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NOT FOR RESALE

FRONT SUSPENSION

1. General Description

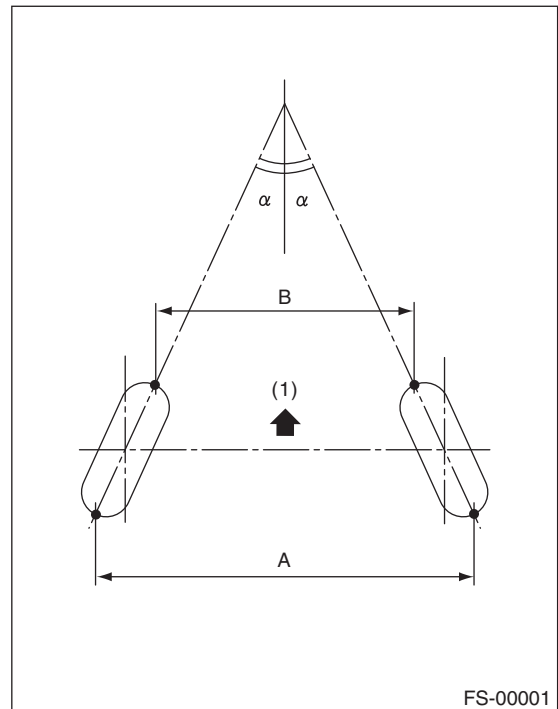
A: SPECIFICATION

	Model	Sedan			Wagon		OUTBACK
		Non-turbo	Turbo	STI	Non-turbo	Turbo	
Front	Camber (tolerance: $\pm 0^{\circ}45'$ adjustment standard: $\pm 0^{\circ}30'$)	$-0^{\circ}15'$	$-0^{\circ}25'$	$-0^{\circ}30'$	$-0^{\circ}10'$	$-0^{\circ}20'$	$-0^{\circ}05'$
	Caster	$3^{\circ}25'$	$3^{\circ}30'$	$3^{\circ}40'$	$3^{\circ}25'$	$3^{\circ}30'$	$3^{\circ}25'$
	Toe-in	Tolerance: 0 ± 3 mm (0 ± 0.12 in), Toe angle (sum of both wheels) $0^{\circ} \pm 15'$ Adjustment standard: 0 ± 2 mm (0 ± 0.08 in), Toe angle (sum of both wheels) $0^{\circ} \pm 10'$					
	Kingpin angle	$14^{\circ}20'$	$14^{\circ}35'$	$14^{\circ}50'$	$13^{\circ}30'$	$13^{\circ}45'$	$13^{\circ}20'$
	Wheel arch height [Tolerance: $+^{12}_{-24}$ mm ($+^{0.47}_{-0.94}$ in)]	406 mm (15.98 in)	396 mm (15.59 in)	386 mm (15.20 in)	397 mm (15.28 in)	387 mm (15.24 in)	402 mm (15.83 in)
Rear	Camber (tolerance: $\pm 0^{\circ}45'$ adjustment standard: $\pm 0^{\circ}30'$)	$-1^{\circ}25'$	$-1^{\circ}30'$	$-1^{\circ}40'$	$-1^{\circ}15'$	$-1^{\circ}20'$	$-1^{\circ}10'$
	Toe-in	Tolerance: 0 ± 3 mm (0 ± 0.12 in), Toe angle (sum of both wheels) $0^{\circ} \pm 15'$ Adjustment standard: 0 ± 2 mm (0 ± 0.08 in), Toe angle (sum of both wheels) $0^{\circ} \pm 10'$					
	Thrust angle	Tolerance: $0^{\circ} \pm 30'$, adjustment standard: $0^{\circ} \pm 20'$					
	Wheel arch height [Tolerance: $+^{12}_{-24}$ mm ($+^{0.47}_{-0.94}$ in)]	381 mm (15.0 in)	376 mm (14.80 in)	363 mm (14.29 in)	381 mm (15.0 in)	376 mm (14.80 in)	386 mm (15.20 in)

NOTE:

- Front and rear toe-in and front camber can be adjusted. If the toe-in or camber exceeds the tolerance, adjust toe-in or camber within the adjustment standard.

- Other items indicated in the specifications table cannot be adjusted. If other items exceed specifications, check suspension parts and connections for deformation, and replace with new parts as required.



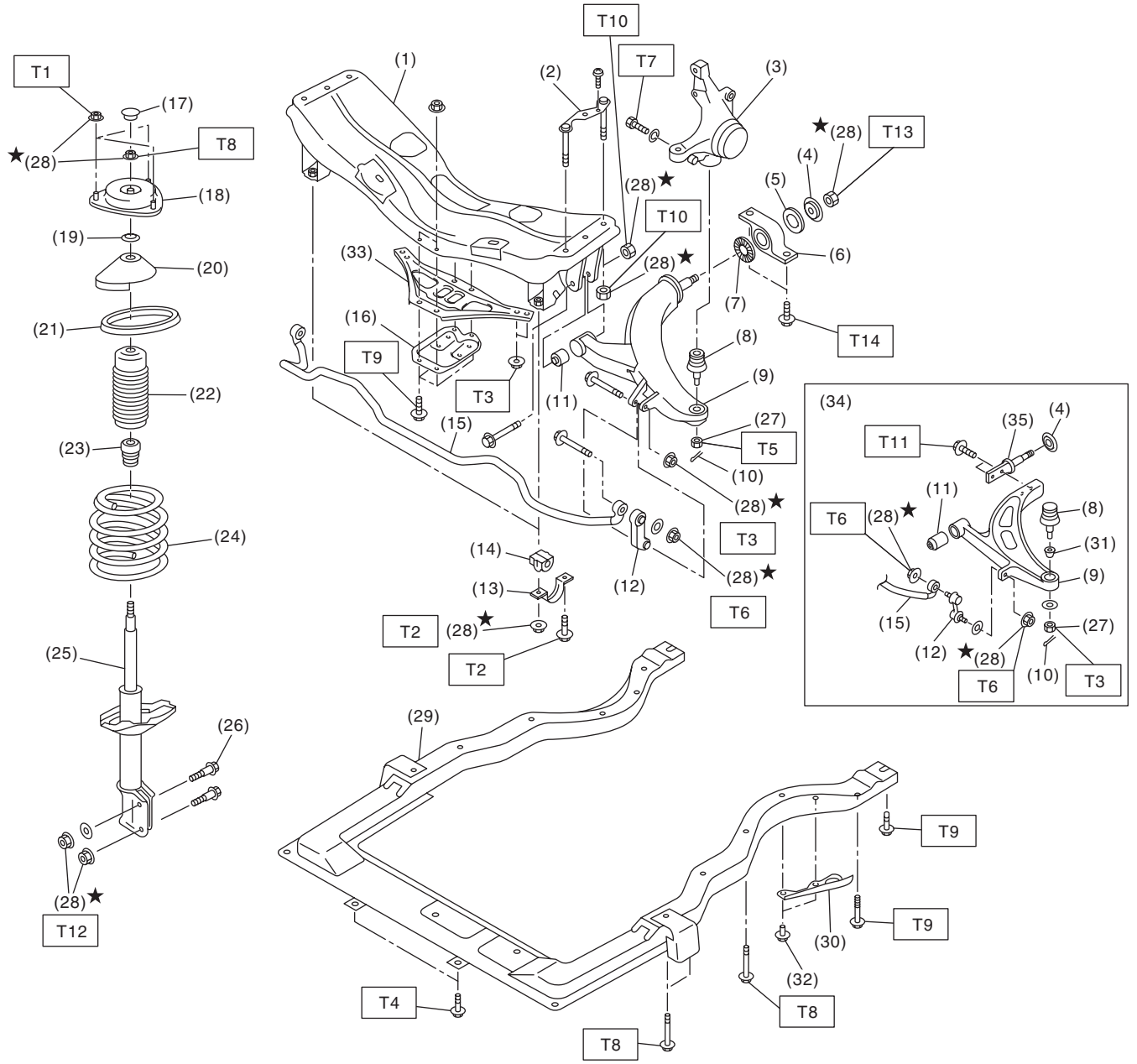
(1) Front

A - B = Positive: Toe-in, Negative: Toe-out

α = Individual toe angles

B: COMPONENT

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FS-00222

General Description

FRONT SUSPENSION

(1) Front crossmember	(18) Strut mount
(2) Bolt ASSY	(19) Spacer
(3) Housing	(20) Upper spring seat
(4) Washer	(21) Rubber seat
(5) Stopper rubber (Rear)	(22) Dust cover
(6) Rear bushing	(23) Helper
(7) Stopper rubber (Front)	(24) Coil spring
(8) Ball joint	(25) Damper strut
(9) Transverse link	(26) Adjusting bolt
(10) Cotter pin	(27) Castle nut
(11) Front bushing	(28) Self-locking nut
(12) Stabilizer link	(29) Sub frame
(13) Clamp	(30) Cover
(14) Bushing	(31) Boss
(15) Stabilizer	(32) Clip
(16) Jack-up plate (Non-turbo model)	(33) Jack-up plate (turbo model)
(17) Dust seal	(34) STI model

(35) Fitting

Tightening torque: N·m (kgf-m, ft-lb)

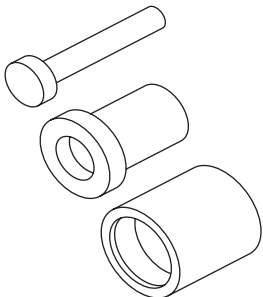
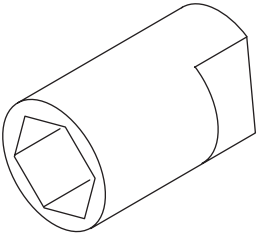
T1:	20 (2.0, 14.5)
T2:	25 (2.5, 18.1)
T3:	30 (3.1, 22)
T4:	34 (3.5, 25)
T5:	40 (4.1, 30)
T6:	45 (4.6, 33)
T7:	50 (5.1, 37)
T8:	55 (5.6, 41)
T9:	71 (7.2, 52.4)
T10:	95 (9.7, 70.1)
T11:	155 (15.8, 114)
T12:	175 (17.8, 129)
T13:	190 (19.4, 140)
T14:	250 (25.5, 184)

C: CAUTION

- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly and replacement.
- Use SUBARU genuine grease etc. or equivalent. Do not mix grease etc. of different grades or manufacturers.
- Before securing a part on a vise, place cushioning material such as wood blocks, aluminum plate, or cloth between the part and the vise.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or rigid racks at the specified points.

D: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>ST-927680000</p>	927680000	INSTALLER & REMOVER SET	Used for replacing the transverse link bushing.
 <p>ST-927760000</p>	927760000	STRUT MOUNT SOCKET	Used for disassembling and assembling the strut and shock mount.

2. GENERAL TOOL

TOOL NAME	REMARKS
Alignment gauge	Used for measuring wheel alignment.
Alignment gauge adapter	Used for measuring wheel alignment.
Turning radius gauge	Used for measuring wheel alignment.
Toe-in gauge	Used for toe-in measurement.
Dial gauge	Used for damper strut measurement.
Coil spring compressor	Used for strut assembly/disassembly.

2. Wheel Alignment

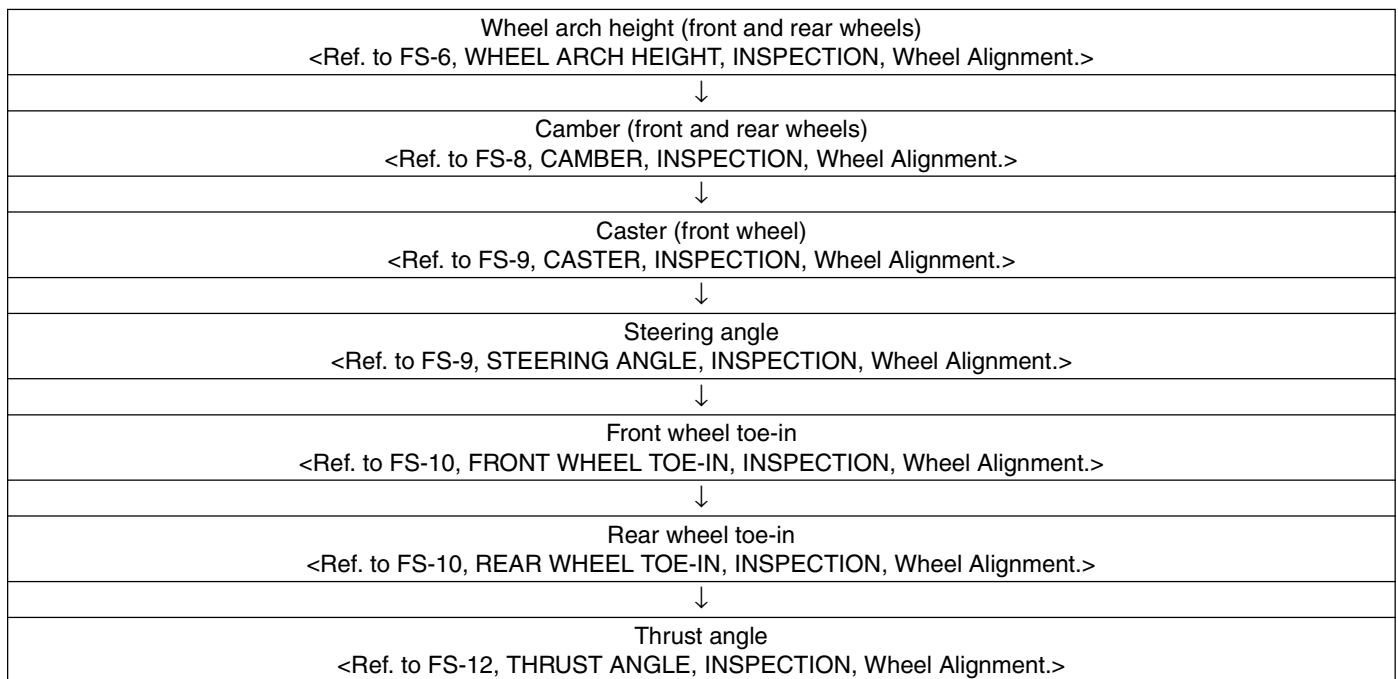
A: INSPECTION

Check the following items before performing the wheel alignment measurement.

Check items before measuring wheel alignment:

- Tire inflation pressure
- Uneven wear of RH and LH tires, or difference of sizes
- Tire runout
- Excessive play and wear of ball joint
- Excessive play and wear of tie rod end
- Excessive play of wheel bearing
- Right and left wheel base imbalance
- Deformation and excessive play of steering link
- Deformation and excessive play of suspension parts

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



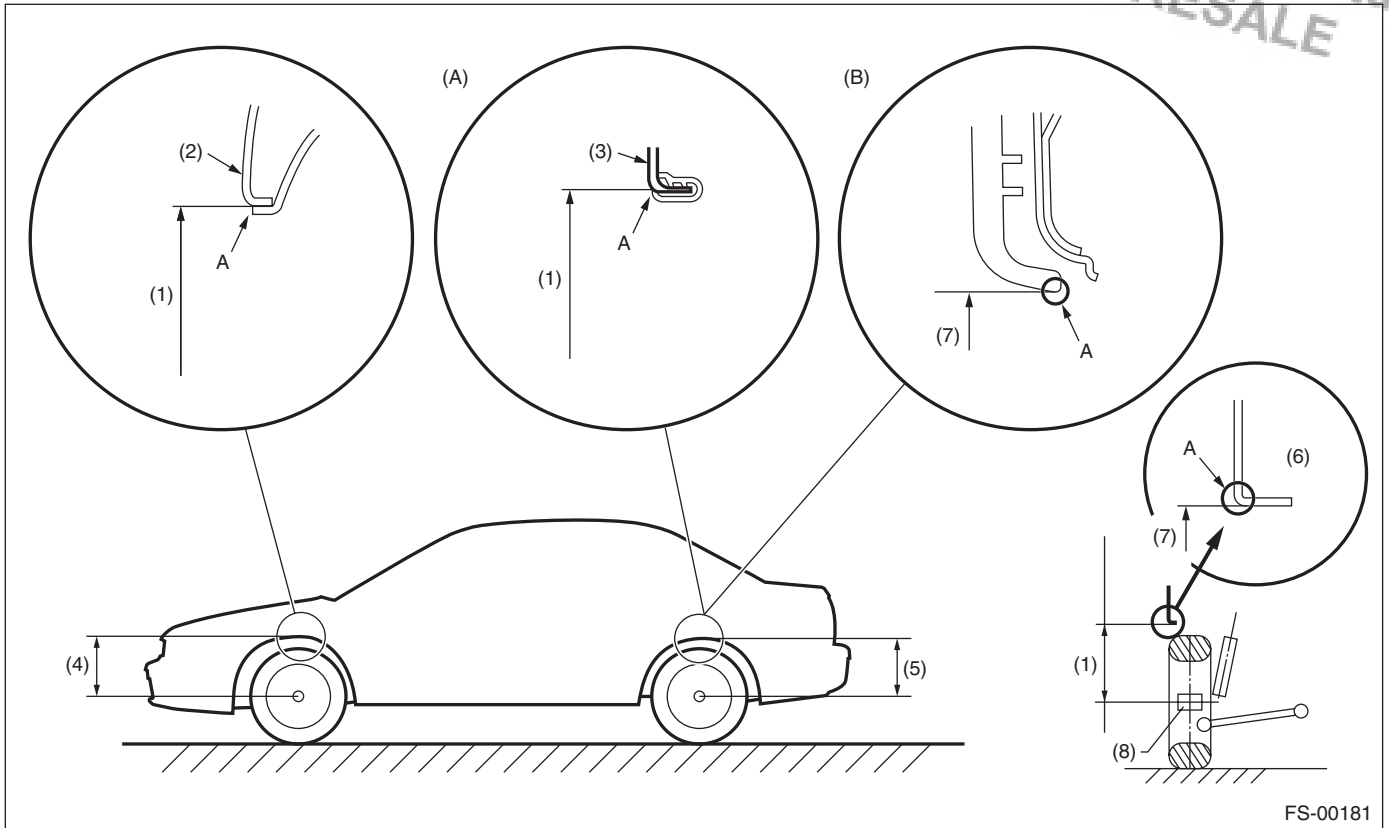
1. WHEEL ARCH HEIGHT

- 1) Place the vehicle on a level surface.
- 2) Empty the vehicle so that it is at "curb weight".
(Empty the luggage compartment, load the spare tire, jack and service tools, and fill up the fuel tank.)
- 3) Set the steering wheel in a straight-ahead position, and stabilize the suspensions by moving the vehicle in a straight line for 5 m (16 ft) or more.
- 4) Suspend a thread from the wheel arch (point "A" in the figure below) and affix at a position directly above the center of wheel.

Wheel Alignment

FRONT SUSPENSION

5) Measure the distance between the point "A" and the center of wheel.



(A) Except for STI model

(B) STI model

(1) Wheel arch height

(4) Front wheel arch height

(7) Point of measurement

(2) Front fender

(5) Rear wheel arch height

(8) End of spindle

(3) Rear quarter

(6) Flange bend line

Model		Wheel arch height specification [Tolerance: $+12_{-24}$ mm ($+0.47_{-0.94}$ in)]	
		Non-turbo	Turbo
Sedan	Front	406 mm (15.98 in)	396 mm (15.59 in)
	Rear	381 mm (15.0 in)	376 mm (14.80 in)
Wagon	Front	397 mm (15.63 in)	387 mm (15.24 in)
	Rear	381 mm (15.0 in)	376 mm (14.80 in)
OUTBACK	Front	402 mm (15.83 in)	—
	Rear	386 mm (15.20 in)	—
STI	Front	—	386 mm (15.20 in)
	Rear	—	363 mm (14.29 in)

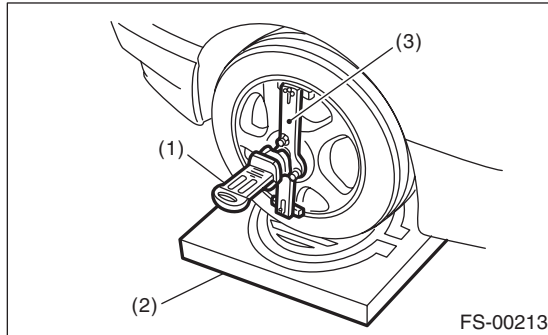
Wheel Alignment

FRONT SUSPENSION

2. CAMBER

INSPECTION

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



- (1) Alignment gauge
- (2) Turning radius gauge
- (3) Adapter

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

NOTE:

Refer to "SPECIFICATION" for the camber angle values.

Front: <Ref. to FS-2, SPECIFICATION, General Description.>

Rear: <Ref. to RS-2, SPECIFICATION, General Description.>

FRONT CAMBER ADJUSTMENT

- 1) Loosen the two self-locking nuts located at the front lower section of the strut.

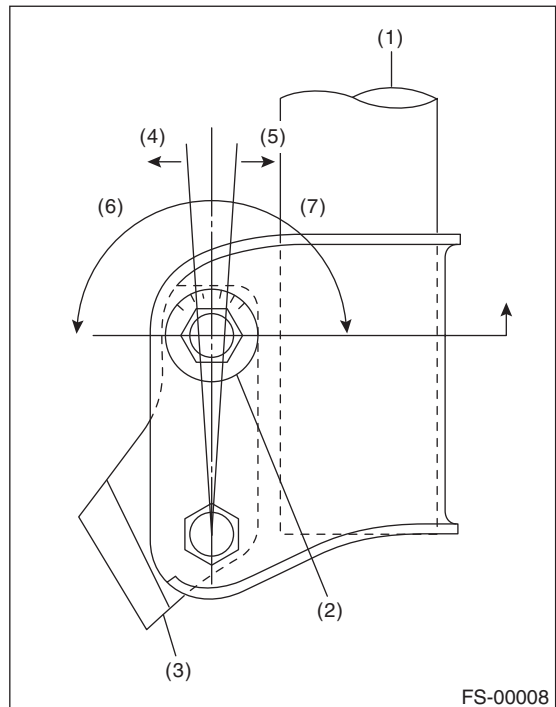
NOTE:

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

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

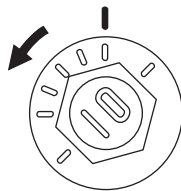
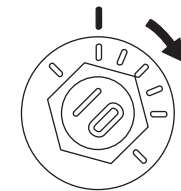
NOTE:

Moving the adjusting bolt by one scale changes the camber by approximately $0^{\circ}10'$.

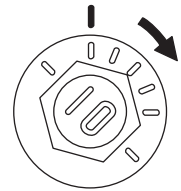
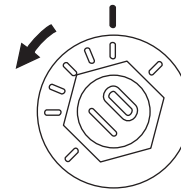


- (1) Strut
- (2) Adjusting bolt
- (3) Housing
- (4) Outer
- (5) Inner
- (6) Camber is increased.
- (7) Camber is decreased.

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

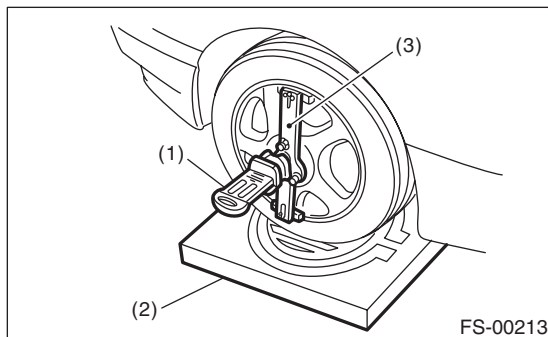
3) Tighten two new self-locking nuts.

Tightening torque:

175 N·m (17.8 kgf·m, 129 ft·lb)

3. CASTER INSPECTION

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



- (1) Alignment gauge
- (2) Turning radius gauge
- (3) Adapter

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

NOTE:

Refer to "SPECIFICATION" for the caster angle values. <Ref. to FS-2, SPECIFICATION, General Description.>

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 angles.

Steering angle:

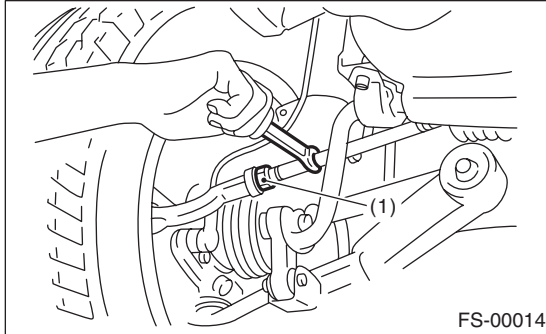
Model	Except for STI model	STI model
Inner wheel	34.5°±1.5°	32.9°±1.5°
Outer wheel	30.3°±1.5°	28.5°±1.5°

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:

$0 \pm 3 \text{ mm } (0 \pm 0.12 \text{ in})$ (tolerance)

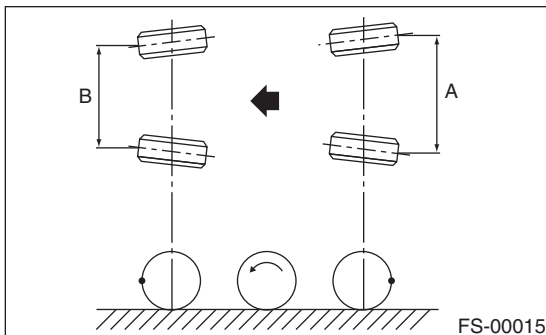
- 1) Set the toe-in gauge in the position at wheel axis center height behind the right and left front tires.
- 2) Place a mark at the center of both left and right tires, and measure distance "A" between the marks.
- 3) Move the vehicle forward to rotate the tires 180° .

NOTE:

Be sure to rotate the tires in the forward direction.

- 4) Measure the distance "B" between the left and right marks. Find toe-in using the following equation:

$$A - B = \text{Toe-in}$$



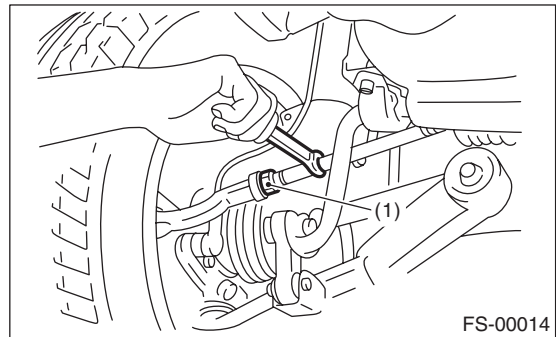
ADJUSTMENT

- 1) Check that the left and right wheel steering angles are within specification.
- 2) Loosen the left and right side steering tie-rod lock nuts.
- 3) Turn the left and right tie-rods by equal amounts until the toe-in is at adjustment standard.

Toe-in:

$0 \pm 2 \text{ mm } (0 \pm 0.08 \text{ in})$ (adjustment standard)

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:

Non-turbo model:

$83 \text{ N}\cdot\text{m } (8.5 \text{ kgf}\cdot\text{m}, 61.5 \text{ ft}\cdot\text{lb})$

Turbo model and STI model:

$85 \text{ N}\cdot\text{m } (8.6 \text{ kgf}\cdot\text{m}, 62.2 \text{ ft}\cdot\text{lb})$

NOTE:

Check and correct the tie rod boot if twisted.

6. REAR WHEEL TOE-IN

INSPECTION

Toe-in:

$0 \pm 3 \text{ mm } (0 \pm 0.12 \text{ in})$ (tolerance)

Refer to FRONT WHEEL TOE-IN for rear toe-in inspection procedures.

<Ref. to FS-10, FRONT WHEEL TOE-IN, INSPECTION, Wheel Alignment.>

Wheel Alignment

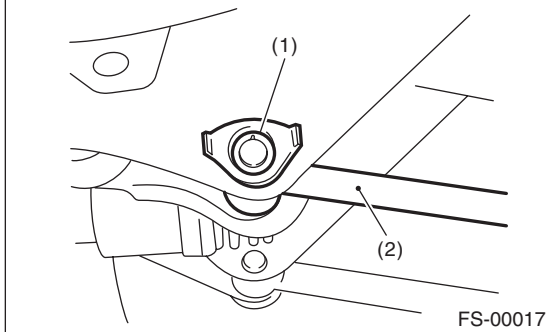
FRONT SUSPENSION

ADJUSTMENT

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

NOTE:

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



- (1) Adjusting bolt
- (2) Link rear

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

Toe-in:

0 ± 2 mm (0 ± 0.08 in) (adjustment standard)

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. 1.5 mm (0.6 in).

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

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

3) Attach and tighten a new self-locking nut.

Tightening torque:

100 N·m (10.2 kgf·m, 74 ft·lb)

7. THRUST ANGLE

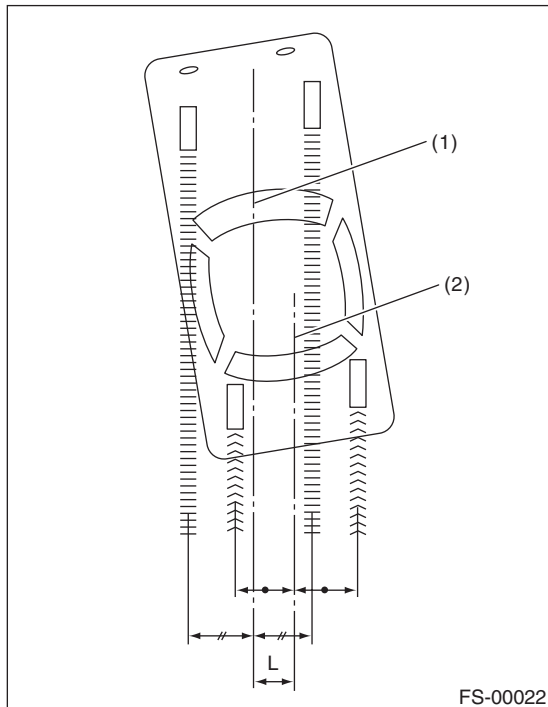
INSPECTION

- 1) Place the vehicle on a level surface.
- 2) Move the vehicle 3 to 4 meters (10 to 13 feet) straight forward.
- 3) Draw the center of loci for both the front and rear axles.
- 4) Measure distance "L" between the center lines of the axle loci.

Thrust angle

$0^{\circ} \pm 30'$ (tolerance)

Less than 30' when "L" is 22 mm (0.9 in) or less.



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

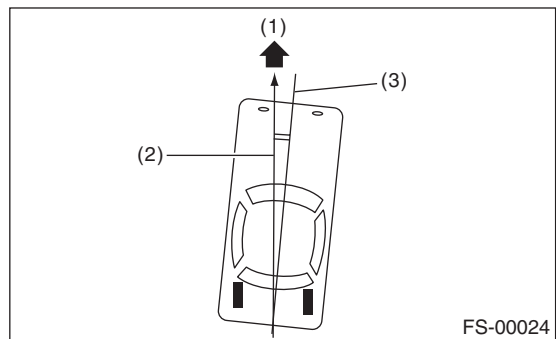
ADJUSTMENT

- 1) Make thrust angle adjustments by turning the toe-in adjusting bolts of the 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. 16' ("L" is approx. 12 mm (0.472 in)).

Thrust angle

$0^{\circ} \pm 20'$ (adjustment standard)

Less than 20' when "L" is 13 mm (0.51 in) or less.



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

NOTE:

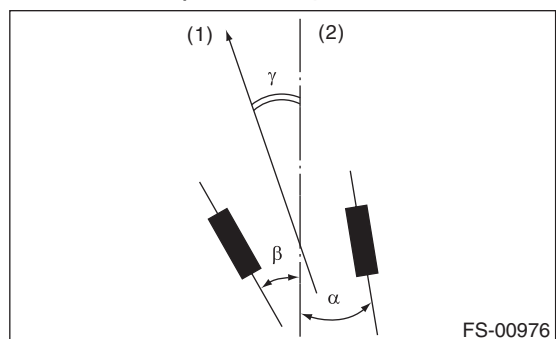
Thrust angle is a mean value of left and right wheel toe angles in relation to the vehicle body center line. Vehicle is driven straight in the thrust angle direction while swaying in the oblique direction depending on the degree of the mean thrust angle.

Thrust angle: $r = (\alpha - \beta)/2$

α : Rear RH wheel toe-in angle

β : Rear LH wheel toe-in angle

Substitute only the positive toe-in values from each wheel into α and β in the equation.



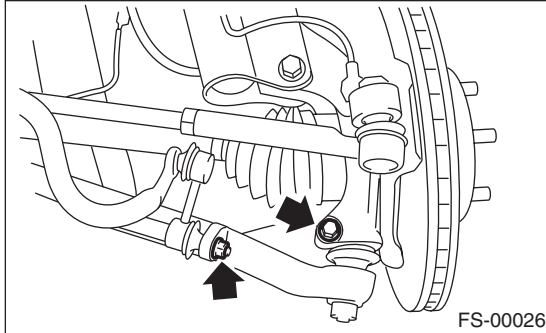
- (1) Front
- (2) Body center line

3. Front Transverse Link

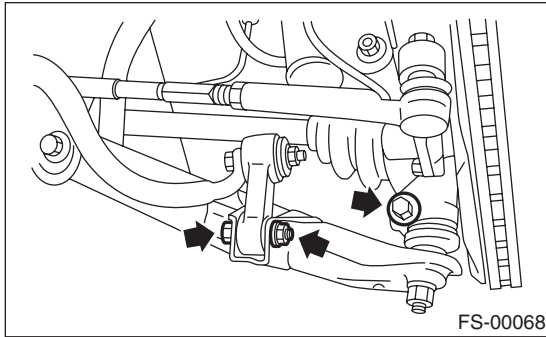
A: REMOVAL

- 1) Set the vehicle on a lift.
- 2) Lift up the vehicle, and remove the wheels.
- 3) Remove the sub frame.
- 4) Remove the stabilizer link from the transverse link.
- 5) Remove the bolt securing the ball joint of the transverse link to housing.

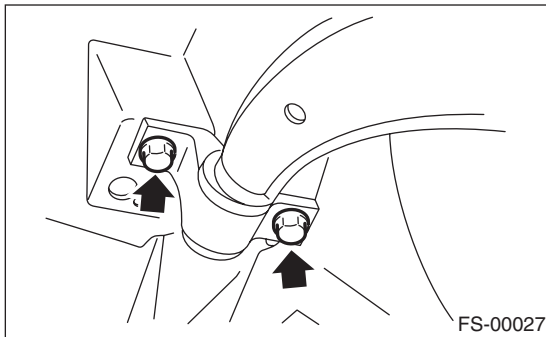
- STI model:



- Except for STI model:

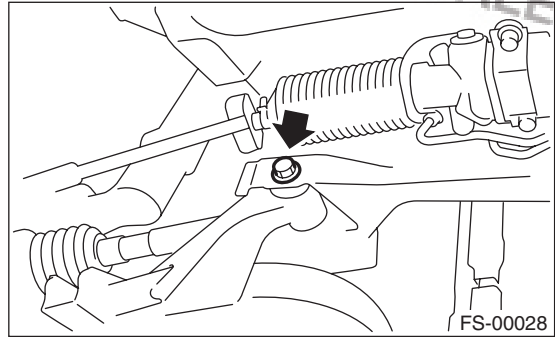


- 6) Remove the nut securing the transverse link to the crossmember. (Do not remove the bolt.)
- 7) Remove the two bolts securing the bushing bracket of the transverse link to the rear bushing location on the body.



- 8) Extract the ball joint from housing.

- 9) Remove the bolt securing the transverse link to crossmember and extract the transverse link from the crossmember.



B: INSTALLATION

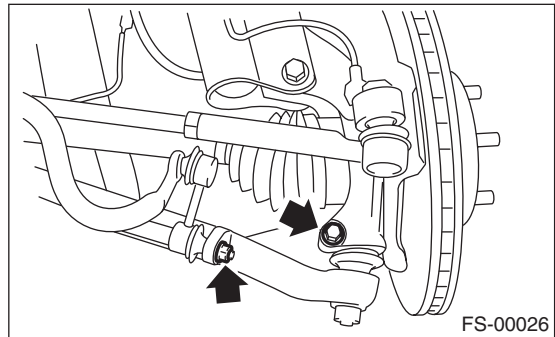
- 1) Temporarily tighten the two bolts used to secure the transverse link to the body.

NOTE:

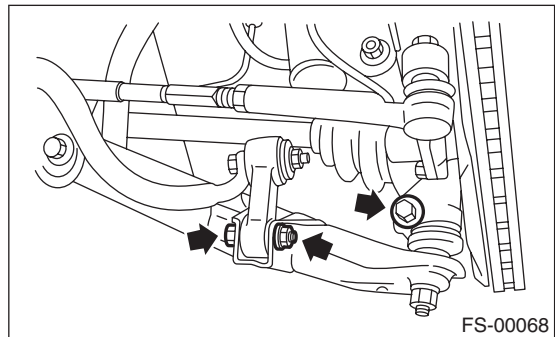
These bolts securing the bushings are tightened to a point where they can still move back and forth in the oblong shaped hole in the bracket.

- 2) Install the bolts which connect the transverse link to the crossmember, and temporarily tighten with a new self-locking nut.
- 3) Insert the ball joint into housing.
- 4) Connect the stabilizer link to the transverse link, and temporarily tighten the new self-locking nuts.

- STI model:



- Except for STI model:



Front Transverse Link

FRONT SUSPENSION

5) Tighten the following points in the order shown below when the wheels are in full contact with the ground and vehicle is at curb weight (empty).

- (1) Transverse link and stabilizer link, and, stabilizer and stabilizer link (STI model)

Tightening torque:

45 N·m (4.6 kgf-m, 33 ft-lb)

- (2) Transverse link and stabilizer link, and, stabilizer and stabilizer link (Except for STI model)

Tightening torque:

Transverse link to Stabilizer link:

30 N·m (3.1 kgf-m, 22 ft-lb)

Stabilizer to Stabilizer link:

45 N·m (4.6 kgf-m, 33 ft-lb)

- (3) Transverse link and crossmember

Tightening torque:

95 N·m (9.7 kgf-m, 70.1 ft-lb)

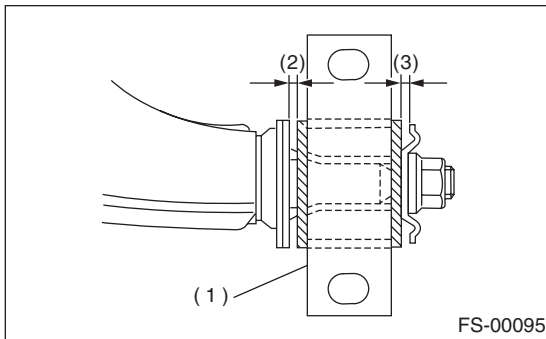
- (4) Transverse link rear bushing and body

Tightening torque:

250 N·m (25.5 kgf-m, 184 ft-lb)

NOTE:

Move the rear bushing back and forth until transverse link-to-rear bushing clearance is established (as indicated in the figure) before tightening.



- (1) Rear bushing
- (2) 1 mm (0.04 in)
- (3) 1.5 mm (0.059 in)

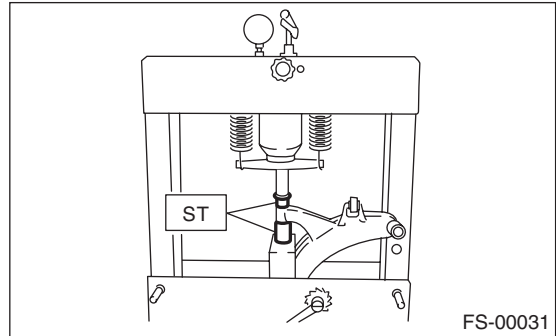
6) Inspect the wheel alignment and adjust if necessary.

C: DISASSEMBLY

1. FRONT BUSHING

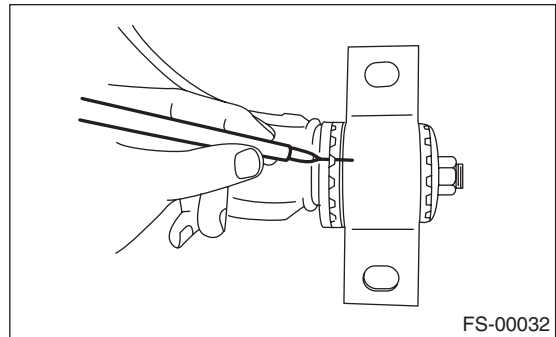
Using the ST, press the front bushing out of place.

ST 927680000 INSTALLER & REMOVER SET



2. REAR BUSHING

- 1) Place alignment marks on the transverse link and rear bushing.
- 2) Loosen the nut and remove the rear bushing.



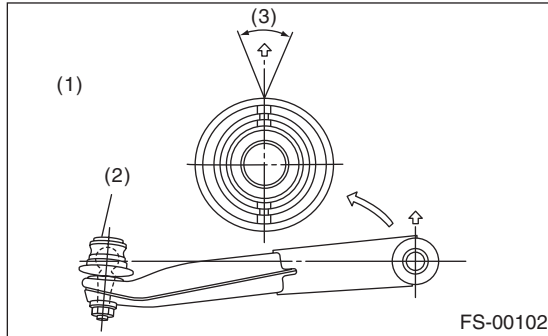
D: ASSEMBLY

1. FRONT BUSHING

Assemble in the reverse order of disassembly.

CAUTION:

Install the front bushing in proper direction as shown in the figure.



- (1) Face the bushing toward the center of ball joint.
- (2) Ball joint
- (3) $\pm 3^\circ$

2. REAR BUSHING

- 1) Attach the rear bushing to the transverse link and align the two aligning marks.
- 2) Attach and tighten a new self-locking nut.

NOTE:

While holding the rear bushing so as not to change position of aligning marks, tighten the self-locking nut.

Tightening torque:

190 N·m (19.4 kgf-m, 140 ft-lb)

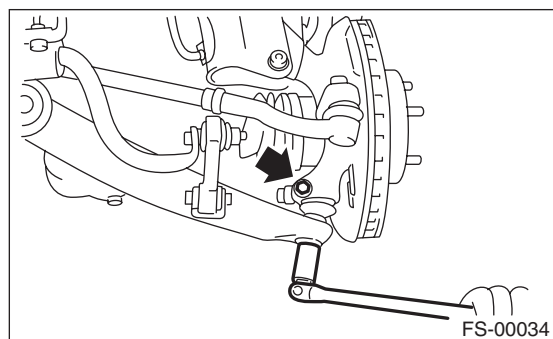
E: INSPECTION

- 1) Check the transverse link for wear, damage and cracks, and correct or replace if defective.
- 2) Check the bushing for major cracks, fatigue or damage.
- 3) Check the rear bushing for oil leaks.

4. Front Ball Joint

A: REMOVAL

- 1) Remove the wheels.
- 2) Pull out the cotter pin from the ball stud, remove the castle nut, and extract the ball stud from the transverse link.
- 3) Remove the bolts which secure the ball joint to the housing.



- 4) Extract the ball joint from housing.

B: INSTALLATION

- 1) Insert the ball joint into housing.

Tightening torque (Bolt):

50 N·m (5.1 kgf·m, 37 ft·lb)

CAUTION:

Do not apply grease to the tapered portion of ball stud.

- 2) Connect the ball joint to transverse link.

Tightening torque (castle nut):

STI model:

30 N·m (3.1 kgf·m, 22 ft·lb)

Except for STI model:

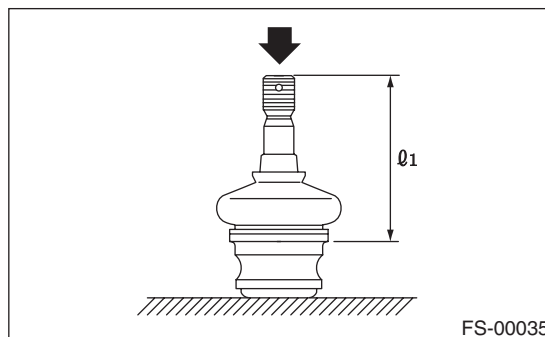
40 N·m (4.1 kgf·m, 30 ft·lb)

- 3) Retighten the castle nut further up to 60° until the hole in the ball stud is aligned with a slot in castle nut. Then, insert a new cotter pin and bend it around the castle nut.
- 4) Install the front wheels.

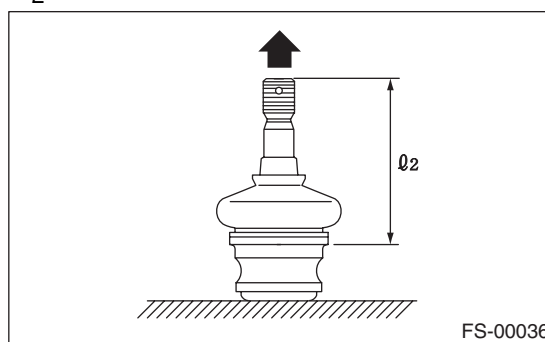
C: INSPECTION

- 1) Measure the play of the ball joint using the following procedures. Replace with a new part if the play exceeds specification.

- (1) With 686 N (70 kgf, 154 lbf) loaded in direction shown in the figure, measure the length l_1 .



- (2) With 686 N (70 kgf, 154 lbf) loaded in direction shown in the figure, measure the length l_2 .



- (3) Determine free play using the following formula. $S = l_2 - l_1$

- (4) Replace with a new part if the play exceeds specification.

Front ball joint:

Specification for replacement S:

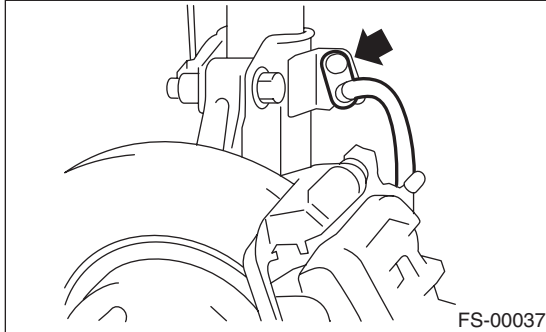
Less than 0.3 mm (0.012 in)

- 2) If the play is within specification, visually check the dust cover.
- 3) Remove the ball joint and cover, and check for wear, damage or cracks. If any damage is found, replace the corresponding part.
- 4) If the dust cover is damaged, replace with a new ball joint.

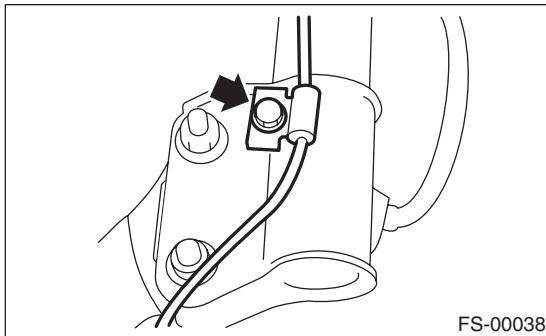
5. Front Strut

A: REMOVAL

- 1) Remove the wheels.
- 2) Remove the bolt securing the brake hose from the strut.



- 3) Scribe an alignment mark on the camber adjusting bolt that secures the strut to the housing.
- 4) Remove the bolt securing the ABS wheel speed sensor harness.

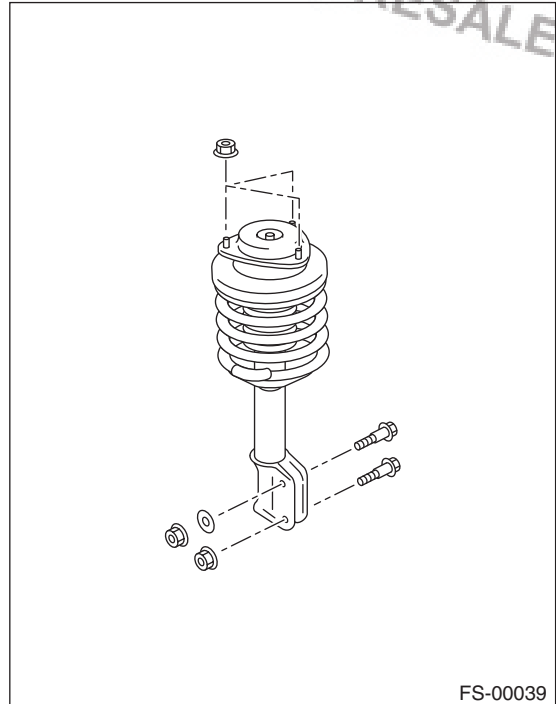


- 5) Remove the two bolts securing the housing to the strut.

NOTE:

While holding the head of the adjusting bolt, loosen the self-locking nut.

- 6) Remove the three nuts securing strut mount to body.



B: INSTALLATION

- 1) Install the strut mount at upper side of strut to the body, and tighten it with new nuts.

Tightening torque:

20 N·m (2.0 kgf-m, 14.5 ft-lb)

- 2) Align to the alignment marks on the camber adjusting bolt and strut bottom.

Using new self-locking nuts, install the strut to the housing.

NOTE:

While holding the head of adjusting bolt, tighten the self-locking nut.

Tightening torque:

175 N·m (17.8 kgf-m, 129 ft-lb)

- 3) Secure the ABS wheel speed sensor harness to the strut.

Tightening torque:

33 N·m (3.3 kgf-m, 24 ft-lb)

- 4) Install the bolts which secure the brake hose to the strut.

Tightening torque:

33 N·m (3.4 kgf-m, 24.3 ft-lb)

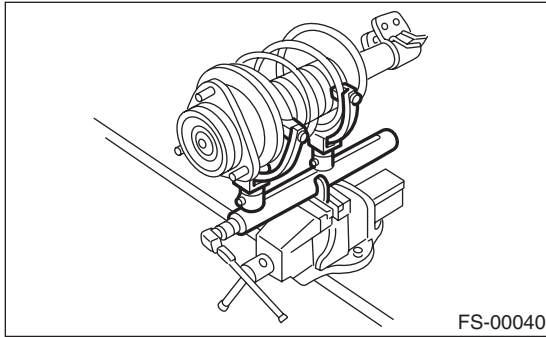
- 5) Install the wheel.

NOTE:

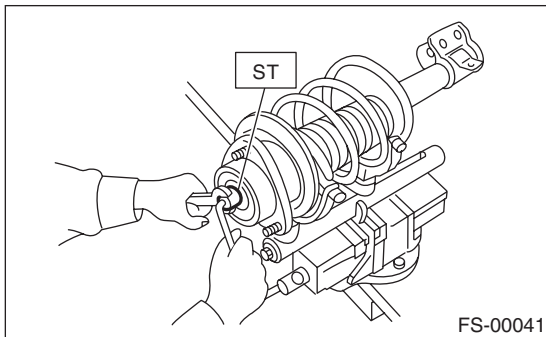
Inspect the wheel alignment and adjust if necessary.

C: DISASSEMBLY

- 1) Using a coil spring compressor, compress the coil spring.



- 2) Using the ST, remove the self-locking nut.
ST 927760000 STRUT MOUNT SOCKET



- 3) Remove the strut mount, upper spring seat and rubber seat from the strut.
- 4) Gradually decrease the compression force of compressor, and remove the coil spring.
- 5) Remove the dust cover and helper spring.

D: ASSEMBLY

- 1) Before installing the coil spring, strut mount, etc. on strut, check for the presence of air in the dampening force generating mechanism of the strut since air prevents proper dampening force production.
- 2) Checking for presence of air
 - (1) Place the strut vertically with the piston rod facing up.
 - (2) Move the piston rod to the center of its entire stroke.
 - (3) While holding the piston rod end with fingers, move the rod up and down.
 - (4) If the piston rod moves 10 mm (0.39 in) or more in the former step, purge air from the strut.

- 3) Air purging procedure
 - (1) Place the strut vertically with the piston rod facing up.
 - (2) Fully extend the piston rod.
 - (3) With the piston rod fully extended, place the piston rod side down. The strut must stand vertically.
 - (4) Fully retract the piston rod.
 - (5) Repeat 3 or 4 times from the step 1).

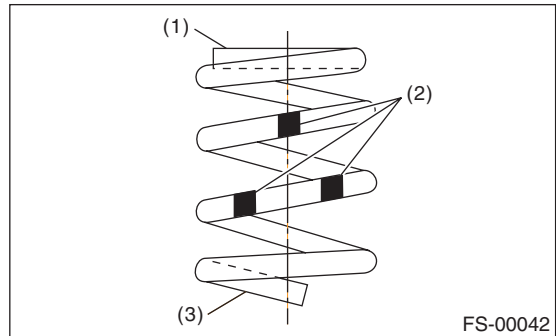
NOTE:

After purging air from the strut, be sure to place the strut with the piston rod facing up. If the strut is laid down for any reason, check for the entry of air in accordance with "Checking for presence of air"

- 4) Using a coil spring compressor, compress the coil spring.

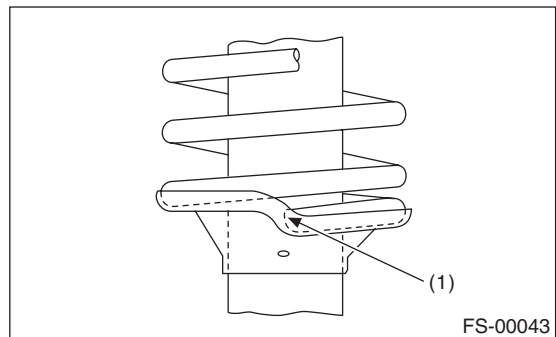
NOTE:

Make sure that the vertical install direction of the coil spring is as shown in the figure.



- (1) Flat (top side)
- (2) Identification paint
- (3) Inclined (bottom side)

- 5) Set the coil spring correctly so that its end face seats well in the spring seat as shown in the figure.



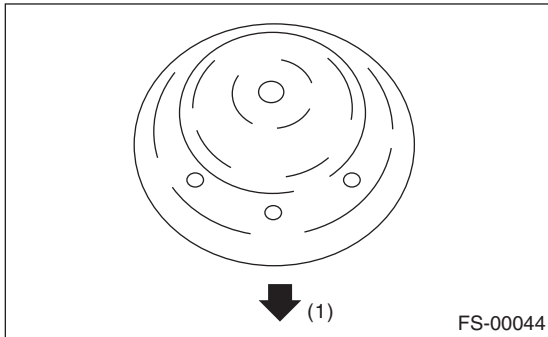
- (1) Coil spring end face

- 6) Install the helper and dust cover to the piston rod.

7) Pull the piston rod fully upward, and install the rubber seat and spring seat.

NOTE:

Position the upper spring seat as shown in the figure.

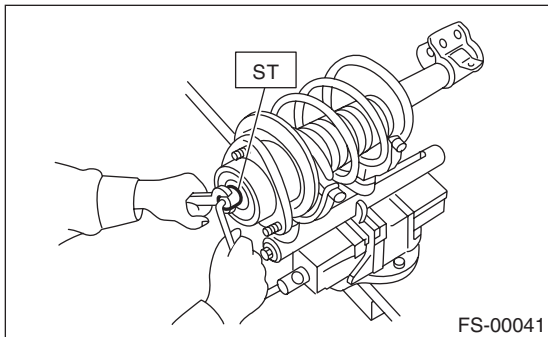


(1) Outside of body

8) Install the strut mount to piston rod, and temporarily attach and tighten a new self locking nut.
 9) Using a hex wrench to prevent strut rod from turning, tighten the self-locking nut with the ST.

Tightening torque:

55 N·m (5.6 kgf-m, 41 ft-lb)



10) Loosen the coil spring compressor carefully.

E: INSPECTION

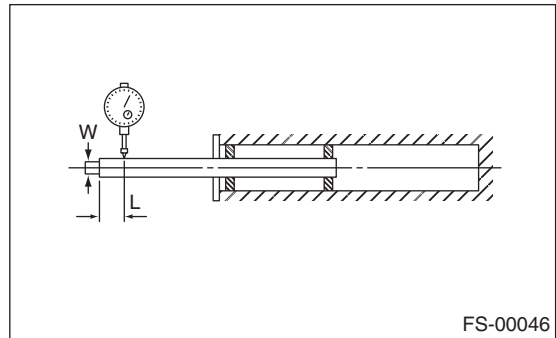
Check the removed part for wear, damage and cracks, and then repair or replace it if defective.

1. DAMPER STRUT

- 1) Check for oil leaks.
- 2) Move the piston rod up and down to check that it operates smoothly without any hitch.
- 3) Piston rod play

- Measure the play as follows:

Fix the outer shell in place and fully extend the rod. Set a dial gauge at the end of rod L [10 mm (0.39 in)], and then read the dial gauge indication P_1 while applying a force of W [20 N (2 kgf, 4 lbf)] to the threaded portion. Apply a force of 20 N (2 kgf, 4 lbf) from the opposite direction of "W", and then read the dial gauge indication P_2 .



Play limit ($P_1 + P_2$):

0.8 mm (0.031 in)

If the play exceeds limit, replace the strut.

2. STRUT MOUNT

Check the rubber part for major cracks, deformation, or deterioration, and then replace it with a new part if defective.

3. DUST COVER

If major cracks or damage are found, replace it with a new part.

4. COIL SPRING

If a permanent strain is found, replaced it with a new part. When the vehicle posture is uneven, even though that is not likely to cause troubles such as flat tires and unstable drivability, check the free length of the coil spring referring to specifications. Replace it with a new part if cracked or damaged.

5. HELPER

If major cracks or damage are found, replace it with a new part.

F: DISPOSAL

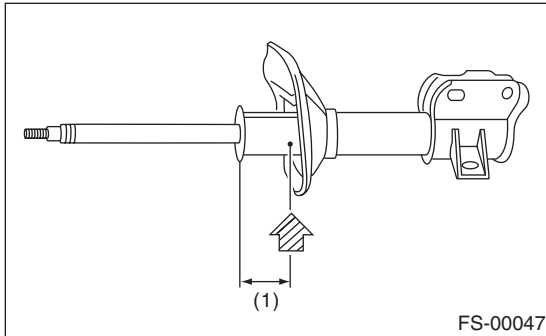
1. EXCEPT FOR STI MODEL

CAUTION:

- Before handling struts filled with gas, be sure to wear goggles to protect eyes from gas, oil and metal shavings.
- Do not disassemble the strut damper or throw into flames.
- When discarding gas filled struts, drill holes in them to purge the gas.

1) Place the gas-filled strut on a level surface with the piston rod fully expanded.

2) Using a 2 — 3 mm (0.08 — 0.12 in) dia. drill, make holes in areas shown in the figure.



(1) 40 mm (1.57 in)

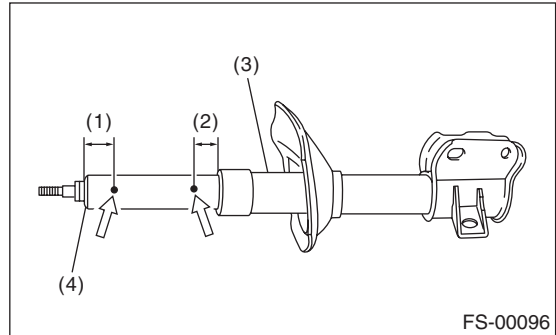
2. STI MODEL

CAUTION:

- Before handling struts filled with gas, be sure to wear goggles to protect eyes from gas, oil and metal shavings.
- Do not disassemble the strut damper or throw into flames.
- When discarding gas filled struts, drill holes in them to purge the gas.

1) Place the gas-filled strut on a level surface with the damping tube fully extended.

2) Using a 2 — 3 mm (0.08 — 0.12 in) dia. drill, make holes at (1) first, and then (2).

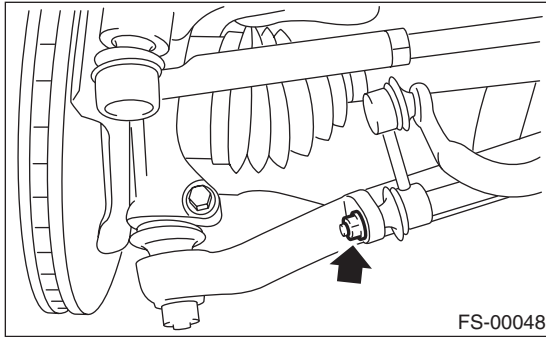


- (1) 20 mm (0.78 in)
- (2) 10 mm (0.39 in)
- (3) Strut
- (4) Damping tube

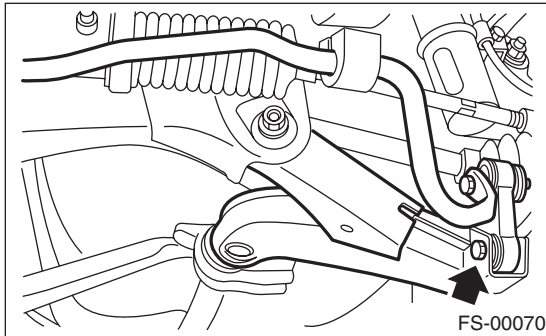
6. Front Stabilizer

A: REMOVAL

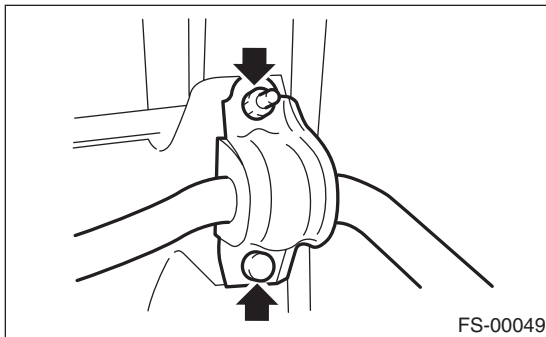
- 1) Lift up the vehicle.
 - 2) Remove the jack-up plate from lower part of the crossmember.
 - 3) Remove the sub frame.
 - 4) Remove the nuts which secure the stabilizer link to the front transverse link.
- STI model:



- Except for STI model:



- 5) Remove the bolt which secures the stabilizer to the crossmember.

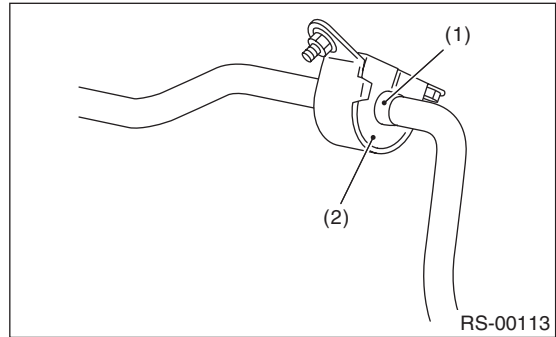


B: INSTALLATION

- 1) Install in the reverse order of removal.

NOTE:

- Install the bushing (on front crossmember side) while aligning it with the paint mark on the stabilizer.
- When installing, make sure that the bushing and stabilizer are labeled with the same identification marks (paint mark).



- (1) Paint mark of the stabilizer
- (2) Bushing identification color

- 2) Always tighten the stabilizer bushing in the state where the vehicle is at curb weight and the wheels are in full contact with the ground.

Tightening torque:

Jack-up plate to crossmember:

70 N·m (7.1 kgf-m, 52 ft-lb)

Stabilizer link to front transverse link (sedan turbo model and STI model):

45 N·m (4.6 kgf-m, 33 ft-lb)

Stabilizer link to front transverse link (except for sedan turbo model and STI model):

30 N·m (3.1 kgf-m, 22 ft-lb)

Stabilizer to crossmember:

25 N·m (2.5 kgf-m, 18.1 ft-lb)

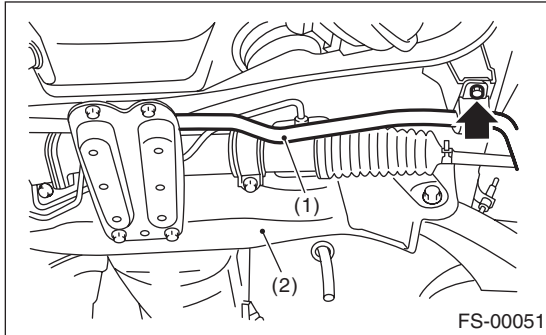
C: INSPECTION

- 1) Check the bushing for major cracks, fatigue or damage.
- 2) Make sure that the stabilizer link has no deformation, cracks or damage or that the bushing is not protruding from the hole in the stabilizer link.

7. Front Crossmember

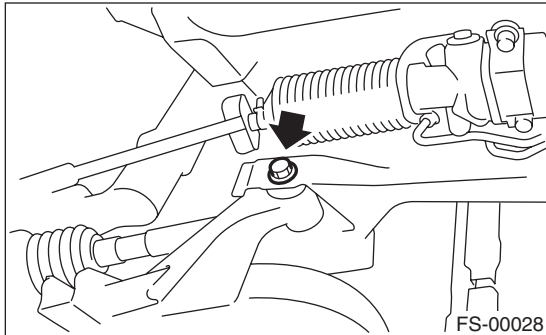
A: REMOVAL

- 1) Disconnect the ground cable from the battery.
- 2) Lift up the vehicle, and remove the front wheels.
- 3) Remove the sub frame.
- 4) Remove the stabilizer and jack-up plate.



- (1) Front stabilizer
- (2) Front crossmember

- 5) Disconnect the tie-rod end from housing.
- 6) Remove the front exhaust pipe. <Ref. to EX(H4SO)-4, REMOVAL, Front Exhaust Pipe.> <Ref. to EX(H4DOTC)-8, REMOVAL, Front Exhaust Pipe.>
- 7) Remove the front transverse link from the front crossmember and body.



- 8) Remove the bolts attaching the engine mount cushion rubber to crossmember.
- 9) Remove the steering universal joint.
- 10) Disconnect the power steering pipe from steering gearbox.
- 11) Lift the engine approx. 10 mm (0.39 in) using a chain block.
- 12) Support the crossmember with a jack, remove the nuts securing crossmember to body, and then gradually lower the crossmember with steering gearbox as a unit.

CAUTION:

When pulling the crossmember downward to remove, be careful that the tie-rod end does not interfere with SFJ boot.

B: INSTALLATION

- 1) Install in the reverse order of removal.

NOTE:

Always tighten the stabilizer bushing in the state where the vehicle is at curb weight and the wheels are in full contact with the ground.

Tightening torque:

Transverse link bushing to crossmember:
95 N·m (9.7 kgf-m, 70.1 ft-lb)

Stabilizer to bushing:
25 N·m (2.5 kgf-m, 18.1 ft-lb)

Tie-rod end to Housing:
27.0 N·m (2.75 kgf-m, 19.9 ft-lb)

Front cushion rubber to Crossmember:
85 N·m (8.7 kgf-m, 62.7 ft-lb)

Universal joint to pinion shaft:
24 N·m (2.4 kgf-m, 17.4 ft-lb)

Crossmember to body:
95 N·m (9.7 kgf-m, 70.1 ft-lb)

- 2) Purge air from the power steering system.
- 3) Inspect the wheel alignment and adjust if necessary.

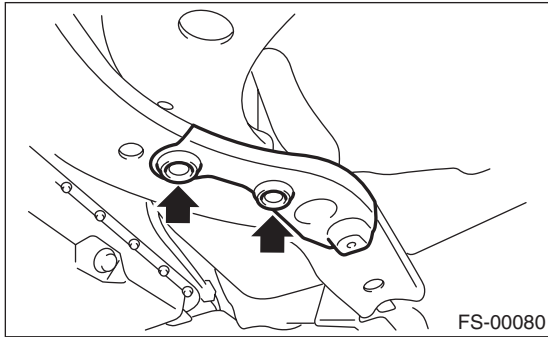
C: INSPECTION

Check the crossmember for wear, damage or cracks, and then repair or replace if faulty.

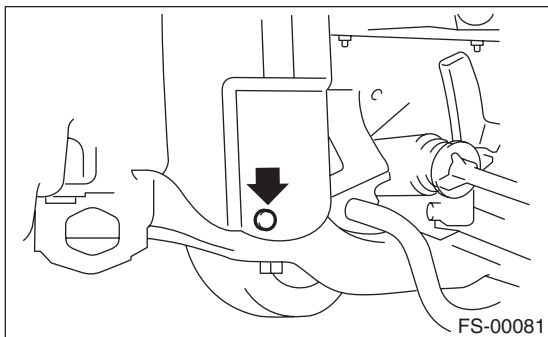
8. Sub Frame

A: REMOVAL

- 1) Lift up the vehicle.
- 2) Remove the under cover. <Ref. to EI-23, REMOVAL, Front Under Cover.>
- 3) Remove the bolt cover.



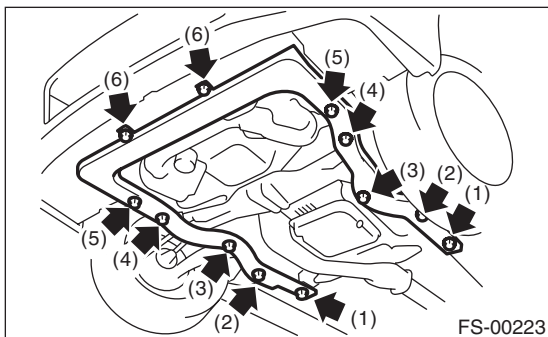
- 4) Remove the clip.



- 5) Remove the sub frame.

NOTE:

Loosen bolt (1) and leave a few threads caught, then remove the bolts in the order of (2), (3), (4), (5), and (6).



B: INSTALLATION

Install in the reverse order of removal.

NOTE:

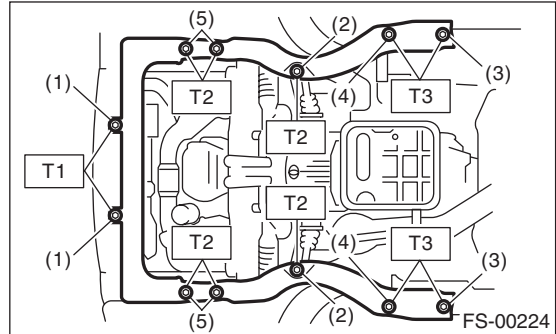
Replace with a new M12 bolt.

Tightening torque:

T1: 34 N-m (3.5 kgf-m, 25 ft-lb)

T2: 55 N-m (5.6 kgf-m, 41 ft-lb)

T3: 71 N-m (7.2 kgf-m, 52.4 ft-lb)



- (1) M8 bolt
- (2) M12 bolt (with wax)
- (3) M10 bolt
- (4) M10 bolt
- (5) M12 bolt (with wax)

C: INSPECTION

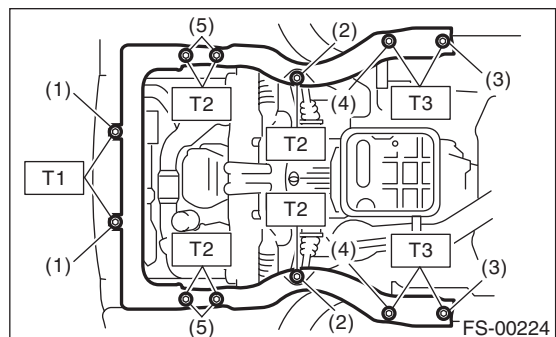
- 1) Check that there is no damage or distortion of the sub frame.
- 2) Check that the bolts are tightened with the specified torque. If there is looseness, tighten to the specified torque.

Tightening torque:

T1: 34 N-m (3.5 kgf-m, 25 ft-lb)

T2: 55 N-m (5.6 kgf-m, 41 ft-lb)

T3: 71 N-m (7.2 kgf-m, 52.4 ft-lb)



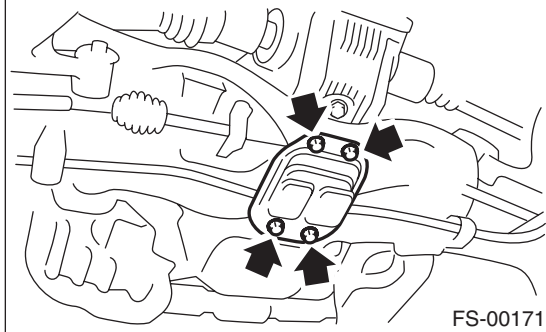
- (1) M8 bolt
- (2) M12 bolt
- (3) M10 bolt
- (4) M10 bolt
- (5) M12 bolt

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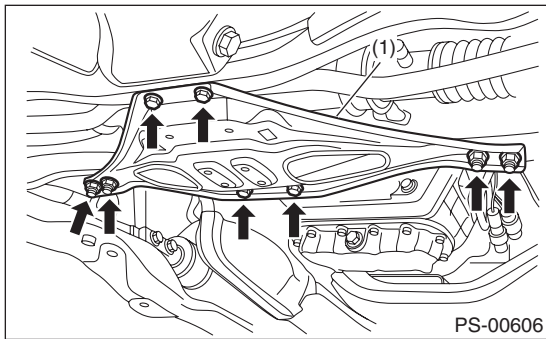
9. Jack-up Plate

A: REMOVAL

- 1) Set the vehicle on a lift.
- 2) Lift up the vehicle.
- 3) Remove the under cover. <Ref. to EI-23, REMOVAL, Front Under Cover.>
- 4) Remove the jack-up plate.
 - Non-turbo model



- Turbo model



B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

Jack-up plate to crossmember:

70 N·m (7.1 kgf-m, 52 ft-lb)

Turbo model and STI model

Tightening torque:

Both ends of jack-up plate to crossmember:

30 N·m (3.1 kgf-m, 22 ft-lb)

C: INSPECTION

Check the jack-up plate for wear, damage, or cracks, and repair or replace it if faulty.

10. General Diagnostic Table

A: INSPECTION

1. IMPROPER VEHICLE POSTURE OR IMPROPER WHEEL ARCH HEIGHT

Possible cause	Corrective action
(1) Permanent distortion or damage of the coil spring	Replace.
(2) Rough operation of damper strut or shock absorber	Replace.
(3) Improper installation of strut or shock absorber	Replace with appropriate parts.
(4) Installation of the wrong coil spring	Replace with appropriate parts.

2. POOR RIDE COMFORT

- 1) Large rebound shock
- 2) Rocking of the vehicle continues too long after running over bump and hump.
- 3) Excessive shock in bumping

Possible cause	Corrective action
(1) Damaged coil spring	Replace.
(2) Overinflation of tires	Adjust.
(3) Improper wheel arch height	Adjust or replace the coil springs with new parts.
(4) Fault in operation of damper strut or shock absorber	Replace.
(5) Major cracks or deformation of the strut mount or shock absorber mount	Replace.
(6) Unsuitable length (maximum or minimum) of damper strut or shock absorber	Replace with appropriate parts.
(7) Deformation or loss of bushing	Replace.
(8) Deformation or damage of helper in strut assembly or shock absorber	Replace.
(9) Oil leakage from the damper strut or shock absorber	Replace.

3. NOISE

Possible cause	Corrective action
(1) Wear or damage of damper strut or shock absorber component parts	Replace.
(2) Loosening of the suspension link installing bolt	Tighten to the specified torque.
(3) Deformation or loss of bushing	Replace.
(4) Unsuitable length (maximum or minimum) of damper strut or shock absorber	Replace with appropriate parts.
(5) Damaged coil spring	Replace.
(6) Wear or damage of the ball joint	Replace.
(7) Deformation of the stabilizer clamp	Replace.

General Diagnostic Table

FRONT SUSPENSION

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