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.

FUJI HEAVY INDUSTRIES LTD.

G8050GE5

REAR SUSPENSION

RS

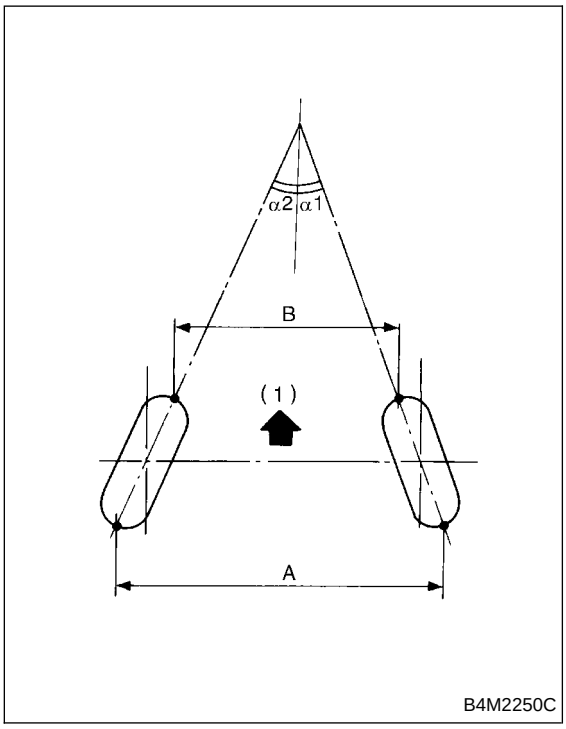
1. General Description S201001

A: SPECIFICATIONS S201001E49

Item	Non-turbo	Turbo
Camber (tolerance: ±0°45′)	−0°35′	−0°45′
Toe-in	2±3 mm (0.08±0.12 in)* Each toe-in angle: 0°06′±0°09′	
Wheel arch height [tolerance: $^{+12}/_{-24}$ mm ($^{+0.47}/_{-0.94}$ in)]	435 mm (17.13 in)	425 mm (16.73 in)
Thrust angle	0°±20′	
Diameter of stabilizer	13 mm (0.51 in)	15 mm (0.59 in)

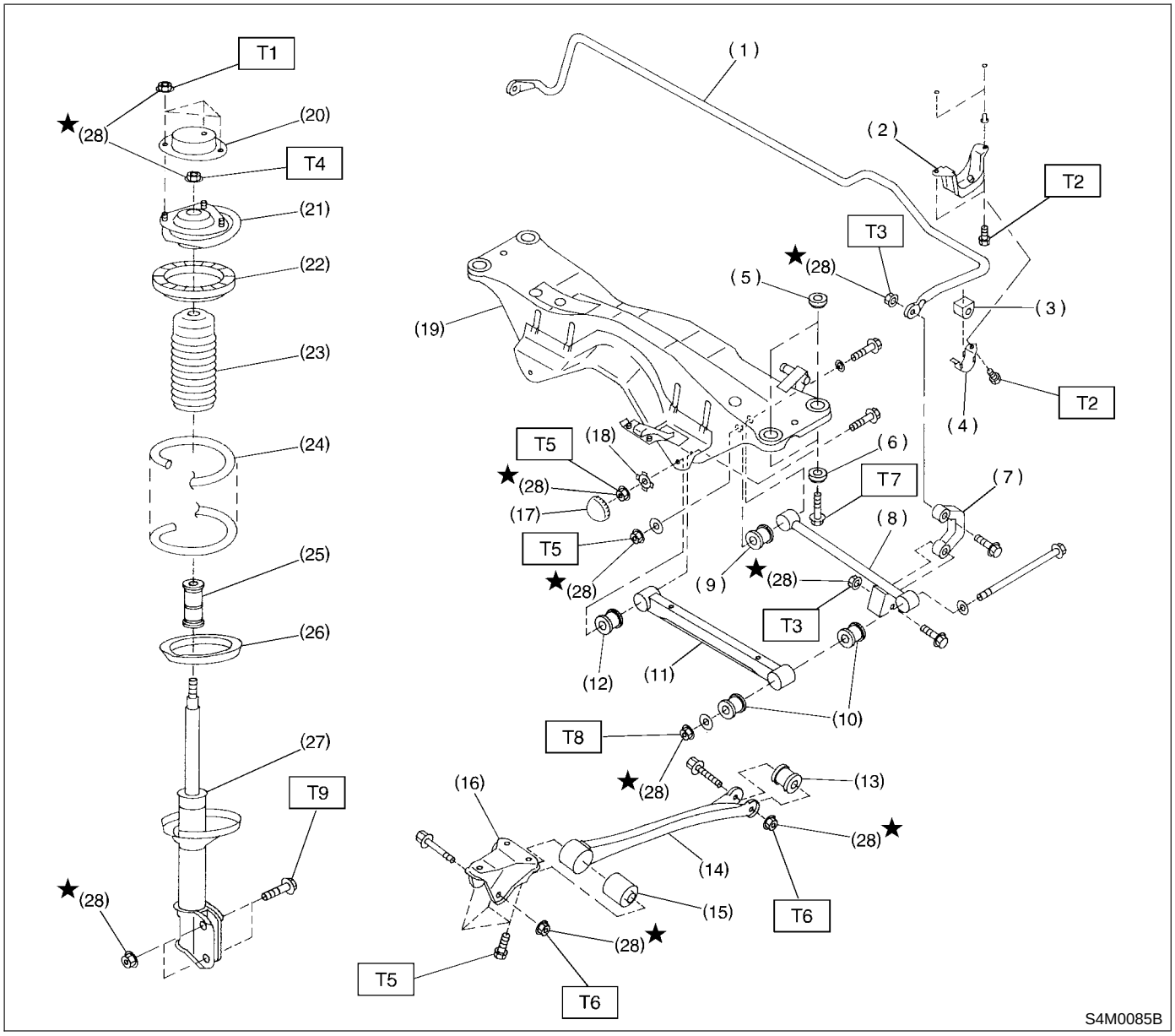
*: When performing toe-in adjustment, align as close to 2 mm (0.08 in) as possible.

NOTE:
- Front and rear toe-ins and front camber can be adjusted. If toe-in or camber tolerance exceeds specifications, adjust toe-in and camber to the middle value of specification.
- The other items indicated in the specification table cannot be adjusted. If the other items exceeds specifications, check suspension parts and connections for deformities; replace with new ones as required.



(1) Front
A − B = Positive: Toe-in, Negative: Toe-out
α1, α2: Each toe-in angle

B: COMPONENT S201001A05



(1) Stabilizer
(2) Stabilizer bracket
(3) Stabilizer bushing
(4) Clamp
(5) Floating bushing
(6) Stopper
(7) Stabilizer link
(8) Rear lateral link
(9) Bushing (C)
(10) Bushing (A)
(11) Front lateral link
(12) Bushing (B)
(13) Trailing link rear bushing
(14) Trailing link
(15) Trailing link front bushing
(16) Trailing link bracket
(17) Cap (Protection)
(18) Washer
(19) Rear crossmember
(20) Strut mount cap
(21) Strut mount
(22) Rubber seat upper
(23) Dust cover
(24) Coil spring
(25) Helper
(26) Rubber seat lower
(27) Damper strut
(28) Self-locking nut

Tightening torque: N·m (kgf-m, ft-lb)
T1: 20 (2.0, 14.5)
T2: 25 (2.5, 18.1)
T3: 45 (4.6, 33)
T4: 60 (6.1, 44)
T5: 100 (10.2, 74)
T6: 115 (11.7, 85)
T7: 130 (13.3, 96)
T8: 140 (14.3, 103)
T9: 200 (20.4, 148)

C: CAUTION S201001A03

- Wear working clothing, including a cap, protective goggles, and protective shoes during operation.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust or dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly, and replacement.
- Use SUBARU genuine grease etc. or the equivalent. Do not mix grease etc. with that of another grade or from other manufacturers.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or safety stands at the specified points.
- Apply grease onto sliding or revolution surfaces before installation.
- Before installing O-rings or snap rings, apply sufficient amount of grease to avoid damage and deformation.
- Before securing a part on a vise, place cushioning material such as wood blocks, aluminum plate, or shop cloth between the part and the vise.
- Before disposing shock absorbers, be sure to bleed gas completely. Also, do not throw away in fire.

D: PREPARATION TOOL S201001A17

1. SPECIAL TOOL S201001A1701

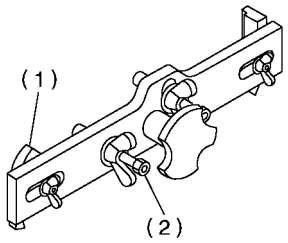
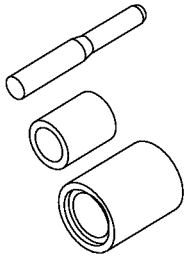
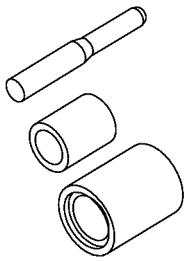
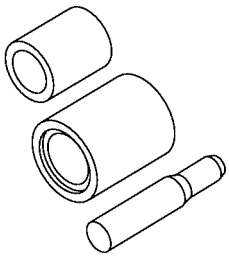
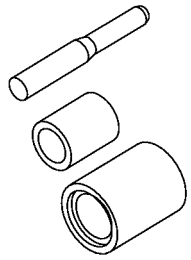
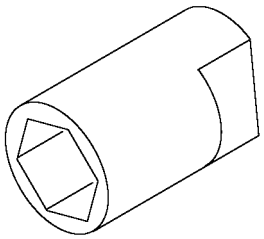
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 B4M2378A	927380002	ADAPTER	Used as an adapter for camber & caster gauge when measuring camber and caster. (1) 28199AC000 PLATE (2) 28199AC010 BOLT
 H5M0979	927690000	INSTALLER & REMOVER SET	Used for replacing lateral link bushing (12 dia.).
 H5M0979	927700000	INSTALLER & REMOVER SET	Used for replacing lateral link bushing (14 dia.).
 H5M0980	927720000	INSTALLER & REMOVER SET	Used for replacing trailing link bushing.

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 H5M0979	927730000	INSTALLER & REMOVER SET	Used for replacing rear housing bushing.
 B4M2384	927760000	STRUT MOUNT SOCKET	Used for disassembling and assembling strut mount.

2. GENERAL TOOL *S201001A1704*

TOOL NAME	REMARKS
Alignment Gauge	Used for wheel alignment measurement.
Turning Radius Gauge	Used for wheel alignment measurement.
Toe-in Gauge	Used for toe-in measurement.
Transmission Jack	Used for suspension assembly/disassembly.
Bearing Puller	Used for removing bushings.

2. Wheel Alignment S201116

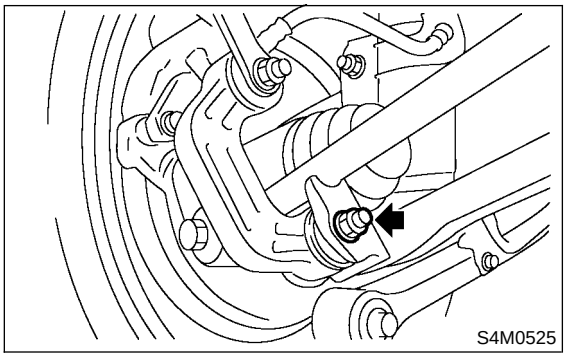
A: INSPECTION S201116A10

NOTE:
The front and rear wheel alignment must be measured and/or adjusted at once to obtain accuracy. Measure and/or adjust the rear wheel alignment together with the front. Follow the procedure in “FS” section “Wheel Alignment” for measurement and/or adjustment of wheel alignment. <Ref. FS-6, INSPECTION, Wheel Alignment.>

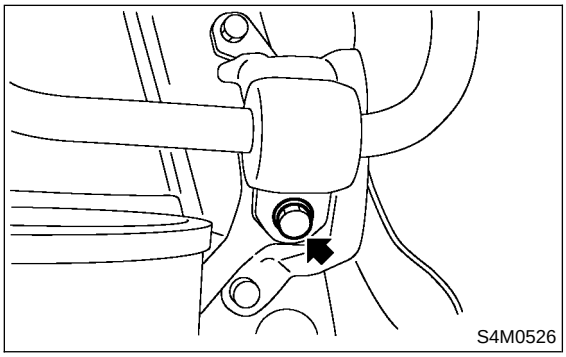
3. Rear Stabilizer S201118

A: REMOVAL S201118A18

1) Set vehicle on a lift.
2) Disconnect ground terminal from battery.
3) Jack-up the rear part of the vehicle, support it with safety stands (rigid racks).
4) Remove bolts which secure stabilizer link to rear lateral link.



5) Remove bolts which secure stabilizer to stabilizer bracket.

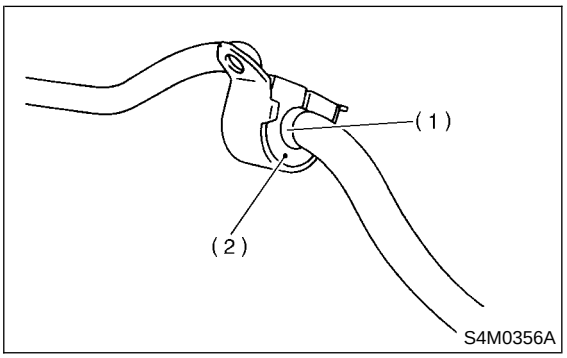


6) Separate rear stabilizer and stabilizer link.

B: INSTALLATION S201118A11

1) Install in the reverse order of removal.

NOTE:
● Install bushing while aligning it with paint mark on stabilizer.
● Ensure that bushing and stabilizer have the same identification colors when installing.



(1) Mark stamped on stabilizer
(2) Bushing identification color

2) Always tighten rubber bushing location when wheels are in full contact with the ground and vehicle is curb weight.
3) Tightening torque:

Stabilizer to stabilizer link:
45 N·m (4.6 kgf-m, 33 ft-lb)

Stabilizer link to rear lateral link:
45 N·m (4.6 kgf-m, 33 ft-lb)

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

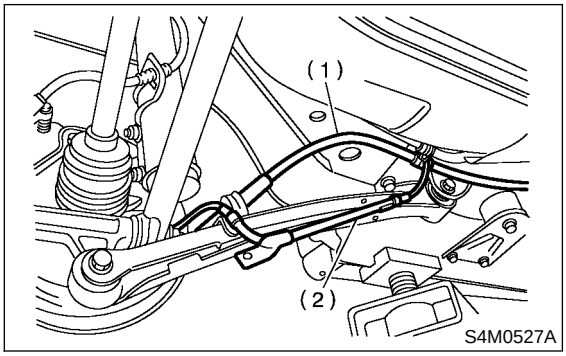
C: INSPECTION S201118A10

1) Check bushing for cracks, fatigue or damage.
2) Check stabilizer links for deformities, cracks, or damage, and bushing for protrusions from the hole of stabilizer link.

4. Rear Trailing Link S201107

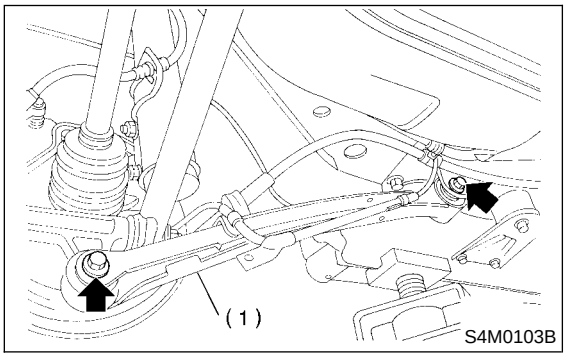
A: REMOVAL S201107A18

1) Set vehicle on a lift.
2) Disconnect ground terminal from battery.
3) Loosen rear wheel nuts.
4) Jack-up vehicle, and remove rear wheels.
5) Remove both rear parking brake clamp and ABS sensor harness. (Models equipped with ABS)



(1) Parking brake cable
(2) ABS sensor harness

6) Remove bolt which secure trailing link to trailing link bracket.



(1) Trailing link

7) Remove bolt which secure trailing link to rear housing.

B: INSTALLATION S201107A11

Install in the reverse order of removal.

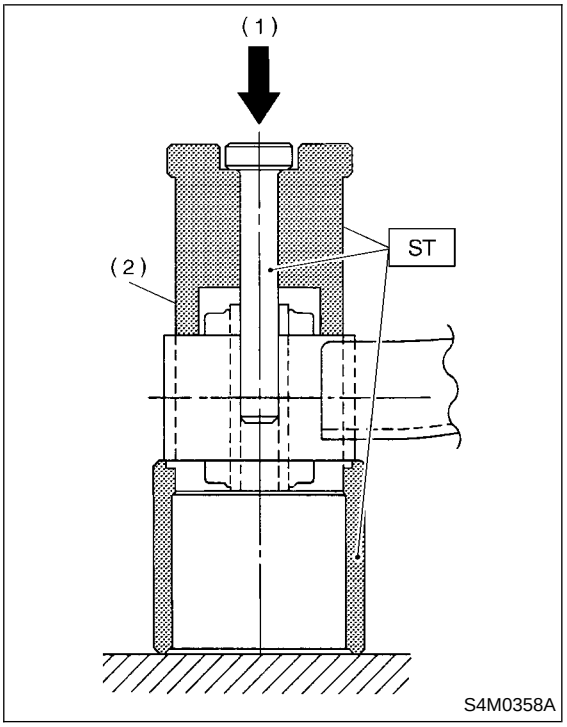
CAUTION:
Always tighten rubber bushing location when wheels are in full contact with the ground and vehicle is at curb weight condition.

NOTE:
Check wheel alignment and adjust if necessary.

C: DISASSEMBLY S201107A06

1. FRONT BUSHING S201107A0601

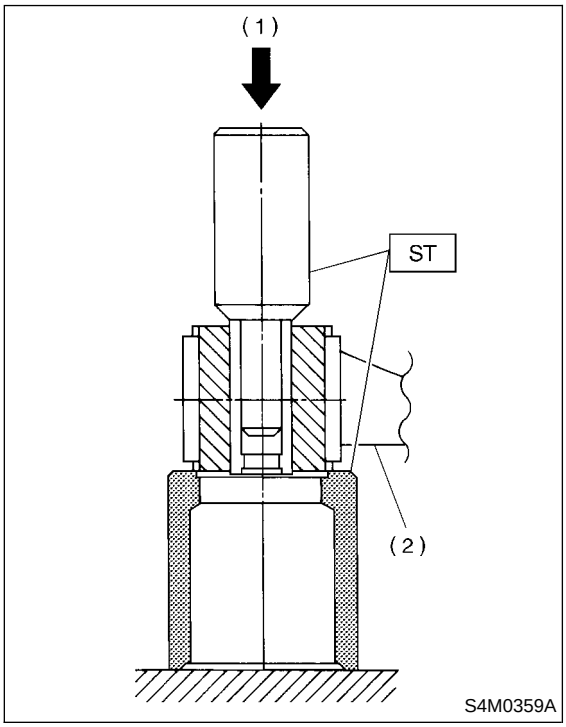
Using ST, press front bushing out of place.
ST 927720000 INSTALLER & REMOVER SET



(1) Press
(2) Trailing link

2. REAR BUSHING S201107A0602

1) Remove housing. <Ref. to DS-23, REMOVAL, Rear Axle.> for removal procedures.
2) Using ST, press rear bushing out of place.
ST 927730000 INSTALLER & REMOVER SET



(1) Press
(2) Housing

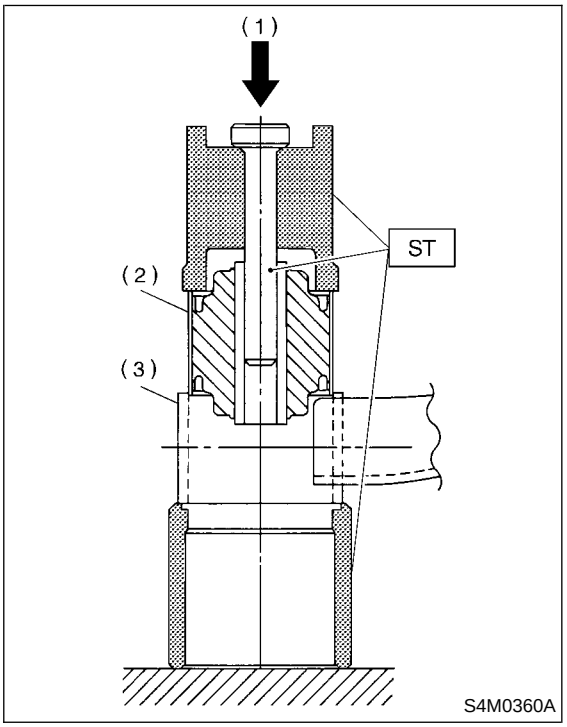
D: ASSEMBLY S201107A02

Assemble in the reverse order of disassembly.

1. FRONT BUSHING S201107A0201

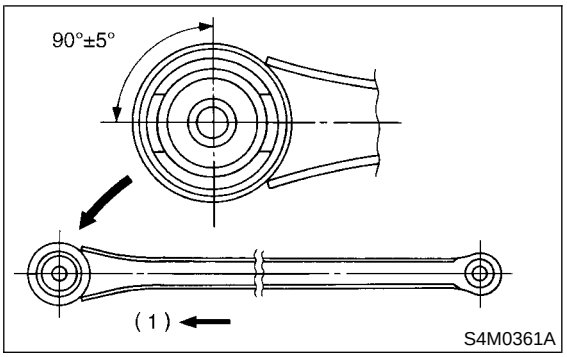
Using ST, press bushing into trailing link.
ST 927720000 INSTALLER & REMOVER SET

CAUTION:
When installing bushing, turn ST plunger upside down and press it until plunger end surface contacts trailing link end surface.



(1) Press
(2) Front bushing
(3) Trailing link

CAUTION:
Install front bushing in the proper direction, as shown in figure.



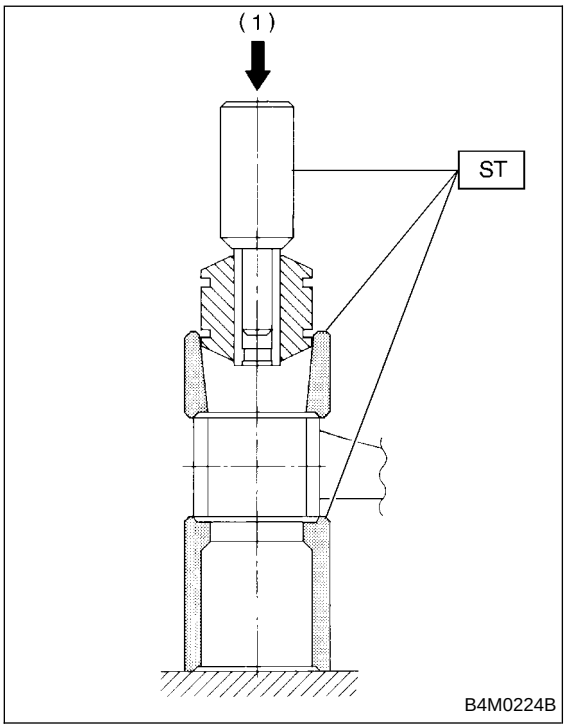
(1) Front

2. REAR BUSHING S201107A0202

1) Using ST, press bushing into trailing link.
ST 927730000 INSTALLER & REMOVER SET

NOTE:
If it is difficult to press bushing into trailing link, apply water-diluted TIRE LUBE to the inner surface of ST as a lubricant.

Specified lubricant:
TIRE LUBE : water = 1 : 3



(1) Press

2) Install housing. <Ref. to DS-26, INSTALLATION, Rear Axle.>

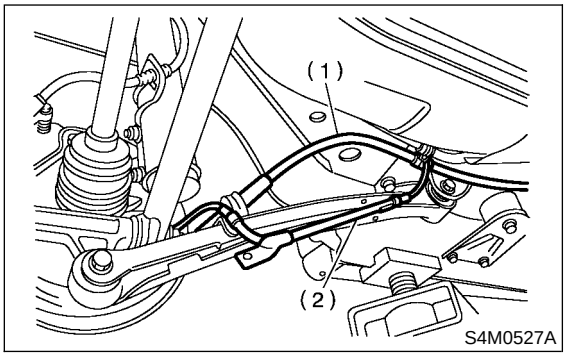
E: INSPECTION S201107A10

Check trailing links for bends, corrosion or damage.

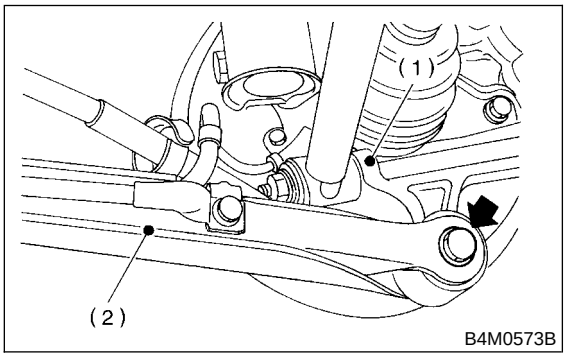
5. Lateral link S201576

A: REMOVAL S201576A18

1) Set vehicle on a lift.
2) Disconnect battery ground terminal from battery.
3) Loosen wheel nuts. Jack-up vehicle and remove wheel.
4) Remove stabilizers. <Ref. to RS-8, REMOVAL, Rear Stabilizer.>
5) Remove ABS sensor harness from trailing link. (Models equipped with ABS)



6) Remove bolt securing trailing link to housing.

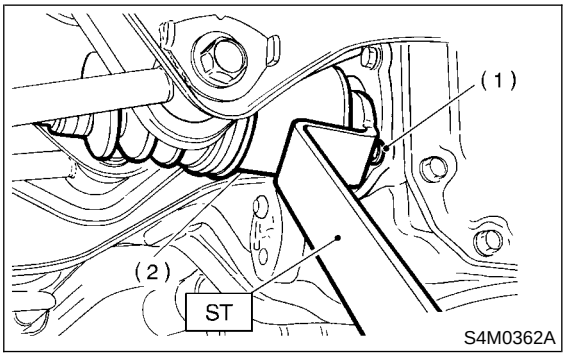


(1) Rear housing
(2) Trailing link

7) Remove bolts which secure lateral link assembly to rear housing.

8) Remove DOJ from rear differential using ST. (Except Non-TURBO AT model)
ST 28099PA100 DRIVE SHAFT REMOVER

NOTE:
The side spline shaft circlip comes out together with the shaft.

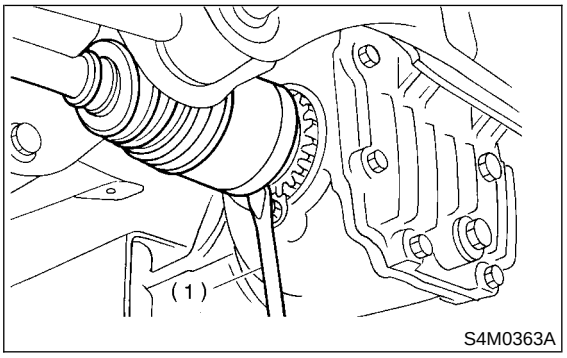


(1) Bolt
(2) DOJ

CAUTION:
Be careful not to damage side bearing retainer. Always use bolt as shown in figure, as supporting point for ST during removal.

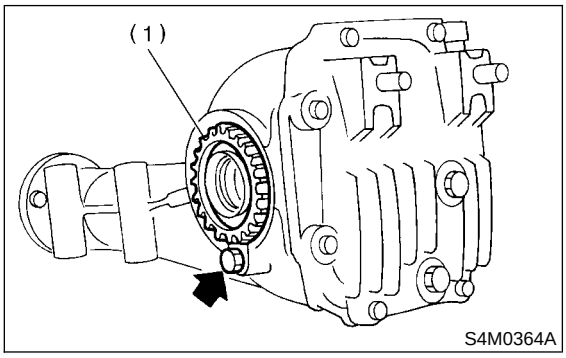
9) Remove DOJ from rear differential using tire lever. (Non-TURBO AT model)

NOTE:
The side spline shaft circlip comes out together with the shaft.



(1) Tire lever

CAUTION:
When removing the DOJ from the rear differential, fit tire lever to the bolt as shown in figure so as not to damage the axle shaft holder.



(1) Axle shaft holder

10) Scribe an alignment mark on rear lateral link adjusting bolt and crossmember.
11) Remove bolts securing front and rear lateral links to crossmember, detach lateral links.

CAUTION:
To loosen adjusting bolt, always loosen nut while holding the head of adjusting bolt.

B: INSTALLATION S201576A11

Install in the reverse order of removal, observing the following instructions.

NOTE:
Installation of DOJ to differential; <Ref. to DS-39, INSTALLATION, Rear Drive Shaft.>

CAUTION:
- **Always tighten rubber bushing when wheels are in full contact with the ground and vehicle is curb weight.**
- **Tighten nut when installing adjusting bolt.**
- **Replace self-locking nut.**

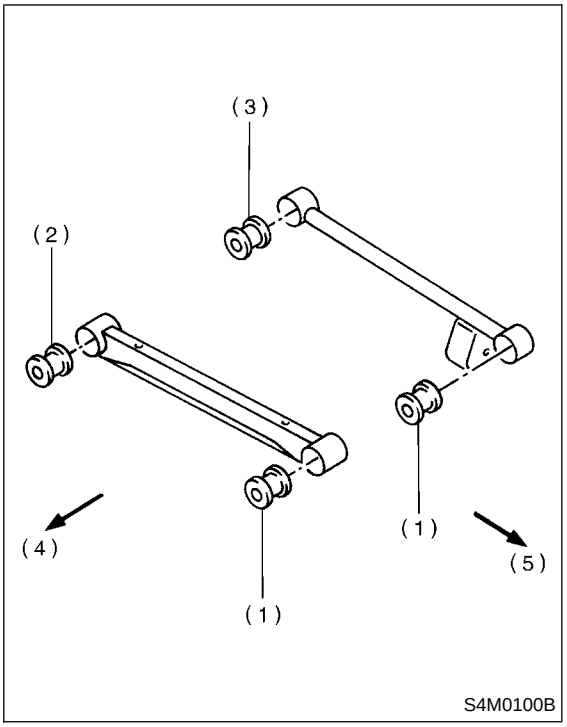
NOTE:
Check wheel alignment and adjust if necessary.

C: DISASSEMBLY S201576A06

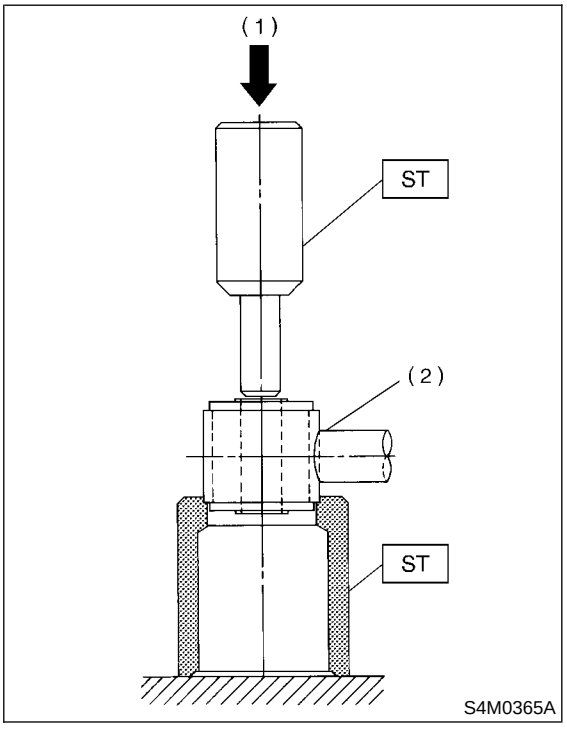
Using ST, press bushing out of place.

NOTE:
- Using the following table as a guide, verify the type of bushings.
- Select ST according to the type of bushings used.

Bushing	ST: INSTALLER & REMOVER SET
Bushing A	927700000
Bushing B	927690000
Bushing C	927700000



(1) Bushing A
(2) Bushing B
(3) Bushing C
(4) Front
(5) Outside of body



(1) Press
(2) Lateral link

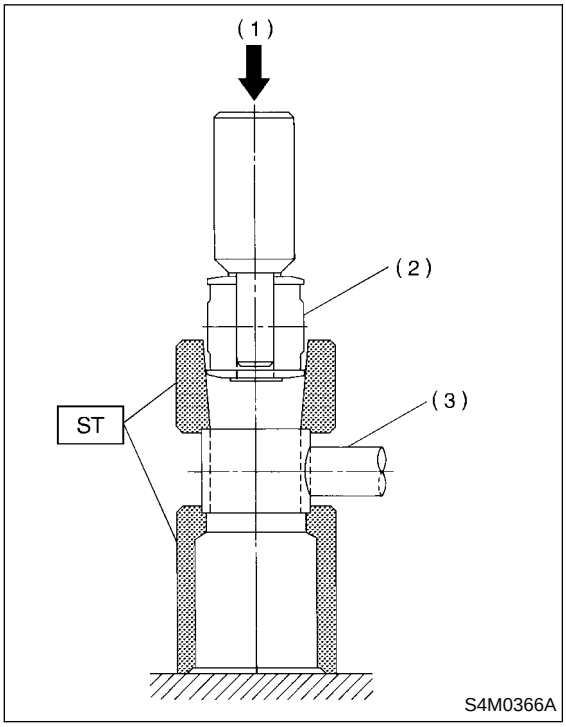
D: ASSEMBLY S201576A02

1) Using ST, press bushing into place.

CAUTION:
Select ST according to the type of bushings used.

NOTE:
● Use the same ST as that used during disassembly.
● If it is difficult to press bushing into trailing link, apply water-diluted TIRE LUBE to the inner surface of ST as a lubricant.

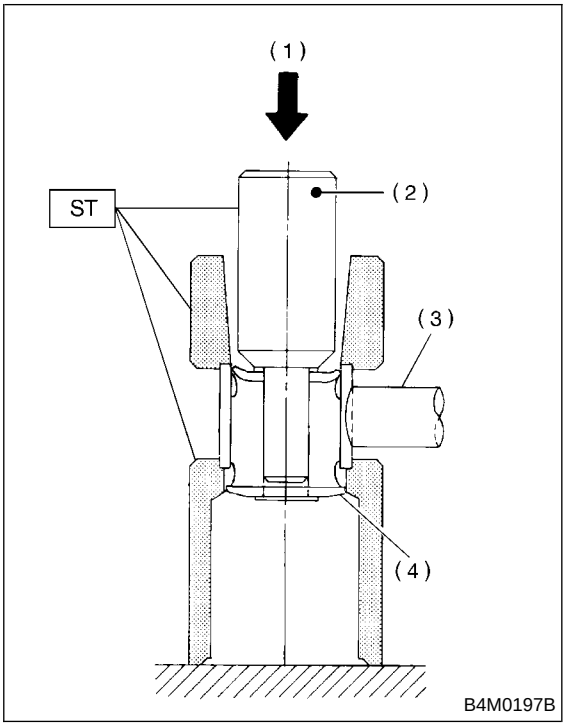
Specified lubricant:
TIRE LUBE : water = 1 : 3



(1) Press
(2) Bushing
(3) Lateral link

2) Press ST plunger until bushing flange protrudes beyond lateral link.

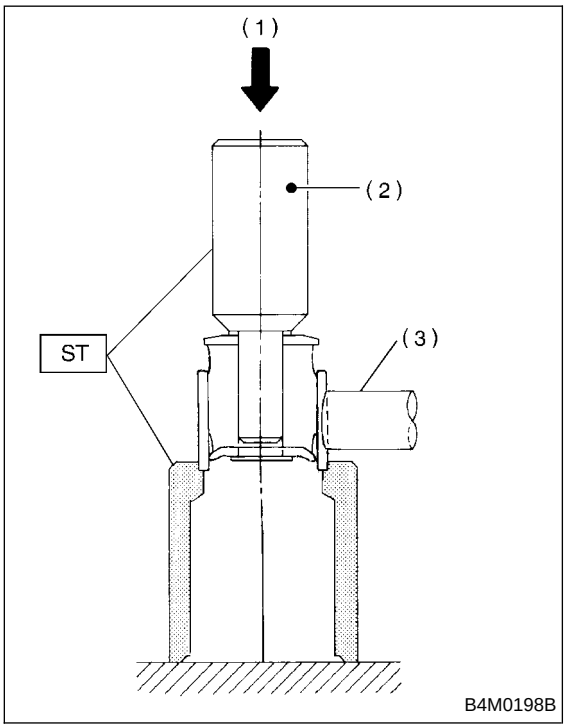
NOTE:
Use the same ST as that used during disassembly.



(1) Press
(2) Plunger
(3) Lateral link
(4) Flange

3) Turn lateral link upside down. Press ST plunger in the direction opposite that outlined in the former procedure until bushing is correctly positioned in trailing link.

NOTE:
Use the same ST as that used during disassembly.



(1) Press
(2) Plunger
(3) Lateral link

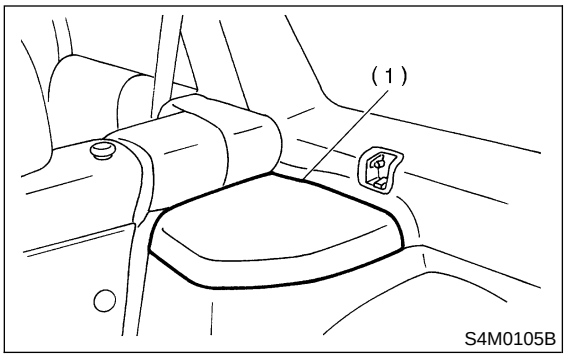
E: INSPECTION S201576A10

Visually check lateral links for damage or bends.

6. Rear Strut S201132

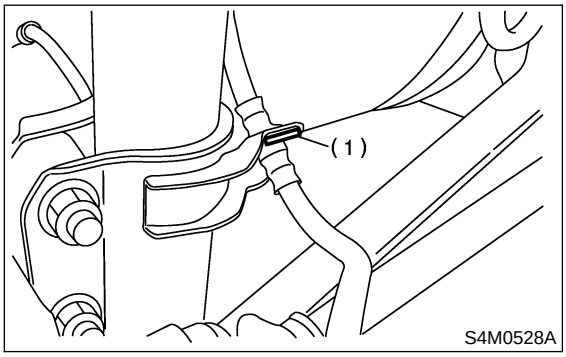
A: REMOVAL S201132A18

1) Set vehicle on a lift.
2) Disconnect ground terminal from battery.
3) Depress brake pedal and secure it in that position using a wooden block, etc.
4) Remove strut cap of rear quarter trim.



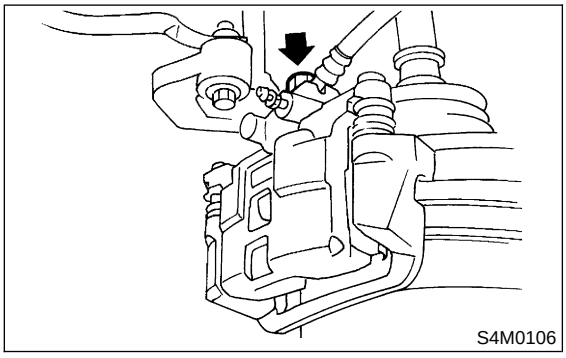
(1) Strut cap

5) Loosen rear wheel nuts.
6) Jack-up vehicle, and remove rear wheels.
7) Remove brake hose clip.



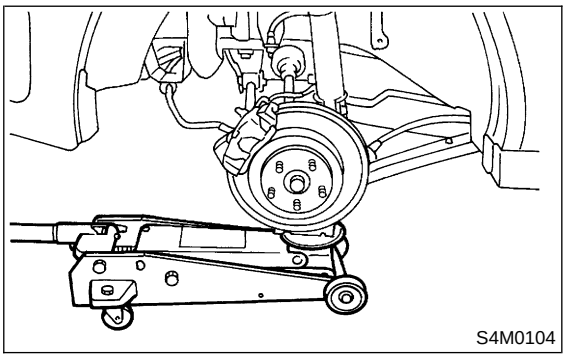
(1) Clip

8) Models equipped with rear disc brakes:
Remove union bolt from brake caliper.

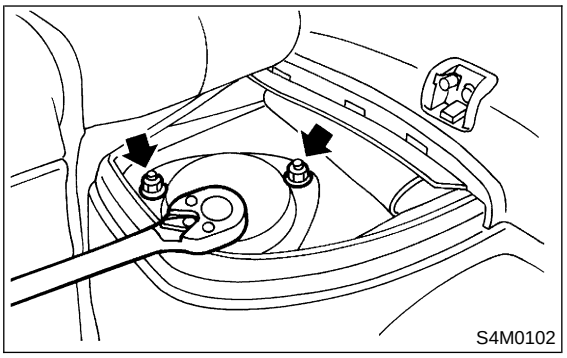


9) Models equipped with rear drum brakes:
Disconnect brake hose and brake pipe from strut, and disconnect brake pipe from drum brake.

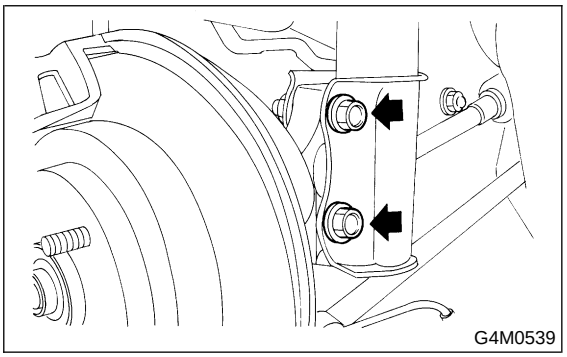
10) Use a garage jack to support the rear housing.



11) Remove nuts securing strut mount to body.



12) Remove bolts which secure rear strut to housing.



13) Remove strut mount.

B: INSTALLATION S201132A11

1) Install strut mount cap.
2) Tighten self-locking nut used to secure strut mount to vehicle body.

CAUTION:
Use a new self-locking nut.

NOTE:
Tighten strut mount and cap as a unit.

Tightening torque:
20 N·m (2.0 kgf-m, 14.5 ft-lb)

3) Tighten bolts securing rear strut to housing.

Tightening torque:
200 N·m (20.4 kgf-m, 148 ft-lb)

CAUTION:
Use a new self-locking nut.

4) Models with rear disc brakes:
Tighten brake hose union bolt on brake caliper.

Tightening torque:
18 N·m (1.8 kgf-m, 13.0 ft-lb)

Models with rear drum brakes:
Connect brake hose to brake pipe.

Tightening torque:
15 N·m (1.5 kgf-m, 10.8 ft-lb)

5) Insert brake hose clip between brake hose and lower side of strut.

CAUTION:
● Check that hose clip is positioned properly.
● Check brake hose for twisting, or excessive tension.
● Models equipped with ABS:
Do not subject ABS sensor harness to excessive tension.

6) Be sure to bleed air from brake system.
7) Lower vehicle and tighten wheel nut.

Tightening torque:
88 N·m (9 kgf-m, 65 ft-lb)

8) Install strut cap of rear quarter trim.

NOTE:
Check wheel alignment and adjust if necessary.

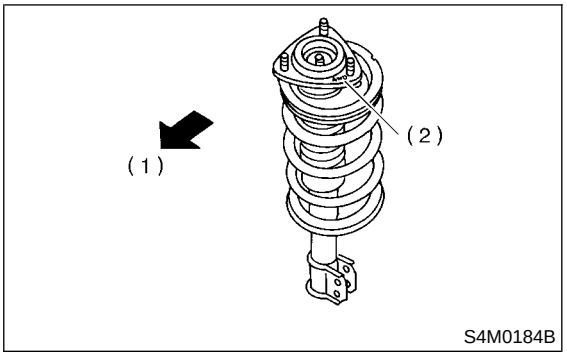
C: DISASSEMBLY S201132A06

For disassembly of rear strut, refer to procedures outlined under front strut as a guide. <Ref. to FS-19, DISASSEMBLY, Front Strut.>

D: ASSEMBLY S201132A02

Refer to Front Strut as a guide for assembly procedures. <Ref. to FS-20, ASSEMBLY, Front Strut.>

CAUTION:
● Install rear strut with “4WD” mark on strut mount facing outside of vehicle body.
● Insert the protrusion of lower rubber seat into the strut spring seat hole.



(1) Front of vehicle
(2) “4WD” mark

E: INSPECTION S201132A10

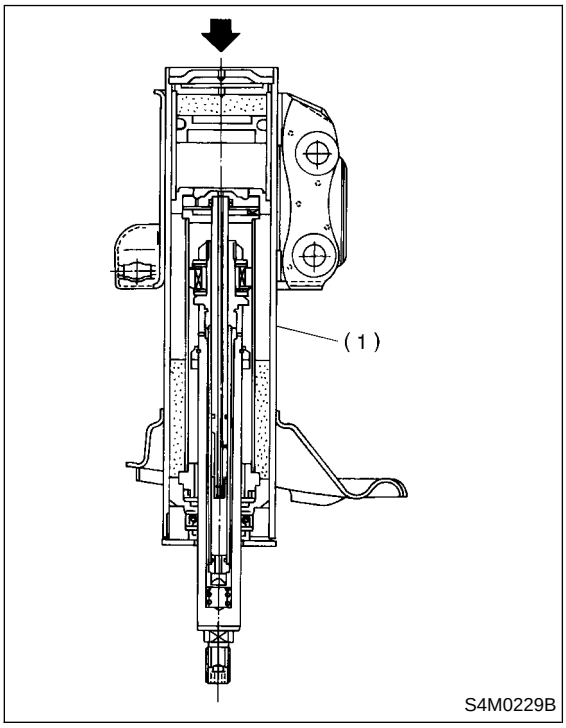
1) Refer to Front Strut as a guide for inspection procedures. <Ref. to FS-21, INSPECTION, Front Strut.>
2) For models equipped with self leveling struts: Inspect the following.

No.	Step	Check	Yes	No
1	**CHECK WHEEL ARCH HEIGHT.** 1) Remove all cargo from the vehicle. 2) Fill gasoline tank completely. 3) Drive vehicle (only the driver aboard) for at least 1 km (0.6 mile). 4) Measure the rear wheel arch height. This is value “A” in the equation. <Ref. to FS-6, Wheel Alignment.> 5) Put 4 people in the vehicle. NOTE: The total weight of the 4 people should be approximately 300 kg (662 lb). 6) Drive the vehicle for at least 5 km (3 miles). 7) Stop the vehicle. With the 4 people in the vehicle, measure the rear wheel arch height. This value is “B” in the equation. 8) A − B = C	Is C less than 30 mm (1.18 in)?	Go to step **2**.	Replace damper strut.
2	**CHECK WHEEL ARCH HEIGHT.** 1) Let the 4 people get off of the vehicle. 2) Drive the vehicle (only the driver aboard) for at least 1 km (0.6 mile). 3) Measure the rear wheel arch height. This is value “D” in the equation. 4) A − D = E	Is E less than ±10 mm (0.39 in)?	Go to step **3**.	Replace damper strut.
3	**CHECK VEHICLE.**	Is it a non-turbo vehicle?	Go to step **4**.	Go to step **5**.
4	**CHECK WHEEL ARCH HEIGHT.**	Is E less than 435^{+12}_{-24} mm ($17.13^{+0.47}_{-0.94}$ in)?	Correct.	Replace coil spring.
5	**CHECK WHEEL ARCH HEIGHT.**	Is E less than 425^{+12}_{-24} mm ($16.73^{+0.47}_{-0.94}$ in)?	Correct.	Replace coil spring.

F: DISPOSAL S201132A07

CAUTION:
● Completely discharge the gas from the green-painted struts on outer housings, before disposal. Follow the disposal procedure outlined below.
● Do not disassemble strut damper or place into a fire.
● Drill holes before disposing of self leveling struts.
● Before handling self leveling struts, be sure to wear goggles to protect eyes from gas, oil and/or filings.

1) Place self leveling strut upside-down (the opposite of its installation position on the vehicle) on a flat surface.
2) Using a 2 to 3 mm (0.08 to 0.12 in) dia. drill, drill 30 mm (1.18 in) deep holes in areas shown in the figure.



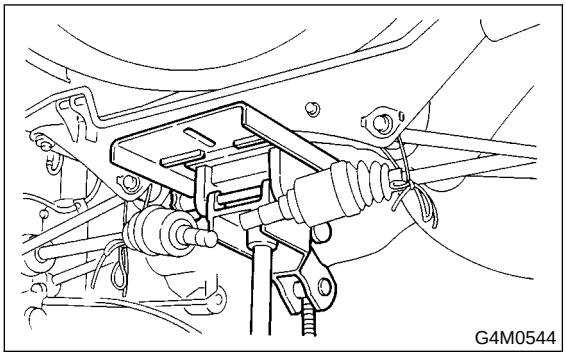
(1) Self leveling strut

7. Rear Crossmember S201133

A: REMOVAL S201133A18

CAUTION:
Do not subject ABS sensor harness to excessive tension. (Models equipped with ABS)

1) Set vehicle on a lift.
2) Disconnect ground terminal from battery.
3) Loosen wheel nuts. Jack-up vehicle and remove wheels.
4) Separate front exhaust pipe and rear exhaust pipe. (Non-turbo model)
5) Separate center exhaust pipe (rear) and rear exhaust pipe. (Turbo model)
6) Remove rear exhaust pipe and muffler.
7) Remove rear differential.
T-Type: <Ref. to DI-25, Rear Differential for T-type.>
VA-Type: <Ref. to DI-42, Rear Differential for VA-type.>
8) Place transmission jack under rear crossmember.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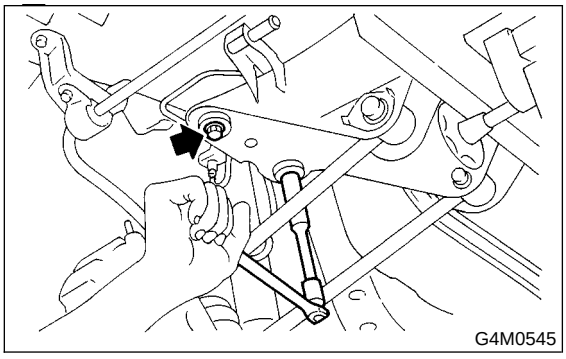
9) Remove bolts securing crossmember to vehicle body, and remove crossmember.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10) Scribe an alignment mark on rear lateral link cam bolt and crossmember.
11) Remove front and rear lateral links by loosening nuts.

B: INSTALLATION S201133A11

1) Install in the reverse order of removal.
2) For installation and tightening torque of rear differential, always tighten rubber bushing when wheels are in full contact with the ground and vehicle is curb weight.

NOTE:
Check wheel alignment and adjust if necessary.

C: INSPECTION S201133A10

Check removed parts for wear, damage and cracks, and correct or replace if defective.

8. General Diagnostic Table S201257

A: INSPECTION S201257A10

1. IMPROPER VEHICLE POSTURE OR IMPROPER WHEEL ARCH HEIGHT S201257A1001

Possible causes	Countermeasures
(1) Permanent distortion or breakage of coil spring	Replace.
(2) Unsmooth operation of damper strut	Replace.
(3) Installation of wrong strut	Replace with proper parts.
(4) Installation of wrong coil spring	Replace with proper parts.

2. POOR RIDE COMFORT S201257A1002

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

Possible causes	Countermeasures
(1) Breakage of coil spring	Replace.
(2) Overinflation pressure of tire	Adjust.
(3) Improper wheel arch height	Adjust or replace coil springs with new ones.
(4) Fault in operation of damper strut	Replace.
(5) Damage or deformation of strut mount	Replace.
(6) Unsuitability of maximum and/or minimum length of damper strut	Replace with proper parts.
(7) Deformation or loss of bushing	Replace.
(8) Deformation or damage of helper in strut assembly	Replace.
(9) Oil leakage of damper strut	Replace.

3. NOISE S201257A1003

Possible causes	Countermeasures
(1) Wear or damage of damper strut component parts	Replace.
(2) Loosening of suspension link installing bolt	Retighten to the specified torque.
(3) Deformation or loss of bushing	Replace.
(4) Unsuitability of maximum and/or minimum length of damper strut	Replace with proper parts.
(5) Breakage of coil spring	Replace.
(6) Wear or damage of ball joint	Replace.
(7) Deformation of stabilizer clamp	Replace.

MEMO: