CHASSIS SECTION

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.
This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.
Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

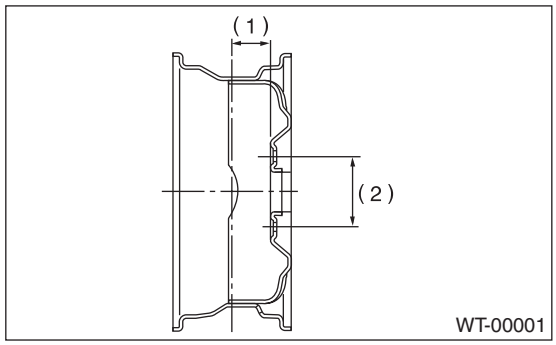
All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.

WHEEL AND TIRE SYSTEM

WT

1. General Description

A: SPECIFICATION



(1) Offset
(2) P.C.D.

	Grade	Tire size	Rim size	Rim offset mm (in)	P.C.D. mm (in)
Front and rear	2.0X	205/70 R15	15×6J (Steel)	48 (1.89)	100 (3.94)
			15×6JJ (Aluminum)		
	2.0XT	215/60 R16	16×6 1/2JJ (Aluminum)		
	2.5X (Saudi Arabia)		16×6 1/2J (Steel)		
			16×6 1/2JJ (Aluminum)		
	2.5XS, 2.5XT	P215/60 R16	16×6 1/2J (Steel)		
	2.5X (Australia)		16×6 1/2JJ (Aluminum)		

	Grade	Tire size	Tire inflation pressure kPa (kg/cm^2, psi)	
			Light load	Full load
Front and rear	2.0X	205/70 R15	Fr: 200 (2.0, 29) Rr: 190 (1.9, 28)	Fr: 200 (2.0, 29) Rr: 250 (2.5, 36)
	2.0XT, 2.5X (Saudi Arabia)	215/60 R16		
	2.5XS, 2.5XT	P215/60 R16		
	2.5X (Australia)			

NOTE:
- The vehicle is equipped with spare tire as same size as front and rear tire.
- At trailer towing, rear inflation pressure is 280 kPa (2.8 kg/cm^2, 41 psi).

1. SERVICE DATA

Item	Axial runout	Radial runout
Steel wheel	1.5 mm (0.059 in)	
Aluminum wheel	1.0 mm (0.039 in)	

2. ADJUSTING PARTS

Wheel balancing	Standard	Service limit
Dynamic unbalance	Less than 5 g (0.18 oz)	

Balance weight part number (For steel wheel)	Weight
28101TC000	5 g (0.18 oz)
28101SA060	10 g (0.35 oz)
28101SA070	15 g (0.53 oz)
28101SA080	20 g (0.71 oz)
28101SA090	25 g (0.88 oz)
723141340	30 g (1.06 oz)
723141350	35 g (1.23 oz)
723141360	40 g (1.41 oz)
723141370	45 g (1.59 oz)
723241380	50 g (1.76 oz)
723241580	55 g (1.94 oz)
723241590	60 g (2.12 oz)

Balance weight part number (For aluminum wheel)	Weight
28101SA000	5 g (0.18 oz)
28101SA010	10 g (0.35 oz)
28101SA020	15 g (0.53 oz)
28101SA030	20 g (0.71 oz)
28101SA040	25 g (0.88 oz)
23141GA512	30 g (1.06 oz)
23141GA522	35 g (1.23 oz)
23141GA532	40 g (1.41 oz)
23141GA542	45 g (1.59 oz)
23141GA552	50 g (1.76 oz)
—	55 g (1.94 oz)
23141GA572	60 g (2.12 oz)

B: PREPARATION TOOL

1. GENERAL TOOL

TOOL NAME	REMARKS
Air pressure gauge	Used for measuring tire air pressure.
Dial gauge	Used for measuring wheel runout.

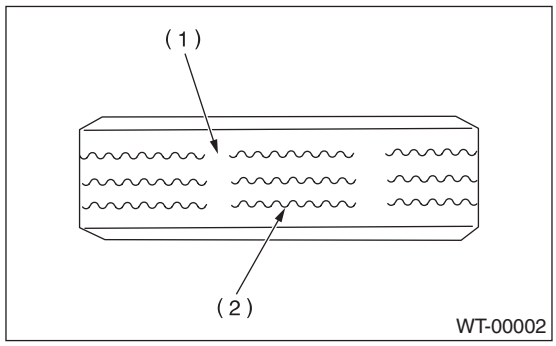
2. Tire

A: INSPECTION

1) Take stone, glass, nail etc. off the tread groove.
2) Replace the tire:

CAUTION:
When replacing a tire, make sure to use only the same size, construction and load range as originally installed.

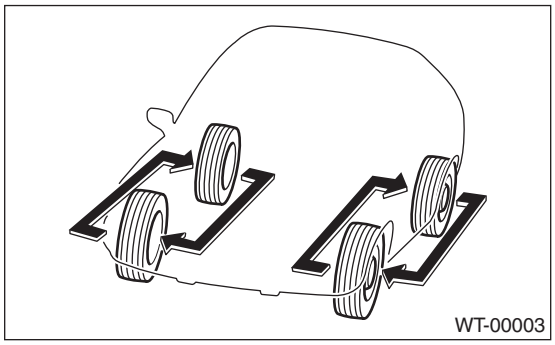
(1) When large crack on the side wall, damage or crack on tread is found.
(2) When the “tread wear indicator” appears as a solid band across the tread.
(3) If a crack is found on the tire valve, replace the tire valve.



(1) Tread wear indicator
(2) Tire tread

1. TIRE ROTATION

Rotate the tire positions periodically (10,000 km (6,200 miles)) as shown in the figure to prevent tires from wearing unevenly or the lengthen their service lives.



3. Steel Wheel

A: REMOVAL

1) Apply parking brake, and position the select lever to “P” or “LOW”.
2) Set jacks or a lift to the specified point, and support the vehicle with its tires slightly contacting the floor.
3) Loosen the wheel nuts.
4) Raise the vehicle until its wheels take off the ground using a jack or a lift.
5) Remove the wheel nuts and wheels.

NOTE:
• While removing the wheels, prevent hub bolts from damage.
• Place the wheels with their outer sides facing upward to prevent wheels from damage.

B: INSTALLATION

1) Remove dirt on the mating surface of wheels and brake rotors.
2) Attach the wheel to hub by aligning the wheel bolt hole with hub bolt.
3) Temporarily attach the wheel nuts to hub bolts. (In the case of aluminum wheel, use SUBARU genuine wheel nut for aluminum wheel.)
4) Manually tighten the nuts making sure the wheel hub hole is aligned correctly to guide portion of hub.
5) Tighten the wheel nuts in a diagonal selection to specified torque. Use a wheel nut wrench.

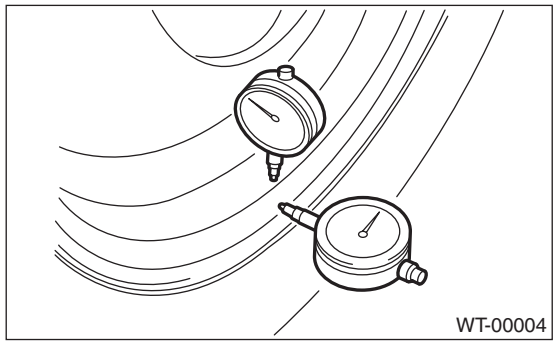
Wheel nut tightening torque:
90 N·m (9.1 kgf-m, 65.7 ft-lb)

CAUTION:
• Tighten the wheel nuts in two or three steps by gradually increasing the torque and working diagonally, until the specified torque is reached. For drum brake models, excess tightening of wheel nuts may cause wheels to “judder”.
• Do not depress the wrench with foot. Always use both hands when tightening.
• Make sure the bolt, nut and nut seating surface of the wheel are free from oils.

6) If a wheel is removed for replacement or for repair of a puncture, retighten the wheel nuts to the specified torque after running 1,000 km (620 miles).

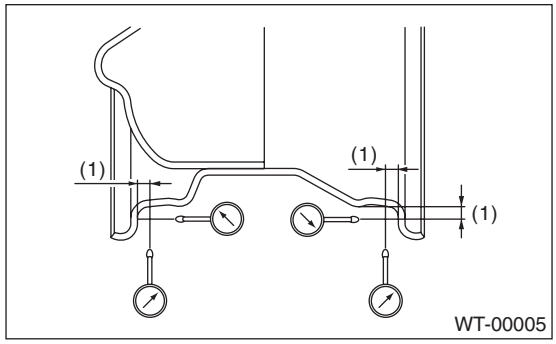
C: INSPECTION

1) Deformation or damage on the rim can cause air leakage. Check the rim flange for deformation, crack, or damage, and repair or replace as necessary.
2) Jack-up the vehicle until tires clear the floor.
3) Slowly rotate the wheel to check rim “runout” using a dial gauge.



Axial runout limit	Radial runout limit
1.5 mm (0.059 in)	

4) If the rim runout exceeds specifications, remove the tire from rim and check runout while attaching dial gauge to positions shown in the figure.



(1) Approx. 7 mm (0.28 in)

5) If measured runout still exceeds specifications, replace the wheel.

4. Aluminum Wheel

A: REMOVAL

Refer to Steel Wheel for removal procedure of aluminum wheels. <Ref. to WT-5, REMOVAL, Steel Wheel.>

B: INSTALLATION

Refer to Steel Wheel for installation procedure of aluminum wheels. <Ref. to WT-5, INSTALLATION, Steel Wheel.>

C: INSPECTION

Refer to Steel Wheel for inspection procedure of aluminum wheels. <Ref. to WT-5, INSPECTION, Steel Wheel.>

Rim runout:

Axial runout limit	Radial runout limit
1.0 mm (0.039 in)	

D: CAUTION

Aluminum wheels are easily scratched. To maintain their appearance and safety, do the following:
1) Do not damage the aluminum wheels during removal, installation, wheel balancing, etc. After removing the aluminum wheels, place them on a rubber mat, etc.
2) While the vehicle is being driven, be careful not to ride over sharp obstacles or allow the aluminum wheels to contact the shoulder of the road.
3) When installing a tire chain, be sure to install it properly not to have slack; otherwise it may hit the wheel while driving.
4) When washing the aluminum wheel, use neutral synthetic detergent and water. Avoid using the cleanser including abrasive, hard brushes or an automatic car washer.

5. Wheel Balancing

A: ADJUSTMENT

1) Remove the balance weights.
2) Using wheel balancer, measure the wheel balance.
3) Select a weight close to the value measured by wheel balancer.

Balance weight part number (For steel wheel)	Weight
28101TC000	5 g (0.18 oz)
28101SA060	10 g (0.35 oz)
28101SA070	15 g (0.53 oz)
28101SA080	20 g (0.71 oz)
28101SA090	25 g (0.88 oz)
723141340	30 g (1.06 oz)
723141350	35 g (1.23 oz)
723141360	40 g (1.41 oz)
723141370	45 g (1.59 oz)
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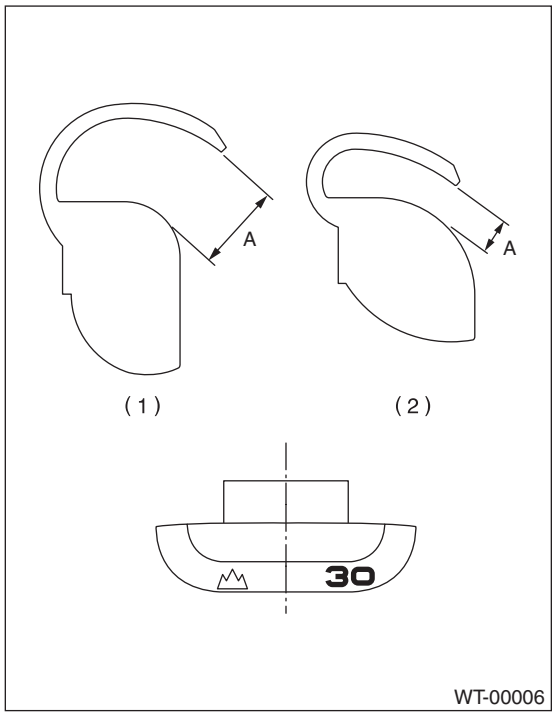
723241580	55 g (1.94 oz)
723241590	60 g (2.12 oz)

Balance weight part number (For aluminum wheel)	Weight
28101SA000	5 g (0.18 oz)
28101SA010	10 g (0.35 oz)
28101SA020	15 g (0.53 oz)
28101SA030	20 g (0.71 oz)
28101SA040	25 g (0.88 oz)
23141GA512	30 g (1.06 oz)
23141GA522	35 g (1.23 oz)
23141GA532	40 g (1.41 oz)
23141GA542	45 g (1.59 oz)
23141GA552	50 g (1.76 oz)
—	55 g (1.94 oz)
23141GA572	60 g (2.12 oz)

4) Install the selected weight to the point designated by wheel balancer.
5) Using wheel balancer, measure the wheel balance again. Check that the wheel balance is correctly adjusted.
6) Use genuine balance weights.

NOTE:
• 55 g (1.94 oz) weight used with the aluminum wheel is not available.

• Balance weights are available for use with any of 15 to 16-inch wheels.



(1) Weight for aluminum wheel
(2) Weight for steel wheel

Service limit: A
Weight for steel wheel;
5 g (0.18 oz) — 25 g (0.88 oz) 2.0 mm (0.079 in)
More than 30 g (1.06 oz) 1.8 mm (0.071 in)
Weight for aluminum wheel;
5 g (0.18 oz) — 25 g (0.88 oz) 5.0 mm (0.197 in)
More than 30 g (1.06 oz) 4.5 mm (0.177 in)

6. General Diagnostics Table

A: INSPECTION

Symptom	Possible cause	Remedy
Vehicle sways.	Improperly inflated tire	Adjust inflation pressure.
	Abnormal tire wear	Inspect tires according “Abnormal tire wear” in this table, and then replace tires if required.
	Front wheel alignment	Inspect front wheel alignment. <Ref. to FS-6, INSPECTION, Wheel Alignment.>
	Rear wheel alignment	Inspect rear wheel alignment. <Ref. to RS-8, INSPECTION, Wheel Alignment.>
	Front strut	Inspect front strut. <Ref. to FS-20, INSPECTION, Front Strut.>
	Rear shock absorber	Inspect rear shock absorber. <Ref. to RS-14, INSPECTION, Rear Strut.>
	Front axle	Inspect front axle. <Ref. to DS-24, INSPECTION, Front Axle.>
	Rear axle	Inspect rear axle. <Ref. to DS-32, INSPECTION, Rear Axle.>
Abnormal vehicle pitching	Improperly inflated tire	Adjust inflation pressure.
	Abnormal tire wear	Inspect tires according “Abnormal tire wear” in this table, and then replace tires if required.
	Front stabilizer	Inspect front stabilizer. <Ref. to FS-22, INSPECTION, Front Stabilizer.>
	Front wheel alignment	Inspect front wheel alignment. <Ref. to FS-6, INSPECTION, Wheel Alignment.>
	Rear wheel alignment	Inspect rear wheel alignment. <Ref. to RS-8, INSPECTION, Wheel Alignment.>
Abnormal wheel vibration	Improperly inflated tire	Adjust inflation pressure.
	Abnormal tire wear	Inspect tires according “Abnormal tire wear” in this table, and then replace tires if required.
	Wheel is out of balance.	Inspect wheel balance. <Ref. to WT-7, ADJUSTMENT, Wheel Balancing.>
	Front axle	Inspect front axle. <Ref. to DS-24, INSPECTION, Front Axle.>
	Rear axle	Inspect rear axle. <Ref. to DS-32, INSPECTION, Rear Axle.>
Abnormal tire wear	Improperly inflated tire	Adjust inflation pressure.
	Wheel is out of balance.	Inspect wheel balance. <Ref. to WT-7, ADJUSTMENT, Wheel Balancing.>
	Front wheel alignment	Inspect front wheel alignment. <Ref. to FS-6, INSPECTION, Wheel Alignment.>
	Rear wheel alignment	Inspect rear wheel alignment. <Ref. to RS-8, INSPECTION, Wheel Alignment.>