic Transmission Fluid

INSPECTION

- 1) Drive vehicle several km (miles) to bring automatic transmission fluid (ATF) up to normal operating temperature. Normal operating temperature is 60 to 80°C (140 to 176°F).
 - 2) Park vehicle on a level surface.
 - 3) After selecting all positions (P, R, N, D, 2, 1), place selector lever in "P" position and run engine on at idling speed.
 - 4) Remove level gauge and wipe it clean.
 - 5) Reinsert the level gauge all the way.
 - 6) Remove it again and note reading. If the fluid level is below the center between high and low marks, add recommended ATF until the fluid level is within the specified range (above the center between high and low marks). When transmission is hot, the level should be above the center of upper and lower marks, and when it is cold, the level should be below the center of these two marks.
- ATF level gauge hole also serves as fluid filler.

Do not fill the fluid above upper point of level gauge.

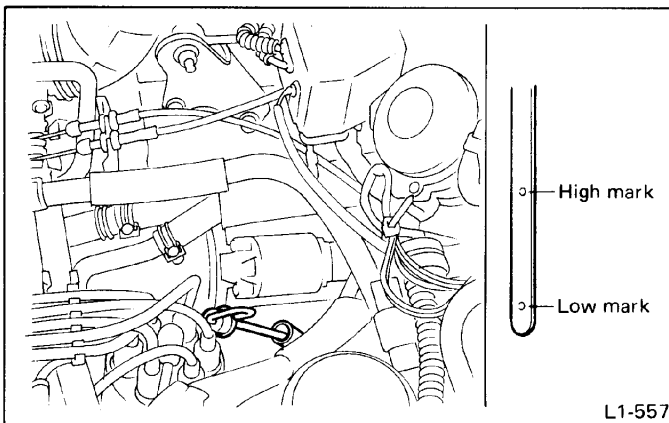


Fig. 30

Recommended automatic transmission fluid (ATF Dexron II)

MAINTENANCE INTERVAL [Number of months or km (miles), whichever occurs first]								
Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
FWD vehicle				I				
4WD vehicle				R				R

REPLACEMENT

- 1) Drain fluid by removing drain plug after allowing the engine to cool for 3 to 4 hours.

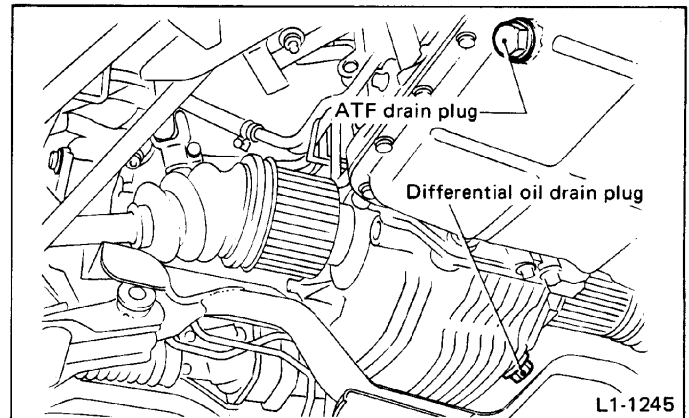


Fig. 31

- 2) Reinstall drain plug after draining fluid, and tighten it to the specified torque.

Tightening torque:

25 N·m (2.5 kg·m, 18 ft·lb)

- a. Be sure to place a gasket between oil pan and drain plug.
- b. Replace the gasket with new one.

- 3) Fill ATF through the fluid level gauge hole.

Oil capacity:

1800 cc		9.3 ℓ (9.8 US qt, 8.2 Imp qt)
2700 cc	FWD	9.3ℓ (9.8 US qt, 8.2 Imp qt)
	4WD	9.5ℓ (10.0 US qt, 8.4 Imp qt)

- 4) Run the vehicle until the ATF temperature rises to 60 to 80°C (140 to 176°F) and then check the ATF level.

11

Brake Fluid

MAINTENANCE INTERVAL [Number of months or km (miles), whichever occurs first]								
Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
				R				R

REPLACEMENT

1) Either jack up the front end of vehicle and place a safety stand under it, or drive vehicle onto the pit and then jack up the front end.

2) Remove both left and right front wheels.

3) Remove filler cap from brake fluid tank.

Install one end of a vinyl tube onto the air bleeder of front brake and insert the other end of the tube into a container to collect the brake fluid.

To drain fluid into container, open the air bleeder and repeatedly depress and release the brake pedal until a small amount of fluid remains in the reservoir tank.

Then tighten the bleeder screw.

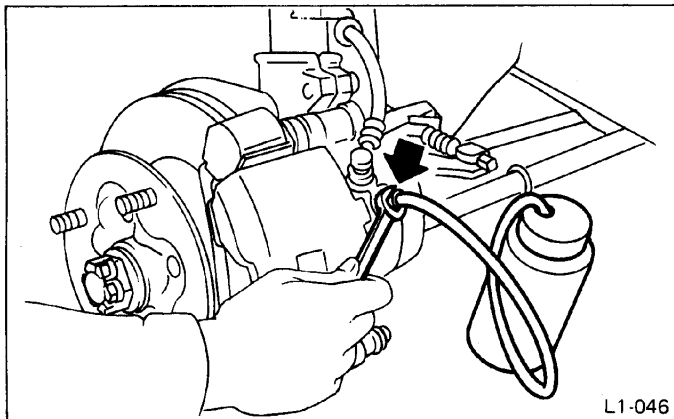


Fig. 32

a. The brake piping consists of a dual system, cross design. The piping on the primary side connects the right front brake and the rear left brake and the piping on the secondary side connects the left front brake and rear right brake.

b. For convenience and safety, it is advisable to have two men working.

c. Be careful not to spill brake fluid onto the painted surface.

d. Discard the drained brake fluid and do not reuse it.

4) Refill reservoir tank with recommended brake fluid.

Recommended brake fluid:

FMVSS No. 116, fresh DOT3 or 4 brake fluid

a. Avoid mixing different brands of brake fluid to prevent degrading the quality of the fluid.

b. Be careful not to allow dirt or dust to get into the reservoir tank.

c. Use fresh DOT3 or 4 brake fluid when replacing or refilling the fluid.

d. Always check to be sure a small amount of brake fluid is in the tank while changing brake fluid.

e. The amount of brake fluid required is approximately 270 ml (9.1 US fl oz, 9.5 Imp fl oz) for total brake system.

f. Bleed air according to illustrated sequence.

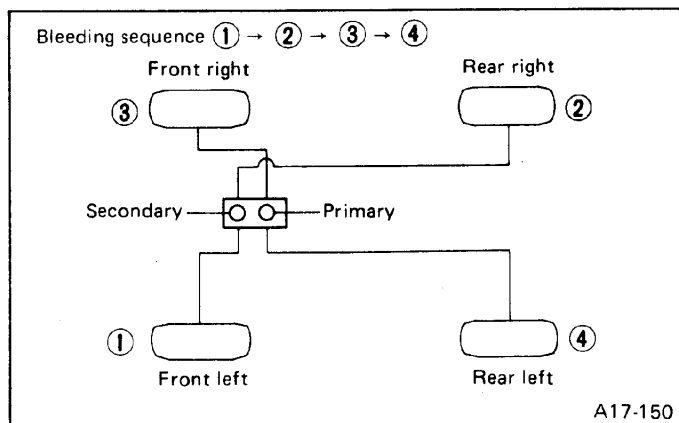


Fig. 33

5) Instruct your co-worker to depress the brake pedal slowly two or three times and then hold it depressed.

6) Loosen bleeder screw approximately 1/4 turn until a small amount of brake fluid drains into container, and then quickly tighten screw.

7) Repeat steps 5) and 6) above until there are no air bubbles in drained brake fluid and new fluid flows through vinyl tube.

Add brake fluid as necessary while performing the air bleed operation, in order to prevent the tank from running short of brake fluid.

8) After completing the bleeding operation, hold brake pedal depressed and tighten screw and install bleeder cap.

Tightening torque (Bleeder screw):

7 – 9 N·m (0.7 – 0.9 kg·m, 5.1 – 6.5 ft·lb)

9) Bleed air from each wheel cylinder using the same procedures as described in steps 5) through 8) above.

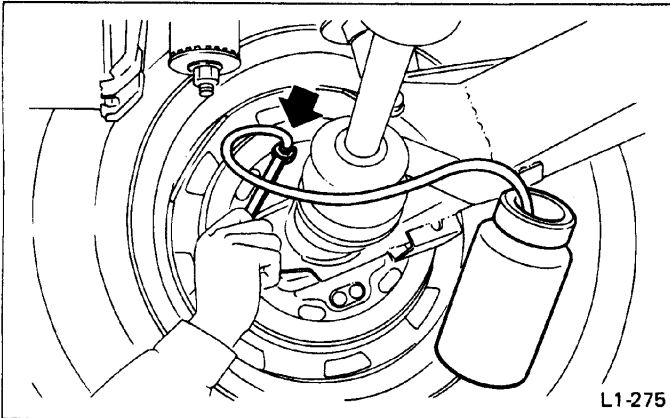


Fig. 34

10) Depress brake pedal with a force of approximately 294 N (30 kg, 66 lb) and hold it there for approximately 20 seconds. At this time check pedal to see if it shows any unusual movement.

Visually inspect bleeder screws and brake pipe joints to make sure that there is no fluid leakage.

11) Install wheels, and drive car for a short distance between 2 to 3 km (1 to 2 miles) to make sure that brakes are operating properly.

12

Disc Brake Pad and Disc/Front and Rear Axle Boots

INSPECTION

[A] Disc Brake Pad and Disc (Front and Rear)

- 1) Jack up vehicle and support with rigid racks. Then remove wheels.
- 2) Visually check pad thickness through inspection hole of disc brake assembly. Replace pad if necessary.

FRONT

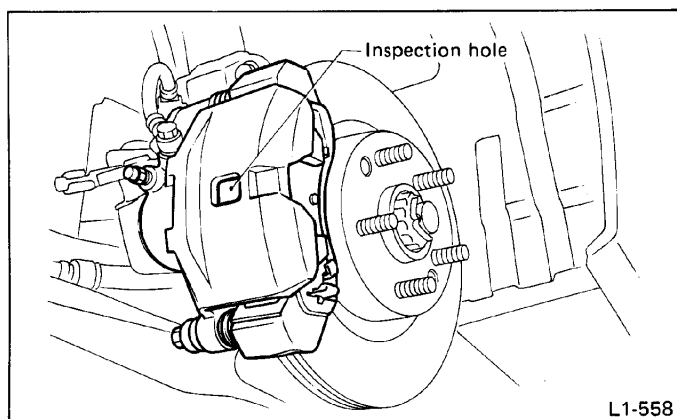


Fig. 35

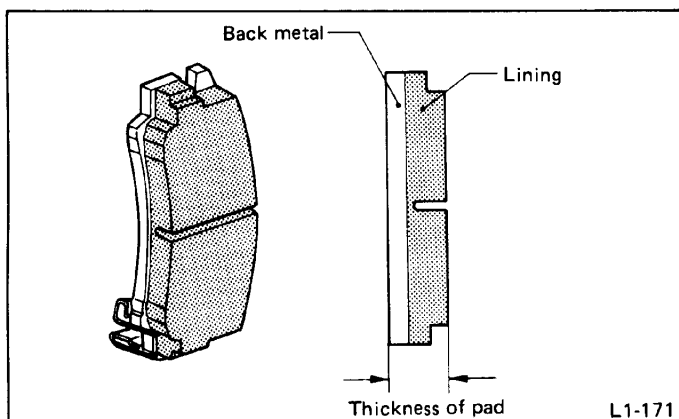


Fig. 36

REAR

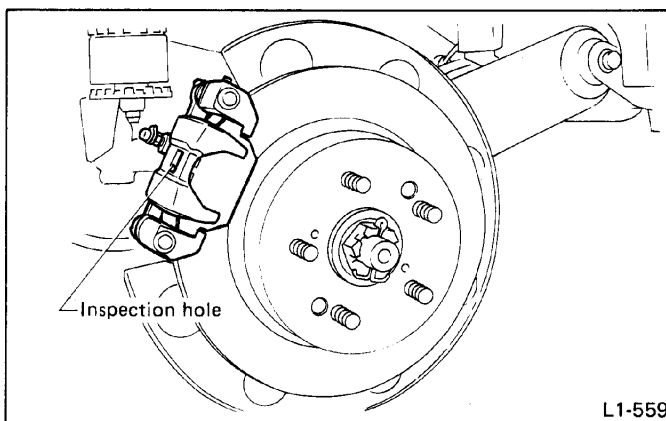


Fig. 37

Pad thickness including back metal mm (in)			
		Front	Rear
Standard	Except XT6	18 (0.71)	15 (0.59)
	XT6	22 (0.87)	
Wear limit	Except XT6	7.5 (0.295)	6.5 (0.256)
	XT6		8 (0.31)
Wear limit (excluding back metal)	Except XT6	1.5 (0.059)	1.5 (0.059)
	XT6		3 (0.12)

- a. When replacing a pad, always replace the pads for both the left and right wheels at the same time. Also replace pad clips if they are twisted or worn.
- b. The clip incorporated with pad is also used as a warning device for worn pads. When wear occurs on the pad to such an extent that the clip comes into contact with the rotor, unusual noise (squeak) is produced. If such a noise is noticed, replace the pads.

3) Disc rotor

Check for wear and damage, and correct or replace if abnormal.

Brake disc thickness mm (in)			
		Front	Rear
Standard	Except XT6	18 (0.71)	10 (0.39)
	XT6	22 (0.87)	
Wear limit	Except XT6	16 (0.63)	8.5 (0.33)
	XT6	20 (0.79)	

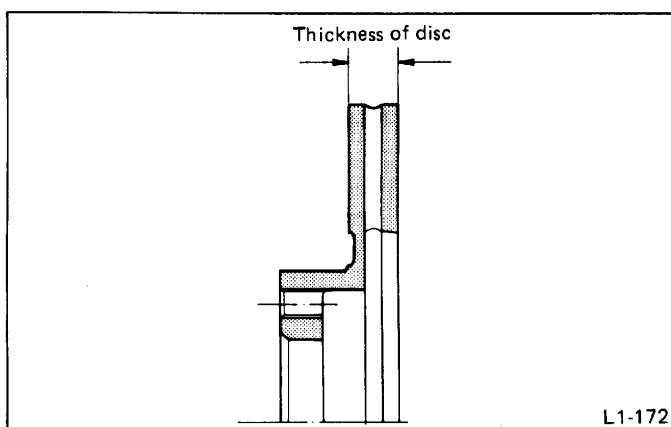


Fig. 38

Disc rotor runout:

Limit: 0.10 mm (0.0039 in)

Measure the disc rotor runout at a point less than 5 mm (0.20 in) from the outer periphery of the rotor.

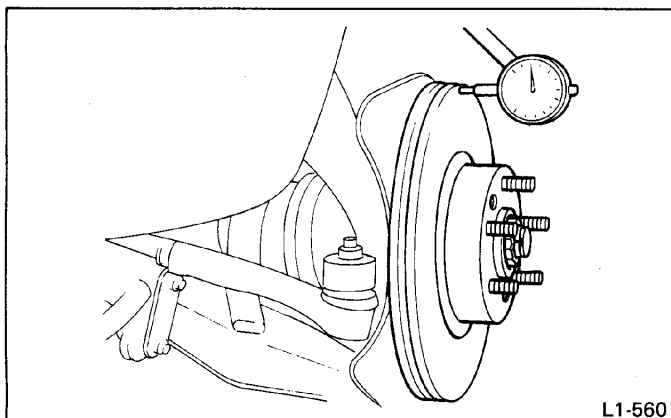


Fig. 39

[B] Front and Rear Axle Boots

Inspect front and rear axle boots for deformation, damage or failure. If faulty, replace them with new ones.

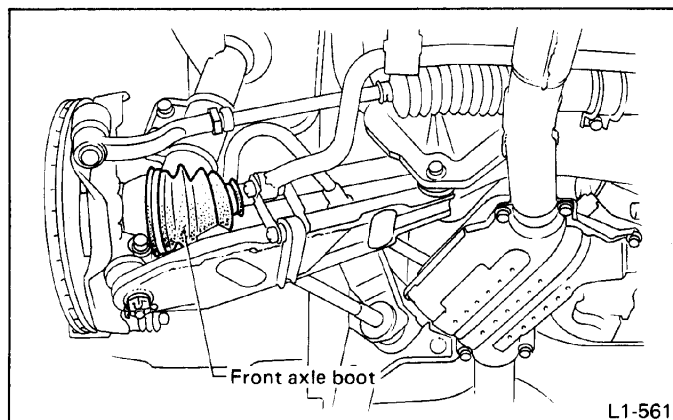


Fig. 40

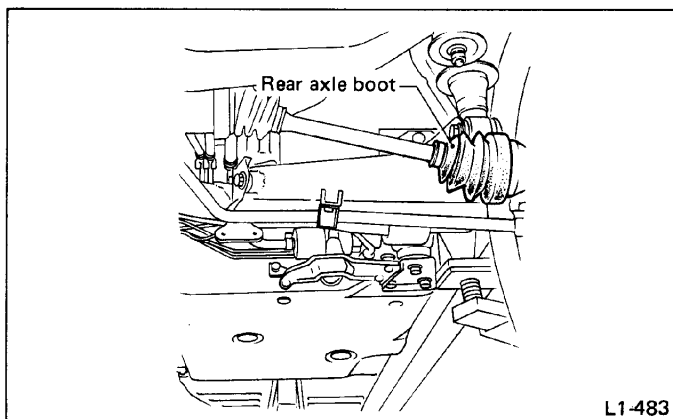


Fig. 41

13

Brake Lining and Drum

MAINTENANCE INTERVAL
 [Number of months or km (miles), whichever occurs first]

Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
				I				I

INSPECTION

Inspect brake linings and drums of both sides of the rear brake at the same time by removing brake drums.

1) Inspect brake shoes for damage or deformities and check brake linings for wear.

Always replace both leading and trailing brake shoes for the left and right wheels at the same time.

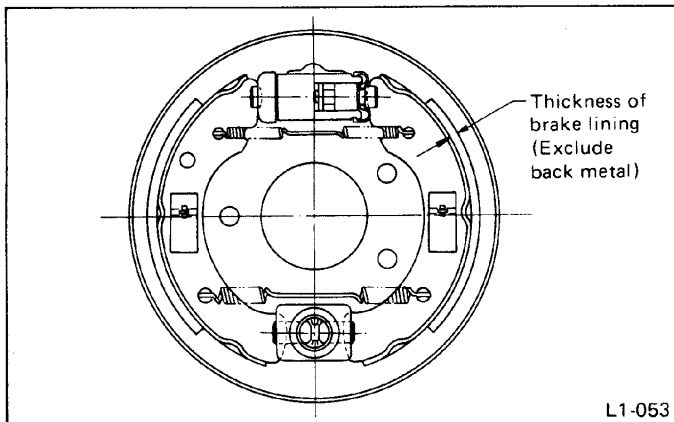
Brake lining thickness excluding back metal:

Standard:

4.5 mm (0.177 in)

Wear limit:

1.5 mm (0.059 in)



L1-053

Fig. 42

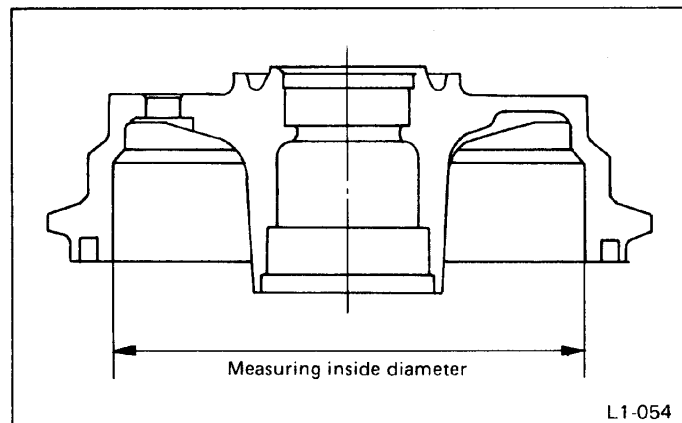
Brake drum inside diameter:

Standard:

180 mm (7.09 in)

Wear limit:

182 mm (7.17 in)



L1-054

Fig. 43

3) If the deformation or wear of back plate, shoe, etc. are notable, replace them.

4) When the shoe return spring tension is excessively weakened, replace it, taking care to identify upper and lower springs.

5) If grease has leaked from brake drum, replace oil seal or drum.

6) If drum bearing is abnormal or loose, replace it.

14

Inspect Brake Line and Check Operation of Parking and Service Brake System

MAINTENANCE INTERVAL [Number of months or km (miles), whichever occurs first]								
Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
		P		P		P		P

INSPECTION

BRAKE LINE

- 1) Check scratches, swelling and/or traces of fluid leakage on brake hoses or pipe joints.

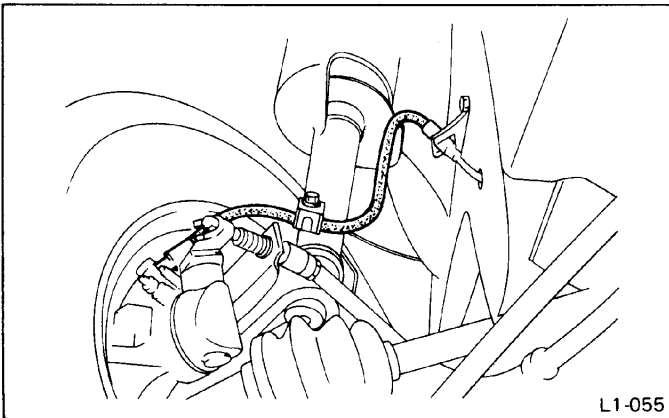


Fig. 44

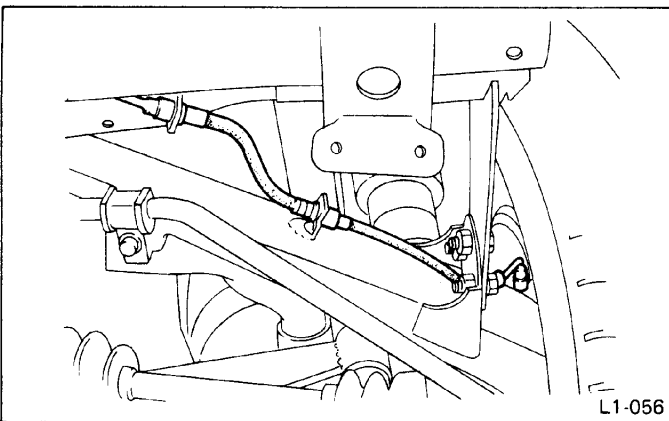


Fig. 45

- 2) Check the possibility of adjacent parts interfering with brake pipes/hoses during driving, and loose connections/clamps.
- 3) Check any trace of fluid leakage, scratches, etc. on master cylinder, wheel cylinder, pressure control valve and hill-holder.

When the brake fluid level in the reservoir tank is lower than the specified limit, the brake fluid warning light on the instrument panel will come on.

CHECKING

[A] Service Brake

- 1) Check the free play of brake pedal by lightly depressing the pedal with your finger with a force of less than 10 N (1 kg, 2 lb).

Brake pedal free play:
0.5 – 2.5 mm (0.020 – 0.098 in)

If the free play is out of specifications above, adjust the brake pedal as follows:

- (1) Be sure engine is off. (No vacuum is applied to brake booster.)
- (2) There should be play between brake booster clevis and pin at brake pedal installing portion.
(Depress brake pedal pad with a force of less than 10 N [1 kg 2 lb] to a stroke of 0.5 to 2.5 mm [0.020 to 0.098 in].

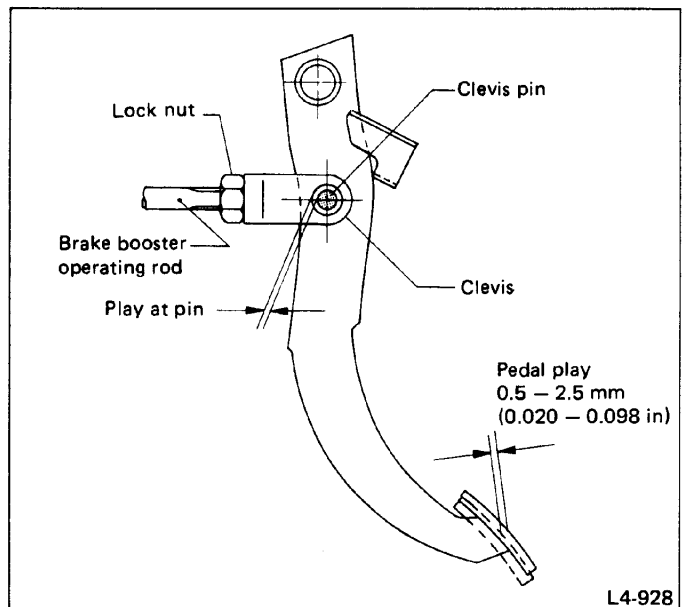


Fig. 46

- (3) Depress the surface of brake pad by hand.

(4) If there is no free play between clevis pin and clevis, loosen lock nut for operating rod and adjust operating rod by turning in the direction that shortens it.

a. Make sure that the stop lamp operates normally.

b. After adjustment, make sure there is no brake dragging.

2) Adjust lining clearances of rear drum brake as follows.
[FWD only]

- (1) Jack up vehicle to release tires and wheels slightly from the ground.
- (2) Tighten adjusting screw on back side of rear brake drum fully until tire and wheel ceases to rotate.
- (3) Turn back adjusting screw by 180° and lining clearance will be 0.1 to 0.15 mm (0.004 to 0.0059 in).
- (4) Be sure to rotate tire and wheel lightly by hand.
- (5) Adjust lining clearance of another side rear brake with the same manner.

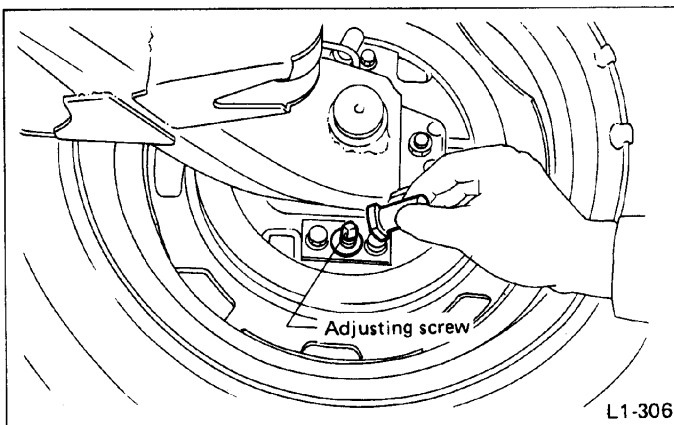


Fig. 47

3) Measure the distance between brake pedal and floor when the pedal is depressed with a force of approximately 294 N (30 kg, 66 lb).

Brake pedal reserve distance:

More than 120 mm (4.72 in)/294 N (30 kg, 66 lb)

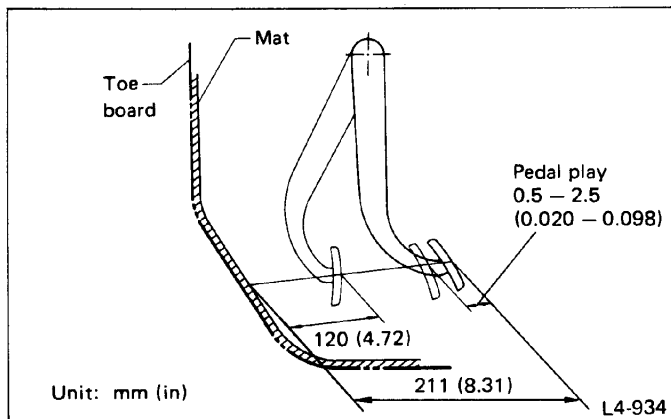


Fig. 48

4) Check to see if air is in the hydraulic brake line by the feel of the pedal operation. If air appears to exist in the line, bleed it from the system.

5) Check for even operation of all brakes, using a brake tester or by driving the vehicle for a short distance on a straight road.

[B] Parking Brake

1) After confirming the proper operation of brake pedal, pull parking brake lever with a force of approximately 245 N (25 kg, 55 lb) to make sure lever still has a short length of stroke to go.

Parking brake lever stroke:

Standard:

3 – 4 notches/245 N (25 kg, 55 lb)

Torque (Adjuster lock nut):

4.4 – 7.4 N·m (0.45 – 0.75 kg·m, 3.3 – 5.4 ft·lb)

2) If the parking brake lever pull is not within the above specifications, adjust it as follows:

- (1) Pull parking brake lever forcibly three to five times.
- (2) Loosen the lock nut and change the setting of adjuster until the play at point A is 0 to 0.5 mm (0 to 0.020 in).

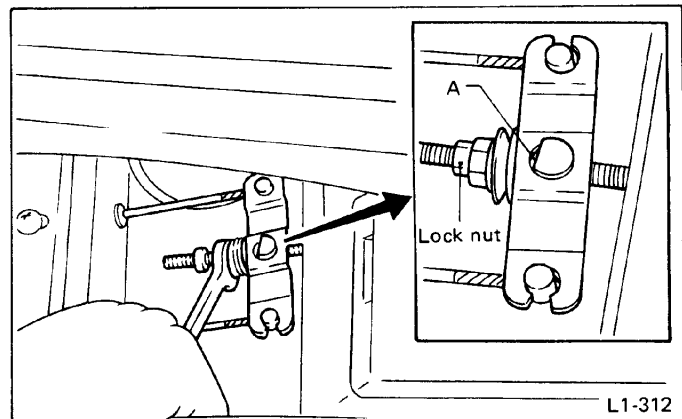


Fig. 49

(3) Make sure that vehicle stops on uphill road properly by operating parking lever.

[C] Brake Servo System

1) With the engine off, depress the brake pedal several times applying the same pedal force: Make sure the travel distance should not change.

2) With the brake pedal depressed, start the engine: Make sure the pedal should move slightly toward the floor.

3) With the brake pedal depressed, stop the engine and keep the pedal depressed for 30 seconds: Make sure the pedal height should not change.

4) Check valve is built into vacuum hose. Disconnect vacuum hose to inspect function of check valve.

Blow air into vacuum hose from its brake booster side end: Air must flow out of engine side end of hose. Next blow air into hose from engine side: Air should not flow out of hose.

Replace both check valve and vacuum hose if check valve is faulty. Engine side of vacuum hose is indicated by marking

"ENGINE" as shown.

5) Check vacuum hose for cracks or other damage.

When installing the vacuum hose on the engine and brake booster, do not use soapy water or lubricating oil on their connections.

6) Check vacuum hose to make sure it is tight and secure.

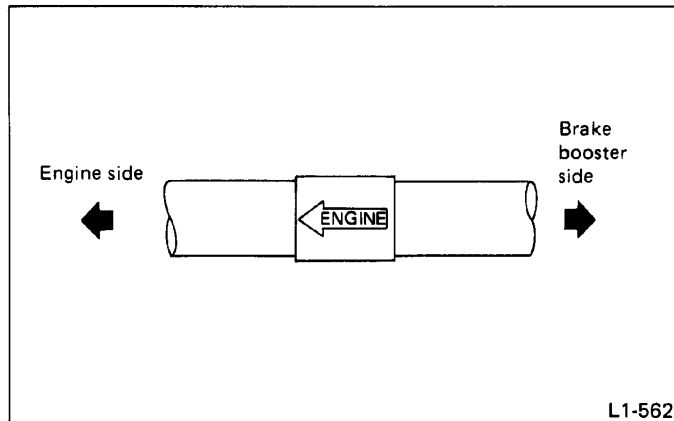


Fig. 50

15

Clutch and Hill-holder System

MAINTENANCE INTERVAL [Number of months or km (miles), whichever occurs first]								
Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
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INSPECTION AND ADJUSTMENT

1) Inspect free play of clutch pedal by operating pedal by hand.

If it is out of the specified value, adjust it by turning adjusting nut on engine side end of clutch cable at release fork.

Standard of free play:

At clutch pedal:

10 – 20 mm (0.51 – 0.79 in)

At center of cable on clutch release fork:

FWD: 2 – 3 mm (0.08 – 0.12 in)

4WD: 3 – 4 mm (0.12 – 0.16 in)

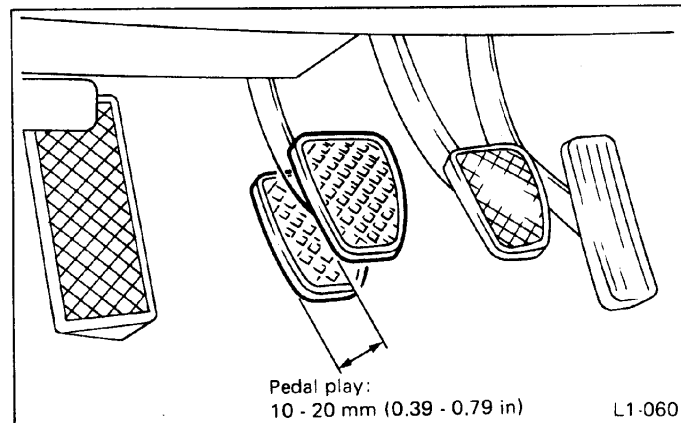


Fig. 51

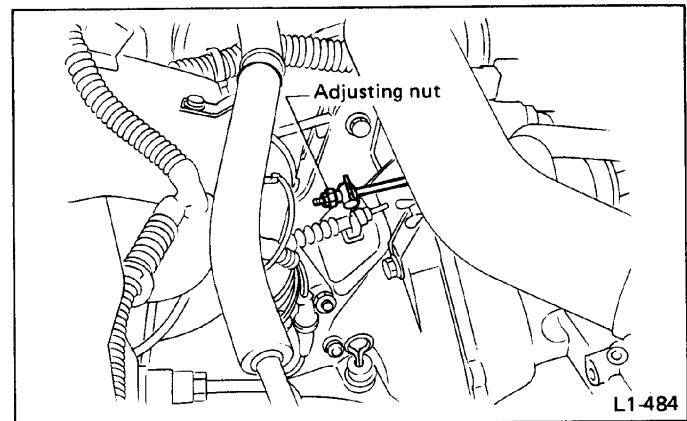


Fig. 53

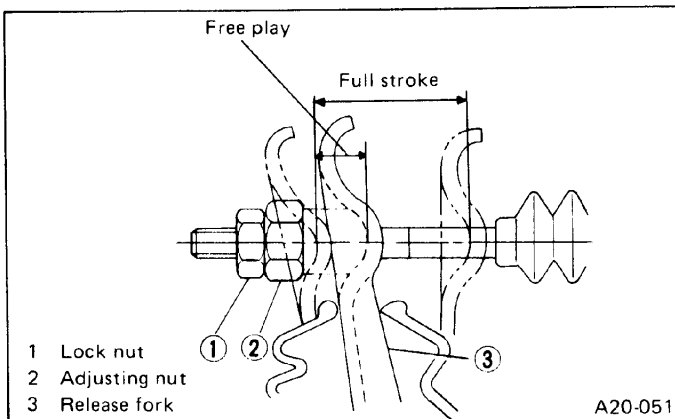


Fig. 52

Tightening torque (Adjusting nut on release fork):

5.4 – 9.3 N·m (0.55 – 0.95 kg·m, 4.0 – 6.9 ft·lb)

a. When replacing clutch cable with new one and/or making free play adjustment of clutch pedal, make adjustment of hill-holder system without fail as follows.

b. After replacing clutch cable and/or pressure hold valve (PHV) cable with new one, depress clutch pedal about thirty (30) times as a running-in operation prior to this adjustment.

2) Confirm stopping and starting performance by activating hill-holder on an uphill road of 3° or higher inclination.

(1) If vehicle does not stop;

Tighten adjusting nut of PHV cable.

(2) If vehicle does not start properly;

- Case A – When hill-holder is released later than engagement of clutch (engine tends to stall):
Loosen adjusting nut gradually until smooth starting is enabled.
- Case B – When hill-holder is released earlier than engagement of clutch (vehicle slips down slightly):
Tighten adjusting nut so that hill-holder is released later than engagement of clutch (status in Case A).
Then make adjustment the same as in Case A.

a. Whenever turning adjusting nut, prevent PHV cable from revolving as following illustration.

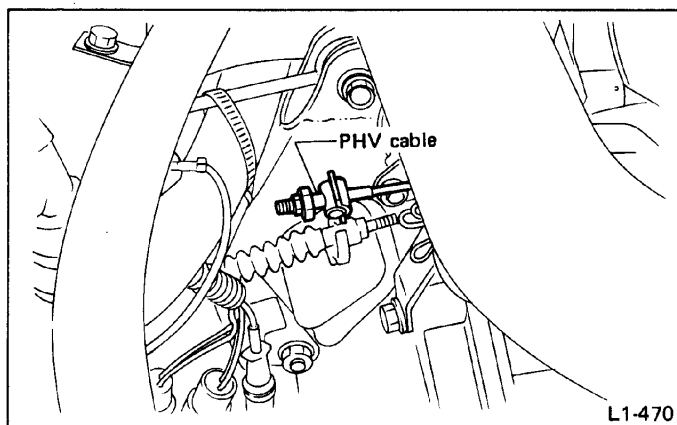


Fig. 54

b. Replace pressure hold valve (PHV), return spring of PHV or PHV cable with new one, if they are defective and/or damaged.

16**Steering and Suspension****INSPECTION****STEERING WHEEL**

- 1) Set steering wheel in a straight-ahead position, and check wheel spokes to make sure they are correctly set in their specified positions.
- 2) Lightly turn steering wheel to the left and right to determine the point where front wheels start to move. Measure the distance of the movement of steering wheel at the outer periphery of wheel.

Steering wheel free play:
0 – 17 mm (0 – 0.67 in)

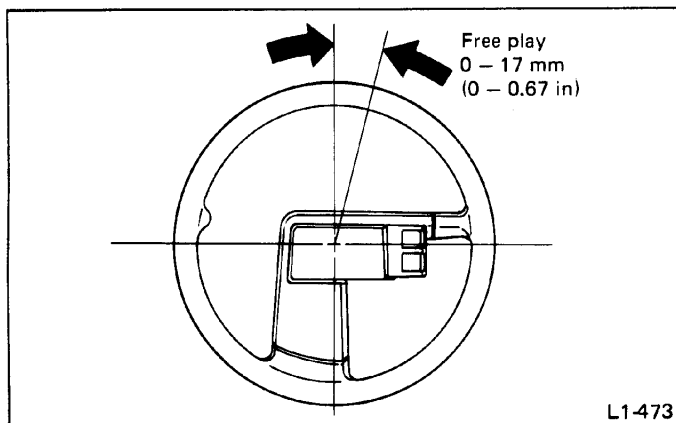


Fig. 55

- 3) Move steering wheel vertically toward the shaft to ascertain if there is play in that direction.

Maximum permissible play:
0.5 mm (0.020 in)

- 4) Drive vehicle and check the following items during operation.

- (1) Steering force

The effort required for steering should be smooth and even at all points, and should not vary.

- (2) Pull to one side

Steering wheel should not be pulled to either side while driving on a level surface.

MAINTENANCE INTERVAL
[Number of months or km (miles), whichever occurs first]

Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
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- (3) Wheel runout

Steering wheel should not show any sign of runout.

- (4) Return factor

Steering wheel should return to its original position after it has been turned and then released.

STEERING SHAFT JOINT

- 1) Disconnect universal joint of steering shaft and check it for any play and yawing torque (at the point of the crossing direction). Also inspect for any damage to sealing or worn serrations.

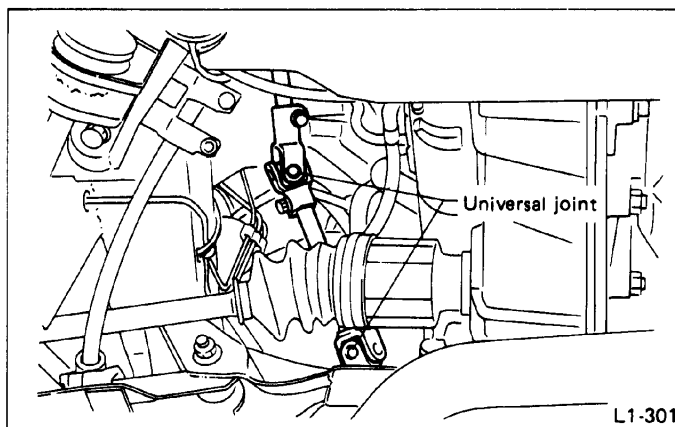


Fig. 56

If the joint is loose, retighten the mounting bolts to the specified torque.

Tightening torque:

21 – 26 N·m (2.1 – 2.7 kg·m, 15 – 20 ft·lb)

GEARBOX

- 1) With wheels placed on a level surface, turn steering wheel 90° in both the left and right directions.

While wheel is being rotated, reach under vehicle and check for looseness in gearbox.

Tightening torque:

47 – 71 N·m (4.8 – 7.2 kg·m, 35 – 52 ft·lb)

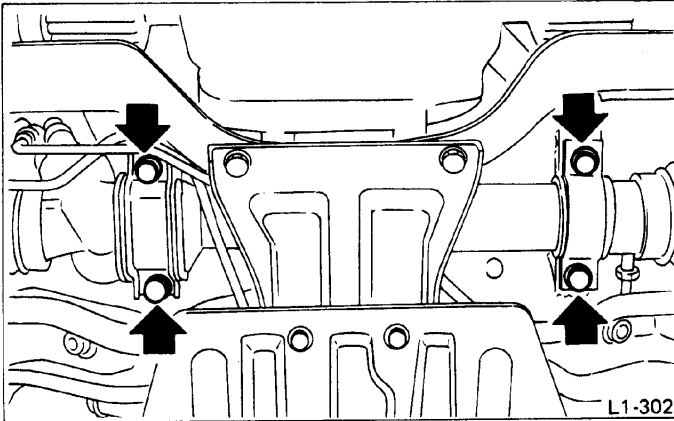


Fig. 57

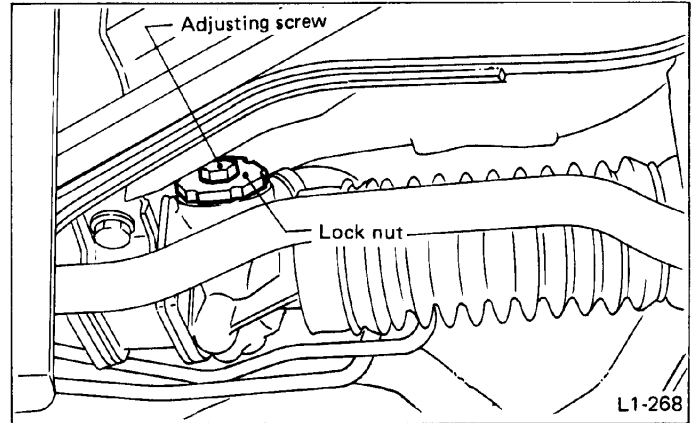


Fig. 59

2) Check boot for damage, cracks or deterioration.

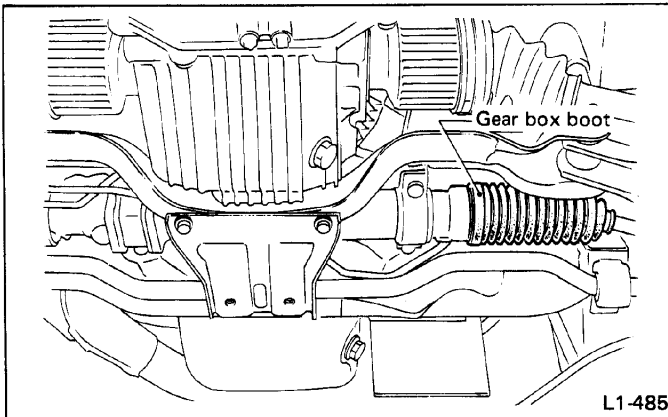


Fig. 58

(3) From that position, turn back adjusting screw 15° and then tighten lock nut securely.

Tightening torque:

29 – 49 N-m (3.0 – 5.0 kg-m, 22 – 36 ft-lb)

Hold the adjusting screw with a wrench to prevent it from turning while tightening the lock nut.

TIE-ROD

- 1) Check tie-rod and tie-rod ends for bends, scratches or other damage.
- 2) Check connections of knuckle ball joints for play, inspect for damage on dust seals, and check the free play of ball studs.
- 3) Make sure that the cotter pin is installed correctly in the castle nut of the tie-rod end.

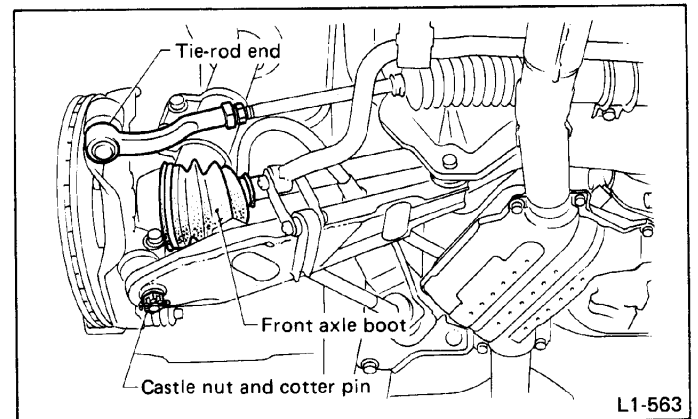


Fig. 60

3) With vehicle on a level surface, quickly turn steering wheel to the left and right.

While steering wheel is being rotated, check the gear backlash. If any unusual noise is noticed, adjust the gear backlash as follows:

- (1) Loosen gearbox mounting clamps, and slightly lower gear box.
- (2) Loosen lock nut by using Spanner (Special tool) and tighten adjusting screw fully.

	Tool No.	Tool name
Manual steering	925640000	SPANNER (STEERING GEAR BOX)
Power steering	926230000	SPANNER (STEERING GEAR BOX)

SPANNER (926230000) can be also used for manual steering.

POWER STEERING FLUID LEVEL

- 1) Place vehicle with engine "off" on the flat and level surface.

- 2) Check the fluid level by removing filler cap of oil pump.
 (1) Check at temperature 21°C (70°F) of fluid temperature.

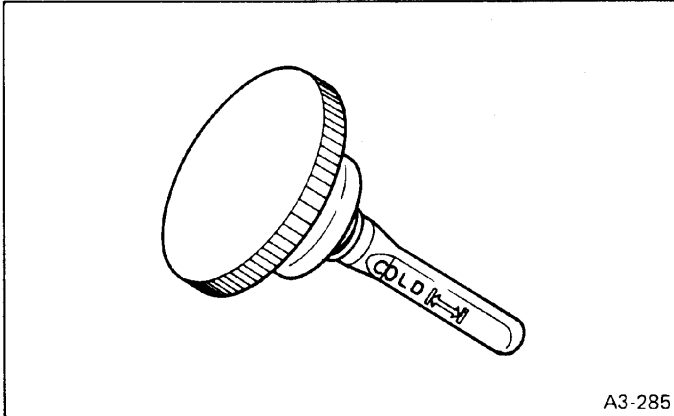


Fig. 61

- (2) Check at temperature 60°C (140°F) of fluid temperature.

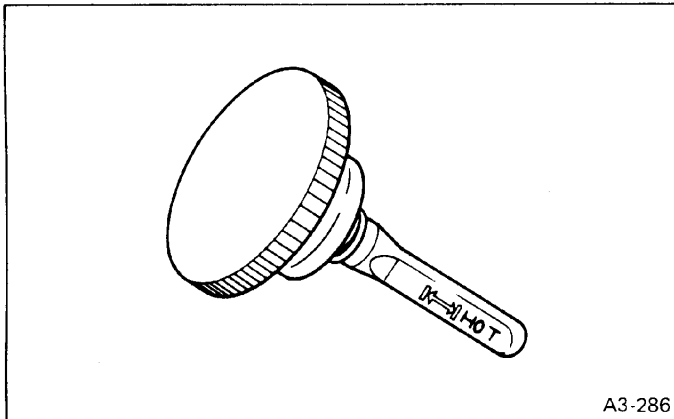


Fig. 62

- 3) Fluid level should be maintained in the each specified range on the indicator of filler cap.

If fluid level is at lower point or below, add fluid to keep the level in the specified range of indicator.

If fluid level is at upper point or above, drain fluid to keep the level in the specified range of indicator by using a syringe or the like.

● **Except XT6**

Recommended fluid	Manufacturer
ATF Dexron II	B.P.
	CALTEX
	CASTROL
	MOBIL
	SHELL
	TEXACO

● **XT6**

Recommended fluid	
IDEMITSU	SPECIAL POWER STEERING FLUID [Parts No. K0209A0080]

Fluid capacity:

0.7ℓ (1.5 US pt, 1.2 Imp pt)

POWER STEERING FLUID FOR LEAKS

Inspect the underside of oil pump and gearbox for power steering system, hoses, piping and their couplings for fluid leaks.

If fluid leaks are found, correct them by retightening their fitting bolts (or nuts) and/or replacing their parts.

a. Wipe the leakage fluid off after correcting fluid leaks, or a wrong diagnosis is taken later.

b. Also pay attention to clearances between hoses (or pipings) and other parts when inspecting fluid leaks.

HOSES OF OIL PUMP FOR DAMAGES

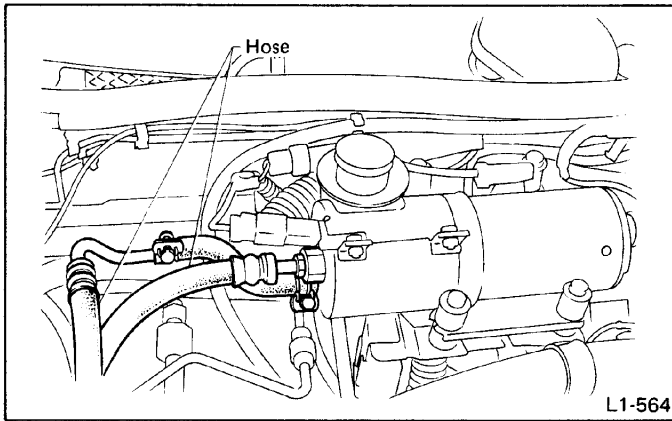


Fig. 63

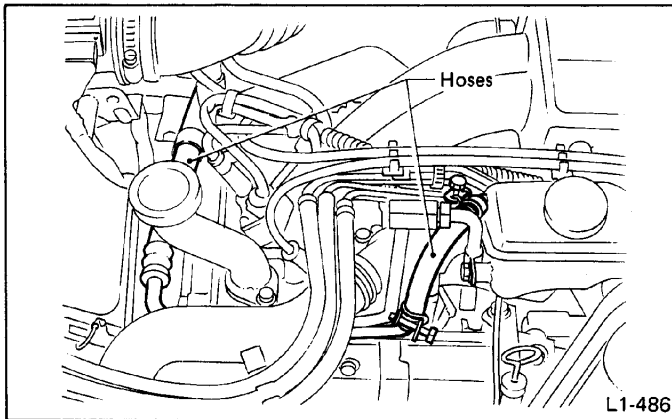


Fig. 64

Check pressure hose and return hose of oil pump for crack, swell or damage. Replace hose with new one if necessary.

Prevent hoses from revolving and/or turning when installing hoses.

GEARBOX BOOTS (Except XT6)

Inspect both sides of gearbox boots as follows, and correct the defects if necessary.

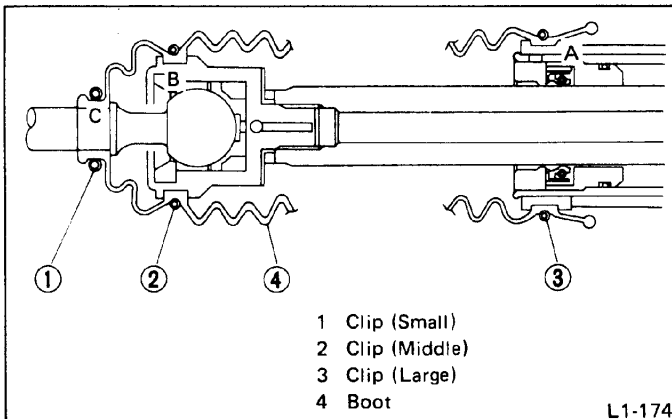


Fig. 65

- 1) A, B and C position of gearbox boot are fitted correspondingly in A, B and C grooves of gearbox and the rod.
- 2) Clips are fitted outside of A, B and C positions of boot.
- 3) Projection of boot is fitted in hole on A groove of gearbox to prevent boot rotating.
- 4) Boot does not have crack, hole.

Rotate B and C position of gearbox boot against twist of it produced by adjustment of toe-in, etc.
In this case, never rotate A position of gearbox boot.

GEARBOX BOOTS (XT6)

Inspect both sides of gear box boots as follows, and correct the defects if necessary.

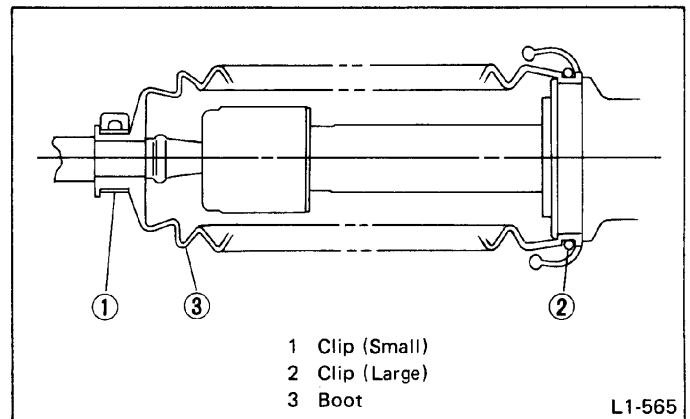


Fig. 66

- 1) A and B positions of gearbox boot are fitted correctly in A and B grooves of gearbox and rod.
- 2) Clips are fitted outside of A and B positions of boot.
- 3) Boot does not have cracks or holes.

Repair boot if twisted while adjusting toe-in.

FITTING BOLTS AND NUTS (Except XT6)

Inspect fitting bolts and nuts of oil pump and bracket for looseness, and retighten them if necessary.

Inspect and/or retighten them when engine is cold.

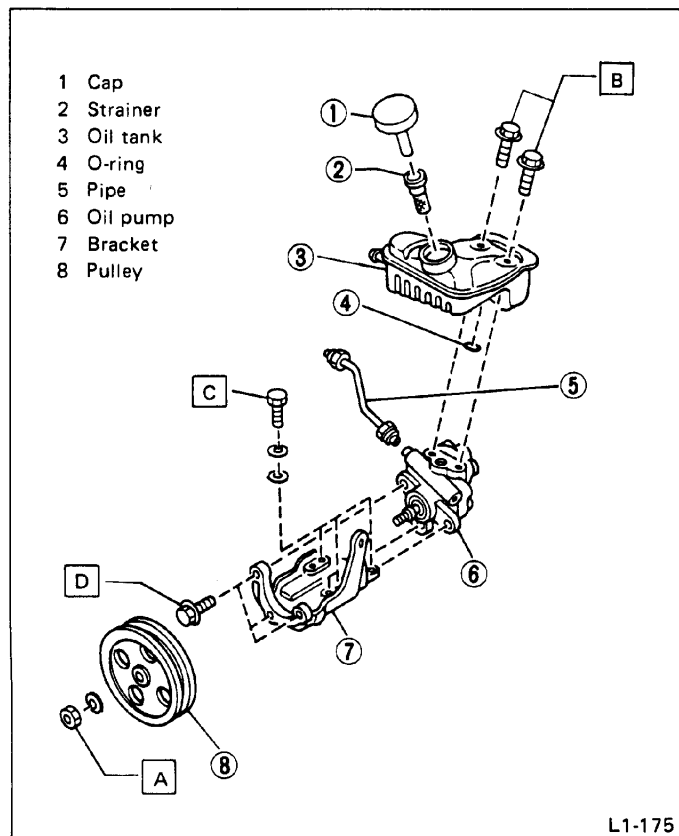


Fig. 67

Tightening torque:**Nut A (one):**

42 – 62 N·m (4.3 – 6.3 kg·m, 31 – 46 ft-lb)

Bolt B (two):

20 – 29 N·m (2.0 – 3.0 kg·m, 14 – 22 ft-lb)

Bolt C (three):

18 – 22 N·m (1.8 – 2.2 kg·m, 13 – 16 ft-lb)

Bolt D (three):

29 – 49 N·m (3.0 – 5.0 kg·m, 22 – 36 ft-lb)

FITTING BOLTS AND NUTS (XT6)

Inspect fitting bolts and nuts of oil pump and bracket for looseness, and retighten them if necessary.

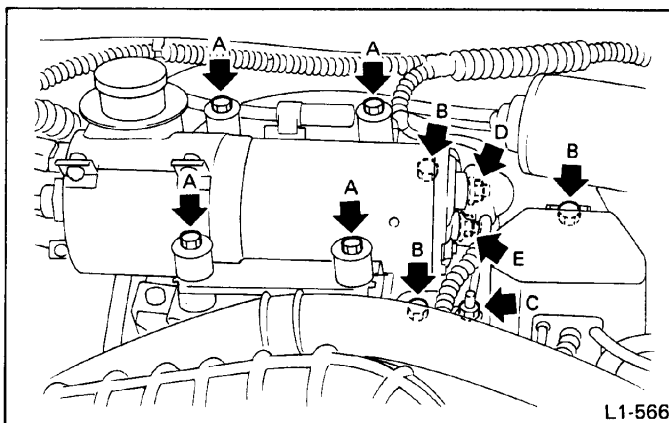


Fig. 68

Tightening torque:**Bolt A (four):**

23 – 42 N·m (2.3 – 4.3 kg·m, 17 – 31 ft-lb)

Bolt B:

23 – 37 N·m (2.3 – 3.8 kg·m, 17 – 27 ft-lb)

Nut C:

4.4 – 7.4 N·m (0.45 – 0.75 kg·m, 3.3 – 5.4 ft-lb)

Bolt D:

9.5 – 12.3 N·m (0.97 – 1.25 kg·m, 7.0 – 9.0 ft-lb)

Bolt E (one):

3.9 – 5.1 N·m (0.40 – 0.52 kg·m, 2.9 – 3.8 ft-lb)

SUSPENSION SYSTEM

Care should be taken not to apply paint, undercoating agent, anti-corrosive wax, etc. to the following parts of air-suspension equipped models while refinishing the undercarriage.

- (1) Diaphragm and rolling surfaces
- (2) Air suspension compressor and dryer assembly

1) Play of front ball joint Inspect every 24,000 km (15,000 miles) or 15 months, whichever occurs first.

(1) Jack up vehicle until front wheels are off ground as instructed in "Pre-Delivery Inspection."

(2) Next, grasp bottom of tire and move it in and out. If relative movement is observed between brake disc cover and end of transverse link, ball joint may be excessively worn.

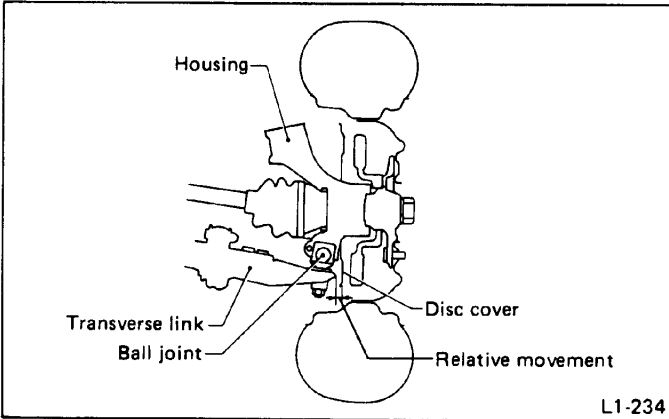


Fig. 69

(3) Next, grasp end of transverse link and move it up and down. Relative movement between housing and transverse link boss indicates ball joint may be excessively worn.

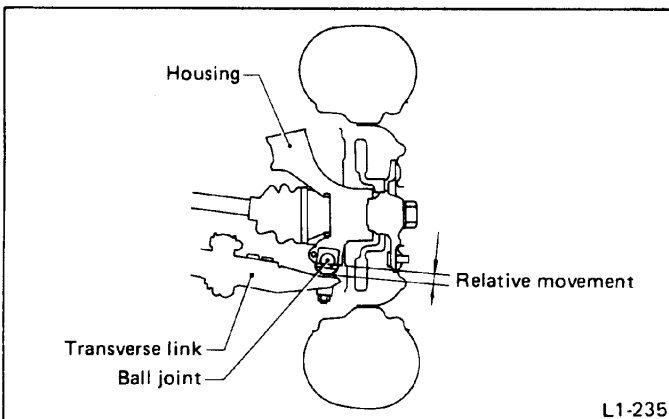


Fig. 70

(4) If relative movement is observed in tests (2) and (3) above, remove and inspect ball joint according to chapter 4-1. If looseness exceeds standard, replace ball joint.

2) Damage of dust seal Inspect every 24,000 km (15,000 miles) or 15 months, whichever occurs first.

Visually inspect ball joint dust seal. If it is damaged, remove ball joint as instructed in chapter 4-1 and measure looseness of ball joint.

(1) When looseness exceeds standard value, replace ball joint.

(2) When looseness is less than standard value, wipe off old grease, apply the proper amount [about 3 g (0.11 oz)] of designated grease (SUNLIGHT 2, P/N 003602010), and install a new dust seal.

When transverse link ball joint has been removed or replaced, check toe-in (or side slip) of front wheel.

If front wheel toe-in (or side slip) is not at specified value, adjust according to chapter 4-1 so that toe-in conforms to service standard.

3) Wheel alignment and ground clearance Inspect every 48,000 km (30,000 miles) or 30 months, whichever occurs first.

(1) Unload cargoes and set vehicle in curb weight (empty) condition.

(2) Then, check ground clearance of front and rear suspensions to ensure that they are within specified values.

(Adjusting procedure)

When ground clearance is out of standard, visually inspect following components and replace deformed parts.

- Suspensions components [Front: strut assembly, cross-member, transverse link, etc. Rear: shock absorber, inner arm, outer arm, etc.]
- Body parts to which suspensions are installed.

When no components are deformed, adjust ground clearance by replacing coil spring in the suspension whose ground clearance is out of standard.

(3) Check alignment of front suspension to ensure that following items conform to standard values provided in chapters 4-1 and 4-3.

- Toe-in (or side slip)
- Camber angle
- Caster angle
- Turning angle of tire

(Adjusting procedure)

(a) Camber and caster angles are not adjustable. When camber or caster angle does not conform to standard value, visually inspect following components and replace deformed parts.

- Suspension components [Strut assembly, crossmember, transverse link, etc.]
- Body parts to which suspensions are installed.

(b) When toe-in (or side slip) is out of standard value, adjust by the method described in chapter 4-1 so that it conforms to service standard.

(c) When right-and-left turning angles of tire are out of standard, adjust to standard value by method described in chapter 4-3.

(4) Check alignment of rear suspension to ensure that following items are within standard values.

- Toe-in (or side slip)
- Camber angle

(Adjusting procedure)

When toe (or side slip) or camber angle does not conform to standard value, visually inspect parts listed below. If deformation is observed, replace damaged parts.

- Suspension components [Shock absorber, inner arm, outer arm, crossmember, etc.]
- Body parts to which suspensions are installed.

When no components are deformed, adjust alignment as instructed below so that it conforms to service standard.

Toe

(a) Jack up rear of vehicle as shown in "Pre-Delivery Inspection," and remove rear wheels.

(b) Loosen outer arm mounting bolts.

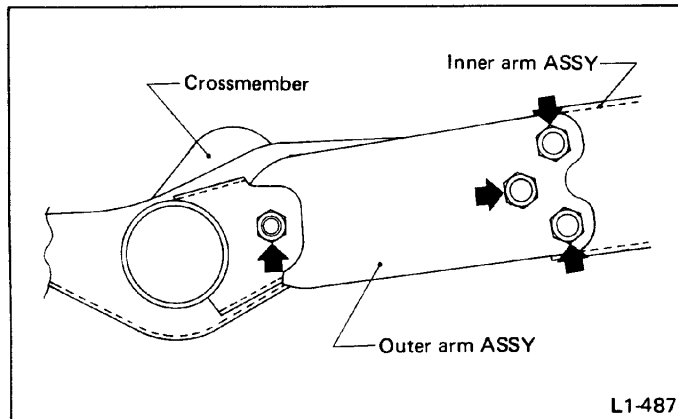


Fig. 71

(c) When toe-in (or side slip) is excessive, tighten outer arm mounting bolts shown in Fig. 71 while pulling end of spindle towards rear of vehicle (in direction of arrow in Fig. 72). When toe-out (or side slip) is excessive, tighten outer arm mounting bolts while pushing end of spindle toward front of vehicle (in opposite direction of arrow in Fig. 72).

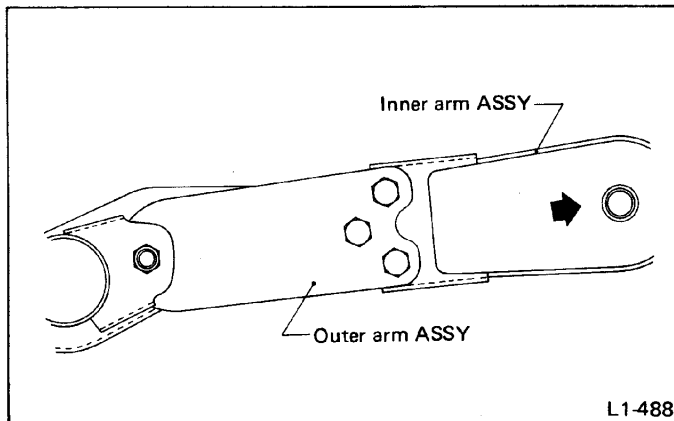


Fig. 72

(d) Adjust toe within service standard by repeating steps in 2) and 3) above for both right and left wheels.

Camber angle

(a) Jack up rear of vehicle as shown in "Pre-Delivery Inspection," and remove wheel whose camber angle is out of standard.

(b) Remove bolt linking lower end of shock absorber to inner arm.

(c) Then, loosen outer arm mounting bolts shown in Fig. 5.

(d) If camber angle is excessive in \oplus direction, use a piece of wood as a lever and change relative angle between inner arm and outer arm so that angle θ formed by inner arm and outer arm centerlines (Fig. 73) increases. Then, tighten outer arm mounting bolts.

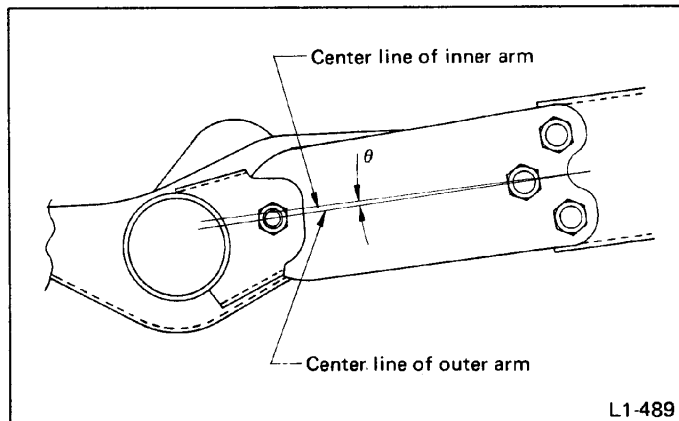


Fig. 73

(e) If camber angle is excessive in \ominus direction, use a piece of wood as a lever and change relative angle between inner and outer arms so that angle θ formed by inner arm and outer arm centerlines decreases. Then, tighten outer arm mounting bolts.

(f) Adjust camber angle to conform to service standard by repeating steps 4) and 5) above.

a. Adjusting toe (or side slip) results in a change in camber angle, while adjusting camber angle causes a change of toe (or side slip). Therefore, when either is adjusted, always check that the other remains within service standard.

b. After both toe (or side slip) and camber angle have been adjusted within service standard, be sure to tighten bolts to torque specified in chapter 4-1..

4) Oil leakage of shock absorber Inspect every 48,000 km (30,000 miles) or 30 months, whichever occurs first.

Remove tire and visually inspect shock absorber for oil leakage as instructed in chapter 4-1. Replace shock absorber if oil leaks excessively.

5) Tightness of bolts and nuts Inspect every 48,000 km (30,000 miles) or 30 months, whichever occurs first.

Check bolts shown in Figs. 74, 75 and 76 for looseness. Retighten bolts to specified torque. Further, check that cotter pin is in place as shown in Figs. 74 and 75. If not, install a new cotter pin.

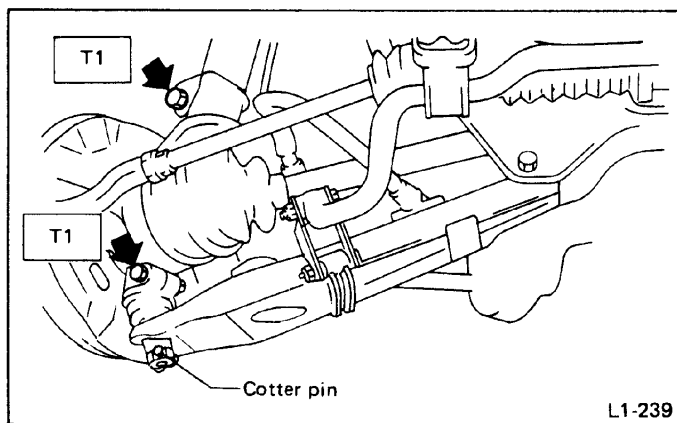


Fig. 74 Front suspension (Except XT6)

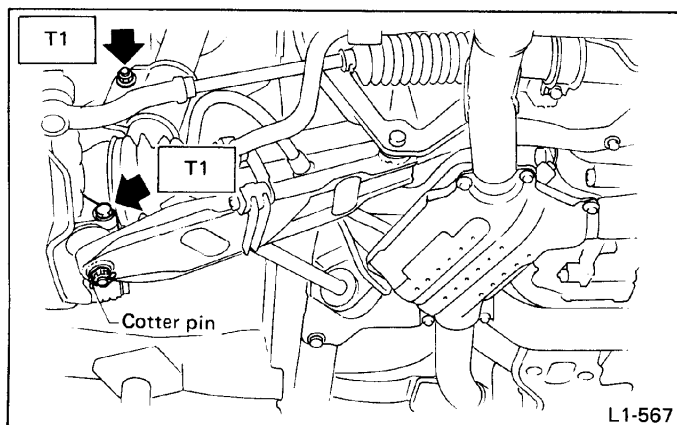


Fig. 75 Front suspension (XT6)

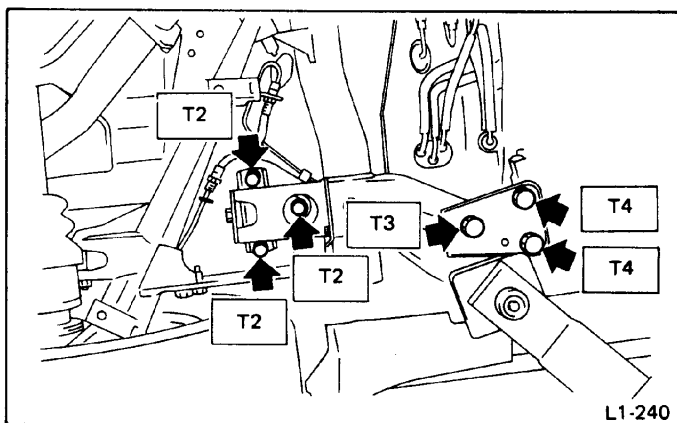


Fig. 76 Rear suspension

Tightening torque N·m (kg·m, ft·lb):

T1: 38 – 50 (3.9 – 5.1, 28 – 37) (Except XT6)

64 – 83 (6.5 – 8.5, 47 – 61) (XT6)

T2: 88 – 103 (9.0 – 10.5, 65 – 76)

T3: 118 – 147 (12.0 – 15.0, 87 – 108)

T4: 74 – 88 (7.5 – 9.0, 54 – 65)

6) Dirt on and damage to rolling diaphragm Inspect every 24,000 km (15,000 miles) or 15 months, whichever occurs first.

(1) After loosening wheel nuts, jack up vehicle until all four wheels are off ground according to instructions in "Pre-Delivery Inspection." Remove tires.

(2) Visually inspect rolling diaphragm. If dirty, remove dirt from diaphragm. Be careful not to damage diaphragms.


(3) Visually inspect rolling diaphragm. Replace diaphragm if damaged. However, replacement is not required if only fine scratches on diaphragm surface caused by sand. These do not present a problem.

(4) Visually inspect rolling diaphragm for rust. If rusty, remove rust and touch up.

When touching up diaphragm, be careful paint does not adhere to diaphragm. (Lower jack after touch-up paint has dried completely.)

17

Grease on Front and Rear Wheel Bearings

MAINTENANCE INTERVAL [Number of months or km (miles), whichever occurs first]								
Months	7.5	15	22.5	30	37.5	45	52.5	60
x 1,000 km	12	24	36	48	60	72	84	96
x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60
								

INSPECTION

Inspect the condition of front and rear wheel bearing grease as follows:

FRONT WHEEL BEARING (Except XT6)

- 1) Raise front wheel with a jack, and remove wheel. Remove cotter pin from axle shaft and remove castle nut.
- 2) Remove hub & disc ASSY.
- 3) Remove oil seal from housing, and check the condition of bearing grease.

- a. If either the grease appears to be white or if only a small amount of grease remains, remove the bearing from the housing, clean it, and pack it with grease.
- b. Discard the old seal and install a new one.

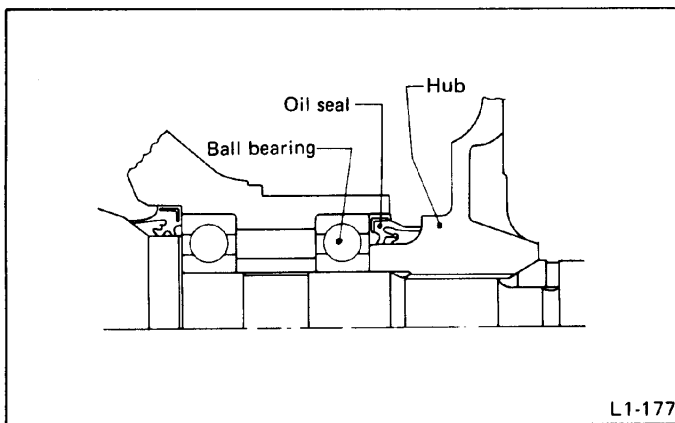


Fig. 77

- 4) Installation is in the reverse order of removal.

Tightening torque (Castle nut):
196 N·m (20 kg·m, 145 ft·lb)

After tightening the castle nut to the specified torque, tighten additionally in one sixth (1/6) turn until both holes of bolt and castle nut align each other.

Tightening torque (Hub to disc rotor bolts):
44 – 58 N·m (4.5 – 5.9 kg·m, 33 – 43 ft·lb)

FRONT WHEEL BEARING (XT6)

- 1) Jack up the front of vehicle.
- 2) While holding front wheel by hand, swing it in and out to check bearing free play.
- 3) Loosen wheel nuts and remove front wheel.
- 4) If bearing free play exists in step 2) above, attach a dial gauge to hub and measure axial displacement in axial direction.

Service limit:

Straight-ahead position within 0.05 mm (0.0020 in)

- 5) Remove bolts and self-locking nuts, and extract transverse link from front crossmember.
- 6) While lightly hammering spring pin which secures D.O.J. to transmission spindle, remove it.
- 7) Extract D.O.J. from transmission spindle.
- 8) While supporting front drive shaft horizontally with one hand, turn hub with the other to check for noise or binding. If hub is noisy or binds, disassemble front axle and check condition of oil seals, bearings, etc.

REAR WHEEL BEARING
[Except 4WD vehicle]

- 1) Apply parking brake, and loosen rear wheel nuts.
- 2) Jack up vehicle, support it with safety stands (rigid racks) and remove rear tires and wheels.
- 3) Pry brake drum cap by screwdriver off drum.
- 4) Flatten lock washer and loosen axle nut, then remove lock washer, lock plate and brake drum so as not to drop inner race of outer taper roller bearing. Outer bearing, outer race of inner bearing and oil seal can be removed together with drum.
- 5) Check condition of bearing grease.

- a. If either the grease appears to be white or if only a small amount of grease remains, remove the bearing from the housing, clean it, and pack it with grease.
- b. Discard the old seal and install a new one.

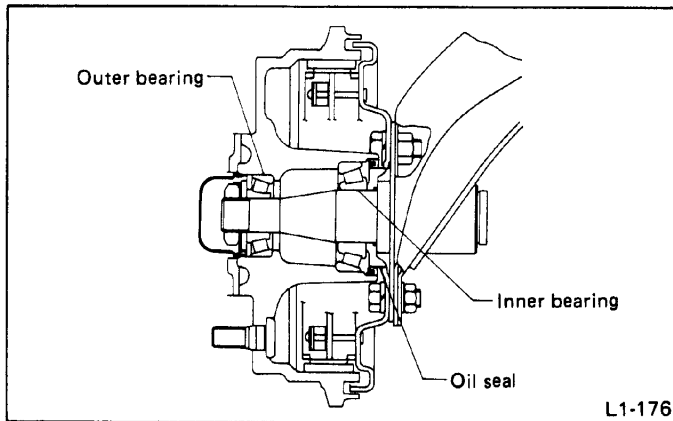


Fig. 78

- 6) Apply approximately 4 g (0.14 oz) of grease to inner bearing and 3 g (0.11 oz) to outer bearing. Fill the hub of drum with approximately 30 g (1.06 oz) of grease.
- 7) Install drum, inner race of outer bearing, lock plate, lock washer and axle nut in this order onto the spindle.

Be sure to use new lock plate and new lock washer without fail.

REAR WHEEL BEARING [4WD vehicle]

- 1) Apply parking brake.
- 2) Remove rear wheel cap and cotter pin, and loosen castle nut and wheel nuts.
- 3) Detach shock absorber from inner trailing arm.
- 4) Loosen locking bolts of crossmember outer bushing.
- 5) Jack up vehicle, support it with safety stand (rigid racks) and remove rear tires and wheels.
- 6) Remove castle nut and brake drum.
- 7) Drive out spring pins of BJ and D.O.J. by using a steel rod of 6 mm diameter.
- 8) Remove BJ from spindle of trailing arm with trailing arm lowered fully.
- 9) Remove rear exhaust pipe, muffler and exhaust cover in that order.
- 10) Disconnect brake pipe from brake hose.

Fit air breather cap onto end of brake hose to prevent brake fluid from pouring out.

- 11) Remove brake assembly from trailing arm.
- 12) Remove bolt holding inner bushing of inner trailing arm.
- 13) Remove three bolts, and take out inner arm.
- 14) Vise inner arm, and straighten staked portion of housing, then remove ring nut by using HOUSING NUT WRENCH (Special tool).

Tool No.	Tool name
925550000	HOUSING NUT WRENCH

- 15) Extract spindle inwardly by tapping it from outside with a plastic hammer.
- 16) Remove oil seal.
- 17) Check condition of bearing grease.

- a. If either the grease appears to be white or if only a small amount of grease remains, remove the bearing from the housing, clean it, and pack it with grease.
- b. Discard the old seal and install a new one.

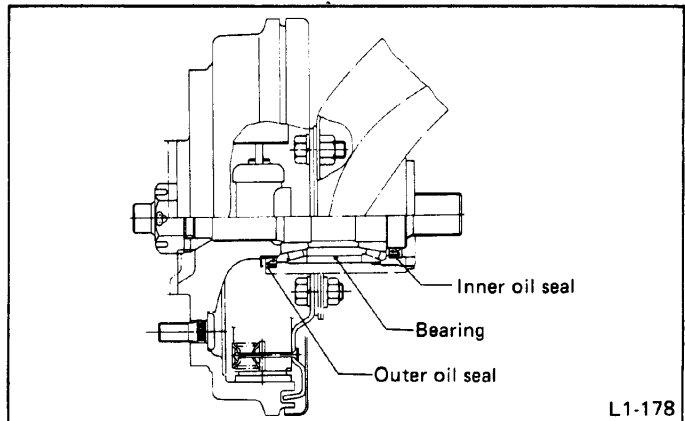


Fig. 79

- 18) Apply grease of 20 to 30 g (0.71 to 1.06 oz) to bearing outer race in housing.
- 19) Insert spindle from inside, and press inner race of outer bearing from outside by using a pipe of 35 mm (1.38 in) in inner diameter while tapping it with a hammer.

Apply grease sufficiently on the inner and outer bearing area.

- 20) Install ring nut to housing.

Tightening torque:

172 – 221 N·m (17.5 – 22.5 kg·m, 127 – 163 ft·lb)

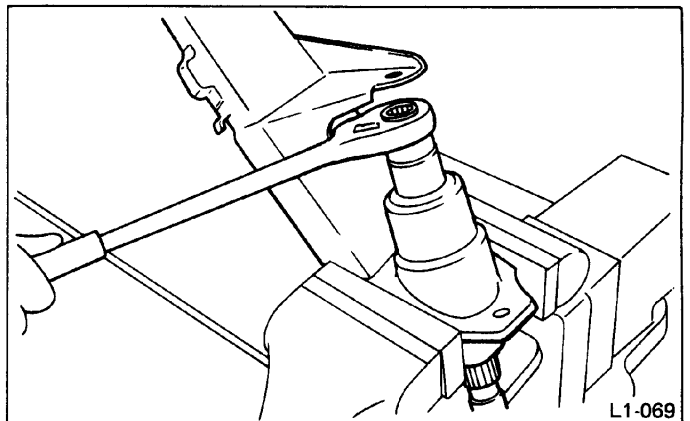


Fig. 80

21) Lock the ring nut by staking a point on the housing surface facing the ring nut groove.

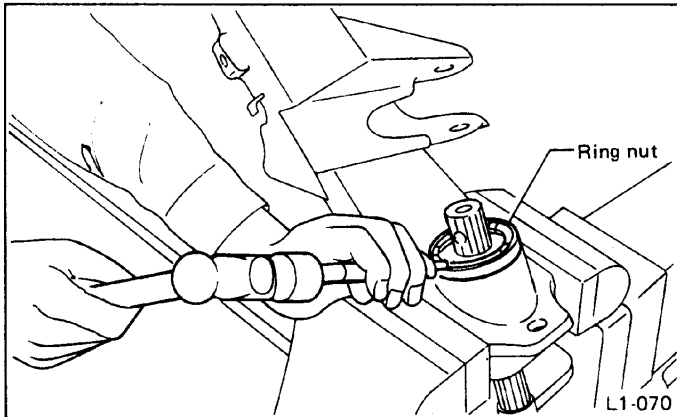


Fig. 81

22) Install outer oil seal by using OIL SEAL INSTALLER (Special tool).

Tool No.	Tool name
925530000	OIL SEAL INSTALLER

Be sure to renew the oil seal.

23) Install inner oil seal by using OIL SEAL INSTALLER (Special tool).

Be sure to renew the oil seal.

24) Mount inner arm to vehicle body.

Tightening torque:

Inner bush bolt:

74 – 93 N·m (7.5 – 9.5 kg·m, 54 – 69 ft-lb)

Inner and outer arms connecting bolts:

118 – 147 N·m

(12.0 – 15.0 kg·m, 87 – 108 ft-lb)

25) Install rear brake assembly to inner arm, and connect brake pipes etc.

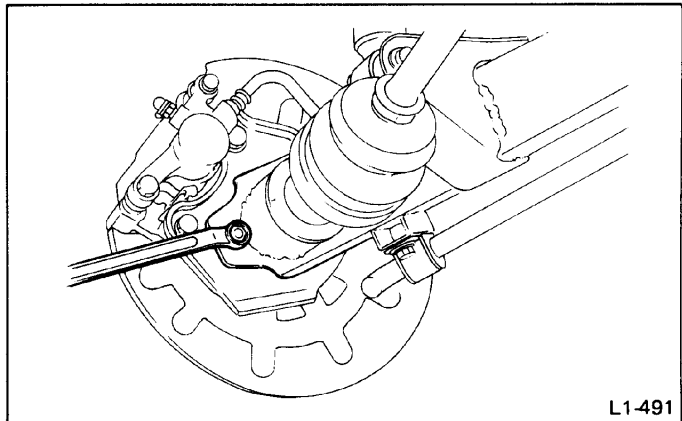


Fig. 82

Tightening torque (Back plate):

46 – 58 N·m (4.7 – 5.9 kg·m, 34 – 43 ft-lb)

26) Connect brake hose and brake pipe.

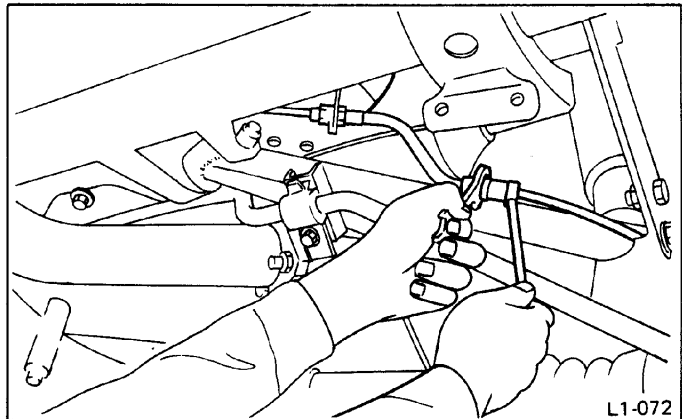


Fig. 83

27) Temporarily fit brake drum, center piece, washer spring and castle nut to spindle in this order.

- a. Play on spindle is not a fault when mounting brake drum.
- b. Don't confuse orientation of washer spring.

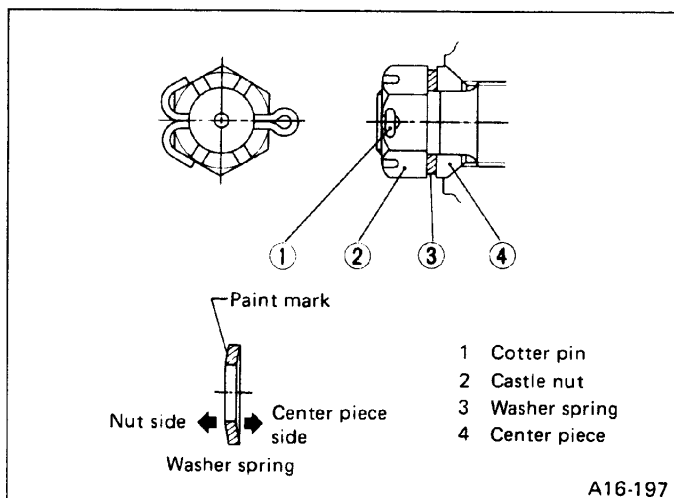


Fig. 84

28) Bleed brake system.

- Before bleeding brake system, check pedal play and brake fluid level in reserve tank.
- Bleed air from four wheels without fail.

29) Tighten castle nut, insert cotter pin and bend it firmly with foot brake applied to lock the wheel and axle.

Tightening torque:

196 N·m (20 kg-m, 145 ft-lb)

After tightening castle nut to the specified torque tighten further within 30° to align holes on nut and spindle.

30) Install packing to rear spindle, and mount D.O.J. or B.J. on rear drive shaft onto spindle with trailing arm lowered all the way.

When mounting, mate the spline teeth properly so that the D.O.J. or B.J. and spindle spring pin hole will align.

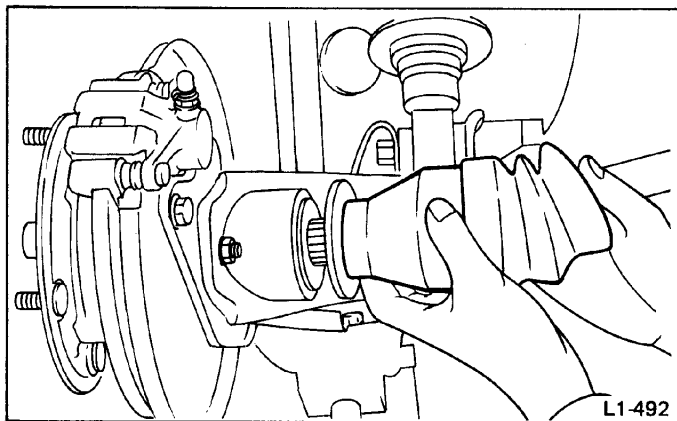


Fig. 85

31) Drive spring pins into D.O.J.

- Before driving in the spring pin, confirm alignment of the holes.
- Be sure to renew the spring pin to be driven in.

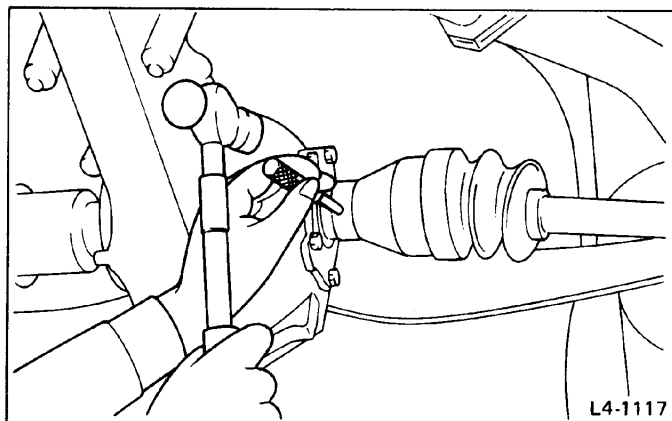


Fig. 86

32) Install wheels, outer arms, etc.

33) Lower vehicle on the ground, and install lower end of shock absorber.

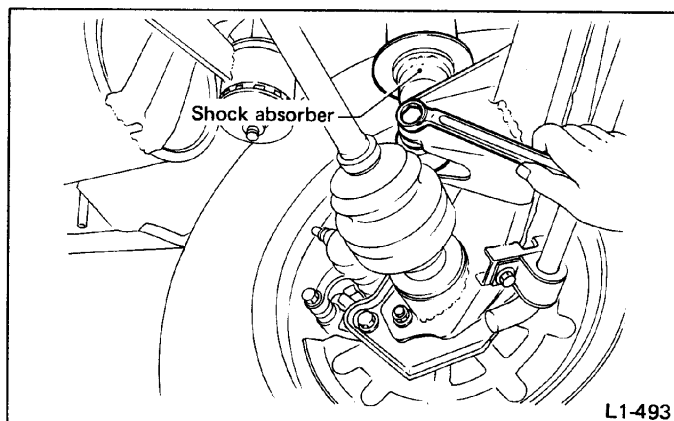


Fig. 87

Tightening torque:

88 – 118 N·m (9 – 12 kg-m, 65 – 87 ft-lb)

34) Check and adjust rear vehicle height and rear wheel alignment.

35) Tighten outer arm lock bolts.

For disc brake vehicle, inspect it in the same manner as drum brakes one.