

Impreza 1997-1998

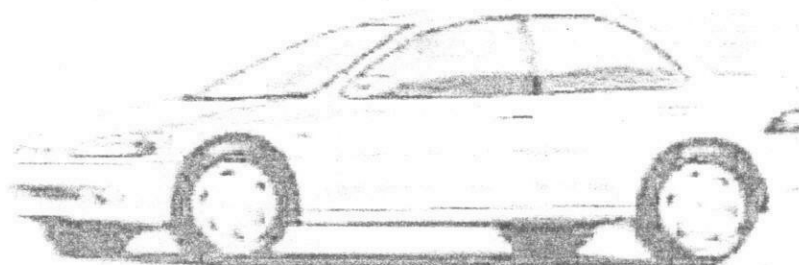


Exit

SERVICE MANUAL



SUBARU IMPREZA



Service manual

General information

1. 4-door Sedan

A: DIMENSIONS

Model		1600		1800	2000 Non TURBO		2000 TURBO	
		FWD	AWD	AWD	FWD	AWD	AWD	
Overall length	mm (in)	4,350 (171.3), 4,375 (172.2)* ¹					4,340 (170.9)	
Overall width	mm (in)	1,690 (66.5)						
Overall height (at CW)	mm (in)	1,400 (55.1)* ² , 1,405 (55.3) 1,415 (55.7)* ³	1,415 (55.7)	1,415 (55.7)	1,415 (55.7)	1,415 (55.7)	1,400 (55.1)	
Compartment	Length	1,820 (71.7)						
	Width	1,385 (54.5)						
	Height	1,170 (46.1)						
Wheelbase	mm (in)	2,520 (99.2)						
Tread	Front	1,475 (58.1)* ² 1,465 (57.7) 1,460 (57.5)* ³	1,460 (57.5)	1,460 (57.5)	1,460 (57.5)	1,460 (57.5)	1,465 (57.7)	
	Rear	1,465 (57.7)* ² 1,455 (57.3) 1,450 (57.1)* ³	1,455 (57.3)	1,455 (57.3)	1,455 (57.3) 1,450 (57.1)* ³	1,455 (57.3)	1,455 (57.3)	
Minimum road clearance	mm (in)	150 (5.9)	160 (6.3)	160 (6.3)	145 (5.7) 155 (6.1)* ³	145 (5.7) 155 (6.1)* ³	150 (5.9)	

*¹ : G.C.C. Countries

*² : with 13 inch wheel

*³ : Australian model

B: ENGINE

Model — With catalyst vehicles —		1600	1800	2000 Non TURBO	2000 TURBO
Engine type		Horizontally opposed, liquid cooled, 4-cylinder, 4-stroke gasoline engine			
Valve arrangement		Overhead camshaft type			
Bore x Stroke	mm (in)	87.9 x 65.8 (3.461 x 2.591)	87.9 x 75 (3.461 x 2.95)	92 x 75 (3.62 x 2.95)	
Displacement	cm ³ (cu in)	1,597 (97.45)	1,820 (111.06)	1,994 (121.67)	
Compression ratio		9.7			8.0
Firing order		1 — 3 — 2 — 4			
Idle speed at Park/Neutral position	rpm	700 ± 100		800 ± 100	
Maximum output	kW (PS)/rpm	66 (90)/5,600	79 (107)/5,600	85 (115)/5,600	155 (211)/5,600
Maximum torque	N.m (kg-m, ft-lb)/rpm	137 (14.0, 101)/ 4,000	157 (16.0, 115)/ 4,000	172 (17.6, 127)/ 4,000	290 (29.6, 213)/ 4,000

Model — Without catalyst vehicles —		1600	1800
Engine type		Horizontally opposed, liquid cooled, 4-cylinder, 4-stroke gasoline engine	
Valve arrangement		Overhead camshaft type	
Bore x Stroke	mm (in)	87.9 x 65.8 (3.461 x 2.591)	
Displacement	cm ³ (cu in)	1,597 (97.45)	1,820 (111.06)
Compression ratio		9.7	
Firing order		1 — 3 — 2 — 4	
Idle speed at Park/Neutral position	rpm	700 ± 100	
Maximum output	kW (PS)/rpm	70 (95)/5,600	79 (107)/5,600
Maximum torque	N.m (kg-m, ft-lb)/rpm	137 (14.0, 101)/4,000	157 (16.0, 115)/4,000

SPECIFICATIONS

[S1D0] **1-1**
1. 4-door Sedan

Model — Australia spec. vehicles —	1600	2000 Non TURBO	2000 TURBO
Engine type	Horizontally opposed, liquid cooled, 4-cylinder, 4-stroke gasoline engine		
Valve arrangement	Overhead camshaft type		
Bore x Stroke mm (in)	87.9 x 65.8 (3.461 x 2.591)	92 x 75 (3.62 x 2.95)	
Displacement cm ³ (cu in)	1,597 (97.45)	1,994 (121.67)	
Compression ratio	9.7		8.0
Firing order	1 — 3 — 2 — 4		
Idle speed at Park/Neutral position rpm	700 ± 100	800 ± 100	
Maximum output kW (PS)/rpm	70 (95)/5,600	88 (120)/5,600	155 (211)/5,600
Maximum torque N.m (kg-m, ft-lb)/rpm	137 (14.0, 101)/4,000	175 (17.9, 129)/4,000	290 (29.6, 214)/4,000

C: ELECTRICAL

Model	1600	1800	2000 Non TURBO	2000 TURBO
Ignition timing at idling speed BTDC/rpm	5° ± 10°/700	10° ± 10°/700	20° ± 10°/800 (MT), 15° ± 10°/800 (AT)	12° ± 10°/800
Spark plug Type and manufacturer	NGK: BKR6E (without catalyst) NGK: BKR6E-11 (with catalyst) CHAMPION: RC8YC4 (with catalyst)		NGK: BKR6E (without catalyst) NGK: BKR6E-11 (with catalyst) CHAMPION: RC10YC4 (with catalyst)	NGK: PFR6B
Generator	12V — 75A			
Battery Type and capacity (5HR)	For Europe	5MT: 12V — 48AH 4AT: 12V — 52AH		
	Others	5MT: 12V — 27AH 4AT: 12V — 40AH		

D: TRANSMISSION

Model	1600		2000		
	FWD				
Transmission type	5MT*1	4AT*1	5MT*1	4AT*1	
Clutch type	DSPD	TCC	DSPD	TCC	
Gear ratio	1st	3.545	2.785	3.545	
	2nd	2.111	1.545	2.111	
	3rd	1.448	1.000	1.448	
	4th	1.088	0.694	1.088	
	5th	0.825	—	0.871	
	Reverse	3.416	2.272	3.416	
Reduction gear (Front drive)	1st reduction	Type of gear	—	Helical	
		Gear ratio	—	1.000	
	Final reduction	Type of gear	Hypoid	Hypoid	Hypoid
		Gear ratio	3.900	4.444	3.700

5MT*1: 5-forward speeds with synchromesh and 1-reverse

4AT*1: Electronically controlled fully-automatic, 4-forward speeds and 1-reverse

DSPD: Dry Single Plate Diaphragm

TCC: Torque Converter Clutch

SPECIFICATIONS

Model		1600		1800	
		AWD			
Transmission type		5MT*2		5MT*2	4AT*2
Clutch type		DSPD		DSPD	TCC
Gear ratio	1st	3.545	3.545	3.545	2.785
	2nd	2.111	2.111	2.111	1.545
	3rd	1.448	1.448	1.448	1.000
	4th	1.088	1.088	1.088	0.694
	5th	0.825	0.825	0.825	—
	Reverse	3.416	3.416	3.416	2.272
Auxiliary transmission gear ratio		High	—	—	—
		Low	—	—	—
Reduction gear (Front drive)	1st reduction	Type of gear	—	—	Helical
		Gear ratio	—	—	1.000
	Final reduction	Type of gear	Hypoid	Hypoid	Hypoid
		Gear ratio	3.900	3.900	4.111
Reduction gear (Rear drive)	Transfer reduction	Type of gear	Helical	Helical	—
		Gear ratio	1.000	1.000	—
	Final reduction	Type of gear	Hypoid	Hypoid	Hypoid
		Gear ratio	3.900	3.900	4.111

Model		2000 Non TURBO		2000 TURBO	
		AWD			
Transmission type		5MT*2	4AT*2	5MT*2	4AT*2
Clutch type		DSPD	TCC	DSPD	TCC
Gear ratio	1st	3.545	2.785	3.454	2.785
	2nd	2.111	1.545	1.947	1.545
	3rd	1.448	1.000	1.366	1.000
	4th	1.088	0.694	0.972	0.694
	5th	0.871	—	0.738	—
	Reverse	3.416	2.272	3.416	2.272
Auxiliary transmission gear ratio		High	—	—	—
		Low	—	—	—
Reduction gear (Front drive)	1st reduction	Type of gear	—	Helical	—
		Gear ratio	—	1.000	—
	Final reduction	Type of gear	Hypoid	Hypoid	Hypoid
		Gear ratio	3.900	4.111	3.900
Reduction gear (Rear drive)	Transfer reduction	Type of gear	Helical	—	Helical
		Gear ratio	1.000	—	1.100
	Final reduction	Type of gear	Hypoid	Hypoid	Hypoid
		Gear ratio	3.900	4.111	3.545

5MT*2: 5-forward speeds with synchromesh and 1-reverse – with center differential and viscous coupling
 4AT*2: Electronically controlled fully-automatic, 4-forward speeds and 1-reverse – with hydraulically controlled transfer clutch
 DSPD: Dry Single Plate Diaphragm
 TCC: Torque Converter Clutch

E: STEERING

Model	Non TURBO	TURBO	
		RHD	LHD
Type	Rack and Pinion		
Turns, lock to lock	3.2	2.8	3.0
Minimum turning circle m (ft)	Curb to curb: 10.2 (33.5)	Curb to curb: 10.4 (34.1)	Curb to curb: 10.8 (35.4)

F: SUSPENSION

Front	Macpherson strut type, Independent, Coil spring
Rear	Dual link strut type, Independent, Coil spring

G: BRAKE

Model	Non TURBO	TURBO
Service brake system	Dual circuit hydraulic with vacuum suspended power unit	
Front	Ventilated disc brake	
Rear	Drum brake	Disc brake
Parking brake	Mechanical on rear brakes	

H: TIRE

Model	Non TURBO				TURBO
	13 x 5.00B	14 x 5-1/2JJ	15 x 6JJ	15 x 6JJ	
Rim size	13 x 5.00B	14 x 5-1/2JJ	15 x 6JJ	15 x 6JJ	
Tire size	165R13	175/70R14	185/70R14	195/60R15	
Type	Steel belted radial, Tubeless				

I: CAPACITY

Model		Non TURBO				TURBO	
		FWD		AWD		5MT	4AT
		5MT	4AT	5MT	4AT		
Fuel tank	ℓ (US gal, Imp gal)	50 (13.2, 11.0)				60 (15.9, 13.2)	
Engine oil	Upper level	4.0 (4.2, 3.5)				4.5 (4.8, 4.0)	
	Lower level	3.0 (3.2, 2.6)				3.5 (3.7, 3.1)	
Transmission gear oil	ℓ (US qt, Imp qt)	3.3 (3.5, 2.9)	—	3.5 (3.7, 3.1)	—	4.0 (4.2, 3.5)	—
Automatic transmission fluid	ℓ (US qt, Imp qt)	—	7.9 (8.4, 7.0)	—	7.9 (8.4, 7.0)	—	9.5 (10.0, 8.4)
AT differential gear oil	ℓ (US qt, Imp qt)	—	1.2 (1.3, 1.1)	—	1.2 (1.3, 1.1)	—	1.2 (1.3, 1.1)
AWD rear differential gear oil	ℓ (US qt, Imp qt)	—		0.8 (0.8, 0.6)			
Power steering fluid	ℓ (US qt, Imp qt)	0.7 (0.7, 0.6)					
Engine coolant	ℓ (US qt, Imp qt)	1600: 6.4 (6.8, 5.6), 1800: 6.2 (6.6, 5.5), 2000: 6.0 (6.3, 5.2)				7.2 (7.6, 6.3)	

SPECIFICATIONS

J: WEIGHT

1. EUROPE, GENERAL SPEC. VEHICLE

Model			1600						1800	
			FWD				AWD		AWD	
			LX		GL		LX	GL	GL	
			5MT	4AT	5MT	4AT	5MT	5MT	5MT	4AT
Curb weight (C.W.)	Front	kg (lb)	615 (1,355)	660 (1,455)	625 (1,380)	670 (1,475)	645 (1,420)	650 (1,435)	655 (1,445)	685 (1,510)
	Rear	kg (lb)	410 (905)	415 (915)	425 (935)	430 (950)	470 (1,035)	475 (1,045)	475 (1,045)	480 (1,060)
	Total	kg (lb)	1,025 (2,260)	1,075 (2,370)	1,050 (2,315)	1,100 (2,425)	1,115 (2,460)	1,125 (2,480)	1,130 (2,490)	1,165 (2,570)
Maximum permissible axle weight (M.P.A.W.)	Front	kg (lb)	790 (1,750)	830 (1,830)	810 (1,785)	850 (1,875)	810 (1,785)	830 (1,830)	840 (1,850)	860 (1,895)
	Rear	kg (lb)	760 (1,675)	790 (1,740)	770 (1,700)	800 (1,765)	830 (1,830)	840 (1,850)	840 (1,850)	840 (1,850)
Maximum permissible weight (M.P.W.)	Total	kg (lb)	1,520 (3,350)	1,590 (3,505)	1,580 (3,485)	1,640 (3,615)	1,620 (3,570)	1,640 (3,615)	1,680 (3,705)	1,680 (3,705)

Model			2000 Non TURBO						2000 TURBO
			FWD			AWD			AWD
			GL		GL		RX		TURBO
			5MT	4AT	5MT	4AT	5MT	4AT	5MT
Curb weight (C.W.)	Front	kg (lb)	640 (1,410)	680 (1,500)	660 (1,455)	690 (1,520)	660 (1,455)	690 (1,520)	725 (1,600)
	Rear	kg (lb)	425 (935)	430 (950)	475 (1,045)	480 (1,060)	475 (1,045)	480 (1,060)	510 (1,125)
	Total	kg (lb)	1,065 (2,350)	1,110 (2,450)	1,135 (2,505)	1,170 (2,580)	1,135 (2,505)	1,170 (2,580)	1,235 (2,725)
Maximum permissible axle weight (M.P.A.W.)	Front	kg (lb)	810 (1,785)	850 (1,875)	840 (1,850)	860 (1,895)	840 (1,850)	860 (1,895)	900 (1,985)
	Rear	kg (lb)	770 (1,700)	800 (1,765)	840 (1,850)	840 (1,850)	840 (1,850)	840 (1,850)	850 (1,875)
Maximum permissible weight (M.P.W.)	Total	kg (lb)	1,580 (3,485)	1,640 (3,615)	1,680 (3,705)	1,680 (3,705)	1,680 (3,705)	1,680 (3,705)	1,750 (3,860)

NOTE:

When any of the following optional parts are installed, add the weight to the curb weight.

Weight of optional parts	Power window	Power door lock	ABS			Air conditioning	Sun roof	Without power steering	SRS Airbag (Driver)	SRS Air bag (Driver & Passenger)
			13 in*	14 in	15 in					
Front kg (lb)	1 (2)	0 (0)	13 (29)	8 (18)	7 (15)	19 (42)	5 (11)	-8 (-18)	5 (11)	11 (24)
Rear kg (lb)	2 (4)	1 (2)	6 (13)	4 (9)	1 (2)	-2 (-4)	8 (18)	1 (2)	1 (2)	2 (4)
Total kg (lb)	3 (7)	1 (2)	19 (42)	12 (26)	8 (18)	17 (37)	13 (29)	-7 (-15)	6 (12)	13 (29)

*: In case that the ABS is installed on 13 in.-wheel equipped vehicles, the wheels and brakes must be exchanged for 14 in. ones.

1. General Precautions

A: BEFORE STARTING SERVICE

- 1) Be sure to perform the jobs listed in the Periodic Maintenance Schedule.
- 2) When a vehicle is brought in for maintenance, carefully listen to the owner's explanations of the symptoms exhibited by the vehicle. List the problems in your notebook, and refer to them when trying to diagnose the trouble.
- 3) All jewelry should be removed. Suitable work clothes should be worn.
- 4) Be sure to wear goggles.
- 5) Use fender, floor and seat covers to prevent the vehicle from being scratched or damaged.
- 6) Never smoke while working.
- 7) Before removing underfloor bolts (including the rear differential filler plug) coated with bituminous wax, remove old wax. Re-coat with new wax after reinstallation.

B: WHILE WORKING

- 1) When jacking up the vehicle, be sure to use safety stands.
- 2) When jacking up the front or rear end of the car body, be sure to chock the tires remaining in contact with the ground.
- 3) Keep the parking brake applied when working on the vehicle. Chock the tires remaining in contact with the ground (and set the selector lever to "P" position in AT vehicle), when the parking brake cannot be applied, such as when the brakes are being worked on.
- 4) Keep the ignition key turned "OFF" if at all possible.
- 5) Be cautious while working when the ignition key is "ON"; if the engine is hot, the cooling fan may start to operate.
- 6) While the engine is in operation, properly ventilate the workshop.
- 7) While the engine is in operation, be aware of any moving parts, such as the cooling fan and the drive belt.
- 8) Keep your hands off any metal parts such as the radiator, exhaust manifold, exhaust pipe, and muffler to prevent burning yourself.
- 9) When servicing the electrical system or the fuel system, disconnect the ground cable from the battery.
- 10) When disassembling, arrange the parts in

the order that they were disassembled.

- 11) When removing a wiring connector, do not pull the wire but pull the connector itself.
- 12) When removing a hose or tube, remove the clip first. Then, pull the hose or tube while holding its end fitting.
- 13) Replace gaskets, O-rings, snap rings, lock washers, etc. with new ones.
- 14) When tightening a bolt or nut, tighten it to the specified torque.
- 15) When performing work requiring special tools, be sure to use the designated ones.
- 16) After completing work, make certain that the hoses, tubes and wiring harnesses are securely connected.
- 17) After completing work, be sure to wash the vehicle.

C: TREATMENT FOR USED ENGINE OIL

1. ENGINE OILS

Prolonged and repeated contact with mineral oil will result in the removal of natural fats from the skin, leading to dryness, irritation and dermatitis. In addition, used engine oil contains potentially harmful contaminants which may cause skin cancer. Adequate means of skin protection and washing facilities should be provided.

2. HEALTH PROTECTION PRECAUTIONS

- 1) Avoid prolonged and repeated contact with oils, particularly used engine oils.
- 2) Wear protective clothing, including impervious gloves where practicable.
- 3) Do not put oily rags in pockets.
- 4) Avoid contaminating clothes, particularly underpants, with oil.
- 5) Overalls must be cleaned regularly. Discard unwashable clothing and oil impregnated footwear.
- 6) First aid treatment should be obtained immediately for open cuts and wounds.
- 7) Use barrier creams, applying them before each work period, to help the removal of oil from the skin.
- 8) Wash with soap and water to ensure all oil is removed (skin cleansers and nail brushes will help). Preparations containing lanolin replace the natural skin oils which have been removed.
- 9) Do not use petrol, kerosene, diesel fuel, gas oil, thinners or solvents for washing skin.

- 10) If skin disorders develop, obtain medical advice.
- 11) Where practicable, degrease components prior to handling.
- 12) Where there is a risk of eye contact, eye protection should be worn, for example, chemical goggles or face shields; in addition an eye wash facility should be provided.

3. ENVIRONMENTAL PROTECTION PRECAUTIONS

It is illegal to pour used oil on to the ground, down sewers or drains, or into water courses. The burning of used engine oil in small space heaters or boilers is not recommended unless emission control equipment is fitted. If in doubt, check with the Local Authority.

Dispose of used oil through authorized waste disposal contractors, licensed waste disposal sites, or to the waste oil reclamation trade. If in doubt, contact the Local Authority for advice on disposal facilities.

D: HANDLING AN AT VEHICLE

- 1) The engine cannot be started by pushing the vehicle, and also the vehicle cannot be moved by operating the starter motor.
- 2) Be sure to release the accelerator pedal before shifting from the "R" to the "N" range and from the "N" to the "D" range, or vice versa even when the vehicle is stopped.
- 3) Do not maintain the vehicle in a stall operation for more than five seconds as this may over-heat the clutch excessively.
- 4) When the speedometer malfunctions, a vehicle-speed signal will no longer be emitted. Immediately have it repaired.
- 5) Use only genuine SUBARU AT fluid in the transmission.

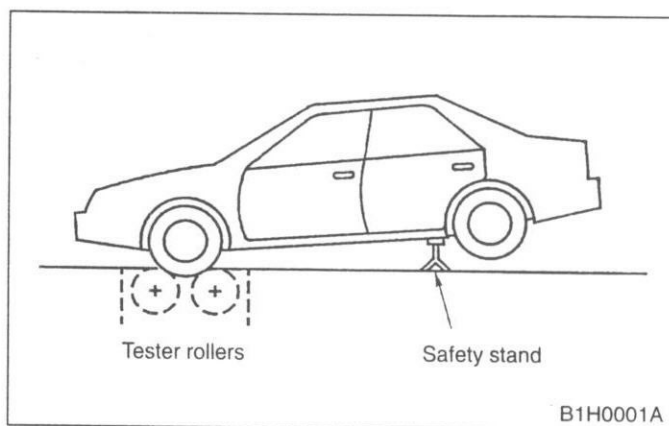
E: FULL-TIME AWD MT MODELS

1. SPEEDOMETER TEST (Jack-up method)

- 1) Position vehicle so that front wheels are placed between rollers of speedometer test machine.
- 2) Jack up vehicle until rear wheels clear the floor, and support with safety stands.
- 3) Start engine with shift lever set in 2nd gear (for safety considerations). Perform speedometer tests.

WARNING:

- Secure a rope or wire to the front towing hook to prevent the lateral runout of front wheels.
- Do not abruptly depress/release clutch pedal or accelerator pedal during tests even when engine is operating at low speeds since this may cause vehicle to jump off test machine.
- Avoid abrupt braking after tests.
- In order to prevent the vehicle from slipping due to vibration, do not place any wooden blocks or similar items between the safety stands and the vehicle.
- Since the rear wheels will also be rotating, do not place anything near them. Also, make sure that nobody goes in front of the vehicle.



2. SPEEDOMETER TEST (Free roller method)

- 1) Position vehicle so that front wheels are placed between rollers of test machine.
- 2) Scribe alignment mark corresponding with centerline of rear wheels on floor.
- 3) Back up vehicle so that centerline of free rollers are aligned with mark scribed in step 2 above.
- 4) Drive vehicle onto free rollers.
- 5) Perform speedometer tests.

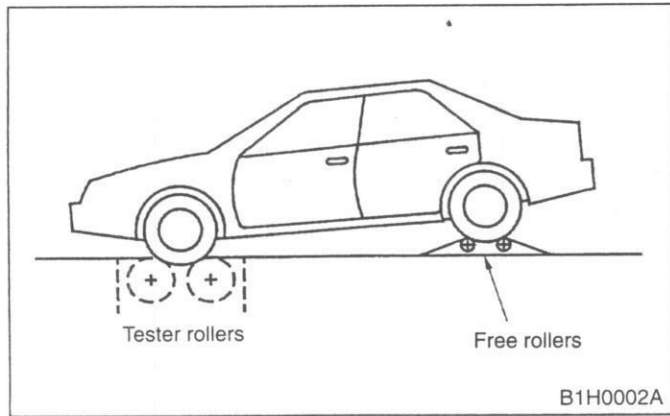
WARNING:

- Secure a rope or wire to the front towing hook to prevent the lateral runout of front wheels
- Do not abruptly depress/release clutch pedal or accelerator pedal during tests even when engine is operating at low speeds

1. General Precautions

since this may cause vehicle to jump off test machine.

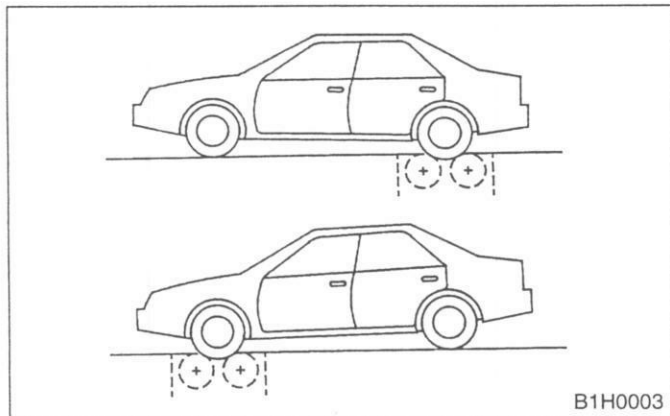
- Avoid abrupt braking after tests.



3. BRAKE TEST

- 1) Drive vehicle for a distance of several kilometers (miles) to stabilize dragging force of viscous coupling.
- 2) Place vehicle onto brake tester.
- 3) Perform brake tests.

Effect of braking force on viscous coupling torque: Approx. 245 N (25 kg, 55 lb)



NOTE:

If dragging force exceeds specifications, check brake pad or brake shoe for dragging. Abnormalities related to the viscous torque of viscous coupling unit may cause excessive dragging force. At this point, raise vehicle so that two front or rear wheels clear floor, remove cause of abnormality and check wheel rotation.

4. CHASSIS DYNAMOMETER TEST

- 1) Locate vehicle onto chassis dynamometer tester.
- 2) Locate rear wheels onto free rollers.
- 3) Perform dynamic performance tests.

WARNING:

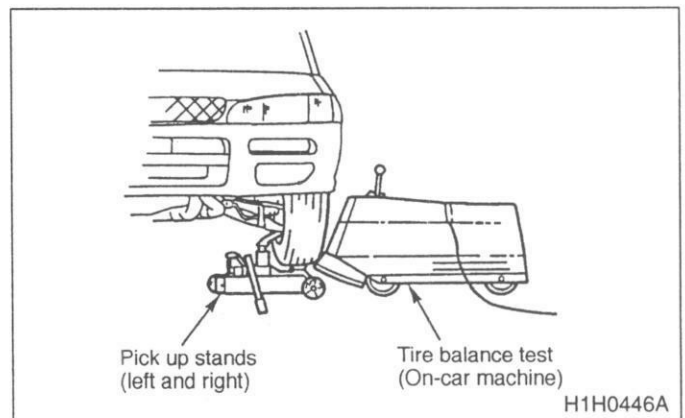
- Do not abruptly depress/release clutch pedal or accelerator pedal during tests.
- Avoid abrupt braking tests after tests.

5. TIRE BALANCE TEST (ON-car machine)

- 1) Raise vehicle so that left and right wheels to be checked clear the floor. Support wheels using pick-up stands.
- 2) Raise the other two wheels off the ground and support with a safety stand.
- 3) Attach on-car machine to wheels to be checked.
- 4) Drive wheel with engine and perform tire balance tests.

CAUTION:

- Perform tire balance tests after each tire balance has been measured.
- Locate the vehicle so that its front and rear sides are equal in height.
- Release parking brake.
- Manually rotate each tire and check for drag.
- Do not operate clutch and do not accelerate the engine abruptly.
- If error occurs due to engine operation, do not operate balance's motor.

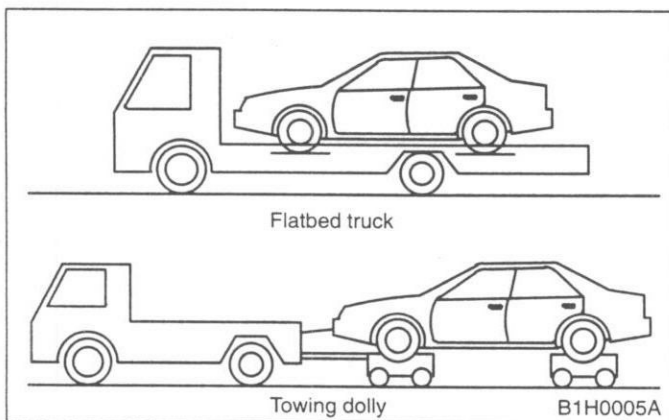


6. TOWING

1) Loading vehicle onto dolly or flat-bed truck

CAUTION:

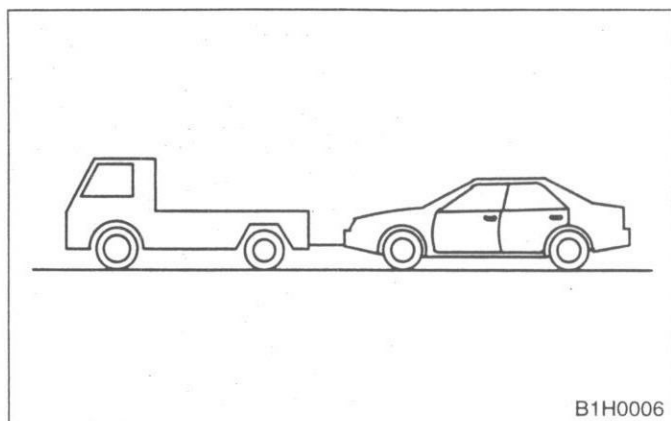
- Transport vehicle using a dolly or flat-bed truck whenever possible.
- Move shift lever to "1st" position and apply parking brake.
- When you unload a vehicle from a flat-bed truck, do as follows:
 - run the engine of the unloaded vehicle,
 - shift into reverse gear when unloading the vehicle as it faces the same direction as that in which the truck travels,
 - shift into 1st gear when unloading the vehicle as it faces the opposite direction to that in which the truck travels.



2) Towing with a rope

CAUTION:

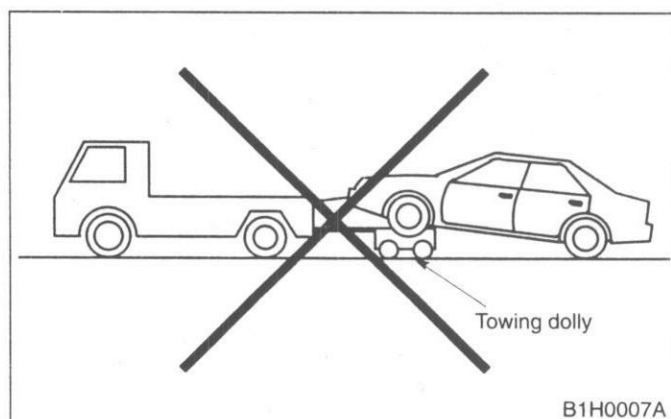
- Use a rope only when power train and all wheels are operating properly.
- The ignition switch should be in the "ACC" position. Never have the ignition switch on "LOCK" while the vehicle is being towed because steering will not be possible, since the direction of the wheels will be locked.
- Put the transmission in neutral.
- Never use the tie down hooks for towing.
- Remember that brake booster and power steering will not work when engine is "OFF". You will have to use greater effort for the brake pedal and steering wheel.
- Before towing, check transmission oil and differential oil levels and top up to the specified level if necessary.



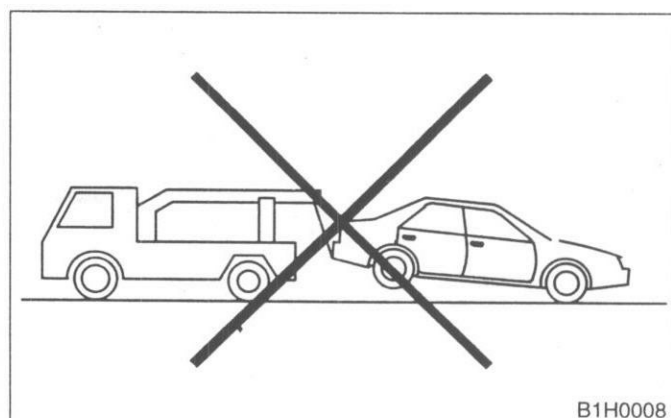
3) Towing with front or rear wheels raised

CAUTION:

- Do not tow vehicle with only front or rear wheels placed on towing dolly or flat-bed truck. This may degrade viscous coupling performance or cause vehicle to jump off dolly or truck.

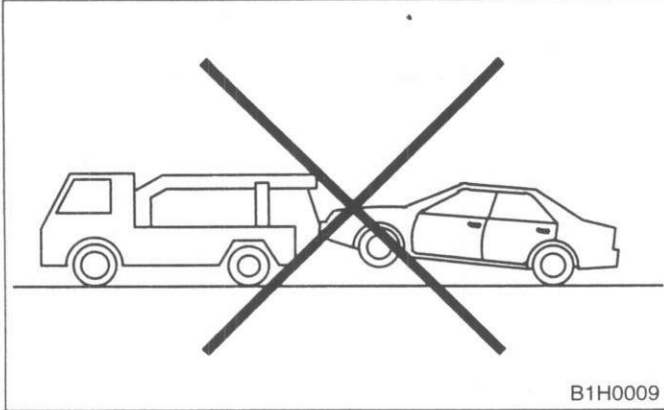


- Do not tow vehicle with rear wheels raised under any circumstances since this will damage bumper.



1. General Precautions

- Do not tow vehicle with front wheels raised under any circumstances since this will damage bumper.



F: NON-TURBO FULL TIME AWD AT MODELS

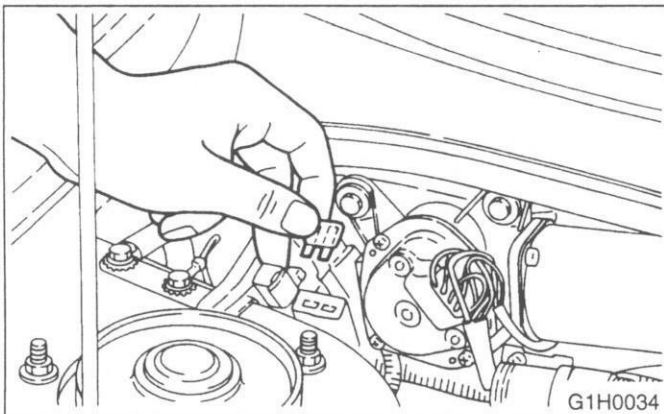
1. BEFORE CHECKING OR SERVICING CARS WITH THE FRONT WHEELS RAISED OR ON ROLLERS (BRAKE TESTER, CHASSIS DYNAMOMETER, ETC.)

Always set the car in the FWD mode.

To set the car in the FWD mode, disconnect the AWD circuit by inserting a fuse in the FWD connector inside the engine compartment. Also chock the rear wheels firmly.

CAUTION:

Ensure that the FWD pilot light is on. If the car is left in the AWD mode, it will surge abruptly when the wheels turn, possibly damaging the transfer clutch.

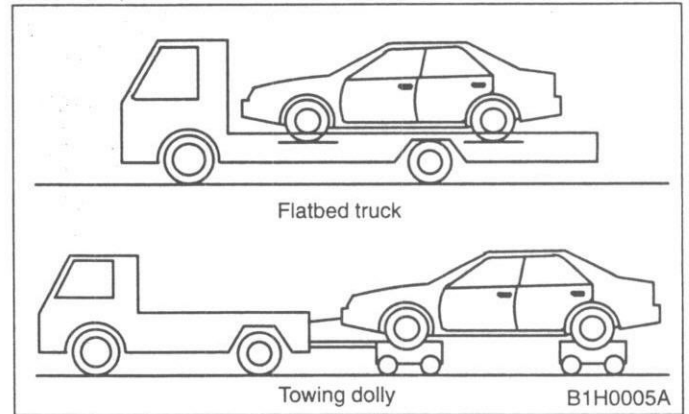


2. TOWING

- 1) Loading vehicle onto dolly or flat-bed truck

CAUTION:

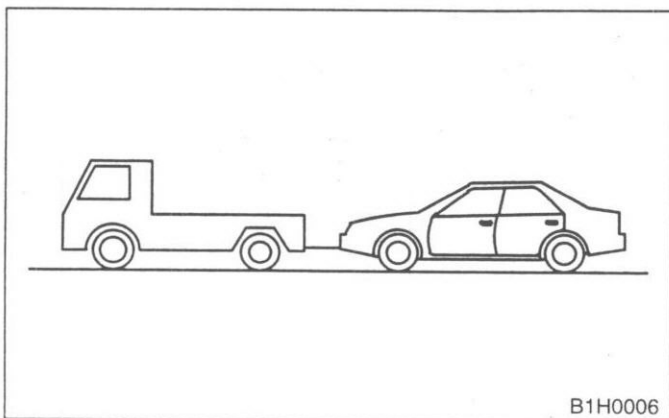
- Transport vehicle using a dolly or flat-bed truck whenever possible.
- Place the selector lever in "P" position and apply the parking brake.



- 2) Towing with a rope

CAUTION:

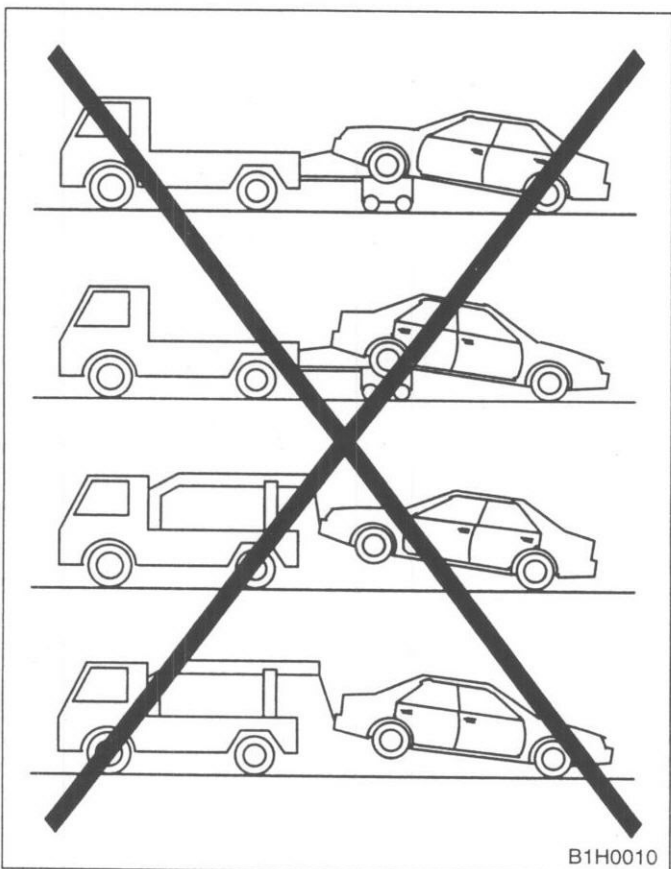
- Tow vehicle with a rope only when power train and all wheels are operating properly.
- Put a spare fuse inside the FWD connector and never exceed 30 km/h (19 MPH). Also, do not tow for more than 50 km (31 miles).
- Place the selector lever in "N" position.
- The ignition switch should be in the "ACC" position while the vehicle is being towed.
- Never use the tie down hooks for towing.
- Remember that brake booster and power steering will not work when the engine is "OFF". You will have to use greater effort for the brake pedal and steering wheel.
- Before towing, check transmission oil and differential oil levels and top up to the specified level if necessary.



3) Towing with front or rear wheels raised

CAUTION:

Do not tow vehicle with front or rear wheels raised under any circumstances since this will damage bumper.



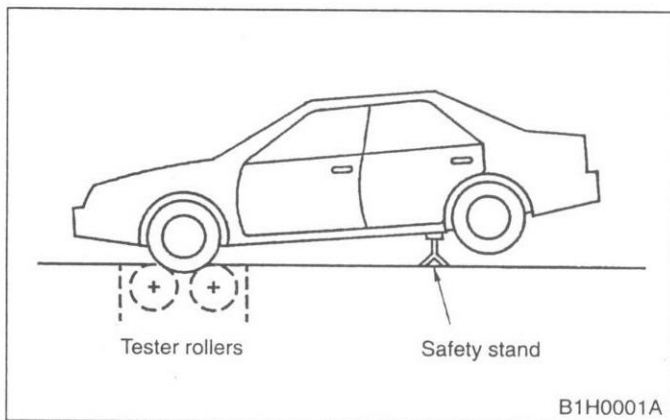
G: TURBO AT MODELS

1. SPEEDOMETER TEST (Jack-up method)

- 1) Position vehicle so that front wheels are between rollers of speedometer test machine.
- 2) Jack up vehicle until rear wheels clear the floor, support with safety stands.
- 3) Start engine with selector lever set in "2nd." (for added safety).
- 4) Perform speedometer tests.

WARNING:

- Secure a rope or wire to the front and rear towing or tie-down hook to prevent lateral runout of front wheels.
- Do not abruptly push down on accelerator pedal during tests even when engine is operating at low speeds since this may cause vehicle to jump off test machine.
- Avoid abrupt braking after tests.
- In order to prevent the vehicle from slipping due to vibration, do not place any wooden blocks or similar items between the safety stands and the vehicle.
- Since the rear wheels will also be rotating, do not place anything near them. Also, make sure that nobody gets in front of the vehicle.



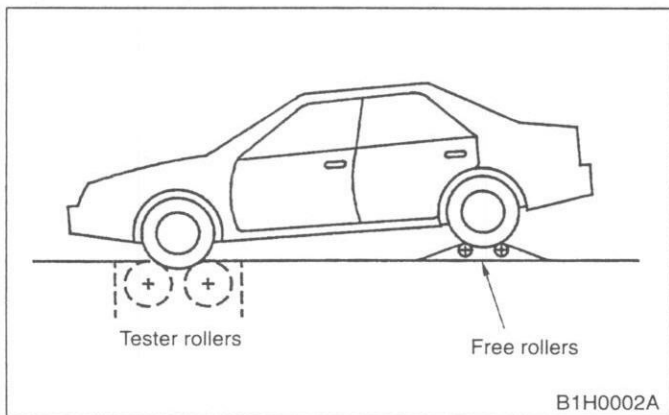
2. SPEEDOMETER TEST (Free roller method)

- 1) Position vehicle so that front wheels are between rollers of speedometer test machine.
- 2) Make an alignment mark corresponding with centerline of rear wheels on floor.
- 3) Back up vehicle so that centerline of free rollers are aligned with mark described in step 2 above.
- 4) Drive vehicle onto free rollers.
- 5) Perform speedometer tests.

1. General Precautions

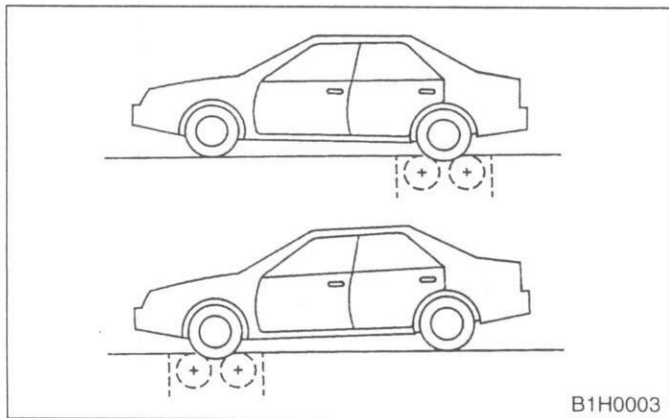
WARNING:

- Secure a rope or wire to the front and rear towing or tie-down hook to prevent the lateral runoff of front wheels.
- Do not abruptly push down on accelerator pedal during tests even when engine is operating at low speeds since this may cause vehicle to jump off test machine.
- Avoid abrupt braking.



3. BRAKE TEST

- 1) Place vehicle onto brake tester.
- 2) Perform brake tests.



NOTE:

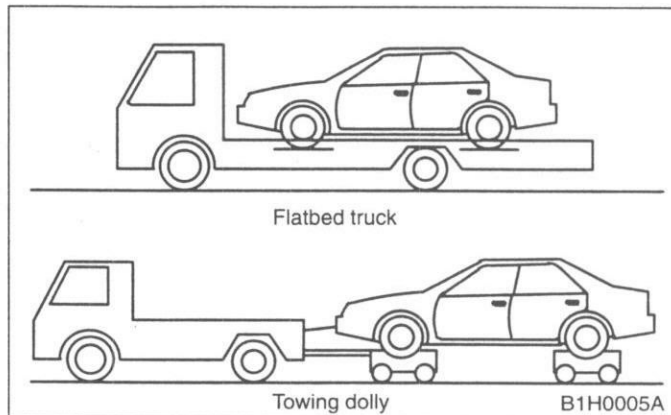
- Ensure front or rear wheels are in contact with the ground during tests.
- If dragging force exceeds specifications, check brake pad or shoe for dragging.

4. TOWING

- 1) Loading vehicle onto dolly or flat-bed truck

CAUTION

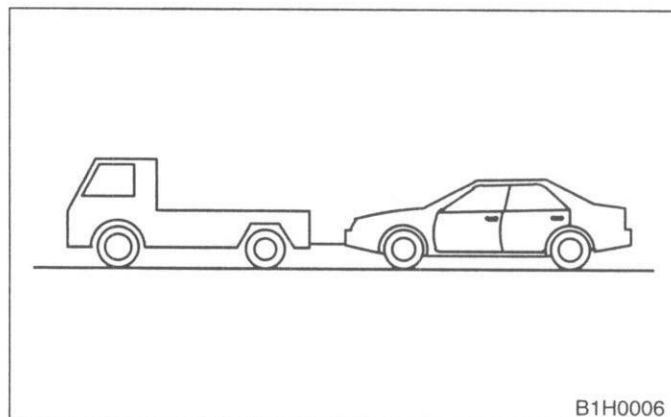
- Transport vehicle using a dolly or flat-bed truck whenever possible.
- Place the selector lever in "P" position and apply the parking brake.



- 2) Towing with rope

CAUTION:

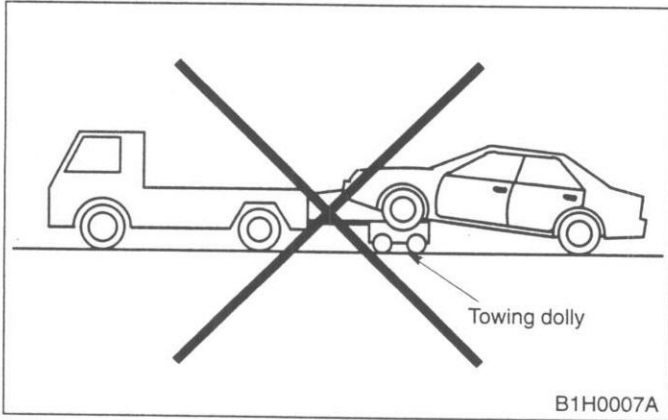
- Tow vehicle with a rope only when power train and all wheels are operating properly.
- Never exceed 30 km/h (19 MPH). Also, do not tow for more than 10 km (6 miles).
- Place the selector lever in "N" position.
- The ignition switch should be in the "ACC" position while the vehicle is being towed.
- Remember that brake booster and power steering will not work when the engine is "OFF". You will have to use greater effort for the brake pedal and steering wheel.
- Before towing, check transmission oil and differential oil levels and top up to the specified level if necessary.



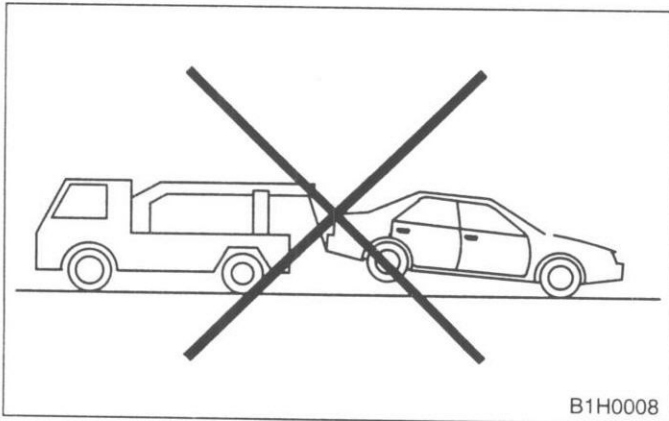
3) Towing with front or rear wheels raised

CAUTION:

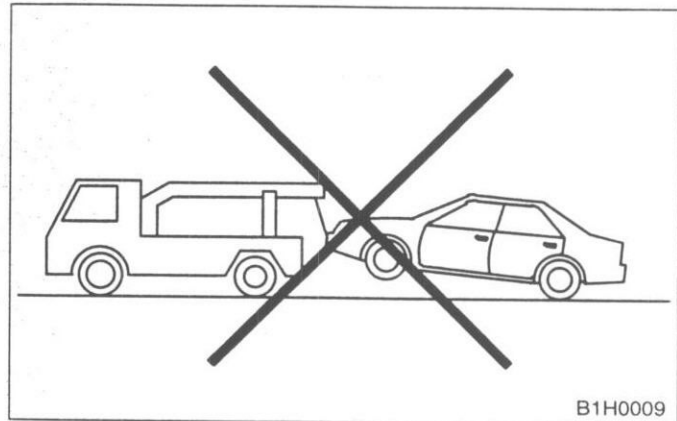
- Do not tow vehicle with only front or rear wheels placed on towing dolly or flat-bed truck. This may degrade multi-plate clutch (L.S.D.) performance or cause vehicle to jump off dolly or truck.



- Do not tow vehicle with rear wheels raised under any circumstances since this will damage bumper.



- Do not tow vehicle with front wheels raised under any circumstances since this will damage bumper.



2. Precaution for Supplemental Restraint System (Airbag)

The Supplemental Restraint System (Airbag) has been implemented in some Subaru vehicles. For proper and safe maintenance of this system, please ensure that you carefully read the precautionary notes given in "5-5 SUPPLEMENTAL RESTRAINT SYSTEM" in the Service Manual before servicing.

It should also be noted that in the SM table of contents, an AIRBAG mark is added to each of the items which do not directly concern the airbag system but need to be considered in their relationship to it. So, during the service work for such items, make sure you refer to "5-5 SUPPLEMENTAL RESTRAINT SYSTEM".

- **Take utmost care to follow faithfully the service procedures specified for the airbag, since otherwise it might deploy unexpectedly.**
- **With the airbag system, failures such as faulty connection of harness connectors or neglect of tightening sensor mounting bolts can lead to failure of deployment in an accident. Recheck each check point after maintenance work and use the on-board self-diagnosis to ensure there is nothing wrong with the system.**
- **All wire harnesses of the airbag system are encased in a yellow cover to make them distinct from those of other systems.**

The following are the parts involved in the airbag installation:

- 1) Steering wheel
- 2) Steering column
- 3) Toe-board (center, left & right ends)
- 4) Front seat floor and side seal
- 5) Inside left and right front fenders
- 6) Front pillar (left, lower)
- 7) Combination meter
- 8) Steering support beam
- 9) Instrument panel

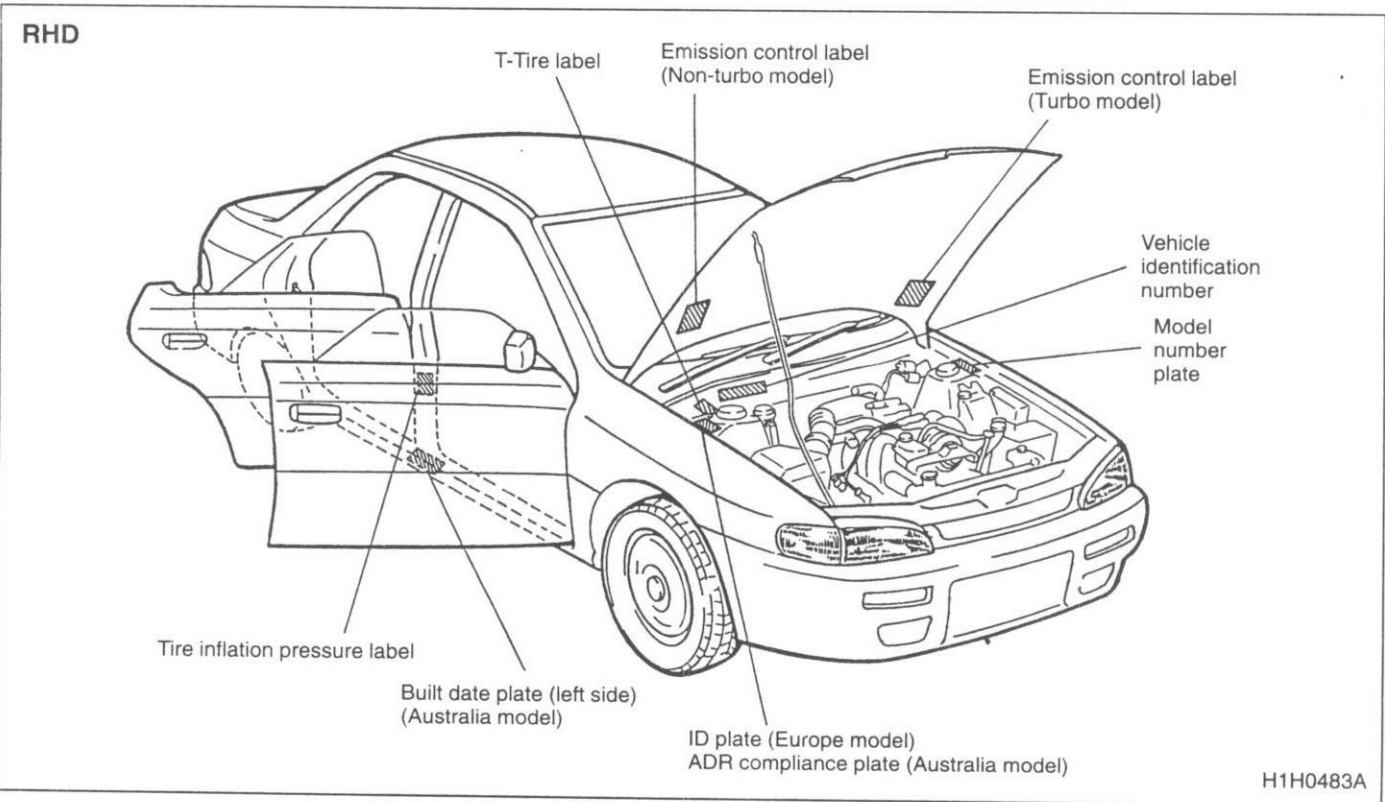
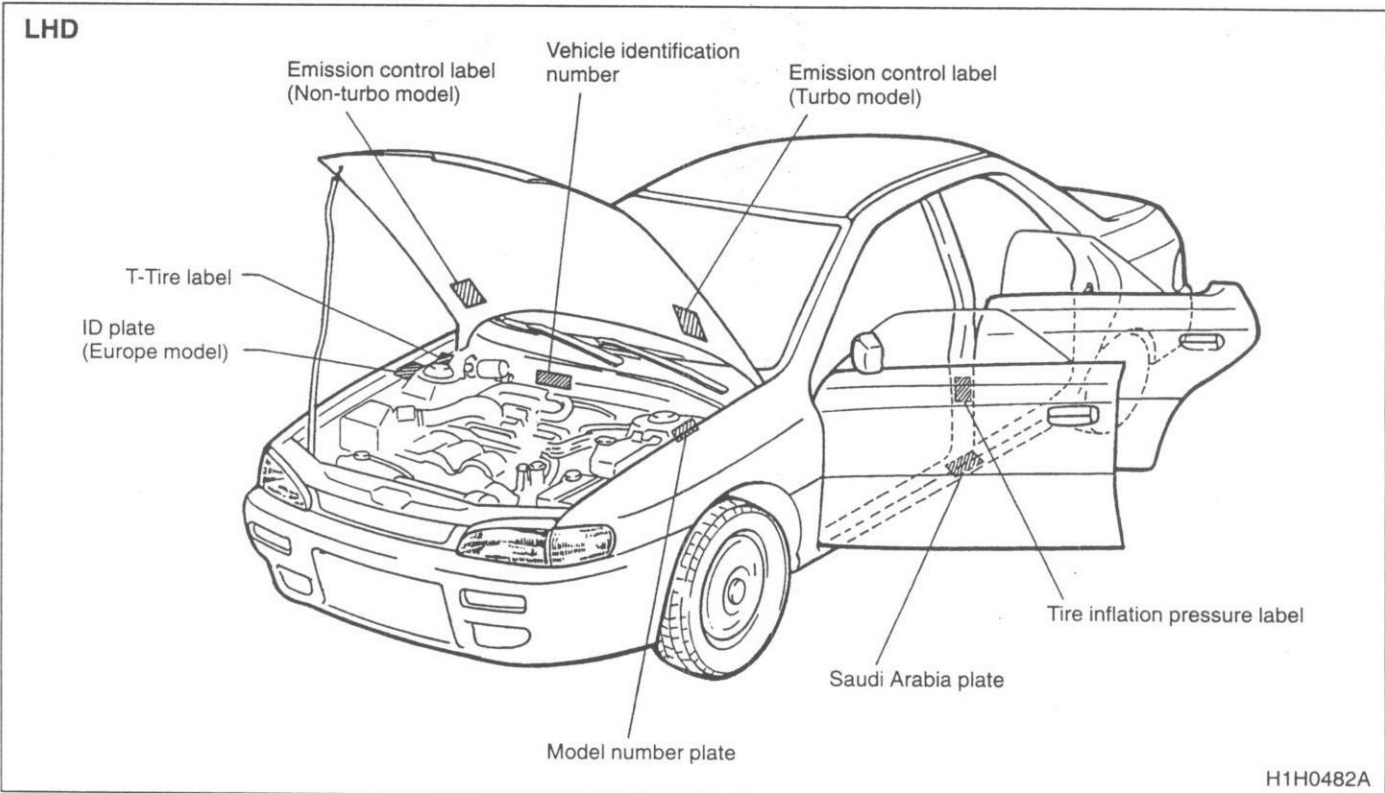
Care should be taken when servicing in areas where the above parts are installed since it can affect the airbag system.

- Examples of service work involving the airbag system:

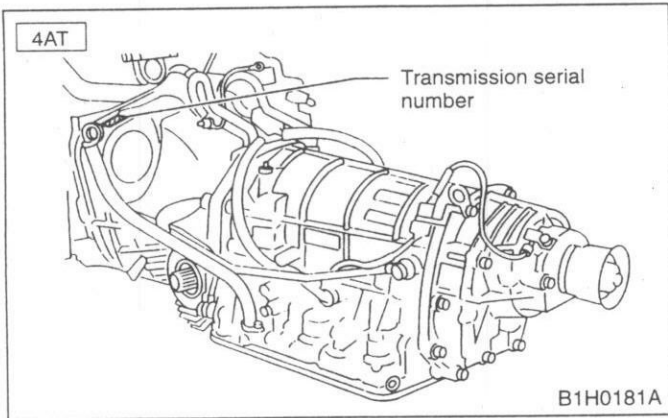
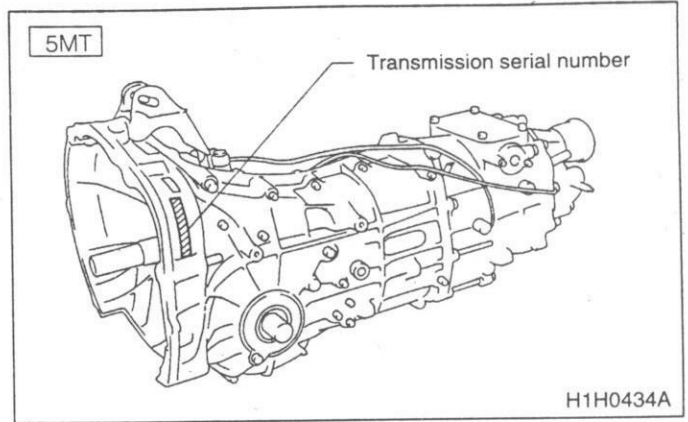
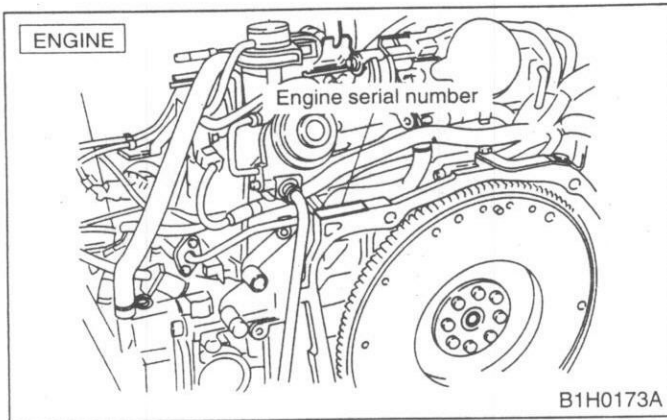
- 1) Replacement of steering gear
- 2) Steering maintenance and repair of the area adjoining toe-board
- 3) Removal and installation of combination meter
- 4) Installation of car stereo and other optional extras
- 5) Sheet metal repair paint work on the body front

4. Identification Number and Label Locations

Engine, transmission and vehicle identification numbers are used for factory communications such as Technical Information, Service Bulletins and other information.



4. Identification Number and Label Locations



5. Recommended Fuel, Lubricants, Sealants and Adhesives

A: FUEL

1) With catalytic convertor

- Non-turbo model

The engine is designed to provide satisfactory performance while producing low exhaust emissions by using **unleaded** gasoline with an octane rating 90 or above (the octane rating selected by the Research Methodos).

- Turbo model

The engine is designed to provide satisfactory performance while producing low exhaust emissions by using **unleaded** gasoline with an octane rating 95 or above (the octane rating selected by the Research Methodos).

2) Without catalytic convertor

The engine is designed to provide satisfactory performance while producing low exhaust emissions by using gasoline with an octane rating 90 or above (the octane rating selected by the Research Methodos).

B: FUELS CONTAINING ALCOHOL

Some gasoline blends sold at service stations contain alcohol or other oxygenates even though that fact may not be fully disclosed. If you are not sure whether there is alcohol present in the fuel, ask your service station operator.

Do not use such fuels unless the gasoline/alcohol blend is suitable for your vehicle as explained at right:

- The fuel should be unleaded and have an octane rating no lower than that recommended below.

- Never use fuel containing more than 10% ethanol (ethyl or grain alcohol).

- Methanol (methyl or wood alcohol) is sometimes mixed with unleaded gasoline. Methanol can be used in your vehicle **ONLY** if it does not exceed 5% of the fuel mixture **AND** it is accompanied by sufficient quantities of the proper co-solvents and corrosion inhibitors required to prevent fuel system damage. Otherwise, fuel containing methanol should not be used.

- Unleaded fuel blends which contain no more than 15% MTBE (methyl tertiary butyl ether) or other oxygenates and which are approved by the Environmental Protection Agency may be used.

- You should avoid using fuels mixed with alcohol or other oxygenates on an exclusive basis. If driving problems such as engine stalling or hard starting result when such fuels are used, immediately discontinue their use and switch back to unleaded gasoline that does not contain alcohol or other oxygenates.

CAUTION:

Take care not to spill fuel during refueling. Fuels containing alcohol may cause paint damage.

C: LUBRICANTS

Lubricants	Specifications	Remarks
<ul style="list-style-type: none"> Engine oil 	<ul style="list-style-type: none"> API Classification: SH or SG ILSAC Certified CCMC Specification: G4 or G5 ACEA Specification: A1 or A2 or A3 	<ul style="list-style-type: none"> For SAE viscosity number, refer to the following table. If it is impossible to get SH or SG grade, you may use SF grade.
<ul style="list-style-type: none"> Transmission and differential gear oil AWD rear differential gear oil 	<ul style="list-style-type: none"> API Classification: GL-5 	<ul style="list-style-type: none"> For SAE viscosity number, refer to the following table.
<ul style="list-style-type: none"> Automatic transmission fluid 	<ul style="list-style-type: none"> DEXRON II or III type 	—
<ul style="list-style-type: none"> Power steering fluid 	<ul style="list-style-type: none"> DEXRON II or IIE or III type 	—
<ul style="list-style-type: none"> Coolant 	<ul style="list-style-type: none"> Genuine SUBARU Coolant (Part No. 000016218) (Anti-freeze, anti-corrosive ethylene glycol base) 	<ul style="list-style-type: none"> For further coolant specifications, refer to the following table.
<ul style="list-style-type: none"> Brake fluid 	<ul style="list-style-type: none"> DOT3 or DOT4 	<ul style="list-style-type: none"> FMVSS NO. 116 Avoid mixing brake fluid of different brands to prevent the fluid performance from degrading. When brake fluid is added, be careful not to allow any dust into the reservoir.
<ul style="list-style-type: none"> Clutch fluid 	<ul style="list-style-type: none"> DOT3 or DOT4 	<ul style="list-style-type: none"> FMVSS NO. 116 Avoid mixing clutch fluid of different brands to prevent the fluid performance from degrading. When clutch fluid is added, be careful not to allow any dust into the reservoir.

Lubricants	Recommended	Application	Equivalent
<ul style="list-style-type: none"> Spray lubricants 	SUBARU CRC (P/N 004301003)	O ₂ sensor	
<ul style="list-style-type: none"> Grease 	SUNLIGHT 2 (P/N 003602010)	Steering shaft bearing, bushing for manual transmission gear shift system	—
	Valiant grease M-2 (P/N 003608001)	Steering gearbox	—
	Niglube RX-2 (P/N 003606000 or 725191040)	Piston boot of disc brake and sliding pin	—
	Molykote No. 7439 (P/N 725191460)	Contacting surfaces of drum brake shoes and shoe clearance adjuster	—
	Molylex No.2 (P/N 723223010)	BJ of rear axle shaft	—
	VU-3A702 (P/N 23223GA050)	DOJ of axle shaft	—
	NTG2218 (P/N 28093AA020)	BJ of front axle shaft	—
	FX clutch grease (P/N 000040901)	Splines of transmission main shaft	—
Slicolube G-30M (P/N 004404002)	Control cables and throttle linkages subject to cold weather, water-pump impeller, door latch, striker, battery terminals, etc.	—	