2. Wheel Alignment

A: INSPECTION

Check the following items before taking wheel alignment measurement.
Check items before taking wheel alignment measurement:

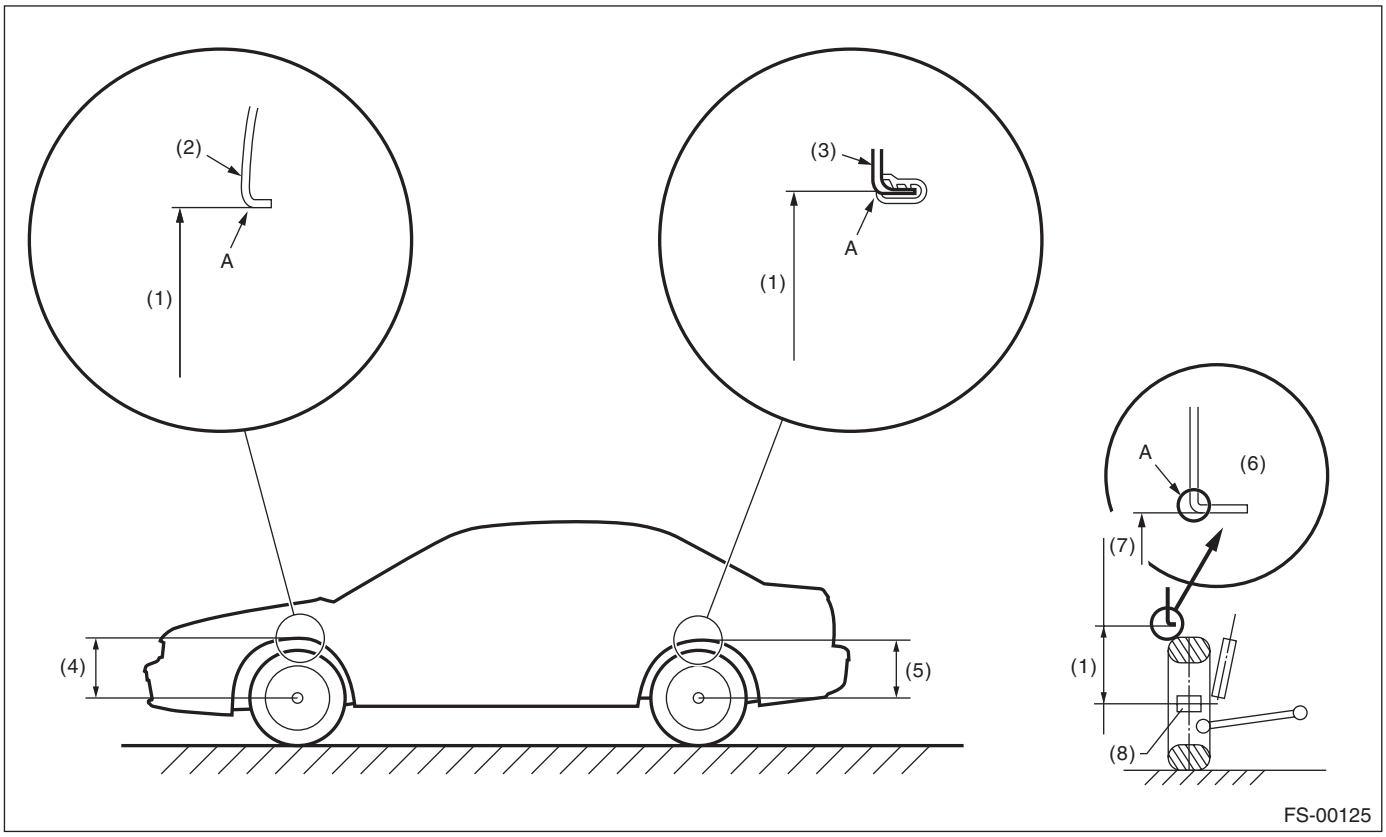
- Tire inflation pressure
- Unbalanced right and left tire wear, size difference
- Tire runout
- Excessive play and wear in ball joint
- Excessive play and wear in tie rod end
- Excessive play in wheel bearing
- Right and left wheel base imbalance
- Deformation and excessive play in steering link
- Deformation and excessive play in suspension parts

Check, adjust and measure the wheel alignment in accordance with the procedures indicated in the figure.

Wheel arch height (front and rear wheels) <Ref. to FS-8, WHEEL ARCH HEIGHT, INSPECTION, Wheel Alignment.>
↓
Camber (front and rear wheels) <Ref. to FS-9, CAMBER, INSPECTION, Wheel Alignment.>
↓
Caster (front wheel) <Ref. to FS-10, CASTER, INSPECTION, Wheel Alignment.>
↓
Steering angle <Ref. to FS-10, STEERING ANGLE, INSPECTION, Wheel Alignment.>
↓
Front wheel toe-in <Ref. to FS-11, FRONT WHEEL TOE-IN, INSPECTION, Wheel Alignment.>
↓
Rear wheel toe-in <Ref. to FS-11, REAR WHEEL TOE-IN, INSPECTION, Wheel Alignment.>
↓
Thrust angle <Ref. to FS-12, THRUST ANGLE, INSPECTION, Wheel Alignment.>

1. WHEEL ARCH HEIGHT

1) Park the vehicle on a level surface.
2) Set the vehicle under “curb weight” condition. (Make the luggage compartment empty, install the spare tire, jack and service tools, and top up the fuel tank.)
3) Set the steering wheel in a straight-ahead position, and stabilize the suspensions by moving the vehicle straight more than 5 m (16 ft).
4) Suspend a thread from wheel arch (point “A” in the figure below) to determine the point directly above the center of wheel.
5) Measure the distance between the point “A” and the center of wheel.



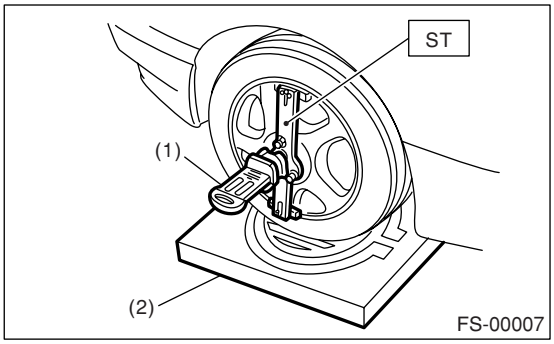
(1) Wheel arch height
(2) Front fender
(3) Rear quarter
(4) Front wheel arch height
(5) Rear wheel arch height
(6) Flange bend line
(7) Point of measurement
(8) Tip end of spindle

Wheel arch height standard value mm (in) (Tolerance: ($^{+12\ mm}_{-24\ mm}$ ($^{+0.47\ in}_{-0.94\ in}$))						
Model	Sedan			Wagon		
	2.5 i	2.5 GT	OUTBACK	2.5 i	2.0 GT	OUTBACK
Front	381 (15.0)		439 (17.3)	381 (15.0)		439 (17.3)
Rear	365 (14.4)		438 (17.2)	375 (14.8)		438 (17.2)

2. CAMBER

• INSPECTION

1) Place the front wheel on turning radius gauge. Make sure the ground contacting surfaces of front and rear wheels are set at the same height.
2) Set the ST into the center of wheel, and then set the wheel alignment gauge.
ST 927380002 ADAPTER



(1) Alignment gauge
(2) Turning radius gauge

3) Measure the camber angle in accordance with the operation manual for wheel alignment gauge.

Model	Camber (Differences between RH and LH: 45′ or less)
2.5 i, 2.5 GT	−0°15′±0°45′
OUTBACK	0°40′±0°45′

• FRONT CAMBER ADJUSTMENT

1) When adjusting the camber, adjust it to the following value.

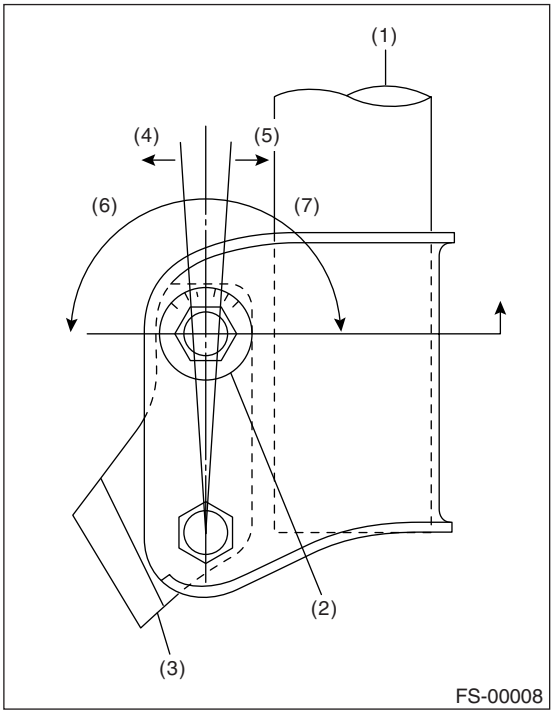
Model	Camber (Differences between RH and LH: 45′ or less)
2.5 i, 2.5 GT	−0°15′±0°30′
OUTBACK	0°40′±0°30′

2) Loosen the two self-locking nuts located at the lower front portion of strut.

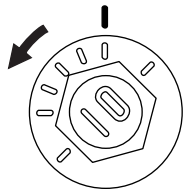
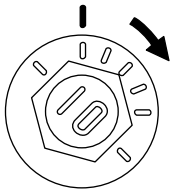
NOTE:
When the adjusting bolt needs to be loosened or tightened, hold its head with a wrench and turn the self-locking nut.

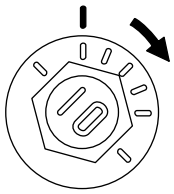
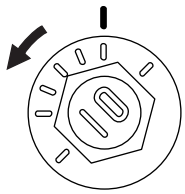
3) Turn the camber adjusting bolt so that the camber is set at specification.

NOTE:
Moving the adjusting bolt by one scale changes the camber by approx. 0°15′.



(1) Strut
(2) Adjusting bolt
(3) Housing
(4) Outer
(5) Inner
(6) Camber is increased.
(7) Camber is decreased.

To increase camber:	
Rotate the left side counterclockwise.	Rotate the right side clockwise.
 FS-00009	 FS-00010

To decrease camber:	
Rotate the left side clockwise.	Rotate the right side counterclockwise.
 FS-00010	 FS-00009

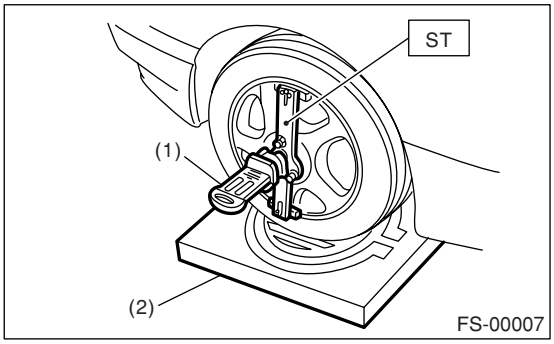
4) Tighten two new self-locking nuts.

Tightening torque:
152 N·m (15.5 kgf-m, 112.1 ft-lb)

3. CASTER

• INSPECTION

1) Place the front wheel on turning radius gauge. Make sure the ground contacting surfaces of front and rear wheels are set at the same height.
2) Set the ST into the center of wheel, and then set the wheel alignment gauge.
ST 927380002 ADAPTER



(1) Alignment gauge
(2) Turning radius gauge

3) Measure the caster angle in accordance with the operation manual for wheel alignment gauge.

Model		Caster
Sedan	2.5 i, 2.5 GT	5°55′
	OUTBACK	4°55′
Wagon	2.5 i, 2.5 i. LTD, 2.5 GT	5°40′
	OUTBACK	4°55′

4. STEERING ANGLE

• INSPECTION

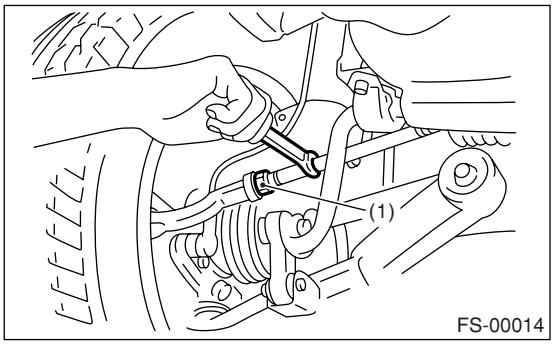
1) Place the vehicle on turning radius gauge.
2) While depressing the brake pedal, turn the steering wheel fully to the left and right. With the steering wheel held at each fully turned position, measure both the inner and outer wheel steering angle.

Model	Inner wheel	Outer wheel
OUTBACK	38.0°±1.5°	33.7°±1.5°
2.5 i, 2.5 GT	37.2°±1.5°	33.0°±1.5°

• ADJUSTMENT

1) Turn the tie-rod to adjust the steering angle of both inner and outer wheels.
2) Check the toe-in.

NOTE:
Correct the boot if it is twisted.



(1) Lock nut

5. FRONT WHEEL TOE-IN

• INSPECTION

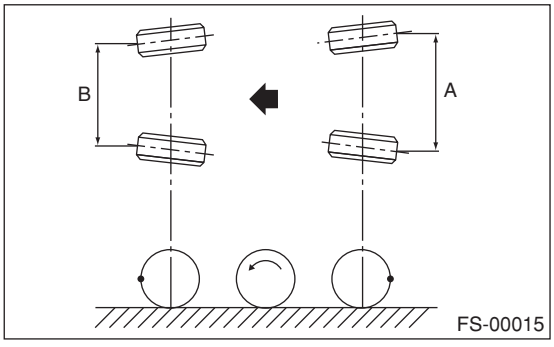
Toe-in:
0±3 mm (0±0.12 in)

1) Set the toe-in gauge in the position at wheel axis center height behind the right and left front tires.
2) Measure the distance “A” between the marks which are put on the centers of left and right tires.
3) Move the vehicle forward and rotate the tires 180°.

NOTE:
Be sure to rotate the tires in the forward direction.

4) Measure the distance “B” between the left and right marks. Detect toe-in by the following equation:

A − B = Toe-in

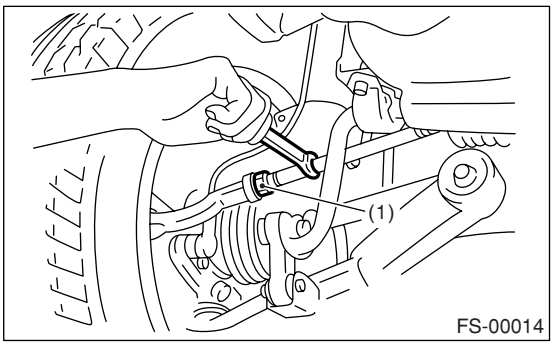


• ADJUSTMENT

When adjusting the toe-in, adjust it to the following value.

Toe-in:
0±2 mm (0±0.08 in)

1) Check that the left and right wheel steering angle is within specifications.
2) Loosen the left and right side steering tie-rod lock nuts.
3) Turn the left and right tie rods equal amounts until the toe-in is at the specification.
Both the left and right tie-rods are right-hand threaded. To increase toe-in, turn both tie-rods clockwise by equal amount (viewing from the inside of vehicle).



(1) Lock nut

4) Tighten the tie-rod lock nut.

Tightening torque:
85 N·m (8.7 kgf-m, 62.7 ft-lb)

NOTE:
Correct the tie rod boot if it is twisted.

6. REAR WHEEL TOE-IN

• INSPECTION

Toe-in:
0±3 mm (0±0.12 in)

Refer to “FRONT WHEEL TOE-IN” for rear toe-in inspection procedure.
<Ref. to FS-11, FRONT WHEEL TOE-IN, INSPECTION, Wheel Alignment.>

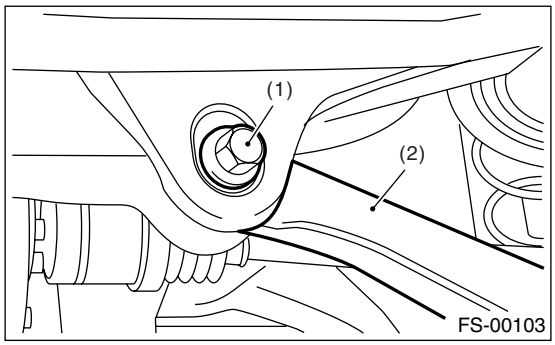
• ADJUSTMENT

When adjusting, adjust it to the following value.

Toe-in:
0±2 mm (0±0.08 in)

1) Loosen the self-locking nut on the inner side of rear link.

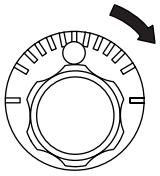
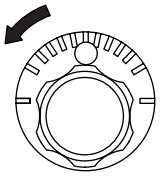
NOTE:
When loosening or tightening the adjusting bolt, hold the bolt head and turn self-locking nut.

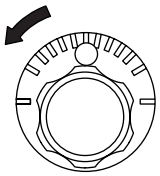
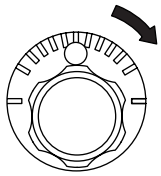


(1) Adjusting bolt
(2) Rear link

2) Turn the adjusting bolt until toe-in is at the specification.

NOTE:
When the left and right wheels are adjusted for toe-in at the same time, the movement of one scale graduation changes toe-in by approx. 0.6 mm (0.02 in).

To increase toe-in:	
Rotate the left side clockwise.	Rotate the right side counterclockwise.
 FS-00018	 FS-00019

To decrease toe-in:	
Rotate the left side counterclockwise.	Rotate the right side clockwise.
 FS-00019	 FS-00018

3) Tighten a new self-locking nut.

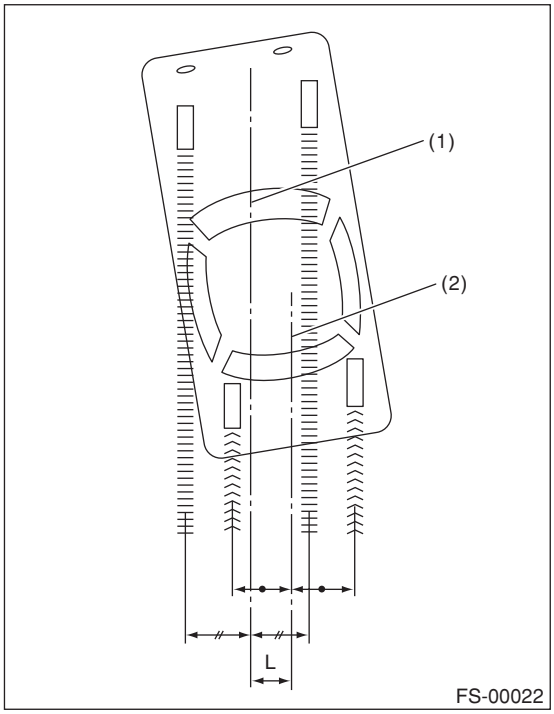
Tightening torque:
120 N·m (12.2 kgf-m, 88.5 ft-lb)

7. THRUST ANGLE

• INSPECTION

1) Park the vehicle on a level surface.
2) Move the vehicle 3 to 4 meters (10 to 13 feet) directly forward.
3) Draw the center of loci of both the front and rear axles.
4) Measure the distance “L” between center lines of the loci of axles.

Thrust angle:
0°±30′
Less than 30′ when "L" is less than 23 mm (0.9 in).



(1) Center line of loci (front axle)
(2) Center line of loci (rear axle)

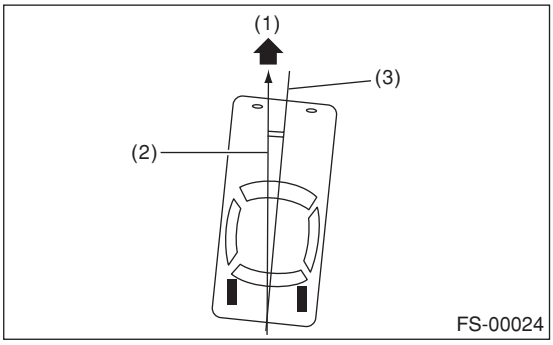
• ADJUSTMENT

When adjusting, adjust it to the following value.

Thrust angle:
0°±20′
Less than 20′ when "L" is less than 15 mm (0.6 in).

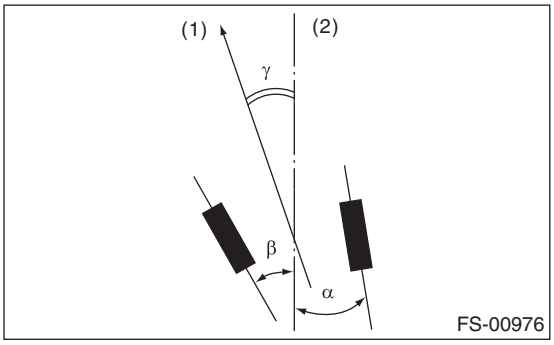
1) Make the thrust angle adjustments by turning the toe-in adjusting bolts of rear suspension equally in the same direction.
2) When one rear wheel is adjusted in a toe-in direction, adjust the other rear wheel equally in toe-out direction, in order to make the thrust angle adjustment.
3) When the left and right adjusting bolts are turned by one graduation, the thrust angle will change approx. 17′ ["L" is approx. 13 mm (0.51 in)].

NOTE:
Thrust angle refers to a mean value of left and right rear wheel toe angles in relation to the vehicle body center line. Vehicle is driven straight in the thrust angle direction while slanting in the oblique direction depending on the degree of the mean thrust angle.



(1) Front
(2) Thrust angle
(3) Body center line

Thrust angle: r = ($\alpha - \beta$)/2
α: Rear RH wheel toe-in angle
β: Rear LH wheel toe-in angle
Use only positive toe-in values from each wheel to substitute for α and β in the equation.



(1) Front
(2) Body center line