17. Steering and Suspension System

MAINTENANCE INTERVAL [Number of months or km (miles), whichever occurs first]																	
Months	3	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75	82.5	90	97.5	105	112.5	120
×1,000 km	4.8	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192
×1,000 miles	3	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75	82.5	90	97.5	105	112.5	120
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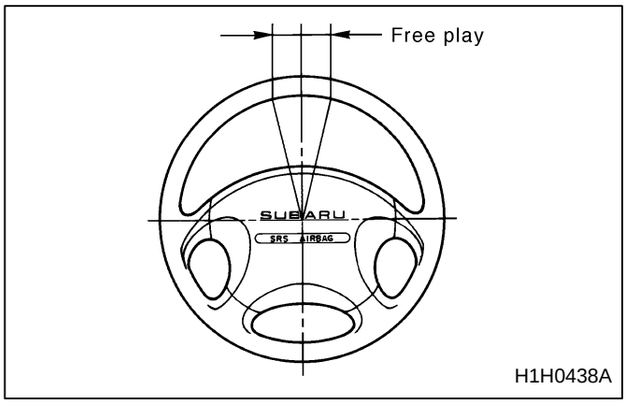
A: INSPECTION

1. 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)



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

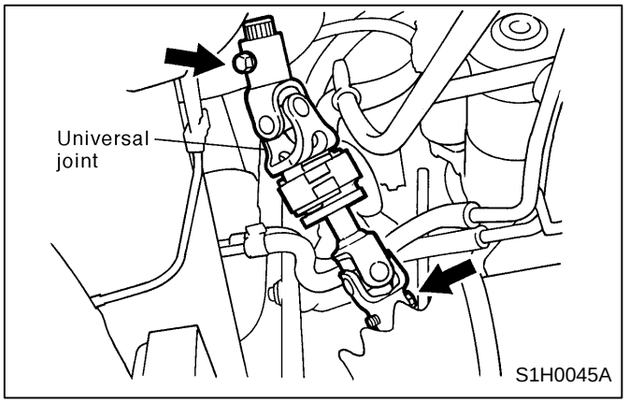
Maximum permissible play:
0.5 mm (0.020 in)

3) 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.
(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.

2. STEERING SHAFT JOINT

1) When steering wheel free play is excessive, 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. If the joint is loose, retighten the mounting bolts to the specified torque.

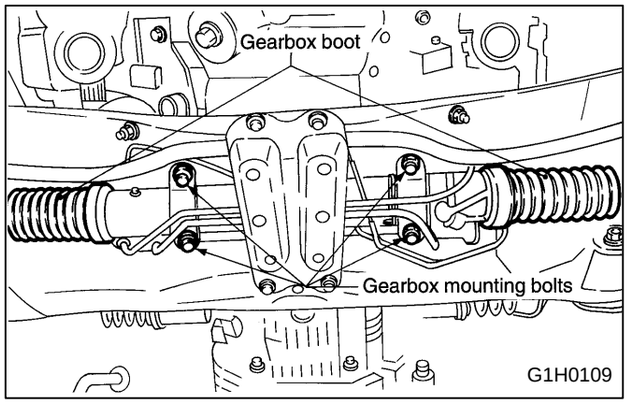
Tightening torque:
21 — 26 N.m
(2.1 — 2.7 kg-m, 15 — 19 ft-lb)



3. 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.

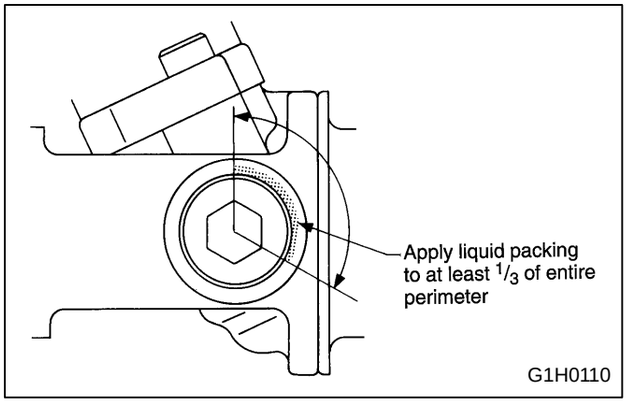
Tightening torque:
47 — 71 N.m
(4.8 — 7.2 kg-m, 35 — 52 ft-lb)



2) Check boot for damage, cracks or deterioration.
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 in the following manner.

Liquid packing:
Three Bond 1102 or equivalent

(1) Tighten adjusting screw to 5 N.m (0.5 kg-m, 3.6 ft-lb) and then loosen. Repeat this operation twice.
(2) Retighten adjusting screw to 5 N.m (0.5 kg-m, 3.6 ft-lb) and back off 30°.
(3) Apply liquid packing to at least 1/3 of entire perimeter of adjusting screw thread.



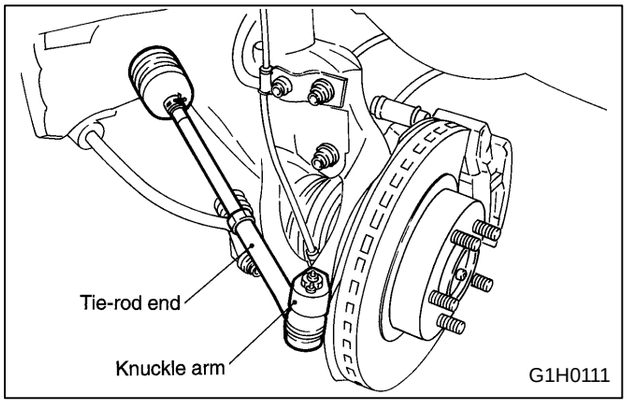
(4) Install lock nut. While holding adjusting screw with a wrench, tighten lock nut using SPANNER (926230000).

Tightening torque (Lock nut):
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.

4. 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 free play of ball studs. If castle nut is loose, retighten it to the specified torque, then tighten further up to 60° until cotter pin hole is aligned.

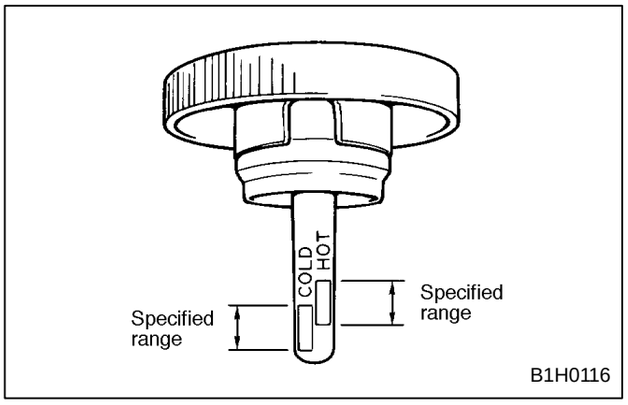
Tightening torque:
25 — 29 N.m
(2.5 — 3.0 kg-m, 18 — 22 ft-lb)

3) Check lock nut on the tie-rod end for tightness. If it is loose, retighten it to the specified torque.

Tightening torque:
78 — 88 N.m (8 — 9 kg-m, 58 — 65 ft-lb)

5. 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, read the fluid level on the “COLD” side.
(2) Check at temperature 60°C (140°F) of fluid temperature, read the fluid level on the “HOT” side.



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.

Recommended fluid	Manufacturer
Dexron II, Dexron IIE or Dexron III type	B.P.
	CALTEX
	CASTROL
	MOBIL
	SHELL
	TEXACO

Fluid capacity:
0.7 ℓ (0.7 US qt, 0.6 Imp qt)

6. POWER STEERING FLUID FOR LEAKS

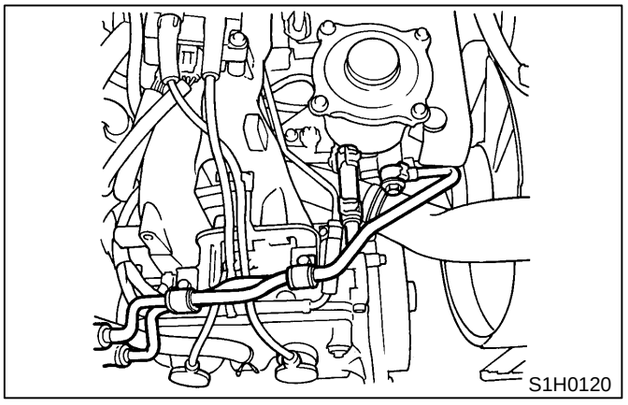
Inspect the underside of oil pump and gearbox for power steering system, hoses, piping and their couplings for fluid leaks.
If fluid leaks are found, correct them by retightening their fitting bolts (or nuts) and/or replacing their parts.

NOTE:
● Wipe the leakage fluid off after correcting fluid leaks, or a wrong diagnosis is taken later.
● Also pay attention to clearances between hoses (or pipings) and other parts when inspecting fluid leaks.

7. HOSES OF OIL PUMP FOR DAMAGES

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

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



8. POWER STEERING PIPES FOR DAMAGE

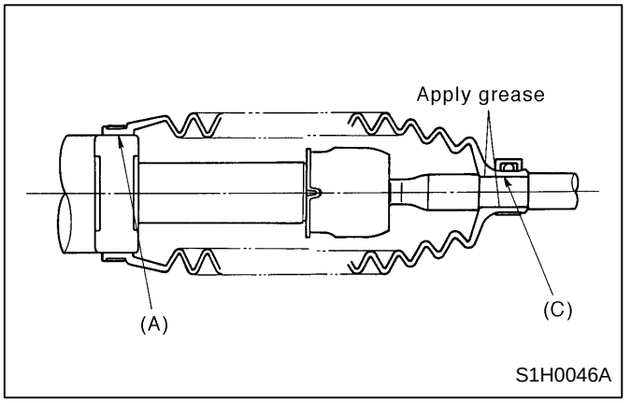
Check power steering pipes for corrosion and damage.
Replace pipes with new one if necessary.

9. GEARBOX BOOTS

Inspect both sides of gearbox boots as follows, and correct the defects if necessary.
1) (A) and (C) positions of gearbox boot are fitted correspondingly in (A) and (C) grooves of gearbox and the rod.
2) Clips are fitted outside of (A) and (C) positions of boot.

3) Boot does not have crack and hole.

NOTE:
Rotate (C) position of gearbox boot against twist of it produced by adjustment of toe-in, etc.



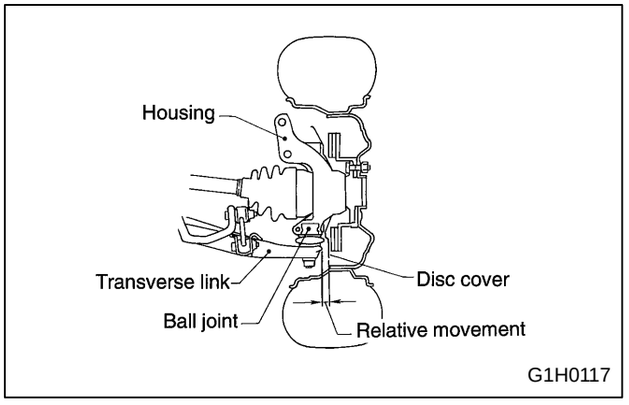
10. FITTING BOLTS AND NUTS

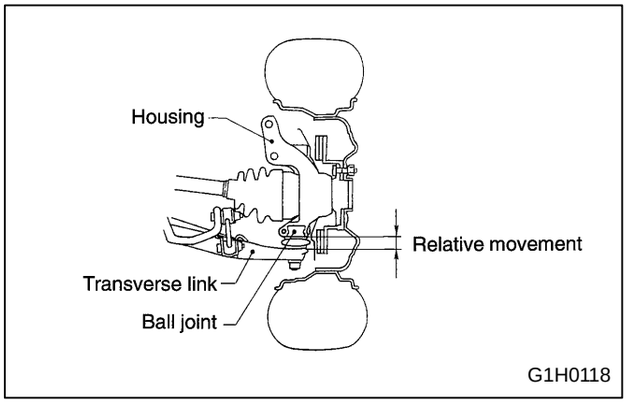
Inspect fitting bolts and nuts of oil pump and bracket for looseness, and retighten them if necessary.
Inspect and/or retighten them when engine is cold. <Ref. to 4-3 [C200].>

11. SUSPENSION BALL JOINT

1) Play of front ball joint
Inspect every 25,000 km (15,000 miles) or 12 month, whichever occurs first.

(1) Jack up vehicle until front wheels are off ground.
(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.
(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.
(4) If relative movement is observed in the immediately preceding two steps, remove and inspect ball joint. If free play exceeds standard, replace ball joint. <Ref. to 4-1 [W3A0].>, <Ref. to 4-1 [W3B0].>, <Ref. to 4-1 [W3C0].>

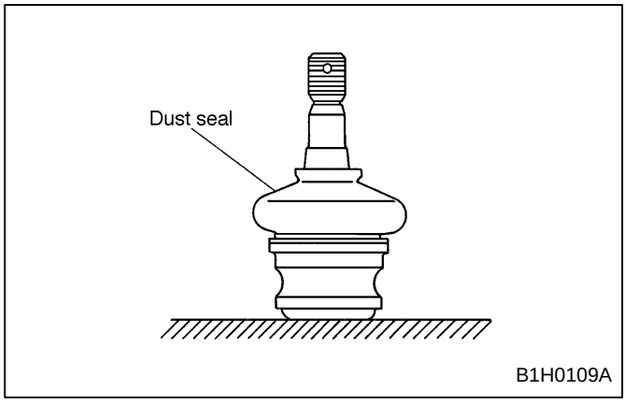




2) Damage of dust seal
Inspect every 25,000 km (15,000 miles) or 12 months, whichever occurs first. Visually inspect ball joint dust seal. If it is damaged, remove transverse link. <Ref. to 4-1 [W2A0].> And measure free play of ball joint. <Ref. to 4-1 [W3B0].>

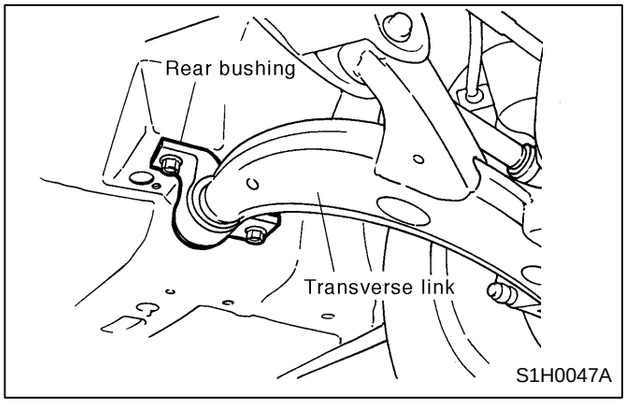
(1) When looseness exceeds standard value, replace ball joint.
(2) If the dust seal is damaged, replace with the new ball joint.

NOTE:
When transverse link ball joint has been removed or replaced, check toe-in of front wheel. If front wheel toe-in is not at specified value, adjust according to chapter 4-1 <Ref. to 4-1 [W1A0].> so that toe-in conforms to service standard.



12. TRANSVERSE LINK'S REAR BUSHING

Check oil leaks at around liquid-filled bushing. If oil leaks, replace bushing.



13. WHEEL ARCH HEIGHT

Inspect every 50,000 km (30,000 miles) or 24 months, whichever occurs first.
1) Unload cargoes and set vehicle in curb weight (empty) condition.
2) Then, check wheel arch height of front and rear suspensions to ensure that they are within specified values.
<Ref. to 4-4 [W1B1].>
3) When wheel arch height is out of standard, visually inspect following components and replace deformed parts.
● Suspension components [Front and rear: strut assembly]
● Body parts to which suspensions are installed.
4) When no components are deformed, adjust wheel arch height by replacing coil spring in the suspension whose wheel arch height is out of standard.

14. WHEEL ALIGNMENT OF FRONT SUSPENSION

Inspect every 50,000 km (30,000 miles) or 24 months, whichever occurs first.
1) Check alignment of front suspension to ensure that following items conform to standard values.
● Toe-in
● Camber angle
● Caster angle
● Steering angle
<Ref. to 4-1 [W1A0].>
2) When 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.
3) When toe-in and camber is out of standard value adjust so that it conforms to service standard.
4) When right-and-left turning angles of tire are out of standard, adjust to standard value.

15. WHEEL ALIGNMENT OF REAR SUSPENSION

Inspect every 50,000 km (30,000 miles) or 24 months, whichever occurs first.
1) Check alignment of rear suspension to ensure that following items are within standard values.
● Toe-in
● Camber angle
● Thrust angle
<Ref. to 4-1 [W1A0].>
2) When toe-in, camber angle or thrust angle does not conform to standard value, visually inspect parts listed below. If deformation is observed, replace damaged parts.
● Suspension components [Strut assembly, lateral links, trailing link, crossmember, etc.]
● Body parts to which suspensions are installed.
3) When no components are deformed, adjust toe-in, camber angle and thrust angle so that it conforms to service standard.

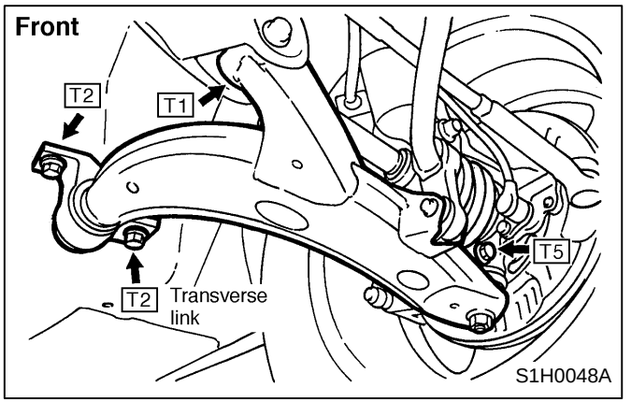
16. OIL LEAKAGE OF STRUT

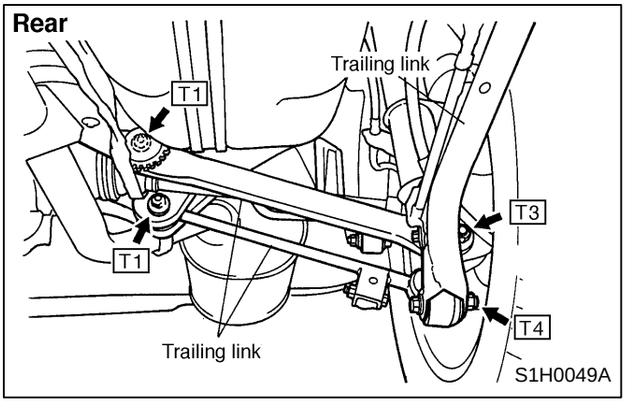
Inspect every 50,000 km (30,000 miles) or 24 months, whichever occurs first.
Visually inspect strut for oil leakage as instructed in chapter 4-1. <Ref. to 4-1 [W4C1].>
Replace strut if oil leaks excessively.

17. TIGHTNESS OF BOLTS AND NUTS

Inspect every 50,000 km (30,000 miles) or 24 months, whichever occurs first. Check bolts and nuts shown in the figure for looseness. Re-tighten bolts and nuts to specified torque. If self-lock nuts and bolts are removed, replace them with new ones.

Tightening torque:
T1:
98 ± 15 N.m
(10 ± 1.5 kg-m, 72 ± 11 ft-lb)
T2:
245 ± 49 N.m
(25 ± 5 kg-m, 181 ± 36 ft-lb)
T3:
139 ± 21 N.m
(14 ± 2 kg-m, 101.5 ± 14.5 ft-lb)
T4:
112.5 ± 14.5 N.m
(11.5 ± 1.5 kg-m, 83 ± 11 ft-lb)





18. DAMAGE TO SUSPENSION PARTS

1) Check the following parts and the fastening portion of the car body for deformation or excessive rusting which impairs the suspension. If necessary, replace damaged parts with new ones. If minor rust formation, pitting, etc. are noted, remove rust and apply remedial anti-corrosion measures.
- Front suspension
  - Transverse link
  - Crossmember
  - Strut
- Rear suspension
  - Crossmember
  - Lateral links
  - Trailing link
  - Strut
- In the district where salt is sprayed to melt snow on a road in winter, check suspension parts for damage caused by rust every 12 months after lapse of 60 months. Take rust prevention measure as required.