SUBARU®

GD-TT1
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SAMBAR

Maintenance Manual

Volume 2

SUBARU Co., Ltd.

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'99.2

G7342A

Preface

This book is the first volume of the **SAMBAR** maintenance manual, and provides an overview and explanations of maintenance procedures for the engine and power transmission systems.

Please read this volume carefully together with the second volume and use it as a reference for carrying out accurate and prompt maintenance for your vehicle.

In addition to this book, we have published the following materials, which we hope you will also make use of:

SAMBAR New Car Manual	'99-2	U7341A
SAMBAR Mantenance Manual Vol 2	'99-2	G7342A
SAMBAR Electrical wiring diagram collection	'99-2	X7341A
SAMBAR Troubleshooting & diagnosis	'99-2	P7341A

Please note that the contents of this manual are based on vehicles released in February 1999. Please note that the contents may not match future vehicles due to changes in vehicle specifications, etc.

If there are any changes to the specifications in the future, we will notify you via technical information or other means.

February 1999

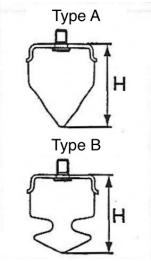
Table of Contents

Fuji Heavy Industries Co., Ltd.

4 Chassis

4 - 1 Suspension

■ Specifications

Item					Vehicle Type: Truck 2WD NA	Truck 2WD SC	Truck 4WD NA	Truck 4WD SC	Panel Van 2WD NA	Panel Van 2WD SC	Panel Van 4WD NA	Van 2WD NA	Van 4WD NA	Dias 2WD NA	Dias 2WD SC	Dias 4WD NA	Dias 4WD SC	Remarks
Suspension Specifications	Front	Spring	Spring Constant N/mm [kg/mm]		40 (4.1)		43 (4.4)							43 (4.4)	27 (2.8)	43 (4.4)	27 (2.8)	
		Strut	Damping Force N [kg] Elongation/ Contraction	0.3 m/s	1600/400 (163/41)													
		Stabilizer	Type/Style		————————									—	Torsion Bar Type	—	Torsion Bar Type	
			Outer Diameter (mm)		————————									—	ø20	—	ø20	
	Rear	Spring Coil	Spring Constant N/mm [kg/mm]		61 (6.2)									61 (6.2)	45 (4.6)	61 (6.2)	45 (4.6)	Type A  Type B
		Shock Absorber	Damping Force N[kg] Elongation/ Contraction	0.3 m/s	1200/450 (122/46)													
		Helper Spring	Height (mm)		70							65.5						
			Type/Shape		Type A							Type B						
Alignment	Front		Camber (deg)		0° ± 45’													Left-Right Difference within 45’
			Caster (deg)		(5°05’)							(5°30’)						
			Toe-In (mm)		0° ± 3													
			Side Slip (mm/m)		0° ± 4													
		Ground Clearance (mm)	12” Bias (5.00-12)		$331\frac{+12}{-24}$				$329\frac{+12}{-24}$			$329\frac{+12}{-24}$		—————				Left-Right Difference within 10mm
			12” Radial (145R12)		$316\frac{+12}{-24}$				$315\frac{+12}{-24}$			$315\frac{+12}{-24}$		$314\frac{+12}{-24}$				
			12” Radial (155/80R12)		—————				—————			—————		$319\frac{+12}{-24}$				
	Rear		Camber (deg)		0°50’ ± 45’							0°50’ $\frac{45'}{-60'}$						Left-Right Difference within 45’
			Toe-In (mm)		0 ± 3													
			Side Slip (mm/m)		(0 ± 5)													
		Ground Clearance (mm)	12” Bias (5.00-12)		$299\frac{+12}{-24}$				$296\frac{+12}{-24}$			$291\frac{+12}{-24}$		—————				Left-Right Difference within 10mm
			12” Radial (145R12)		$284\frac{+12}{-24}$				$282\frac{+12}{-24}$			$277\frac{+12}{-24}$		$276\frac{+12}{-24}$				
			12” Radial (155/80R12)		—————				—————			—————		$281\frac{+12}{-24}$				

■ Maintenance Preparations

Classification	Tool Number	Name	Purpose
ST	922640000	Camber gauge adapter	Camber angle and caster angle inspection
	926110000	Coil spring compressor	Disassembly and assembly of struts
	28099PA100	Drive shaft remover	Remove drive shaft
Instruments	—	Camber/caster gauge	Camber angle and caster angle inspection
	—	Side slip tester	Side slip measurement
	—	Turning radius gauge	Steering angle Measurement
	—	Toe-in gauge	Toe-in measurement
Grease, Oils, & Other	—	NOK SEALUB S4 Grease	Grease for O Rings

On-board Inspection

(1) Ground clearance

<Preparation Before Inspection>

1. Fill the fuel tank and remove the spare tire, tools, jack, etc. to empty the vehicle.
2. Check and adjust tire pressure.
3. Release the handbrake and shift into neutral [N].
4. Turn the steering wheel to a straight ahead position.
5. Push the vehicle forward and backward 2 to 3 meters while rocking it up and down.

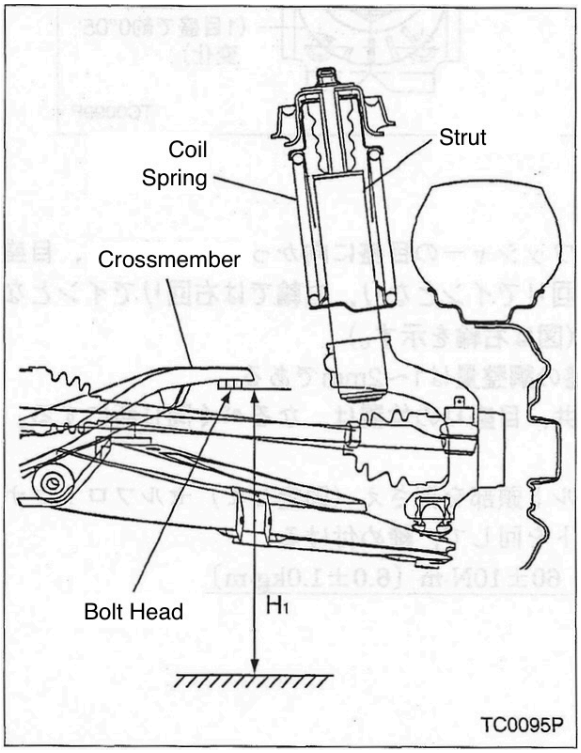
<Inspection>

1. Front side
   - Measure the height (H1) from the underside of the front suspension member mounting bolt head to the tire contact surface (ground).

Standard Value (H_1) (mm)

Type / Tire	Truck	Panel Van	Van	Dias
12” Bias (5.00-12)	331	329	329	—
12" Radial (145R12)	316	315	315	314
12” Radial (155/80R12)	—	—	—	319

Left-right difference within 10mm

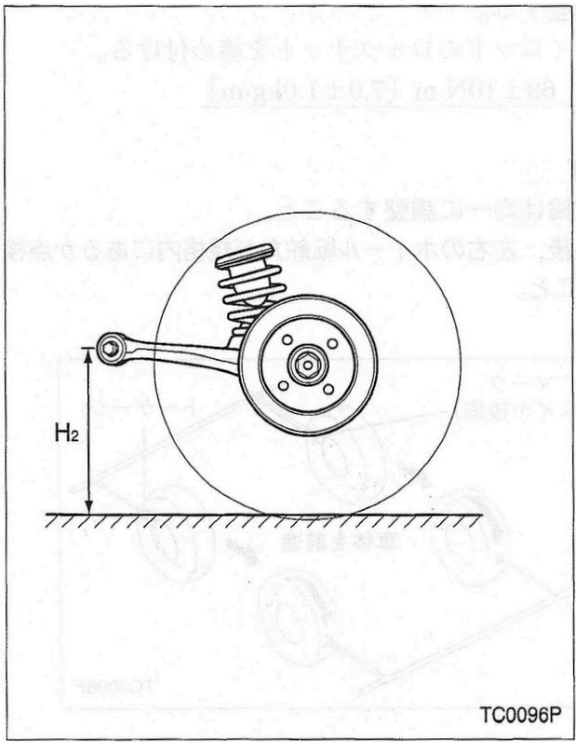


2. Rear side
   - Measure the height (H_2) from the center of the head of the mounting bolt on the outside of the trailing arm (tire side) to the tire contact surface (ground).

Standard value (H_2) (mm)

Type / Tire	Truck	Panel Van	Van	Dias
12” Bias (5.00-12)	299	296	291	—
12" Radial (145R12)	284	282	277	276
12” Radial (155/80R12)	—	—	—	281

Left-right difference within 10mm



REFERENCE

- Wheel alignment inspection is performed in the following order: ground clearance → camber angle → toe-in → caster angle → thrust angle → wheel steering angle → side slip.

(2) Check and Adjust Front Toe-In

<Inspection>

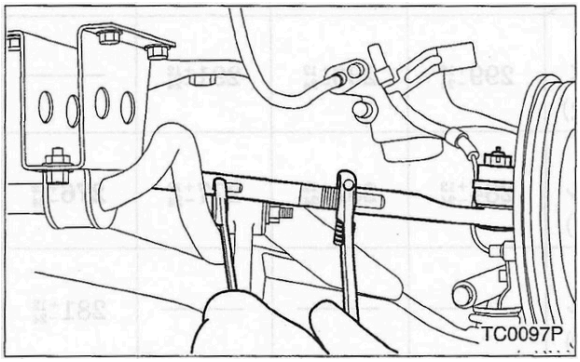
Check the toe using a toe-in gauge.

Toe-in	0 ± 3 mm

(When vehicle is vacant)

<Adjustment>

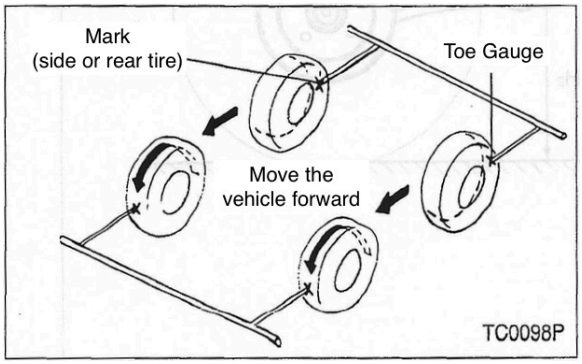
1. Loosen the tie rod lock nut.



2. Turn the tie rod to adjust the toe to the standard value.
3. Tighten the tie rod lock nuts.
   T 69 ± 10 N•m [7.0 ± 1.0 kg•m]

NOTE

- Adjust the left and right wheels evenly.
- After adjustment, check that the left and right wheel turning angles are within specifications.



<Inspection guidelines>

Toe-in should be checked using a four-wheel alignment tester or by the following method.

1. Check the tire pressure.
2. Release the handbrake.
3. While shaking the vehicle, move it forward approximately 1 m to remove any slack from the bushings.
4. Place a mark on the center of the tire at the center height of the wheel axle (the mark should be placed on the rear side of the tire).
5. Align the toe gauge with the mark.
6. Move the vehicle forward and rotate the tires 180 degrees.

NOTE

- Always turn the tires in the forward direction.

7. Align the toe gauge with the mark and measure the toe.

(3) Check and Adjust Rear Toe-In

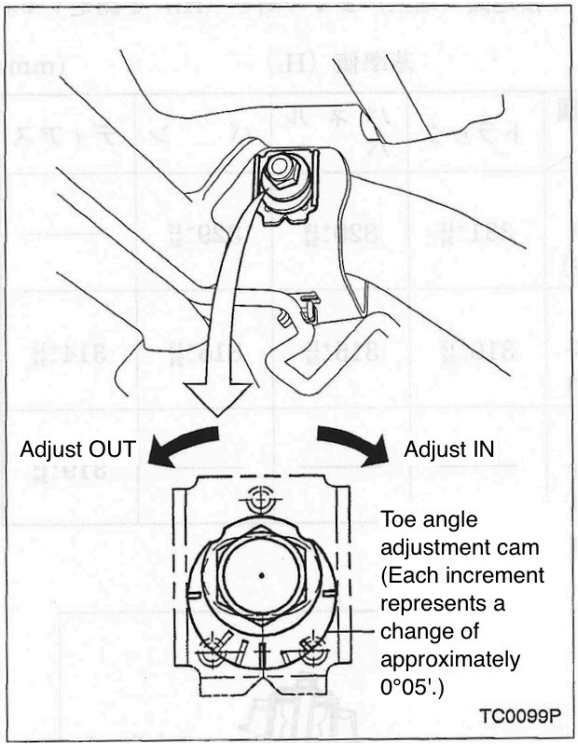
<Inspection>

Toe-in	0 ± 3 mm

(When vehicle is vacant)

<Adjustment>

1. Loosen the nut on the mounting part (cam washer part) on the inner side of the trailing arm.
2. Turn the bolt head on the other side to adjust the toe to the reference value.



NOTE

- Facing the cam washer scale, on the left wheel, the scale is in when turned counterclockwise, and on the right wheel, the scale is in when turned clockwise. (The illustration shows the right wheel.)
- The adjustment amount per scale is 1 to 2 mm.
- The scale positions on both wheels should be in the same place as much as possible.

3. Hold the bolt head (fix it) and turn the self-locking nut to tighten it.
   T 60 ± 10 N•m [6.0 ± 1.0 kg•m]

(4) Check and Adjust Camber and Caster

<Inspection>

1. Place the vehicle on a level surface.
2. Check the tire pressure.
3. Turn the steering wheel to a straight ahead position.
4. When inspecting caster, place the turning radius gauge under the tire.

NOTE

- The tire should be in a straight line and in the center of the gauge.
- Place the rear wheel on a stand that is the same height as the turning radius gauge and align the tire's contact height.

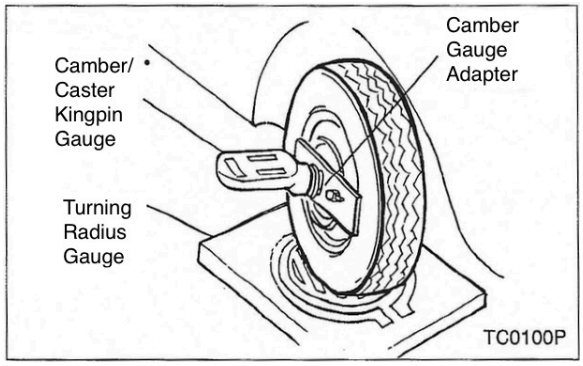
5. Attach the special tool, the camber gauge adapter, to the wheel, then set the camber, caster, and kingpin gauges and check the camber and caster angles.

922640000 Camber Gauge Adapter

Standard Value

Classification	Car Model	Front	Rear
Camber Angle (deg)	Truck & Panel Van	0°±45'	0°50'±45'
	Van & Dias	0°±45'	0°50' $^{+45'}_{-60'}$
Caster Angle (deg)	Truck & Panel Van	5°±05'	—
	Van & Dias	5°30'	—

Camber angle difference between left and right: within 45'



6. If the camber angle or caster angle is outside the standard values, inspect the body suspension mounting parts, cross members, front arm assemblies, trailing arms, and other related parts, and if any deformation or damage is found, repair or replace the relevant parts.

(5) Inspection and Adjustment of Thrust Angle

<Inspection>

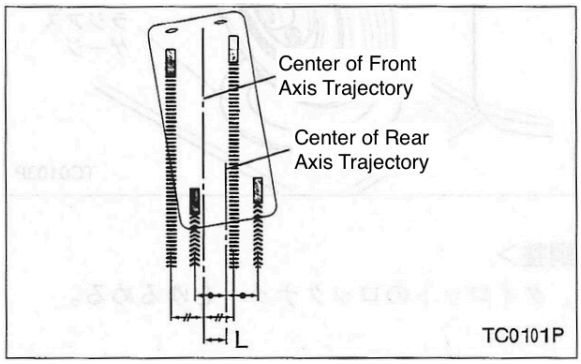
Thrust Angle Standard Value	±30° or less

If the thrust angle cannot be measured directly, calculate it using the following method.

1. Park your car on a flat surface.
2. Move straight for 3~4 meters.
3. Draw the center of the trajectory for each of the front and rear axles.
4. Measure the difference (L) between the center of the front axle and the center of the rear axle.

REFERENCE

- When L ≤ 16mm, the thrust angle is 30° or less.

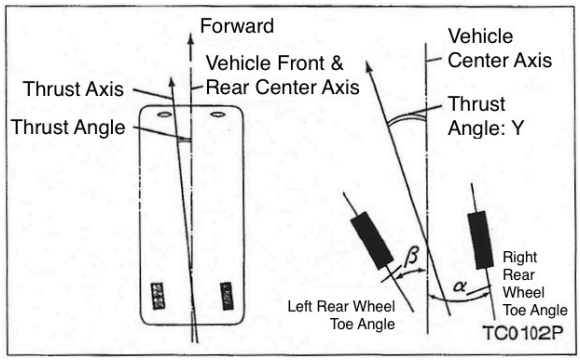


<Adjustment>

Rotate the left and right rear wheel toe angle adjustment bolts in the same direction by the same amount to adjust the thrust angle.

REFERENCE

- For example, if you adjust the right wheel in the toe-in direction, adjust the left wheel in the toe-out direction by the same amount.
- Rotating the left and right wheel adjustment bolts one notch in the same direction will change the thrust angle by approximately 10' (L ≅ 4.5mm).
- Regarding the thrust angle:
  - The thrust angle is the angle between the average of the toe angles of the rear left and right wheels and the longitudinal center axis of the vehicle. The vehicle will travel straight in the direction of the thrust angle. Conversely, the larger the thrust angle, the more the vehicle will "crab walk."
  - Assuming the thrust angle in the diagram below is positive:
  - Thrust angle: $Y = \left| \frac{a - B}{2} \right|$
  - (a and B are considered positive in the case of toe-in)

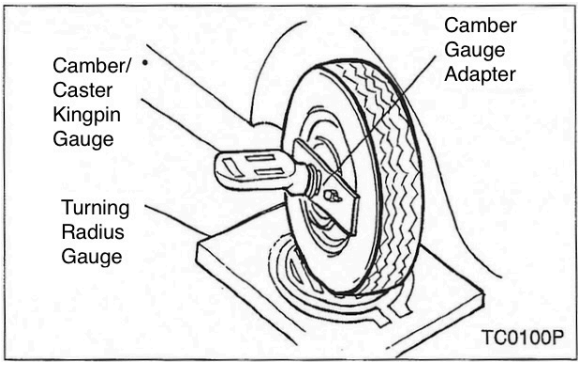


(6) Check and Adjust Wheel Turning Angle

<Inspection>

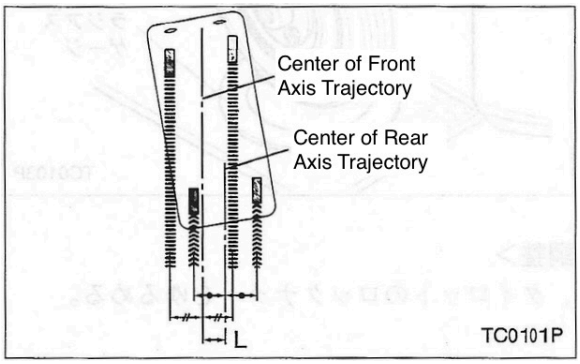
1. Place the vehicle on the turning radius gauge.
2. With the brake pedal depressed, measure the angle when the steering wheel is turned fully left and right.

Wheel Turning Angle (Steering Angle)	**Inner Ring**	37°30' $^{+1°30'}_{-2°30'}$
	Outer Ring	31°36' $^{+1°30'}_{-2°30'}$



<Adjustment>

1. Loosen the lock nut on the tie rod.



2. Adjust by turning the tie rod.

NOTE

- After adjusting the wheel turning angle, check and adjust the toe-in.

3. Tighten the lock nut.
   T 69 ± 10 N•m [7.0 ± 1.0 kg•m]

(7) Side Slip Inspection

Measure the amount of side slip when moving forward 1m.

Side Slip Standard Value (mm/m)

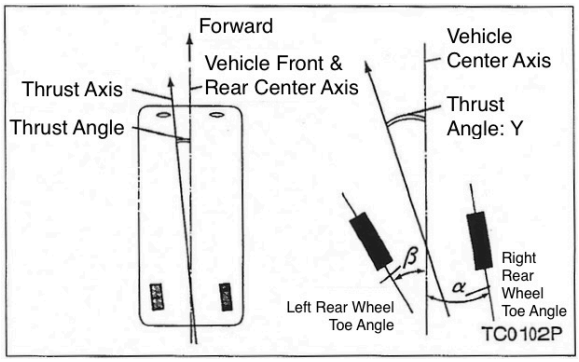
Front	0 ± 4
Rear	(0 ± 5)

( ) is a reference value

If the front side slip is not within the standard value, check and adjust the toe-in.

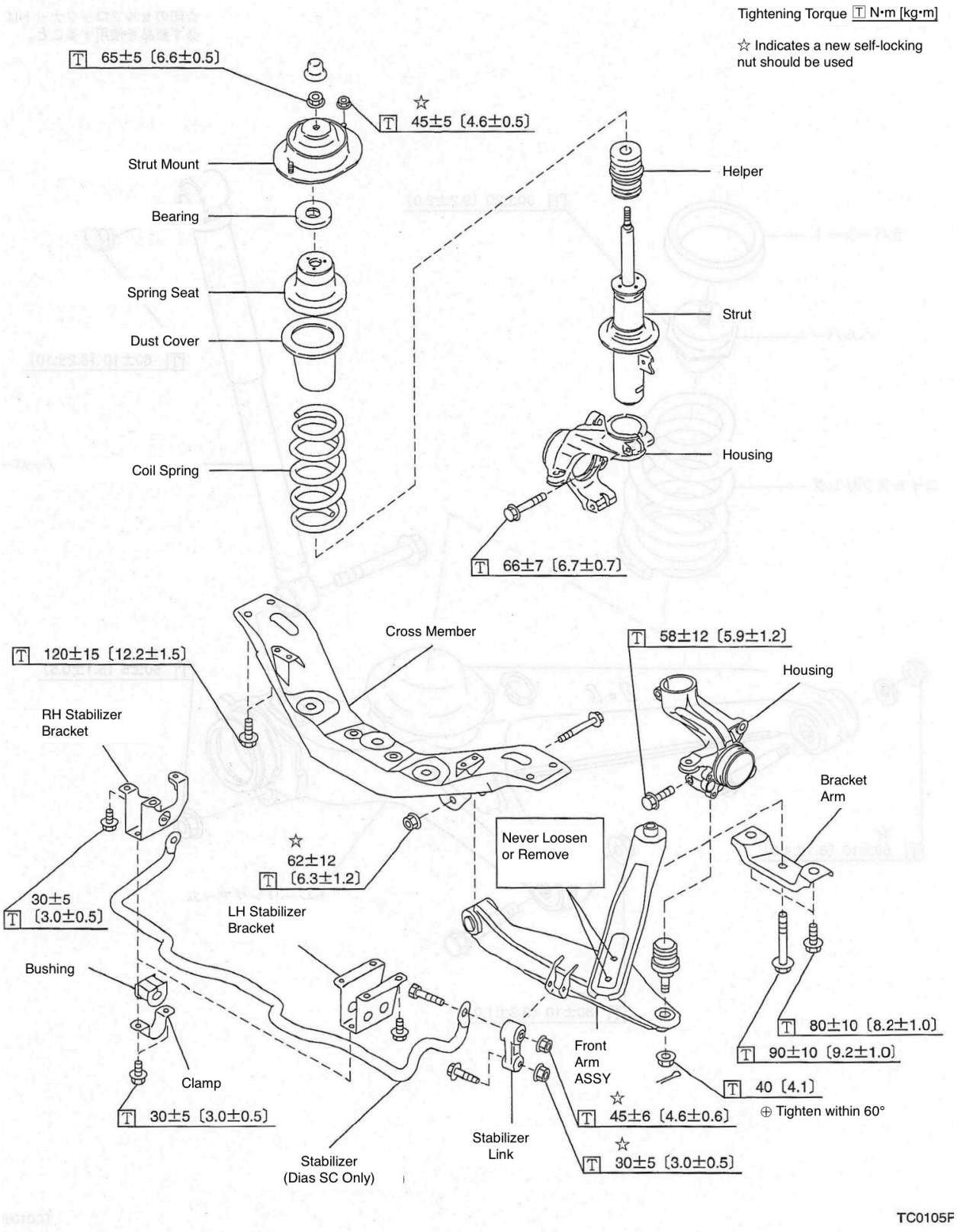
REFERENCE

- As long as the rear toe-in is within the standard, no adjustment is required for rear side slip, even if it is outside the standard value.

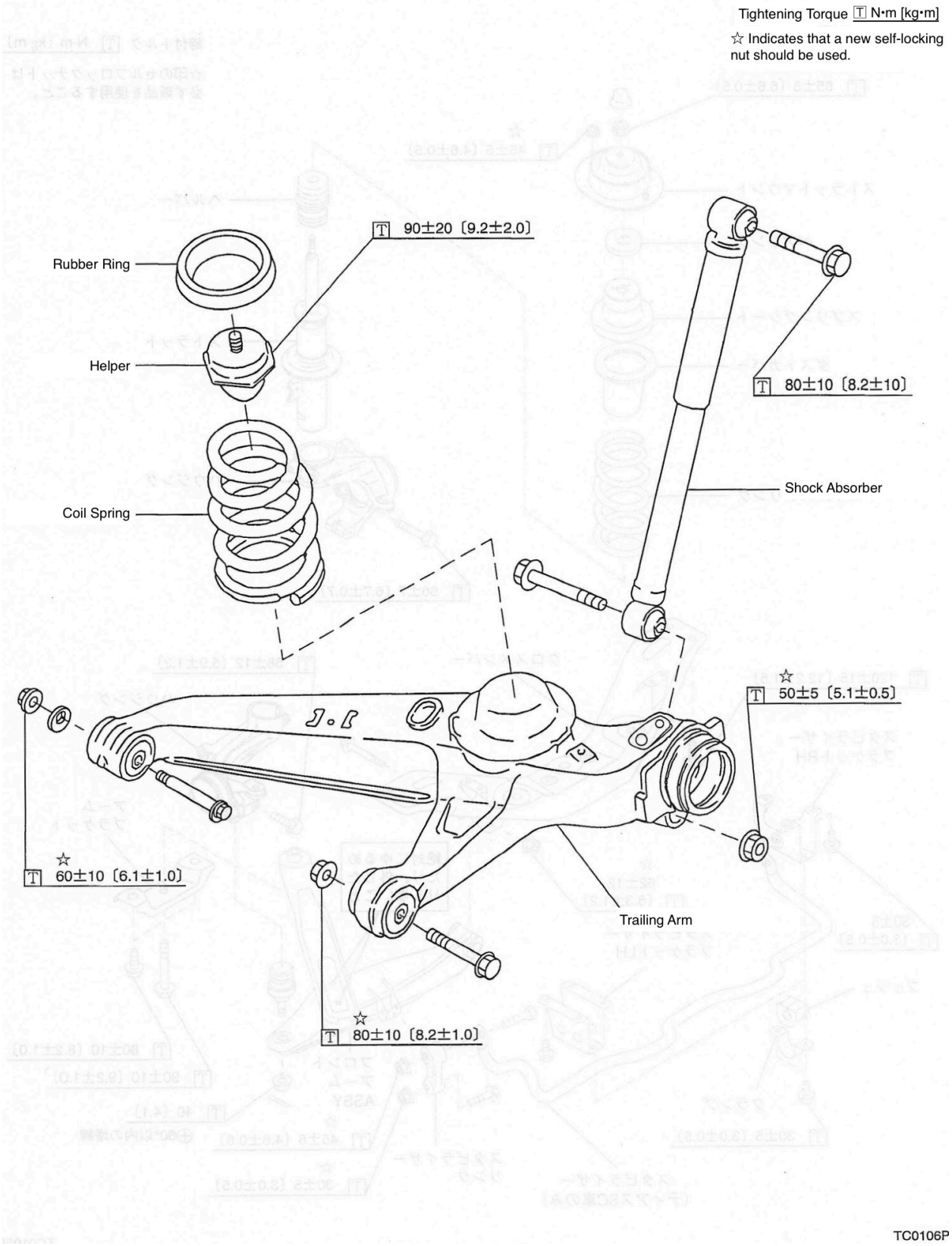


■ Component Parts

(1) Front Suspension



(2) Rear Suspension

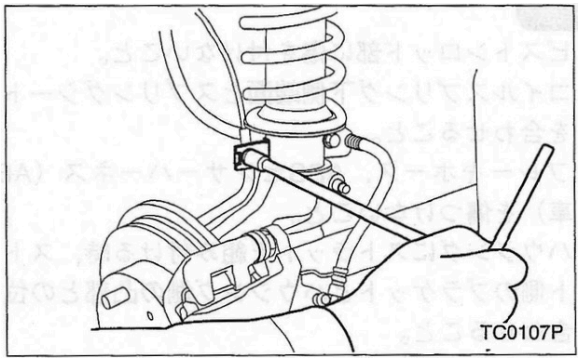


■ Maintenance Instructions

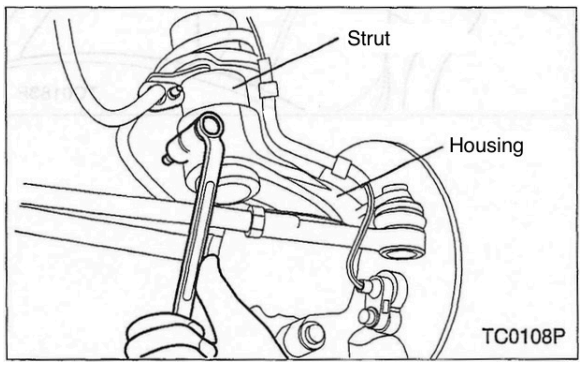
(1) Front Strut

<Removal>

1. Place the vehicle on a lift and apply the handbrake.
2. Remove the wheel nuts and remove the wheel.
   T 88 ± 10 N•m [9.0 ± 1.0 kg•m]
3. Remove the ABS sensor harness mounting bolt. (Cars with ABS)
   T 7.5 ± 2 N•m [0.75 ± 0.2 kg•m]



4. Remove the mounting bolts and remove the brake hose together with the bracket.
   T 7.5 ± 2 N•m [0.75 ± 0.2 k•gm]
5. Remove the connecting bolts between the strut and the housing.
   T 66 ± 7 N•m [6.7 ± 0.7 k•gm]

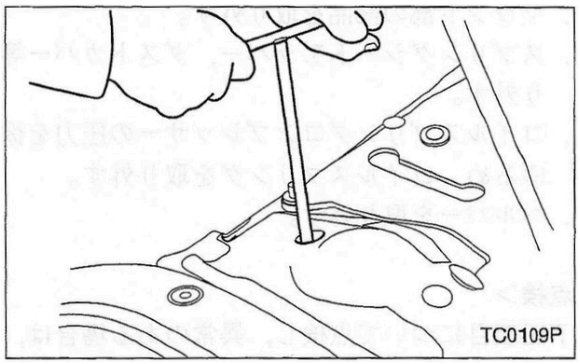


6. Press down on the housing and pull out the strut.

NOTE

- Remove the bolts connecting the stabilizer and link.
  - (For Dias SC vehicles)
- With the tire in a straight line, pull out the strut.

7. Remove the cap inside the vehicle, then loosen the strut mount fixing nuts (2 places) and gradually remove the strut assembly.
   T 45 ± 5 N•m [4.6 ± 0.5 kg•m]



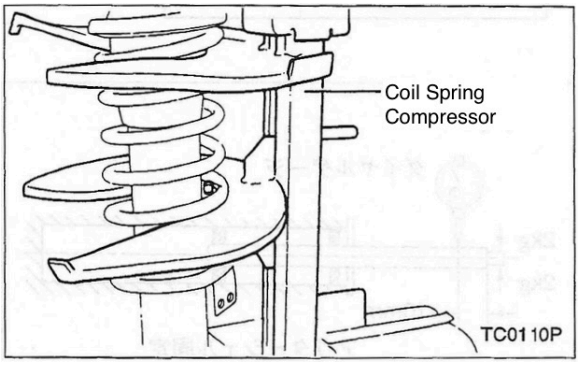
<Disassembly>

1. Use a special tool (or commercially available tool) coil spring compressor to compress the coil spring.

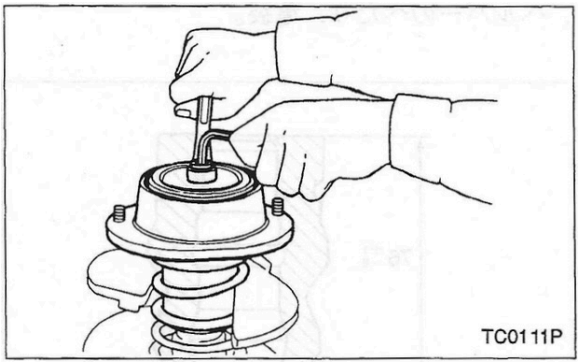
ST 926110000 Coil Spring Compressor

NOTE

- Compress the spring until it separates from the spring seat.



2. Remove the cap.
3. Hold the strut rod with a hexagonal wrench and remove the self-locking nut with a box wrench.
   T 65 ± 5 N·m [6.6 ± 0.5 kg•m]



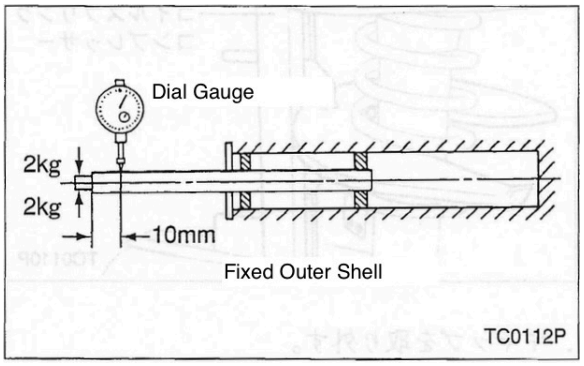
1. Remove the mounting parts.
2. Remove the spring seat upper, dust cover, etc.
3. Gradually release the pressure on the coil spring compressor and remove the coil spring.
4. Remove the helper.

<Inspection>

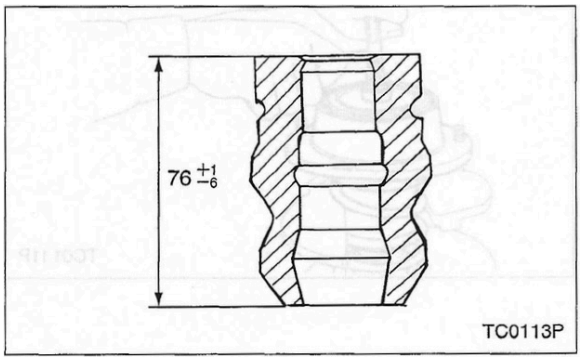
Check the following items and replace them if any abnormalities are found.

1. Check the struts
   1) Check for oil leaks.
   2) Check that the piston rod does not get stuck when moving it up and down.
   3) Check the piston rod play
      With the outer shell fixed and the rod fully extended, apply a load of ±20N (±2.0kg) to the threaded part of the rod using a spring balance or similar and measure the amplitude (play) with a dial gauge.

Limit of Play (mm)	0.8 or less



2. Deformation or damage to the strut mount and deterioration or damage to the rubber.
3. Thrust bearing wear or damage.
4. Helper spring wear or damage.



5. Dust cover damage or cracks.
6. Coil spring is wear or damaged.

NOTE

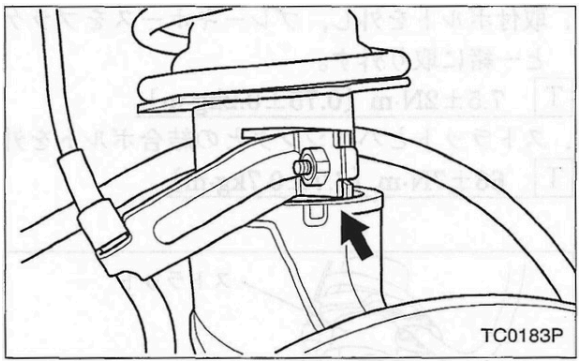
- Whether or not the suspension has worn out can be determined from the results of the suspension ground clearance inspection performed in the "On-board inspection" section above.

<Assembly> <Installation>

Reverse the removal and disassembly procedures.

NOTE

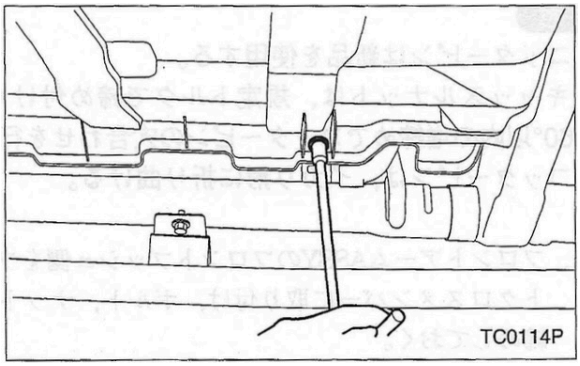
- Do not scratch the piston rod.
- Align the lower end of the coil spring with the spring seat lower.
- Do not damage the brake hose or ABS sensor harness (vehicles with ABS).
- When assembling the strut to the housing, align the bracket on the strut with the protrusion on the housing.



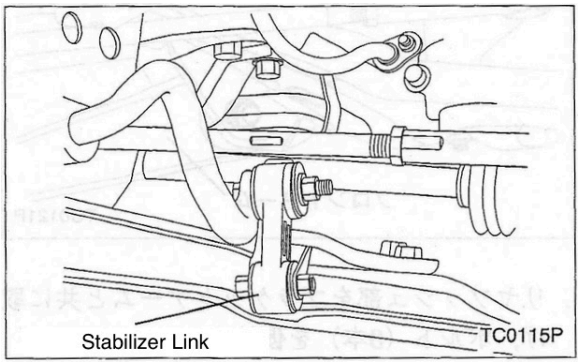
(2) Front Arm Assembly

<Removal>

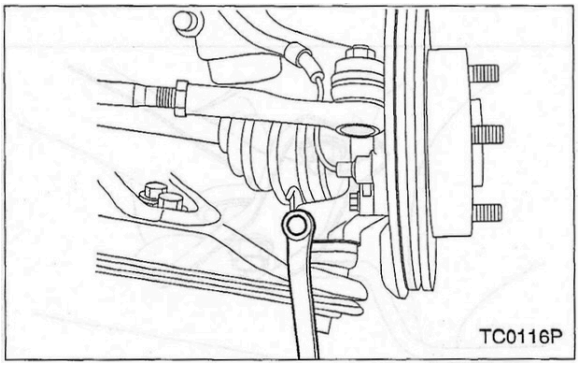
1. Lift up the vehicle and remove the front undercover.



2. Remove the front drive shaft. (4WD vehicles)
   - For work procedures, refer to "Power Transmission System" in the Maintenance Manual Volume 1.
3. Remove the bolts and detach the stabilizer link from the front arm assembly (Dias SC Only).



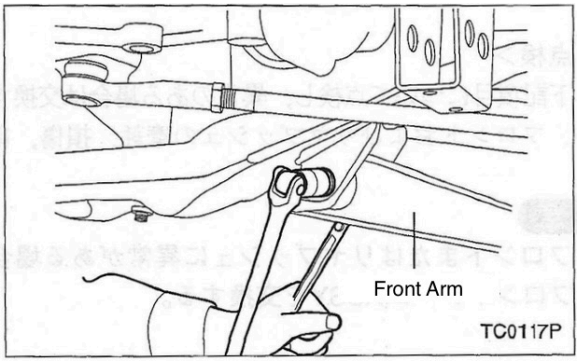
4. Remove the bolts and separate the ball joint part of the front arm assembly from the housing.



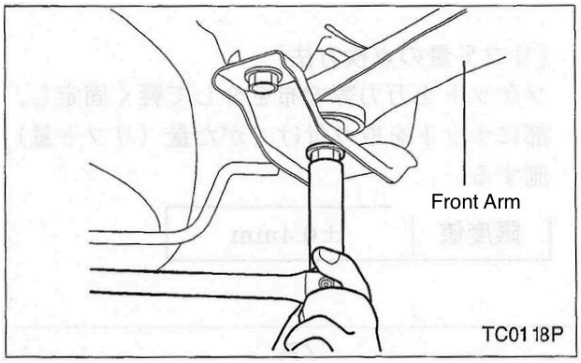
5. Remove the mounting nuts from the front bushing of the front arm assembly.

NOTE

- Insert the bolt.



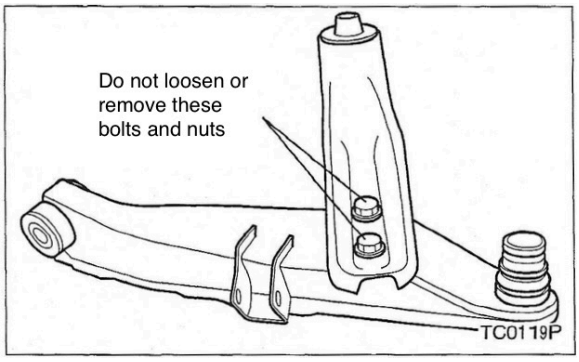
6. Remove the rear bushing mounting bolt (center) of the front arm assembly, then remove the bracket arm mounting bolts (right and left).



7. Front arm assembly: Remove the bolts from the front bushing and remove the front arm assembly.

NOTE

- Never loosen or remove the two bolts on the front arm assembly.
- If the front arm assembly is loosened or removed, replace it with a new one.



8. Remove the cotter pin and castle nut from the front arm assembly, then remove the ball joint.

NOTE
- Cotter pins cannot be reused. Disassembly of the front bushing and rear bushing is prohibited.

<Inspection>

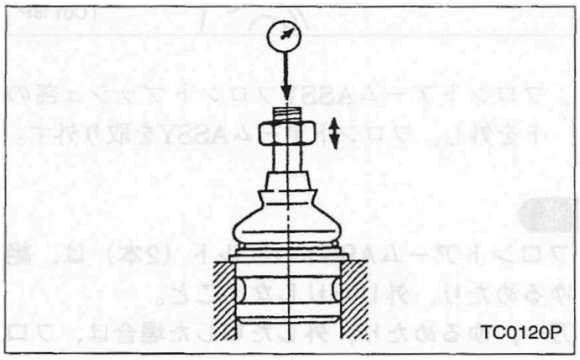
Inspect the following items and replace if there are any abnormalities.

1. Abrasion, damage, cracks on the front and ribs.

ATTENTION
- If there is an abnormality in the front or rear bushing, Replace the front arm assembly.

2. Cracks, damage in the ball-jointed pouts.
3. Loss, deformation of the ball joint stud.
4. Deformation of the ball joint socket, damage.
5. Malfunction of the ball joint and abnormal lift amount.
   [Method for Checking Lift Amount]
   - Lightly secure the socket using a vise or similar tool, protecting it with a cloth.
   - Attach a nut to the threaded portion and measure the amount of play (maximum lift).

Limit	0.4mm



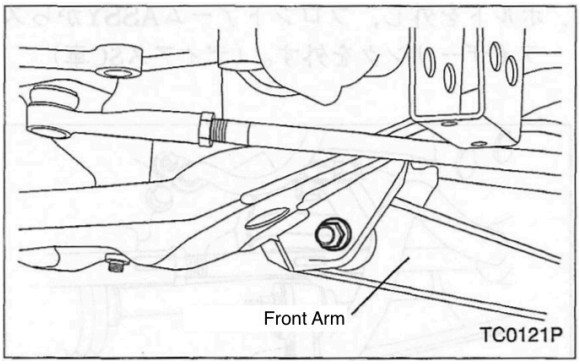
<Installation>

1. Attach the ball joint to the front arm assembly.
   T 40 N•m [4.0 kg•m]

NOTE
- Use new cotter bins.
- After tightening the castle nut to the specified torque, align the cotter pin hole by tightening it up to 60°.
- Bend the cotter pin into an anchor shape.

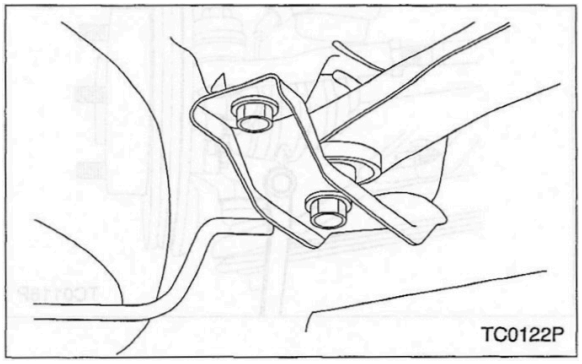
2. Attach the front bushing side of the front arm assembly to the front cross member and temporarily tighten it with bolts and nuts.

NOTE
- Use new nuts.



3. Install the rear bushing together with the bracket arm, and loosely tighten the three bolts.

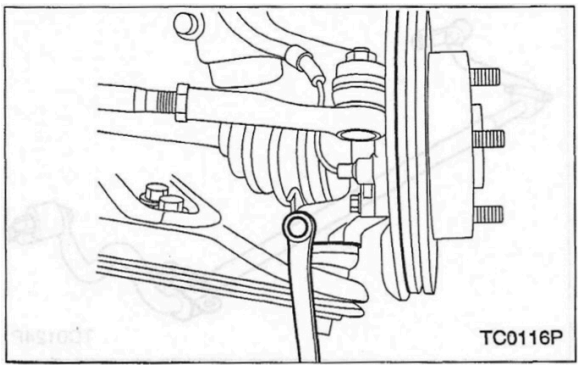
NOTE
- If you are reusing the bolts, apply oil to the threads of only the center bolt.



4. Tighten the bracket arm mounting bolts (left and right in the illustration above).
   T 80 ± 10 N•m [8.2 ± 1.0 kg•m]

5. Assemble the ball joint part of the front arm assembly into the housing and tighten with the bolts.
   T 58 ± 12 N•m [5.9 ± 1.2 kg•m]

NOTE
- Be careful not to damage the ball joint boots.



6. Tighten the bolt (center) on the rear bush side of the front arm assembly.
   T 90 ± 10 N°m [9.2 ± 1.0 kg•m]
7. Tighten the nuts on the front bushing side of the front arm assembly.
   T 62 ± 12 N•m [6.3 ± 1.2 kg•m]
8. Attach the stabilizer link to the front arm assembly, place the vehicle on the ground, and tighten the nuts while the vehicle is in an unloaded position. (For Dias SC vehicles)
   T 30 ± 5 N·m [3.0 ± 0.5 kg•m]

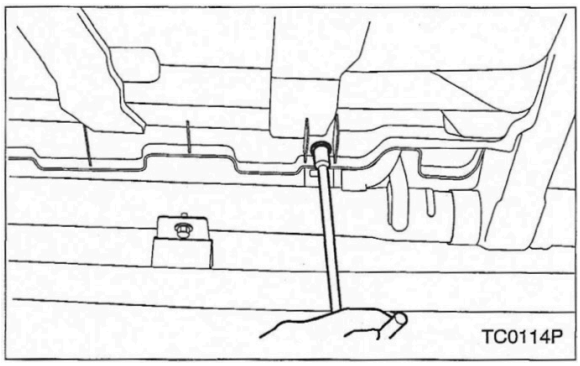
NOTE
- Use new nuts.
- If the tire has been removed, install it.

9. Install the front drive shaft. (4WD vehicles)
   - For work procedures, refer to the Maintenance Manual (Vol. 1) "Power Transmission System."
10. Install the front under cover.

(3) Front Stabilizer (Dias SC only)

<Removal>

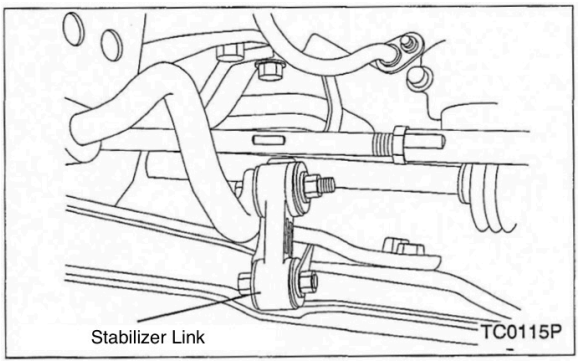
1. Lift up the vehicle and remove the front under cover.



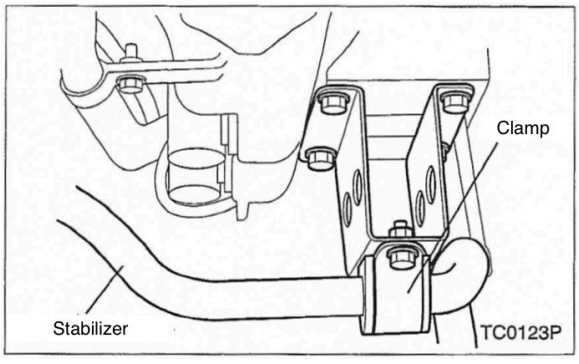
2. Remove the stabilizer link from the front arm assembly (both left and right).
   T 30 ± 5 N·m [3.0 ± 0.5 k•gm]

NOTE

• Use new nuts.



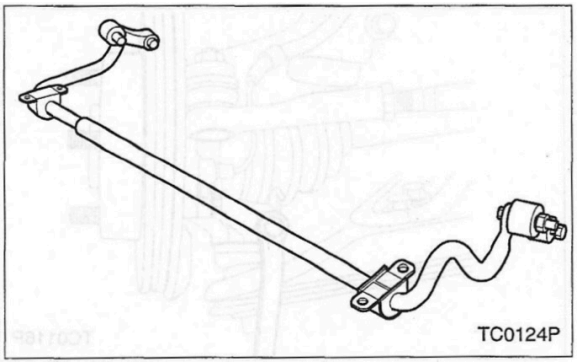
3. Remove the stabilizer clamp mounting bolts (left and right), and then remove the stabilizer assembly.
   T 30 ± 5 N•m [3.0 ± 0.5 kg•m]



4. Remove the clamp, bushing, and link from the stabilizer.
   T 45 ± 6 N•m [4.6 ± 0.6 kg•m]

NOTE

• Use new nuts.



<Inspection>

Check the following items and replace if damaged:

1. Cracks, damage or wear on the rubber bushings of the stabilizer clamp.
2. Damage, deformation, or cracks in the stabilizer link.

<Installation>

Installation is the reverse of removal.

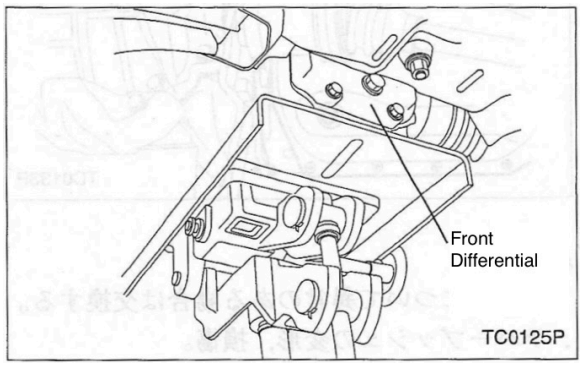
NOTE

• Assemble while the vehicle is empty.
• Use new nuts.

(4) Front Crossmember

<Removal>

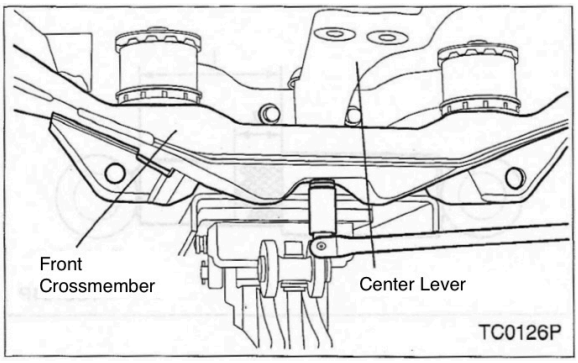
1. Lift up the vehicle and remove the under cover.
2. Remove the front arm assembly.
   - Please refer to section (2) Front Arm Assembly in the previous section for the work procedure.
3. Place the transmission jack under the front differential.



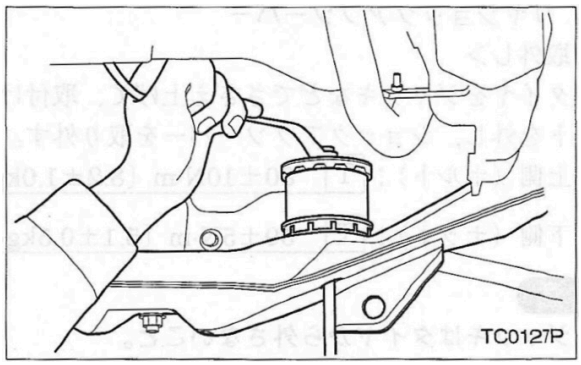
4. Remove the cotter bin, cap, and nut from the connection between the front cross member and the steering center lever.
   T 44 ± 10 N•m [4.5 ± 1.0 k•gm]

NOTE

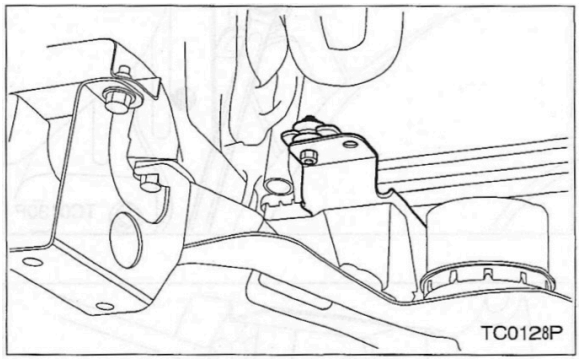
- Cotter bins cannot be reused.
- After tightening the nut to the specified torque, retighten it within 60° to align the cotter pin hole.



5. Remove the connecting bolts (two bolts on each side) between the front cross member and the front differential mounting bracket. (4WD vehicles)
   T 58 ± 10 N·m [5.9 ± 1.0 kg•m]



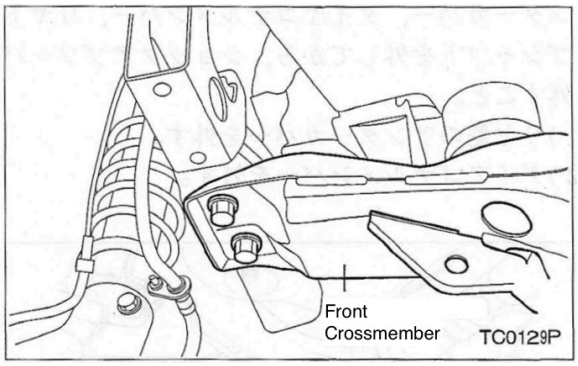
6. Remove the mounting bolts on the radiator bracket that attaches to the front cross member.



7. Remove the connecting bolts (two on each side) between the front cross member and the frame, and remove the cross member.
   T 120 ± 15 N·m [12.2 ± 1.5 kg•m]

NOTE

- Remove the ground terminal on the upper left side of the cross member.



<Inspection>

Inspect the bracket part of the cross member mainly for damage. Replace it if there is any deformation or crack.

<Installation>

Installation is the reverse of removal.

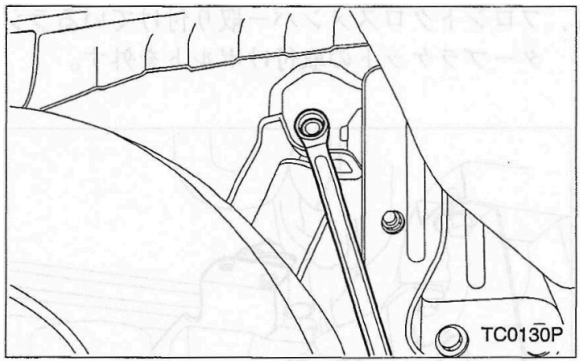
(5) Rear Shock Absorber

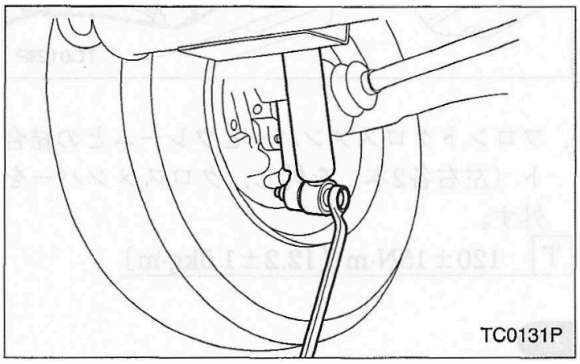
<Removal>

Support the tire with a jack or similar tool, remove the mounting bolts, and remove the shock absorber.
Upper side (bolt): T 80 ± 10 N•m [8.2 ± 1.0 kg•m]
Lower (nut): T 50 ± 5 N•m [5.1±0.5kg•m]

NOTE

• Do not remove the jack from the tire.

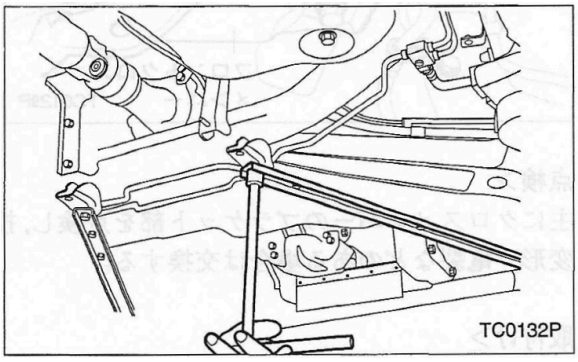




<Notes>

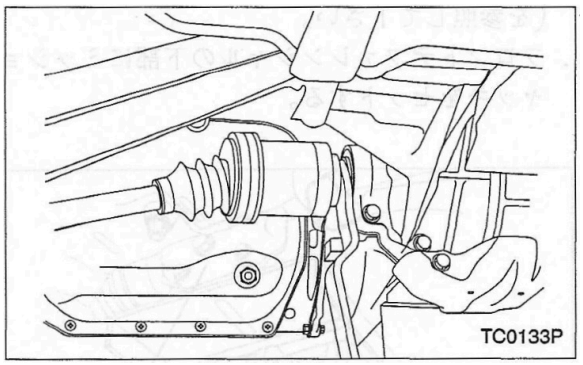
If you are not supporting the tire with a jack or other means, remove the under cover, diagonal member, and rear driveshaft first before removing the shock absorber.

1) Remove the rear under cover.
2) Remove the diagonal member.



3) Use the special tool, drive shaft remover, or a commercially available crowbar (3AT, LH side) to remove the rear drive shaft from the transmission.

ST 28099PA100 Drive Shaft Remover



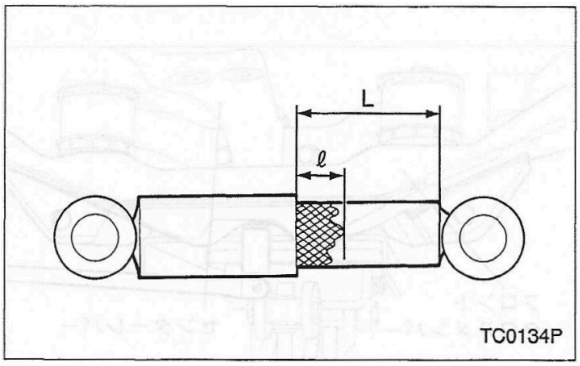
<Inspection>

If any of the following items are abnormal, replace them.

1. Deformation or damage to the rubber bushing.
2. Shock absorbers do not operate smoothly.
3. Maximum length of shock absorber, minimum defects.
4. Damaged shock absorber, oil leak.
5. Is there any sticking when moving the piston rod up and down?

NOTE

• The criteria for determining oil leakage are as follows: When ℓ < L/3, it is determined to be an oil leakage.



<Installation>

Installation is the reverse of removal procedure.

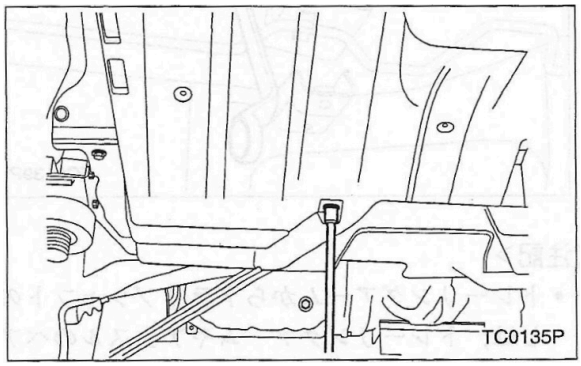
NOTE

• Use new nuts and drive shaft circlips.

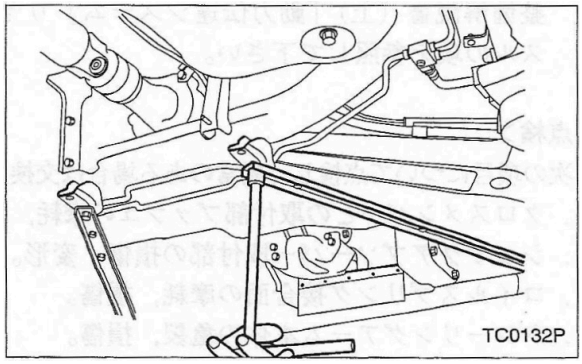
(6) Coil Spring & Helper (Rear)

<Removal>

1. Lift up the vehicle and remove the under cover.

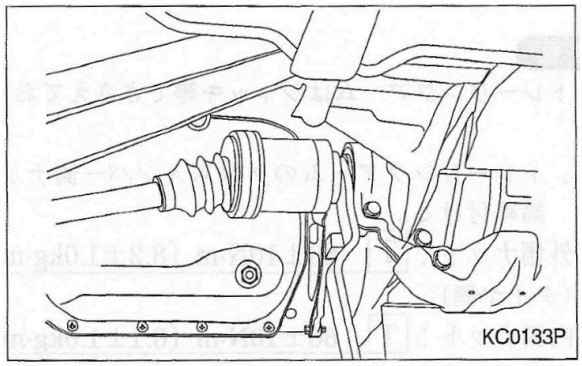


2. Remove the diagonal member.



3. Using a special tool, drive shaft remover, or a commercially available pearl, remove the rear drive shaft from the transmission side.

ST 28099PA100 Drive Shaft Remover

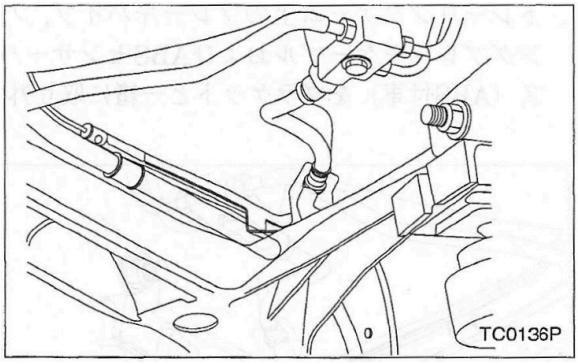


4. Use a jack or similar tool to support the tire, remove the mounting bolts, and remove the shock absorber.
   Upper bolt: T 80 ± 10 N·m [8.2 ± 1.0 kg•m)
   Lower (nut): T 50 ± 5 N·m [5.1 ± 0.5kg•m]

<NOTE>

- The above steps 1 to 4 are the same as those for the "Shock Absorber" mentioned above.

5. Remove the brake pipe, ABS sensor, and harness (for vehicles with ABS) from the trailing arm along with the bracket.



6. Lower the tire supported by the jack to lower the trailing arm to its lowest position and remove the coil spring along with the rubber sheet.
7. Remove the helper.
   T 90 ± 20 N•m [9.2 ± 2.0 kg•m]

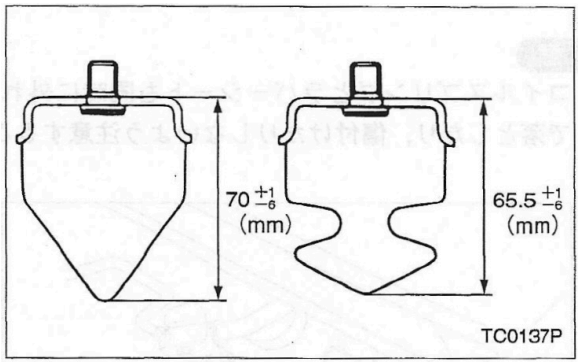
<Inspection>

1. Check the coil spring for damage or wear.

NOTE

- Sagging can be determined by checking the suspension ground clearance during an "on-vehicle inspection."

2. Check the rubber sheet for damage or cracks.
3. Check the helper for cracks and wear.



<Installation>

Installation is the reverse of removal.

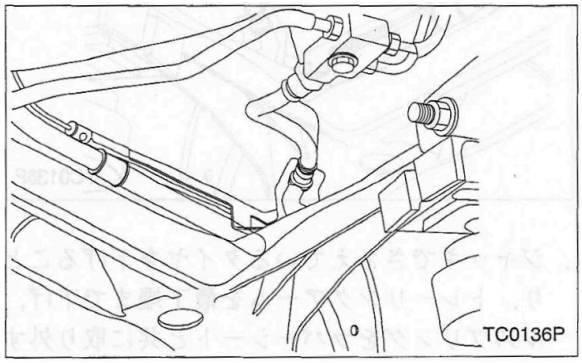
NOTE

- Install the coil spring by aligning the lower end with the trailing arm seat.
- Use new self-locking nuts and drive shaft circlips.

(7) Trailing Arm

<Removal>

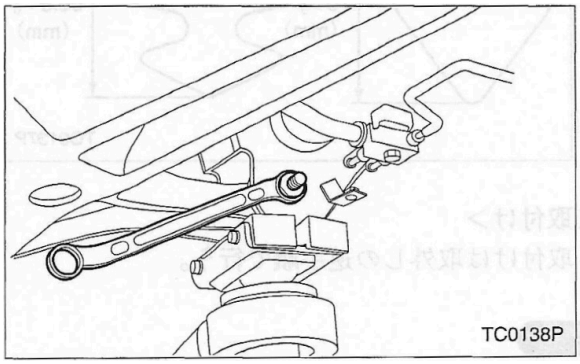
1. Place the vehicle on a lift and remove the rear tire.
2. Remove the rear brake assembly.
   • For work instructions, please refer to section 4-3 "Rear Brake."
3. Remove the under cover and diagonal member.
   • See "Shock Absorber" in the previous section.
4. Remove the brake pipe, parking brake cable, and ABS sensor harness (vehicles with ABS) from the trailing arm together with the bracket.

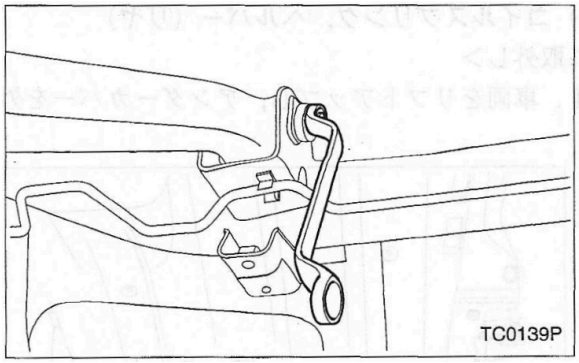


5. Remove the rear drive shaft from the transmission side.
   • See "Shock Absorber" in the previous section.
6. Support the trailing arm with a jack or similar tool, remove the mounting bolts, and remove the shock absorber.
7. Remove the two trailing arm mounting bolts, and slowly lower the jack to remove the trailing arm.

NOTE

• The coil spring and rubber sheet will also come off at the same time, so be careful not to drop or damage them.





NOTE

• Do not remove the drive shaft from the trailing arm except when replacing the trailing arm or axle bearings or oil seals.
• For the procedure for removing and installing the above parts to replace them, please refer to the section on rear axles in the "Power Transmission System" section of the Maintenance Manual (Vol. 1).

<Inspection>

Check the following items and replace if any abnormalities are found.

1. Wear or damage to the bushing at the cross member attachment point.
2. Damage or deformation to the shock absorber mounting part.
3. Wear or damage to the coil spring joint surface.
4. Cracks or damage to the trailing arm body.

<Installation>

1. Attach the trailing arm to the cross member and loosely tighten the two bolts.
2. Place the rubber sheet on the coil spring and install it between the trailing arm and chassis frame

NOTE

• Support the trailing arm with a jack or similar.

3. Tighten the nut on the cross member side of the trailing arm.
   Outer nut: T 80 ± 10 N•m [8.2 ± 1.0 kg•m]
   (tire side)
   Inner nut: T 60 ± 10 N•m [6.1 ± 1.0 kg•m]
4. Jack up the trailing arm and install the shock absorber.
   Upper (bolt): T 80 ± 10 N•m [8.2 ± 1.0 kg•m]
   Lower (nut): T 50 ± 5 N•m [5.1 ± 0.5 kg•m]

NOTE

• When tightening the mounting bolts, remove the jack and place the vehicle in an empty position.

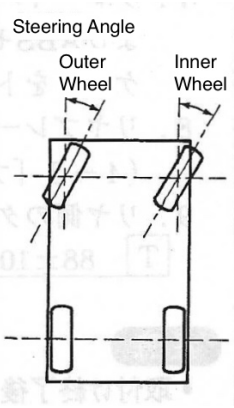
5. Insert and install the rear drive shaft into the transmission.
6. Install the under cover and diagonal member.
7. Attach the brake pipe, parking brake cable, and ABS sensor harness (vehicles with ABS) bracket to the trailing arm.
8. Install the rear brake assembly.
   • (See 4-3 "Brakes.")
9. Install the rear tire.
   T 88 ± 10 N•m [9.0 ± 1.0 kg•m]

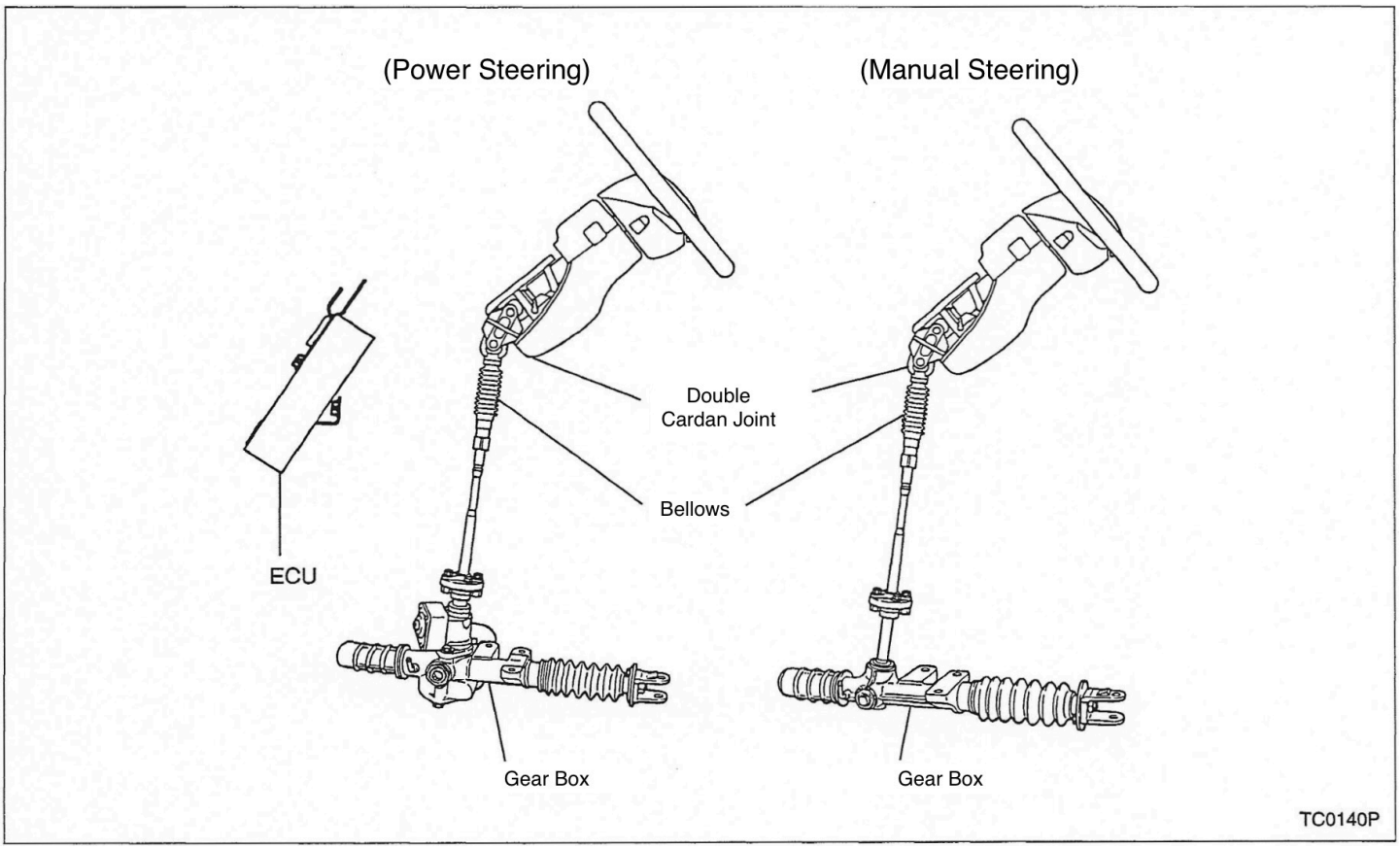
NOTE

• After installation is complete, bleed the air from the brakes.
  • See 4-3 “Brakes."
• Check and adjust toe-in.
• Use new self-locking nuts and drive shaft circlips.

4 - 2 Steering

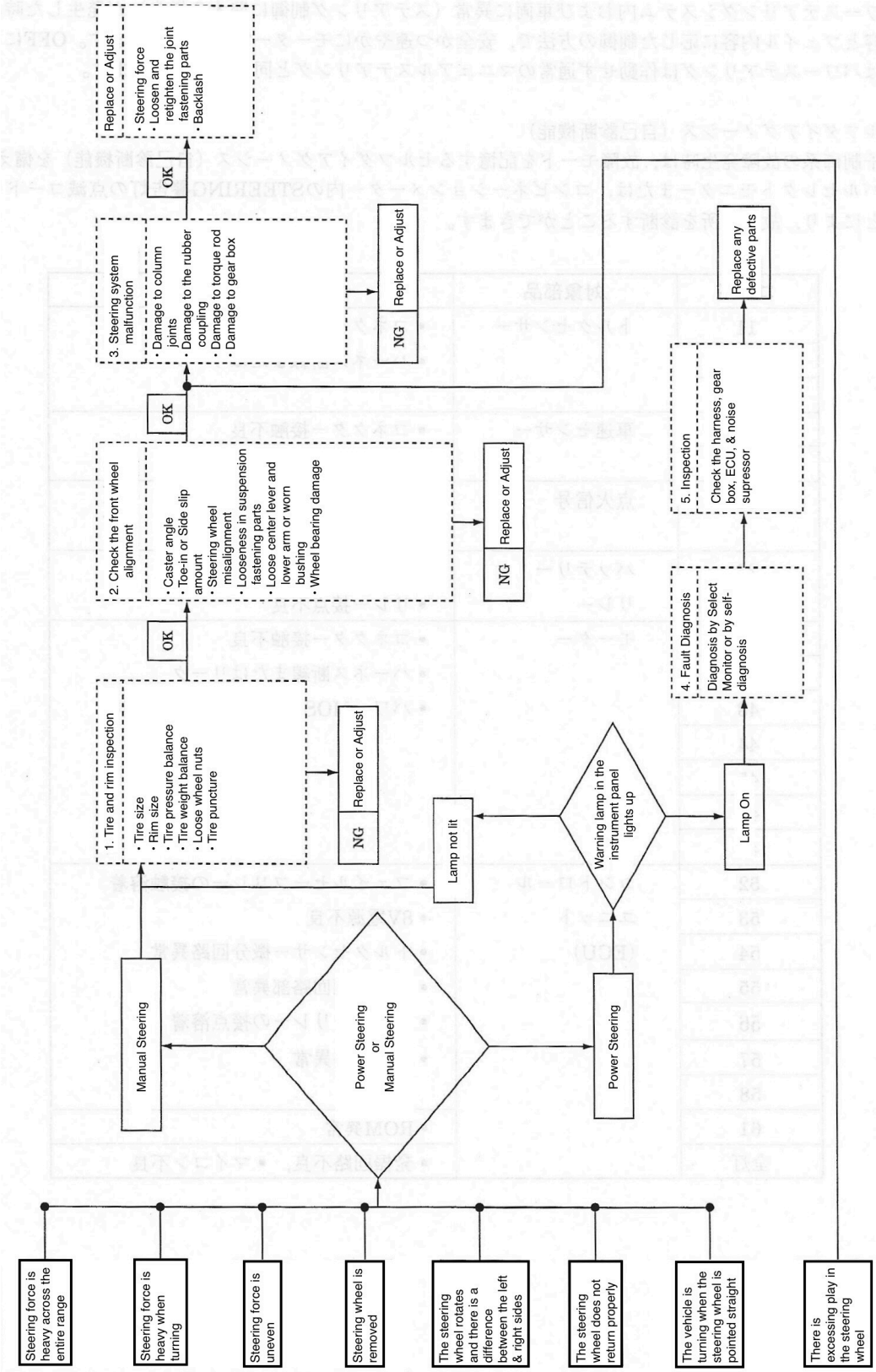
■ Specifications

Item \ Type		Manual Steering	Electric Power Steering	Remarks
Steering Wheel	Kinds	Airbag Equipped Steering Wheel (All Vehicles)		
	Outer Diameter (mm)	ø 370		
	Maximum Rotation Speed	4.3	4.0	
Gear Box	Model	Rack & Pinion		
	Overal Gear Ratio	23	21	
	Grease Used	Kyodo Yushi One-Luber SG#5073	——(Because it does not decompose)	
Steering Angle	Inner Wheel (deg)	37°30'	+1°30' -2°30'	
	Outer Wheel (deg)	31°36'	+1°30' -2°30'	
Minimum Turning Radius (m)		3.9		



■ Common Failure Points

(1) Causes of Steering Malfunction & Inspection Points



(2) Electric Power Steering

(Backup function in case of failure)

1. Fail-safe function
   - When an abnormality (steering control abnormality) occurs in the power steering system or the vehicle, the motor current is safely and quickly turned off using a control method that corresponds to the monitored item and the type of failure. When the current is turned off, the power steering does not operate and the vehicle operates in the same way as a normal manual steering wheel.
2. Self-diagnosis function
   - The self-diagnosis function memorizes the failure mode in the event of a malfunction in the electronic control system. The malfunction can be diagnosed by deciphering the flashing code of the STEERING warning light on the Select Monitor or the combination meter.

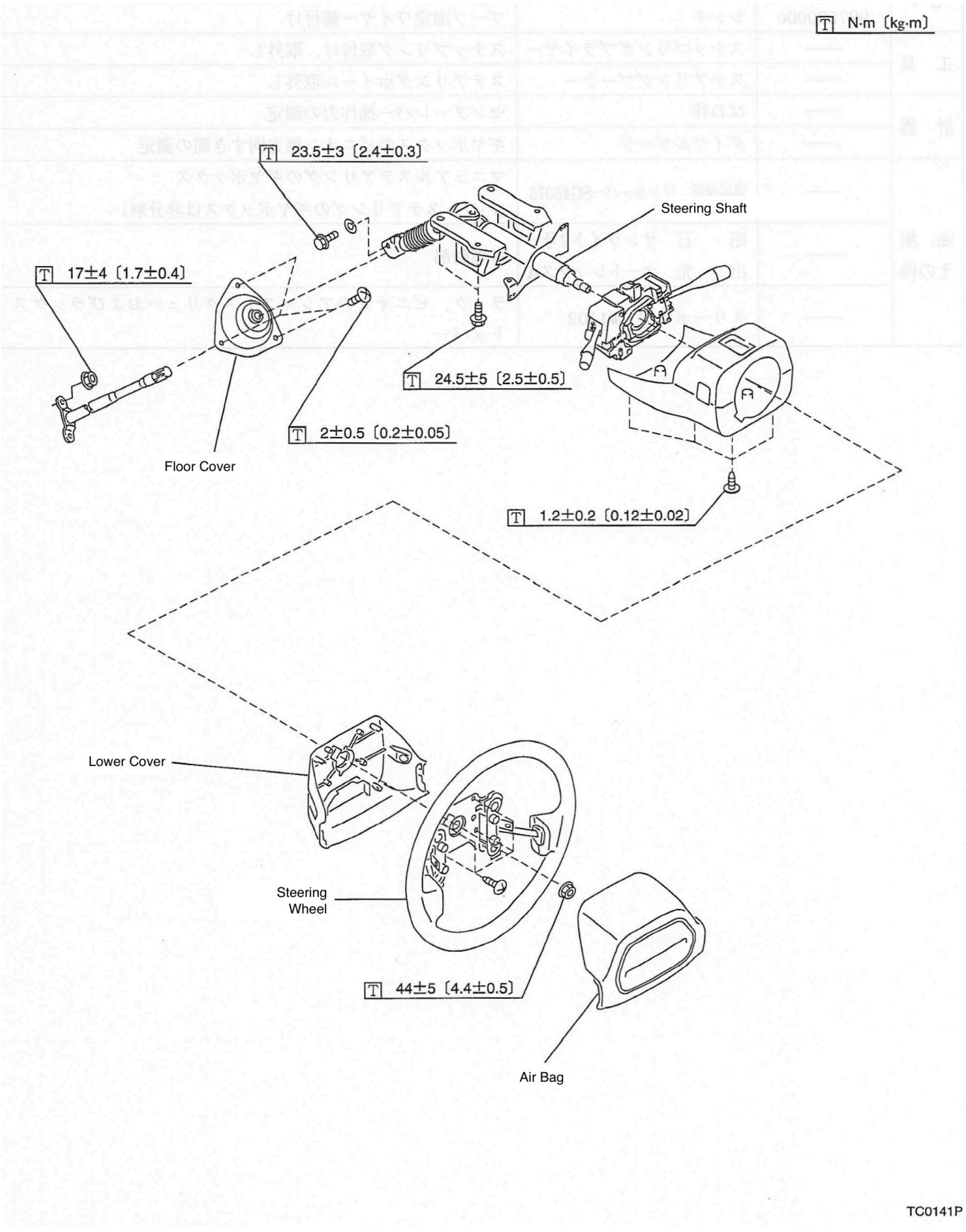
Code	Corresponding Parts	Potential Probems
11	Torque Sensor	• Poor connector contact • Broken or leaking harness
12		
13		
21	Vehicle Speed Sensor	• Poor connector contact • Broken or leaking harness
24		
22	Ignition Signal	• Poor connector contact • Broken or leaking harness
23	Battery Relay	• Battery voltage drop • Defective relay contact
41	Motor	• Poor connector contact • Broken or leaking harness • Power MOS transistor inspection
42		
43		
44		
45		
46		
47		
52	Control Unit (ECU)	• Fail-safe relay contact weld • 8V power supply failure • Torque sensor differential circuit malfunction • Control target circuit malfunction • Motor relay contact weld • Boost circuit malfunction
53		
54		
55		
56		
57		
58		
61		• ROM error
All Lights		• Oscillator circuit failure, microcomputer failure

■ Maintenance Preparations

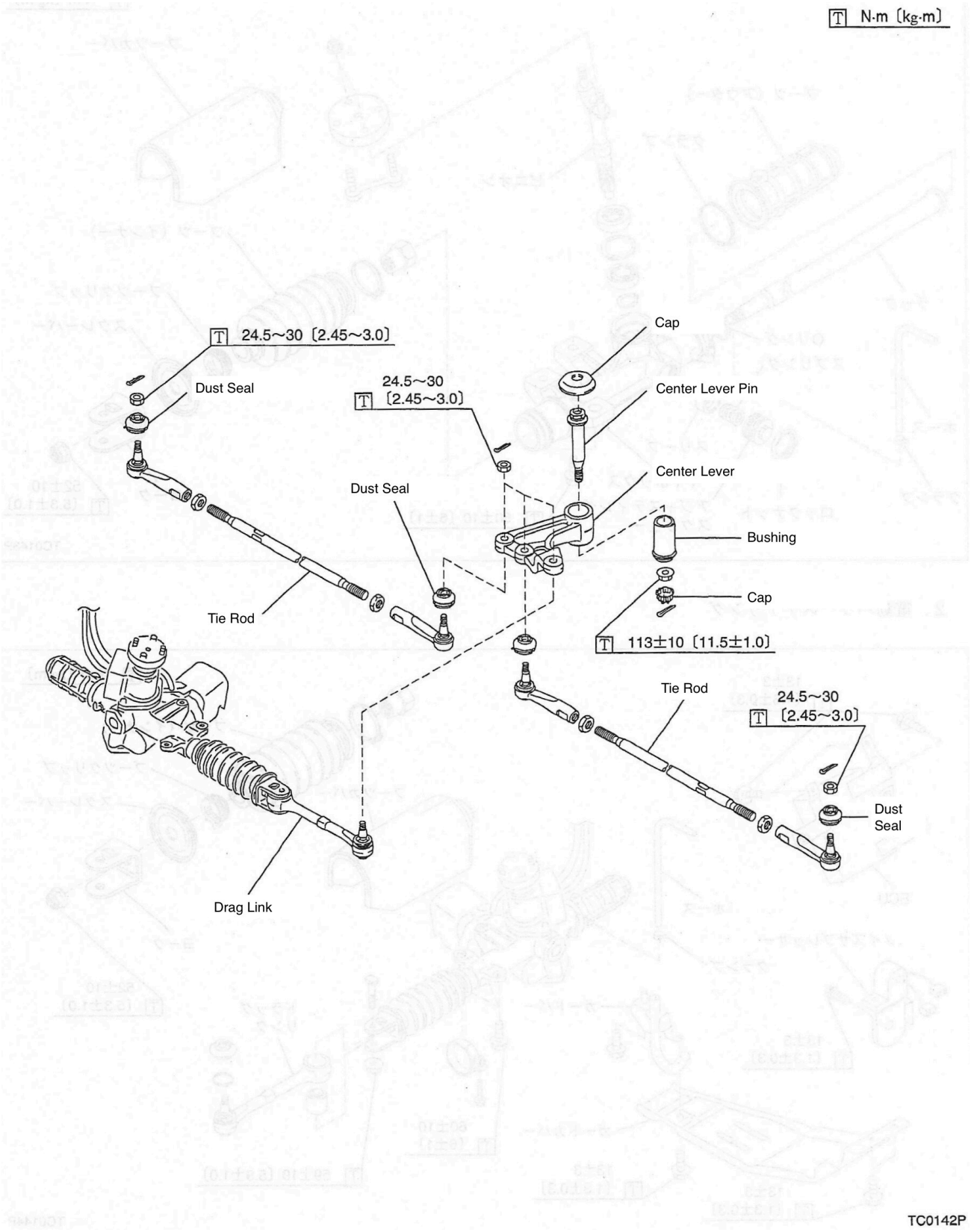
Classification	Tool Number	Name	Purpose
ST	926230000	Gear box spanner	Backlash adjustment
	927590000	Wrench	Remove wire from boot
Tool	—	Snap ring pliers	Snap ring installation and removal
	—	Steering puller	Steering wheel removal
Instruments	—	Spring scale	Measurement of center lever operating force
	—	Dial gauge	Measurement of the axial clearance of the gearbox pinion
Grease, Oils, & Other	—	Kyodo Yushi One-Luber SG#5073	Manual steering gearbox (The power steering gearbox cannot be disassembled)
	—	Showa Sekiyu Sunlight No 2 Idemitsu Autolex A	Each sliding part
	—	ThreeBond #1102	Rack and pinion adjustment screws and rack stoppers

■ Component Parts

(1) Steering Wheel & Column

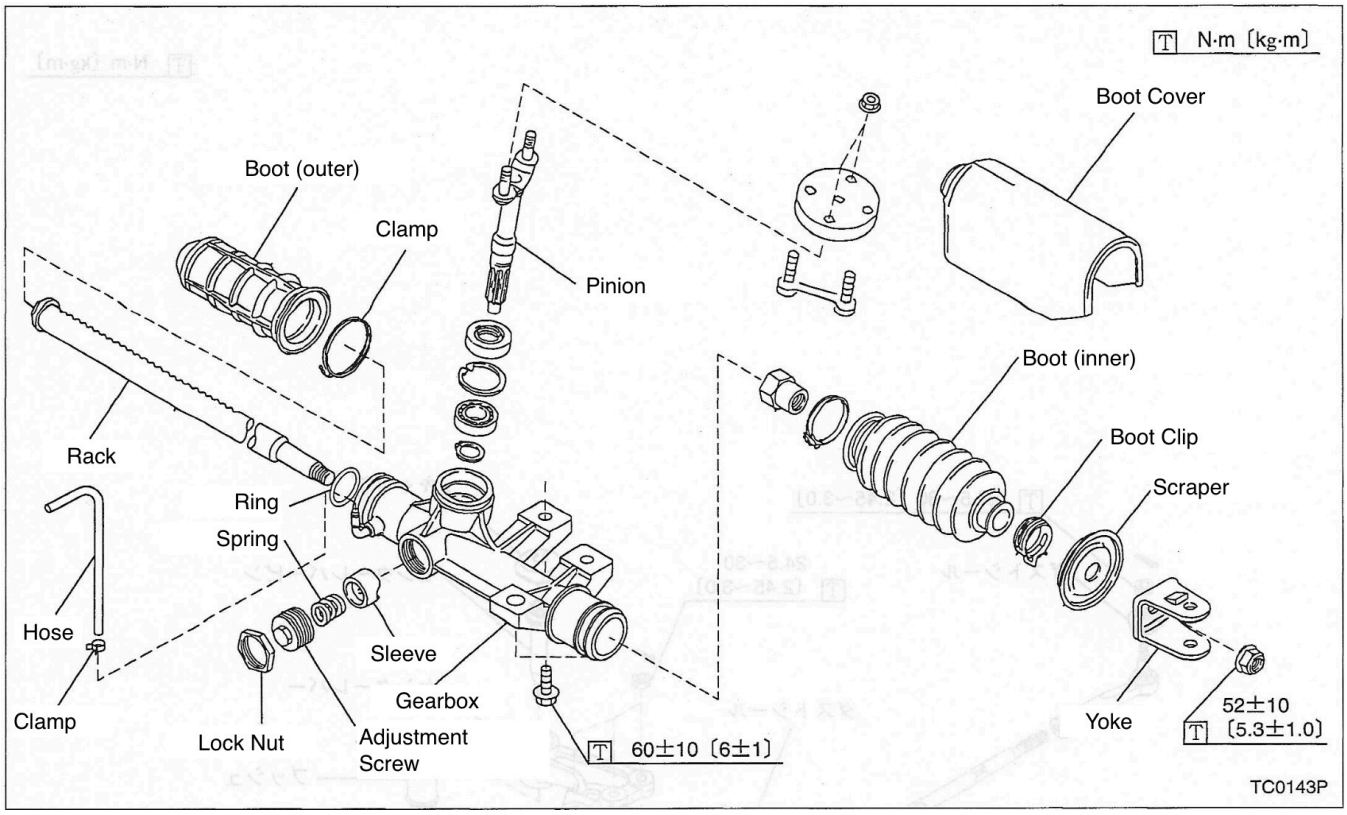


(2) Steering Tie Rod

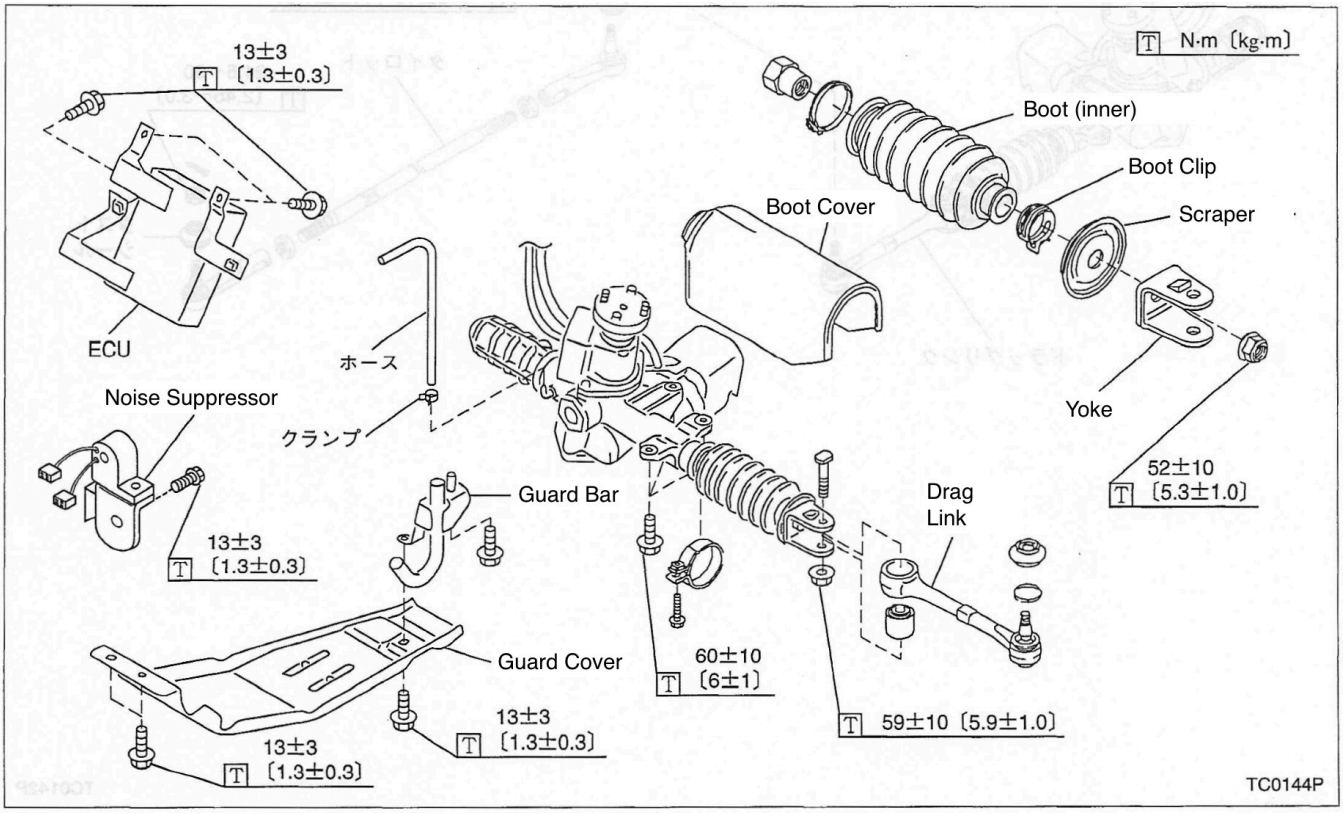


(3) Gearbox

1. Manual Steering



2. Electric Power Steering

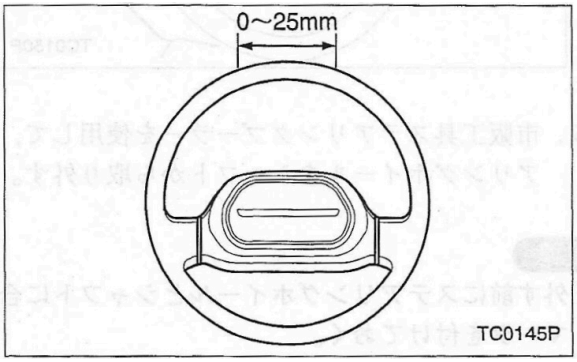


■ Maintenance Instructions

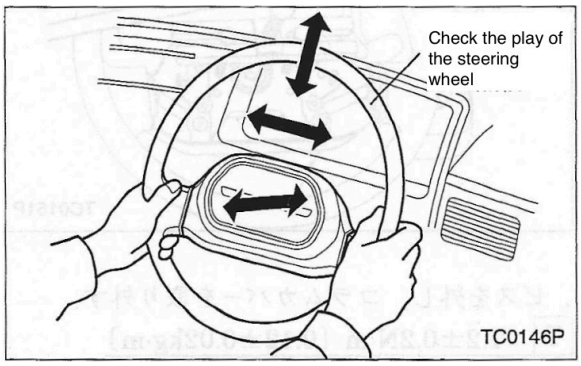
(1) On-board inspection

1. Steering wheel play and rattle
   1) Set the steering wheel to the straight ahead position.
   2) Turn the steering wheel left and right.
   3) Dimensions until the steering wheel feels responsive.

Standard Value	0~25mm



4) Move the steering wheel axially and perpendicular to the axis to check for play.

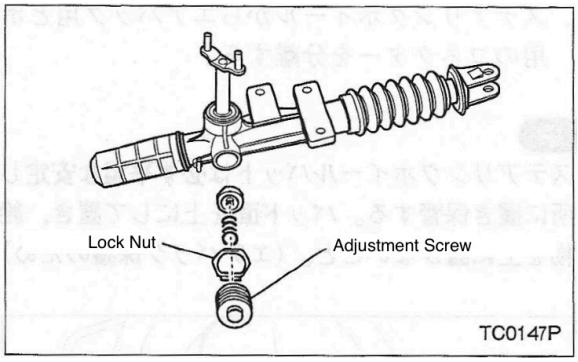


2. Gearbox backlash adjustment (manual steering)
   1) Set the steering wheel to the straight ahead position.
   2) Lift up the vehicle and remove the under cover.
   3) Tighten and loosen the adjustment screw with a torque of 1 to 5 N•m (0.1 to 0.5 kg•m). Repeat this 5 to 6 times (to allow the sleeve to settle in).
   4) Remove the lock nut.
   5) Remove the adjustment screw and clean the threaded part.
   6) Apply liquid gasket to the threads of the adjustment screw, then tighten it again.
   7) Screw the adjusting screw all the way in (until the sleeve touches the rack), then return it 20° from that position (for both manual and power steering).
   8) Tighten the lock nut to lock it in place.
      T 30~49 N•m [3.0~5.0 kg•m]

NOTE

- When tightening the lock nut, use a wrench or similar tool to secure the adjusting screw so that it does not rotate.
- Be careful not to let the liquid gasket flow into the sleeve.

   9) Turn the steering wheel to the maximum left and right 2-3 times and check for any binding or other issues.



NOTE

- Please perform the power steering procedure according to the instructions above.

(2) Steering Column

This document describes the work procedures for vehicles equipped with electric power steering. For manual steering systems, please refer to this chapter for guidance.

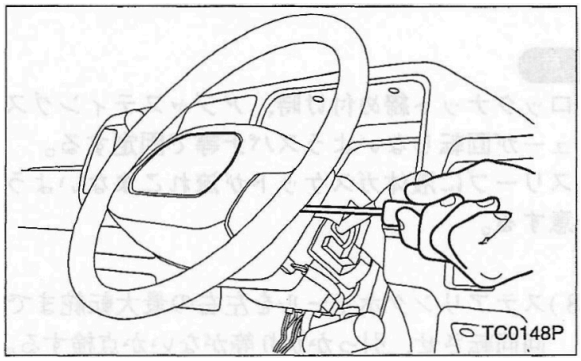
<Removal>

1. Disconnect the battery terminals.

NOTE

- To protect the airbag, wait at least 20 seconds before performing the next step.

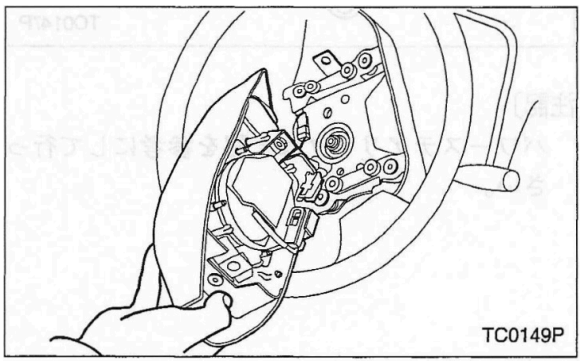
2. Use a Torx wrench (T30) to remove the bolts (one on each side) and remove the steering wheel butt.



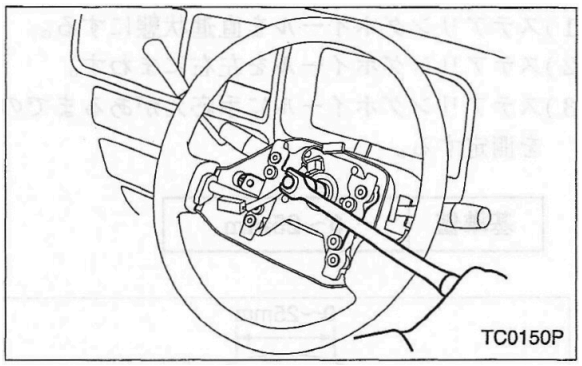
3. Disconnect the airbag and horn connectors from the steering wheel.

NOTE

- Always store the steering wheel pad on a flat, stable surface. Place the pad face up and never place anything on top of it (to protect the airbag).



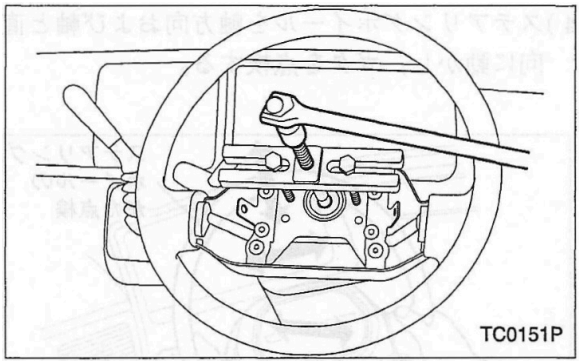
4. Remove the steering wheel mounting nuts.
   T 44 ± 5 N•m [4.4 ± 0.5 kg•m]



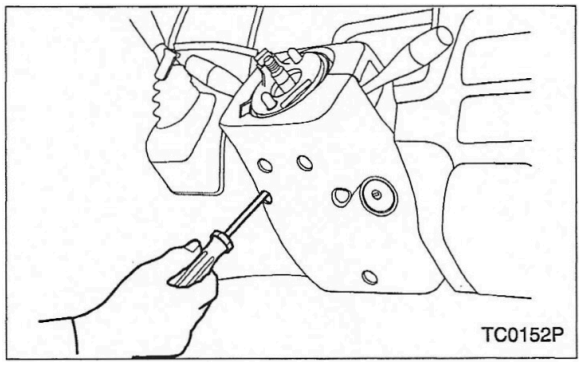
5. Use a commercially available steering puller tool to remove the steering wheel from the shaft.

NOTE

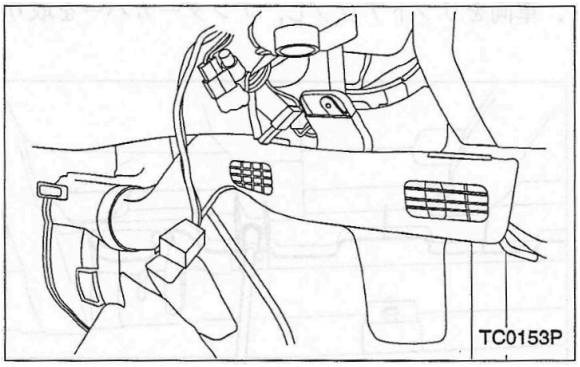
- Before removing, make alignment marks on the steering wheel and shaft.



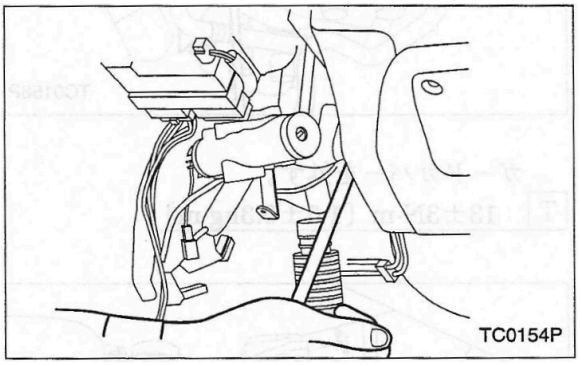
6. Remove the screws and remove the column cover.
   T 1.2 ± 0.2 N•m [0.12 ± 0.02 kg•m]



7. Remove the foot duct.



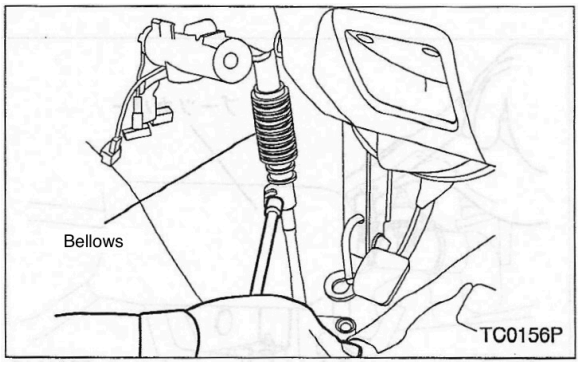
8. Disconnect the harness connector around the combination switch.
9. Disconnect the key interlock harness connector (automatic transmission vehicles).
10. Remove the four mounting bolts and separate the steering column assembly from the vehicle body.
    T 24.5 ± 5 N•m [2.5 ± 0.5 kg•m]



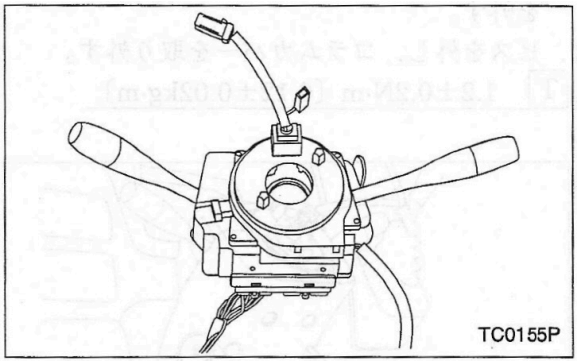
11. Remove the bolts at the bottom of the steering column bellows and remove the steering column assembly.
    T 23.5 ± 3 N•m [2.4 ± 0.3 kg•m]

NOTE

- Place match marks on the torque slots on the column bellows side and gearbox side.



12. Remove the two screws and remove the combination switch assembly from the steering column assembly.



<Inspection>

Check the following items and replace any that are found to be abnormal.

1. Bent or damaged steering shaft.
2. Abnormal noise or poor rotation of bearings.
3. Damage, play, or poor rotation of the constant velocity joint (double cardan joint).

<Installation>

Installation is the reverse of removal.

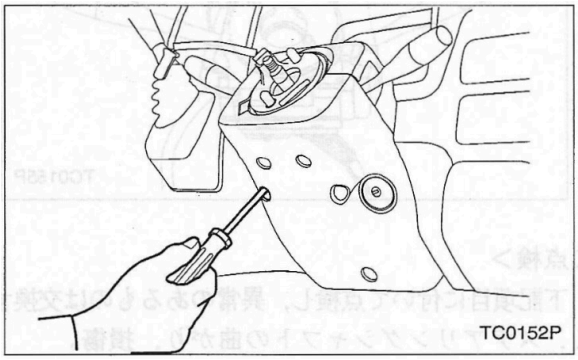
NOTE

- Do not use excessive force to widen or narrow the angle between the column and joint.
- Do not reuse anything that has been dropped.

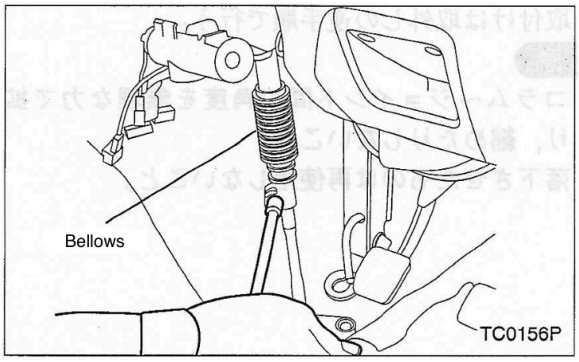
(3) Steering Gearbox

<Removal>

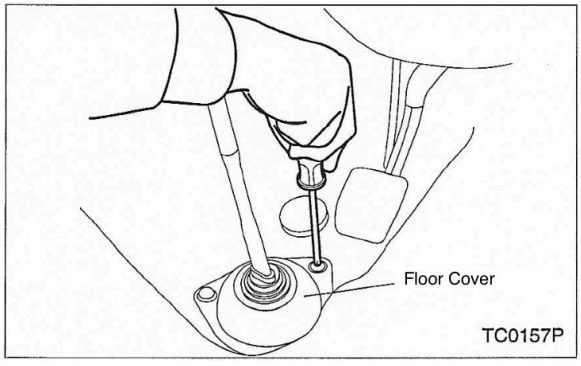
1. Place the vehicle on a lift and disconnect the battery.
2. Remove the screws and remove the column cover.
   T 1.2 ± 0.2 N•m [0.12 ± 0.02 kg•m]



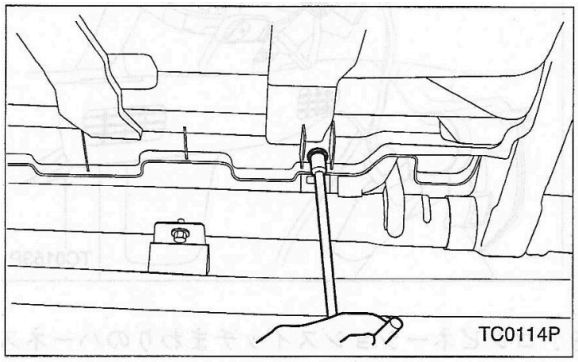
3. Remove the connecting bolt between the steering column bellows and the torque rod at the bottom.
   T 23.5 ± 3 N•m [2.4 ± 0.3 kg•m]

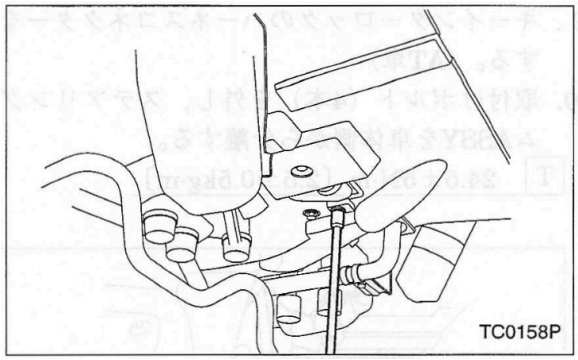


4. Peel off the mat, remove the three screws, and remove the floor cover.
   T 2 ± 0.5 N•m [0.2 ± 0.05 kg•m]

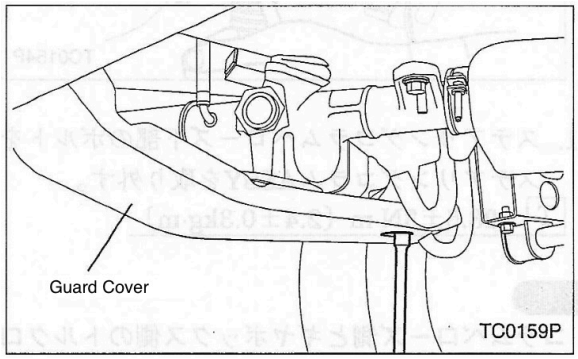


5. Disconnect the harness connector for the electric power steering motor, etc., in front of the driver's seat.
6. Lift up the vehicle and remove the under cover.

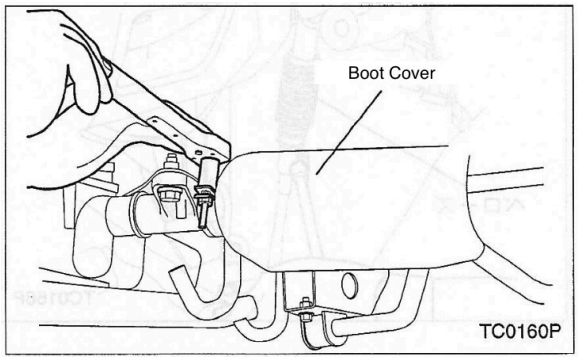




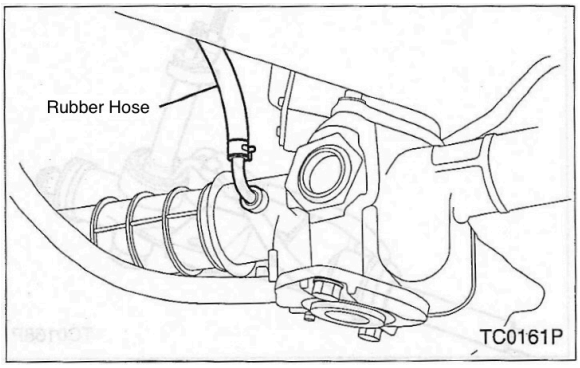
7. Remove the guard cover.
   T 13 ± 3 N•m [1.3 ± 0.3 kg•m]



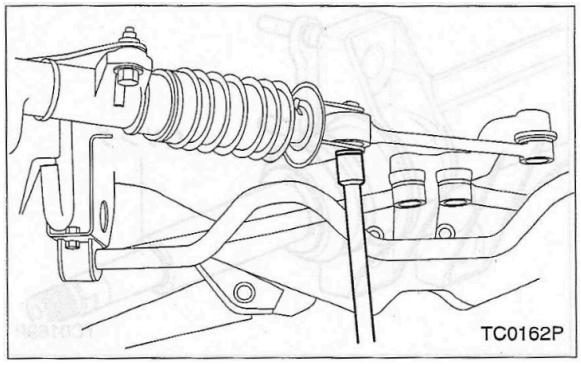
8. Remove the boot cover.



9. Remove the rubber hose from the gearbox.

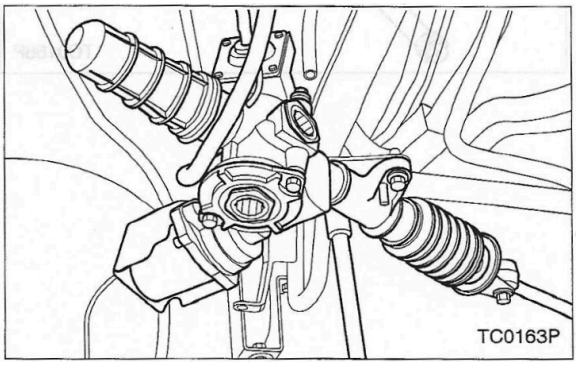


10. Remove the connecting bolt between the gearbox yoke and the drag link.
T 59 ± 10 N•m [5.9 ± 1.0 kg•m]

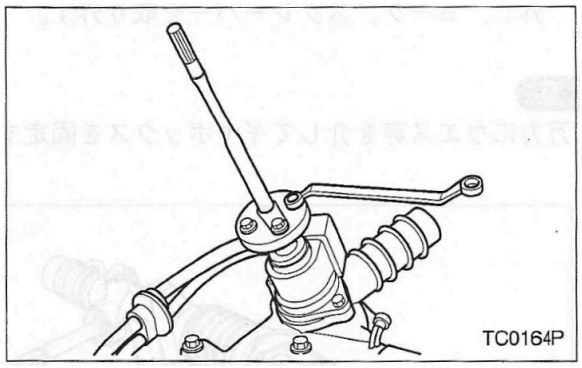


11. Remove the mounting bolts (three) and drive the gearbox Remove from the body. T 6010N-m (6.0±1.0kg.m]

NOTE
- Since the harness is included, be careful not to damage it.
- Do not grip the boots.



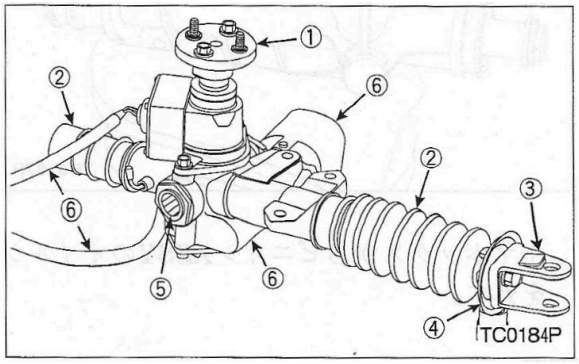
12. Remove the nut and detach the torque rod from the gearbox.
T 7 ± 4 N•m [1.7 ± 0.4 kg•m]



<Disassembly>

Disassembly of the electric power steering gear box assembly is prohibited. (However, replacement of parts such as boots, rubber couplings, yokes, and scrapers is permitted.)

Classification	No	Part
Disassembly, Assembly, Replaceable	①	Rubber Coupling
	②	Boot
	③	Yoke
	④	Scrapper
	⑤	Backlash Adjustment
Disassembly, Assembly, Replaceable	⑥	• Motor • Inside the gearbox • Gearbox bottom adjustment • Plug Adjustment • Harness Connector, etc

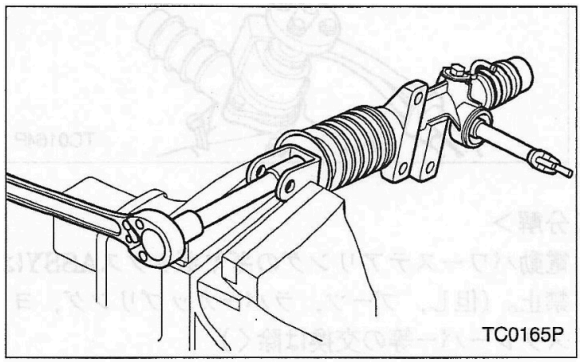


The disassembly and assembly of the gear box for manual steering are described below.

1. Fix the gearbox yoke in a vise, remove the nut, and remove the yoke and scraper.

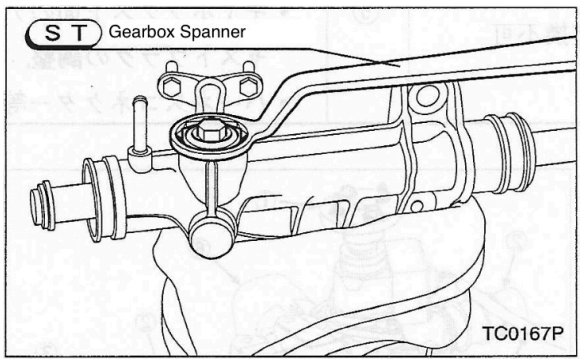
NOTE

• Secure the gearbox in a vise using a rag or similar.



2. Remove the clips and wires from the gearbox, and remove the inner and outer boots.
3. Using the special tool, gearbox wrench, remove the lock nut of the backlash adjustment part, then remove the adjusting screw, and remove the spring and sleeve.

ST 926230000 Gearbox Spanner

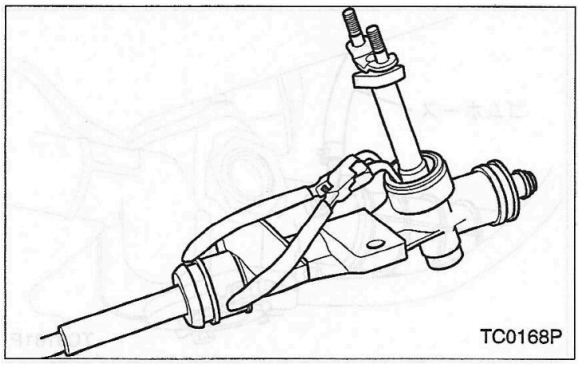


4. Remove the pinion assembly oil seal from the gearbox.

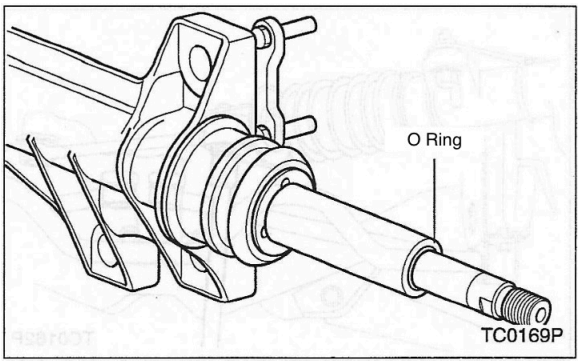
NOTE

• Attach the oil seal to the pinion with vinyl tape or similar to prevent it from interfering with the next step.
• Oil seals must not be reused.

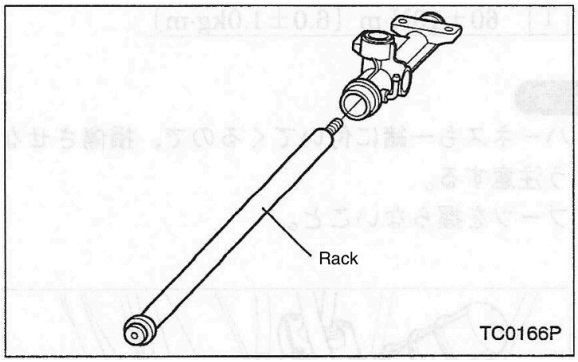
5. Remove the snap ring from the gearbox.



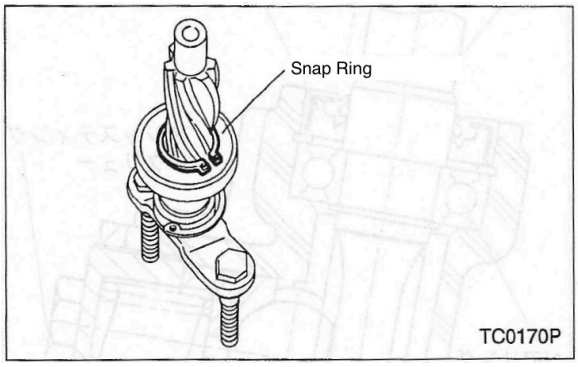
6. Pull out the pinion ABBY from the gearbox.
7. Remove the rack stopper.
8. Remove the rolling pin from the rack.



9. Pull the rack out of the gearbox.



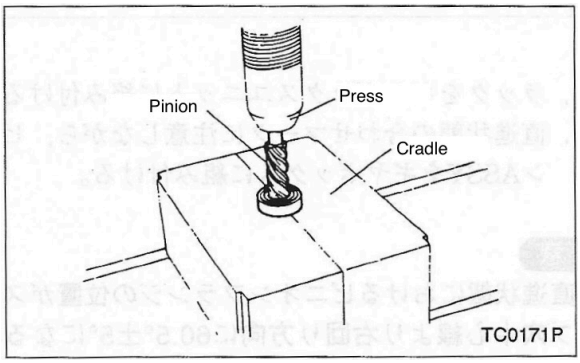
10.Remove the snap ring on the gear side of the pinion assembly.



11.Use a press to remove the ball bearing from the pinion assembly.

NOTE

• The load is supported by the inner race of the bearing.



12.Remove the snap ring and oil seal from the pinion assembly.

<Inspection>

1. After cleaning the parts, check the following items and replace any that are found to be abnormal.
   1) Wear and cracks in the rubber coupling.
   2) Indentations, uneven wear, cracks, etc. on the pinion gear tooth surface.
   3) Ball bearing rattle and rotation problems.
   4) Deformed snap ring.
   5) Indentations, uneven wear, cracks, etc. on the rack gear tooth surface.
   6) Cracks in the gearbox.
   7) Worn or damaged bushings.
   8) Cracks, damage or deterioration of boots.
   9) Damage or deformation of the sleeve.
   10) Deformation or cracks in the stopper.

NOTE

• When replacing the pinion or rack, replace the entire assembly.
• When replacing the bushings, replace the entire gearbox.

2. Replace the oil seal with a new one.

<Assembly>

1. Assemble the oil seal and snap ring onto the pinion.

NOTE

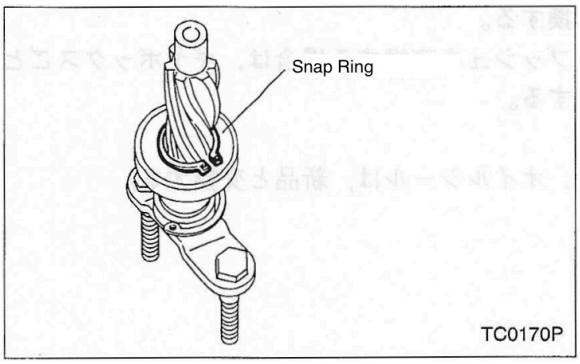
• Use a new oil seal and apply grease to it.

2. Use a press to press the ball bearing into the pinion.

NOTE

• Apply oil to the press-fit surface.

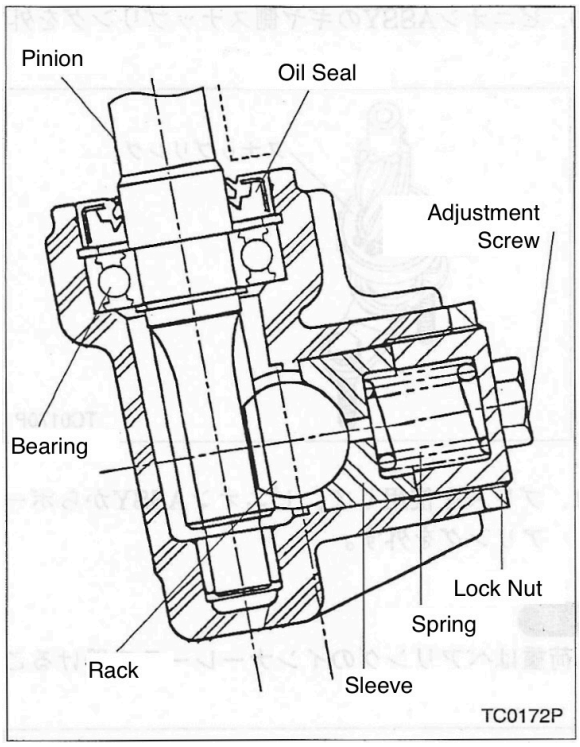
3. Install the gear side snap ring to the pinion assembly.



4. Apply grease to the following parts or areas.

Grease Used	Kyodo Yushi One-Luber SG#5073

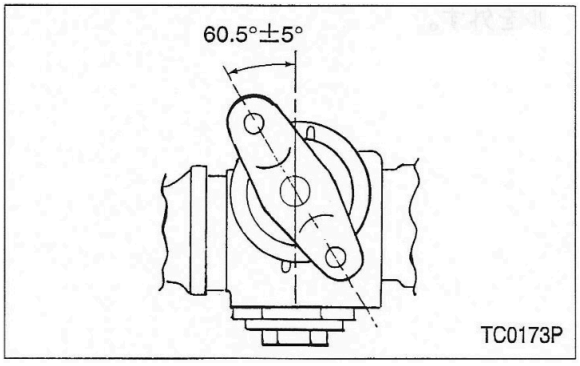
1) Insertion section of the bushing and pinion assembly tip inside the gearbox unit.
2) The sliding part and tooth bottom of the rack.]Pinion tooth root, bearing.
3) The contact surface of the sleeve with the rack and gearbox.



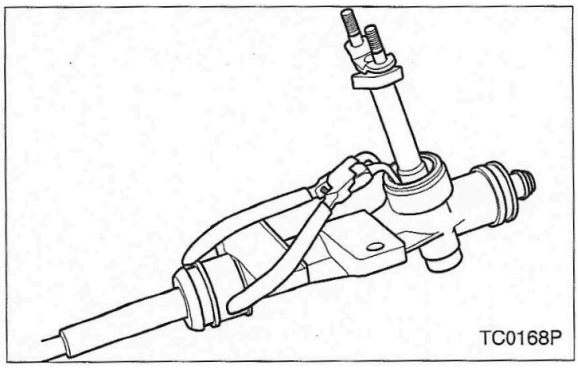
5. Assemble the rack to the gearbox unit.
6. Assemble the pinion assembly into the gearbox while paying attention to the alignment marks when in a straight line.

NOTE

• The position of the pinion flange in a straight running state should be 60.5° ± 5° clockwise from the center line of the sleeve hole.



7. Install the oil seal side snap ring to the gearbox.

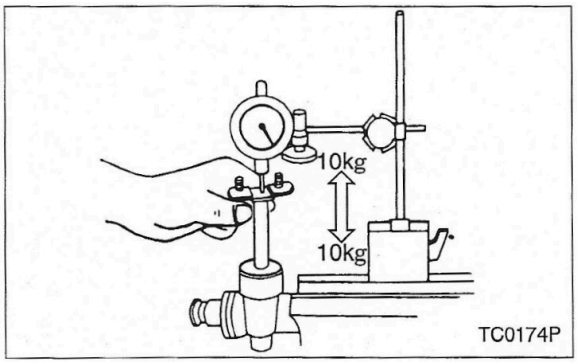


8. Assemble the oil seal to the gearbox.

NOTE
- The end face of the oil seal and the end face on the gearbox side must be flush.

9. Use a dial gauge to measure the clearance (amount of play) in the axial direction of the pinion.

Gap Limit	0.3mm



10. After assembling the sleeve and spring into the gearbox, apply liquid gasket to the threaded portion of the adjusting screw and tighten it to adjust the backlash.

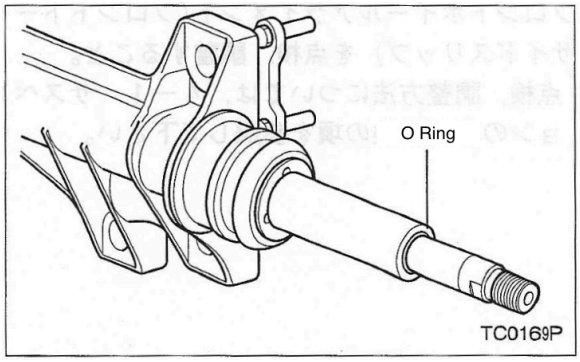
Liquid Gasket	ThreeBond #1102

11. Backlash adjustment procedure
    1) Fully tighten the adjusting screw (until the sleeve touches the rack).
    2) From the state in 1) above, turn the adjusting screw back 20°.
    3) Tighten the lock nut using the special tool, gearbox wrench.
    T 30~49 N•m [3.0~5.0 kg•m]

ST 926230000 Gearbox Wrench

NOTE
- When tightening the lock nut, use a wrench or similar tool to hold the adjusting screw in place so that it does not rotate.

12. Attach the ring to the rack.



13. Assemble the stopper.
14. Assemble the boots to the gearbox (2 places).
15. Attach the wire (tie wire) to the large end of the boot, hook the end of the wire onto the hook of the special tool/wrench, and while pulling upward (approximately 4 kg), tie it and bend it along the boot.

ST 927590000 Wrench

NOTE
- There is no slack in the wire.

16. Assemble the yoke and scraper onto the rack and tighten with the self-locking nuts.
    T 52 ± 10 N•m [5.3 ± 1.0 kg•m]

NOTE
- Align the yoke's oblong hole with the rack's width.
- Use new self-locking nuts.

17. Rotate the pinion and check the operating torque.

Operating Point	Operating Torque
Near straight ahead (±60 from the center of the rack)	1.0 N•m (0.1 kg•m0 or less
Maximum torque over the entire operating range	1.5 N•m (0.15 kg•m) or less

<Installation>

To install on the vehicle, follow the removal procedure in reverse.

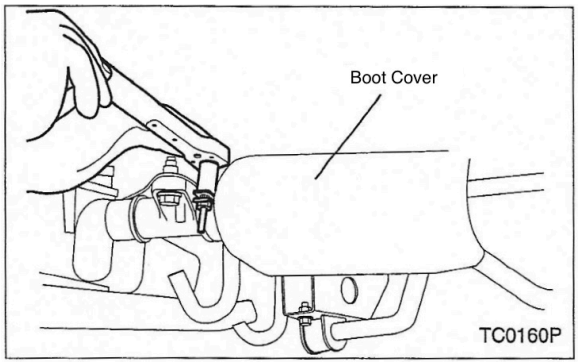
NOTE

- The rubber hose (air vent) must not interfere with the frame.
- When turning left or right, make sure that there are no dents or bulges in the boots.
- When connecting the yoke and drag ring, tighten the nuts in a straight line. Also, use new nuts.
- Do not grip the boots.
- Check and adjust the front wheel alignment (front toe-in, side slip).
- For inspection and adjustment procedures, please refer to Section 4-1, "On-board Inspection of the Suspension."

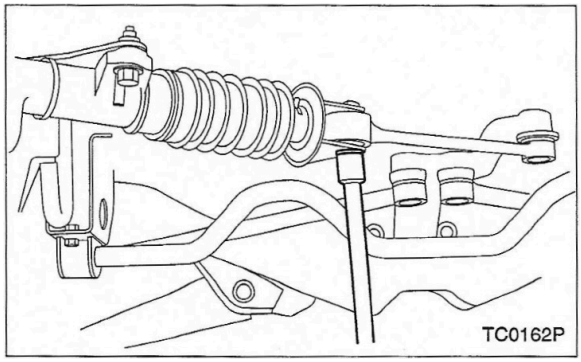
(4) Center Lever, Drag Link

<Removal>

1. Lift up the vehicle.
2. Remove the under cover.
   • For the procedure, refer to the previous section (Gearbox).
3. Remove the boot cover from the steering gearbox.



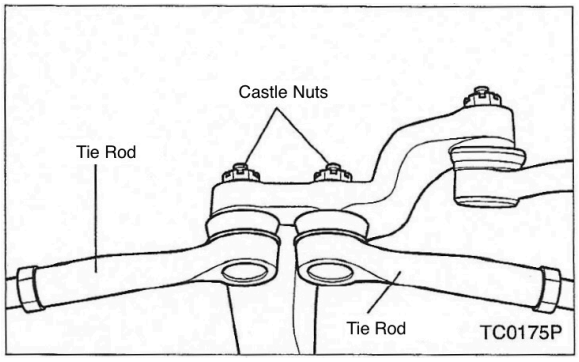
4. Remove the connecting bolts between the gearbox side yoke and drag link and separate them.
   T 59 ± 10 N•m [5.9 ± 1.0 kg•m]



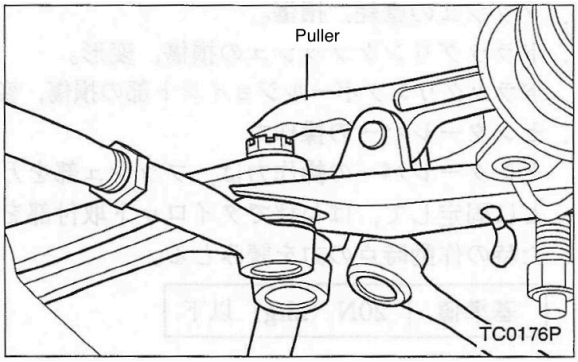
5. Separating the center lever and tie rod.
   1) Remove the cotter bin and then remove the castle nuts (2 places).
      T 24.5~30 N•m [2.45~3.0 kg•m]

NOTE

• Use new Cotter pins.



2) Use a puller to remove the tie rod end from the center lever.

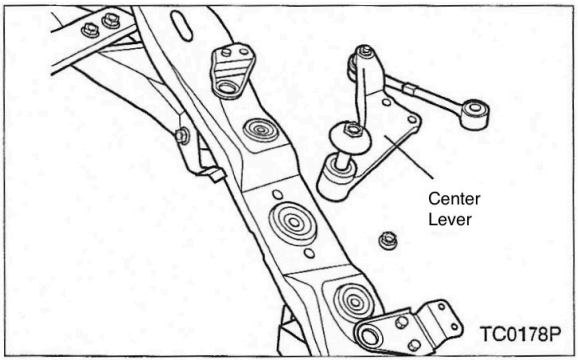


6. Remove the cotter bin in the center of the cross member and loosen the nut connecting the center lever to the front cross member.
   T 113 ± 10 N•m [11.5 ± 1.0 kg•m]

NOTE

• Cotter pins must not be reused.

7. Remove the front cross member. For the procedure, refer to "4-1 Suspension."
8. Remove the nuts and remove the center lever from the front cross member.



9. Remove the cotter bin and nut, and use a puller to remove the drag link from the center lever.
   T 24.5~30 N•m [2.45~3.0 kg•m]

NOTE

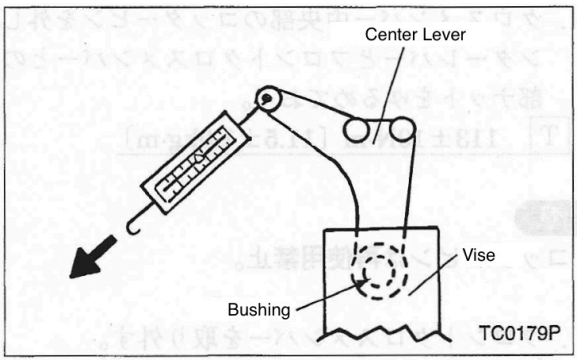
• Use new Cotter pins.

<Inspection>

Check the following items and replace any that are found to be abnormal.

1. Damage or deformation of the center lever.
2. Wear and tear of the push button.
3. Damage or deformation of the drag link bushing.
4. Damage or deformation to the drag link ball joint.
5. Center lever operating force.
   - The operating force of the center lever is measured by fixing the bushing to a vice or the like and reading the force at the time of operation when the tie rod mounting part is pulled using a spring balance.

Standard Value	20 N (2 kg) or less



<Installation>

Follow the removal procedure in reverse.

NOTE

- Use a new cotter pin, and after tightening the nut to the specified torque, align the mounting hole by tightening it no more than 60°.
- After installation is complete, check and adjust the alignment.

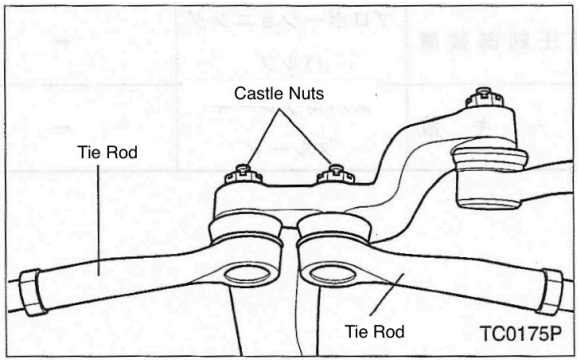
(5) Tie rod

<Removal>

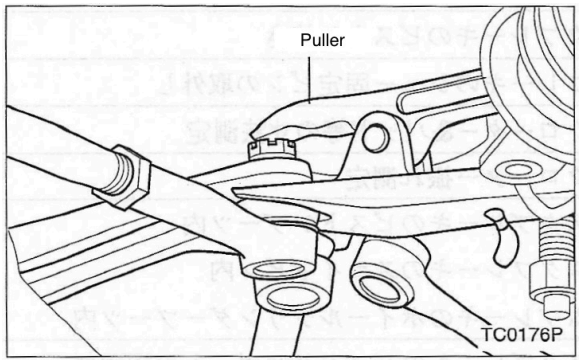
1. Remove the front wheel.
   T 88 ± 10 N•m [9.0 ± 1.0 kg•m]
2. Lift up the vehicle and remove the under cover.
   • Please refer to the previous section "Gearbox" for the procedure.
3. Remove the center lever side tie rod end.
   1) Remove the cotter pin and then remove the castle nut.
      T 24.5~30 N•m [2.45~3.0 kg•m]

NOTE

• Cotter pins must not be reused.



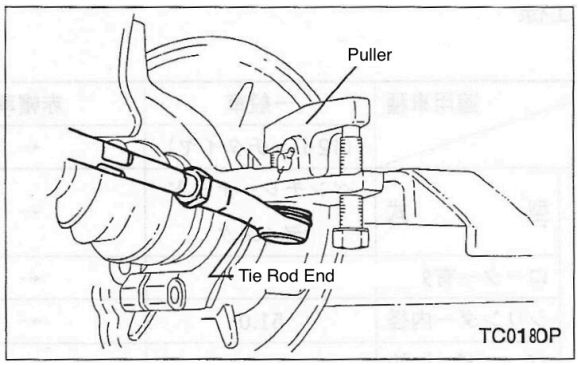
2) Use a puller to remove the tie rod end from the center lever.



4. Remove the cotter pin and castle nut from the outer (tire side) tie rod end, and then use a puller to remove the tie rod end from the knuckle arm.
   T 24.5~30 N•m [2.45~3.0 kg•m]

NOTE

• Use a new cotter pin.



5. Loosen the tie rod lock nut and remove the tie rod end.

NOTE

• Be careful, the inner tie rod end is left-handed and the outer tie rod end is right-handed.

<Inspection>

Check the following items and replace any that are found to be abnormal.

1. Damage or wear to tie rod end or dust seal.
2. Tie rod end and ball stud play.
3. Grease leaking from tie rod end.
4. Damage or deformation of the tie rod end.

NOTE

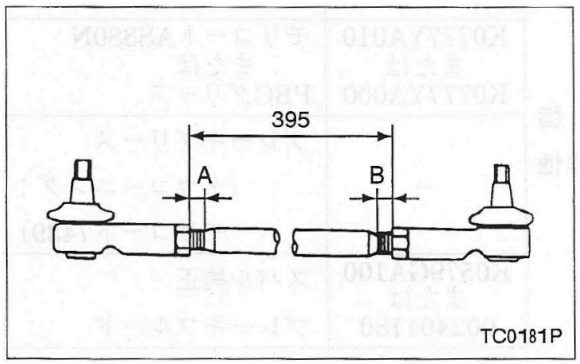
• When replacing the tie rod end, replace it as an assembly.

<Installation>

Installation is the reverse of removal.

NOTE

• Use a new cotter bin, and after tightening the nut to the specified torque, align the mounting holes by tightening it no more than 60°.
• Make sure the distance between the rear end faces of each tie rod end lock nut is 395mm (A and B should be the same).



• After completing the work, check and adjust the toe-in and side slip.

4 - 3 Brakes

■ Specifications

Item		Vehicle Type / 12 inch Tires	Standard	Red Hat
Front Brake	Model		Ventilated Disk	←
	Rotor Effective Diameter		177	←
	Cylinder Inner Diameter		51.0	←
	Pad Dimensions Length x Width x Thickness		93 x 34.5 x 9	←
	Brake Adjustment Method		Automatic Adjustment	←
Rear Brake	Model		Leading/Trailing Drum	←
	Drum Effective Diameter		200	←
	Cylinder Inner Diameter		15.8	←
	Lining Dimensions: Length x Width x Thickness		192 x 30 x 4.5	←
	Brake Adjustment Method		Automatic Adjustment	←

Item		Vehicle Type / 12 inch Tires	Standard	Red Hat
Master Cylinder	Model		Tandem	←
	Cylinder Inner Diameter		20.6	←
	Reservoir Tank		Semi-Moisture With Seal	←
Brake Booster	Model		Vacuum Type	←
	Effective Diameter		205	←
Parking Brake	Model		Mechanical Rear 2 Wheel Braking	← (Retractable Lever)
Rear Wheel Hydraulic Pressure Control Device			Proportioning Valve	←
Brake Fluid			Subaru Brake Fluid	←

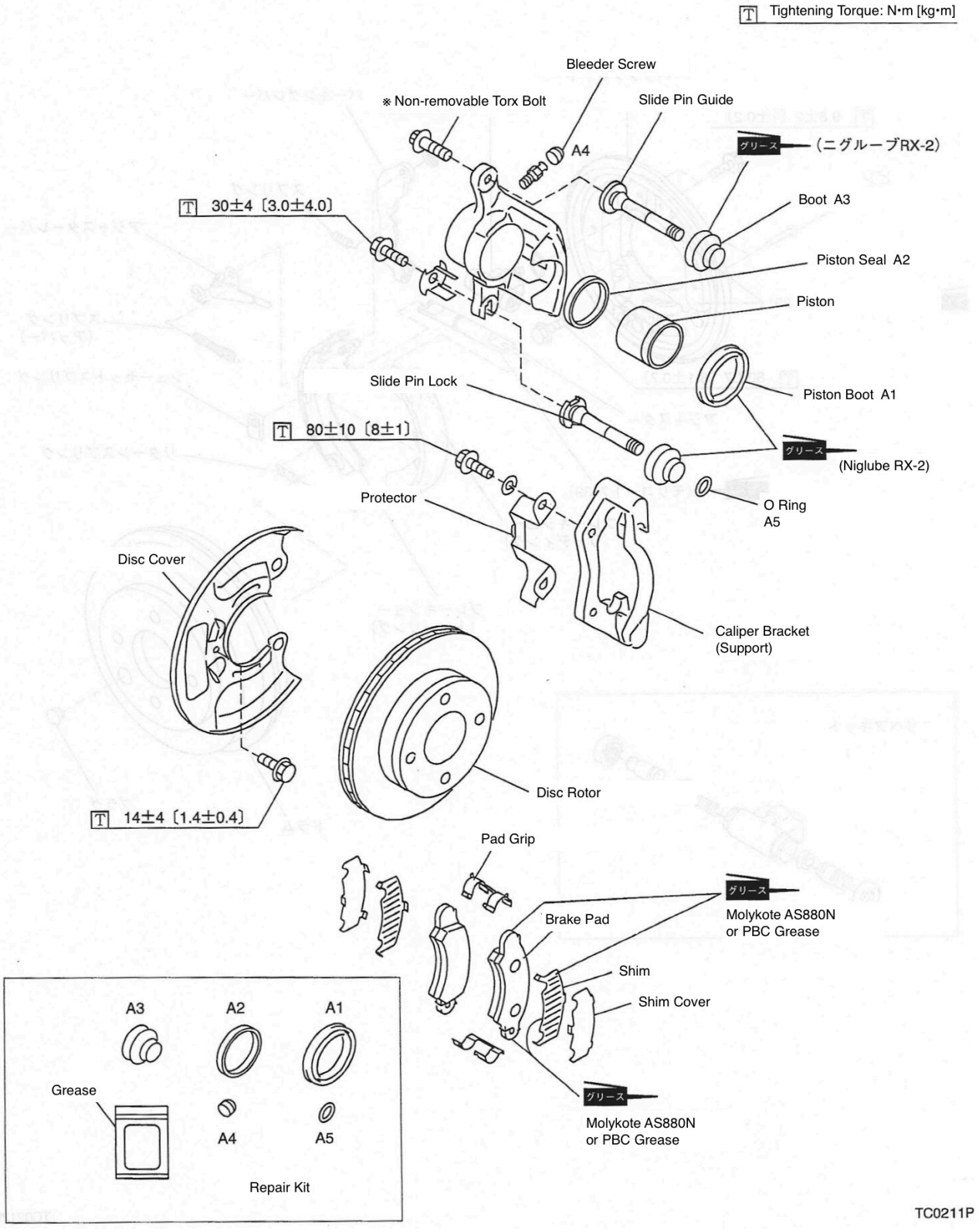
■ Maintenance Preparations

Classification	Tool Number	Name	Purpose
Tool		Flare Nut Wrench	Removal and installation of the brake
		Air Gun	Disc brake piston removal
		Vice Grip	Removing the drum brake shoe fixing pin
Instruments		Caliper	Measurement of the disc rotors and pads
		Dial Gauge	Disc rotor runout measurement
Grease, Oils, & Other	K0779GA102 (000041000)	Niglube RX-2	• Inside the piston boots of the disc brakes • Inside the disc brake slide pin • Inside the wheel cylinder boots of the drum brakes
	K0777YA010 or K0777YA000	Molykote AS880N or PBC Grease	• Vibrating parts of the disc brake pads & supports • The contact surface between the disc brake and shim
	—	Brake Grease (Dow Corning: Molykote 7439)	Contact surface between the drum brake shoe and back plate
	K0579GA100 or 002401180	Subaru Genuine Brake Fluid	Brake fluid
		Nippeco LT&GB (Nippon Mineral Oil)	Lubrication on the grounding part of the ABS Hydraulic Unit

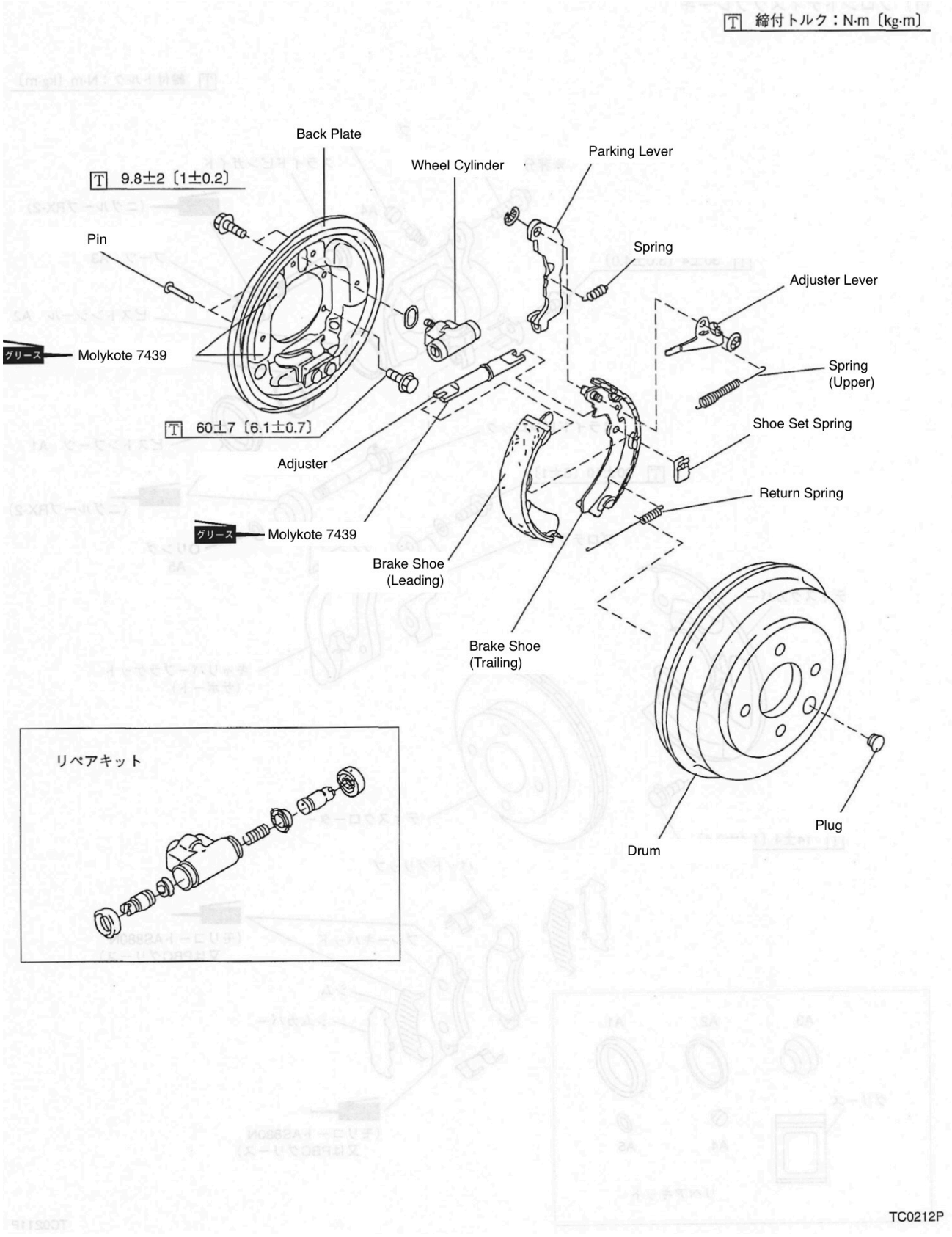
[1] Standard Brakes

■ Component Parts

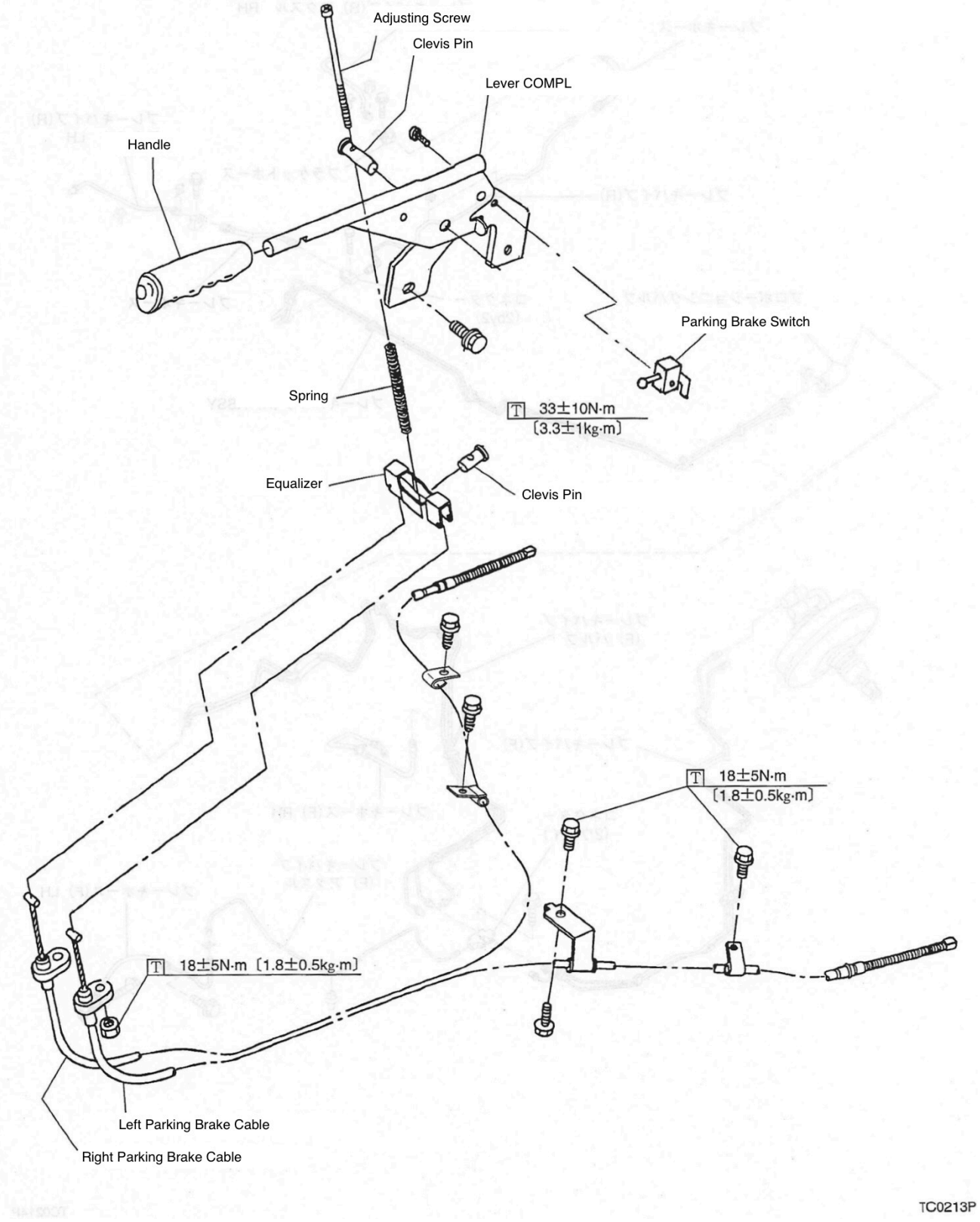
(1) Front Disc Brakes



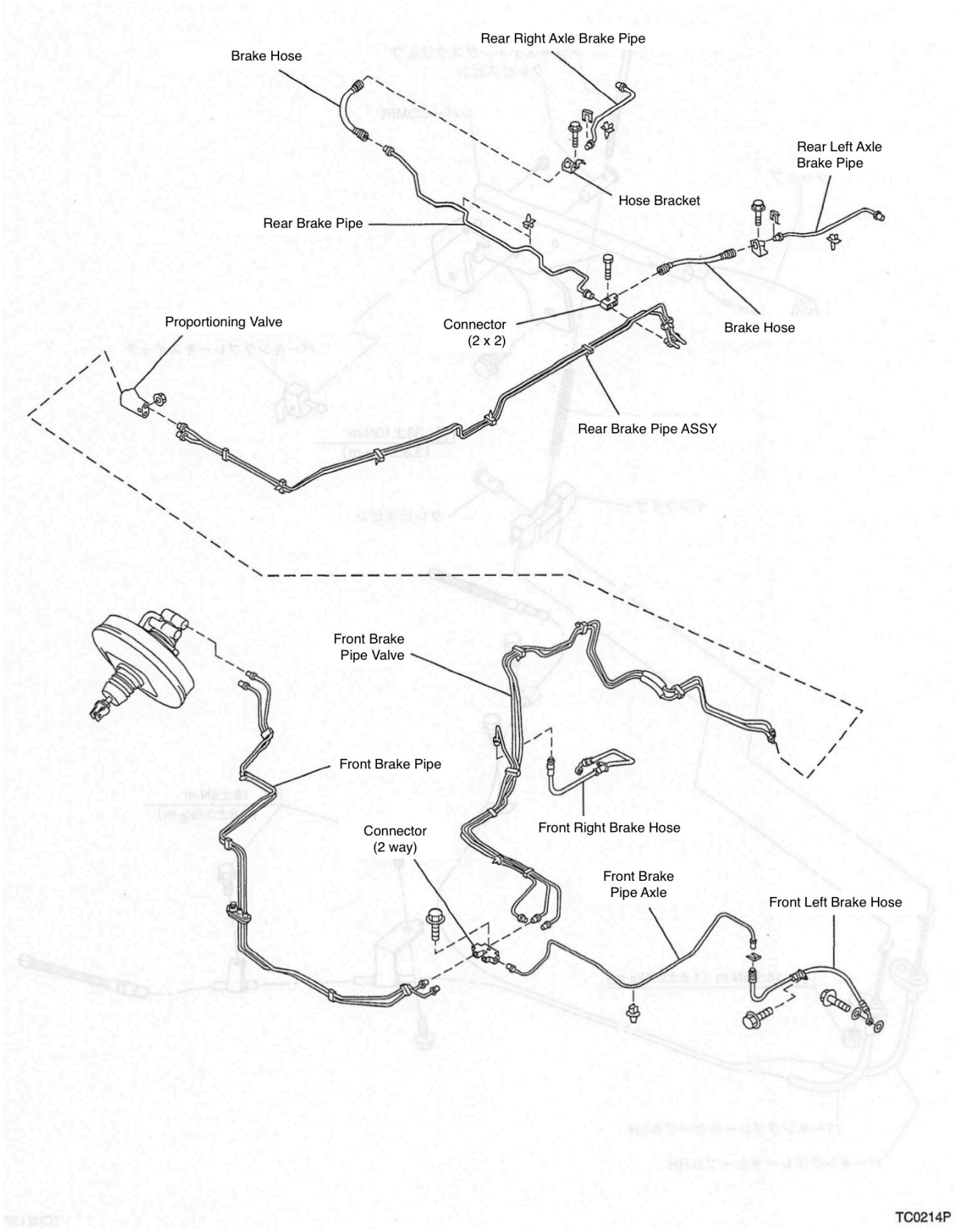
(2) Rear Drum Brakes



(3) Parking Brake



(4) Brake Hoses & Pipes



■ Maintenance Instructions

(1) On-board Inspection

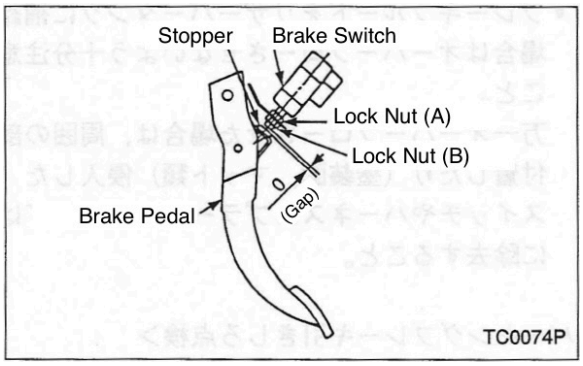
<Brake Pedal Height Check>

1. With the engine stopped, measure the distance from the top of the pedal pad to the lower mounting point of the pedal bracket.

Standard Value	ℓ_1	140mm

<Brake Pedal Height Adjustment>

1. Disconnect the top lamp switch connector.
2. Loosen the lock nuts (A) & (B) of the stop lamp switch, and move it to a position where it does not com in contact with the brake pedal stopper.
3. Loosen the lock nut on the operating rod and rotate the rod to adjust the pedal height.
4. Secure the lock nut.
5. Adjust the gap between the threaded part of the stop lamp switch and the brake pedal stopper so that it is 0mm.



6. In the position from step 5, secure the stop lamp switch with the lock nut (A).
7. Connect the stop lamp switch connector.
8. Check the brake pedal height, free play, and whether the stop lamp is on.

<Brake Pedal Free Play Check>

1. With the engine off, depress the brake pedal 2-3 times to release the vacuum in the brake booster, then press the pedal with your finger to check the distance (play) until it becomes heavy.

Standard Value (mm)	1~3

<Brake Pedal Free Play Adjustment>

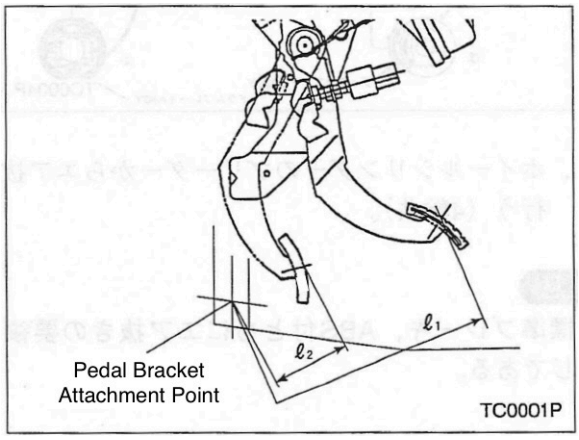
1. Loosen the lock nut on the operating rod and turn the rod to adjust the pedal free play.
2. Check the brake pedal height and whether the stop lamp is on.
3. Tighten the lock nut.

<Brake Pedal Travel Check>

1. Start the engine and measure the distance from the top of the brake pedal to the lower mounting point of the pedal bracket when the pedal is depressed with 30 kg of force.

Standard Value	ℓ_2	55mm or more

2. If the remaining pedal stroke is below the standard value, inspect the following:
   - Air in the brake system.

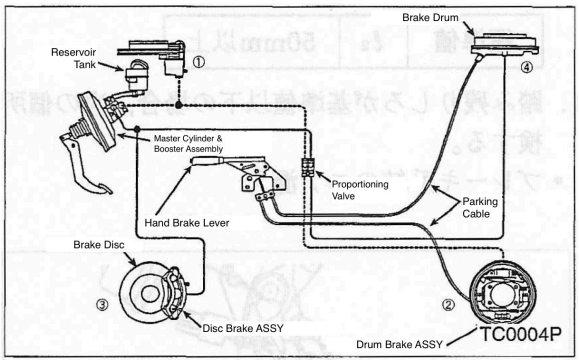


<Air Bleeding>

- To prevent chemical changes, do not use different brands of brake fluid.
- Brake fluid will damage painted surfaces, so be careful not to spill it. If you do spill it, wipe it up immediately.
- While bleeding the air, pay attention to the amount of brake fluid in the reservoir tank and do not let it run empty.
- Pump the brake pedal slowly while bleeding the air.
- Do not reuse the brake fluid that has been drained (as brake fluid is water-absorbent).
- When storing unused brake fluid, make sure to close the container lid tightly to prevent it from absorbing moisture from the air.

<Air Bleeding Procedure>

- Perform in the order of ①→②→③→④ as shown in the diagram below.



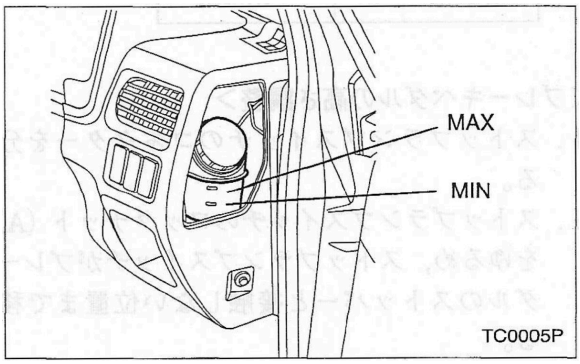
1. Bleed the air from the bleeders in the wheel cylinders (all four wheels).

NOTE

- The procedure for bleeding air is the same for both standard brakes and those with ABS.

<Checking the Brake Fluid Level>

1. Remove the reservoir tank cover on the right side of the instrument panel and check that the upper surface of the brake fluid in the reservoir tank is between the MIN and the MAX levels.



2. If the brake fluid level is below the MIN level, add brake fluid.

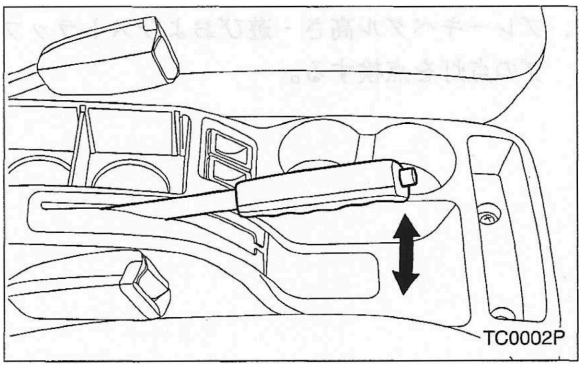
NOTE

- Make sure to securely assemble the tank cap until it hits the stopper and locks in place.
- When refilling the brake fluid into the reservoir, be careful not to let it overflow.
- If the fluid does overflow, be sure to thoroughly remove any fluid that has adhered to surrounding parts (painted surfaces, mats, etc) or that has entered the parts (especially switches and harness couplers).

<Checking the Parking Brake Release>

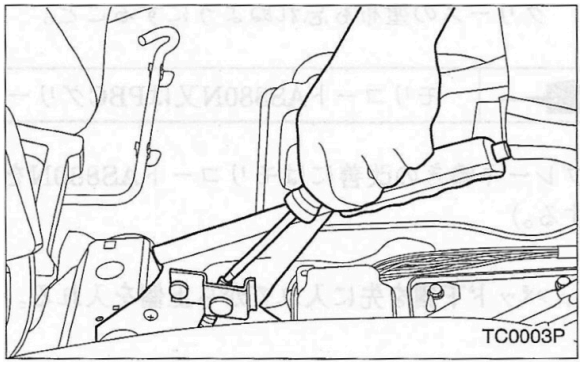
- Check the pull when operating the parking brake lever 2 to 3 times with an operating force of 20 kg.

Standard Value (mm)	7~9 notches (with operating force of 20kg)



<Parking Brake Lever Travel Adjustment>

1. Adjust using a screwdriver through the boot cutout on the console box.
2. Rotate the adjusting screw to set the standard value.



NOTE

- After adjusting the parking lever, release the brake lever and rotate the rear wheel to check for any drag.

<Brake Booster Inspection>

1. Start the engine and run it for 1 to 2 minutes.
2. Stop the engine.
3. Press down on the pedal with normal force.
4. It is good if the stroke is large on the first press and the pedal stroke gets smaller as you press down.

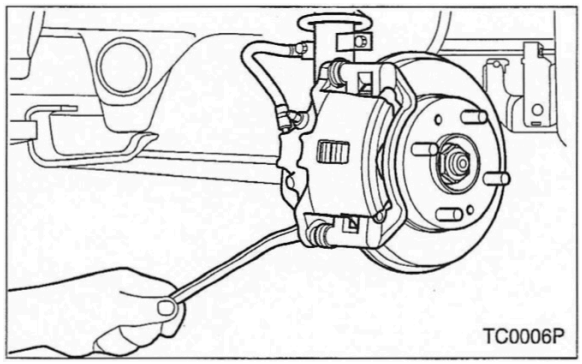
NOTE

- If there is a defect, it may be due to a check valve malfunction, a damaged hose, or a malfunction of the brake booster.
- Replace the check valve and hose if they are faulty.

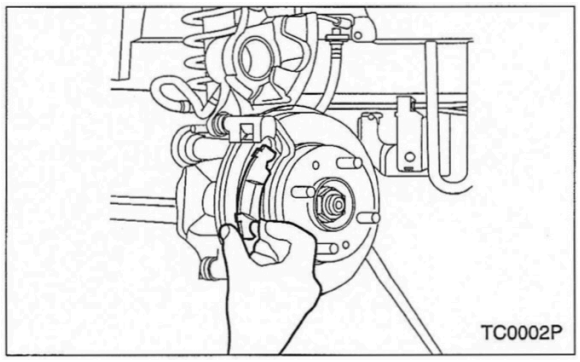
(2) Front Disc Brake

<Inspection of Disc Pad>

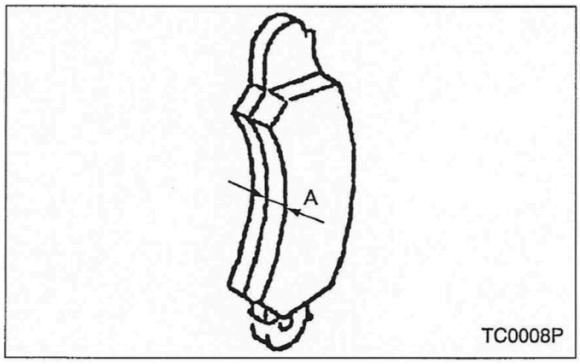
1. Place on the lift.
2. Remove the wheel.
3. Remove the lower caliper fixing bolt and lift up the caliper body.



4. Remove the pad from the support.



5. Check the pad thickness.



Pad Thickness A mm	**Standard**	9.0
	Limit	1.5 (Akabou 2.0)

NOTE

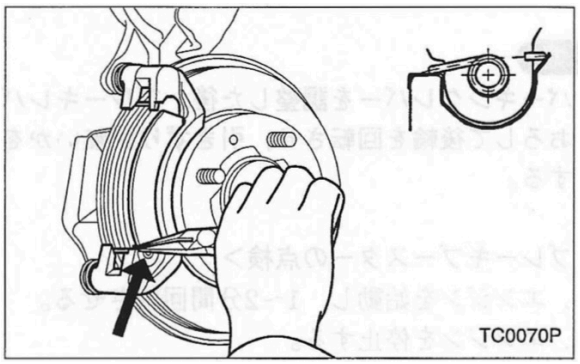
- If oil is present, replace it.
- Replace the pads on both the left and right wheels at the same time.
- If it is difficult to push in the piston when replacing the pads, loosen the air bleeder before working.
- If you work without loosing the air bleeder, be careful of overflow as the fluid level in the breather tank will rise when the piston is pushed in.

6. When installing replacement pads, make sure the springs shown in the diagram below are securely attached to the supports.
   - Don't forget to apply grease.

グリース	Molykote AS880N or PBC Grease

(Molykote AS880N is recommended to reduce brake squeal.)

7. Insert the bottom of the pads first, then the top.

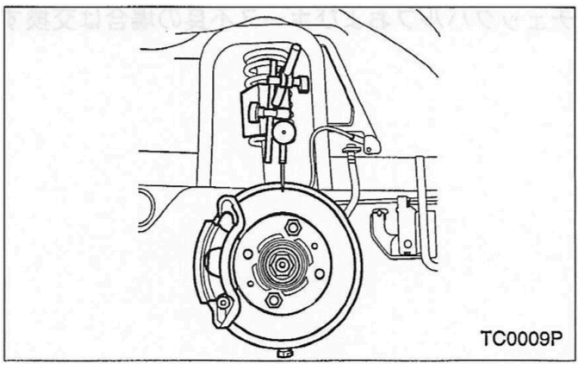


<Disc Rotor Inspection>

1. Place a dial gauge on the disc rotor and rotate the disc rotor to check for runout.

NOTE

- The dial gauge should be set to 5mm from the outer periphery of the rotor



Disc Rotor Runout Limit (mm)	0.075

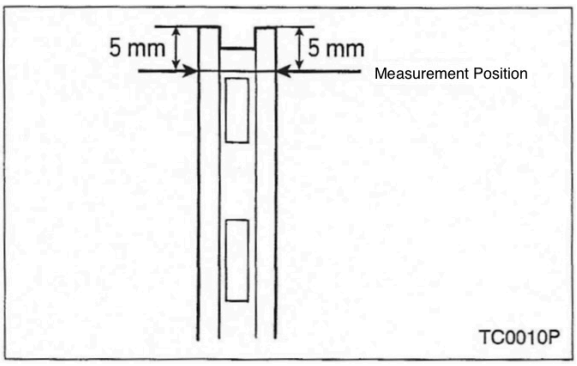
2. Measure the thickness of the disc rotor

NOTE

- The micrometer measurement position is 5mm from the outer circumference of the rotor.

Disc Rotor Thickness A (mm)

Standard Value	Limit
18	16

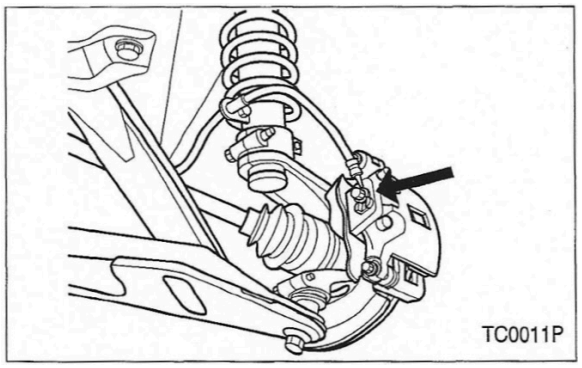


REFERENCE

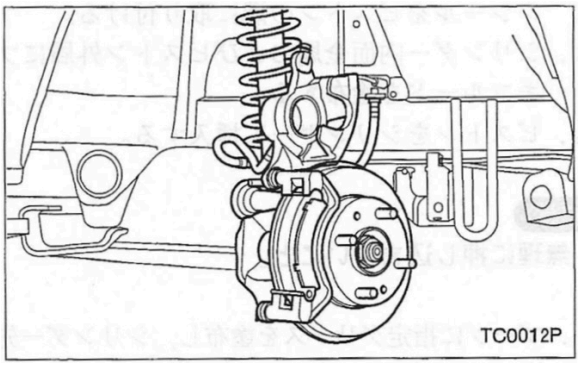
- Remove the support from the disc rotor and remove it from the hub.
- If the disc rotor is difficult to remove from the hub, screw an 8mm bolt into the threaded part of the rotor and pry up the rotor.
- When assembling the rotor, remove any rust or foreign matter from the mating surface between the rotor and hub.

<Brake Caliper Disassembly>

1. Place the vehicle on a lift.
2. Remove the wheel.
3. Remove the union bolt and remove the brake hose from the caliper body assembly.



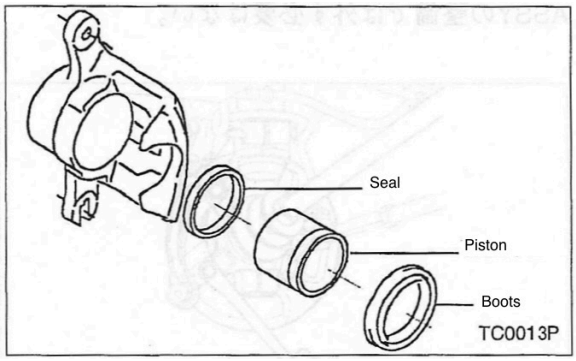
4. Remove the caliper fixing bolts, lift the caliper body, and then move the caliper body towards the inside of the vehicle to separate it from the support.



5. Use a flat-head screwdriver or similar to tool to remove the boot ring on the circumference of the piston.
6. Remove the piston boot from the end of the piston.
7. Compressed air is gradually sent through the brake house mounting.
8. Remove the piston seal from inside the caliper body cylinder.

NOTE

- Place a piece of wood or similar between the caliper tool body to prevent damage caused by the piston popping out.



<Brake Caliper Inspection>

1. Check for uneven wear, damage, or rust on the caliper body and piston.
2. Check for damage or aging of rubber parts.
   - Replace or repair any defective items.

<Brake Caliper Assembly>

1. Clean the inside of the caliper body with brake fluid.
2. Apply the specified grease to the piston seal.
3. Apply brake fluid to the entire inside of the cylinder and the outer periphery of the piston.
4. Insert the piston into the cylinder.

NOTE

- Do not force it in.

5. Apply the specified grease to the boot and assemble it into the grooves at the end of the cylinder and piston.

グリース	Niglube RX-2 or Rubber Grease

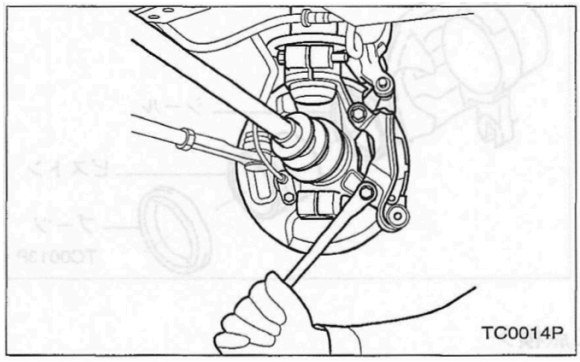
<Installation>

Follow the removal procedure in reverse.

- Apply the specified grease to the inner surface of the cylinder pin slide and the inner surface of the pin boot.
- Bleed air.

NOTE

- The support needs to be removed when replacing the support or disc rotor, but it does not need to be removed when servicing the caliper body assembly.

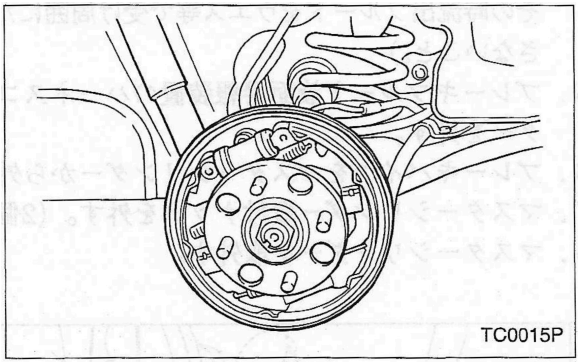


(3) Rear drum brake

<Inspection>

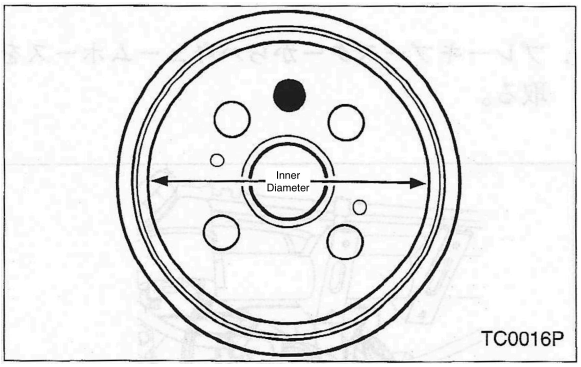
1. Place on the lift.
2. Remove the wheel.
3. Remove the brake drum and check for oil leaks from the wheel cylinder.
4. Check the lining for thickness, uneven wear, streaks, and adhesion of oils and greases to the lining surface, and replace any that are found to be abnormal.

Lining Thickness (mm)	**Standard**	4.5
	Limit	1.7



5. Check the drum for any signs of wear, scratches, rust, etc. inside the drum, as well as the inner diameter of the drum. If any abnormalities are found, repair or replace them depending on the severity.

Drum Inner Diameter (mm)	**Standard**	200
	Limit	202

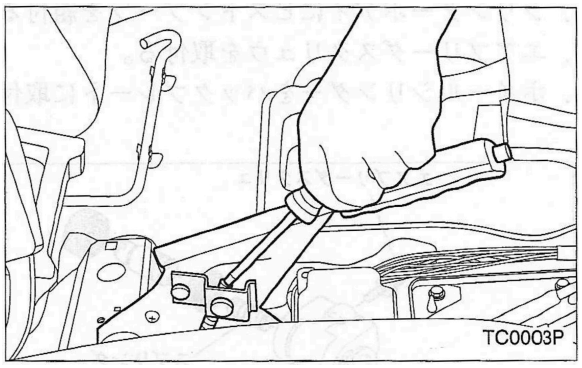


NOTE

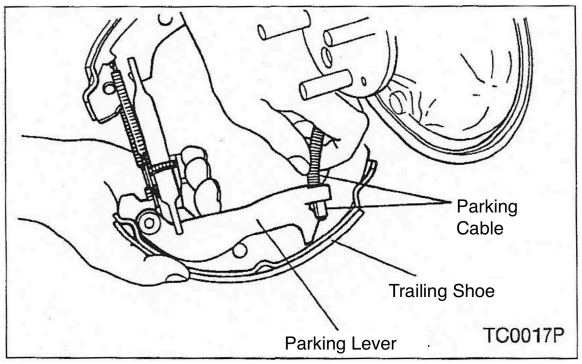
- When replacing, replace both the leading and training wheels, as well as both the left and right wheels, at the same time.
- If there is any oil or grease on the inside of the drum, wipe it off completely.
- If the drum is difficult to remove, screw an 8mm bolt into the threaded part of the drum and pry up the drum.

<Disassembly/Assembly>

1. Loosen the cable using the parking brake lever adjusting screw.
   - Leave the parking brake lever down.



2. Remove the lower shoe return spring.
3. Remove the hold-down spring and bin.
4. Remove the shoe from the anchor side, then remove the wheel cylinder side.
5. Remove the parking brake cable from the parking lever, being careful not to bend or damage the cable.



6. Remove the brake pipe from the wheel cylinder and remove the wheel cylinder from the back plate.

NOTE

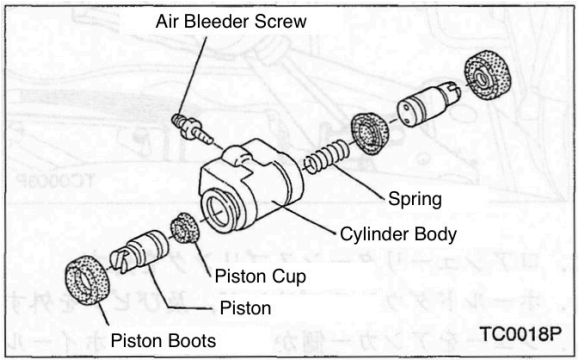
- Assembly is carried out in reverse order.
- After assembly, bleed the air.
- When assembling, make sure that the parking cable and parking lever are securely set.

<Disassembly, Inspection, & Assembly of Wheel Cylinders>

1. Remove the piston boot from the cylinder body.
2. Remove the piston and piston cup from the cylinder body.
3. Remove the air plunger screw.
4. Check the following items and replace any that are found to be abnormal.
   - Check for scratches and wear on the inside of the cylinder body.

- Check for damage, wear, or deformation to the piston head, piston, and piston cup.
- Check for deterioration, cracks, or damage to the cylinder boot.

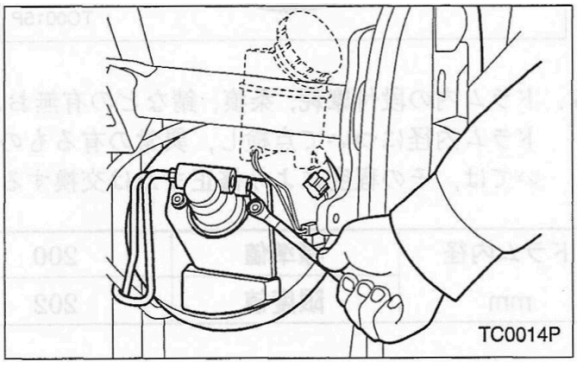
5. Assemble the piston cup, piston, and piston head into the cylinder body.
6. Assemble the piston boot onto the cylinder body.
7. Install the air bleeder screw.
8. Install the wheel cylinder onto the back plate.



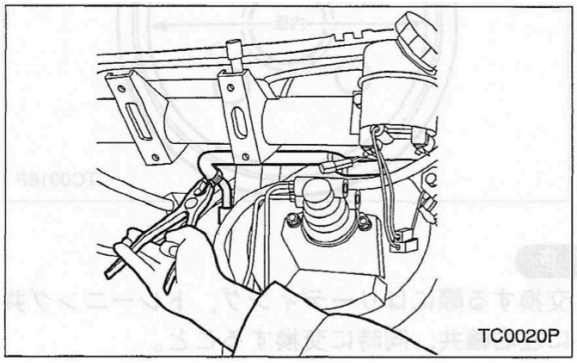
(4) Brake booster

<Removal>

1. Disconnect the battery terminals and wait at least 20 seconds before starting work. (Only for vehicles with airbags)
2. Remove the steering column cover and the foot duct underneath it, remove the mounting bolts for the steering column assembly, and remove the steering column.
   - (See Steering Chapter 4-2)
3. Remove the instrument panel assembly (see Chapter 5-2).
4. Drain the brake fluid from the reservoir tank. (Because there is a filter inside the tank, it cannot be completely drained through the filler neck. Therefore, remove the hose on the master cylinder side and drain the brake fluid. At this time, catch the leaked fluid with a rag or similar and do not let it drip around.)
5. Disconnect the harness connector for the brake fluid level warning device.
6. Remove the brake pipe from the master cylinder.
7. Remove the master cylinder mounting nuts (2 pieces).
8. Remove the master cylinder.



9. Remove the vacuum hose from the brake booster.

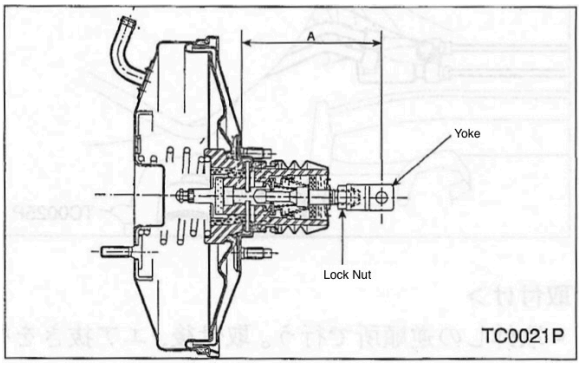


10. Remove the pedal bracket mounting bolts and nuts (four locations), and remove the brake booster along with the pedal bracket.
11. Disconnect the clutch cable (MT vehicle) and stop lamp switch connector at the same time.

12. Remove the clevis pin connecting the brake booster operating rod to the brake pedal.
13. Remove the four nuts that secure the brake booster to the pedal bracket.

<Installation>

1. Attach the lock nut and yoke to the threaded portion of the operation rod, adjust the rod length to the diagram below, and then tighten the lock nut.



A Length (Standard Value)	98.5

NOTE

- Apply the specified grease to the clevis pin where the brake booster and brake pedal connect.

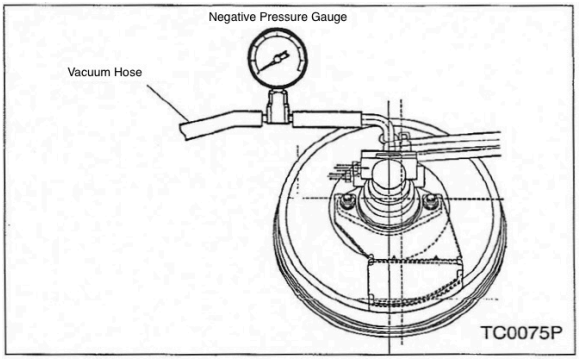
グリース	Showa Shell Sunlight No. 2

- After installing the brake booster, check the brake pedal free play and the height when pressed.

<Airtight Function Check>

1. Install a vacuum gauge and appropriate hose between the brake booster and the check valve.
2. Start the engine and run the radiator fan twice. When the vacuum gauge reaches 66.7KPa (500mmHg), stop the engine and measure the negative pressure.

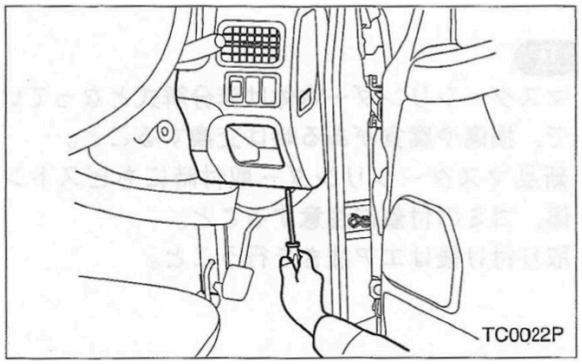
Standard Value	No degrease in vacuum for 15 seconds after engine is stopped



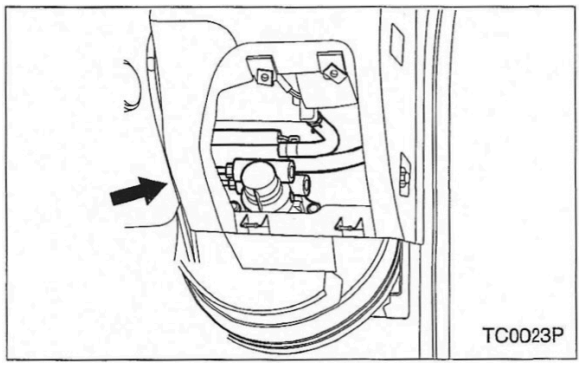
(5) Master Cylinder

<Removal>

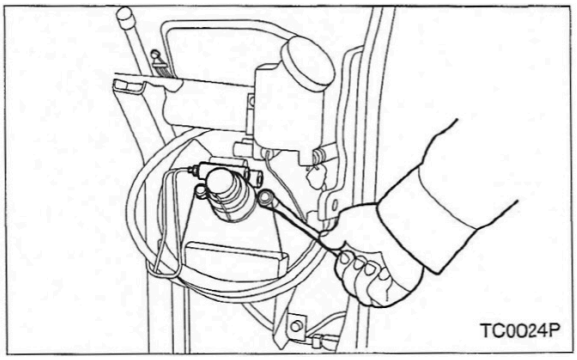
1. Remove the foot duct and steering column lower cover.
2. Remove the pocket (4 screws).
3. Remove the reservoir tank cover (for checking the brake fluid level) on the right side of the instrument panel.



4. Drain the brake fluid from the reservoir tank. See (4)-4.
5. Disconnect the fluid level indicator harness connector.
6. Remove the brake pipe from the master cylinder. (Insert the tool from the steering column side.)



7. Remove the master cylinder mounting nut and remove the master cylinder from the brake booster. The knee guard is fastened together with this nut, so be careful when assembling it.
8. Installation is the reverse of removal.



<Inspection>

1. With the brake fluid installed in the vehicle, check that there are no brake fluid leaks from the reservoir tank, the hose from the tank, the brake pipes, their respective connections, and the master cylinder body.
2. After removing the master cylinder body, clean it and check for damage or corrosion.

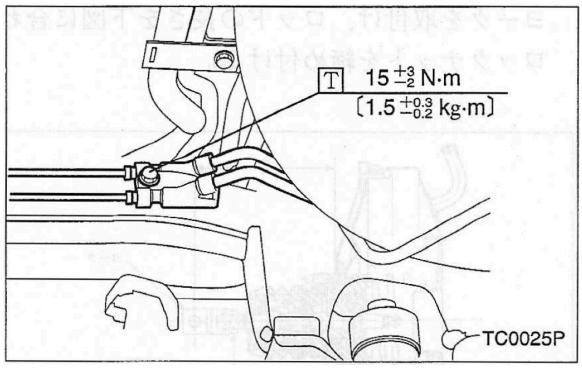
NOTE

- The master cylinder body is not disassembled, so if it is damaged or corroded, replace it.
- When installing a new master cylinder, be careful not to damage the piston or have any dirt stuck to it.
- After installation, bleed the air.

(6) Proportioning valve

<Removal>

1. Use a flare nut wrench to remove the brake pipe from the proportioning valve.
2. Loosen the mounting nut and remove the proportioning valve.



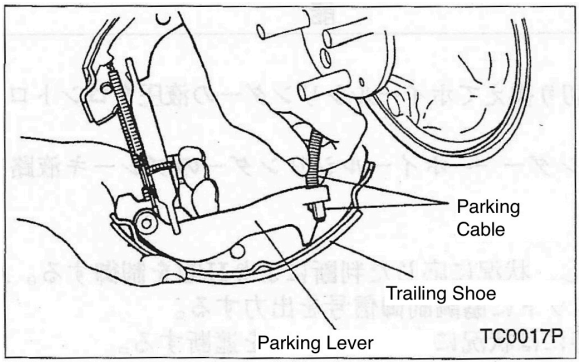
<Installation>

- Remove the parts in the reverse order.
- After installation, bleed the air.

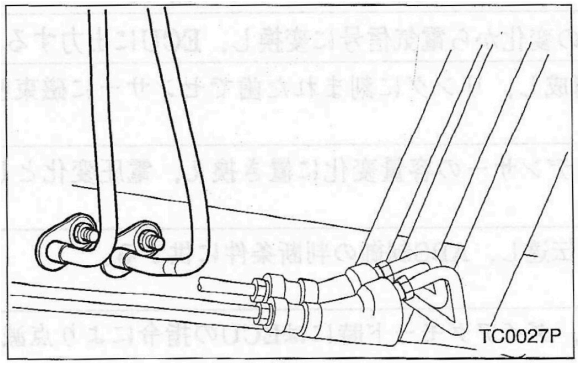
(7) Parking brake

<Replacing the Parking Brake Cable>

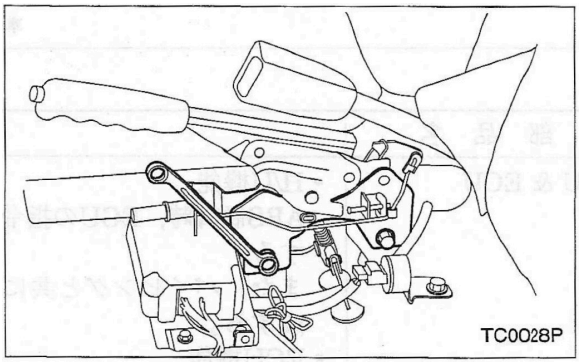
1. Fold up the passenger seat.
2. Remove the center console (4 screws).
3. Release the parking brake lever.
4. Fully loosen the adjusting screw and remove the cable from the equalizer.



5. Remove the wheel and brake drum, and then remove the brake shoes.
6. Remove the cable from the parking lever and pull it out to the outside of the back plate.



7. Remove the cable from the clips around the vehicle.
8. Remove the cable fixing nut on the underside of the body on the parking brake lever mounting side.



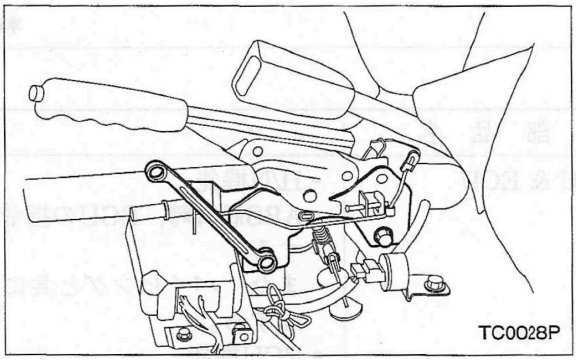
9. Installation is the reverse of removal procedure.

NOTE

- When installing, be careful when routing the cable and do not bend or stretch it too much.
- To prevent malfunction, do not bend the cable.
- After installation, be sure to adjust the parking brake lever travel.

<Removing the Parking Brake Lever>

1. Fold up the passenger seat.
2. Remove the center console.
3. Return the parking lever.
4. Fully loosen the adjusting screw and remove the cable from the equalizer.
5. Disconnect the parking brake switch wiring.
6. Remove the parking brake assembly mounting bolts and remove the entire assembly.



<Inspection>

1. Check for deformation, damage and rust in each part.
2. Check for wear on the mating parts of the ratchet and ratchet hook.
3. Check for uneven wear on the clevis pin.

NOTE

- Replace any damaged items.

<Installation>

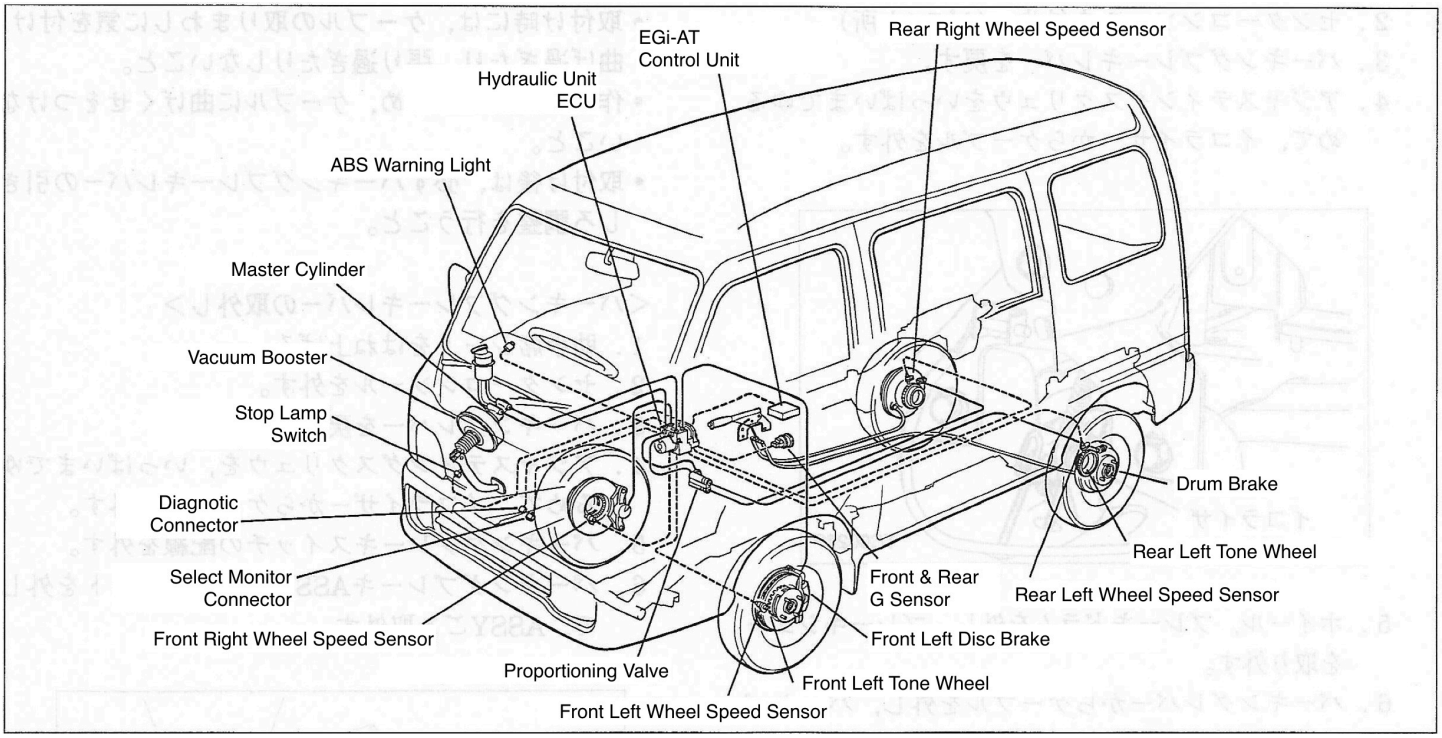
- Installation is the reverse of removal procedure.

NOTE

- After installing the lever assembly, adjust the pull.
- The same procedure is followed for the retractable handbrake lever.
  - The above diagram shows the retractable lever.

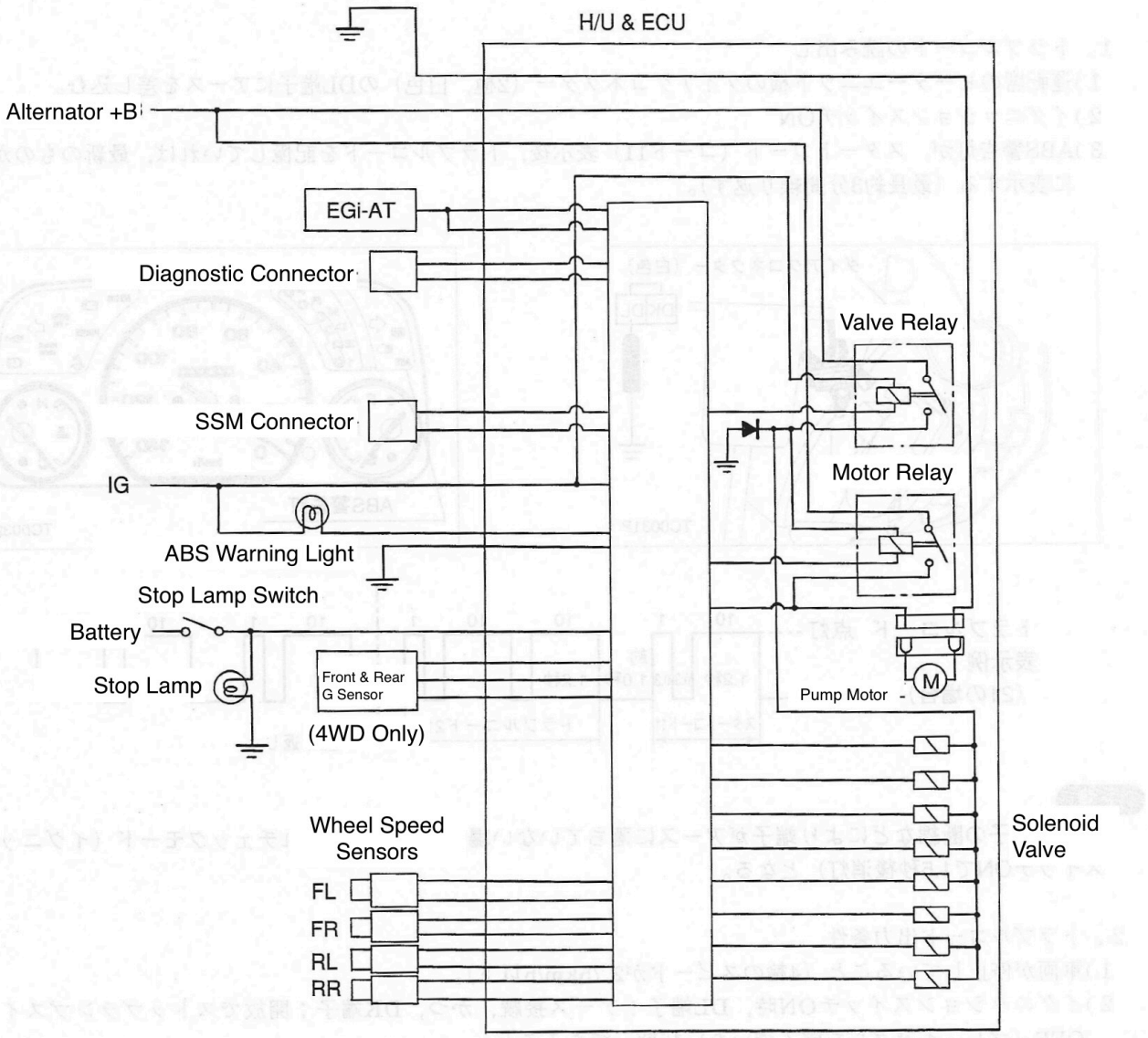
[2] Anti-lock Brake System (ABS)

■ Components & Functions



Part Name	Function
H/U & ECU	• H/U Function • During ABS control, the hydraulic pressure in the wheel cylinder is controlled by switching the hydraulic path according to the ECU's instructions. • Together with the piping, it also forms the brake fluid path from the master cylinder to the wheel cylinder. • ECU Function • Calculates wheel and vehicle behavior from wheel speed and controls H/U according to the situation. ABS • During control, it outputs a cooperative control signal to the EGI AT control unit. It constantly performs self-diagnosis when the power is on, and shuts down the system depending on the situation if an abnormality occurs. • It has serial communication functionality and communicates with the Subaru Select Monitor (SSM). • Relay function • Motor relay - It acts as a power switch to the pump motor under the command of the ECU. • Valve relay - Under the command of the ECU, it acts as a power switch for the solenoid valve and motor relay coil.
Wheel Speed Sensor	The rotation of the wheels is converted into an electrical signal from the change in magnetic flux density passing through the sensor, and output to the ECU.
Tone Wheel	Together with the hub, housing, etc., it forms a magnetic circuit, and the teeth engraved on the ring cause a change in magnetic flux density in the sensor, generating a voltage.
Front & Rear G Sensor (4WD)	Changes in the vehicle's longitudinal G-forces are converted into changes in the capacitance of the capacitor inside the sensor, which is then output to the ECU as a voltage change.
Stop Lamp Switch	It transmits information about whether the brake pedal is depressed to the ECU and serves as a judgment condition for ABS control
ABS Warning Light	It transmits information about whether the brake pedal is depressed to the ECU and serves as a judgment condition for ABS control
EFi-AT Control Unit	Cooperative control is performed based on commands from the ABS ECU.

■ Input/Output Diagram



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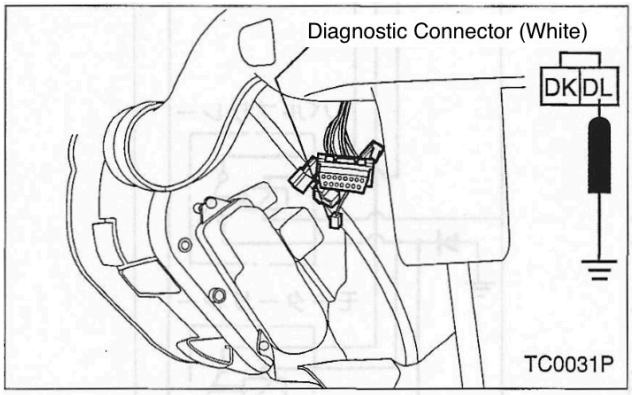
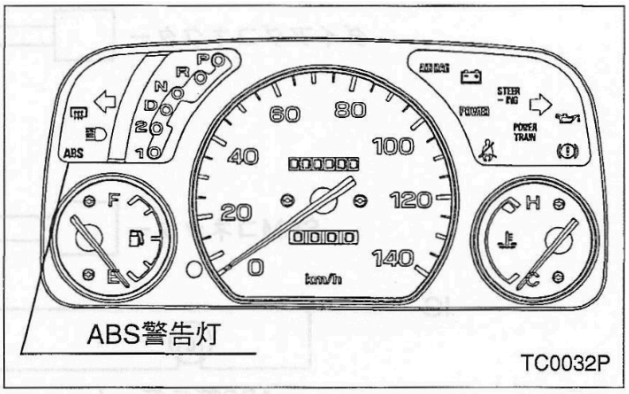
■ Self-diagnosis Function

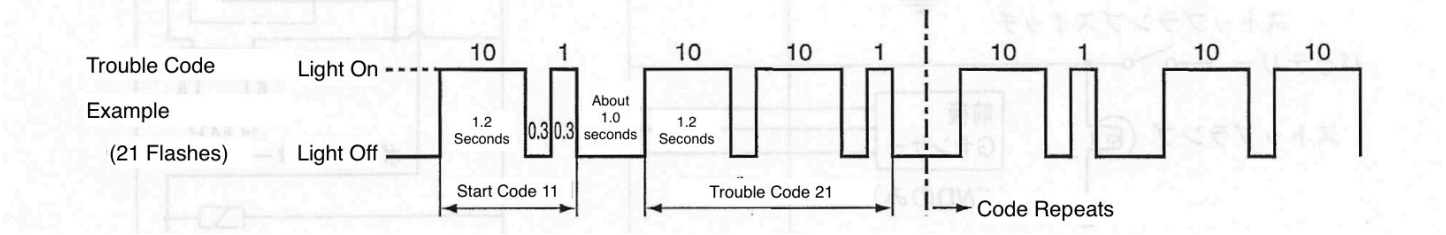
When the ECU's self-diagnosis function detects a problem, it turns on the ABS warning light in the meter and simultaneously shuts down the system to prevent malfunction. However, if the problem is an accidental phenomenon, and no problem occurs when the ignition is turned off and on, the warning light will not come on.

A maximum of three trouble codes can be stored. If there are more than three, the most recent three will be stored (until the memory is cleared). Trouble codes can be displayed by switching the ABS warning light to trouble code display mode by performing the following operation.

1. Trouble code reading
   1) Insert the earth wire into the DL terminal of the diagnostic connector (2-pole, white) next to the heater unit on the driver's seat.
   2) Turn the ignition switch ON
   3) After the ABS warning light comes on and the start code (Code 11) is displayed, if any trouble codes are stored, they will be displayed in order from the most recent.
      • Repeated for up to approximately 3 minutes.





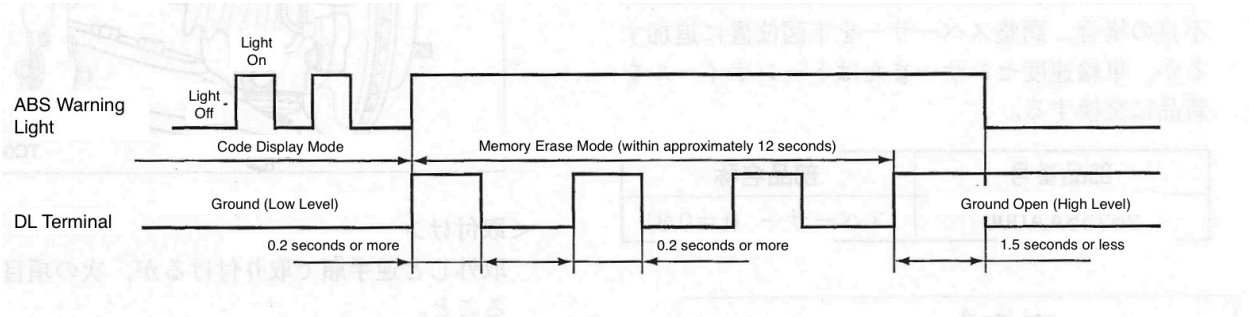


NOTE

• If the terminal is not grounded due to a broken earth terminal or other reason, the lamp will enter normal bulb burnout check mode (the light will go out 1.5 seconds after the ignition switch is turned ON).

2. Trouble code output conditions
   1) The vehicle is stationary (all four wheels moving at 2.75km/h or less).
   2) When the ignition switch is ON, the DL terminal must be connected to ground, and the DK terminal must be open, and the stop lamp switch must be OFF (brake pedal not pressed).

3. Trouble Code Output Termination Conditions
   1) When the vehicle is no longer stationary, or when the stop lamp switch is ON (brake pedal is depressed), or when the DL terminal is opened (transition to normal mode).
   2) Approximately 3 minutes after output begins (system shutoff) (approximately 1 minute after an outlet valve error code is stored in memory)
4. Clearing the trouble code memory
   - After calling the code, disconnect the ground terminal from the DL terminal, and then connect the ground to the DL terminal for at least 0.2 seconds within approximately 12 seconds from this point. This operation is repeated three times or more, and the code is cleared when the ground terminal is subsequently disconnected from the DL terminal.



   - After clearing the trouble code memory, read the trouble code to make sure that the memory has been completely cleared and that there are no other problems, and confirm that it is start code (11).

■ Maintenance Instructions

(1) Wheel Speed Sensor (Front Wheel)

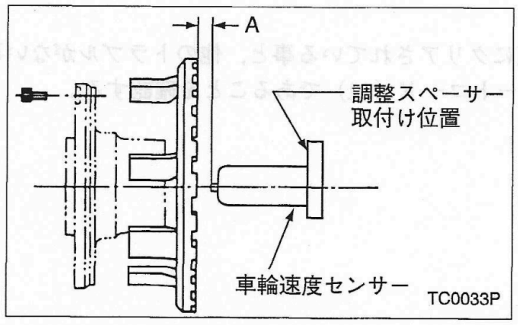
<Inspection/Adjustment>

1. Remove the disc rotor and inspect the entire circumference of the tone wheel and wheel speed sensor for scratches on the tooth surface.
2. Check the gap between the tone wheel and wheel speed sensor all around.

Gap Standard Value A (mm)	0.58~1.18

- If it is defective, add an adjustment spacer to the position shown in the figure below, or replace the wheel speed sensor or tone wheel with a new one.

Part Number	Part Name
26755AA000	Spacer (t=0.3)

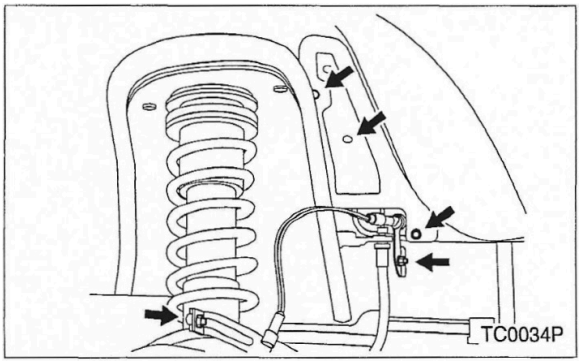


<Removal>

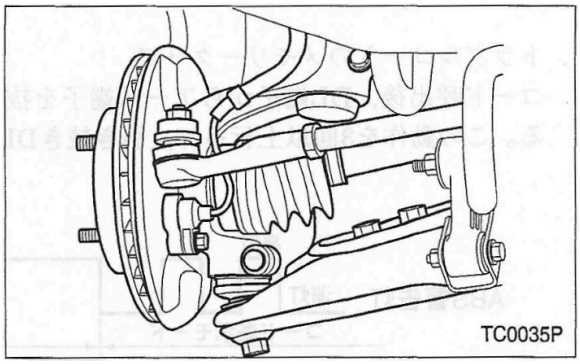
1. Disconnect the battery terminal.
2. Place the vehicle on a lift and remove the front tire.
3. Remove the side cover (two tapping screws) at the front of the strut tower.

NOTE

- The connector part (wheel speed sensor side) of the wheel speed sensor harness is fixed to this side cover, so be sure to remove the connector when removing the side cover.



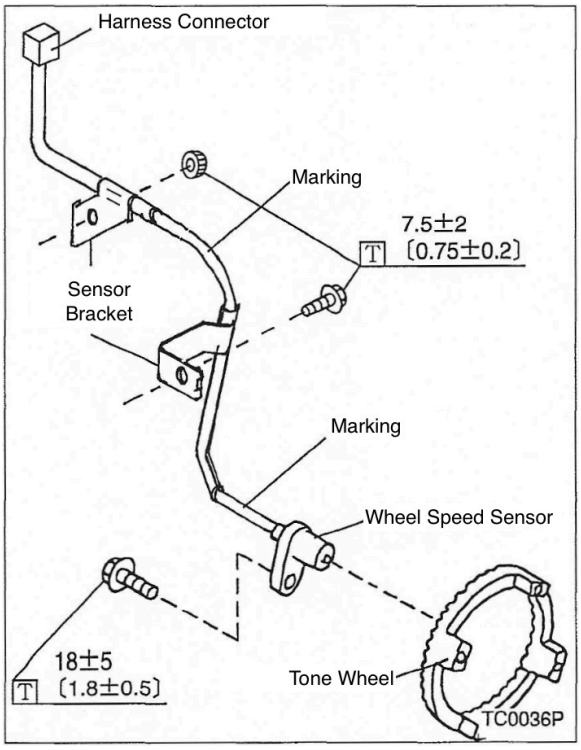
4. Remove the sensor bracket attached to the frame and strut (one bolt and one nut).
5. Remove the wheel speed sensor attached to the housing (one bolt).



<Installation>

Install in the reverse order of removal, but pay attention to the following points.

1. The wheel speed sensors for the right and left wheels have different shapes.



Front Right	Front Left
White	Yellow

2. Check that the harness is not twisted by checking the markings (wire color) on the harness coating.
3. When turning the steering wheel left or right, check that the harness is not pulled and that it does not come into contact with the suspension or body.

(2) Wheel Speed Sensor (Rear Wheel)

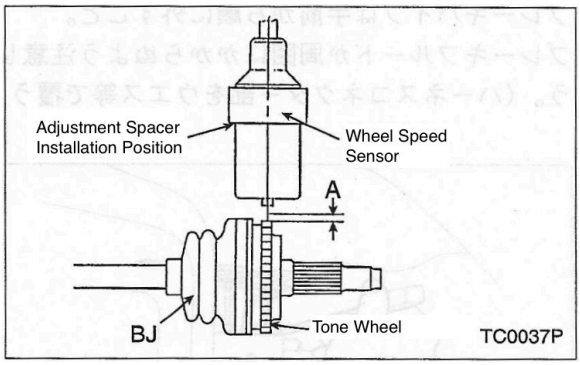
<Inspection/Adjustment>

1. Check the entire circumference of the tone wheel and wheel speed sensor for scratches on the tooth surface.
2. Check the gap between the tone wheel and wheel speed sensor all around.

Gap Standard Value A (mm)	0.3~0.96

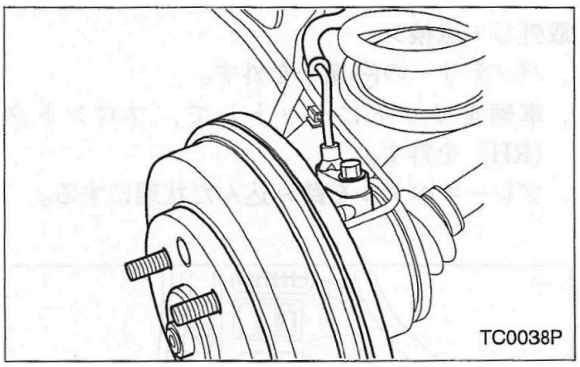
If it is defective, add an adjustment spacer to the position shown in the diagram below, or replace the wheel speed sensor or rear drive shaft (BJ side) with a new one.

Part Number	Part Name
26755AA000	Spacer (t=0.3)



<Removal>

1. Disconnect the negative (⊖) battery terminal.
2. Keep the brake pedal depressed (to prevent brake fluid from leaking).
3. Remove the center under cover (engine under cover).
4. Disconnect the wheel speed sensor connector from the body side harness.
5. Remove the clamp from the rear brake hose at the sensor bracket.
6. Remove the bolts securing the wheel speed sensor harness
   - 3 bolts: 1 on the body side, 2 on the suspension trailing arm side.
7. Remove the connection between the rear brake pipe and the brake hose.
8. Remove the sensor mounting bolts and remove the wheel speed sensor from the housing (trailing arm).
9. Separate the rear brake pipe and wheel speed sensor bracket.



<Installation>

Installation is the reverse order of removal, but pay attention to the following points:

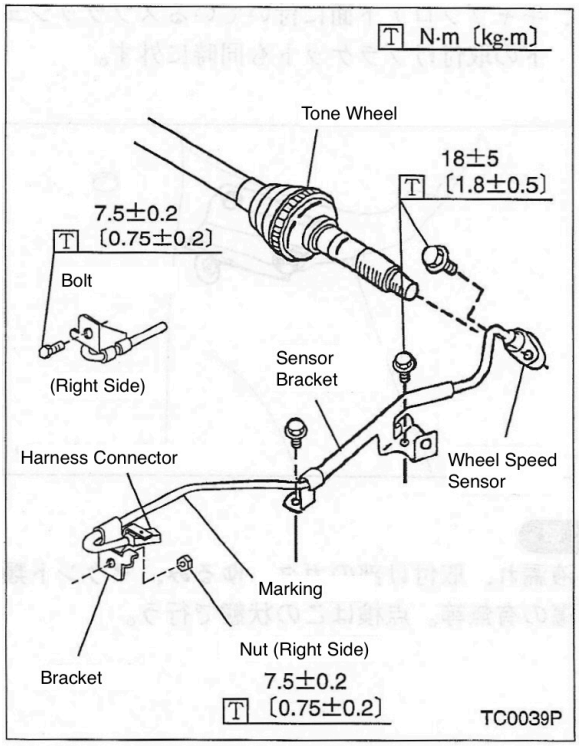
1. The wheel speed sensors for the right and left wheels have different shapes.

Rear Right	Rear Left
White	Yellow

2. Check the harness for kinks by checking the markings on the harness sheath.
3. The parking brake cable is secured together with the bracket of this sensor harness, so be careful when routing it.

NOTE

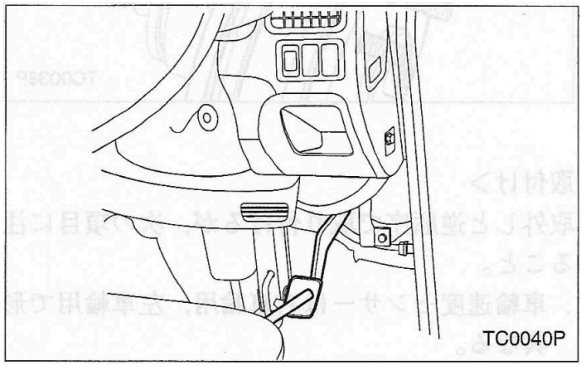
- After installing the brake pipe, bleed the air from the brakes.



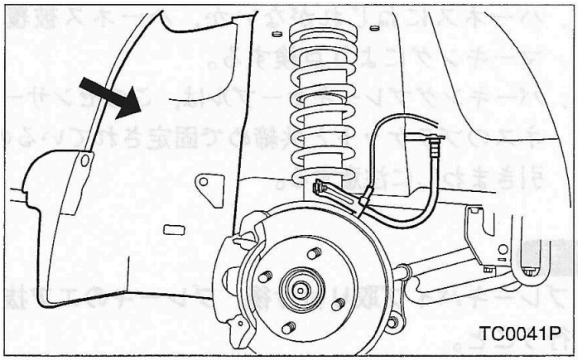
(3) Hydraulic Unit (H/U & ECU)

<Removal and Inspection>

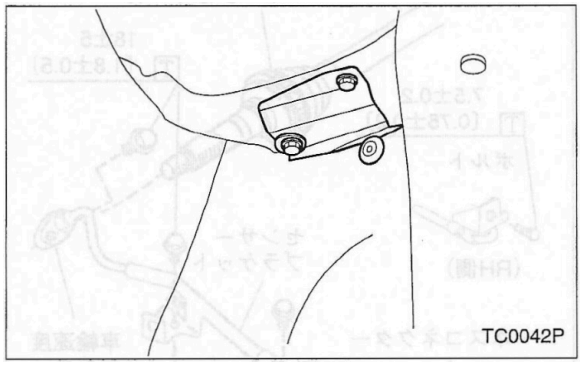
1. Disconnect the negative (⊖) battery terminal.
2. Place the vehicle on a lift and remove the front tire (right).
3. Keep the brake pedal depressed.



4. Remove the front splash board behind the strut tower.

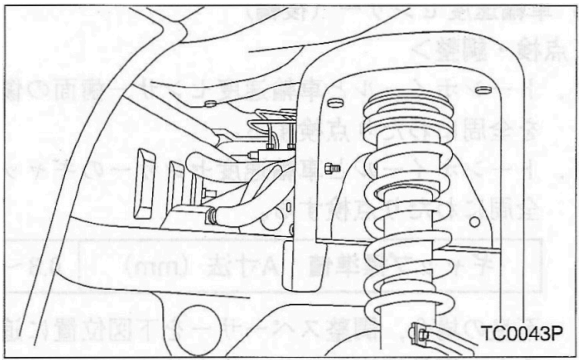


5. At the same time, remove the splash board mounting bracket attached to the underside of the cap floor.



NOTE

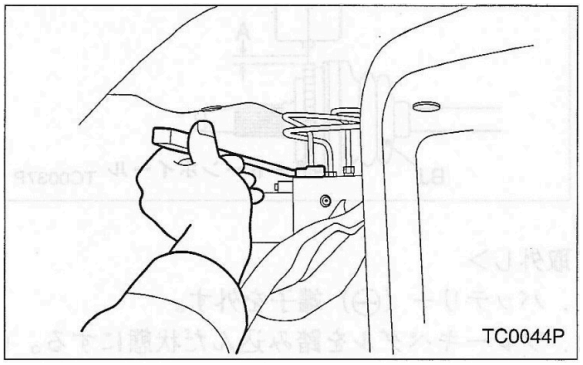
- Check for fluid leaks, looseness or rattle in the mounting parts, damage to mounts, etc. Inspection is carried out in this state.



6. Separate the H/U brake pipe from the H/U.

NOTE

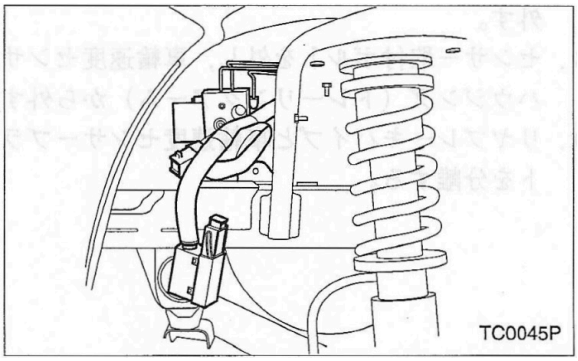
- Before removing the brake pipe, mark it (using a permanent marker, etc.) to prevent incorrect piping.
- Remove the brake pipes in order from the front.
- Be careful not to get brake fluid on the surrounding area (cover the harness connector with a cloth, etc.).



7. After making sure that brake fluid is not spilling from the brake pipe, remove the harness connector from the H/U body (while pulling the lock towards you).

NOTE

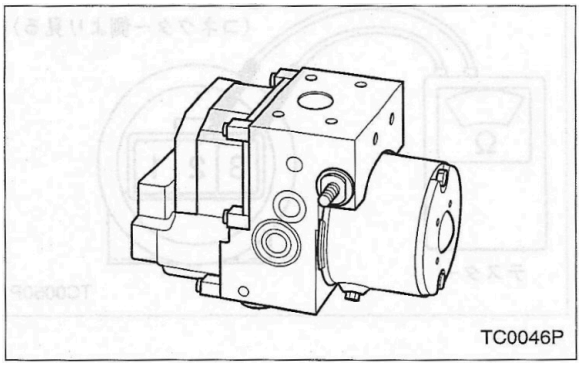
- When removing the harness connector, be careful not to get brake fluid, water, etc. on the connector terminal.



8. Remove the H/U mounting nuts and bracket B (the three nuts on the front side).

NOTE

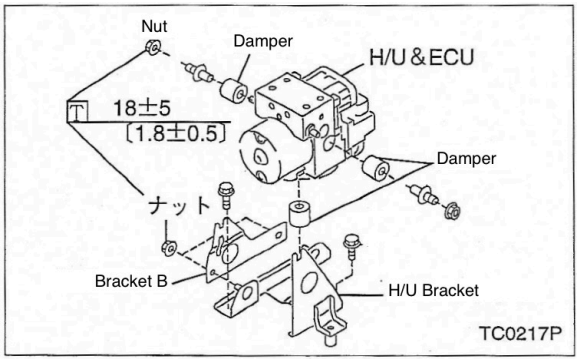
- The H/U brackets are detachable, so only remove bracket B on the front side. Do not remove the H/U bracket on the vehicle side.



9. Remove the H/U body, being careful not to bend the brake pipe.

NOTE

- To remove the head unit, detach the mounting nuts and bracket on the outside (front) of the body. Exercise caution to avoid damaging or losing the dampers on the inside (opposite side) and underside mounting points. If the inner damper remains attached to the bracket, remove it from the bracket and attach it to the head unit.
- The H/U body is not disassembled.

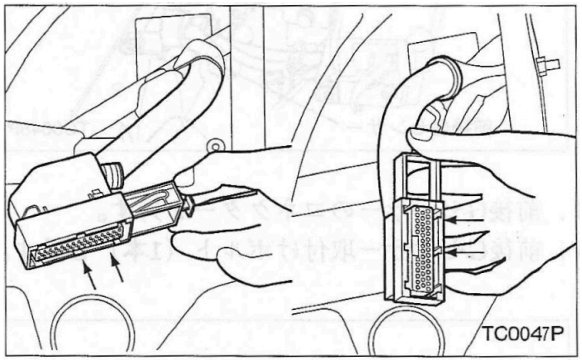


<Installation>

Follow the removal order.

NOTE

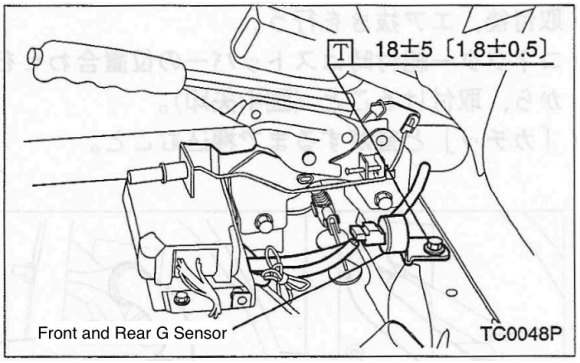
- The brake pipe for the H/U should be installed from the vehicle's center side (opposite side).
- After installation, perform bleeding.
- When installing the connector, align the stopper before attaching it (arrow in the diagram).
- Push until you hear a "click" sound.



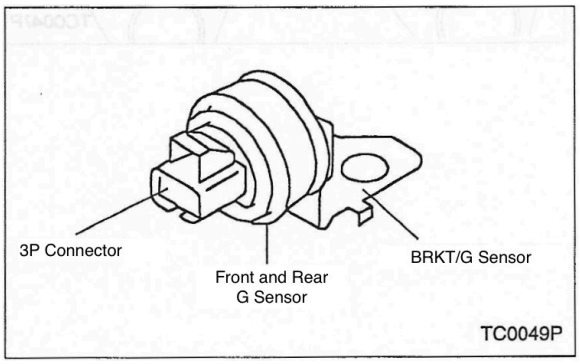
(4) Front and Rear G Sensor

<Removal>

1. Disconnect the negative (⊖) battery terminal.
2. Fold up the passenger seat.
3. Remove the center console.



4. Disconnect the front and rear G sensor connectors.
5. Remove the front and rear G sensor mounting bolt (1 piece).



NOTE

- The front and rear G sensors and bracket are one unit and cannot be separated.

<Installation>

Reverse the removal procedure.

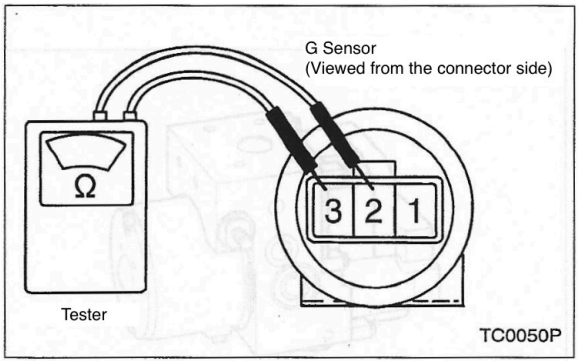
- Front and rear G sensor tightening torque
  T 18 ± 5 [1.8 ± 0.5]

<Inspection>

Check the front and rear G sensors individually.

1. Turn ignition switch OFF.
2. Measure the resistance between the front and rear G sensor terminals (2-3).

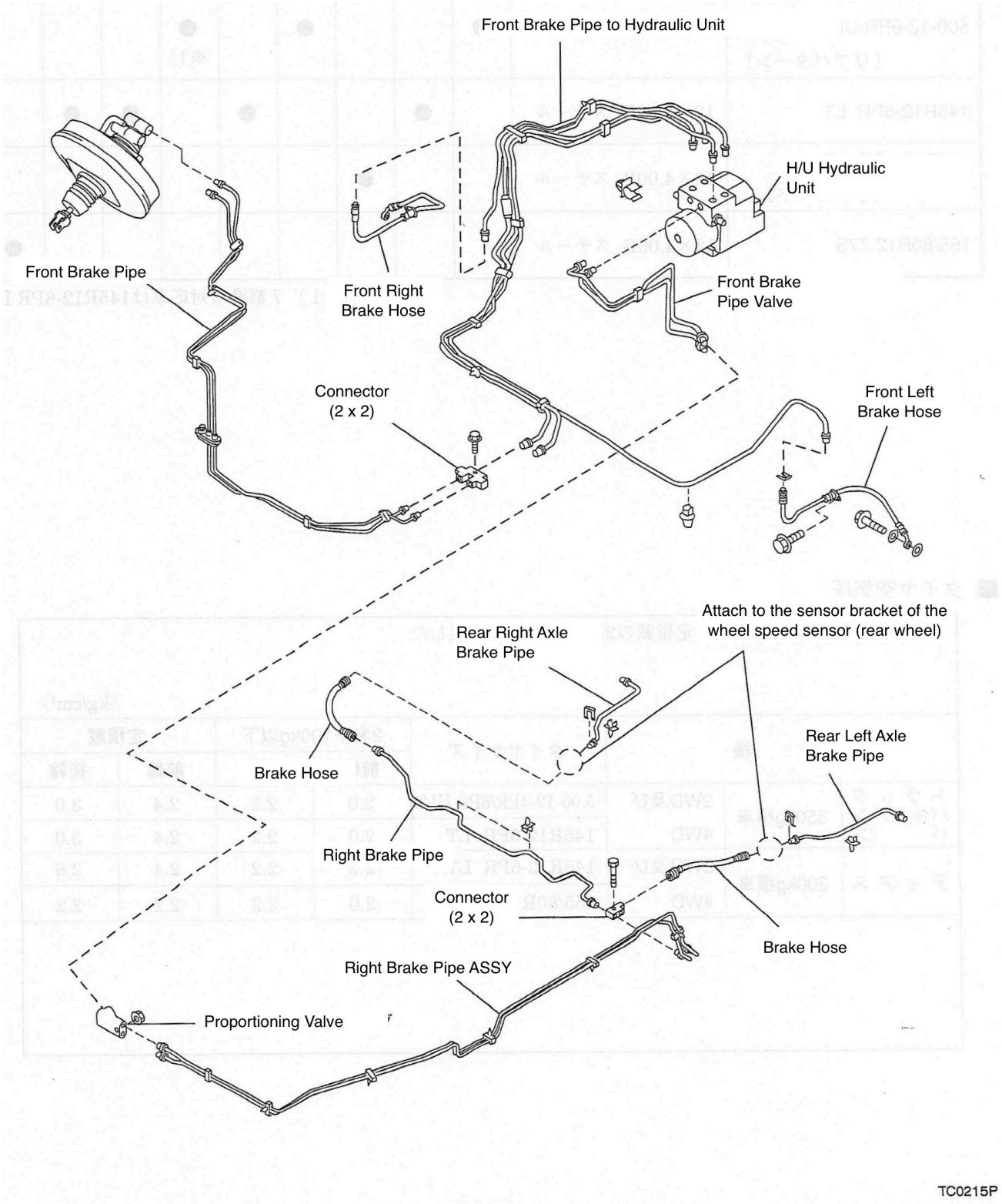
Standard Value	4.6 ± 0.3 kΩ



(5) Brake Hose and Pipe (with ABS)

<Inspection after Removal and Reinstallation>

1. Check the brake hose for abnormal kinks or excessive tension.
2. Check that the brake hose does not come into contact with the body, suspension, or tire and wheel when the steering wheel is turned fully left or right.



4 - 4 Tires & Wheels

Specifications

Tire \ Vehicle Model	Wheel	Truck			Panel Van		Van		Dias	
		350kg Capacity			350kg Capacity		350kg Capacity		200kg Capacity	
		TB 2WD 5MT	JA Excluding ←	JA	VB & Japan Post 5MT	All Others Excluding ←	VB & Japan Post 5MT	All Others Excluding ←	NA Vehicles	SC Vehicles
500-12-4PR ULT (Front) 500-12-6PR ULT (Rear) [Tread Pattern]	12 x 4.00B Steel	●			●		● ※ 1)			
145R12-6PR LT	12 x 4.00B Steel		●			●		●	●	
145R12-6PR LT [Off-Road]	12 x 4.00B Steel			●						
155/80R12 77S	12 x 4.00B Steel									●

※ 1) 145R12-6PR LT for vehicles in the 7 prefectures and cities

Tire Pressure

The air pressure was set in two ways: for two people + 100 kg or less and for a fixed load.

(kg/cm² [psi])

Car Type			Tire Size	2 People + 100kg or less		Fixed Load	
				Front Wheel	Rear Wheel	Front Wheel	Rear Wheel
Truck, Panel Van, & Van	350kg Capacity	2WD & 4WD	5.00-12-4PR/6PR ULT	2.0 [29]	2.2 [31]	2.4 [34]	3.0 [43]
			145R12-6PR LT	2.0 [29]	2.2 [31]	2.4 [34]	3.0 [43]
Dias	200kg Capacity	2WD & 4WD	145R12-6PR LT	2.2 [31]	2.2 [31]	2.4 [34]	2.6 [37]
			155/80R12 77S	2.0 [29]	2.2 [31]	2.2 31	2.2 [31]

■ Maintenance Instructions

(1) Wheel Assembly

<Removal>

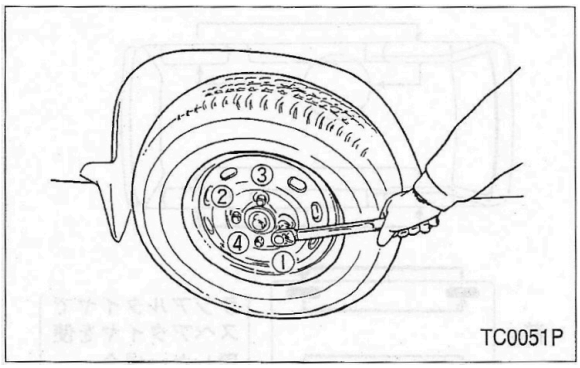
1. If full hubcaps are installed, remove them.
2. Loosen (do not remove) the wheel nuts.
3. Lift up the vehicle.
4. Remove the wheel nuts and remove the wheel assembly.

<Installation>

NOTE

- There must be no oil or grease on the wheel nut seat, wheel nuts, or hub bolts.
- Wipe off any dirt from the mating surfaces of the wheel, brake rotor, and drum.

1. Align the bolt holes on the wheel with the hub bolts.
2. Temporarily assemble the nuts onto the hub bolts.
3. Make sure to align the wheel hub hole with the hub guide, and tighten the nut by hand until it is as tight as possible.
4. Rotate the tire and change its position while tightening it using the tool. (Tighten it to a torque less than the specified torque, but just enough so that there is no play in the wheel.)
5. Place the tire on the ground and tighten the bolts to the specified torque. (Tighten the bolts diagonally in two or three steps to avoid distorting the wheel.)
   T 88.3 ± 9.8 [9.0 ± 1]



6. Install the hubcaps (if removed).
7. When removing and reinstalling wheels for wheel replacement or puncture repair, retighten them to the specified torque after 1000km of driving.

(2) Wheel Balance

Wheel balance is adjusted using a wheel balancer with a straight cone attachment.

NOTE

- Always use genuine Subaru balance weights.
- Do not reuse balance weights.
- Always use a plastic hammer to drive in the balance weight.
- Please note that the 5g steel balance weight is not labeled as 5g. (This is the weight clip only.)

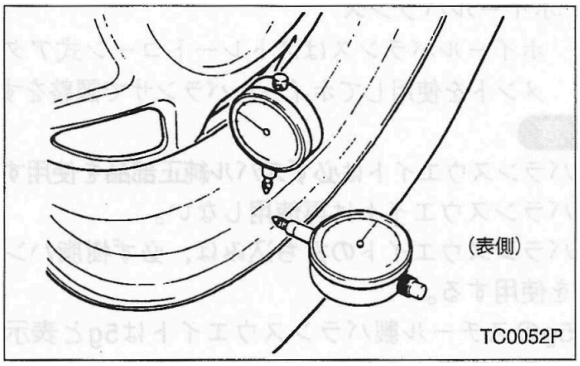
Allowable Residual Unbalanced Amount	Dynamic (at the ear)	(One side) 10g or less
Maximum Adjustment Amount of Balance Weight	Steel Wheels Aluminum Wheels	60g

Weight (g)	Balance Weight Genuine Part Number Steel Weights for Steel Wheels (Line Attached)
5	28101TC000
10	28101TC010
15	28101TC020
20	28101TC030
25	28101TC040
30	28101TC050
35	28101TC060
40	—
45	—
50	—

Weight (g)	Lead Weights for Steel Wheels	For Aluminum Wheels
5	-723141290	-723141450
10	-723141300	-723141120
15	-723141310	-723141130
20	-723141320	-723141140
25	-723141330	-723141150
30	-723141340	-723141160
35	-723141350	-723141170
40	-723141360	-723141180
45	-723141370	-723141190
50	-723141380	-723141200

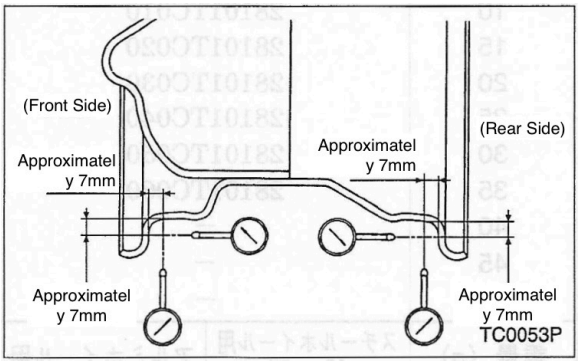
<Inspection and Repair of Steel Wheels and Tires>

1. Rims with significant deformation or damage can cause air leaks, so check the rim flange for deformation, cracks, or other damage and repair or replace them.
2. Check wheel runout.
   1) Lift the car up until the tires are completely off the floor.
   2) Rotate the tire slowly and check the rim runout with a dial gauge (excluding the welded area).



	Lateral Vibration Limit	Vertical Vibration Limit
Steel Wheels	1.5mm	
Aluminum Wheels	1.0mm	

3) If the value in the table is exceeded, remove the tire from the wheel and measure again at the part shown in the following diagram. If the value in the table is still exceeded, replace the wheel.



3. Remove any stones, glass, nails, metal fragments, etc. that are embedded in the tire tread.
4. Replace tires with significant cracks in the sidewall, cracks, damage in the tread, or exposed slip signs (tread wear indicators).
5. Replace any tire valves with significant cracks.

<Inspection of Aluminum Wheels>

Although they are basically the same as regular steel wheels, they are checked for damage or cracks in the rim flange, and if there are any abnormalities such as air leaks, they are replaced rather than repaired.
For checking wheel rim runout, refer to the section on inspecting steel wheels.

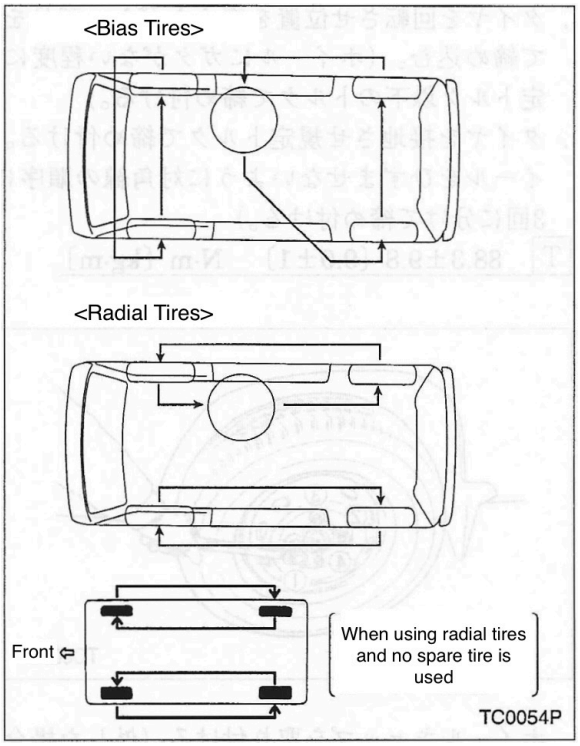
<Handling Precautions>

Aluminum wheels are easily damaged, so please pay attention to the following points to maintain their performance and appearance and ensure safety.

1. Be careful not to scratch the tire when removing, installing, balancing, repairing a puncture, or transporting it. When removing the wheel, lay a rubber mat or other surface underneath to prevent scratches on the floor.
2. While driving, do not drive over sharp objects or scrape against curbs.
3. If tire chains are installed unevenly or loosely, they may damage the wheels.
4. When washing, avoid using soap containing sand. Use a neutral detergent and rinse with water. Also, washing the wheels with a hard brush or high-speed car wash machine may cause scratches.

(3) Tire Rotation

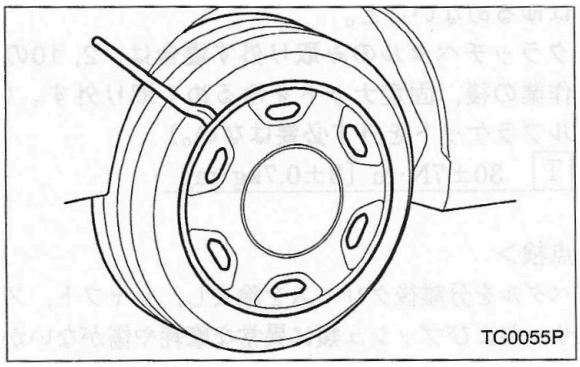
To prevent uneven tire wear and extend tire life, rotate the tires every 5,000 km as shown in the illustration.



(4) Wheel Cap

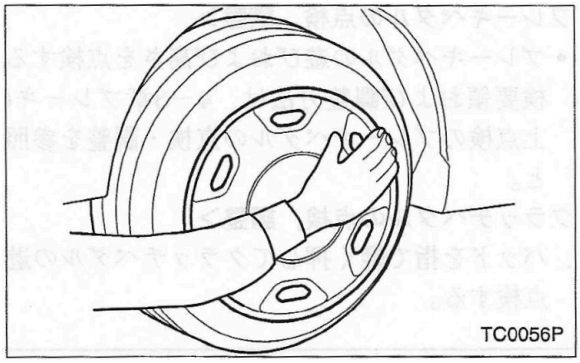
<Removal>

Insert a wheel cap removal lever or screwdriver into the outer periphery to lift and remove the cap.



<Installation>

Align the hole in the cap with the valve stem on the tire, then press the outer edge with your palm to snap it into place.



(5) Spare Tire

All models are equipped with a spare tire of the same size as the standard tire. Vehicles equipped with 5.00-12 tires are equipped with a 6PR spare tire.

Vehicle Model	Tire Size	Air Pressure kg/cm² [psi]
Truck, Panel Van, & Van	5.00-12-6PR ULT	3.0 [43]
	145R12-6PR LT	3.0 [43]
Dias	145R12-6PR LT	2.6 [37]
	155/80R12 77S	2.2 [31]

4 - 5 Pedal & Cable System

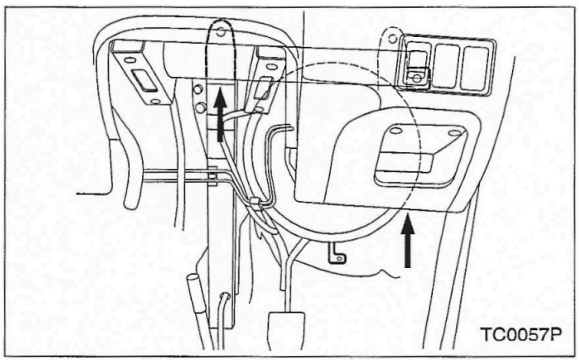
[1] Pedal

■ Maintenance Instructions

(1) Brake Pedal (AT Vehicles), Brake & Clutch Pedals (MT Vehicles)

<Removal>

1. Disconnect the battery terminals. If your vehicle is equipped with an airbag, wait at least 20 seconds before starting work.
2. Loosen the adjustment screw on the transmission side of the clutch cable (manual transmission vehicles only).
3. Remove the steering column assembly and then remove the instrument panel assembly.
4. Drain the brake fluid from the reservoir tank.
5. Disconnect the harness connector for the brake fluid level warning device.
6. Remove the brake pipe from the master cylinder.
7. Disconnect the hose from the reservoir tank from the master cylinder.
8. Disconnect the vacuum hose from the brake booster.
9. Disconnect the stop lamp switch connector.
10. Remove the clip from the clutch cable's pedal side mounting section and remove the cable from the clutch pedal.
11. Remove the bolts and nuts securing the pedal bracket, and remove the pedal bracket from the vehicle.
    T 18 ± 5 N•m [1.8 ± 0.5 kg•m]



12. Separate the brake pedal and operating rod pins.

NOTE

- The dimensions of the operating rod are predetermined, so do not loosen the lock nut on the operating rod.
- If you are removing only the clutch pedal, perform steps 2 and 10, then loosen the fixing nut and remove it. (There is no need to remove the pedal bracket.)
  T 30 ± 7 N·m [3 ± 0.7 kg•m]

<Inspection>

After removing the pedal, remove the grease and check the shaft, spacer and bushings for abnormal wear or damage.

<Installation>

Follow the removal procedure in reverse.

<Inspection and Adjustment of the Brake Pedal >

Check the free play and height of the brake pedal. For inspection and adjustment procedures, refer to Chapter 4-3 Brake (1) On-Vehicle Inspection, Brake Pedal Inspection and Adjustment.

<Inspection and Adjustment of the Clutch Pedal>

1. Check the clutch pedal free play by lightly pressing the pad with your finger.

Pedal Pad Play (mm)	5~15

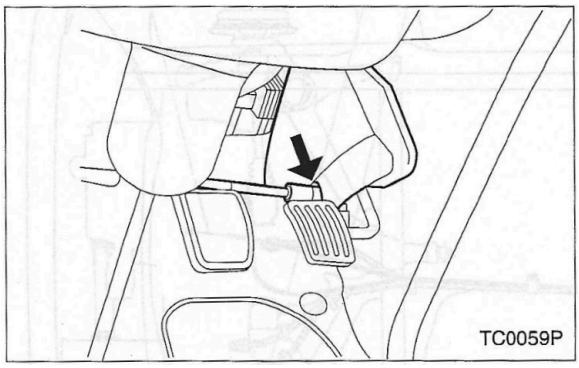
- If it is out of standard, adjust it using the adjustment screw on the transmission side.

2. Check the clutch pedal stroke.

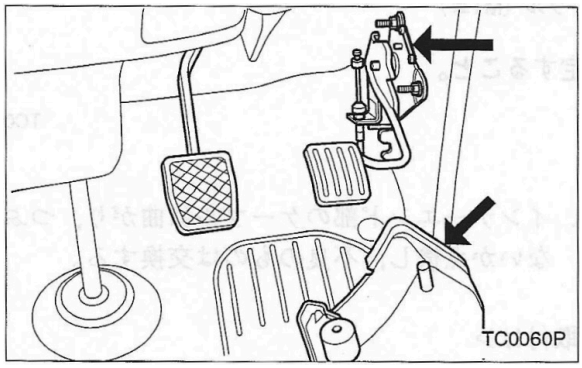
Clutch Stroke (Pedal Center)	130~136 mm

(2) Accelerator Pedal

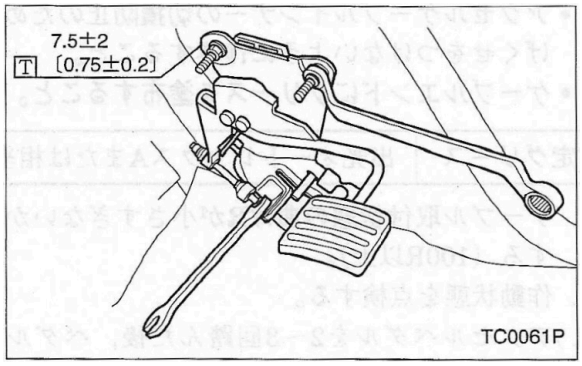
1. Remove the nut securing the accelerator pedal cover (it is fastened together with the pedal bracket).
   T 7.5 ± 2 N·m [0.75 ± 0.2 kg·m]



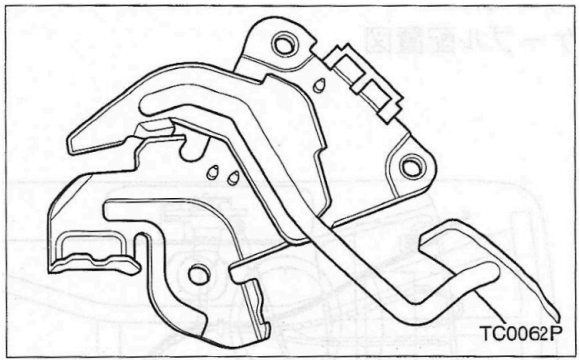
2. Remove the cover. The upper end of the pedal bracket is caught in the cover, so be careful not to damage it.



3. Loosen the nut and remove the outer end of the accelerator cable from the pedal bracket. Next, remove the inner end of the accelerator cable from the pedal lever.
   T 7.5 ± 2 N·m [0.75 ± 0.2 kg·m]



4. Remove the pedal bracket mounting nuts and remove the pedal bracket.



<Inspection>

Disassemble the pedals and inspect each part for abnormal wear or damage.

<Installation>

Follow the removal procedure in reverse.

<Adjustment>

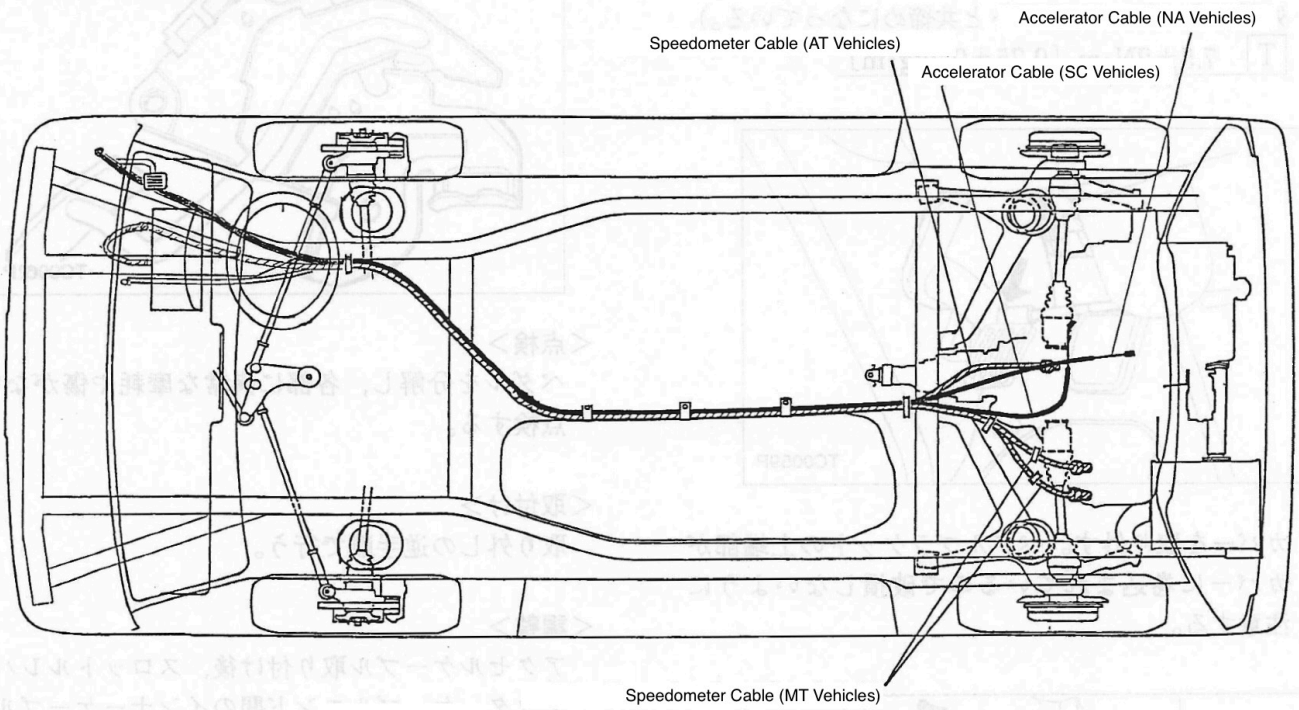
After installing the accelerator cable, check the amount of slack in the inner cable between the slot lever and the outer cable end.

Cable Sag (mm)	5~15

For details, refer to the accelerator cable inspection section in this chapter [2]-(1).

[2] Cable

■ Cable Layout Diagram



Note: Securely fasten with clips.

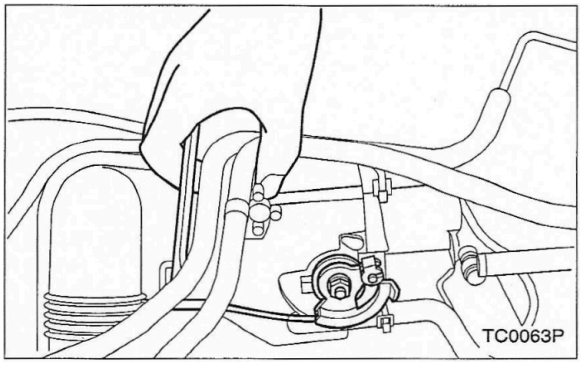
TC0068P

■ Maintenance Instructions

(1) Accelerator cable

<Removal>

1. Remove the trapdoor.
2. Remove the throttle cover.
3. Remove the accelerator cable outer end fixing nut and remove the outer end from the cable bracket.



4. Remove the accelerator cable inner end from the throttle lever.
5. Remove the cable from the accelerator pedal and pull it out under the floor.
6. Lift the vehicle, remove the cable clamp, and remove the cable from the vehicle.
7. Check the inner end cable for bends or crushing, and replace any defective ones.

<Installation>

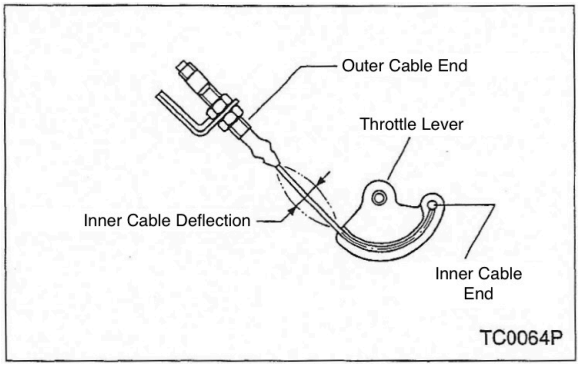
1. While securing the accelerator cable to the vehicle body, push the pedal side into the interior from under the floor.
2. Attach the accelerator cable to the accelerator pedal.
3. Install the throttle lever side, adjust the inner cable so that it has the specified amount of slack, and then secure it in place.

NOTE

- To prevent the accelerator cable inner from breaking, be careful not to bend it.
- Apply grease to the cable end.

Specified Grease	Idemitsu Autolex A or equivalent

4. Check that the bending radius of the cable when it is installed is not too small (100R or more).
5. Check the operating condition.
   1) After pressing the accelerator pedal 2-3 times, does the throttle lever open fully when you press the pedal all the way down?
   2) When you release the accelerator pedal, does the throttle lever fully close?

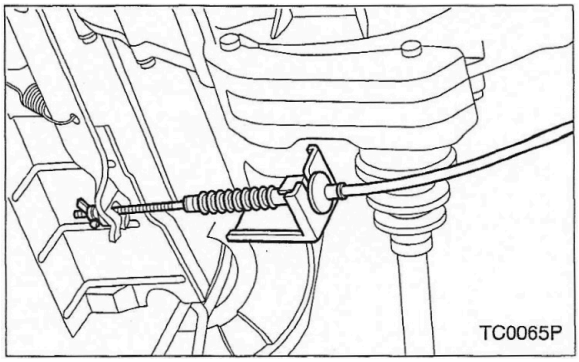


Amount of Inner Cable Slack (mm)	MSC Vehicles	NA Vehicles
	5~15	5~15

(2) Clutch Cable

<Removal>

1. Loosen the thumbscrew on the transmission-side clutch cable and remove the inner end of the fork clutch cable.
2. Remove the outer end of the clutch cable from the transmission bracket.



3. Remove the cable on the clutch pedal side and pull it out under the floor.
4. Lift up the vehicle, remove the vehicle body fixing clamp, and remove the clutch cable.

<Installation>

Installation is performed in the reverse order of removal.

NOTE

- Apply grease to the sliding parts of the cable end to prevent uneven wear.

Specified Grease	Idemitsu Autolex or equivalent

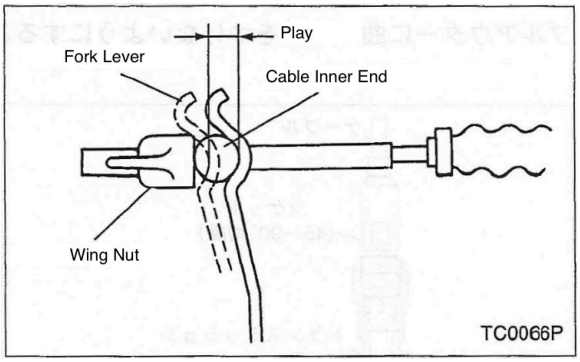
NOTE

- To prevent the inner clutch cable from breaking, do not bend it too much. Also, do not force it around with a small bend radius.
- Make sure that the inner end of the clutch cable is completely hooked onto the pedal hook.

<Adjustment>

Check the fork lever free play and adjust it using the wing nut on the inner end of the clutch cable.

Fork Lever Play	1~2 mm



(3) Speedometer Cable

<Removal>

1. Loosen and remove the socket part on the transmission connection side.
2. On the meter side, remove the combination meter and remove the socket on the back of the meter.
   - For details, see Chapter 8-3.
3. Lift up the vehicle and remove the fixing clamps.
4. Remove the cable from the vehicle.

<Installation>

Reverse the removal procedure.

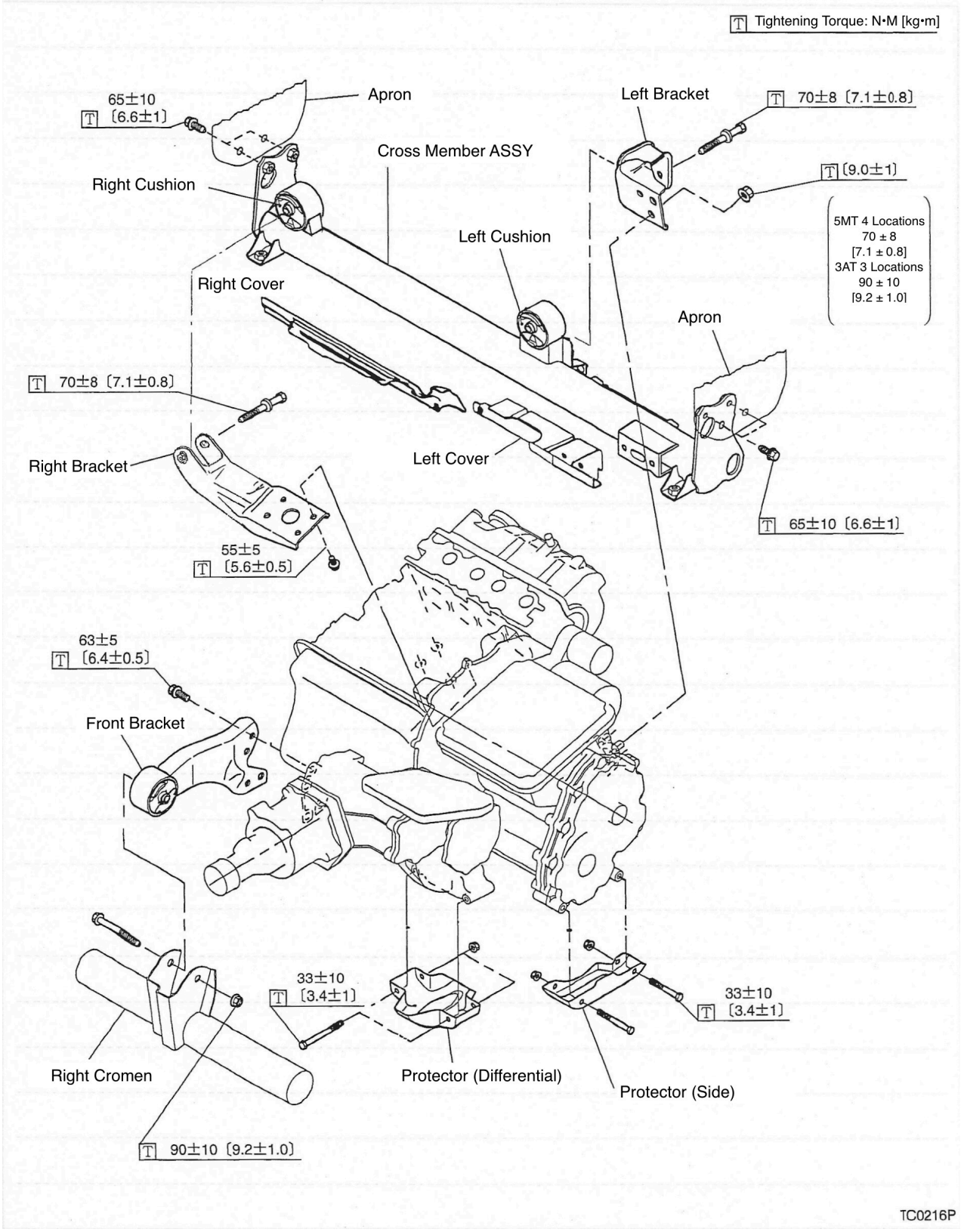
- To tighten the socket, turn it by hand until it stops, then use a wrench to tighten it another 45° to 90°.

NOTE

- To prevent the inner meter cable from breaking, be careful not to bend the outer cable.
- Avoid wiring that causes small bends.
- If the meter cable is routed incorrectly, it may come close to the battery cable and may become connected due to engine vibrations, so be careful.
- When installing the cable, keep it in a natural state so that it does not swing along its entire length.
- After screwing in the socket, make sure to fit the boot completely.

4 - 6 Engine Mount

■ Components & Maintenance Instructions



MEMO

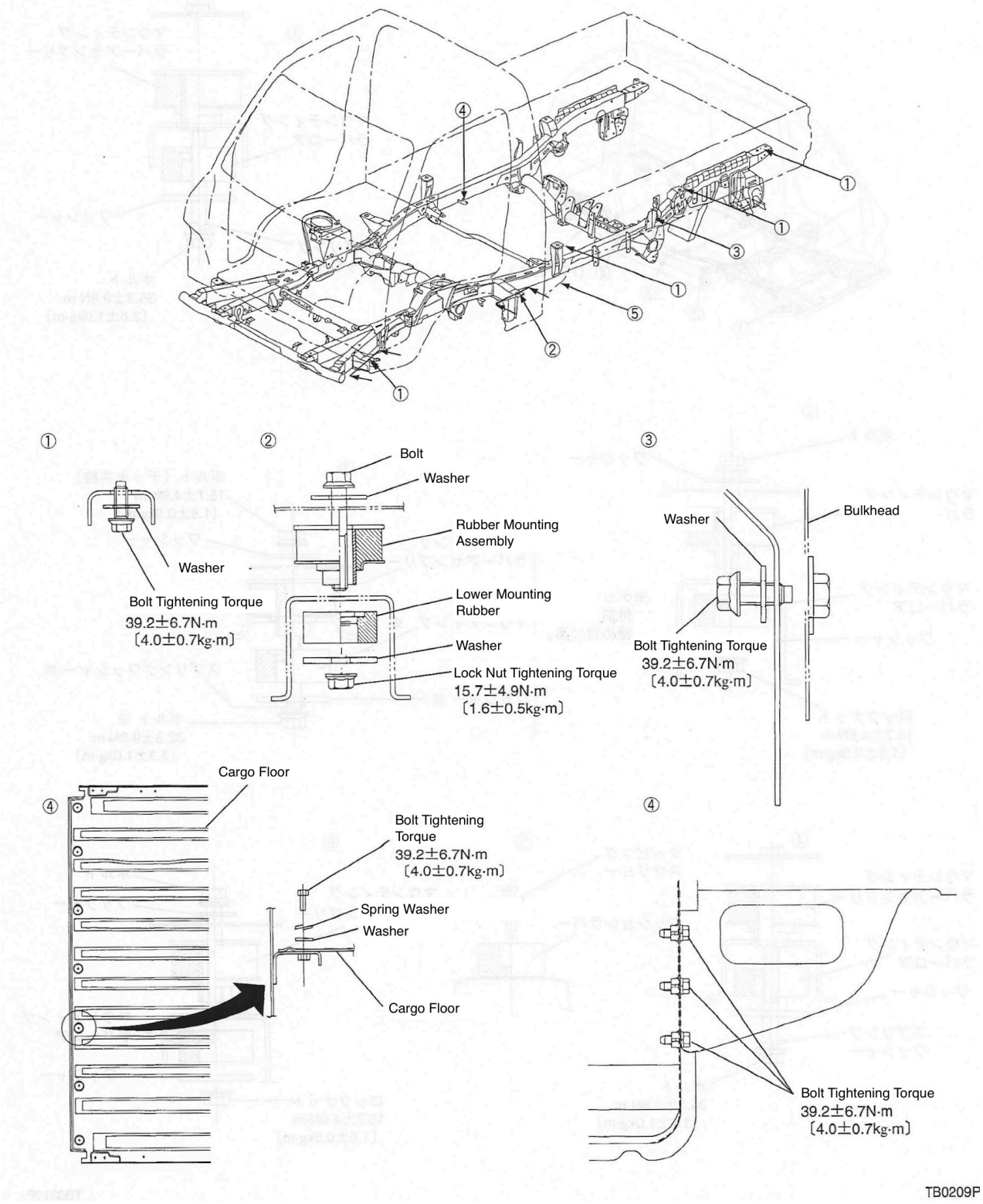
5 Body

5 - 1 Body Exterior/Main Body

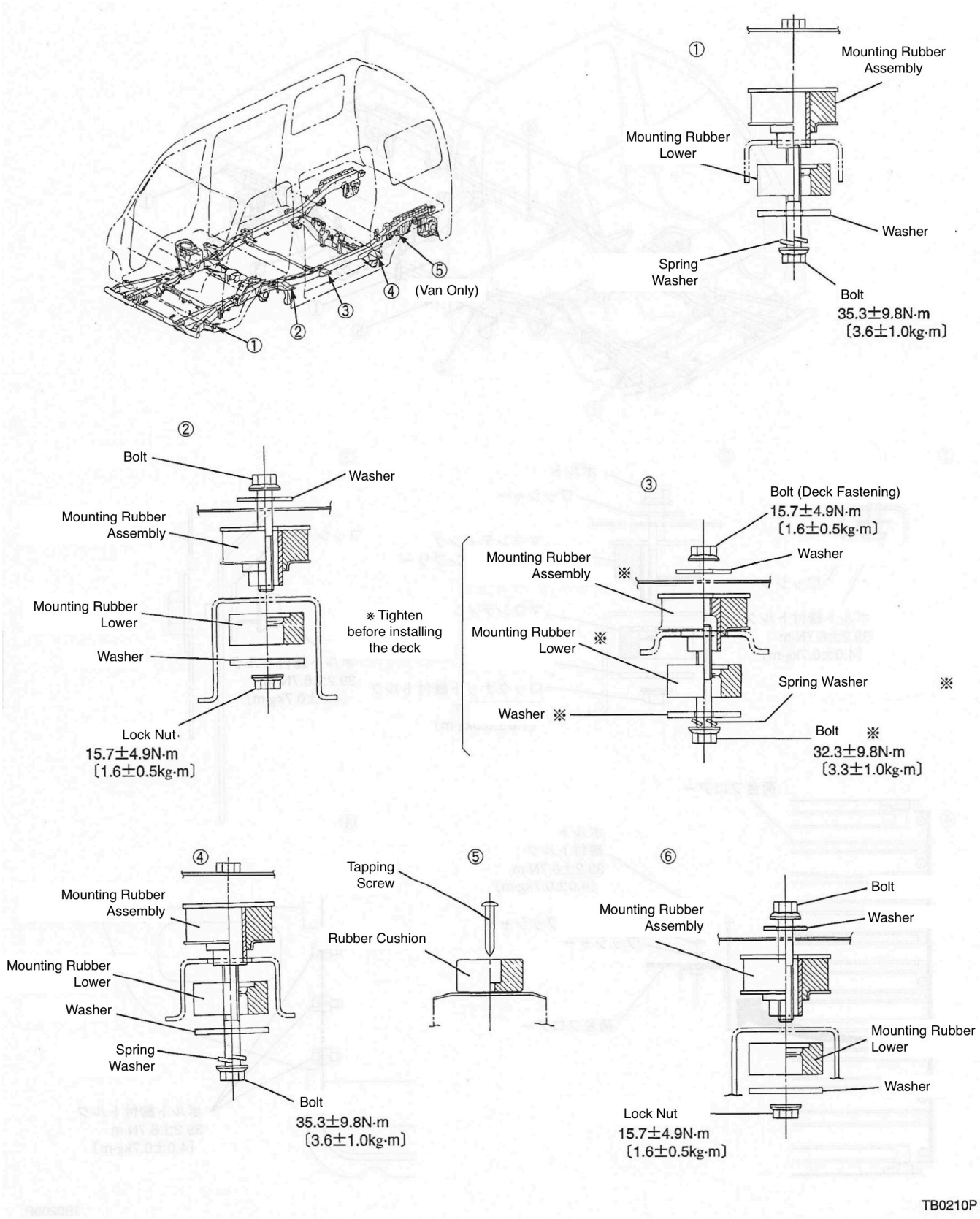
[1] Body Mounts

■ Component Parts

(1) Trucks & Panel Vans



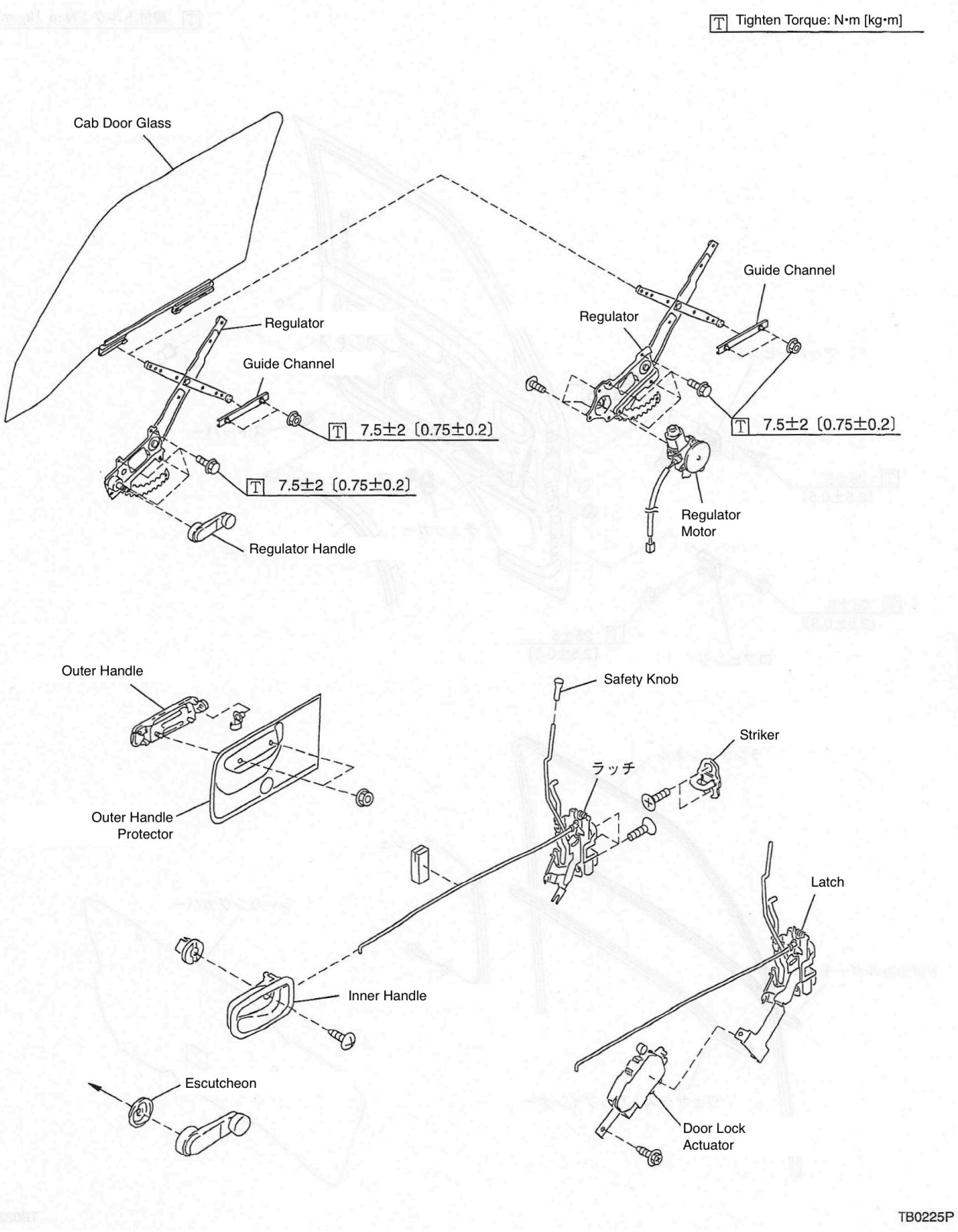
(2) Van & Dias

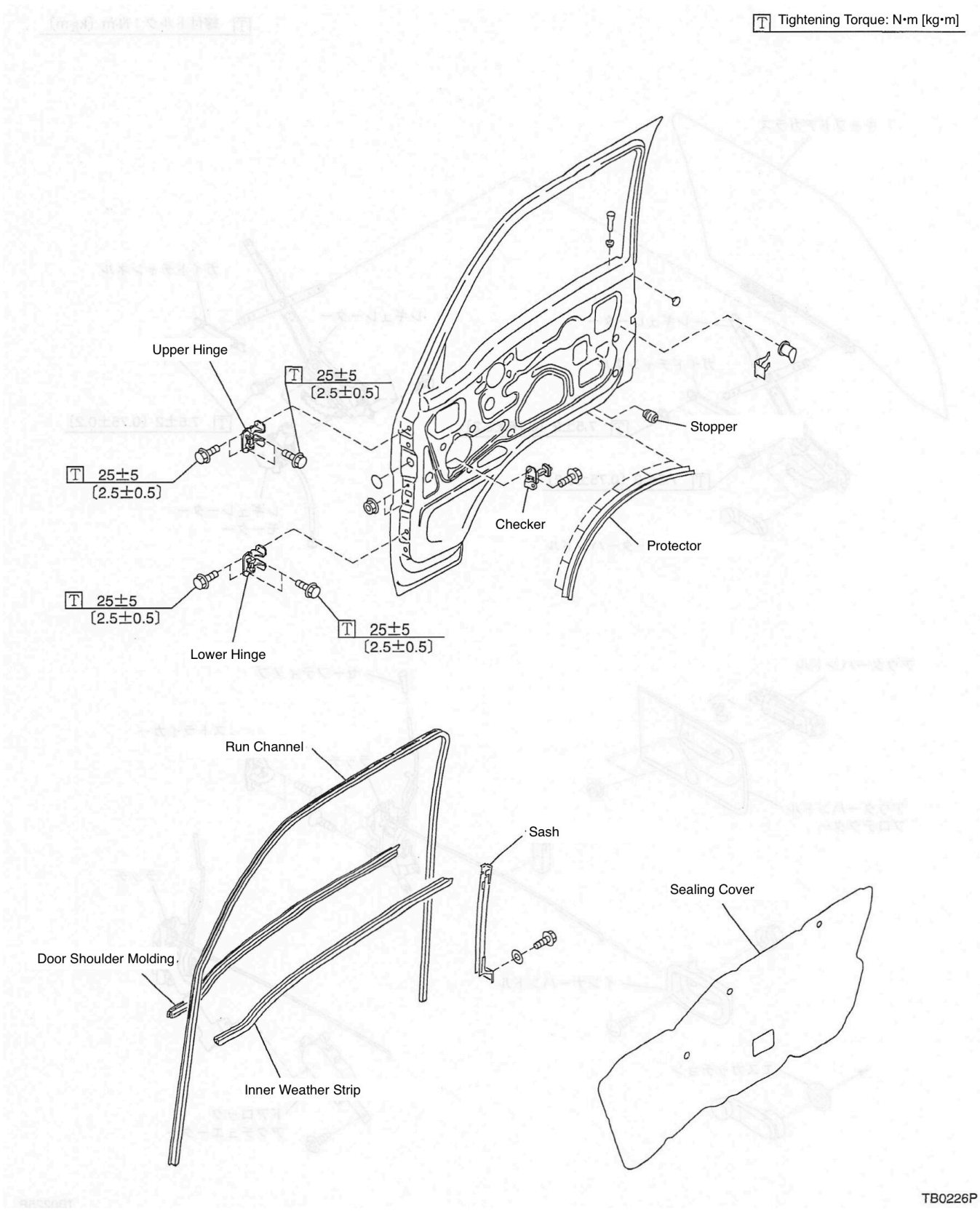

①
②
③
④
⑤ (Van Only)
① Mounting Rubber Assembly
Mounting Rubber Lower
Washer
Spring Washer
Bolt
35.3±9.8N·m
〔3.6±1.0kg·m〕
② Bolt
Washer
Mounting Rubber Assembly
Mounting Rubber Lower
Washer
Lock Nut
15.7±4.9N·m
〔1.6±0.5kg·m〕
※ Tighten before installing the deck
③ Bolt (Deck Fastening)
15.7±4.9N·m
〔1.6±0.5kg·m〕
Washer
Mounting Rubber Assembly ※
Mounting Rubber Lower ※
Spring Washer ※
Washer ※
Bolt ※
32.3±9.8N·m
〔3.3±1.0kg·m〕
④ Mounting Rubber Assembly
Mounting Rubber Lower
Washer
Spring Washer
Bolt
35.3±9.8N·m
〔3.6±1.0kg·m〕
⑤ Tapping Screw
Rubber Cushion
⑥ Bolt
Washer
Mounting Rubber Assembly
Mounting Rubber Lower
Washer
Lock Nut
15.7±4.9N·m
〔1.6±0.5kg·m〕
TB0210P

[2] Doors

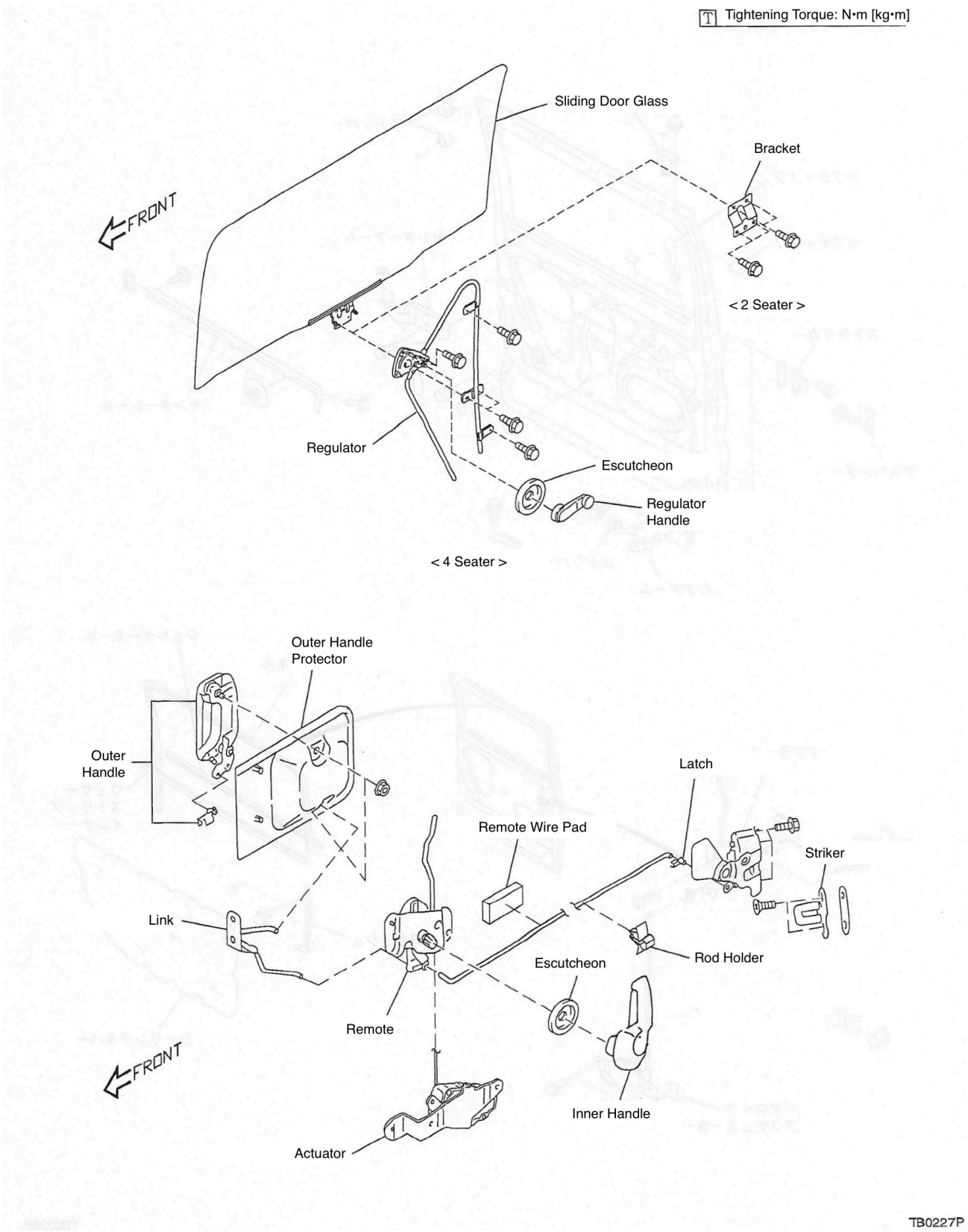
■ Component Parts

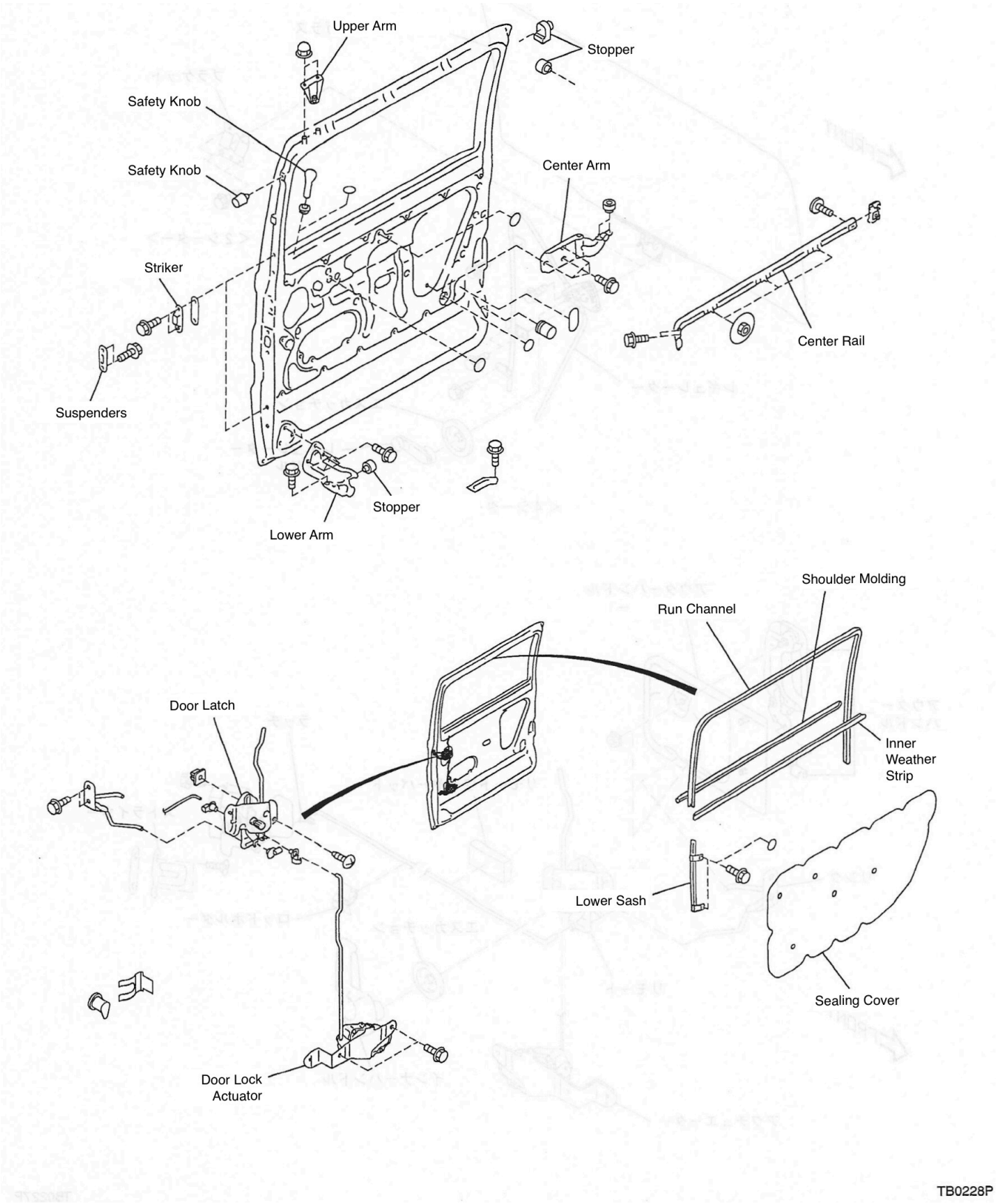
(1) Cab Door



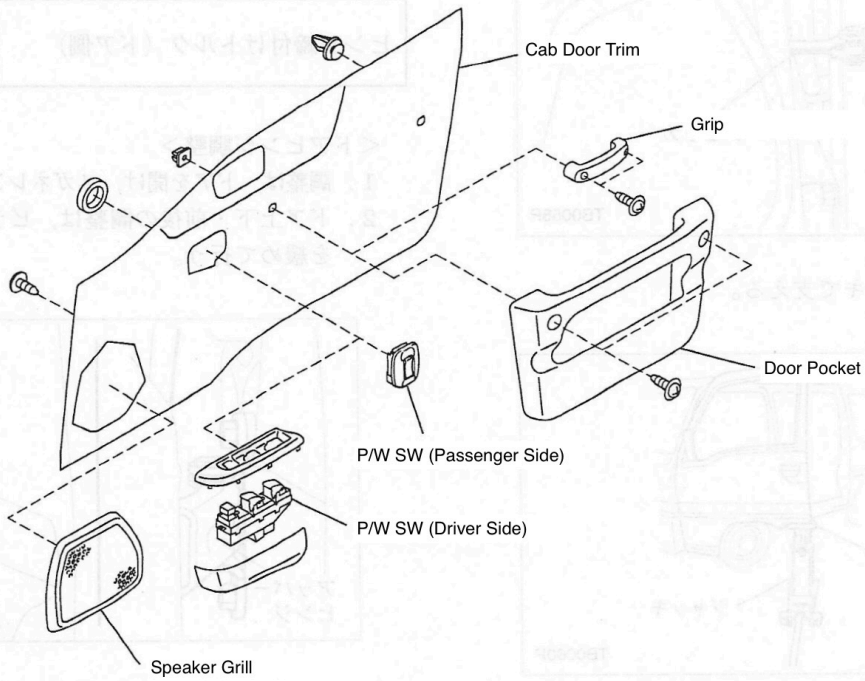

T Tightening Torque: N•m [kg•m]
Upper Hinge
T 25±5 〔2.5±0.5〕
T 25±5 〔2.5±0.5〕
Stopper
Checker
Protector
T 25±5 〔2.5±0.5〕
T 25±5 〔2.5±0.5〕
Lower Hinge
Run Channel
Sash
Sealing Cover
Door Shoulder Molding
Inner Weather Strip
TB0226P

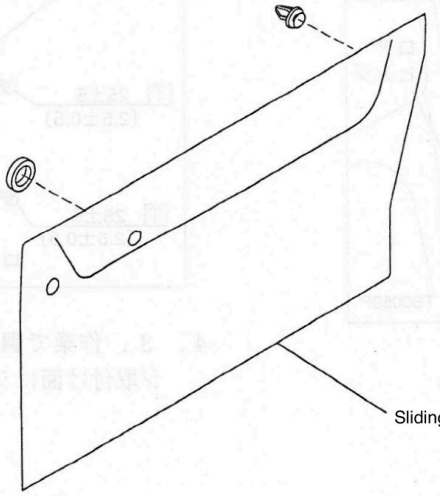
(2) Sliding Door




Upper Arm
Stopper
Safety Knob
Safety Knob
Center Arm
Striker
Center Rail
Suspenders
Stopper
Lower Arm
Shoulder Molding
Run Channel
Door Latch
Inner
Weather
Strip
Lower Sash
Sealing Cover
Door Lock
Actuator
TB0228P

(3) Door Trim





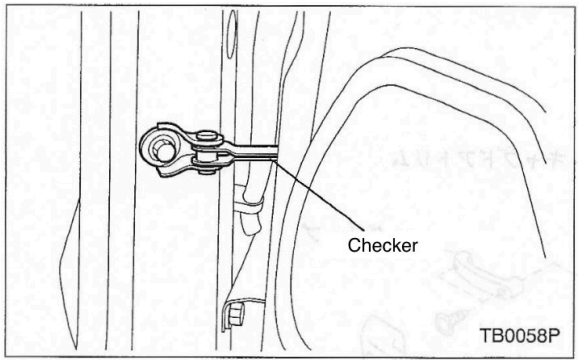
TB0229P

■ Maintenance Instructions

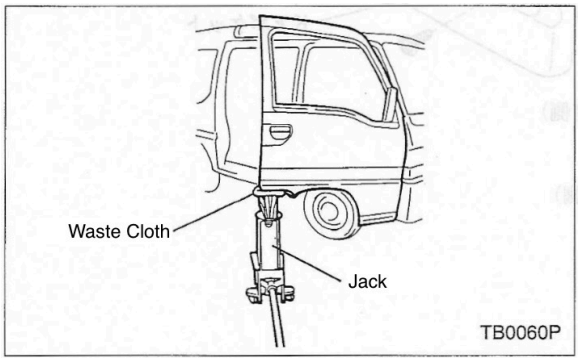
(1) Cab Door

<Removal>

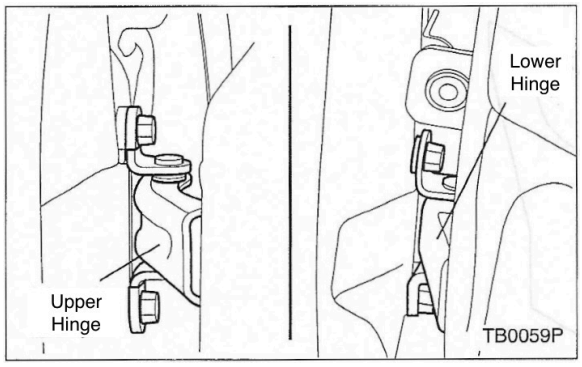
1. Remove the checker mounting bolts.



2. Support the door with a jack.



3. Remove the door mounting bolts from the upper and lower hinges.



4. Disconnect the wiring harness and remove the door.

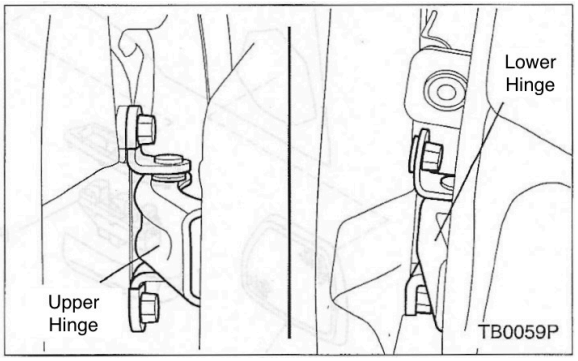
<Door Adjustment>

1. To adjust the front-to-rear and up-to-down direction, loosen the body side mounting bolts on the upper and lower hinges.
2. To adjust the door opening direction, loosen the door striker.

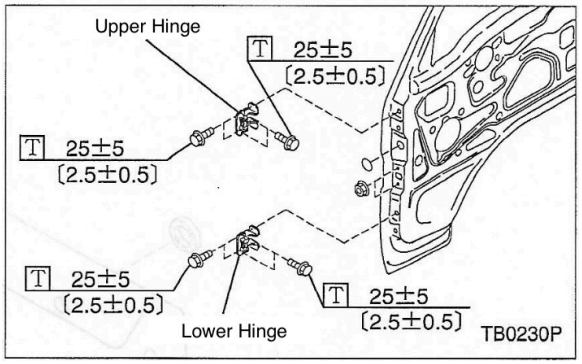
Hinge Tightening Torque (Body Side)	25 ± 5 N•m [2.5 ± 0.5 kg•m]
Hinge Tightening Torque (Door Side)	25 ± 5 N•m [2.5 ± 0.5 kg•m]

<Door Hinge Adjustment>

1. Adjustments are made with the door open, using a spanner wrench.
2. Adjustments are to the door's vertical and horizontal position are made by loosening the hinge bolts on the pillar side.



3. For minor adjustments to the horizontal or vertical alignment of the door, loosen the hinge bolts on the door side.



4. If the adjustments in step 3 cannot be made using this method, insert shims between the hinge mounting surface on the pillar side and the binge side to make the necessary adjustments.

<Door Striker Adjustment>

1. Align the striker mounting position with the latch, and adjust it b moving it up, down, left, and/or right so that the door closes smoothly and the weatherstrip makes contact all around the door frame.
   Striker Mounting Bold Tightening Torque
   T 14 ± 4 N•m [1.4 ± 0.4 kg•m]
2. If the door is twisted or tilted up or down too much, the adjustment in step 1 alone will not fix it. In this case, you will need to correct the position of the door panel itself.

<Installation>

Follow the removal procedure in reverse.
Checker mounting bolt (body side) Tightening torque:
T 33 ± 10 N•m [3.3 ± 1 kg•m]

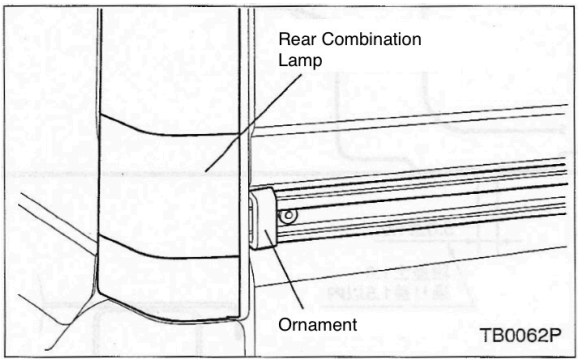
(2) Sliding Door

<Removal>

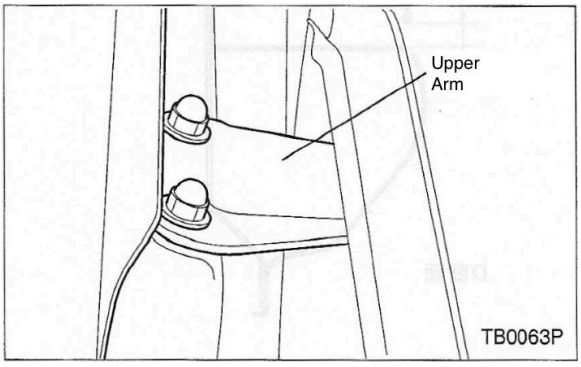
NOTE

• Always do this as a two-person job.

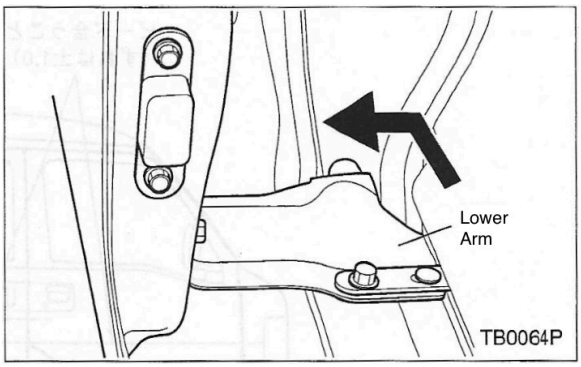
1. Remove the rear combination lamp and ornament.



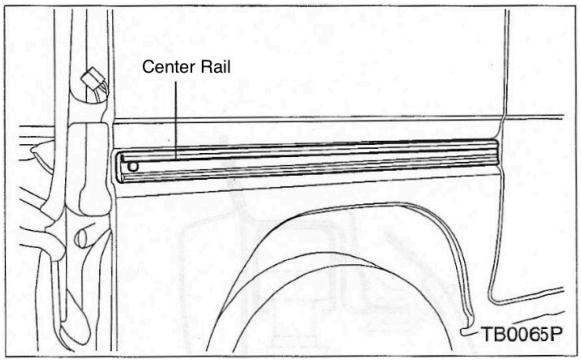
2. Remove the checker mounting bolt (1 piece) and remove the checker from the lower rail.
3. With the door half-open, remove the upper arm mounting bolt and remove the upper arm from the door.



4. Pull the lower arm toward you and remove it from the cutout in the lower rail.



5. Pull out the center arm slider from the rear end of the center rail and remove the sliding door.



<Installation>

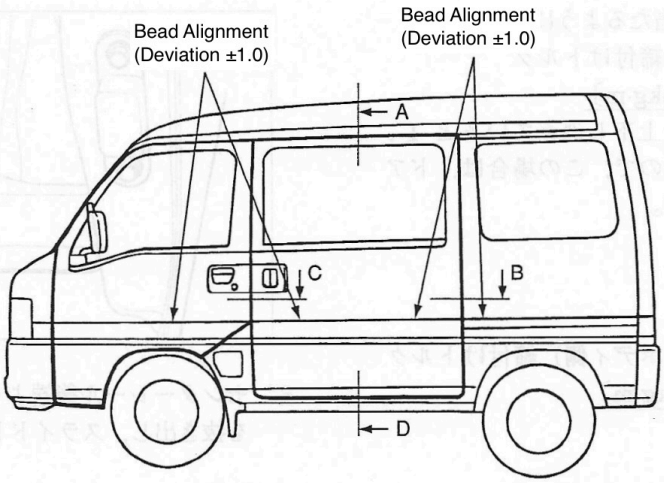
Follow the removal procedure in reverse.
Checker mounting bolt tightening torque
T 7.5 ± 2 N•m [0.75 ± 0.2 kg•m]

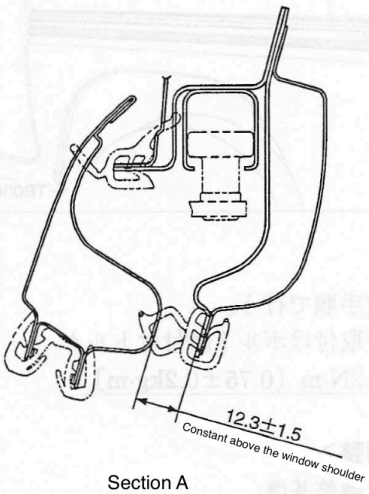
<Installation Adjustment>

• Building adjustment standards
• Vertical adjustment

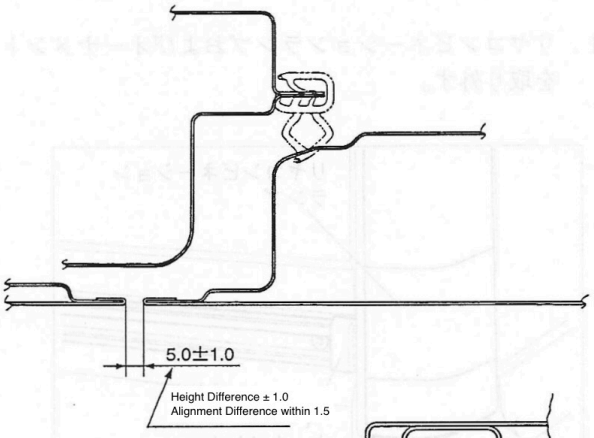
a. Front Side

1. Adjust the height of the lower arm mounting part so that the height of the sliding door panel outer plate bead and the body site outer plate bead match.

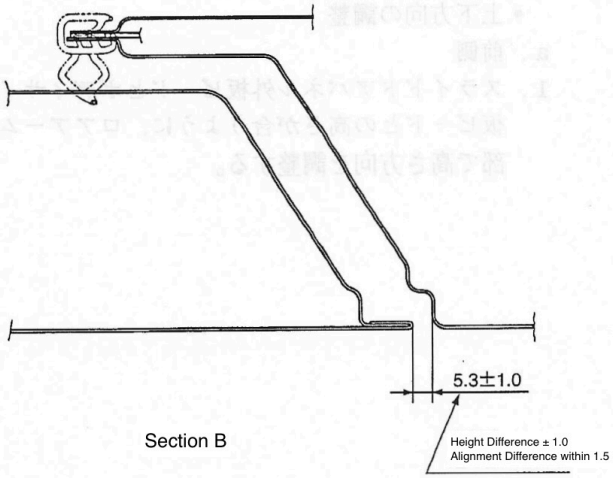




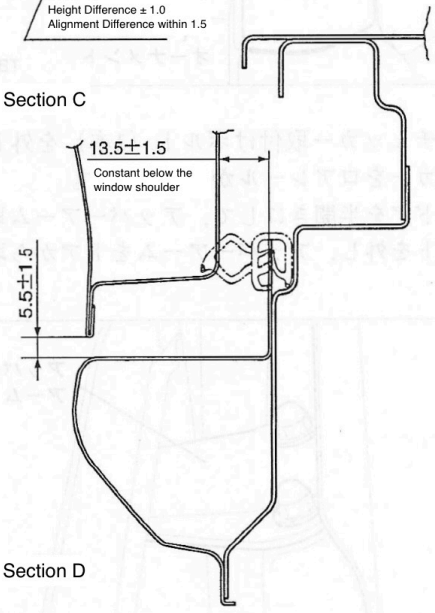
Section A



Section C



Section B

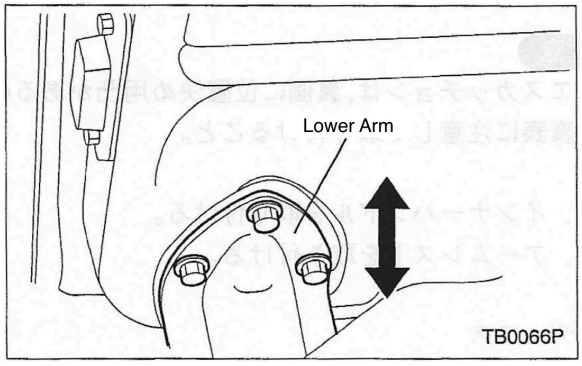


Section D

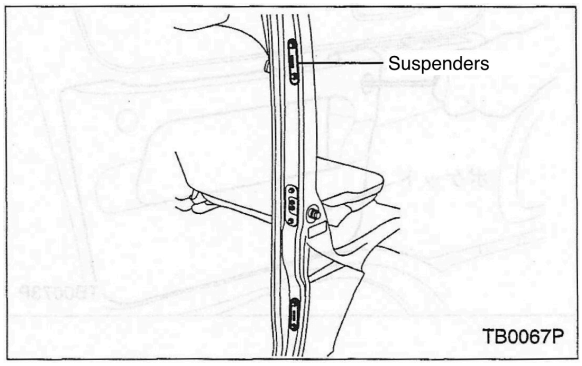
TB0207P

NOTE

• Before adjusting the lower arm, temporarily tighten the body side suspenders.



2. After adjustment, tighten the lower arm, close the door, position the suspenders, and tighten them.



Lower arm mounting bolt tightening torque
T 18 ± 5 N•m [1.80±0.50kg-m]

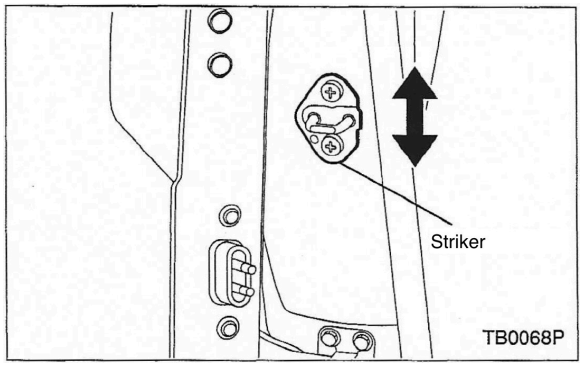
Suspender mounting bolt tightening torque
T 7.5 ± 2 N•m [0.75 ± 0.20 kg•m]

b. Back side

1. Adjust the height using the striker mounting part.
2. Adjust the height of the center arm to match the position of the sliding door.

NOTE

• Before adjusting the striker, temporarily tighten the center arm.



Striker mounting screw tightening torque
T 14 ± 4 N•m [1.4 ± 0.4 kg•m]

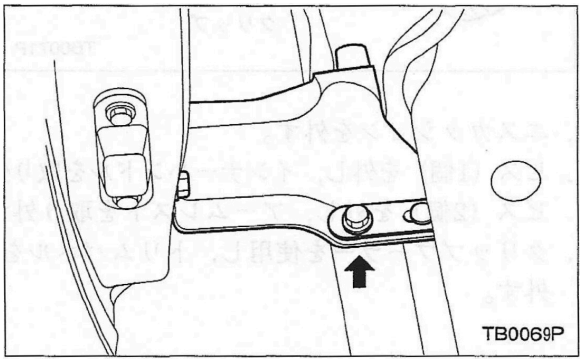
Center arm mounting bolt tightening torque
T 18 ± 5 N•m [1.80 ± 0.50 kg•m]

• Adjustment of the gap between the sliding door and the body exterior

1. Loosen the lower arm adjustment bolt and adjust.

NOTE

• Before adjusting, make sure the body side suspenders are in a partially fastened state.



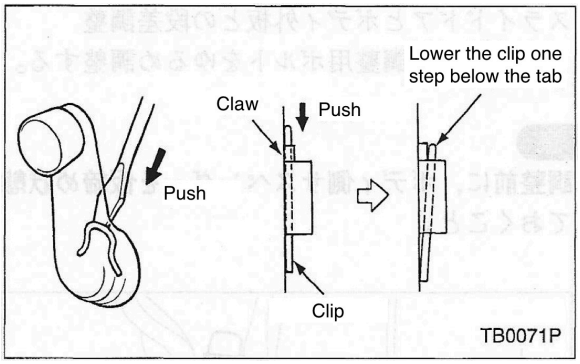
2. After adjustment, fully tighten the lower arm, close the door, determine the position of the suspenders, and then tighten them.
   Lower Arm Mounting Bolt Tightening Torque
   T 18 ± 5 N•m [1.80 ± 0.50 kg•m]
   Suspender Mounting Bolt Tightening Torque
   T 7.5 ± 2 N•m [0.75 ± 0.20 kg•m]

(3) Cab Door Trim

• Trucks, vans, & panel vans

<Removal>

1. Remove the regulator handle.



2. Remove the escutcheon.
3. Remove the screw (1) and remove the inner handle.
4. Remove the two screws and remove the armrest.
5. Use a clip puller to remove the trim panel.

<Installation>

1. Align the clips and install the trim panel.
2. Install the regulator handle on the upper side so that it tilts 45° forward when the glass is fully closed.

NOTE

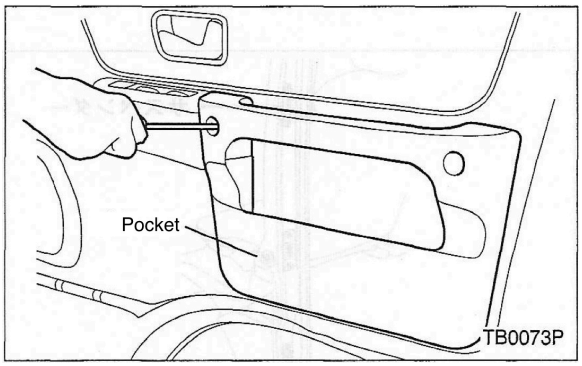
• The escutcheon has a positioning protrusion on the back, so be careful when installing it with the front and back facing up.

3. Attach the inner handle.
4. Install the armrest.

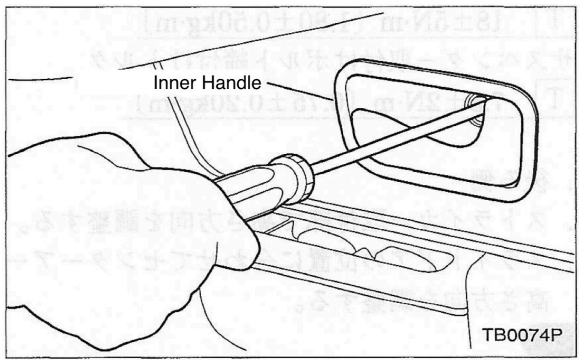
• Dias

<Removal>

1. Remove the two mounting screws from the pocket.

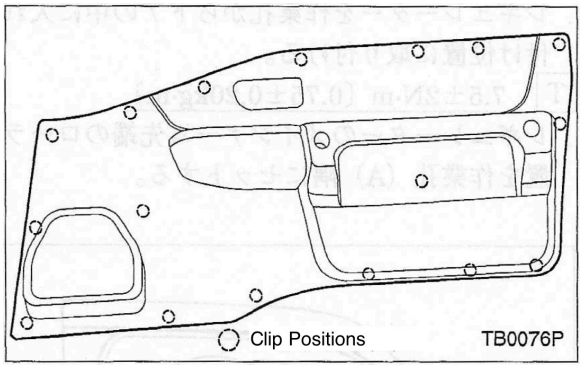


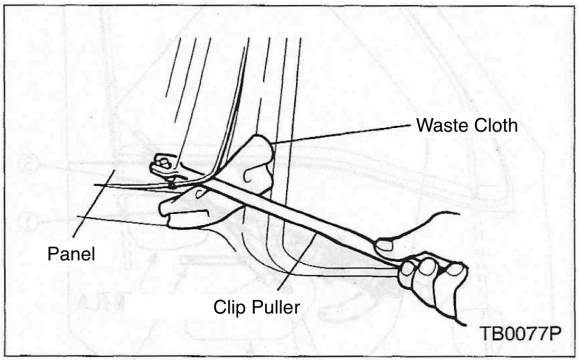
2. Remove the screw (1) from the inner handle.



3. Slide the inner handle forward.

4. Remove the trim clip.



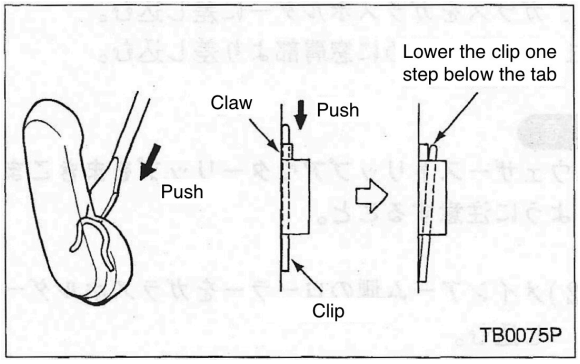


5. Disconnect the power window switch connector and remove the trim.

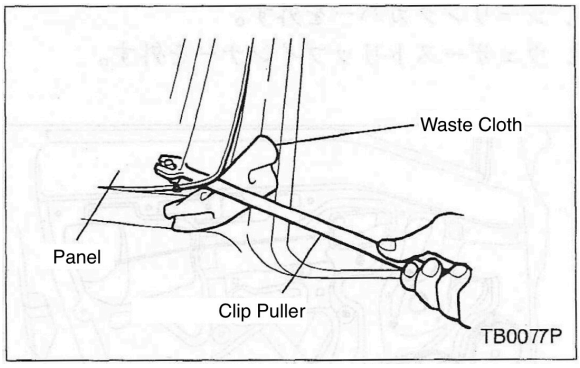
(4) Sliding Door Trim

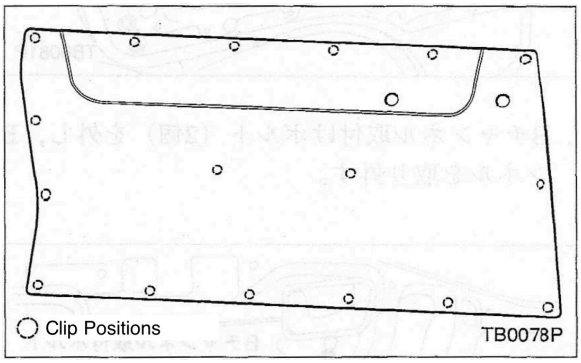
<Removal>

1. Remove the inner handle and regulator handle.



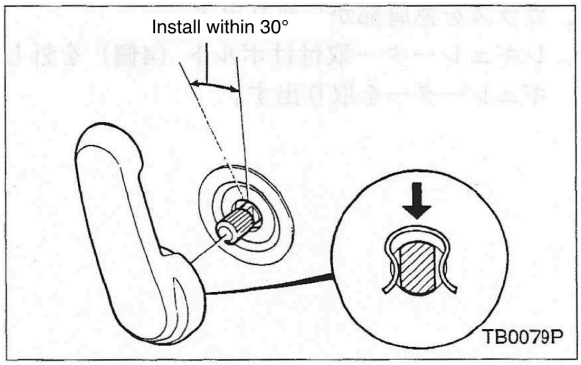
2. Use a clip puller to remove the trim panel.





<Installation>

1. Align the clips and install the trim.
2. For the inner handle, attach the retainer spring to the handle cutout hole, and then push the handle in until the retainer spring is securely seated on the inner remote shaft.



NOTE

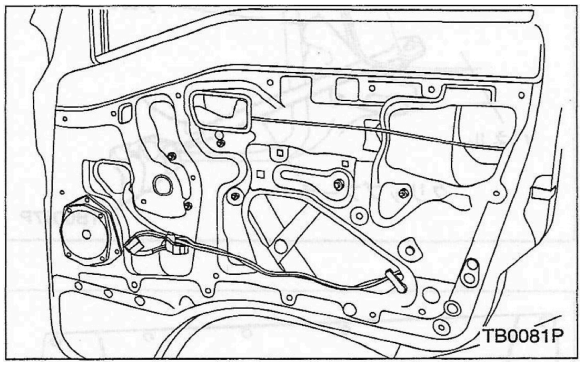
- The escutcheon has a positioning protrusion on the back, so be careful when installing it with the front and back facing up.

3. The regulator handle should be installed on the upper side so that it tilts forward 45° when the glass is fully closed.

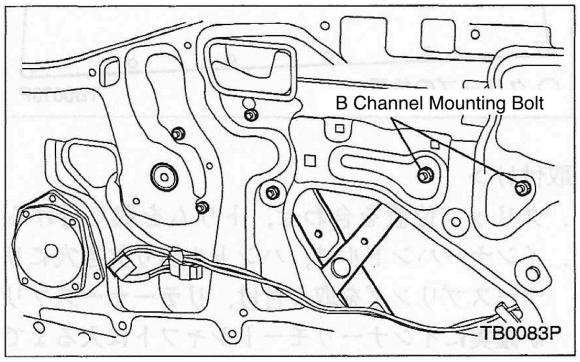
(5) Cab Door Glass and Regulator

<Removal>

1. Remove the trim panel.
2. Remove the ceiling cover.
3. Remove the inner weatherstrip.



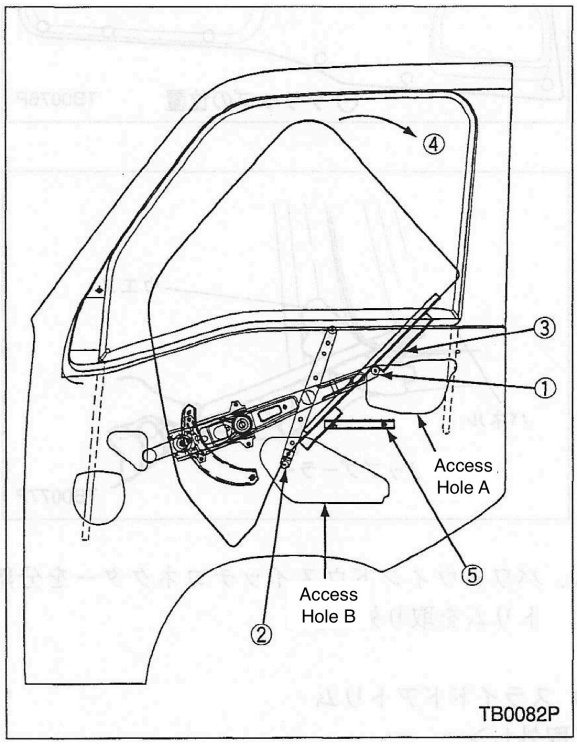
4. Remove the two B channel mounting bolts and remove the B channel.



5. Rotate the glass and remove it from the front and rear sashes.
6. Remove the glass from the window shoulder.
7. Remove the regulator mounting bolts (4 pieces) and take out the regulator.

<Installation>

1. Apply grease to the sliding parts of the regulator.
2. Insert the regulator into the door through the mounting hole and install it in the mounting position.
   T 7.5 ± 2 N•m [0.75 ± 0.20 kg•m]
3. Set the roller position at the tip of the regulator's main arm to the corner of the access hole (A).



4. Set the sub-arm roller in a position where it can be seen from the access hole (B).
5. Insert the glass into the glass holder.
   1) Insert the glass diagonally into the shoulder part.

NOTE

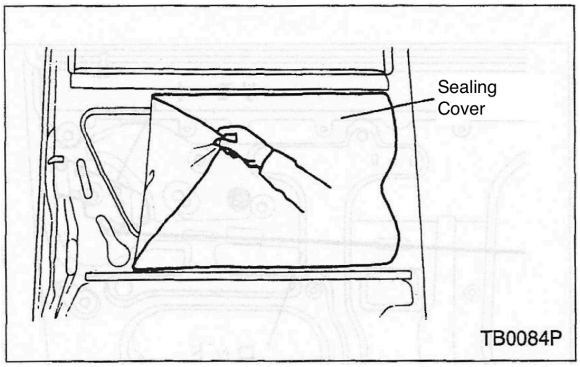
• Be careful not to get the weatherstrip outer lip caught.

   2) Insert the roller on the main arm into the glass holder.
   3) Insert the roller on the sub-arm into the glass holder.
6. Rotate the glass and insert it into the front and rear sashes.
7. Install the B channel.
   T 7.5 ± 2 N•m [0.78 ± 0.20 kg•m]
8. Install the ceiling cover.
9. Install the trim panel.

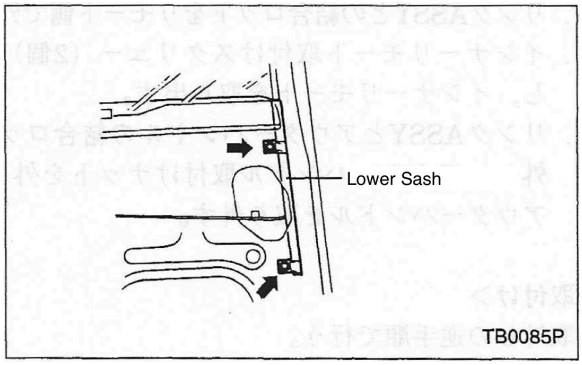
(6) Sliding Door Glass and Regulator

<Removal>

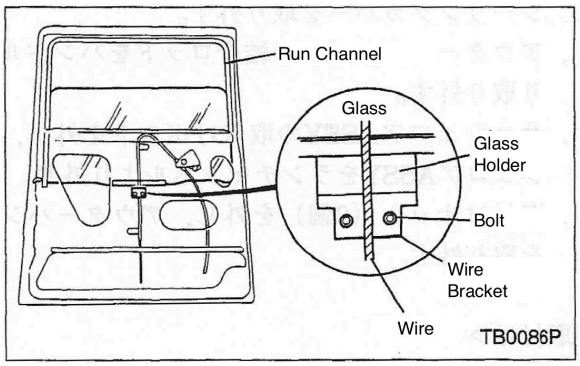
1. Remove the trim panel.
2. Remove the ceiling cover.



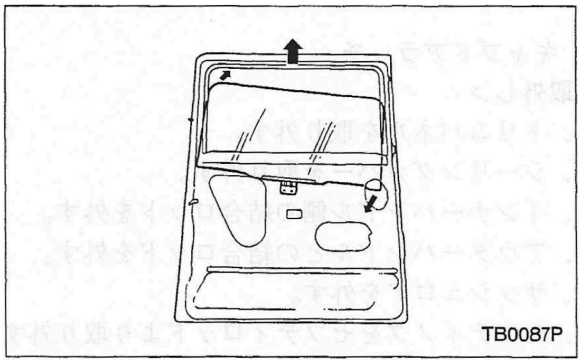
3. Remove the lower sash.



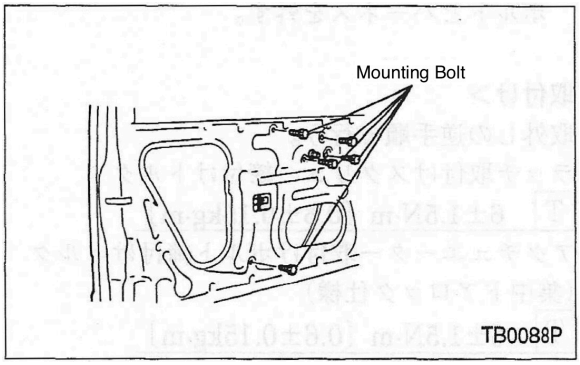
4. Lower the glass to the bottom edge and pull the run channel out of the door panel.
5. Raise the glass until the regulator's glass holder is in the working hole and separate it from the wire bracket.



6. Tilt the rear of the glass up and remove it.



7. Remove the regulator mounting bolts (5 pcs.) and take out the regulator and wire assembly through the access hole.



<Installation>

Follow the removal procedure in reverse.

Glass joining bolt tightening torque

T 7.5 ± 2 N•m [0.75 ± 0.2 kg•m]

Regulator mounting bolt tightening torque

T 7.5 ± 2 N•m [0.75 ± 0.2 kg•m]

(7) Cab Door Outer Handle

<Removal>

1. Remove the trim panel.
2. Remove the ceiling cover.
3. Remove the connecting rod to the outer handle from the handle side.
4. Remove the mounting bolts from the sash lower assembly, and remove the sash lower assembly from the run channel.
5. Remove the two mounting nuts and remove the outer handle.

<Installation>

Follow the removal procedure in reverse.
Outer Handle Mounting Nut Tightening Torque
T 7.5 ± 2 N•m [0.75 ± 0.2 kg•m]

(8) Cab Door Latch

<Removal>

1. Remove the trim panel.
2. Remove the ceiling cover.
3. Remove the connecting rod on the inner handle side.
4. Remove the connecting rod from the outer handle.
5. Remove the sash lower.
6. Remove the safety knob from the safety rod.
7. Remove the connecting rod on the key cylinder side.
8. Remove the key clip and remove the key cylinder.
9. Remove the latch mounting screws (3 pieces) and remove the latch.
   For central door locking models, remove the actuator mounting bolts and harness.

<Installation>

Follow the removal procedure in reverse.
Latch Mounting Screw Tightening Torque
T 6 ± 1.5 N•m [0.6 ± 0.15 kg•m]

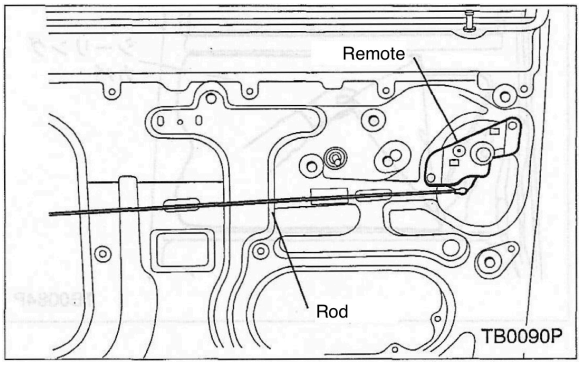
Actuator Mounting Bolt Tightening Torque
(Central Door Lock Specification)
T 6 ± 1.5 N•m [0.6 ± 0.15 kg•m]

Inner Handle Mounting Screw Tightening Torque
T 6 ± 1.5 N•m [0.6 ± 0.15 kg•m]

(9) Sliding Door Outer Handle

<Removal>

1. Remove the trim panel.
2. Remove the ceiling cover.
3. Disconnect the latch and connecting rod on the remote side.



4. Remove the safety knob from the safety rod.
5. Remove the connecting rod from the link assembly on the remote side.
6. Remove the inner remote mounting screws (2 pcs.) and remove the inner remote.
7. Remove the connecting rod between the link assembly and the outer handle, remove the outer handle mounting nut, and then remove the outer handle.

<Installation>

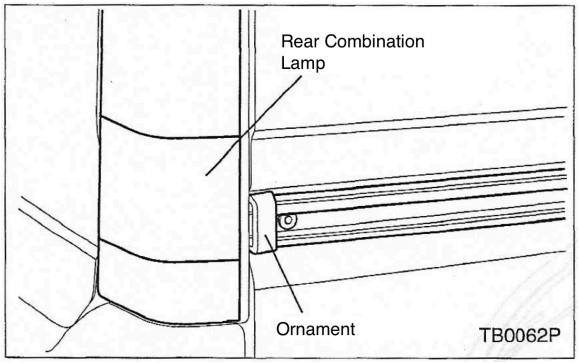
Follow the removal procedure in reverse.
Inner remote mounting screw tightening torque
T 6 ± 1.5 N•m [0.6 ± 0.15 kg•m]

Outer Handle Mounting Nut Tightening Torque
T 7.5 ± 2 N•m [0.75 ± 0.2 kg•m]

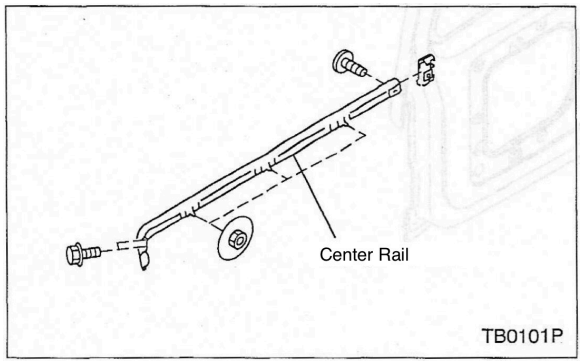
(10) Center Rail

<Removal>

1. Remove the rear combination lamp and ornament.



2. Remove the sliding door.
3. Remove the two mounting bolts and three mounting nuts, and then remove the center rail.



<Installation>

Follow the removal procedure in reverse.
Center Rail Mounting Bolt and Nut Tightening Torque
T 7.5 ± 2 N•m [0.75 ± 0.2 kg•m]

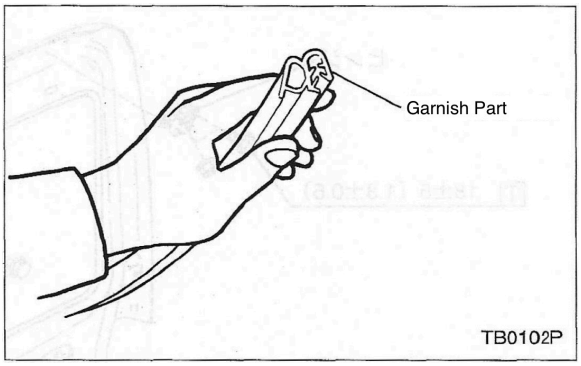
(11) Weatherstrip

<Removal>

Remove the weatherstrip from the body flange.

NOTE

• Remove by holding the garnish part, not the sponge part.

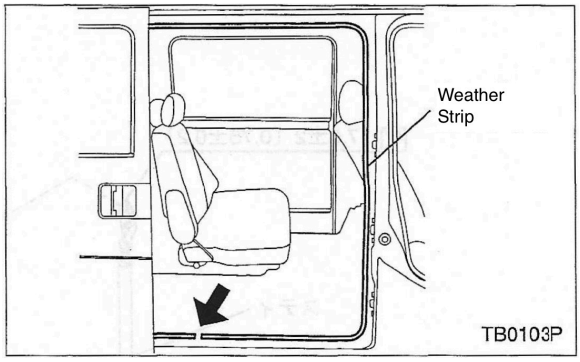


<Installation>

1. Attach the weatherstrip to the body flange with the seam at the bottom center.

NOTE

• When installing, do not pull but insert securely to the base of the flange. Pay particular attention to the corners.



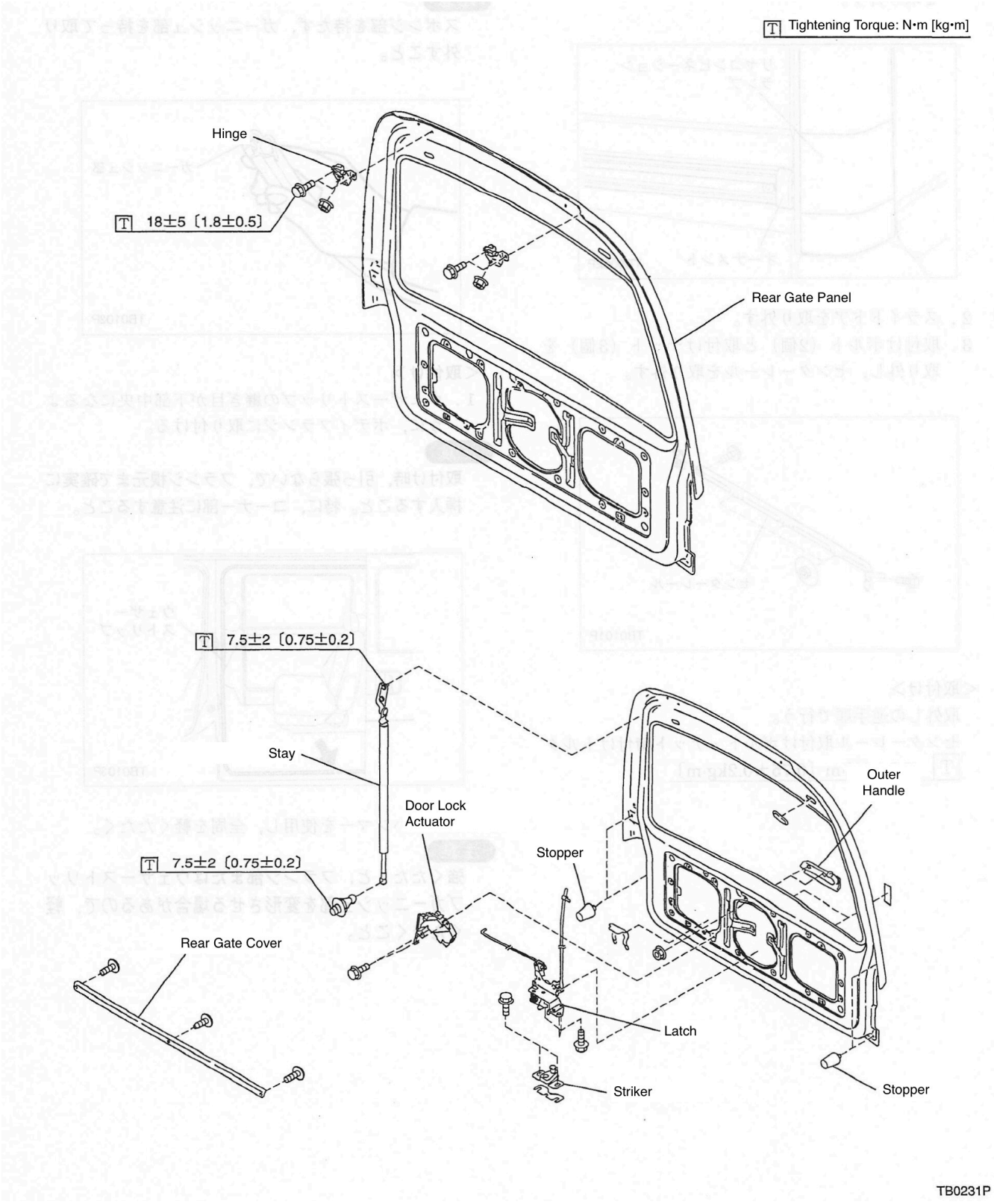
2. Use a rubber hammer and tap lightly all over the surface.

NOTE

• Hitting too hard may deform the flange or weatherstrip garnish, so tap gently.

[3] Rear Gate

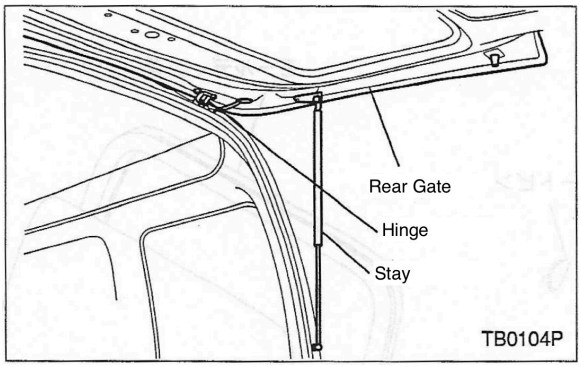
■ Component Parts



Maintenance Instructions

<Removal>

1. Open the tailgate and separate the connector and washer.
2. Remove the stay.
3. Remove the tailgate at the hinges.



<Installation>

Follow the removal procedure in reverse.
Hinge Mounting Bolt Tightening Torque (Rear Gate Side)
T 18 ± 5 N•m [1.8 ± 0.5 kg•m]

Hinge Mounting Bolt Tightening Torque (Body Side)
T 40 ± 5 N•m [4 ± 0.5 kg•m]

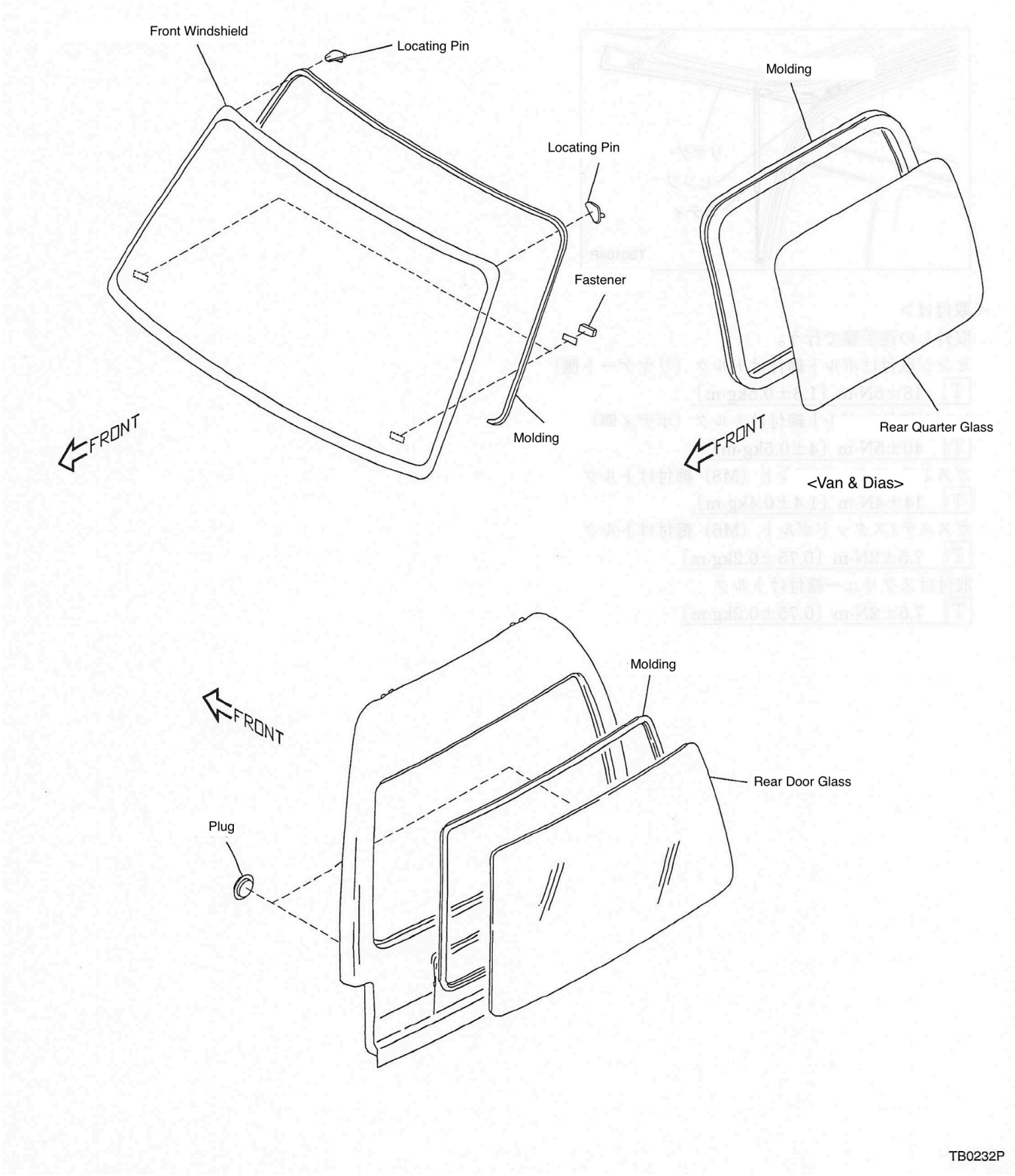
Gas Stud Bolt (M8) Tightening Torque
T 14 ± 4 N•m [1.4 ± 0.4 kg•m]

Gas Stud Bolt (M6) Tightening Torque
T 7.5 ± 2 N•m [0.75 ± 0.2 kg•m]

Mounting Screw Tightening Torque
T 7.5 ± 2 N•m [0.75 ± 0.2 kg•m]

[4] Shield Glass

■ Component Parts

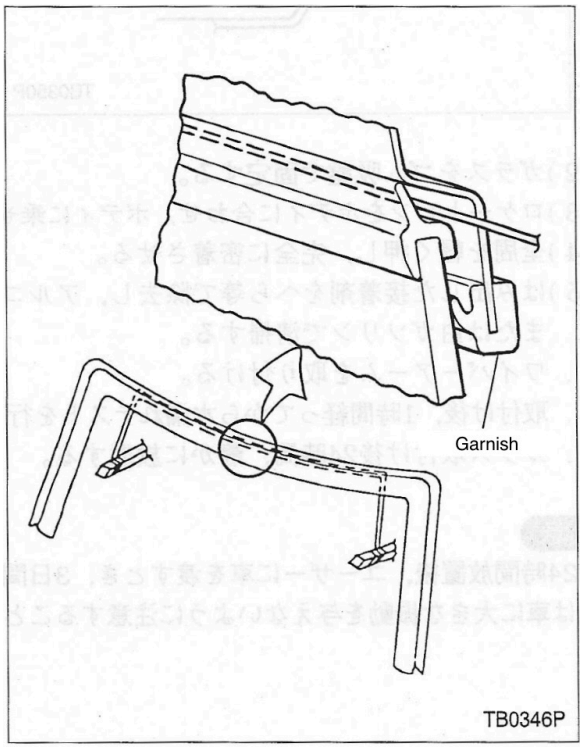


■ Maintenance Instructions

(1) Front Window Glass

<Removal>

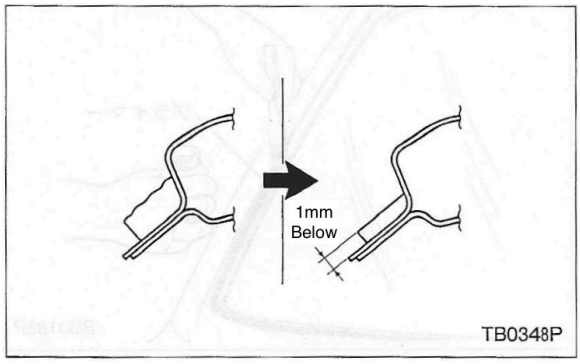
1. Remove the wiper arm.
2. Remove the glass.
   1) Apply protective tape to the body to prevent scratches.
   2) Remove the garnish.
   3) Cut the adhesive from the inside of the room, pass the piano wire between the body and the molding, and insert it into the room from two points.
   4) Tie the piano wire to a piece of wood or something similar.
   5) Pull the piano wire alternately to cut the adhesive.



   6) Work all around in the same way.
   7) Cut the pins and fasteners at the same time.

<Installation>

1. Use a utility knife or similar tool to scrape off the adhesive that has stuck to the body, creating a smooth surface and finishing the entire circumference to a thickness of approximately 1 mm or less.



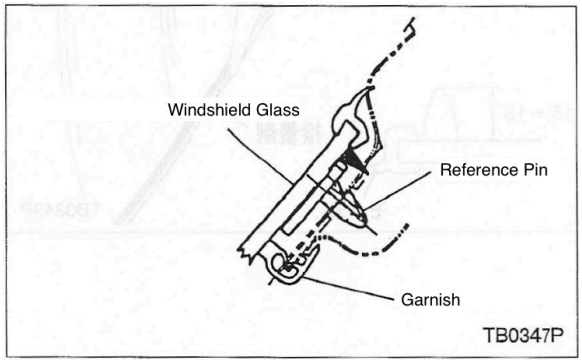
NOTE

- If the finish is poor, the glass may float, causing the tip of the pillar molding to protrude from the body surface.
- Work with care to avoid damaging the painted surface of the body.

2. Cleaning the body adhesive surface
   1) Thoroughly remove any shavings, dirt, dust, etc. remaining on the body adhesive surface.
   2) Clean the body adhesive and the top surface of the adhesive layer thoroughly with a solvent such as alcohol or white gasoline.
3. Cleaning the glass
   1) Clean the adhesive surface of the glass thoroughly with alcohol or white gasoline.
   2) Install the garnish before installing the glass.

NOTE

- Use new garnish.

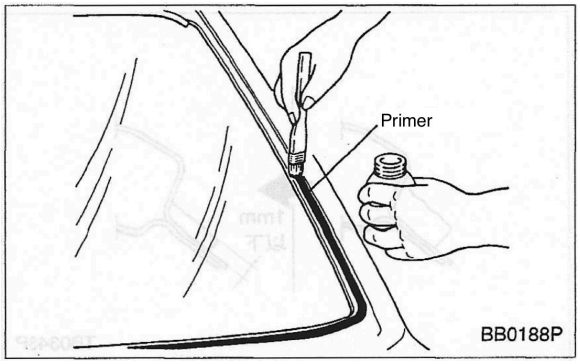


   3) Attach the molding to the glass.

NOTE

- When installing, be careful not to leave gaps between the molding and the glass at the corners.

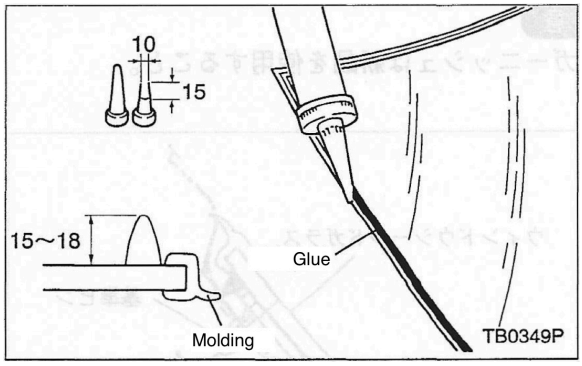
4. Applying Primer
   1) Use a brush to apply the primer to the glass bonding surface.
   2) Apply to the body adhesive surface in the same way.



NOTE
- If you spill primer on the body coating surface, instrument panel, inner trim, etc., it will be difficult to wipe off, so be sure to mask it.
- After application, let it dry naturally for about 10 minutes.
- Never touch the surface coated with primer.

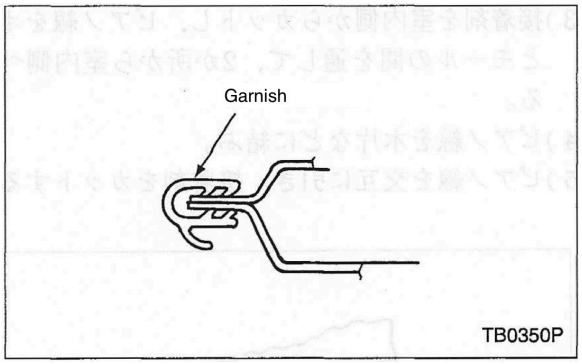
5. Applying adhesive
   1) Cut the nozzle tip of the cartridge.
   2) Open the cartridge, attach the nozzle, and set it in the gun.
   3) Apply adhesive evenly around the entire perimeter of the glass, following the glass surface.

NOTE
- Avoid protruding into the mall as much as possible.



6. Glass installation
   1) Attach the garnish to the flange part of the vehicle body.

NOTE
- Use new garnish.



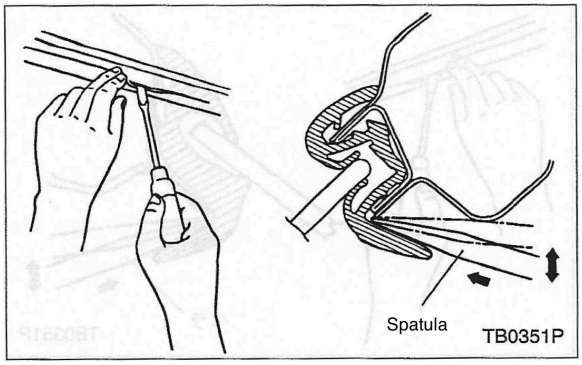
   2) Secure the glass with the rubber suction cup.
   3) Align the locating pin with the body and place it on the body.
   4) Press lightly all around to ensure complete adhesion.
   5) Remove any excess adhesive with a spatula or similar tool and clean with alcohol or white gasoline.
7. Install the wiper arm.
8. After installation, wait one hour before conducting a water leak test.
9. After installing the glass, leave it undisturbed for 24 hours.

NOTE
- When handing the car over to the user after leaving it for 24 hours, be careful not to subject the car to any significant vibrations for around three days.

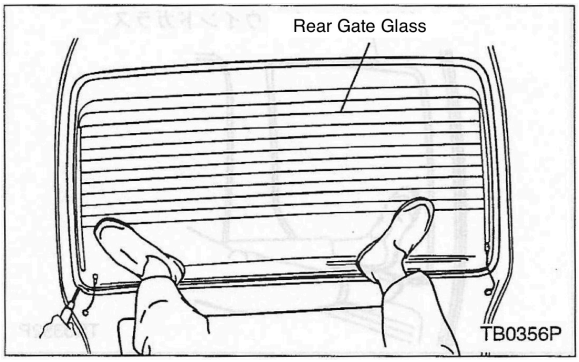
(2) Rear Gate Glass

<Removal>

1. From the inside of the vehicle, use a flat head driver or spatula to peel back the lip of the weather strip and push it outward toward the body flange.
   (Top and half of both sides of the glass)

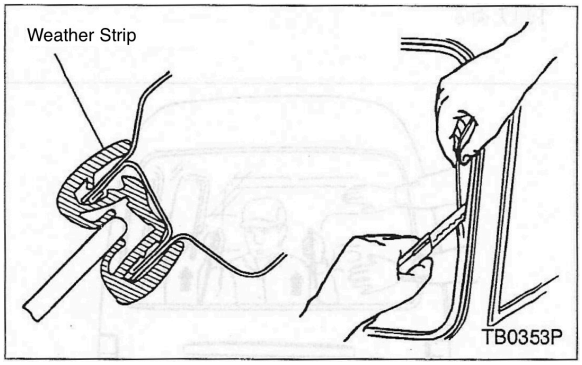


2. Push out the glass along with the weather strip from the inside of the vehicle.



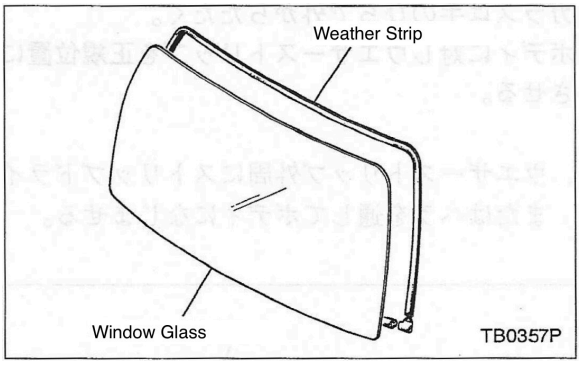
NOTE

- Apply pressure evenly to the glass, pressing close to the weatherstrip.
- If you are not going to reuse the weather strip, cut it with a knife or similar tool and remove the glass.



<Installation>

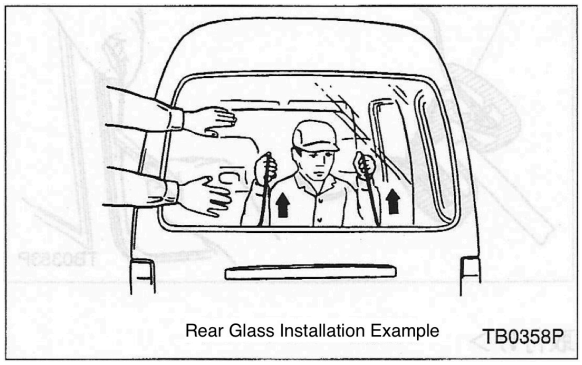
1. Place the glass in the correct position from the outside and insert the work string (overlapped) inside.



NOTE

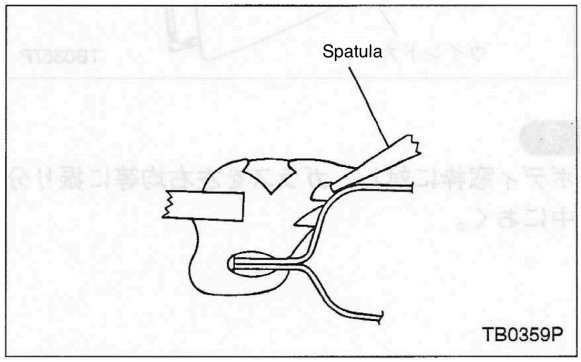
- Distribute the glass evenly on both sides of the body window frame and place it in the center.

2. Apply white gasoline to the entire lip of the weatherstrip.
3. Pull the work cord from inside the room.
   • While pulling the glass retracting cord at an angle so that it goes over the body flange, tap the glass with your hand from the outside to assemble the weather strip to the body.



NOTE
• Work from the center of the glass.
• Tap the glass from the outside with the palm of your hand.
• Attach the weather strip to the body in the correct position.

4. Use a strip driver or spatula to smooth the weatherstrip around the outside edge to fit it into the body.

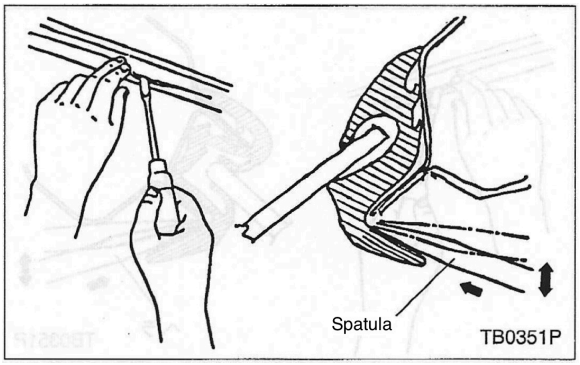


5. Hit the entire glass from the outside with your palm or a rubber hammer to settle it into the body.

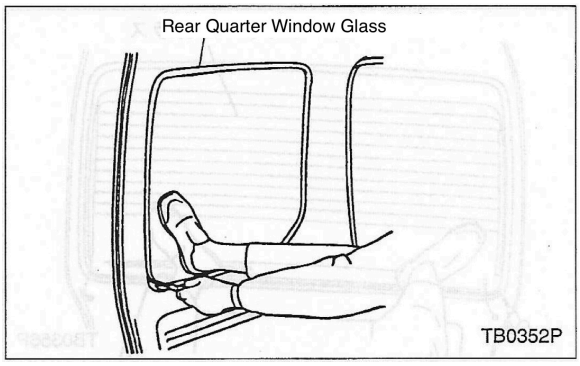
(3) Rear Quarter Glass

<Removal>

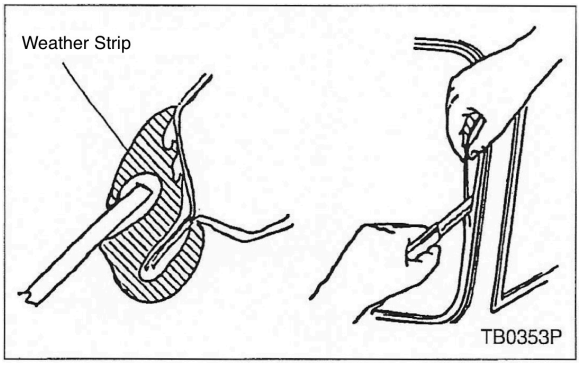
1. From the inside of the vehicle, use a strip driver or spatula to peel back the lip of the weatherstrip and push it outward from the body flange.
   (Top and half of both sides of the glass)



2. Push out the glass along with the weather strip from the inside of the room.



NOTE
• Apply pressure evenly to the glass, pressing close to the weatherstrip.
• If you are not going to reuse the weather strip, cut it with a knife or similar tool and remove the glass.



<Installation>

1. Clean the sealant on the glass and weather strips with white gasoline.
2. When assembling the weather strip to the glass, wrap the work string around the weather strip.

NOTE

- Overlap the work string at the bottom edge of the glass.
- After attaching the work string to the weather strip, apply white gasoline to the entire circumference.

3. Place the glass in the correct position from the outside and insert the work string (overlapped) inside.

NOTE

- Distribute the glass evenly on both sides of the body window frame and place it in the center.

4. Apply white gasoline to the entire lip of the weatherstrip.
5. Pull the work cord from inside the room.
   - While pulling the glass retracting cord at an angle so that it goes over the body flange, tap the glass with your hand from the outside and attach the weather outstrip to the body.

NOTE

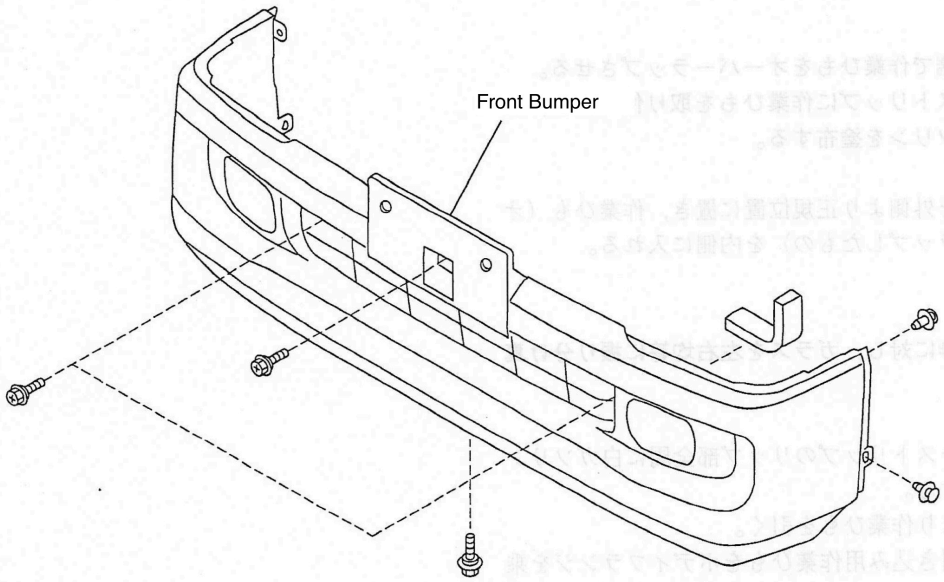
- Work from the center of the glass to the left and right.
- Tap the glass from the outside with the palm of your hand.
- Attach the weather strip to the body in the correct position.

6. Use a strip driver or spatula to smooth the weatherstrip around the outside edge to fit it into the body.
7. Hit the entire glass from the outside with your palm or a rubber hammer to settle it into the body.

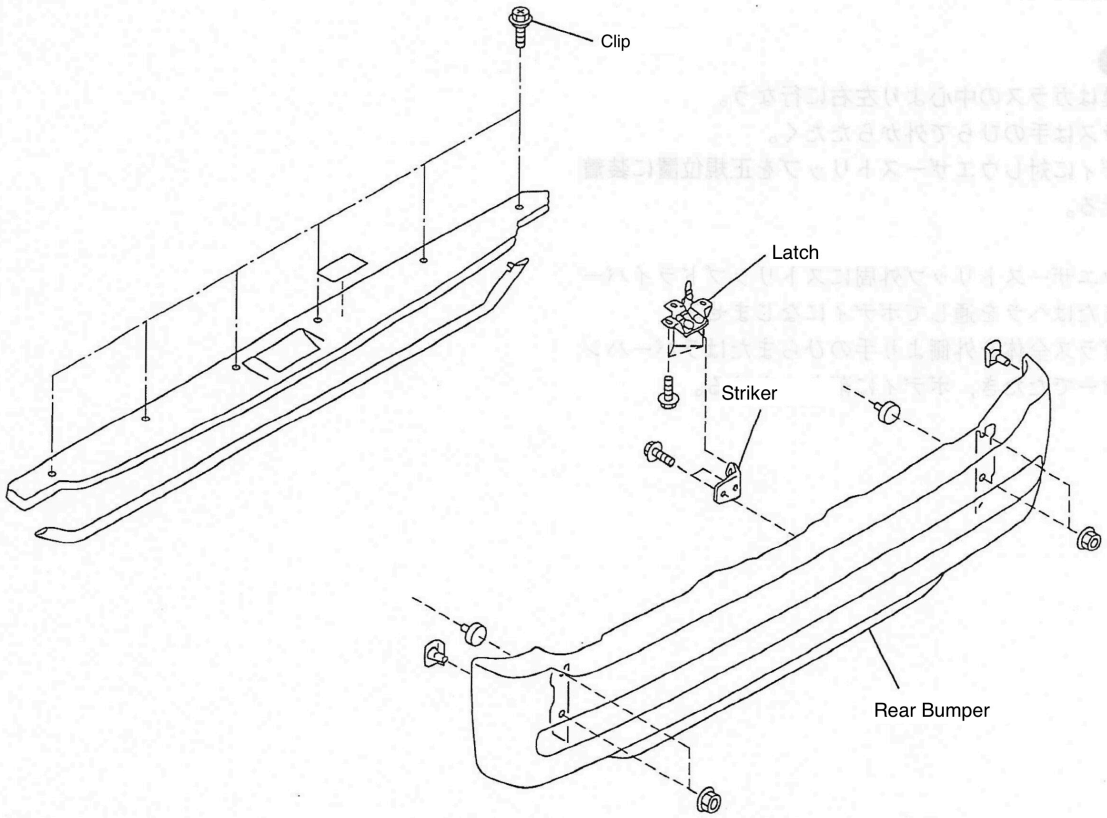
[5] Bumper

■ Component Parts

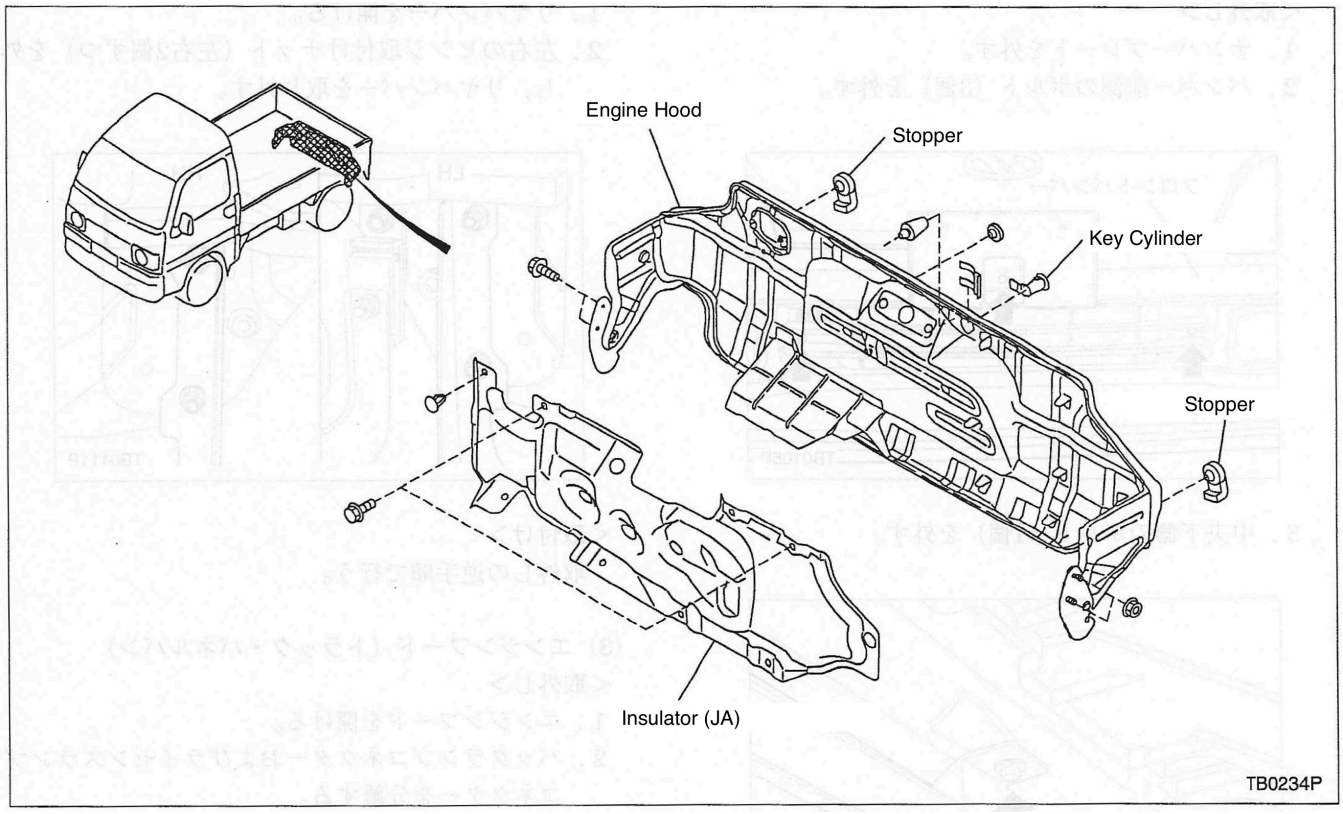
(1) Front Bumper



(2) Rear Bumper



(3) Engine Hood

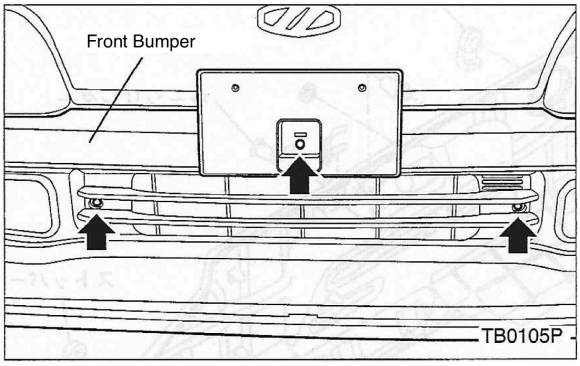


Maintenance Instructions

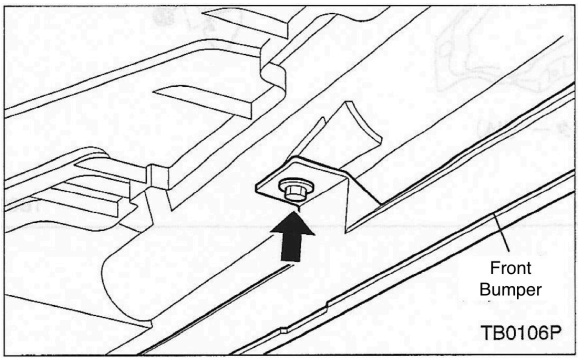
(1) Front Bumper

<Removal>

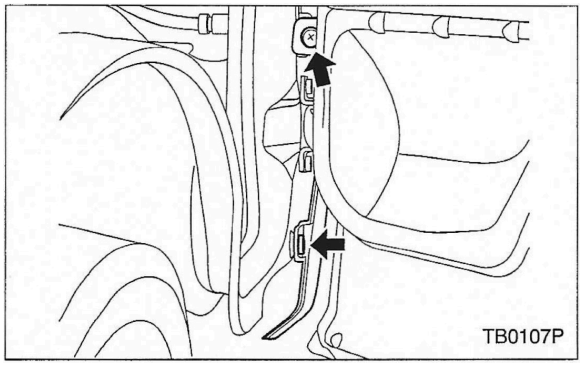
1. Remove the license plate.
2. Remove the three bolts on the front of the bumper.



3. Remove the central lower bolt (1 piece).



4. Remove the mounting clips on the left and right ends (two on each side).



5. For vehicles equipped with fog lights, disconnect the fog light connector and remove the bumper.

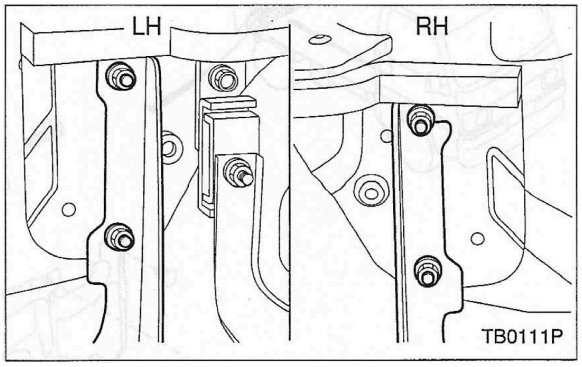
<Installation>

Follow the removal procedure in reverse.

(2) Rear Bumper (Van/Dias)

<Removal>

1. Open the rear bumper.
2. Remove the left and right hinge mounting nuts (two on each side) and remove the rear bumper.



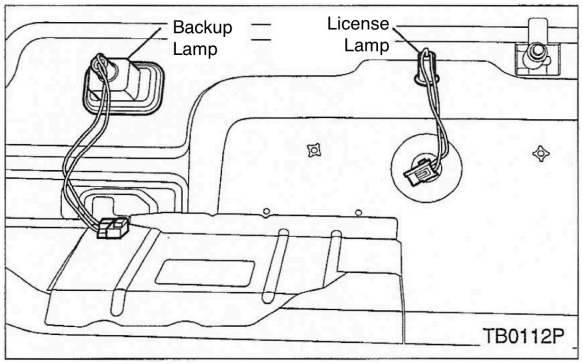
<Installation>

Follow the removal procedure in reverse.

(3) Engine Hood (Truck/Panel Van)

<Removal>

1. Open the engine hood.
2. Disconnect the backup lamp connector and license plate lamp connector.



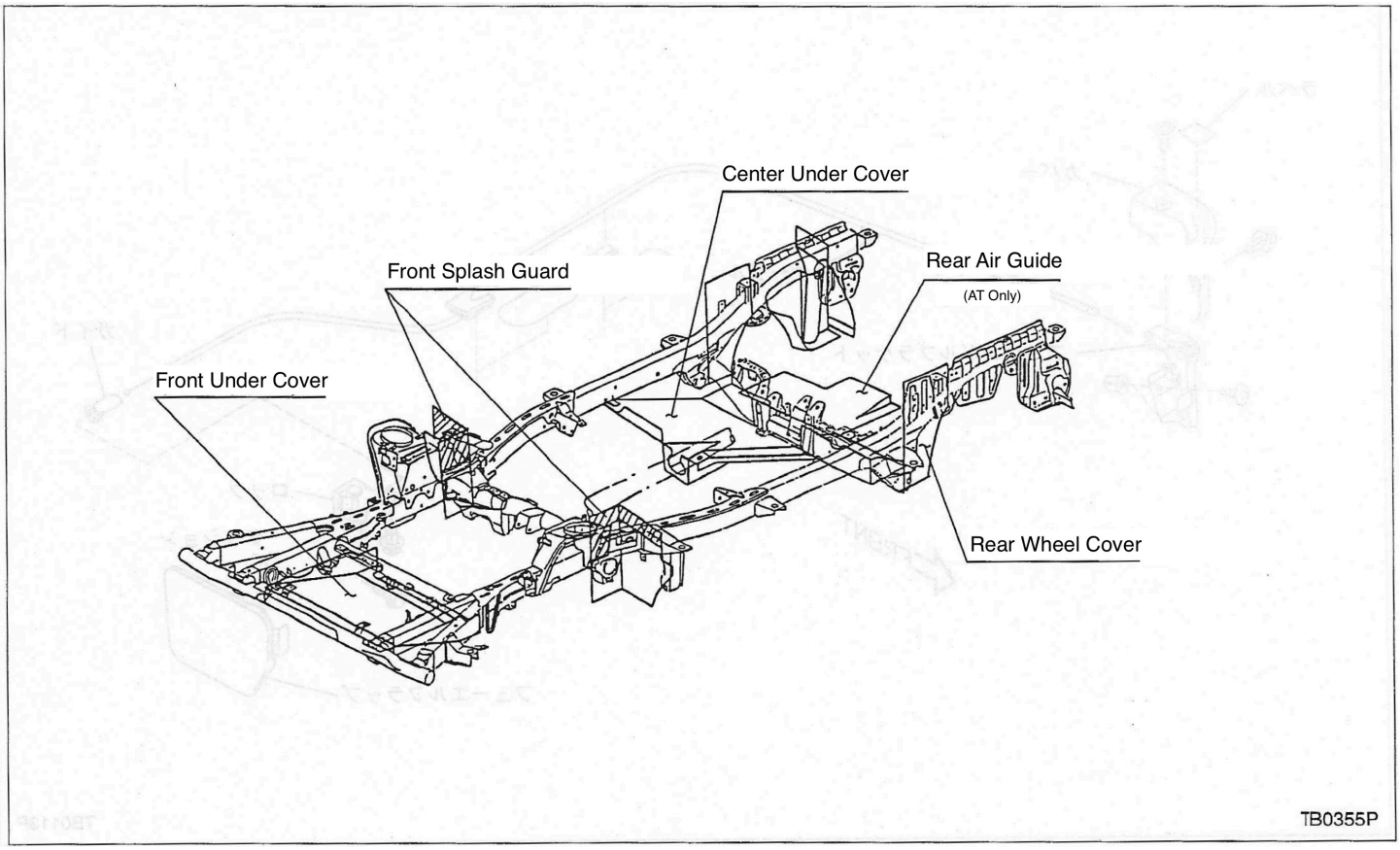
3. Remove the two mounting nuts on the left end and the two mounting bolts on the right end, and then remove the engine hood.

<Installation>

Follow the removal procedure in reverse

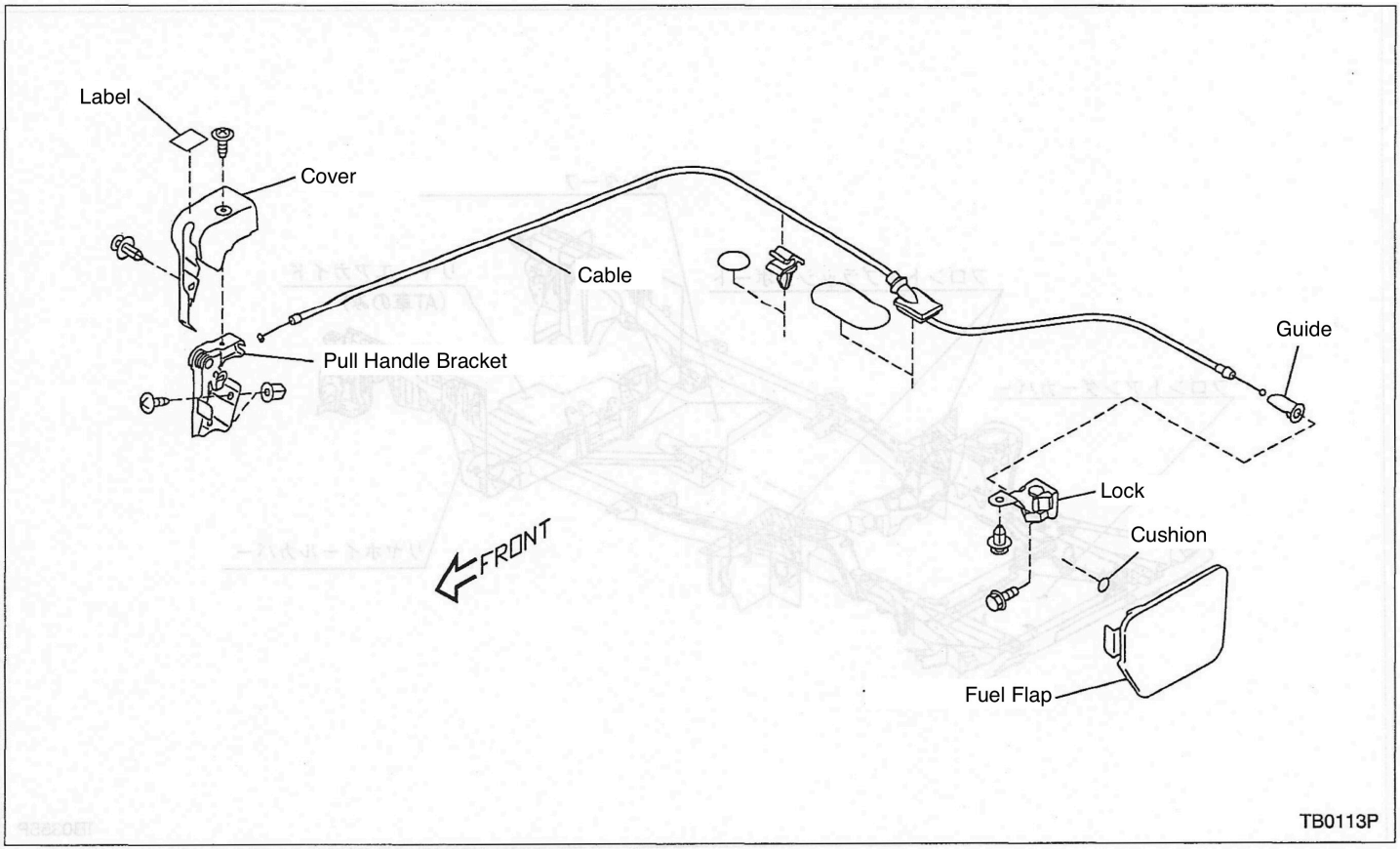
[6] Mudguards & Under Cover

■ Component Parts



[7] Fuel Flap & Opener

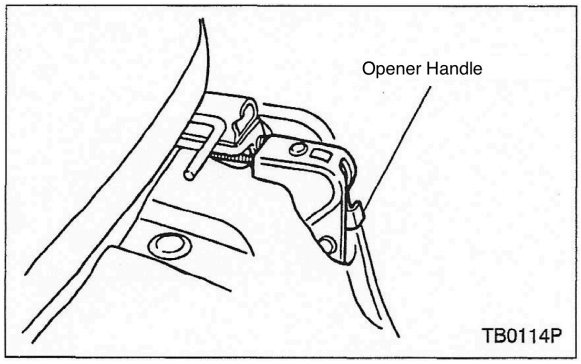
■ Component Parts



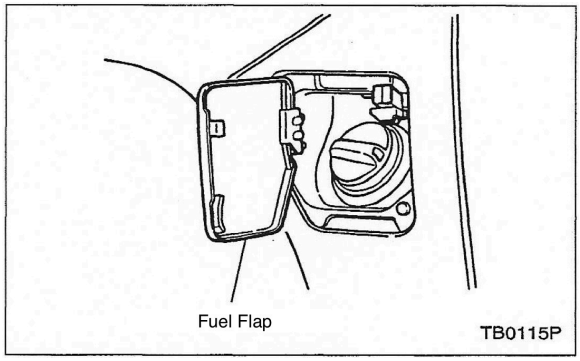
■ Maintenance Instructions

<Removal>

1. Remove the center console.
2. Remove the bull handle bracket mounting screws.



3. Remove the cable end on the lock side.



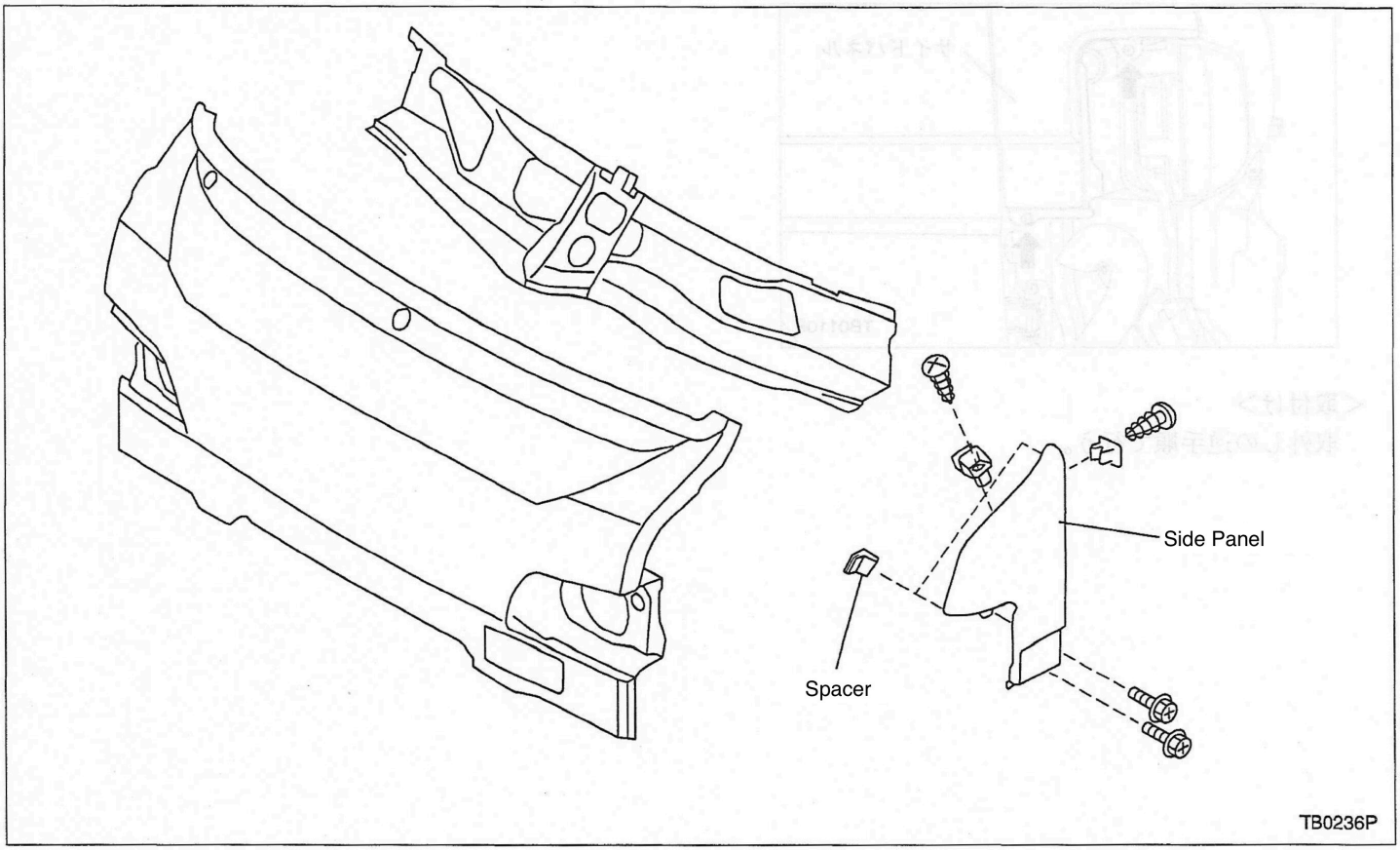
4. Raise the seat and remove the cable.

<Installation>

Follow the removal procedure in reverse.

[8] Side Panel

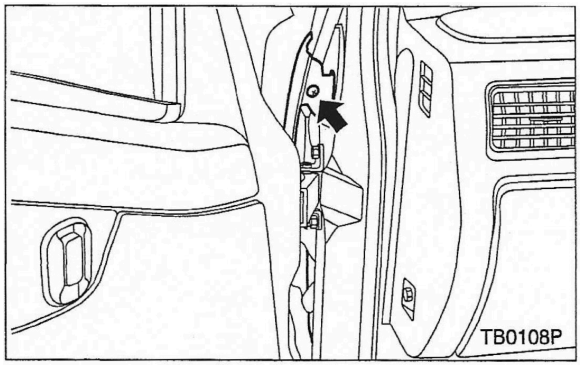
■ Component Parts



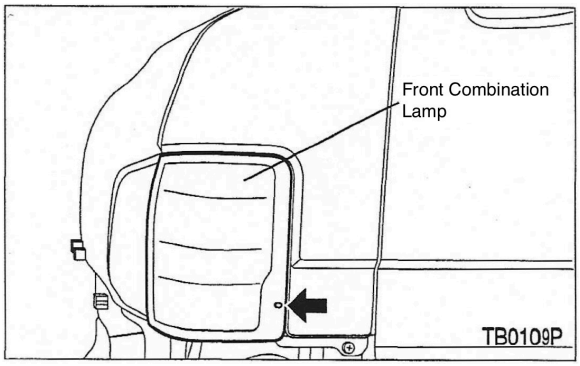
■ Maintenance Instructions

<Removal>

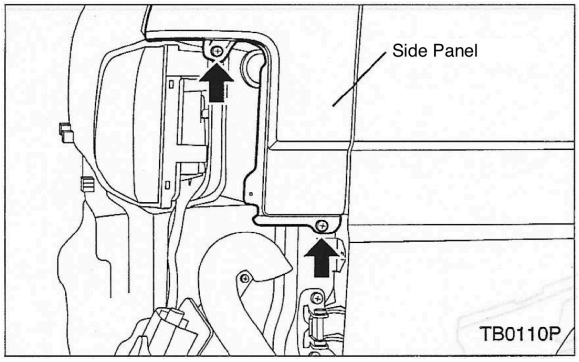
1. Remove the front bumper.
2. Remove the mounting screw (1 piece) from the inside of the vehicle.



3. Remove the screw (1 piece) and remove the front combination lamp.



4. Remove the two mounting bolts and remove the side panel.



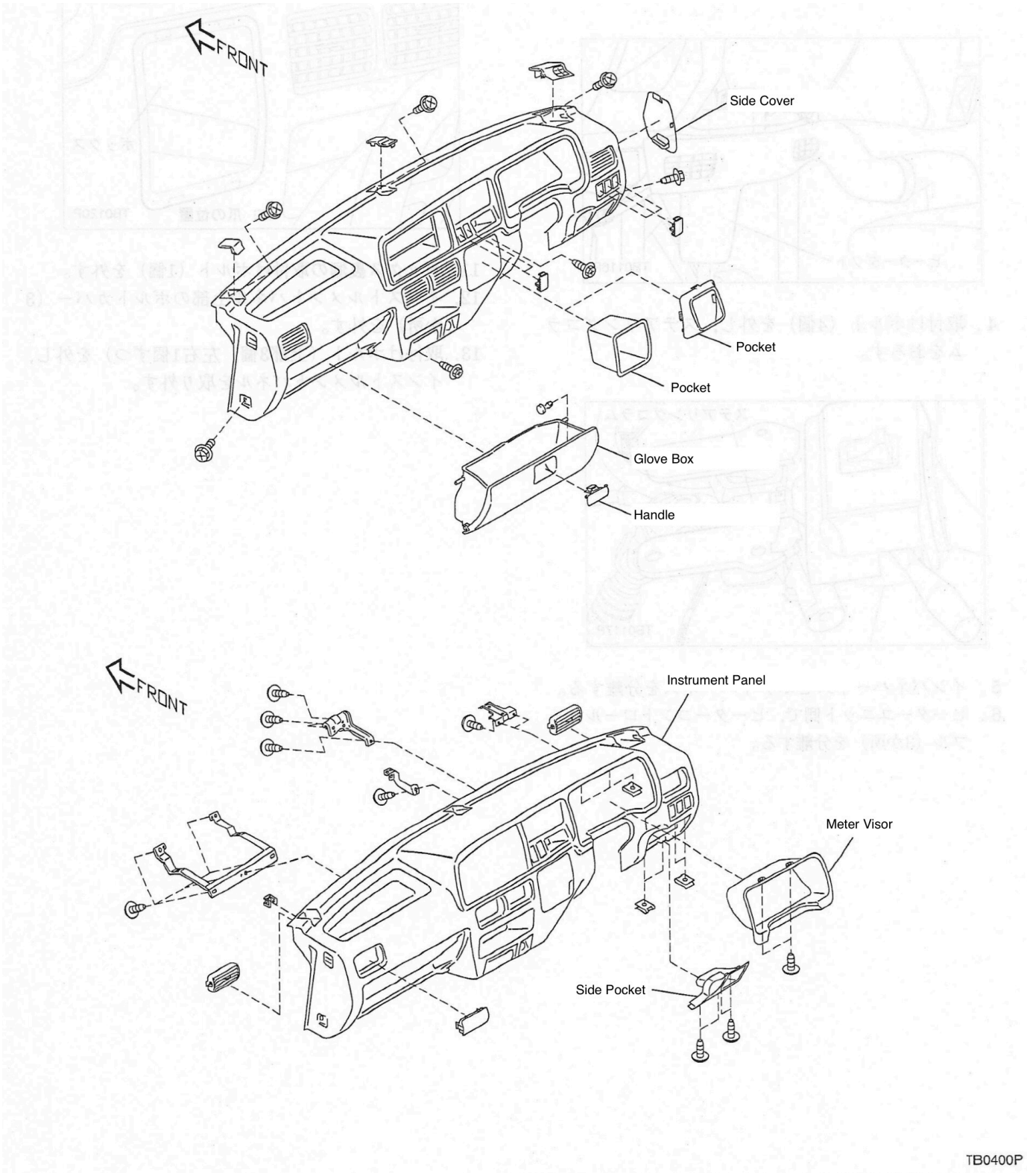
<Installation>

Follow the removal procedure in reverse.

5 - 2 Body Interior

[1] Instrument Panel

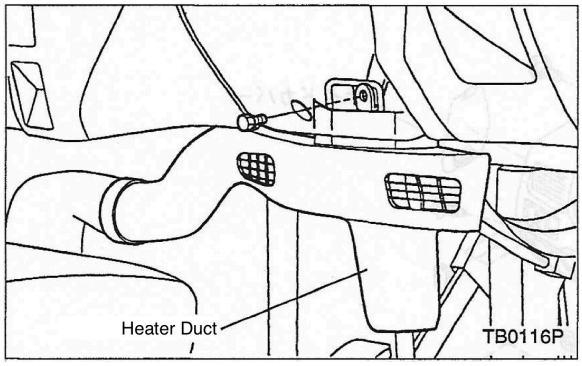
■ Component Parts



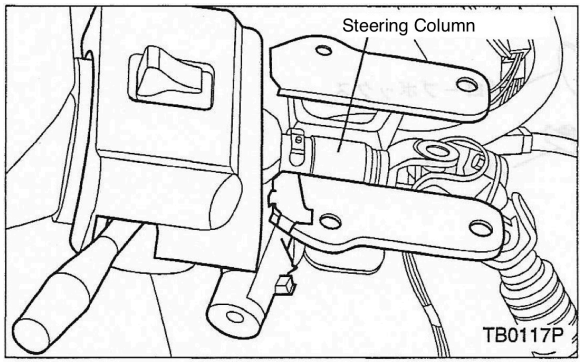
Maintenance Instructions

<Removal>

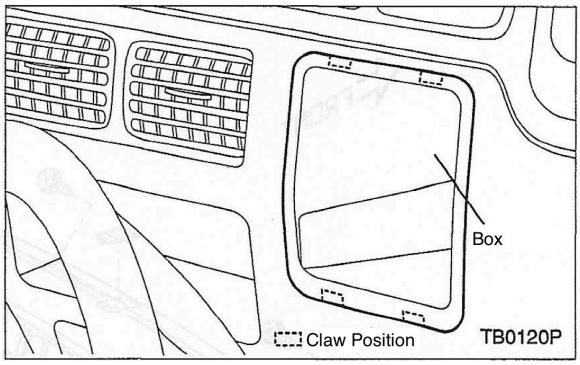
1. Disconnect the negative battery terminal.
2. Remove the five mounting screws, remove the steering column cover, and separate the relay connector.
3. Remove the heater duct at the driver's feet by removing the mounting screw (1).



4. Remove the four mounting bolts and lower the steering column.



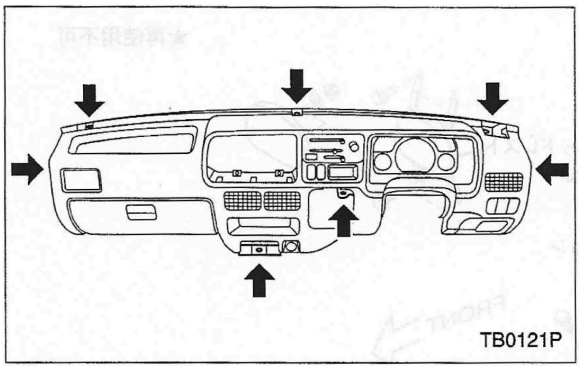
5. Separate the instrument panel harness from the body harness.
6. On the heater unit side, separate the heater control cable (3 locations).
7. Separate the radio feeder line.
8. Disconnect the speedometer cable from the speedometer.
9. Remove the mounting bolt (1) from the bottom of the ashtray.
10. Remove the box (MT) or shift cover (AT).



11. Remove the mounting bolt (1 piece) on the back of the box.
12. Remove the bolt covers (3) on the top of the instrument panel.
13. Remove the mounting bolts (three at the top, one on each side) and remove the instrument panel.

REFERENCE

• There are seven mounting bolts on the instrument panel.

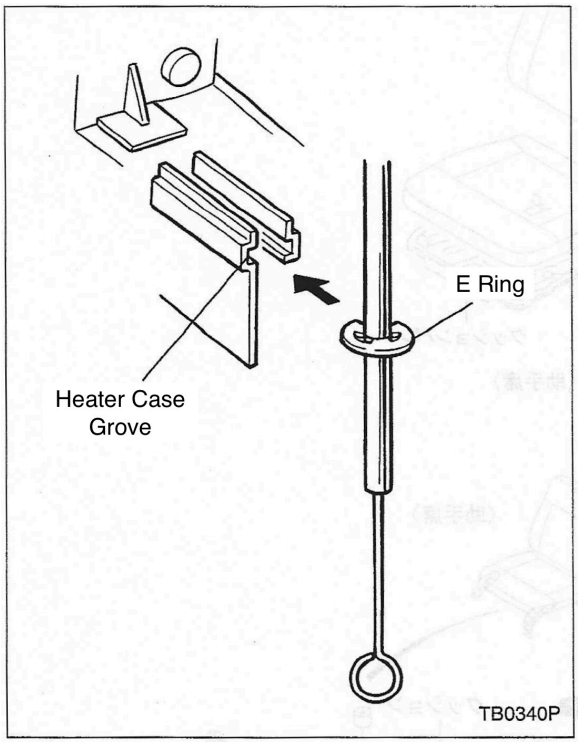


<Installation>

Follow the removal procedure in reverse.

NOTE

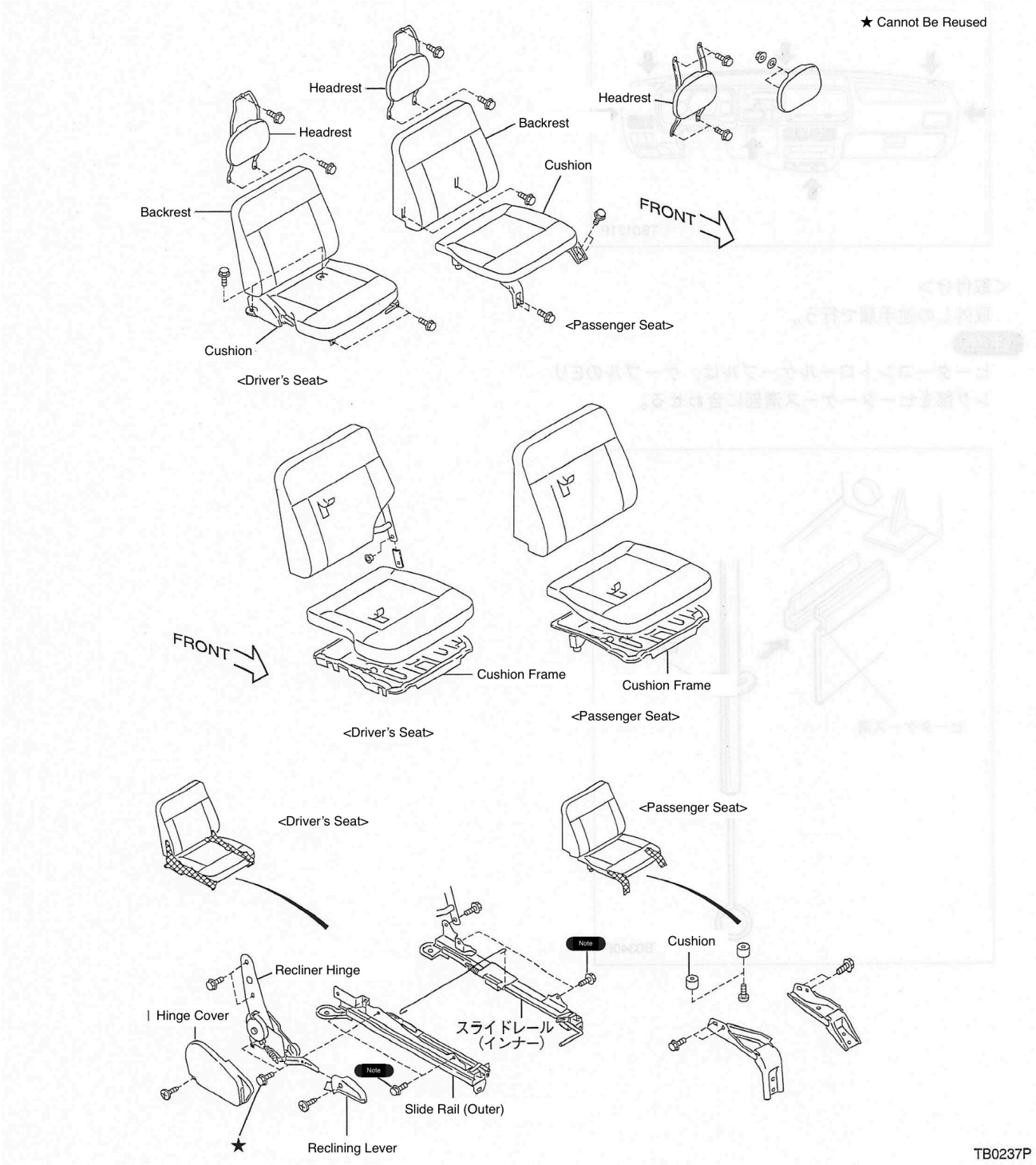
• For the heater control cable, align the E-ring part of the cable with the groove in the heater case.



[2] Front Seat

■ Component Parts

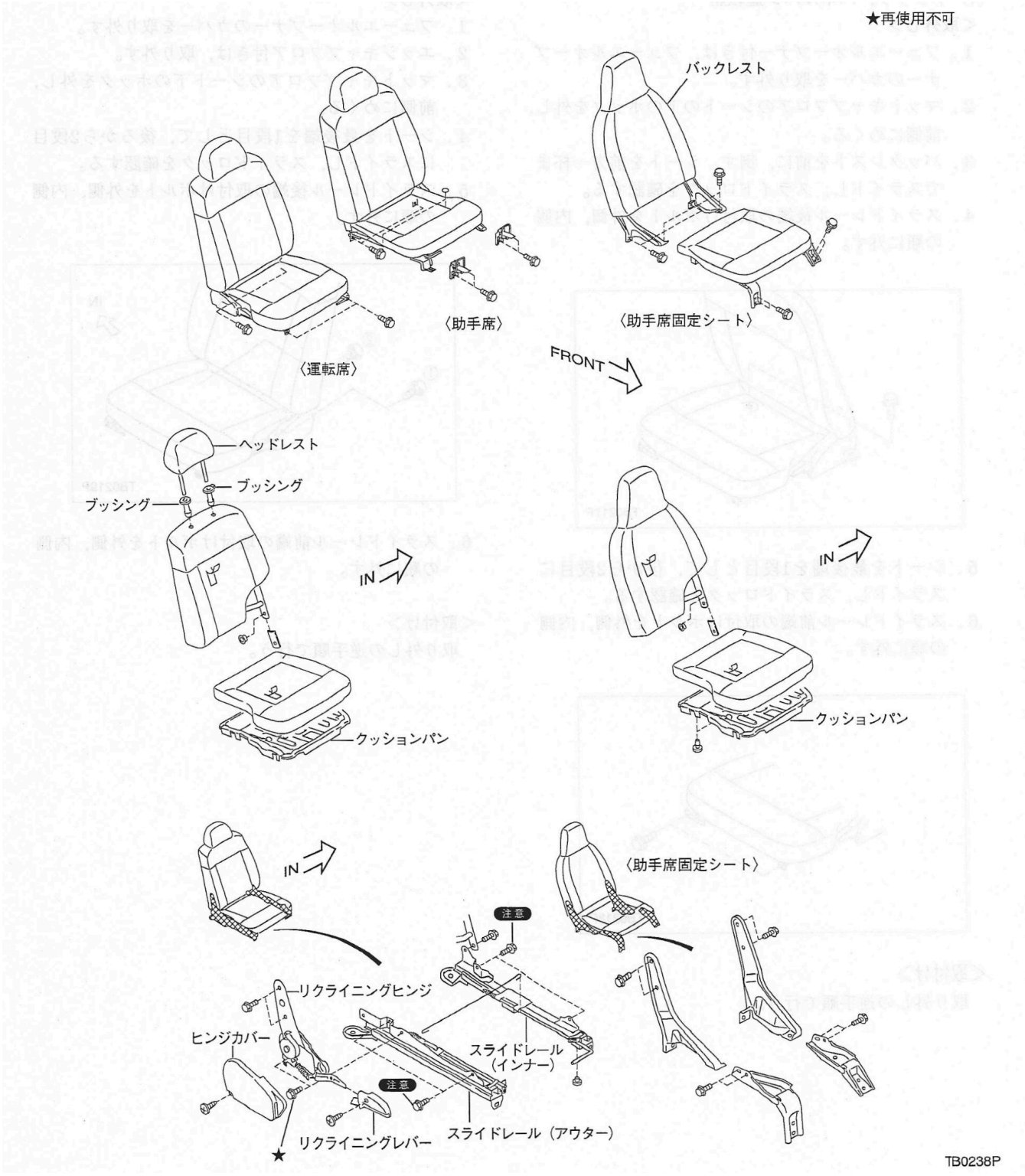
(1) Trucks & Panel Vans



NOTE

- When installing or removing the slide rail, adjust the slide after installing it on the vehicle body and check that it is locked on both sides. If it is not locked, adjust the slide rail installation forward or backward.

(2) Van & Dias



NOTE

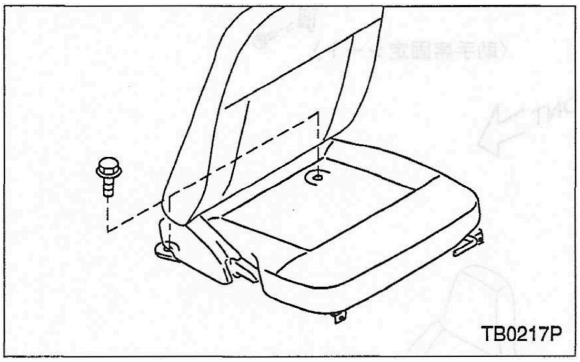
- When installing or removing the slide rail, adjust the slide after installing it on the vehicle body and check that it is locked on both sides. If it is not locked, adjust the slide rail installation forward or backward.

Maintenance Instructions

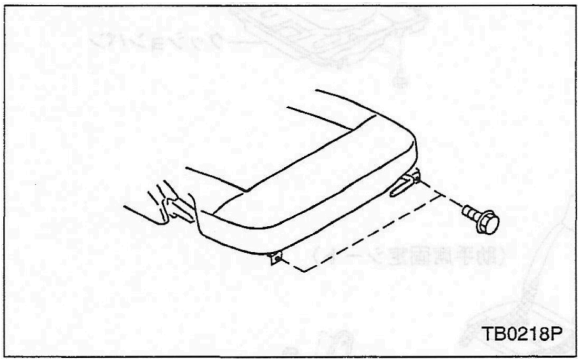
(1) Truck and Panel Van Driver's Seat

<Removal>

1. If the vehicle has a fuel opener, remove the fuel opener cover.
2. Unhook the bottom of the Mat Cap Floor seat and flip it forward.
3. Tilt the backrest forward. Slide the seat all the way forward and check the slide lock.
4. Remove the mounting bolts on the rear end of the slide rail from the outside and inside.



5. Slide the seat from the rearmost position to the second position and check that the slide lock is in place.
6. Remove the mounting bolts at the front end of the slide rail, starting from the outside and then the inside.



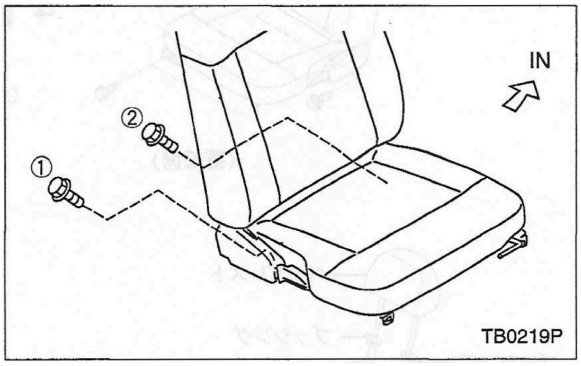
<Installation>

Follow the removal procedure in reverse.

(2) Van Driver's Seat

<Removal>

1. Remove the fuel opener cover.
2. Remove the edge cap with floor.
3. Unhook the mat cab floor under the seat and flip it forward.
4. With the rearmost end of the seat in the first position, slide the seat from the rear to the second position and check the slide lock.
5. Remove the mounting bolts at the rear end of the slide rail, starting from the outer bolt and then the inner bolt.



6. Remove the mounting bolts at the front end of the slide rail, first from the outside and then from the inside.

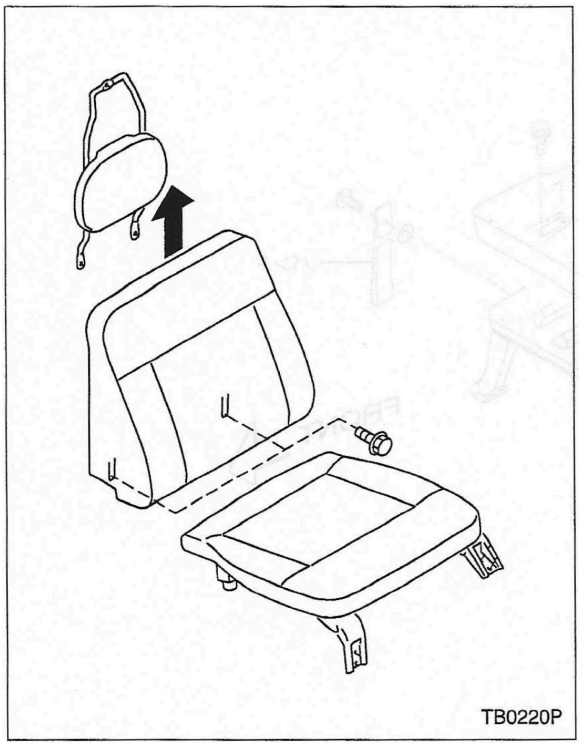
<Installation>

Follow the removal procedure in reverse.

(3) Truck and Panel Van Passenger Seat

<Installation>

1. Unhook the mat cab floor seat from under it and flip it forward.
2. Remove the cushion mounting bolts.
3. Remove the backrest mounting bolts.
4. Pull the backrest upwards and remove it.



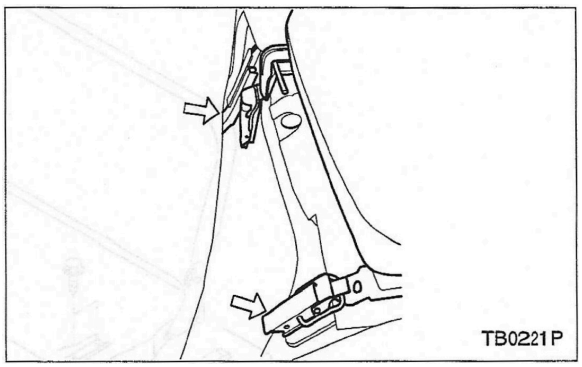
<Removal>

Follow the installation procedure in reverse.

(4) Van Passenger Seat

<Removal>

1. Unhook the mat cab floor under the seat and flip it forward.
2. For vehicles with a seat slide, slide the seat from the rearmost position to the fifth position and check that the slide lock is in place.
3. Release the lock.



4. Remove the mounting bolts at the rear end of the slide rail, starting from the outside and then the inside.

<Installation>

Follow the removal procedure in reverse.

(5) Van Fixed Passenger Seat

<Removal>

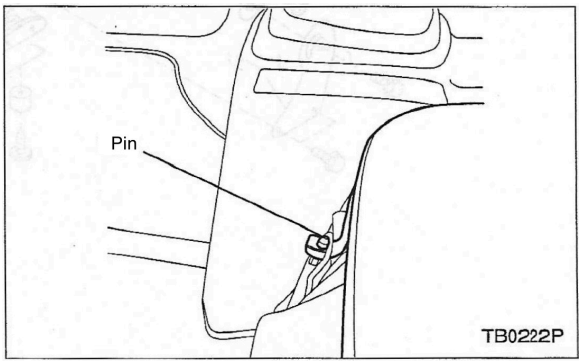
1. Unhook the mat cab floor under the seat and flip it forward.
2. Remove the cushion mounting bolts.
3. Remove the backrest mounting bolts.

<Installation>

Follow the removal procedure in reverse.

NOTE

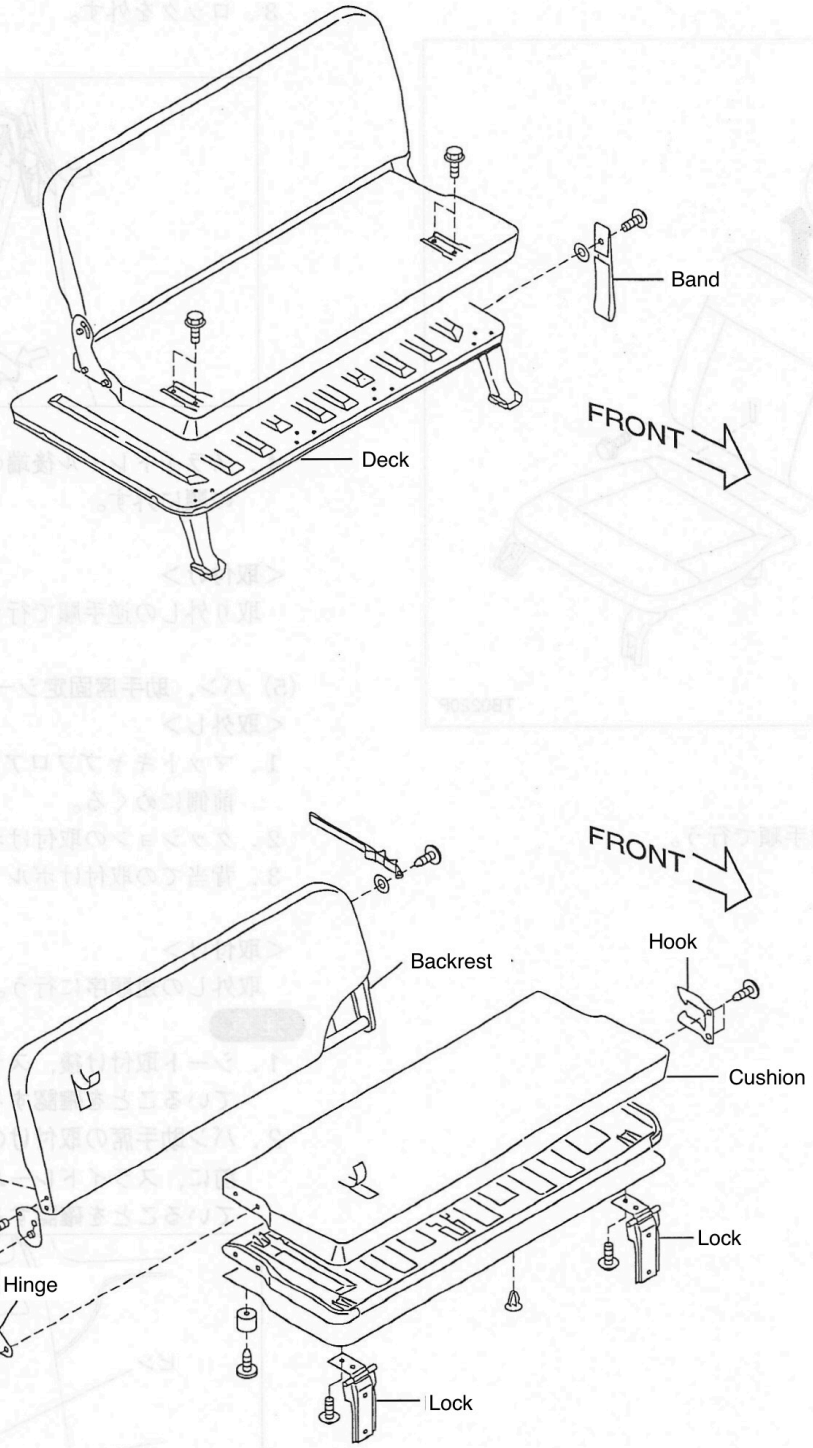
1. After installing the seat, make sure the slide lever is securely lowered.
2. When installing the van passenger seat, make sure that the lock pin on the inside front of the slide rail is aligned before tightening the mounting bolts.



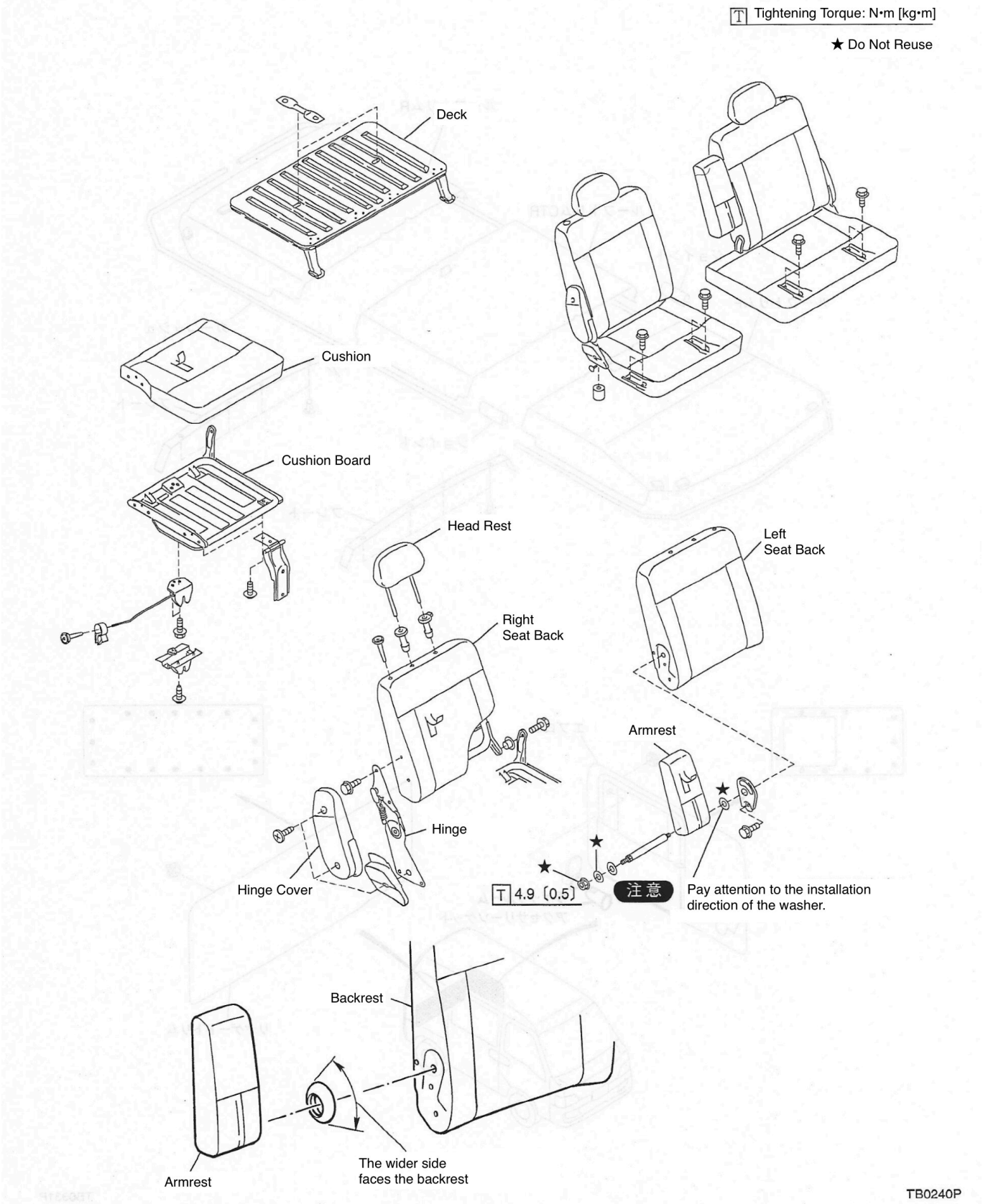
[3] Rear Seats

■ Component Parts

(1) Bench Seat

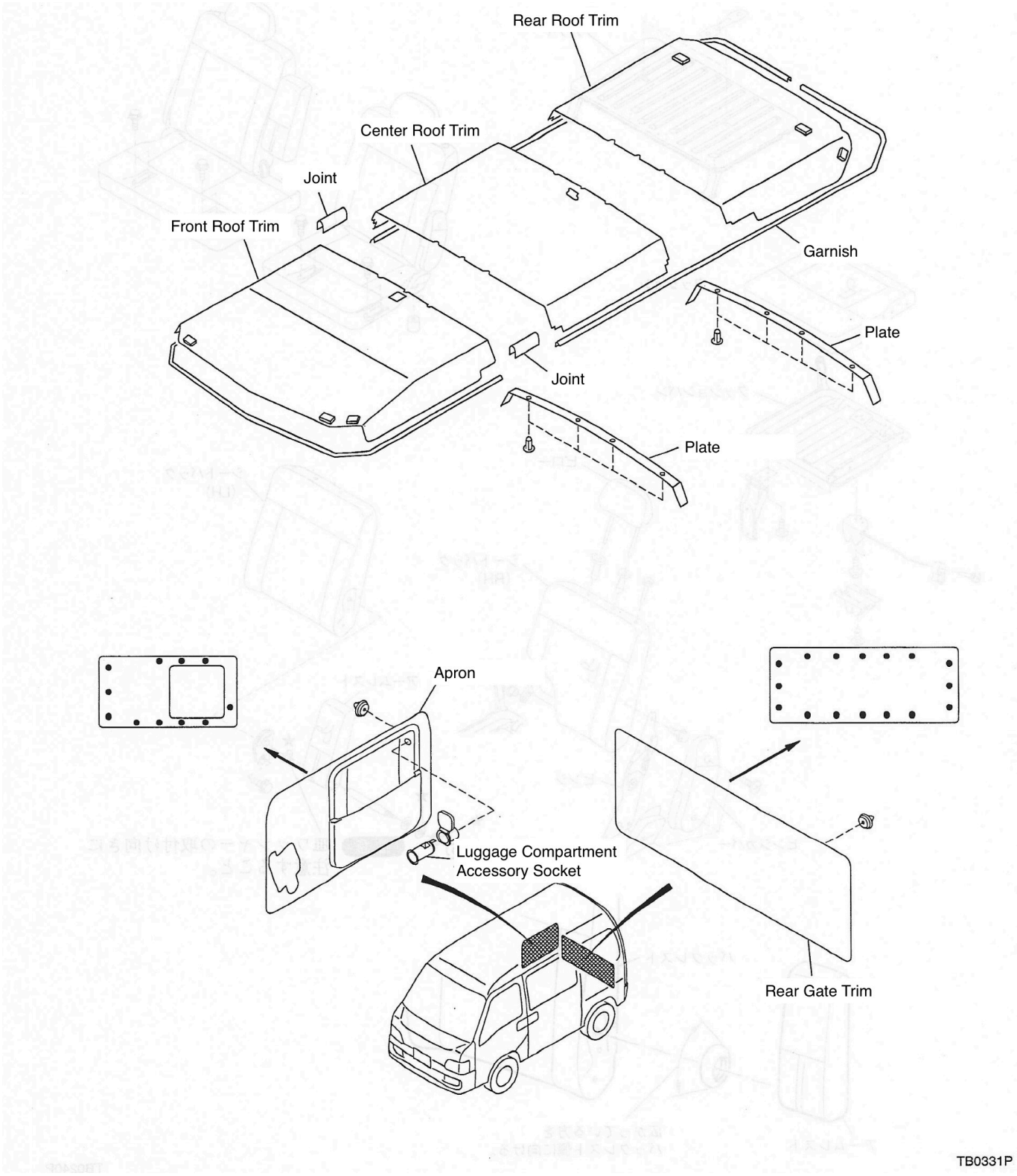


(2) Captains Chair (Separate Seats)



[4] Trim Panel

■ Component Parts

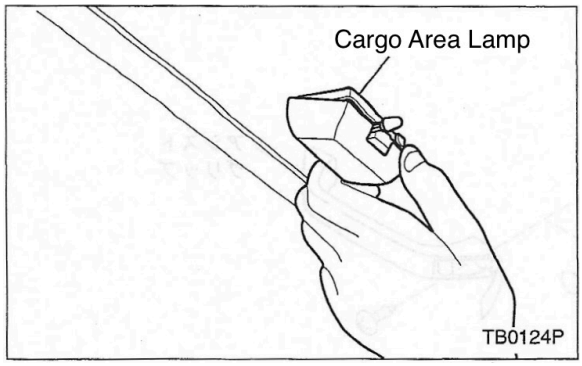


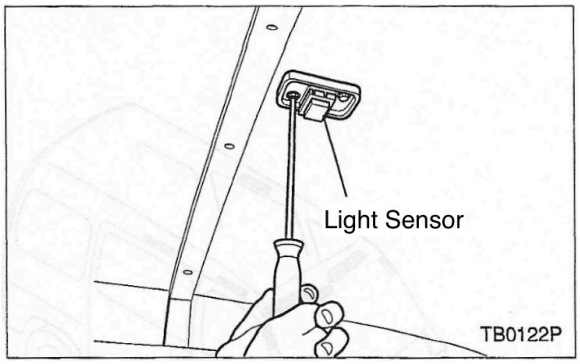
■ Maintenance Instructions

(1) Roof Trim

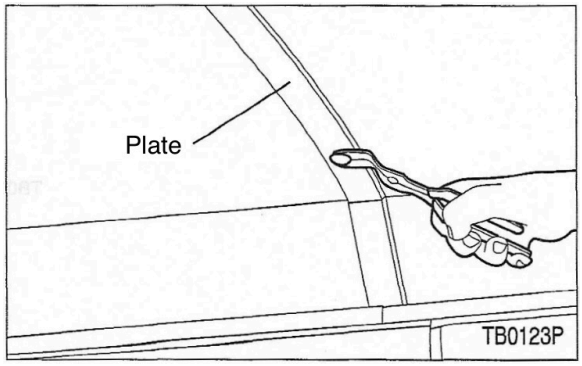
<Removal>

1. Remove the lamp and keyless entry light receiving sensor.





2. Remove the mounting clips (4 on each side) and remove the plates (2 on each side).



3. Remove the center roof trim. Remove the front and rear roof trims after removing the center roof trim.

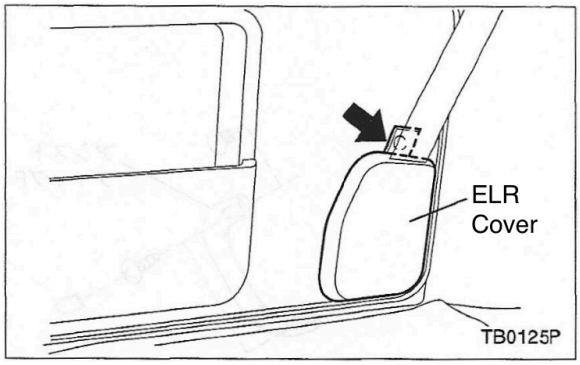
<Installation>

1. Fit the front and rear roof trim.
2. Fit the center roof trim.
3. Install the lamp and keyless entry sensor.
4. Install the plates (2 pieces) and then install the roof trim.

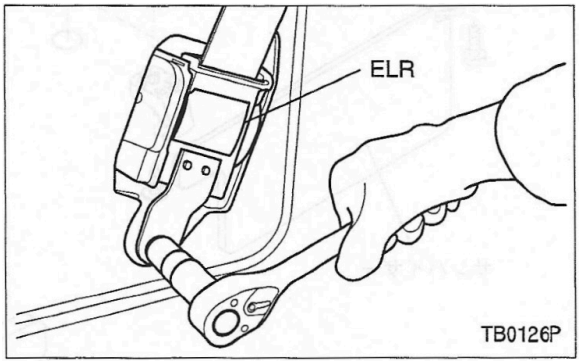
(2) Apron Trim

<Removal>

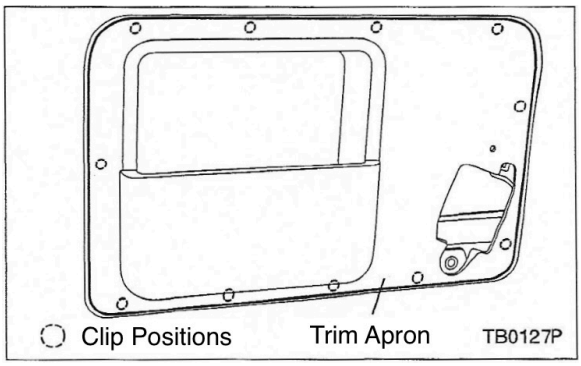
1. Remove the mounting clip (1 piece) and remove the ELR cover.



2. Remove the ELR.



3. Release the mounting clips (11 places) and remove the apron trim. For cars with a luggage compartment accessory socket, separate the socket connector and remove the right-hand trim.

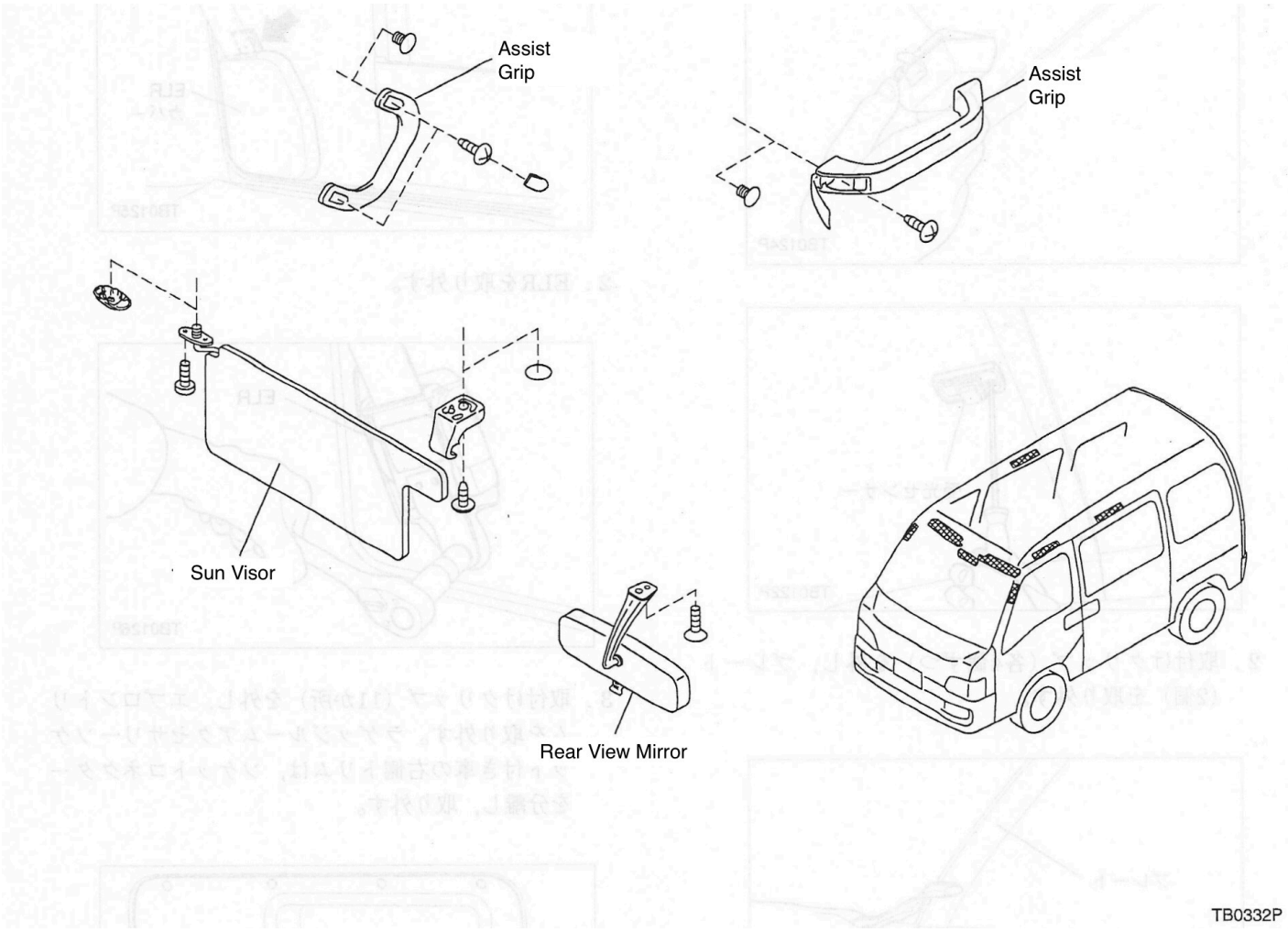


<Installation>

Follow the removal procedure in reverse.

[5] Interior Accessories

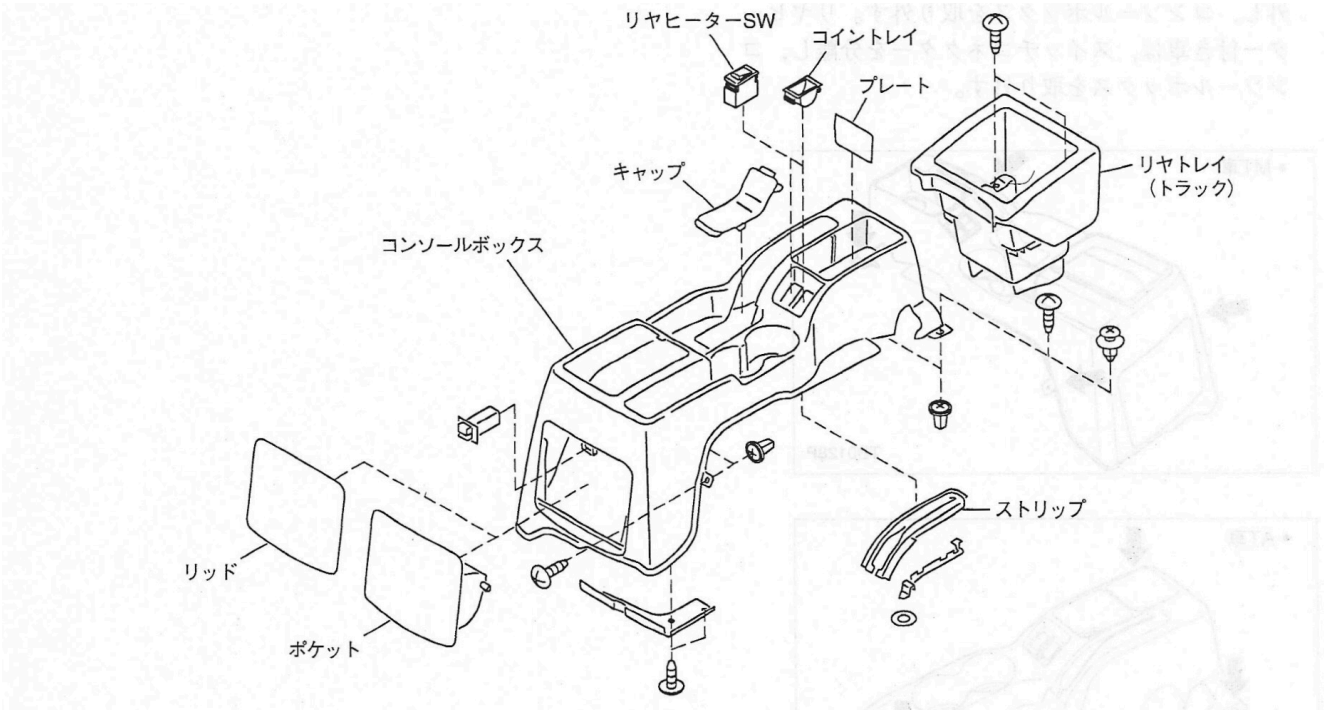
■ Component Parts



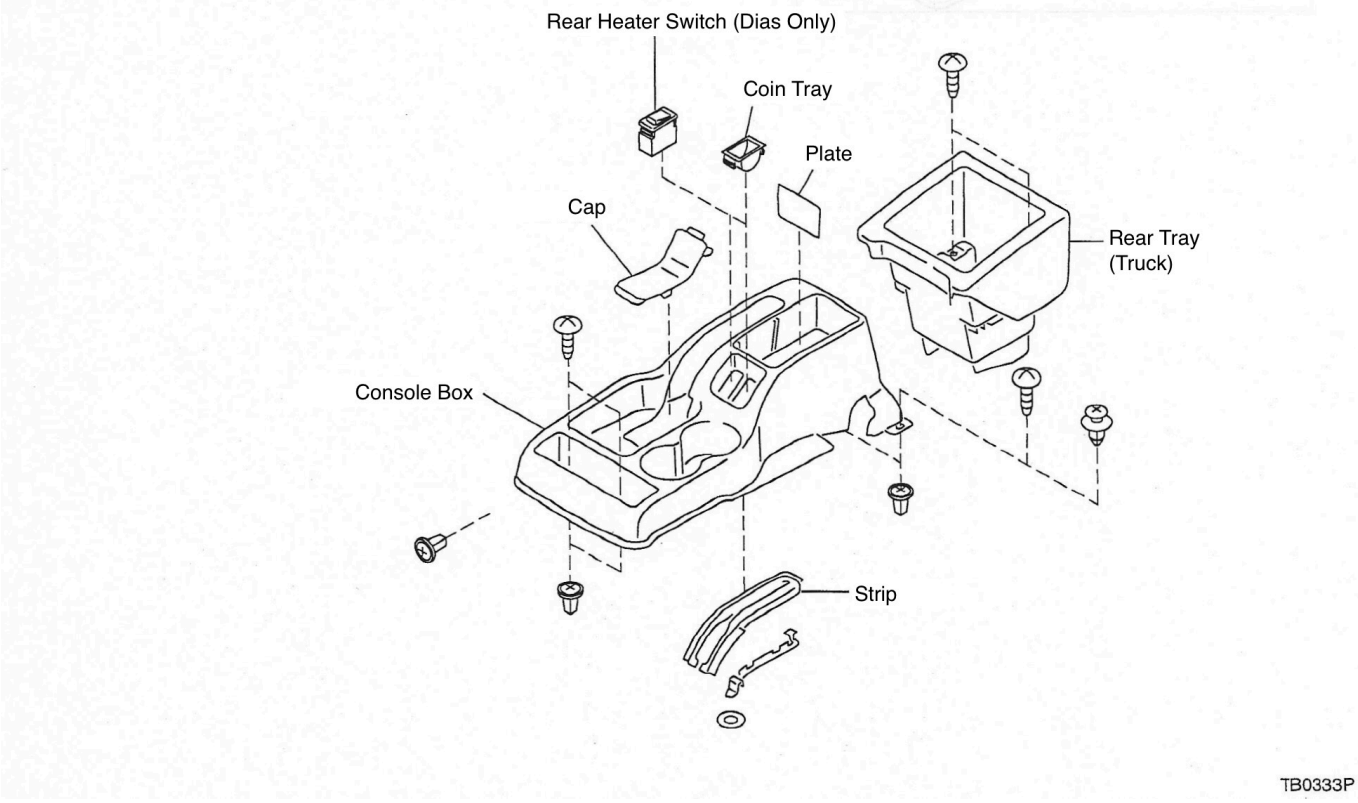
[6] Console Box

■ Component Parts

(1) Console Box (MT Vehicles)



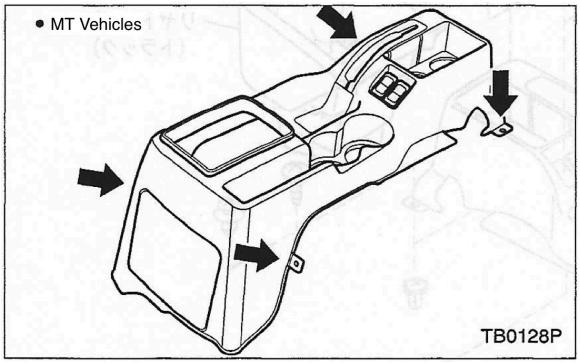
(2) Console Box (AT Vehicles)

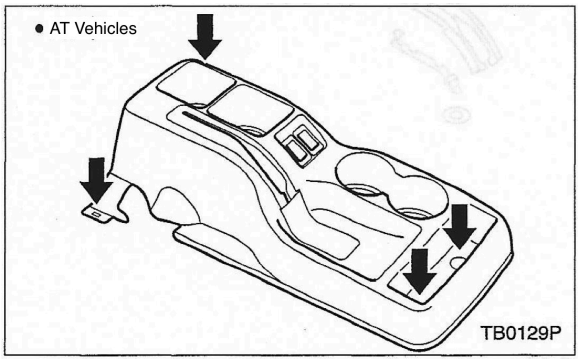


■ Maintenance Instructions

<Removal>

1. Fold up the passenger seat cushion.
2. Remove the four mounting screws and cap console, then remove the console box.
   - For vehicles with a rear heater, disconnect the switch connector and remove the console box.





5 - 3 Body Functional Equipment

[1] Power Windows

■ Troubleshooting Chart

Inspection Items / Problem Item	Battery Charging Status	Main Fuse Box (40A) Blown Fuse	Power Window Relay/ Circuit Breaker	Driver Door Switch	Each Passenger Door Switch	Driver Door Motor	Each Passenger Door Motor	Each Window Regulator	Driver Door Switch Input Check	Bad Grounding	Broken Cable and Terminal Connection Status
All Windows are not working	①	②	③	④					⑤	⑥	⑦
Only the driver's side window does not work				①		②			③		④
The AUTO function of the driver's side window does not work				①		②			③		④
The passenger door window side not work				①	②		③	④			⑤

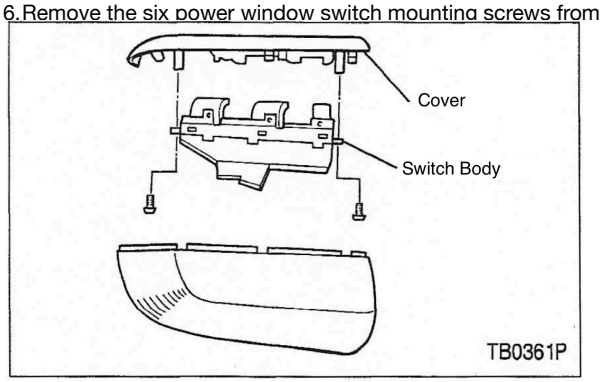
◯ The numbers indicate the inspection order.

■ Maintenance Instructions

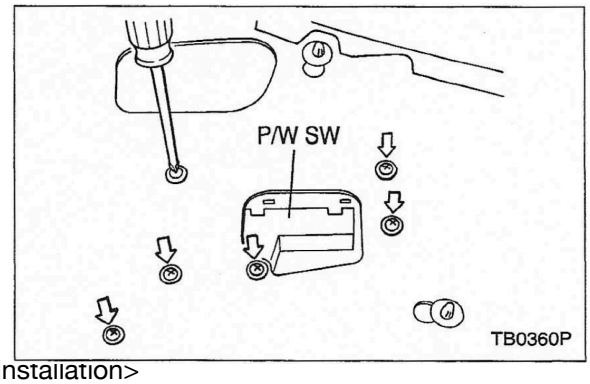
(1) Main Switch

<Removal>

1. Remove the two screws from the door trim pocket.
2. Remove the screw (1) from the inner handle.
3. Slide the inner handle forward.
4. Remove the trim and clip.
5. Disconnect the power window switch connector.
6. Remove the six power window switch mounting screws from the



7. Remove the two switch body mounting screws and remove the switch body from the cover.



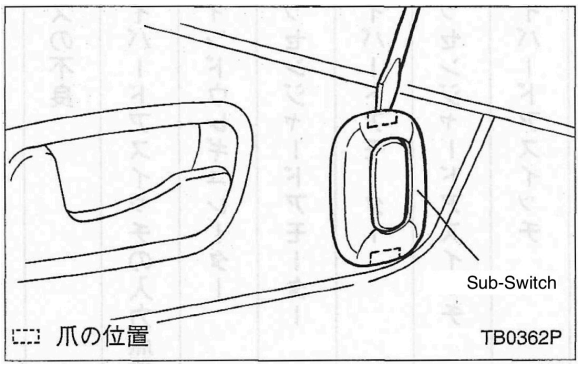
<Installation>

Follow the removal procedure in reverse.

(2) Sub Switch

<Removal>

1. Use a screwdriver or similar tool to remove the sub-switch from the door trim.



2. Disconnect the connector and remove the switch.

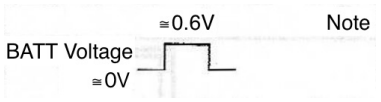
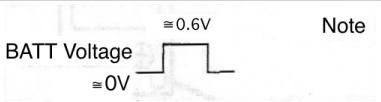
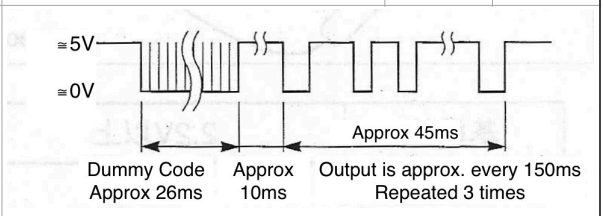
<Installation>

Follow the removal procedure in reverse.

[2] Door Lock System

■ Inspection

(1) Input/Output Diagram

Inspection System		Measurement Terminal		Measurement Conditions	Determination	Points to Check in Case of Malfunction	
		No	Color			Infrared Remote Control	Central Door Lock
Control Power Supply		3	W		BATT Voltage	●	●
Ground		5	B		≅ 0V (Continuity between keyless ECU and body ground)	●	●
Door Lock Actuator	Lock Output	4	G/B	Lock using central door locking or an infrared remote control		●	●
	Unlock Output	10	G/W	Unlock using central door locking or an infrared remote control		●	●
Driver's Door Lock Actuator	Unlock Switch	7	W/G	Lock the driver's door	BATT Voltage	○	◎
				Unlock the driver's door	≅0V		
Receiving Unit	Sensor Power Supply	9	L		≅5V	◎	○※1
	Sensor Signal	1	Y/R	Press the switch on the key plate to input an infrared signal			
	Ground Sensor	6	B/W		≅0V (Continuity between receiver unit and keyless ECU)	◎	
Registered Connector		2	B/R	Connect the registered connector	≅0V	◎※2	
				Remove the registration connector	≅5V		
Key Play	Sending Unit	—		Measure the voltage of a button battery	≅3V	◎	

●: All parts directly related to the functionality

◎: Parts directly related to each function

○: Areas that affect each function

※1: If the sensor power supply system has an earth short circuit failure, the internal power supply of the door lock system ECU will be at OV, and the central door locking will not work.

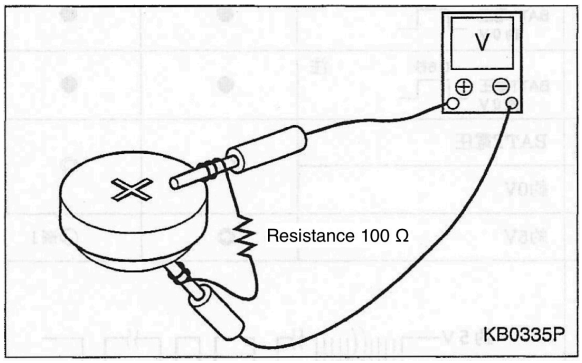
※2: If the registration connector system has a ground short circuit, the unit will enter infrared remote control code registration mode. (The infrared remote control will not function properly.)

NOTE

If the registered connector system is broken, the infrared remote control mode cannot be rewritten.

(2) Basic Inspection

1. Check locking/unlocking. For all doors, check that they can be locked/unlocked by operating the ignition key and inner remote knob.
2. Check the battery voltage. Measure the battery terminal voltage.
3. Check the transmitting unit. Connect the wires as shown in the diagram below and check the battery consumption



Standard Value	2.2v or more

If the voltage drops below 2.0V within 5 seconds, the battery is depleted and should be replaced with a new one.
Battery: CR2032 (commercially available)

NOTE

- To avoid battery stress, finish the measurement within about 5 seconds. If the measurement continues, the voltage will drop.

REFERENCE

Battery Life
Continuous operation: 50,000 times or more
Left at room temperature: 5 years or more

4. Check the fuse.
   - Check for blown fuses.

■ Maintenance Instructions

(1) Up to Three Infrared Code Number Transmitters can be Registered.

1. Connect the registration connector (1-pole white male/female) located on the back of the passenger side instrument panel.
2. Make sure the driver's door is unlocked. If it is locked, unlock it.
3. Send a signal from the first transmitter once. The received infrared code will be registered as the first code number. If there are any previously registered codes, they will be erased.
4. The driver's seat lock knob will lock/unlock, confirming registration.
5. Similarly, register the second and third code numbers.
6. Separate the registration connector.
7. Check that the transmitter is working.

(2) Light Receiving Part

<Removal>

1. Remove the cover of the light receiving unit.
2. Remove the mounting screws (2 pieces).
3. Disconnect the connector and remove the receiver.

<Installation>

Follow the removal procedure in reverse.

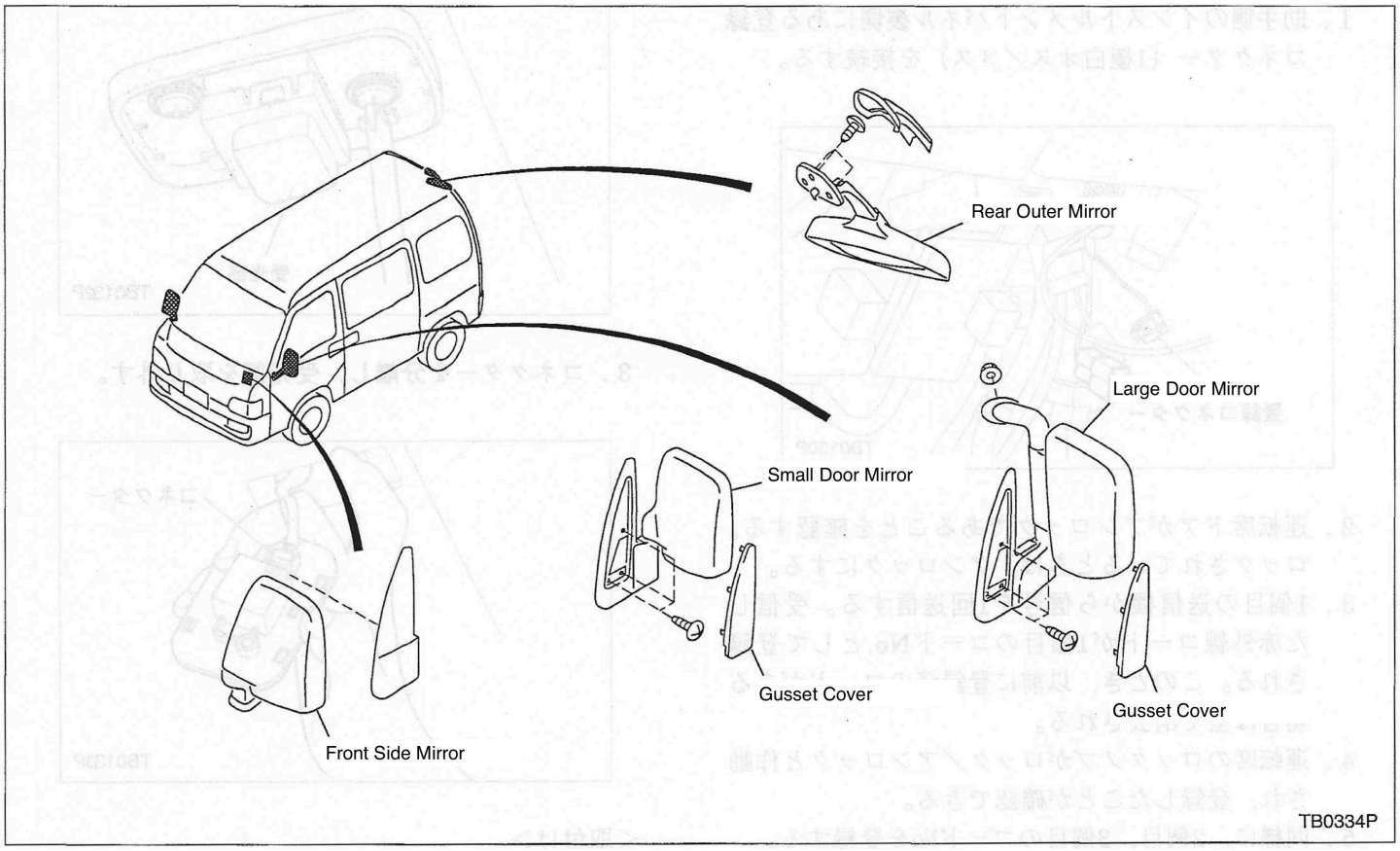
(3) Control Unit

<Removal>

1. Disconnect the control unit connector behind the glove box.
2. Remove the control unit mounting bolt (1 piece) and remove the control unit.

[3] Outer Mirror

■ Component Parts

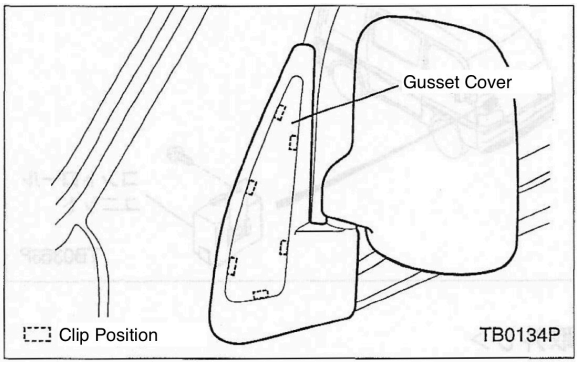


■ Maintenance Instructions

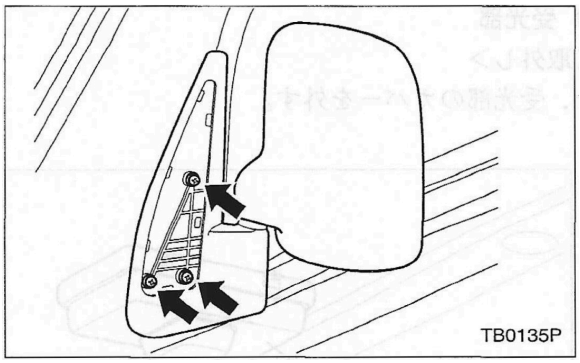
(1) Small Door Mirror

<Removal>

1. Remove the receptacle cover



2. Remove the three mounting screws and remove the door mirror.



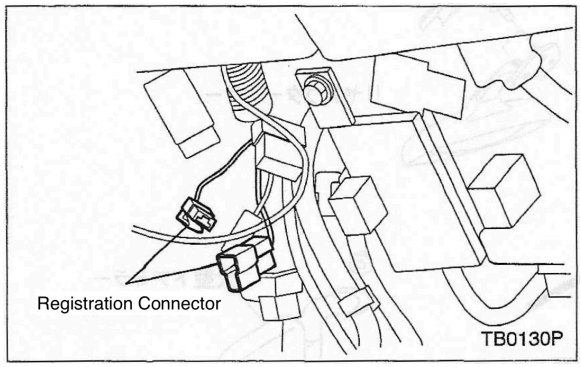
<Installation>

Follow the removal procedure in reverse.

(2) Large Door Mirrors

<Removal>

1. Remove the gusset cover.
2. Remove the three mounting screws and remove the door mirror.
3. Remove the mounting nut (1 piece) from the inside of the vehicle



and remove the door mirror.

<Installation>

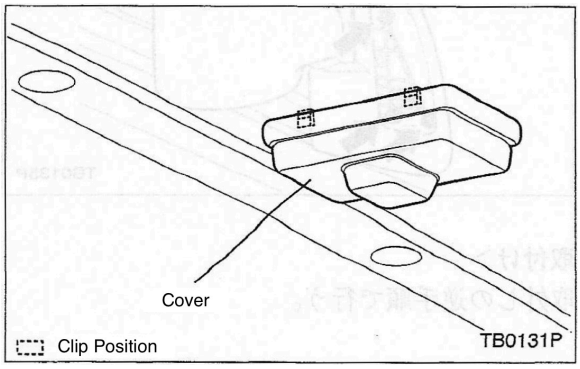
Follow the removal procedure in reverse.

(3) Front Side Mirrors

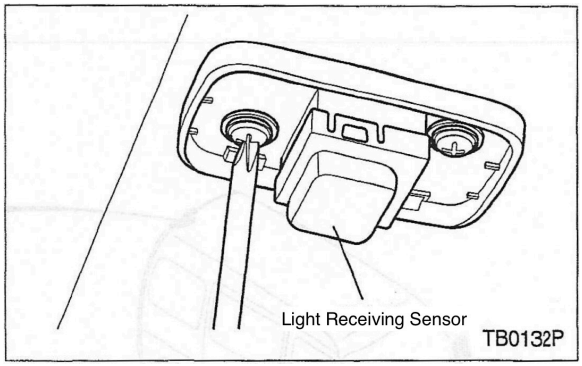
<Removal>

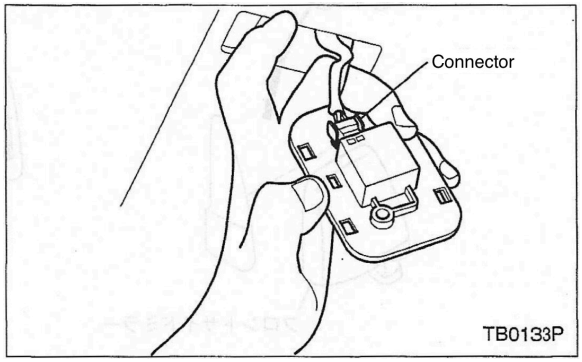
1. Rotate the mirror 90°.
2. Remove the two mounting screws and remove the mirror.

<Installation>



Follow the removal procedure in reverse.

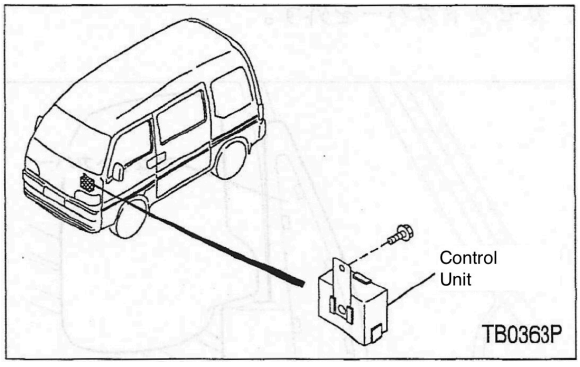




(4) Rear Outer Mirror

<Removal>

1. Remove the cover.
2. Remove the mounting screws (3 pieces) and remove the mirror.



<Installation>

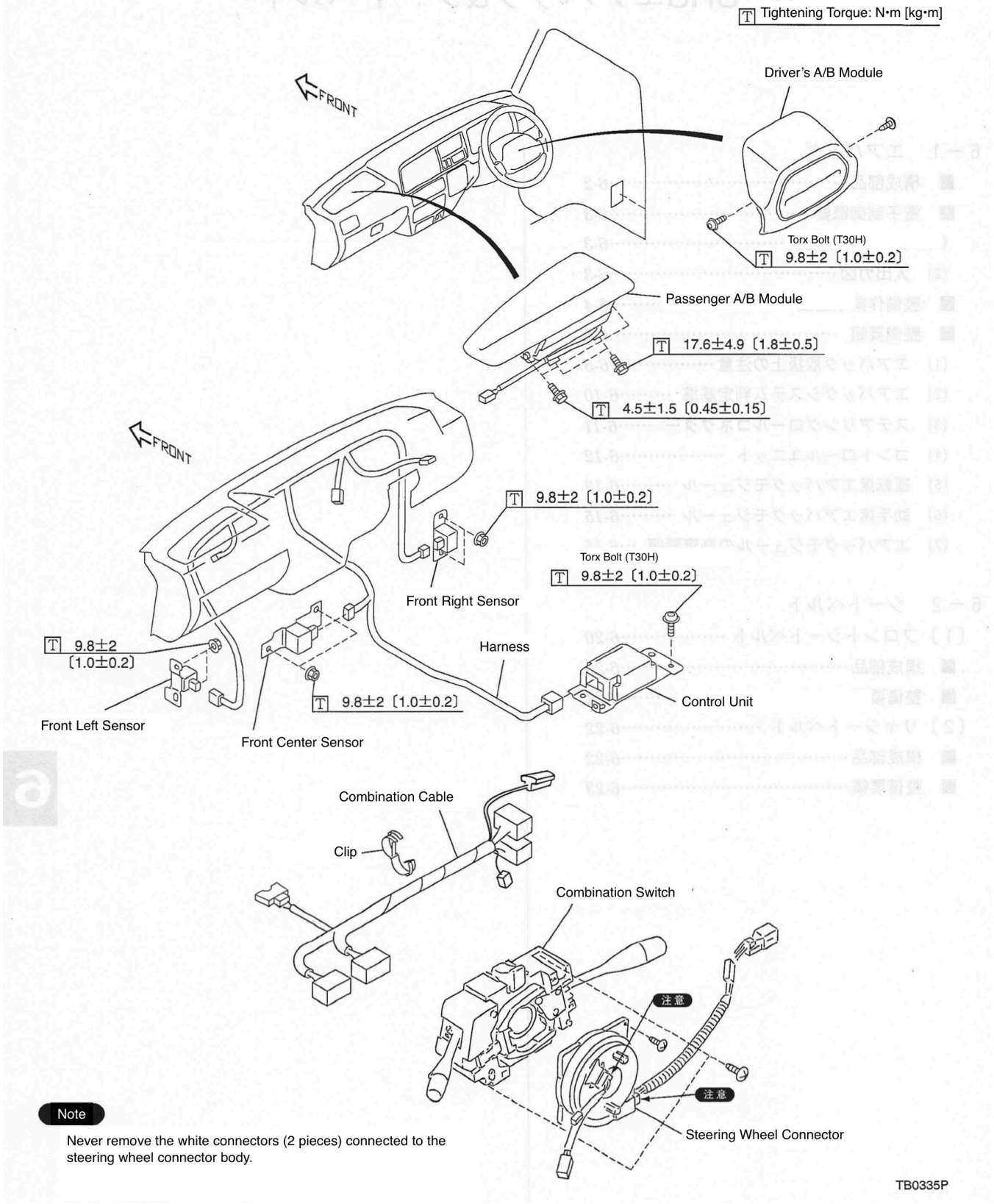
Follow the removal procedure in reverse.

MEMO

6 SRS Airbag & Seat Belts

6 - 1 Airbags

■ Component Parts



Note

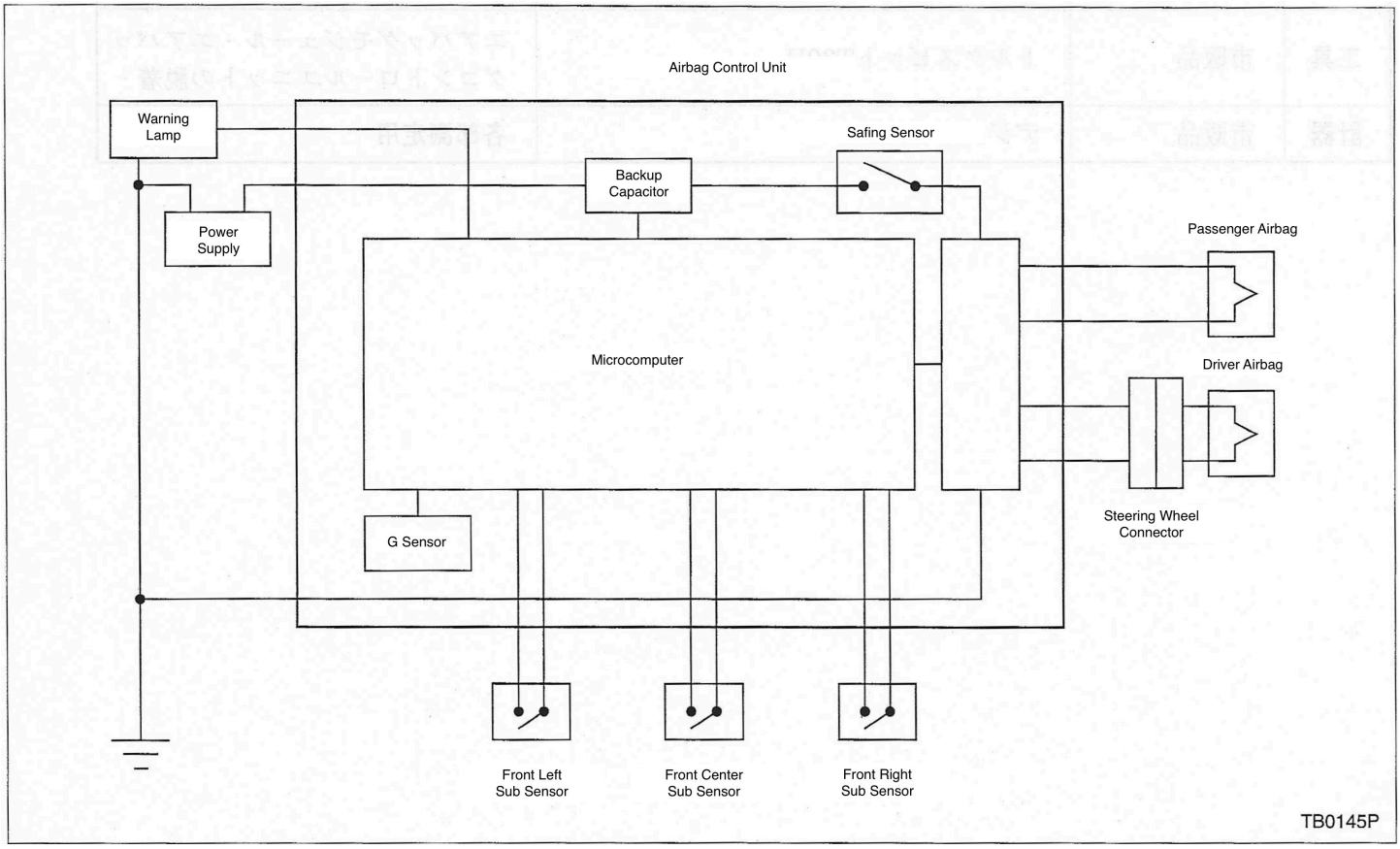
Never remove the white connectors (2 pieces) connected to the steering wheel connector body.

■ Electronic Control Overview

(1) System Configuration Table

Types of Airbags	System Configuration
Driver airbag system	• Airbag inflator built into the steering wheel • Control unit and sensor are installed separately
Driver and passenger airbag system	• Airbag inflator built into the steering wheel • Airbag inflator built into the instrument panel • Control unit and sensor are installed separately

(2) Input/Output Diagram



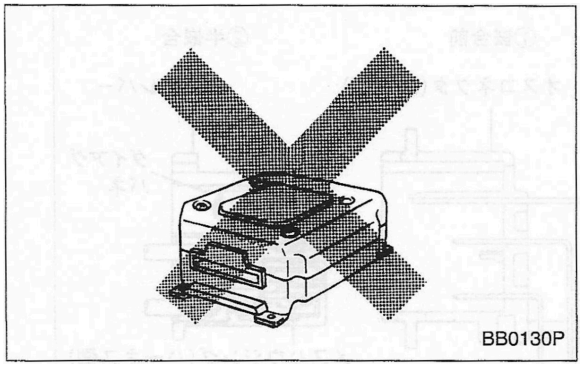
■ Maintenance Preparation Items

Classification	Tool Number	Name	Purpose
ST	98299PA030	Deployment tool/airbag	Airbag Deployment device (when disposed of)
	98299FC030	Adapter A/deployment	
	98299PA000	Test harness A	For measuring each part
	98299FC001	Test harness E2	
	98299FC010	Test harness F	
	98299FA030	Test harness H	
	98299PA040	Airbag register	
Tool	—	Torx bit T30H	Removal and installation of airbag modules and airbag control units
Instrument	—	Digital tester	For measuring each part

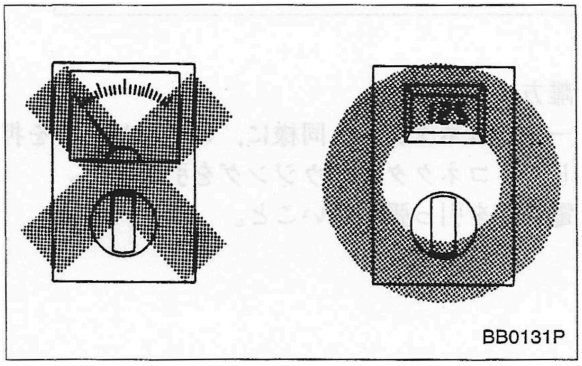
■ Maintenance Instructions

(1) Precautions for Handling Airbags

1. If the airbag control unit, harness, or other airbag system parts

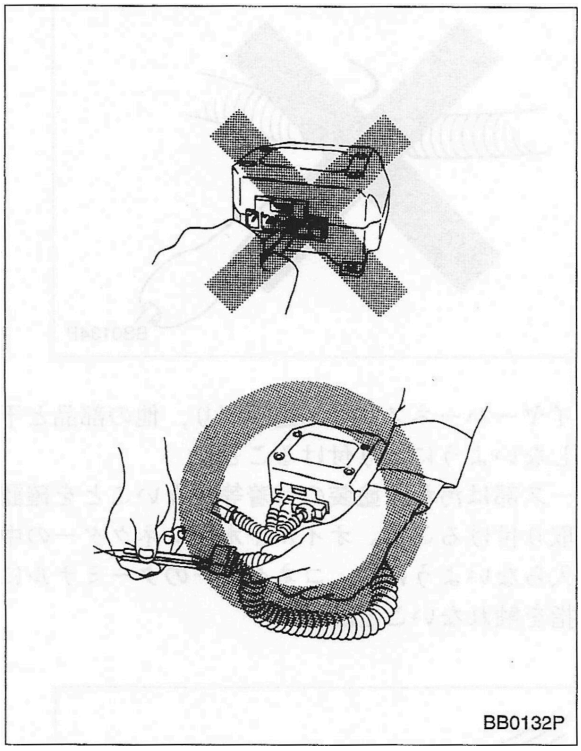


are deformed, cracked, or dented, replace them with new ones.
2. When working on the airbag system, turn the IG switch OFF, disconnect the negative battery terminal, and wait at least 20 seconds before starting work.
3. When checking the system, use a digital circuit tester. Using an

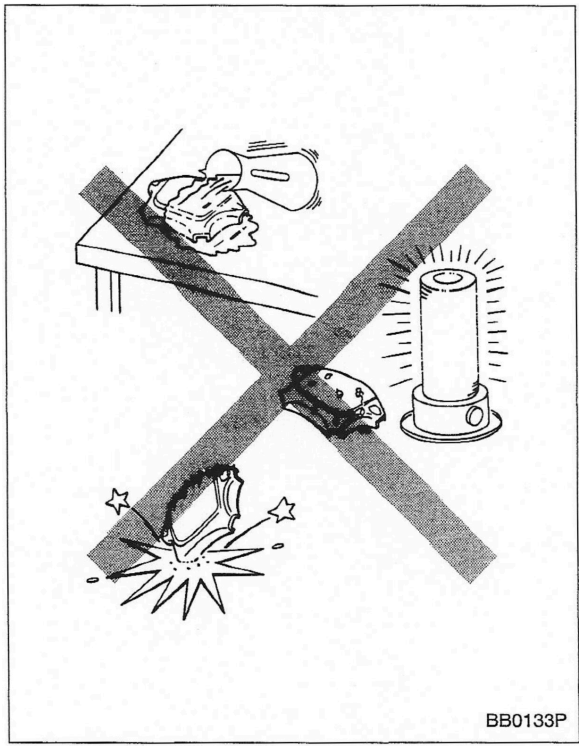


analog circuit tester may cause the airbag to malfunction.

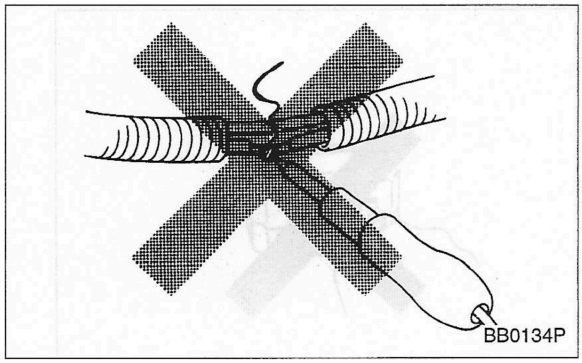
4. Do not insert the test probe directly into the airbag system connector. Use a test harness when checking.



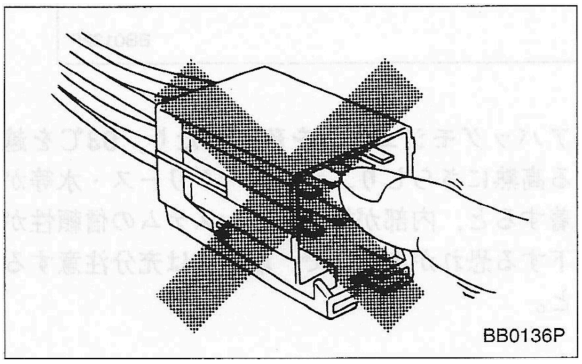
5. If the airbag module is dropped, exposed to temperatures exceeding 93°C, or exposed to oil, grease, water, etc., the internal parts may be damaged and the reliability of the system may be reduced, so please handle with care.



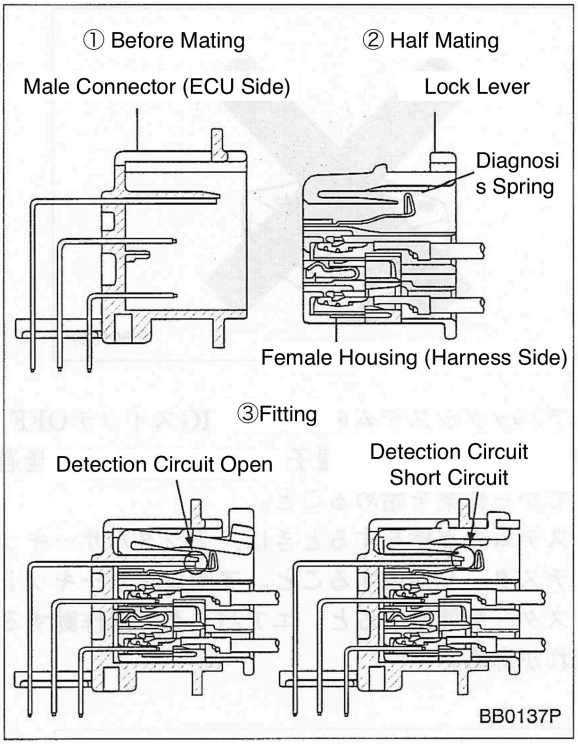
6. Damage to the airbag system wiring harness.
   - If a break occurs, do not repair it with solder or other means, but always replace it with a new one.



7. Install the wire harness so that it does not get pinched or interfere with other parts.
8. Before attaching the earth part, make sure that it is free of dirt, paint, etc. Do not allow oil or water to get into the connector, and do not touch the connector terminal with your fingers.



9. Handling the connectors in the airbag control unit
   1) Joining method
      - As with a regular connector, hold the connector housing and push it in until you hear a click.

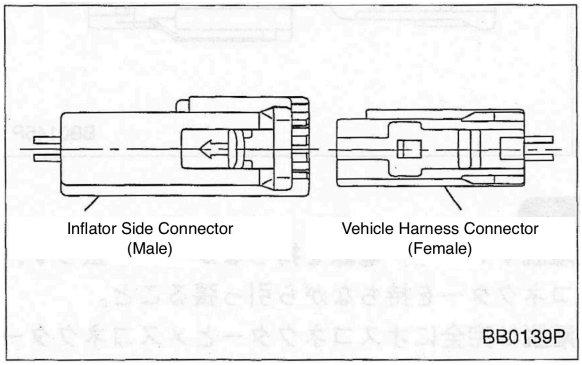


   2) Separation method
      - As with a regular connector, press the lock lever and pull out the connector housing.
      - Do not pull on the electrical wires.

10.Handling of 2P connectors with full locking mechanism

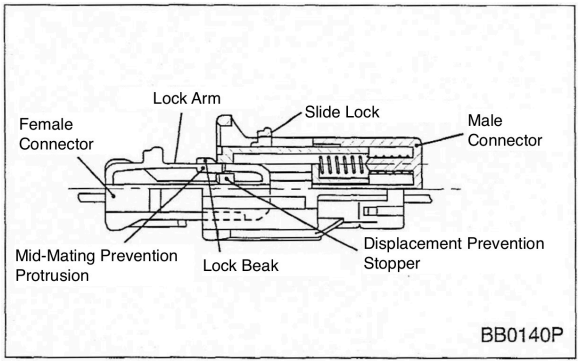
1)Connector

- Connectors with a complete locking mechanism are used for the driver's and passenger's airbags.
- When not connected, the lamp in the meter will light up.

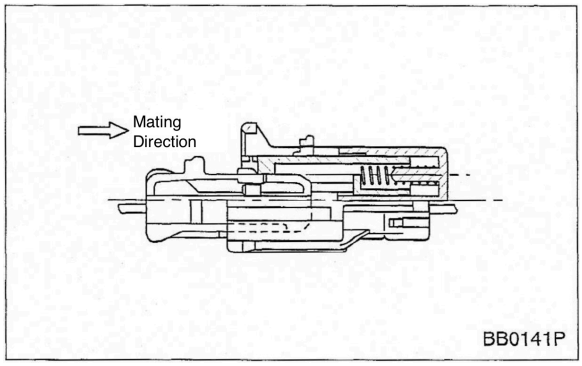


2)Connector mating method

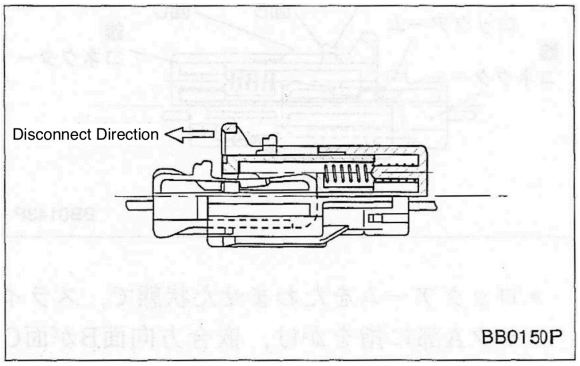
- Before mating



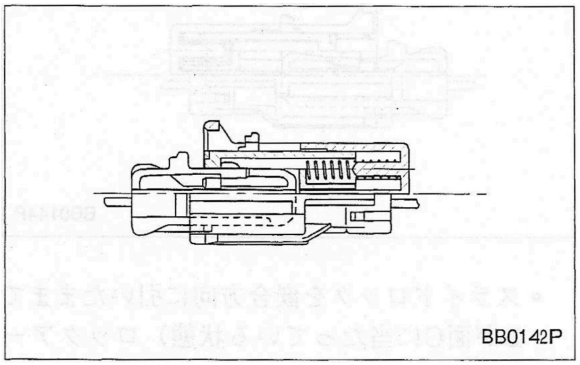
- During mating 1
  The lock peak of the lock arm moves to push the slide lock in the mating direction.



- During mating 2
  When the mid-fitting prevention projection overcomes the displacement prevention stopper, the lock arm bends, the slide lock returns to its original position (in the direction of removal), and the lock beam is locked.



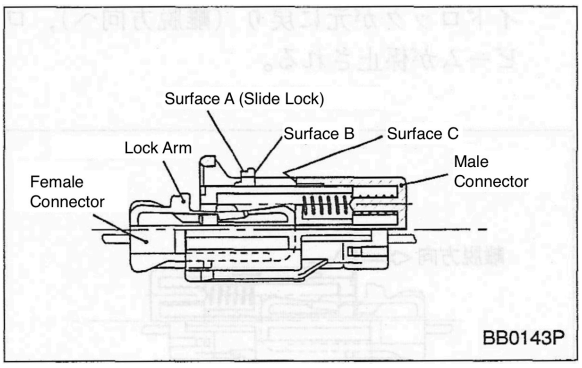
- Complete mating
  Check the orientation of the connector and mate it carefully without twisting it.



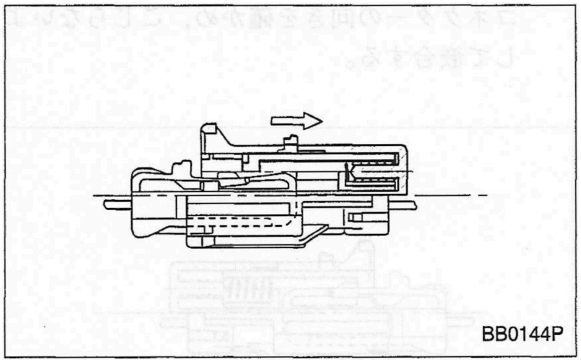
NOTE

- Do not mate while bending the lock arm of the female housing.
- Do not engage the slide lock while pulling it by hand.
- Make sure you hear a "click" when the lock peak locks, and then pull on the female connector to make sure it is securely locked.

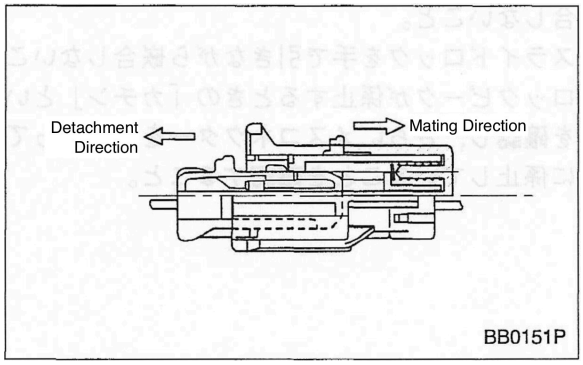
3) How to disconnect the connector
- Bend the lock arm.



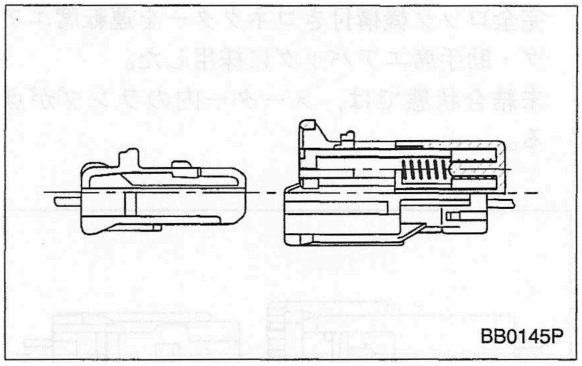
- With the lock arm bent, place your finger on slide lock A and pull until mating surface B contacts surface C.



- While pulling the slide lock in the mating direction (with surface B touching surface C), return the lock arm to its original position, pull the female connector in the direction of the arrow, and return the slide to its original position (in the removal direction).

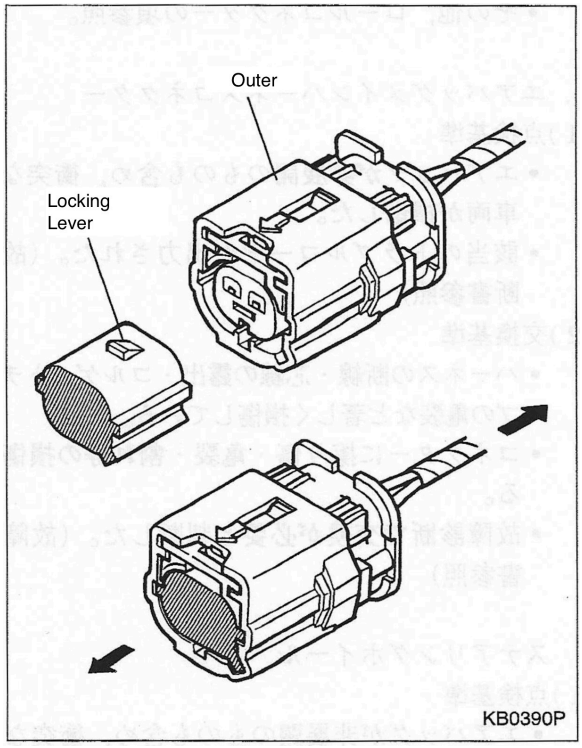


- Detached state



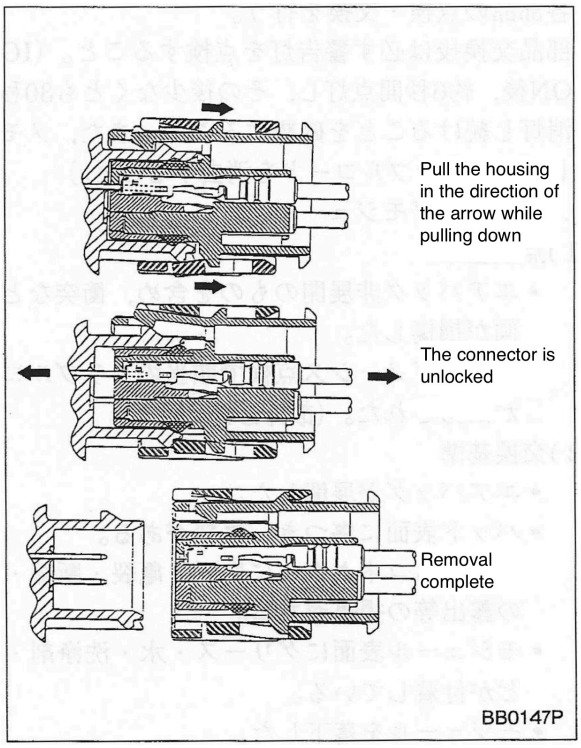
NOTE
- When disconnecting, do not pull while holding the wire, always pull while holding the connector.
- When disconnecting, make sure that the male and female connectors are completely separated.

11.Front sub-sensor connector mating and disconnection
1) As shown in the illustration, align the outer (movable cover) and locking pit in the same direction and fit them together without twisting them.
2) Be sure to insert the connector securely until it locks, and after mating, pull it gently to make sure it is locked. (When locked, make sure the outer casing returns to the position before mating the connector and you hear a "snap.")



NOTE
• The outer part moves backwards, so do not put your hands on the outer part.

• How to remove the connector.



(2) Airbag System Evaluation Criteria

If the vehicle is damaged in a collision or other accident, each system component will be inspected and replaced.
After replacing parts, be sure to check the warning light. (After turning the IG switch ON, make sure it stays on for about 6 seconds and then remains off for at least 30 seconds. Also, erase any trouble codes stored in the memory.)

1. Airbag module
   1) Inspection standards
      - The vehicle was damaged in a collision, including when the airbag did not deploy.
      - The relevant trouble code was output during the diagnostic inspection. (See the fault diagnosis report.)
   2) Exchange criteria
      - The airbag deployed.
      - There are scratches or cracks on the pad surface.
      - The harness connector has damage such as deformation, cracks, broken wires, or exposed core wires.
      - Grease, water, cleaning agent, oil, etc. is attached to the module surface.
      - The module was dropped.
      - Fault diagnosis determined that replacement was necessary. (See fault diagnosis report)
2. Control unit
   1) Inspection standards
      - The vehicle was damaged in a collision, including cases where the airbags did not deploy.
      - The relevant trouble code was output. (See the fault diagnosis.)
   2) Exchange criteria
      - Damage to the control unit such as deformation, cracks, or breakage.
      - Damage to the mounting bracket such as deformation, cracks, or breakage.
      - Damage to the connector such as scratches, cracks, or breaks.
      - The control unit fell.
      - Fault diagnosis determined that replacement was necessary. (See fault diagnosis report)
      - The airbag deployed.
3. Roll connector
   1) Inspection standards
      - The vehicle was damaged in a collision, including when the airbags did not deploy.
      - The relevant trouble code was output. (See the fault diagnosis.)
   2) Exchange criteria
      - The combination switch or roll connector is deformed or cracked.
      - Fault diagnosis determined that replacement was necessary. (See fault diagnosis report)
      - For other details, see the roll connector section.
4. Airbag main harness connector
   1) Inspection standards
      - The vehicle was damaged in a collision, including when the airbags did not deploy.
      - The relevant trouble code was output. (See the fault diagnosis.)
   2) Exchange criteria
      - There is significant damage such as a broken harness, exposed core wire, or cracked corrugated tube.
      - The connector has damage such as scratches, cracks, or breaks.
      - Fault diagnosis determined that replacement was necessary. (See fault diagnosis report)
5. Steering wheel
   1) Inspection standards
      - The vehicle was damaged in a collision, including when the airbags did not deploy.
   2) Exchange criteria
      - It is not possible to easily install a new airbag module.
      - When the module is installed, it interferes with the steering wheel, or the gap is not uniform.
      - For other details, please refer to the steering section.

6. Front sub-sensor
   1) Inspection standards
      • The vehicle was damaged in a collision, including when the airbags did not deploy.
      • The relevant trouble code was output. (See the fault diagnosis.)
   2) Exchange criteria
      • Damage to the front sub-sensor such as deformation, cracks, or breakage.
      • Damage to the mounting bracket such as deformation, cracks, or breakage.
      • The front sub sensor fell off.
      • Fault diagnosis determined that replacement was necessary. (See fault diagnosis report)
      • The airbag deployed.
7. Steering column assembly
   • Replace the column on all vehicles with deployed airbags.

(3) Steering Roll Connector

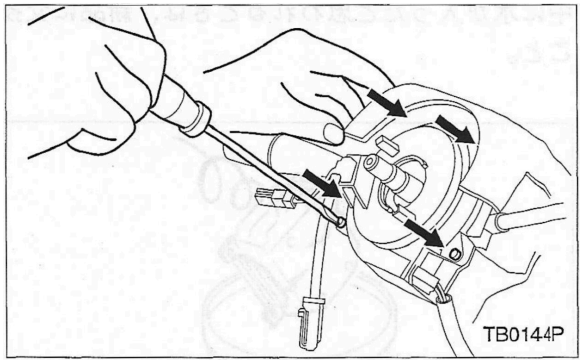
<Removal>

1. Keep the front wheels in a straight line.

NOTE

• Turn the ignition switch OFF, disconnect the negative battery terminal, and wait at least 20 seconds before starting work.

2. Remove the driver's airbag module.
3. Remove the steering wheel.
4. Remove the five mounting screws and remove the steering column cover lower.
5. Remove the steering roll connector mounting screws (4 pcs).



6. Disconnect the connectors and remove the steering roll connector.

<Installation>

1. Make sure the front wheel is heading straight.
2. Attach the roll connector and center it.
   1) Hold the roll connector pin and turn it to the right until it stops.
   2) Rotate counterclockwise approximately 2.5 times.
   3) Align the center mark (⧗).
3. Place the steering wheel in neutral.

NOTE

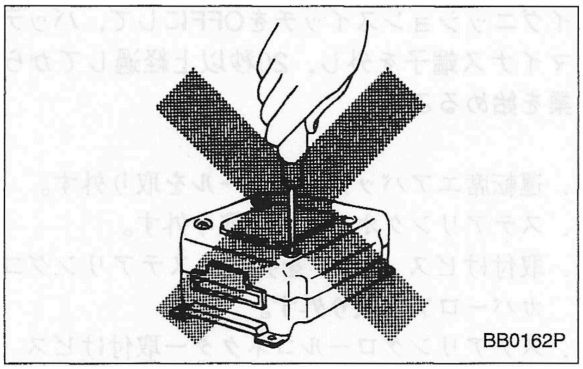
• Insert the roll connector pin into the hole in the steering wheel, being careful not to damage it.
• If the steering wheel angle needs to be fine-tuned even after everything is properly installed, adjust the tie rod.

4. Install the driver's airbag module.

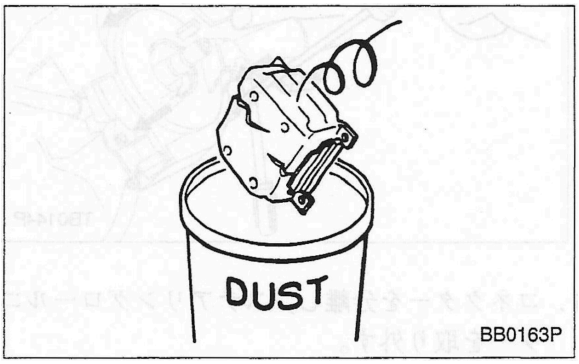
(4) Control Unit

NOTE

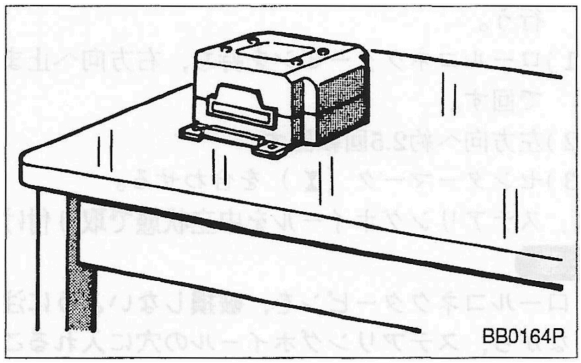
- Do not disassemble the airbag control unit.



- If the control unit is deformed, dropped, or water gets inside, replace it with a new one.



- After removal, store the control unit in a dry, clean, and level location away from heat and light sources and with little moisture or dust.

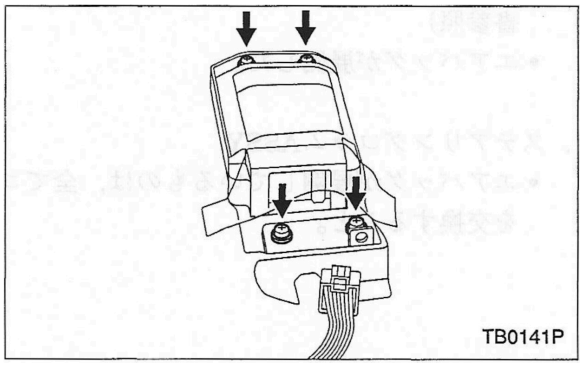


<Removal>

NOTE

- Turn the ignition switch OFF, disconnect the negative battery terminal, and wait at least 20 seconds before starting work.

1. Fold up the passenger seat.
2. Remove the center console.
3. Disconnect the connector.
4. Use a T-30 Torx wrench with tamper-proof function to remove the four mounting bolts and remove the control unit.



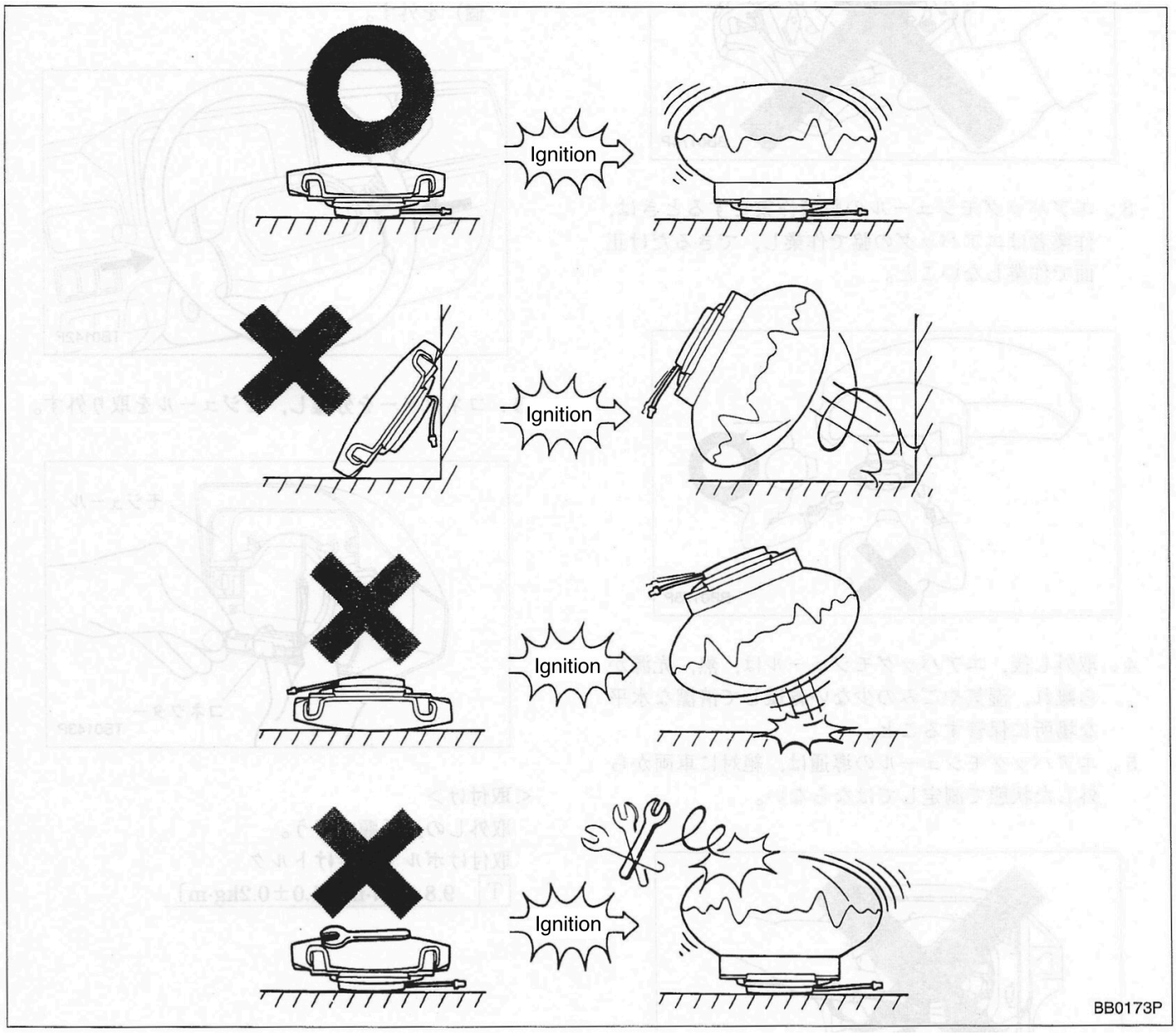
<Installation>

- Follow the removal procedure in reverse.
  Mounting bolt tightening torque
  T 9.8 ± 2 N•m [1.0 ± 0.2 kg•m]

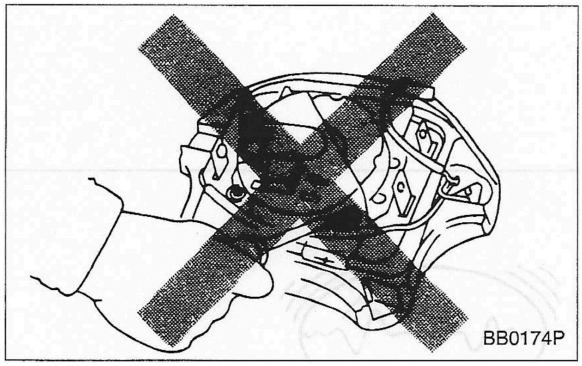
(5) Driver's Airbag Module

<Handling Precautions>

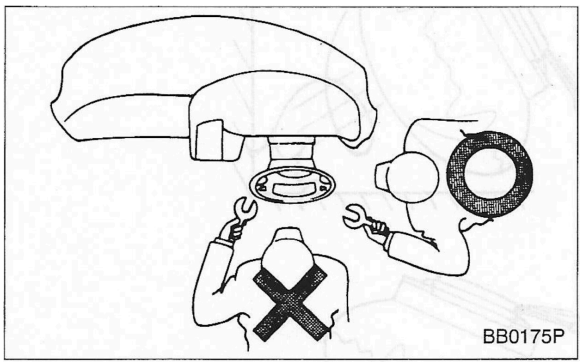
1. When storing a removed airbag module, place it with the padded surface facing up.
   - Do not lean it against a wall, place objects on the padded surface, or place it in any other way that may cause a hazard that may impair the function of the module.



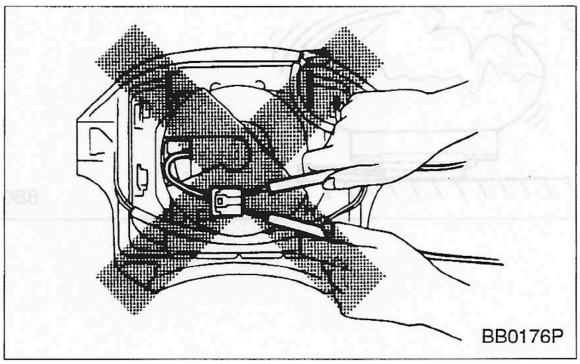
2. The airbag module must never be disassembled. Also, once an airbag module has been activated, it cannot be reused.



3. When removing or installing an airbag module, the worker should work to the side of the airbag and avoid working in front of it as much as possible.



4. After removal, store the airbag module in a dry, clean, level location away from heat, light sources, moisture and debris.
5. Airbag module continuity should never be measured while removed from the vehicle.



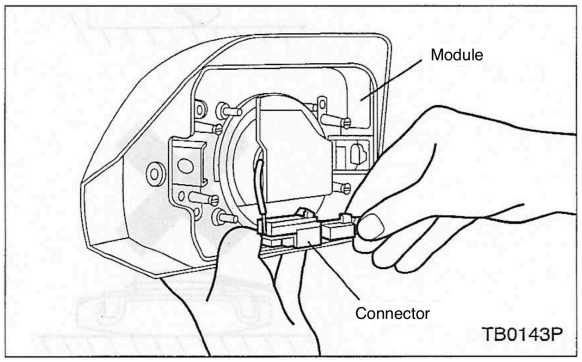
<Removal>

1. Keep the front wheels in a straight line.

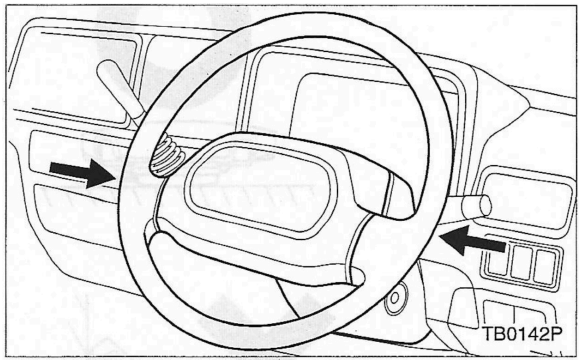
NOTE

- Turn the ignition switch OFF, disconnect the negative battery terminal, and wait at least 20 seconds before starting work.

2. Use a Torx wrench T-30 to remove the two mounting bolts.



3. Disconnect the connector and remove the module.



<Installation>

Follow the removal procedure in reverse.
Mounting bolt tightening torque
T 9.8 ± 2 N•m [1.0 ± 0.2 kg•m]

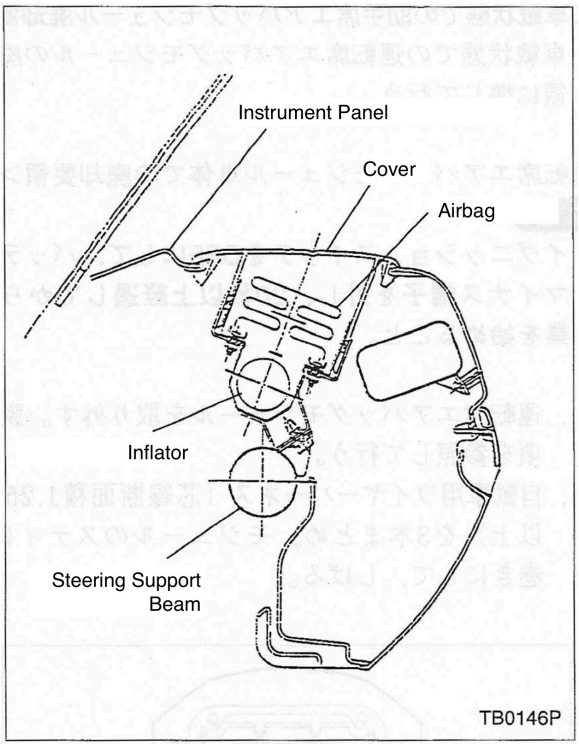
(6) Passenger Airbag Module

<Removal>

NOTE

Turn the ignition switch OFF, disconnect the negative battery terminal, and wait at least 20 seconds before starting work.

1. Remove the glove box.
2. Remove the four mounting bolts.
3. Remove the lid from the instrument panel.
4. Disconnect the connector and remove the airbag module.



<Installation>

Follow the removal procedure in reverse.

Mounting bolt tightening torque

T 17.6 ± 4.9 N•m [1.8 ± 0.5 kg•m]

(7) Disposal Instructions for Airbag Modules

NOTE

- When scrapping a vehicle equipped with an airbag or disposing of an airbag module, be sure to deploy the airbag according to the following procedure before disposing of it. If the airbag malfunctions, it can be extremely dangerous, so never dispose of an airbag module in an inactivated state.
- Disposal should be carried out on a flat, safe place. Do not work outdoors when it is raining or windy.
- When disposing of the product, a loud explosion will occur, so be sure to warn people in the vicinity and do not let anyone come within 5 meters of the product.
- A large amount of smoke will be generated during disposal, so do not work near fire alarms or smoke detectors.
- Wear gloves and protective glasses when working, and wash your hands after work.
- If disposal is difficult, consult your nearest Subaru dealer.
- In principle, airbag modules should be disposed of while still installed in the vehicle. Only when it is difficult to dispose of them while still installed in the vehicle should they be disposed of separately.

<Disposal Instructions for Driver's Airbag Module when Installed in a Vehicle>

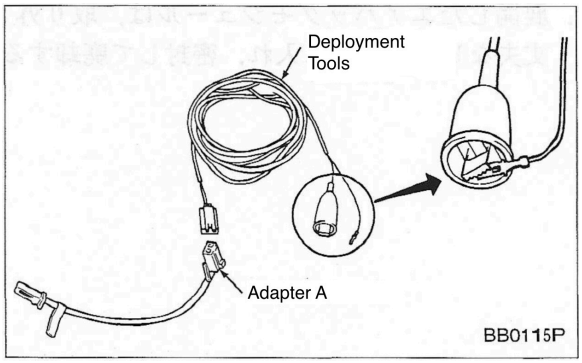
NOTE

- Turn the ignition switch OFF, disconnect the negative battery terminal, and wait at least 20 seconds before starting work.

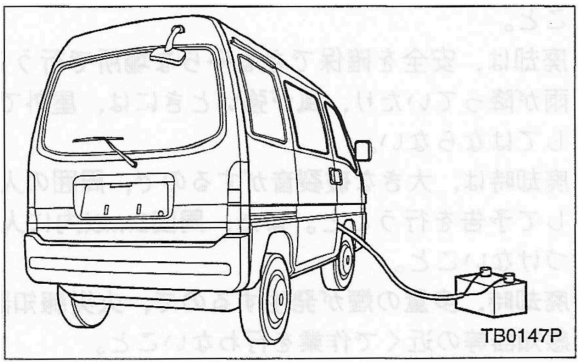
1. Disconnect the airbag connector at the bottom of the driver's side of the instrument panel.
2. Short the alligator clip and terminal of the deployment tool and connect adapter A.

NOTE

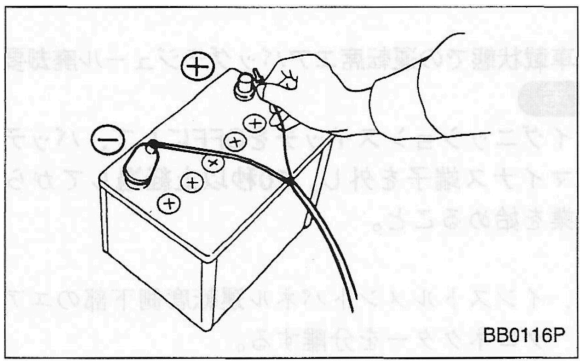
- Keep the deployment tool shorted until just before the airbag module is deployed.



3. Connect the connector on the deployment tool to the connector on the lower part of the driver's side of the instrument panel.
4. Fully extend the deployment tool, ensure there are no occupants inside the vehicle, and fully close all doors, rear doors, and door windows.



5. Move the battery at least 5m away from the vehicle and check that the surrounding area is safe. Then, connect the alligator clip of the deployment tool to the negative terminal of the battery and connect the other terminal to the positive terminal to deploy



the airbag.

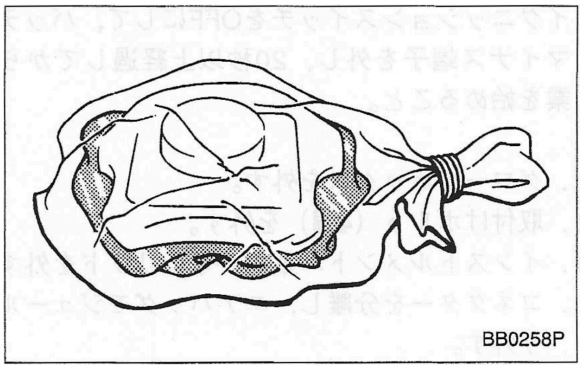
NOTE

- The airbag module becomes extremely hot after deployment, so do not touch it for 40 minutes. Also, do not splash water on it.

6. Remove the deployed airbag module, place it in a strong plastic bag, seal it, and discard it.

NOTE

- Do not disassemble or incinerate.



<Procedure for Disposing of Passenger Airbag Module when Installed in Vehicle>

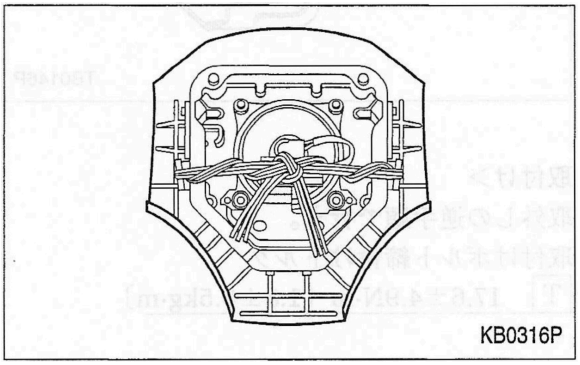
Follow the procedure for disposing of driver airbag module while installed in vehicle.

<Disposal Instructions for a Single Driver's Airbag Module>

NOTE

- Turn the ignition switch OFF, disconnect the negative battery terminal, and wait at least 20 seconds before starting work.

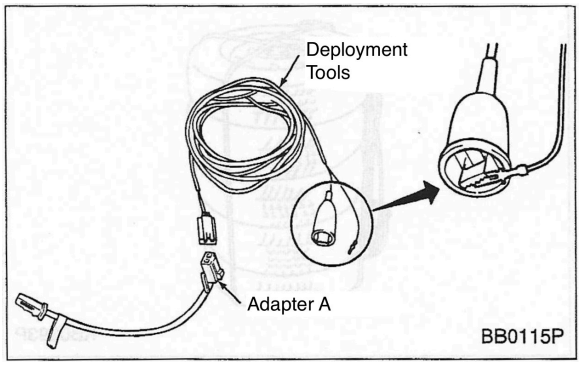
1. Remove the driver's airbag module. Refer to the Removal and Installation section.
2. Bundle three automotive wire harnesses (core cross-sectional area 1.25mm^2 or more), wrap them twice around the module stay, and tie them down.



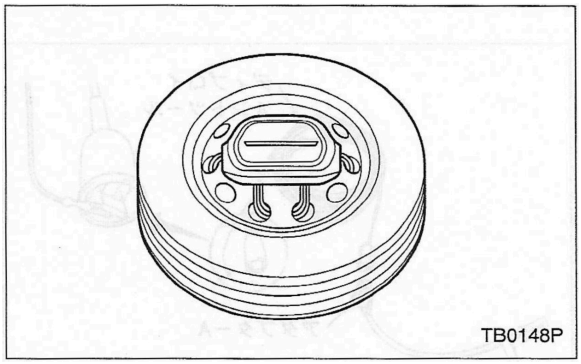
3. Short the alligator clip and terminal of the deployment tool and connect adapter A.

NOTE

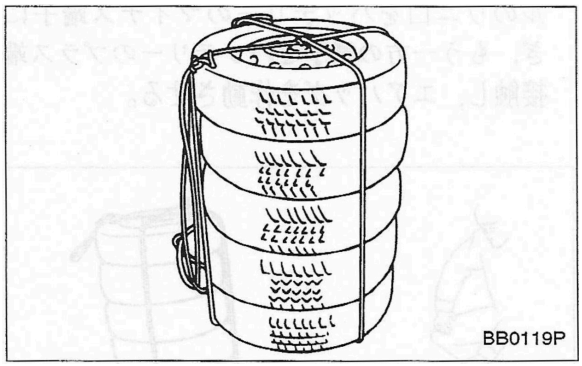
• Keep the deployment tool shorted until just before the airbag module is deployed.



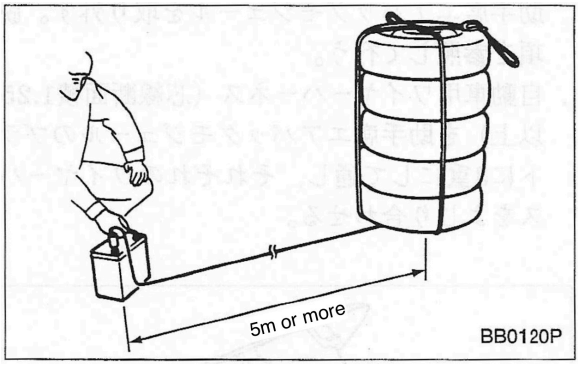
4. Connect the deployment tool connector to the airbag module connector, and secure it to the wheel with the airbag module pad facing up.



5. Place three tires without disc wheels on top of the tire with the airbag module fixed, then place a tire with a disc wheel on top, and tightly tie the tires together with a wire harness or rope.



6. Fully extend the deployment tool and, after checking the safety of your surroundings, connect the alligator clip of the deployment tool to the negative terminal of the battery and the other terminal to the positive terminal of the battery to deploy the airbag.



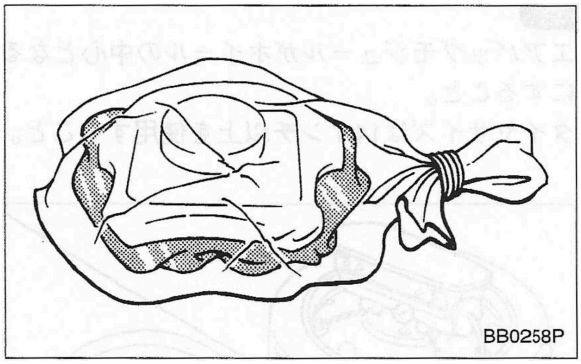
NOTE

• The airbag module will be extremely hot after deployment, so leave it as is for 40 minutes. Never pour water on it.

7. Place the deployed airbag module in a strong plastic bag, seal it, and dispose of it.

NOTE

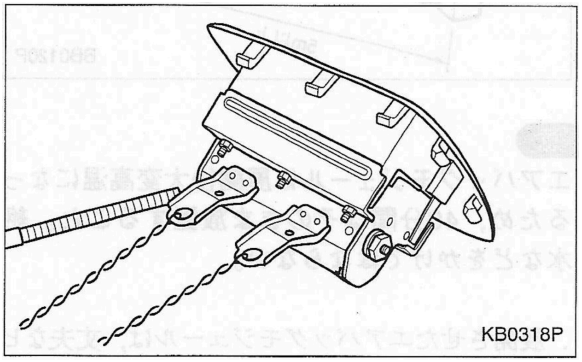
• Do not disassemble or incinerate.



<Disposal Instructions for Passenger Airbag Modules Alone>

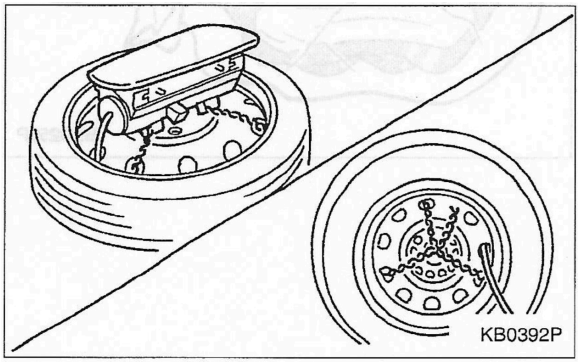
NOTE
- Turn the ignition switch OFF, disconnect the negative battery terminal, and wait at least 20 seconds before starting work.

1. Remove the passenger airbag module. Refer to the Removal and Installation section.
2. Pass an automotive wiring harness (core cross-sectional area of 1.25mm² or more) through the bracket of the passenger airbag



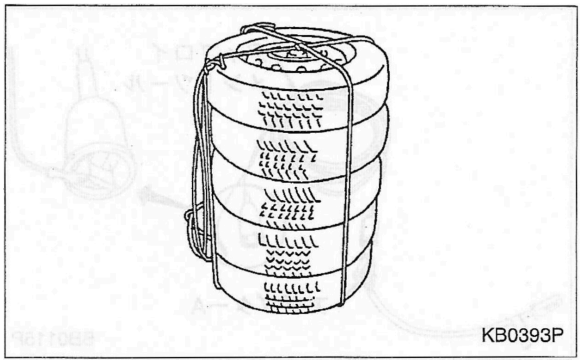
module in three layers, and twist each wire harness together.
3. Attach the passenger airbag module with the lid facing up to the tire with disc wheel, and securely fasten it to the wire harness.

NOTE
- Ensure that the airbag module is centered on the wheel.
- Tire size must be 14 inches or larger.



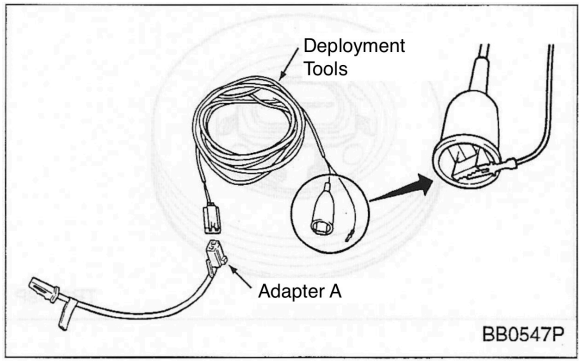
4. Place three tires without disc wheels on top of the tire with the passenger airbag module fixed, then place the tire with a disc wheel on top, and tightly tie the tires together with a wire harness or rope.

NOTE
- Be sure to tie it in four places.
- Tire size must be 14 inches or larger.

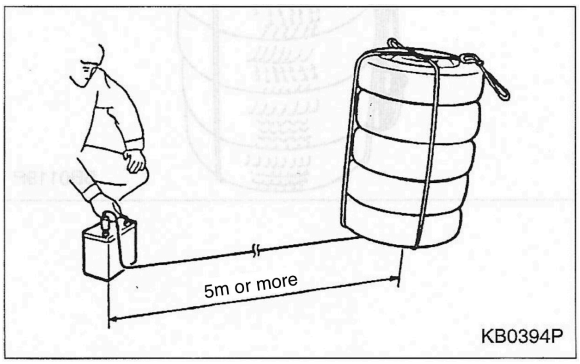


5. Short the alligator clip and terminal of the deployment tool (connect adapter A).

NOTE
- The deployment tool must remain in contact with the airbag module until just before it deploys.



6. Connect the deployment tool connector to the passenger airbag module connector and fully extend the deployment tool connector.
7. After checking the safety of the surrounding area, connect the alligator clip of the deployment tool to the negative terminal of the battery and the other terminal to the positive terminal of the battery to deploy the airbag.



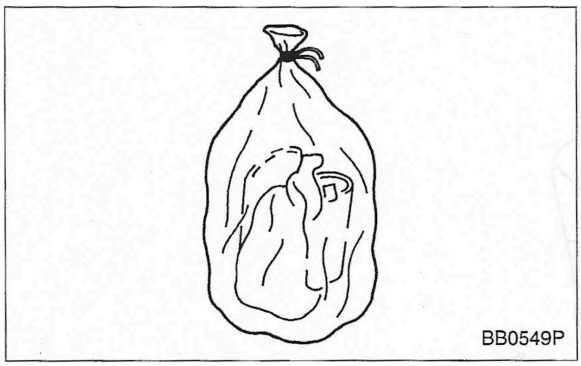
NOTE

- After the airbag module is deployed, it will be hot, so leave it as is for 40 minutes. Never pour water on it.

8. Place the deployed airbag module in a strong plastic bag, seal it, and dispose of it.

NOTE

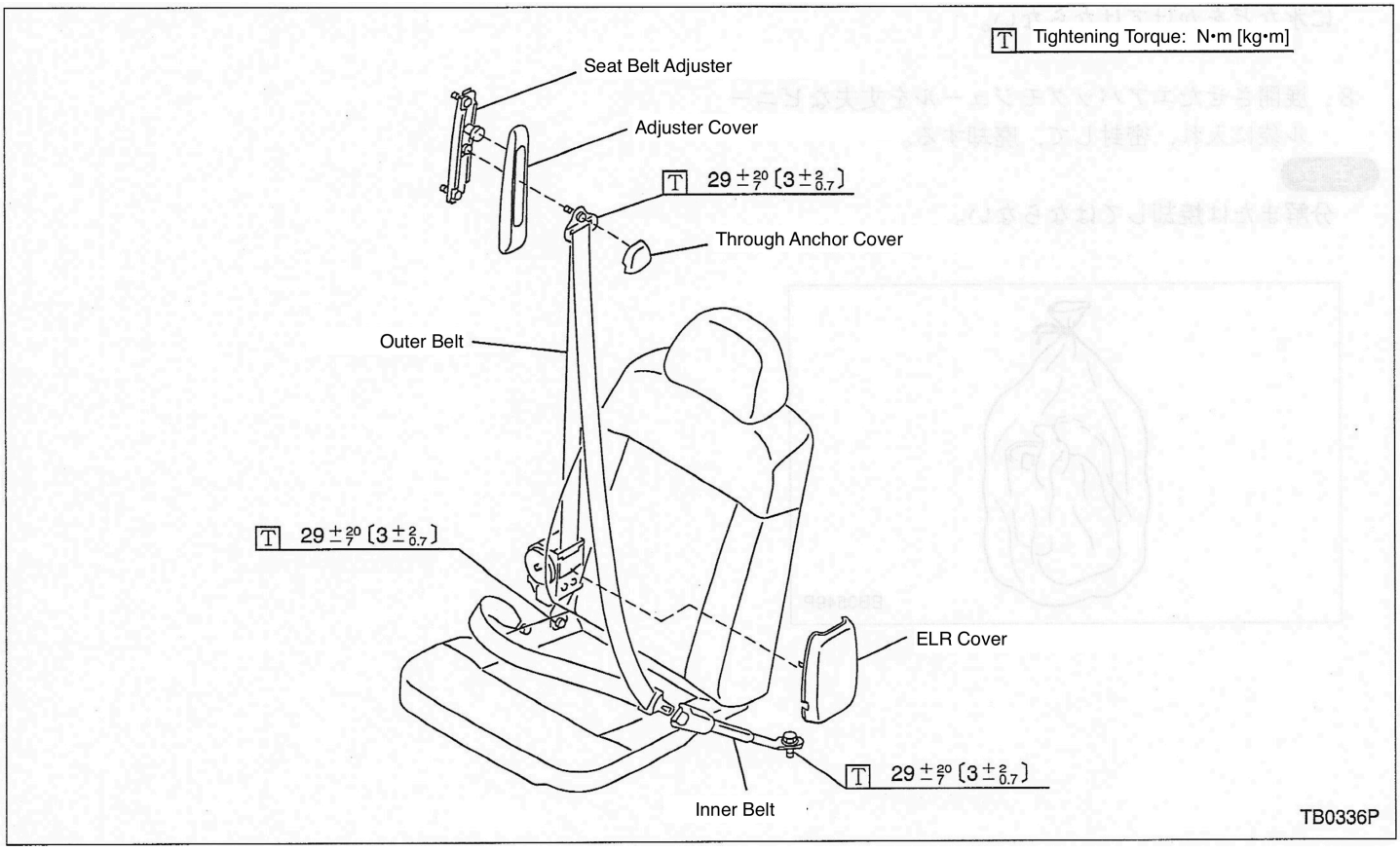
- Do not disassemble or incinerate.



6 - 2 Seat Belts

[1] Front Seat Belts

■ Component Parts



Maintenance Instructions

<Removal>

1. Fold the front seats forward. If it's a van, remove the seats.
2. Remove the adjuster.
3. Remove the ELR cover.
4. Remove the anchor bolts.
5. Remove the mounting bolt (1 piece) and remove the ELR.
6. Remove the inner belt.
   - On the driver's side, the belt warning switch connector is separated.

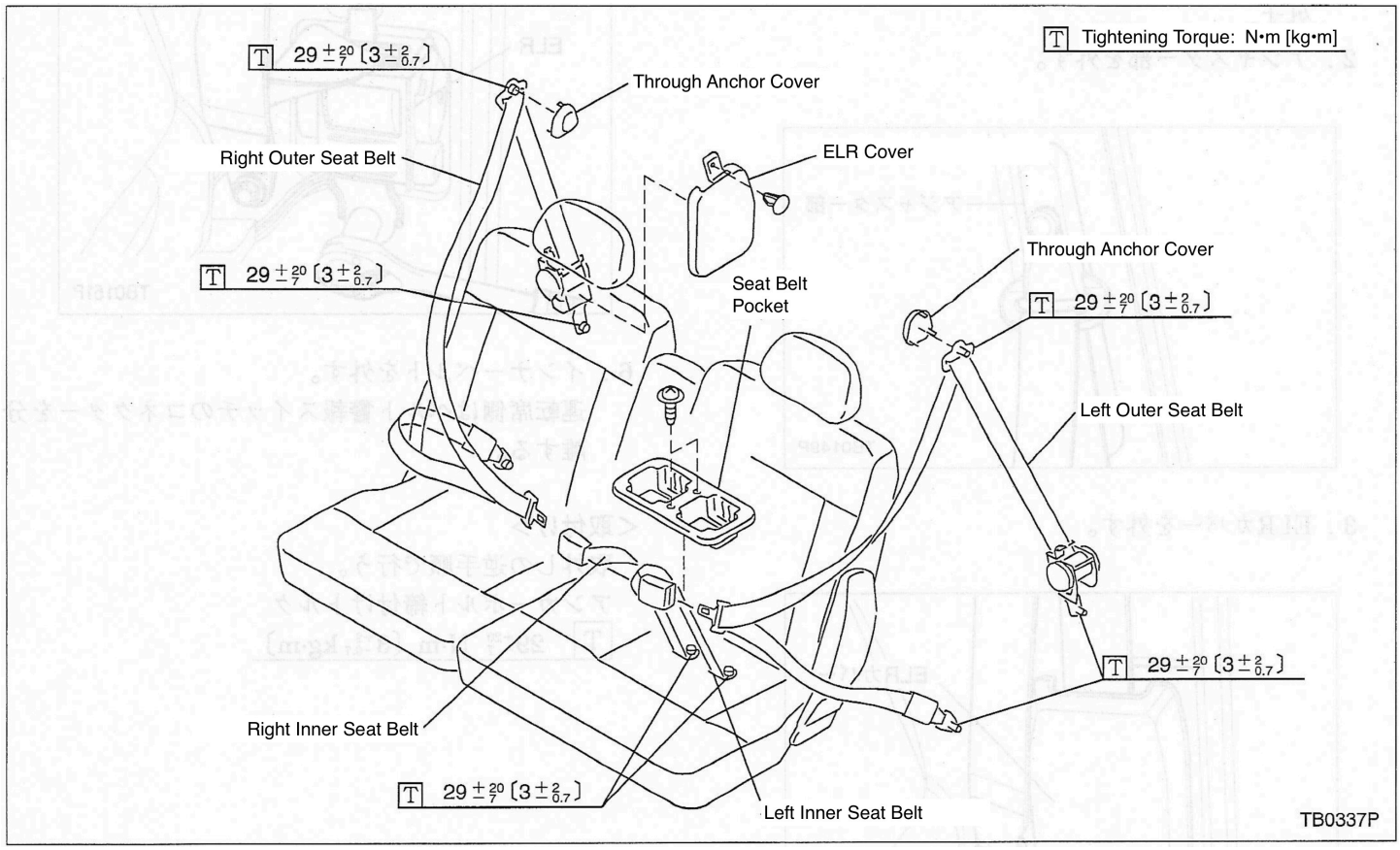
<Installation>

Follow the removal procedure in reverse.
Anchor bolt tightening torque

T	$29\frac{+20}{-7}N \cdot m[3\frac{+2}{-0.7}kg \cdot m]$

[2] Rear Seat Belts

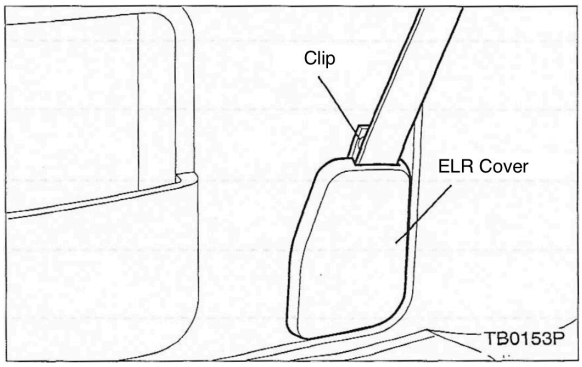
■ Component Parts



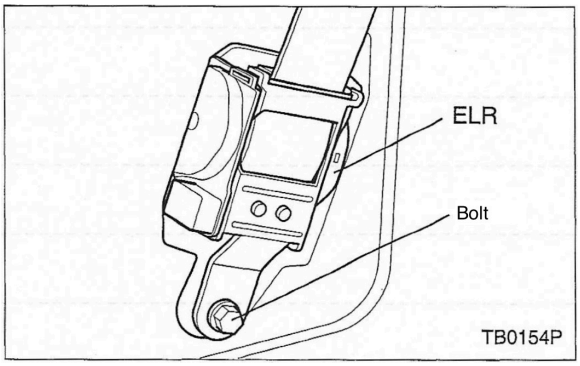
■ Maintenance Instructions

<Removal>

1. Remove the mounting clip (1 piece) and remove the ELR cover.



2. Remove the anchor cover.
3. Remove the anchor bolts.
4. Remove the mounting bolt (1 piece) and remove the ELR.



5. Remove the inner belt.

<Installation>

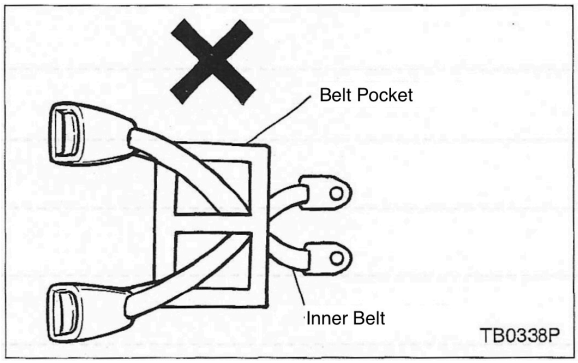
Follow the removal procedure in reverse.

Anchor bolt tightening torque

T $29\frac{+20}{-7}N \cdot m[3\frac{+2}{-0.7}kg \cdot m]$

NOTE

- After installing the inner belt, pass it through the belt pocket on the top of the deck.
- When passing the inner belt through the belt pocket, be careful not to cross the left and right inner belts.



MEMO

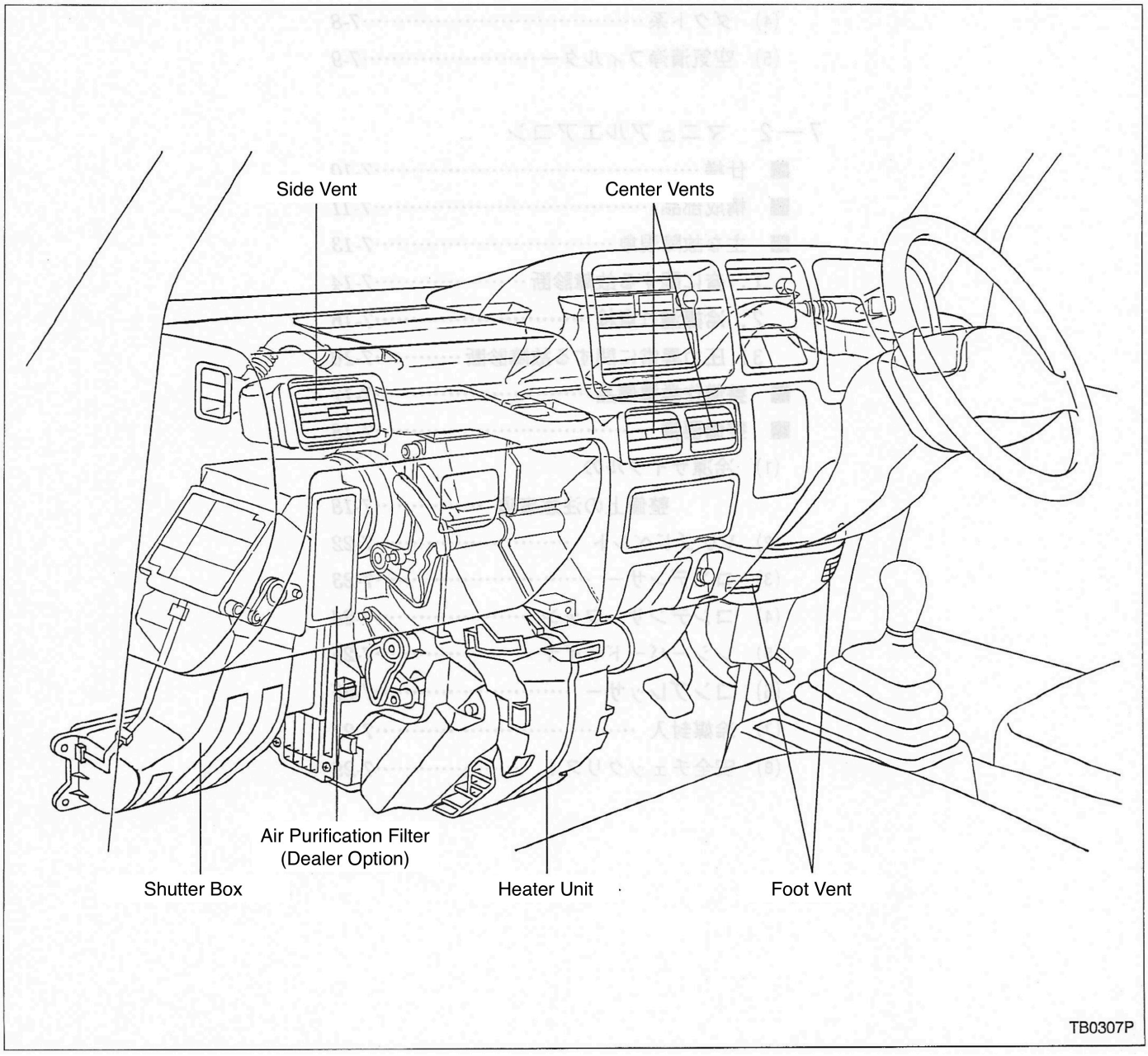
7 Air Conditioning

7 - 1 Heater & Ventilation

Specifications

Estimation Method		Vehicle Type	Region	Heat Performance Kcal/h (JIS)	Motor Power Consumption (W)	Maximum Air Volume (m^3/h)			Fan Model	Heater Core	Fan Diameter
						Vent	Heat	Defroster			
Front Heater	Hot Water Air Mix	Van & Dias	Standard	2750	140	320	200	200	Sirocco	161.4X136.4X25	ø130
			Cold	3070						161.4X176.4X32	
		Truck & Panel Van	Standard	2540	90	260	180	180		161.4X136.4X32	
			Cold	2820						161.4X136.4X25	
Rear Heater		Diaz	Standard & Cold	1550	55 or less	108 (MAX)			Sirocco	161.4X136.4X25	ø100

Parts Layout Diagram

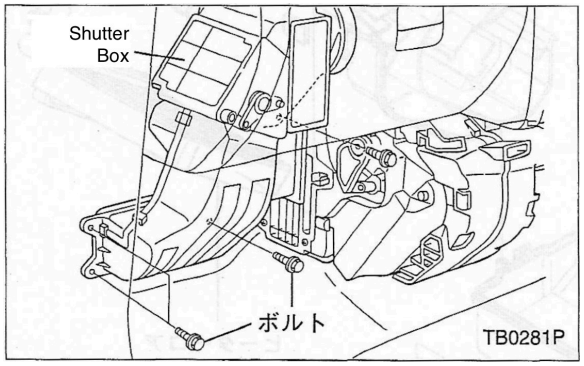


■ Maintenance Instructions

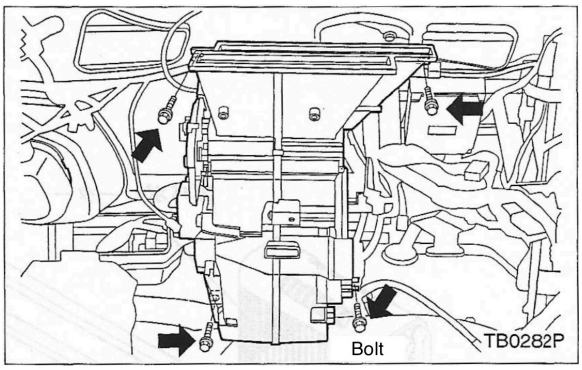
(1) Front Heater Unit

<Removal>

1. Disconnect the battery terminals.
2. Drain the coolant.
3. Remove the inlet and outlet hoses from the heater unit.
4. Remove the glove box.
5. Disconnect the resistor and blower motor wiring.
6. Remove the cables (air outlet, inside/outside air switch, temperature control) from the heater unit and shutter box wiring.
7. Remove the instrument panel. (See the section on removing and installing the instrument panel.)
8. Remove the steering support.
9. Remove the shutter box mounting bolts (4 pieces) and remove the main body.



10. Recover the refrigerant.
11. Remove the high pressure pipe and low pressure pipe from the joint.
12. Remove the heater unit mounting bolts (4 pieces) and remove the main unit.

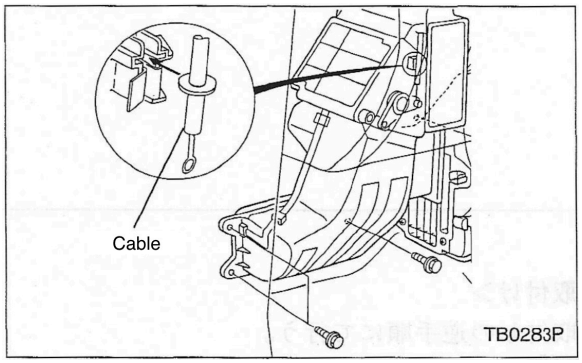


<Installation>

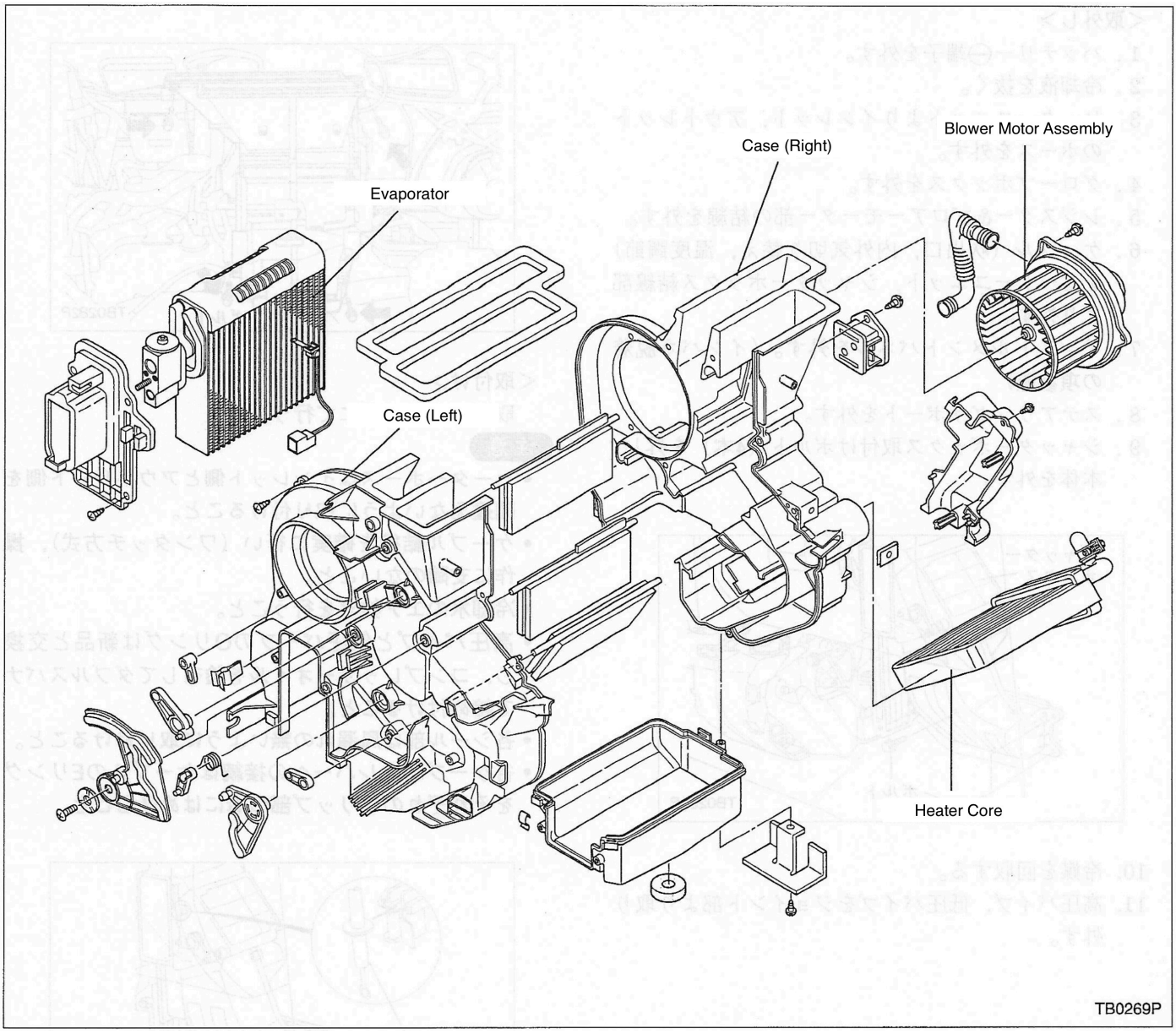
Follow the removal procedure in reverse.

NOTE

- When installing the heater hose, be careful not to mistake the inlet and outlet sides.
- Cables must be securely connected (one-touch method) so that operation is not affected.
- Bleed the air from the cooling water.
- Replace the rings on the high-pressure and low-pressure pipes with new ones, apply compressor oil and tighten with a double wrench.
- Install each seal so that there is no air leakage.
- To connect each cable to the lever, fit the E-ring on the cable into the groove on each clip.



<Disassembly/Assembly>



<Installation>

Follow the removal procedure in reverse.

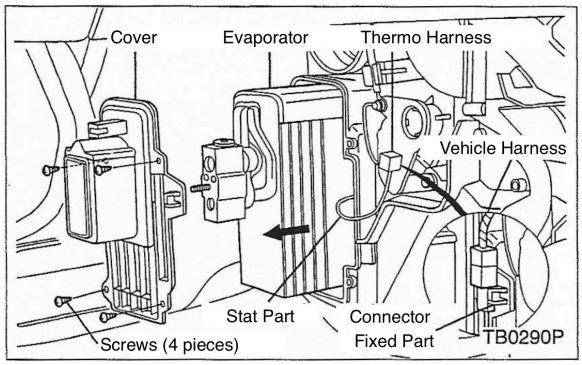
NOTE

- Install each seal so that there is no air leakage.
- Replace the rings on the high-pressure and low-pressure pipes with new ones, apply compressor oil and tighten with a double wrench.

(2) Evaporator

<Removal>

1. Disconnect the battery terminals.
2. Recover the refrigerant.
3. Remove the glove box.
4. Remove the shutter box.
5. Remove the high pressure pipe and low pressure pipe from the joint.
6. Disconnect the thermistor wiring.
7. Remove the cover and pull out the evaporator.



<Disassembly>

1. Remove the thermistor.

NOTE

- When removing the thermistor from the evaporator, be sure to mark the location of the thermistor.

2. Remove the expansion valve.

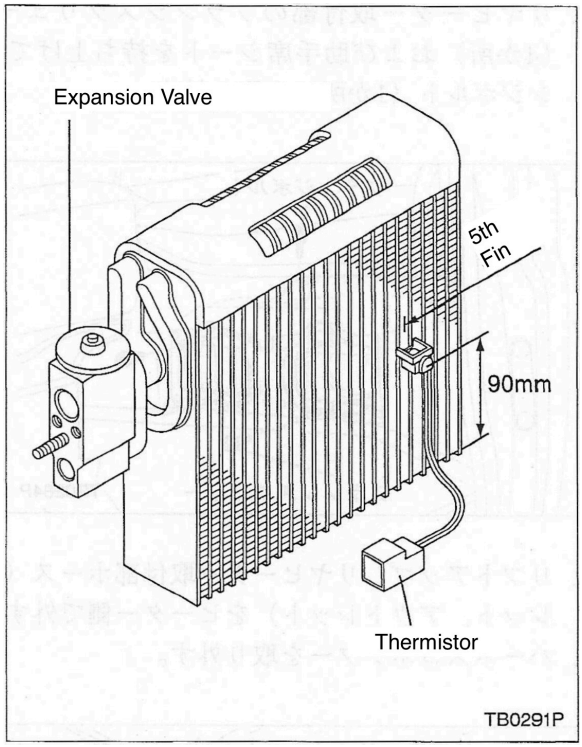
<Assembly>

1. Install the expansion valve on the evaporator.

NOTE

- Replace the ring with a new one and apply compressor oil.

2. Install the thermistor in place.



<Installation>

- Follow the removal procedure in reverse.

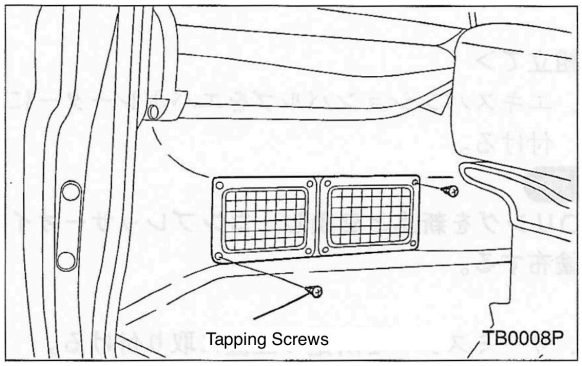
NOTE

- Install each seal so that there is no air leakage.
- Replace the rings on the high-pressure vibrator and low-pressure pipe with new ones, apply compressor oil and tighten with a double wrench.

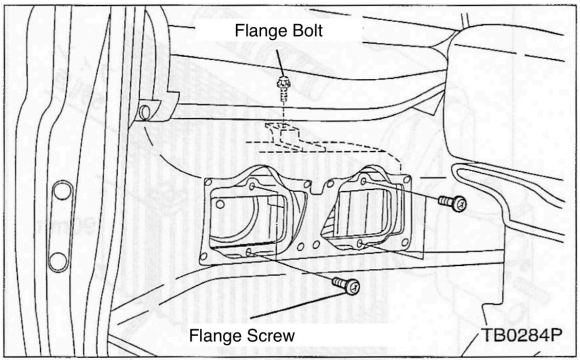
(3) Rear Heater Unit

<Removal>

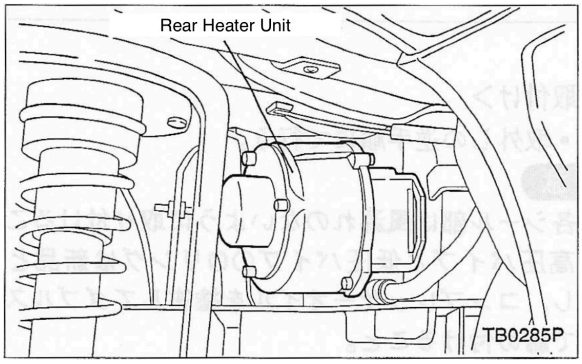
1. Disconnect the battery terminals.
2. Drain the coolant.
3. Remove the grill (rear heater) (M4 x 12 tapping screws x 8).



4. Remove the four M5 flange screws from the rear heater mounting area and lift the passenger seat to remove the flange bolt.



5. Lift up the vehicle and remove the rear heater mounting hoses (inlet, outlet) on the heater side.
6. Remove the harness connector.



NOTE

- The coolant will flow, so catch it in a dish or something similar.

7. Remove the reserve tank (cooling).
8. If your vehicle is a 4WD, remove the front differential.
9. Remove the rear heater from under the floor.

<Installation>

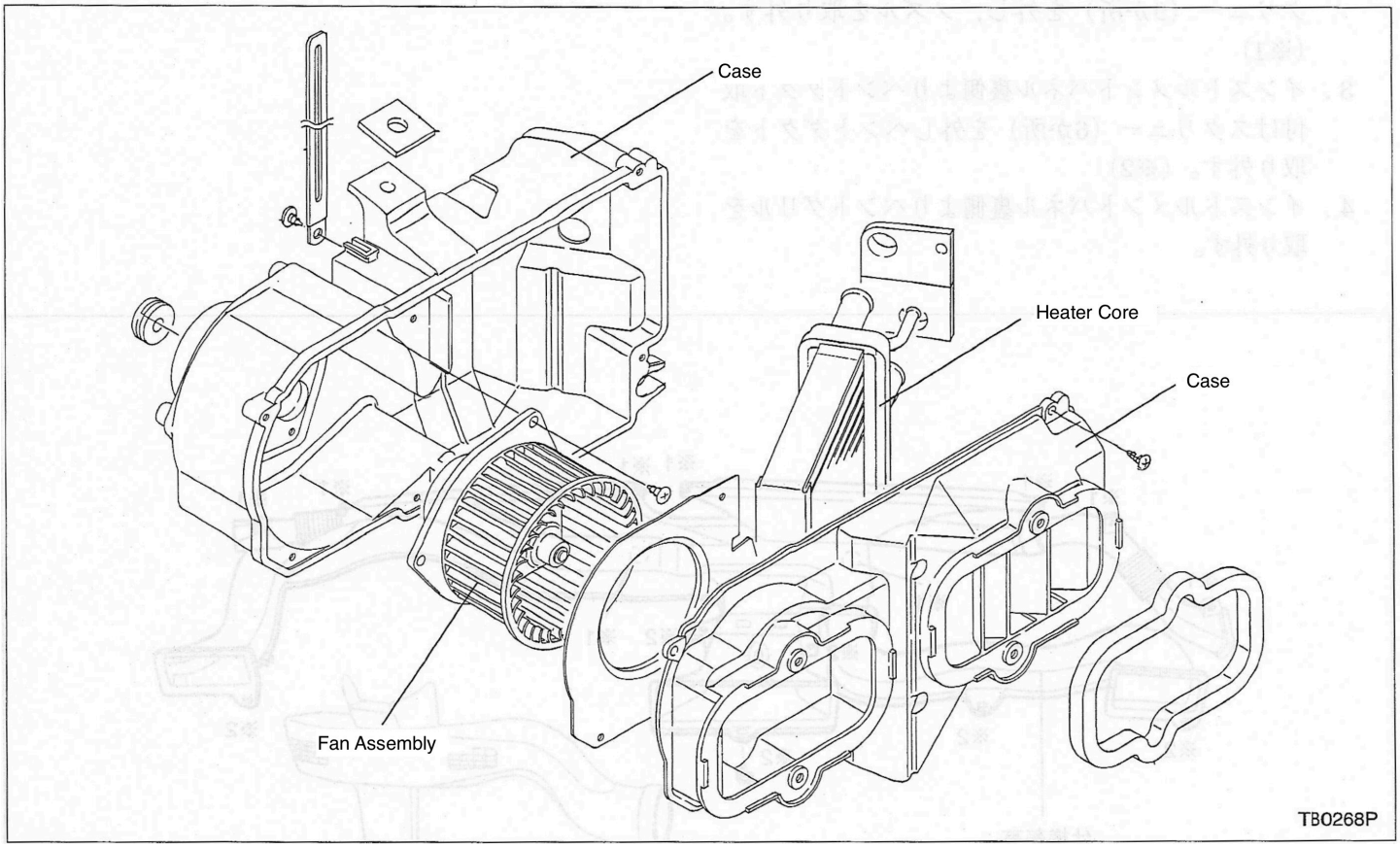
Follow the removal procedure in reverse.

NOTE

- Make sure to connect the hot water inlet and outlet hoses securely.

<Disassembly/Assembly>

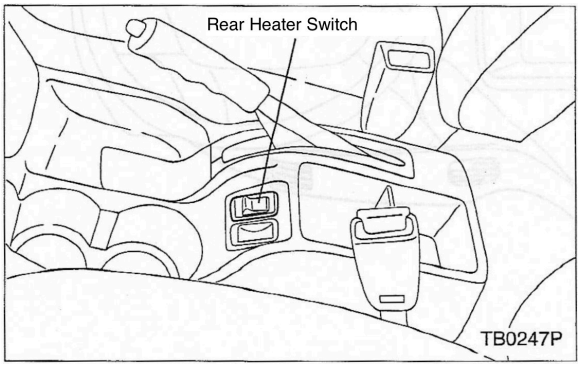
1. Separate the cases.
2. Remove the fan assembly.
3. Remove the heater core.



(3) Rear Heater Switch

<Removal>

1. Disconnect the battery terminals.
2. Remove the rear heater switch using a screwdriver or similar tool.



3. Disconnect the harness connector.

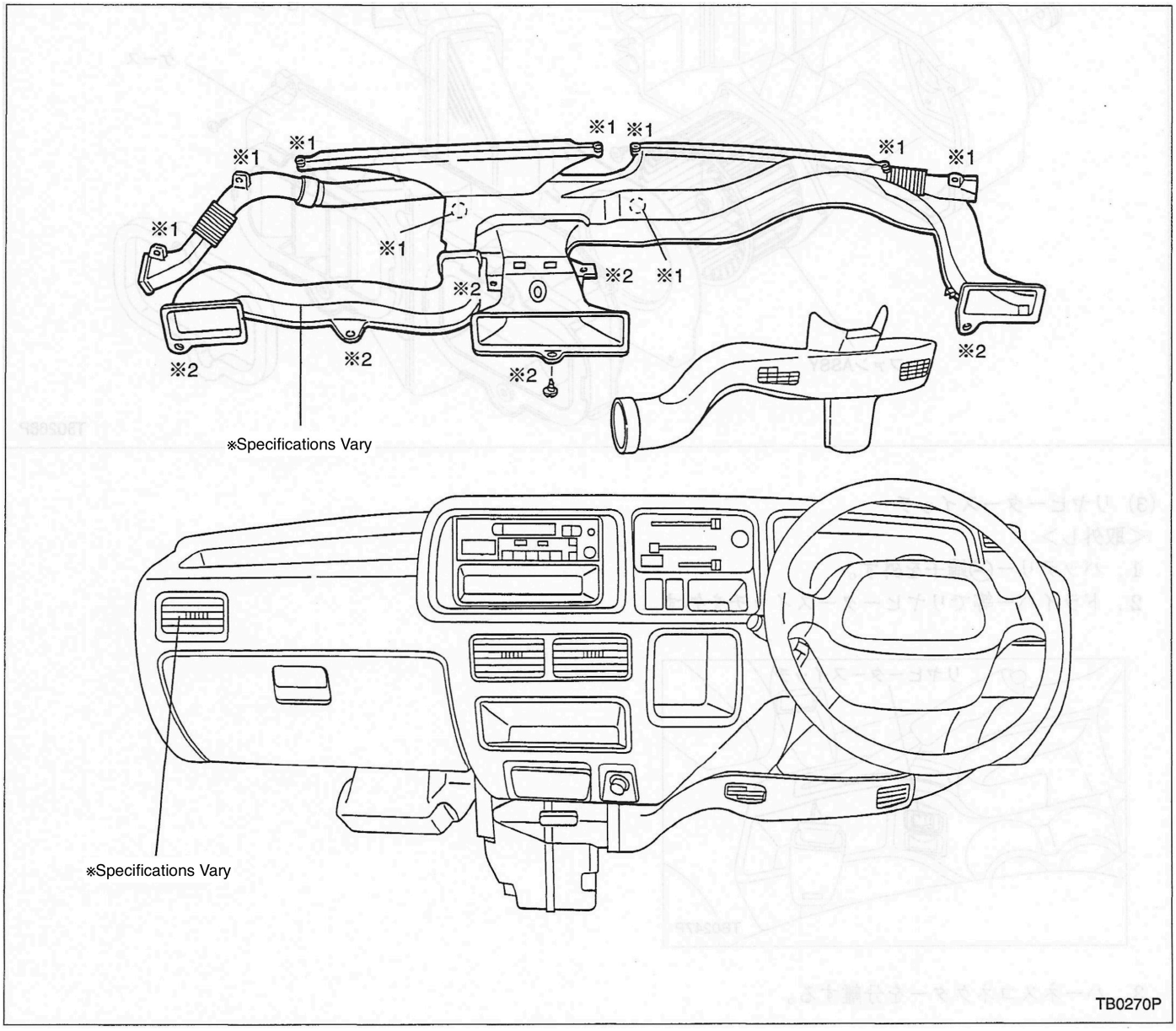
<Installation>

Follow the removal procedure in reverse.

(4) Duct System

<Removal>

1. Remove the instrument panel assembly (see Instrument Panel Removal and Installation).
2. Remove the nozzle mounting screws (9 locations) from the back of the instrument panel and remove the nozzle. (※1)
3. Remove the vent duct mounting screws (6 places) from the back of the instrument panel and remove the vent duct. (※2)
4. Remove the vent grille from the back of the instrument panel.



(5) Air Purifier Filter (Dealer Option)

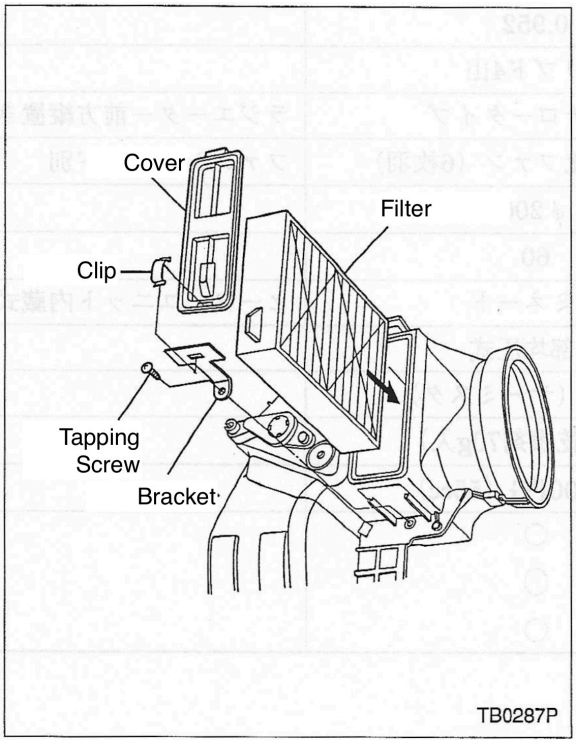
- Manual air conditioners are equipped with an optional filter. To maintain the filter function and air conditioning performance, regular maintenance is required (filter replacement).
  - Maintenance interval (approximate): 1 year or 12,000 km

NOTE

- If you continue to use the air conditioner with a dirty filter, it may reduce the airflow and cause the glass to fog up more easily, which may impair the air conditioning performance.
- If the airflow from the air conditioner seems low, check the filter.

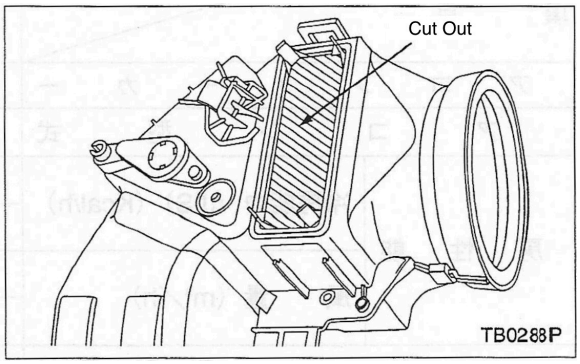
<Performance Check>

1. Remove the air filter fixing clip from the shutter box.
2. Remove the filter.
3. Check for clogged filters, etc.
4. Replace the filter.
5. Install in the reverse order of removal.

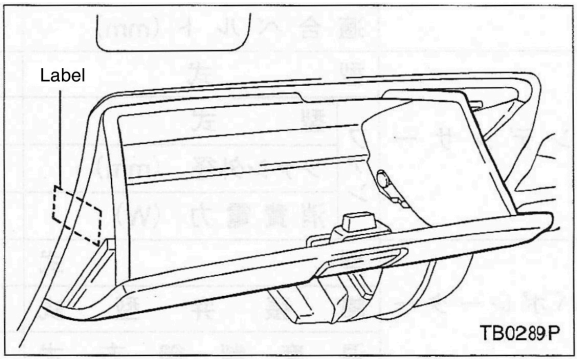


<Installation>

1. Remove the inside/outside air switching cable.
2. Remove the shutter box mounting bolts and remove the main body.
3. Cut out the shaded area with a utility knife or similar tool.



4. Install the bracket.
5. Insert the filter into the shutter box.
6. Secure the cover to the shutter box using the mounting clips.
7. Attaching the label:
   - Write the filter installation date and mileage at the time of installation on the label, and attach it to the glove box in the location shown.

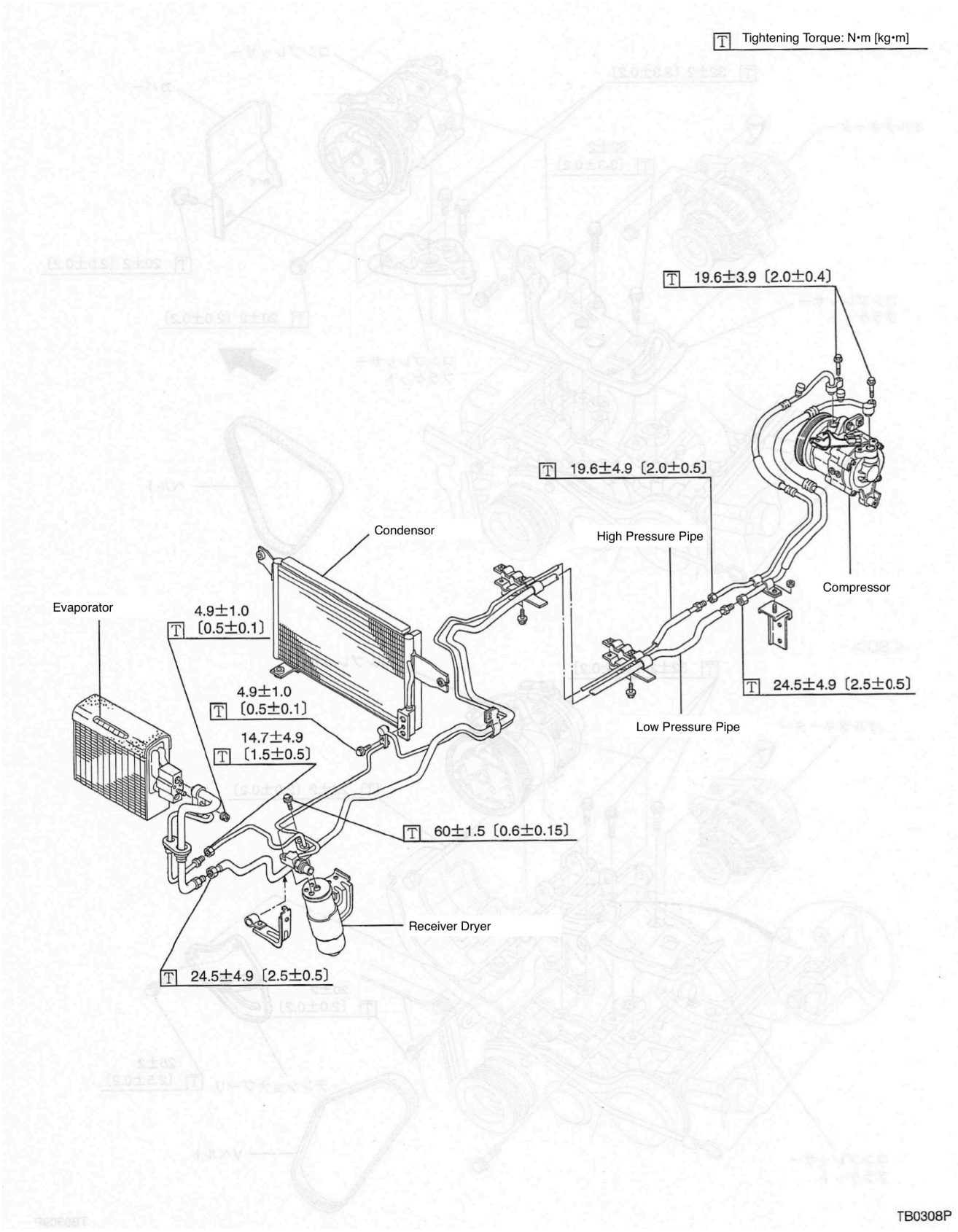


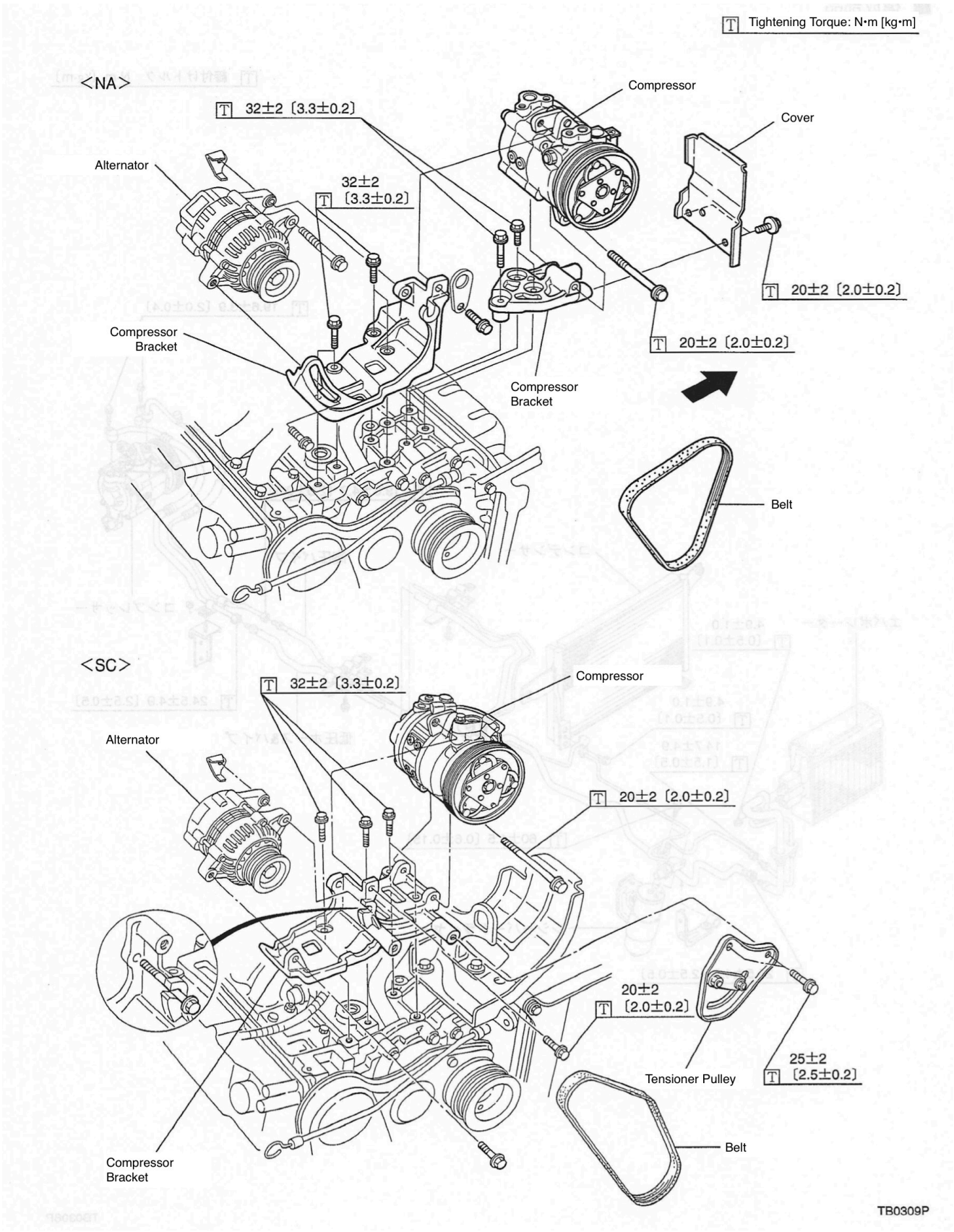
7 - 2 Manual Air Conditioner

■ Specification

Item \ Applicable Models			Standard Vehicles (NA/SC)		Notes
Air conditioner manufacturer			Zexel Co. Ltd.		
Air conditioner model			Full air max		
Cooling Performance	Cooling capacity (JIS) (kCal/h)		Van & Diaz	3100	
			Truck & Panel Van	2670	
	Air volume (m^3/h)		Van & Diaz	320	
			Truck & Panel Van	260	
Coolant (g)			HFC134a (400 ± 50)		
Compressor	Model		Vane rotary type (DKV-07G)		
	Capacity (cc/rev)		70		
	Allowable rotation speed (rpm)		7000		
	Lubricating oil (cc)		ZXL-200PG (80)		
Magnet Clutch	Model		Dry veneer		
	Power consumption (W)		44 or less		
	Pulley effective diameter (mm)		ø135		
	Pulley ratio		0.952		
	Applicable belt (mm)		V-ribbed 4 grooves		
Condensor	Model		Multi-row type		Radiator mounting vertically in front
	Fan	Model	Electric axial fan (6 blades)		Separate fan shroud
		Fan outer diameter (mm)	ø200		
		Power consumption (W)	60		
Evaporator	Model		Laminate		Built-in heater unit
	Expansion valve model		Internal pressure equalization		
	Temperature control method		Electric type (thermistor)		
Receiver Dryer	Capacity (cc)		250 (70g including desiccant)		
	Lubricating oil (cc)		ZXL-200PG (55cc)		
All control devices are controlled by the EGI-ECU.	ECON control water temperature cutoff		○ ○ ○		

■ Component Parts




T Tightening Torque: N•m [kg•m]
<NA>
T 32±2 〔3.3±0.2〕
Compressor
Cover
Alternator
32±2
T 〔3.3±0.2〕
T 20±2 〔2.0±0.2〕
Compressor Bracket
T 20±2 〔2.0±0.2〕
Compressor Bracket
Belt
<SC>
T 32±2 〔3.3±0.2〕
Compressor
Alternator
T 20±2 〔2.0±0.2〕
20±2
T 〔2.0±0.2〕
25±2
T 〔2.5±0.2〕
Tensioner Pulley
Belt
Compressor Bracket
TB0309P

Common Failure Points

<Types of Failure and Diagnostic Methods>

Car air conditioner malfunctions can be broadly divided into the following categories:

1. Things related to coldness (not being cold, not cold enough, etc.),
2. Noise-related issues (such as strange noises),
   - When a customer brings in a problem like this, we first listen carefully to what they have to say, assess the situation with our eyes and ears, and finally check every detail using measuring instruments and other tools before repairing the item.

<Detecting Malfunctions Using Eyes, Hands, and Ears>

An easier way to detect a malfunction is with the human eyes, hands, and ears.

Failure Detection using Eyes, Hands, and Ears

Means			Diagnostics Items	Point
Eyes	Hands	Ears		
○	○	○	Belt abnormality	• Looseness • Deterioration (wear and tear) • Slip sound
○	—	—	Defective capacitor	• Clogged fins • Fin collapse
○	○	○	Loose or missing bolts	
○	—	—	Refrigerant leak (oil stains)	• Piping connections • Compressor, condenser, receiver driver
—	—	○	Strange noise	• Compressor • Idler pulley • Blower motor
—	○	—	Temperature difference between the receiver dryer inlet and outlet pipes.	If the temperature difference is large, the receiver dryer may be clogged.

NOTE

- For circuit diagrams and wiring and installation diagrams, please refer to the separate volume "Electrical Wiring Diagram Collection."

1. Sound-related troubleshooting
   - Complaints about noise vary greatly from person to person, so we listen carefully to what our customers have to say and take appropriate action.
   - In particular, loose crank pulleys, loose compressor brackets, or damage often cause abnormal compressor noise.
   - Be careful not to mistake it for something else.

Sound-related Malfunction Diagnosis Table

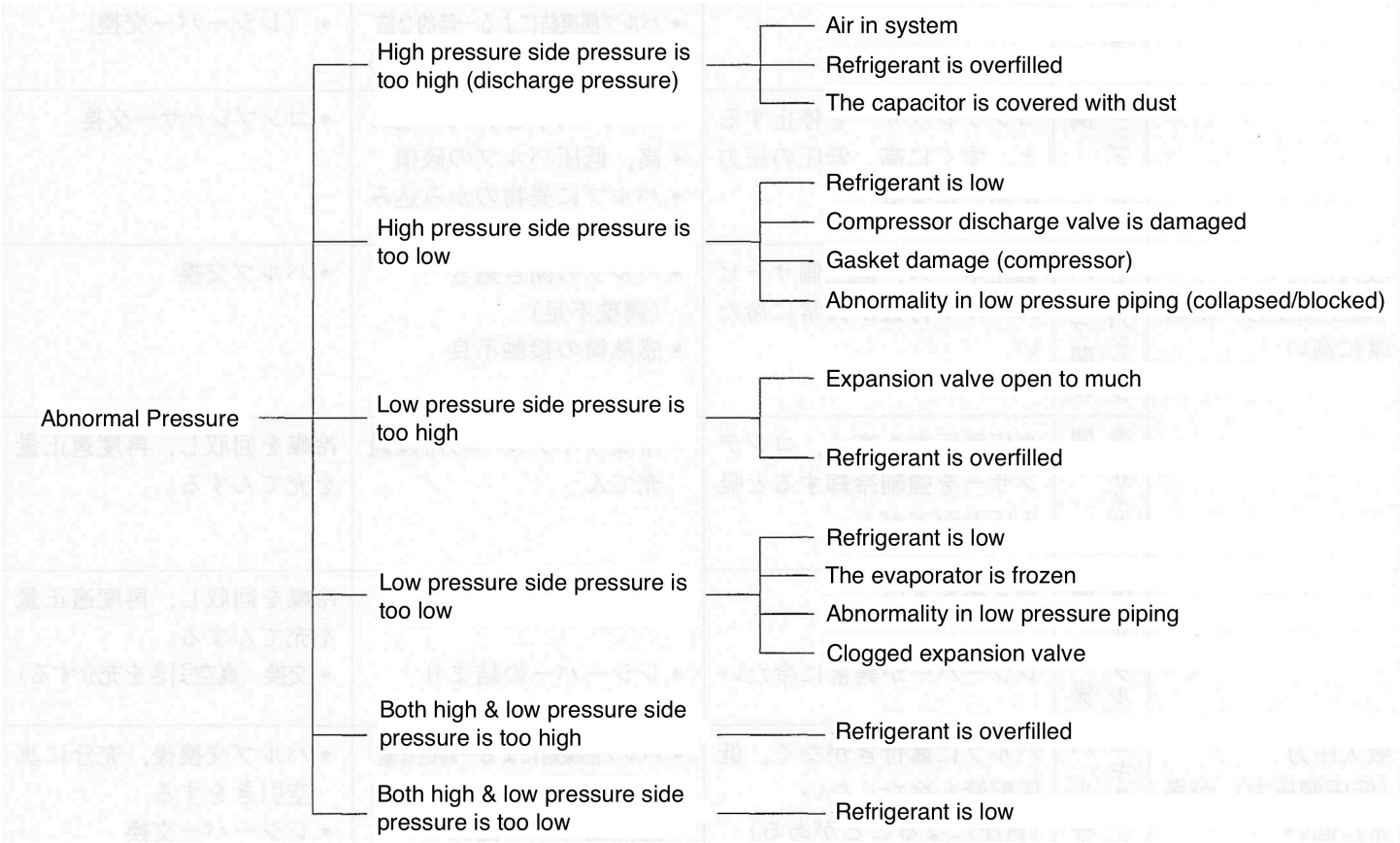
Abnormal Phenomenon	Situation	Probable Cause	Treatment
Compressor noise	Rattling noise (Metal hammering noise)	• Wear of sliding parts • Part damage • Foreign objects caught	• Replace compressor
	There is a crackling noise when the compressor is turned off	Magnetic clutch contact noise	
	Bearing noise	Magnetic clutch bearing noise	
	Whining noise	Compressor hum	• Tighten the mounting bolts of the compressor and bracket
Abnormal noise from the idler pulley and crank pulley	Rattling noise	Idler pulley bearing noise	• Idler pulley replacement
	Rattling noise	Crank pulley noise (This noise occurs when the idling or accelerating suddenly. It gets louder when the compressor is turned on, so its easy to mistake for a compressor noise.)	• Replace or retighten (if there are no external scratches)
Abnormal noise from the V-belt	Continuous coo sound	The v-belt is loose (the belt is also vibrating a lot)	• Re-tension or replace belt
	Continuous slurping sound	• Loose or missing fixing bolts	• Check and repair the pulley alignment • Replace belt
Abnormal noise from the parts mounting area	Continuous squealing sound (rattles when touched)	• Loose or missing fixing bolts • Damaged bracket	• Set to the correct tightening state • Replace bracket

Phenomenon	Location	Situation	Probable Cause	Treatment
The discharge pressure (high pressure side) is abnormally high	Capacitor Related	Poor airflow from the radiator fan (not enough cooling air)	• Radiator fan motor failure • Condenser fins clogged with debris	• Replace motor • Clean the fins (with water)
	Refrigeration System Related	Not cold enough	• Refrigerant overfilled (Approximately 0.4~0.5kg)	• The refrigerant is recovered and refilled the appropriate amount
		When the compressor stops, the pressure drops suddenly by about 2 kg/cm² immediately afterwards	• Air is trapped in the cooling cycle	• Drain all the refrigerant, vacuum out the system, and then refill it with the correct amount
The discharge pressure (high pressure side) is abnormally low	Compressor Related	When the compressor is stopped, the high and low pressures immediately equalize	• Broken gasket or O ring • High & low pressure valve damage • Foreign matter caught in the valve	• Replace compressor
	Refrigeration Cycle Related	Not cold enough	• Lack of refrigerant	• The refrigerant is recovered and refilled the appropriate amount
	Expansion Valve Related	There is no condensation on the valve and the low-pressure piping is not cold (negative pressure may occur)	• Gas leaking from the thermal tube • Clogged valve (due to misadjustment or foreign matter) • Temporarily blocked due to a frozen valve (caused by water contamination)	• Replace valve • After replacing the valve, vacuum the system • Replace receiver
The suction pressure (low pressure side) is abnormally high	Compressor Related	When the compressor is stopped, the high and low pressures immediately equalize	• Broken gasket or O ring • High and lower pressure valve damage • Foreign matter caught in valve	• Replace compressor
	Expansion Valve Related	The low pressure hose and the area around the low pressure service valve are abnormally cold	• Valve is too open (misadjustment) • Poor contact of the thermal tube	• Replace valve
	Refrigeration Cycle Related	The high-pressure side pressure is also high, and forced cooling of the condenser reduces the suction pressure	• Overfilling the refrigerant into the refrigeration cycle	• The refrigerant is recovered and refilled the appropriate amount
The suction pressure (low pressure side) is abnormally low	Refrigeration Cycle Related	The receiver is abnormally cold	• Lack of refrigerant • Receiver connection	• The refrigerant is recovered and refilled the appropriate amount • Replace refrigerant
	Expansion Valve Related	There is no condensation on the valve and the low-pressure piping is not cold (negative pressure may occur)	• Temporarily blocked due to a frozen valve (caused by water contamination) • Gas leaking from the thermal tube	• After replacing the valve, vacuum the system • Replace receiver
		The valve is frosted (with dew)	• Clogged valve (due to misadjustment or foreign matter)	• Replace valve
	Others	The outlet temperature is low and no air comes out	• The evaporator is frozen	• Inspect and adjust • (Thermistor position & resistance value)
		Heat load is too low	• The outside temperature is abnormally low.	

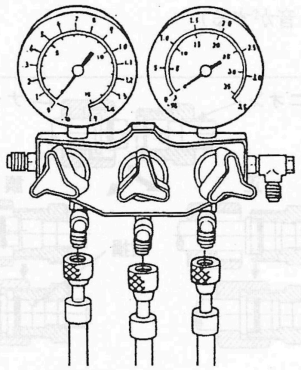
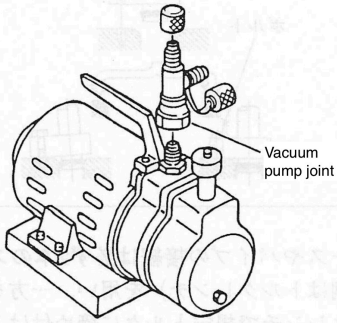
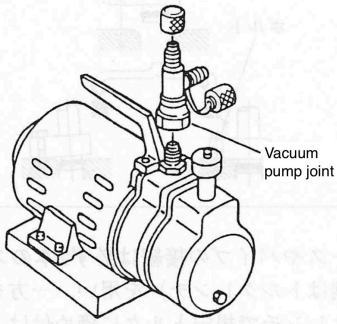
2. Check for refrigerant leaks.

Abnormal Phenomenon	Situation		Probable Cause	Treatment
Insufficient cooling	Oil stains on the pipe joints		Refrigerant leak from pipe joint	Repair or replace O-rings or pipes
	Oil stains are noticeable on the	Dirt on the magnetic clutch	Refrigerant leak from shaft seal	Repair or replace compressor
		Dirty joints	Refrigerant leak from packing or O-ring	
		Dirty bolts	Refrigerant leak from the tightening bolt	
	Conspicuous oil stains on the condenser and receiver dryer		Refrigerant leak from condenser or receiver dryer	Repair or replace condenser & receiver dryer

3. Fault diagnosis for pressure abnormalities.
Connect the gauge manifold to the refrigeration cycle, locate the fault and repair it.



■ Maintenance Preparations

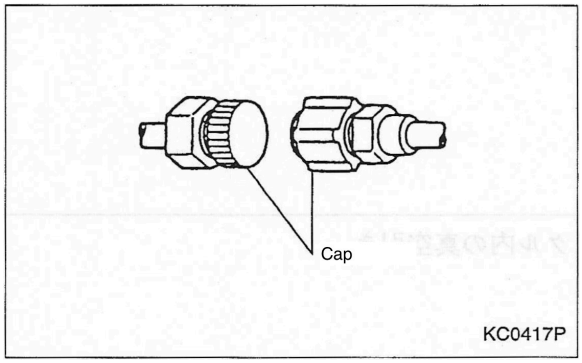
Instrument	Gauge manifold (for HFC134a) 	Refrigerant charging and discharging
	Vacuum pump (with vacuum pump joint) 	Vacuuming inside the refrigeration system
	Vacuum pump (with vacuum pump joint) 	Gas leak detection
	Tension gauge	Compressor & alternator belt tension adjustment
	Tester	For measuring each part

■ Maintenance Instructions

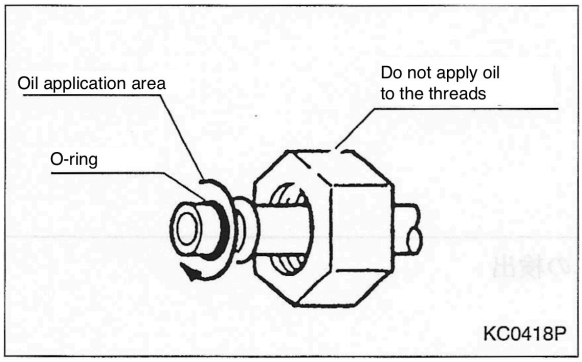
(1) Precautions for Maintenance of the Refrigeration System

<General Maintenance>

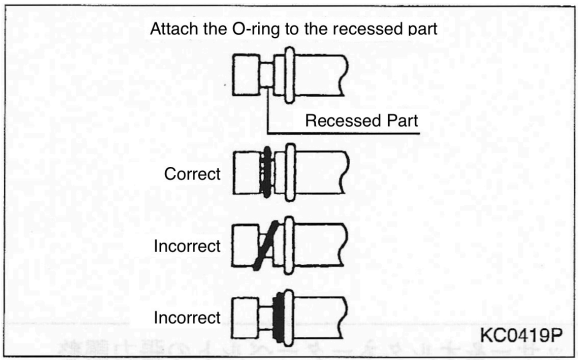
1. Always disconnect the battery terminals before installing or removing the battery.
2. As a general rule, installation and removal should be done indoors. (Air conditioners are particularly sensitive to dirt, dust, and moisture from rain.)
3. After removing the air conditioner parts, install the blind plug immediately and remove the direct plug just before connecting.



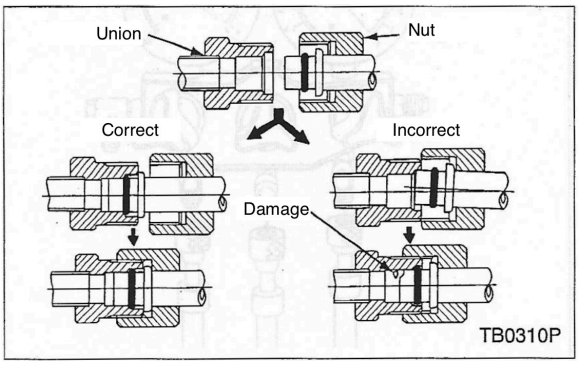
4. When connecting hoses and pipes, apply compressor oil (ZXL-100PG) to the ring.
   - Do not apply oil to the union threads to prevent excessive torque from being applied.

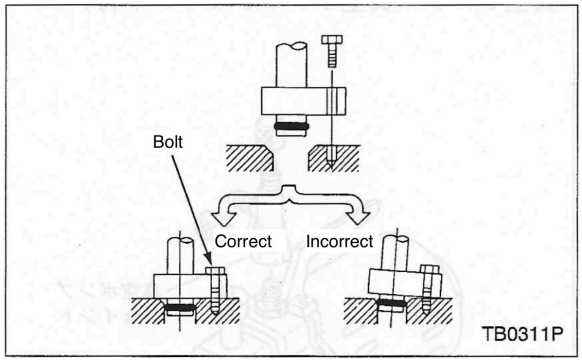


<O-ring Position when Connecting Pipes>



5. Initial tightening of unions and nuts should be done by hand.
6. When connecting with bolts, insert the end of the pipe with the O-ring into the hole on the other side to the same extent and push it in until the seat on the pipe side touches the seat surface on the other side (you will hear a click).



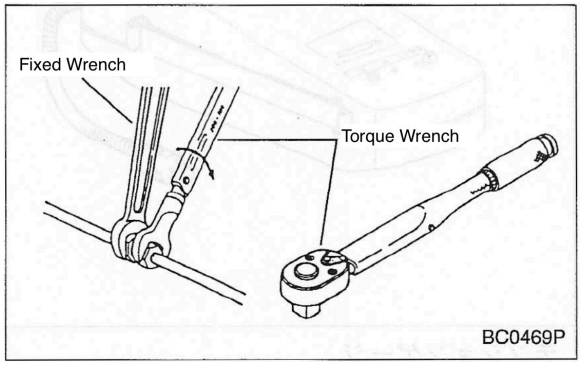


7. When connecting hoses or pipes, always use two wrenches (one for the tightening end and one for the torque wrench), holding one end in place and tightening it to the specified torque with the torque wrench.

NOTE

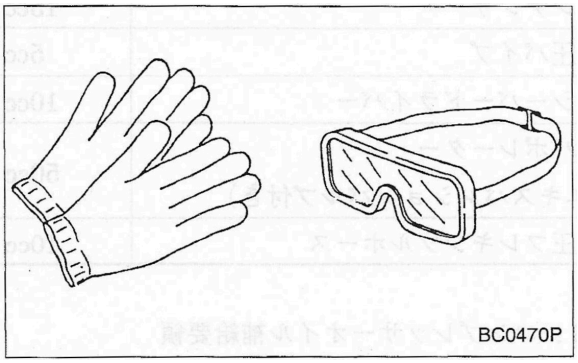
- If tightening with one wrench, excessive force will be applied, which may cause the pipe to twist, gas leaks due to insufficient tightening torque, or even damage.

8. Use a torque wrench to tighten the mounting bolts of each part to the specified torque.

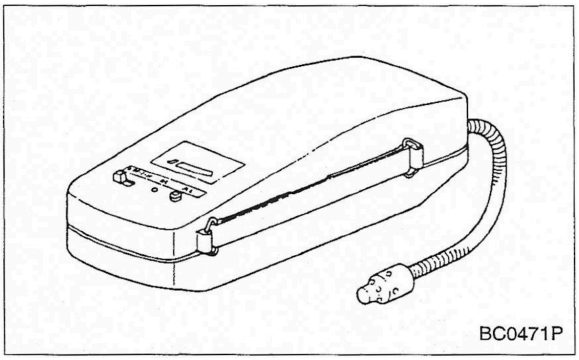


<Handling of Refrigerant>

1. Handle refrigerants in a well-ventilated area, avoid direct contact of liquid refrigerant with the skin, and wear protective glasses and gloves.

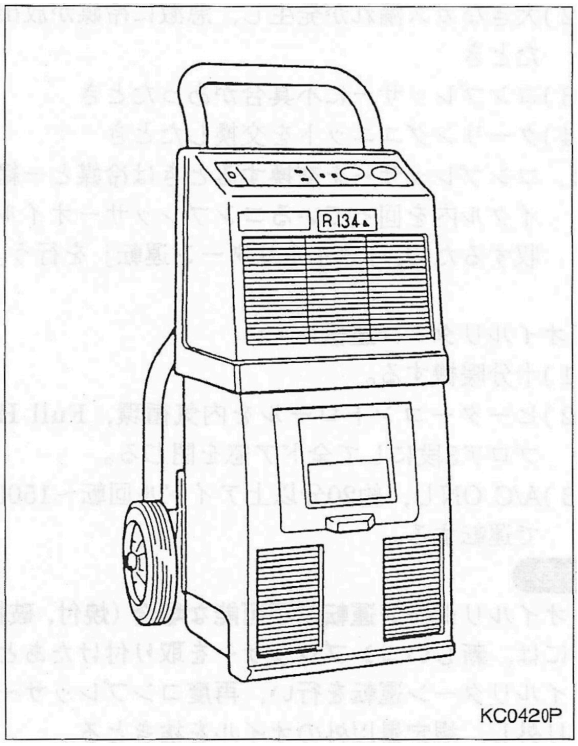


2. Handling of refrigerant cans.
   - Do not allow the ambient temperature of the refrigerant can to exceed 40°C.
   - Do not place the refrigerant can on the radiator or engine.
   - Do not shake the refrigerant can vigorously or subject it to shock.
   - Follow the precautions and instructions on the refrigerant can.
3. When checking for refrigerant leaks with a halide torch leak detector, be careful of the gas that comes out, as toxic gases will be generated if the refrigerant is exposed directly to the flame.When checking for refrigerant leaks, we recommend using the electric leak detector shown below.



<Recovery of Refrigerant>

The work is carried out using a refrigerant recovery device in order to prevent global warming.
(See the handling instructions)



<Compressor Oil Removal and Replenishment>

1. Compressor oil does not need to be checked or replenished as frequently as engine oil, but it should be checked or replenished in the following cases:
   1) At the start of the second season.
   2) When a large gas leak occurs and refrigerant is suddenly released
   3) When there is a problem with the compressor.
   4) When the cooling unit is replaced.
2. When replacing the compressor, perform "oil return operation" to recover the compressor oil that circulates in the cycle along with the refrigerant.

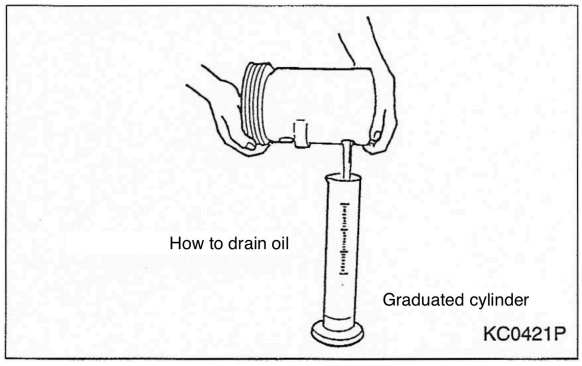
<Oil Removal Operation>

1) Warm up the engine thoroughly.
2) Set the heater control to recirculation, full throttle, and three-stage front doors, and close all door windows.
3) Turn on the A/C and run the engine at idle speed of 1500 rpm for at least 20 minutes.

NOTE

- If oil removal operation is not possible (due to seizure, damage, etc.), perform oil removal operation after installing a new compressor, then remove the compressor again and drain any oil that is not in the specified amount.

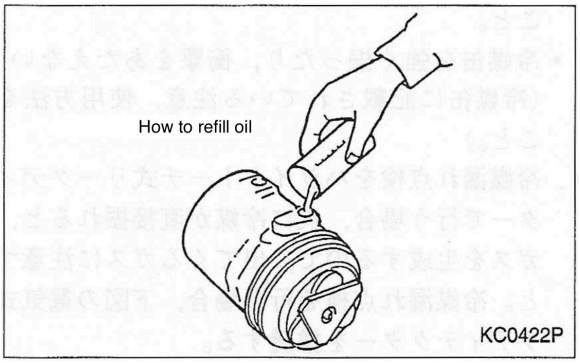
3. Turn the compressor upside down and drain the compressor oil from the low-pressure and high-pressure pipe connections, then measure the oil volume using a measuring cylinder.



4. Compressor oil refill amount list.

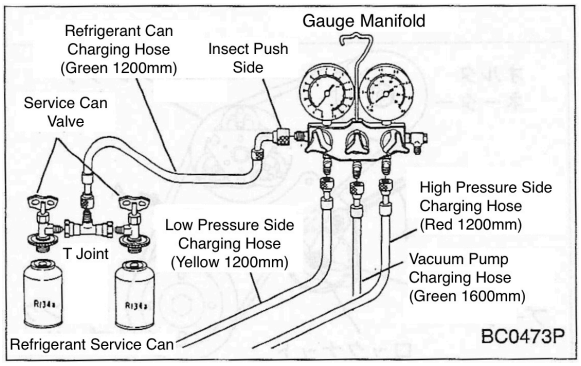
Replacement Parts	Oil Amount
Compressor	55cc
High pressure flexible hose	5cc
Condenser	15cc
High pressure pipe	5cc
Receiver dryer	10cc
Evaporator (with expansion valve)	50cc
Low pressure flexible hose	10cc

5. Compressor oil replenishment procedure.
   1) Measure the amount of oil to be added using a measuring cylinder.
   2) Inject from the high pressure side at the top of the compressor.
   3) After injection, tighten the plug.



<Refilling Refrigerant>

1. After evacuation, close the high and low pressure valves, remove the vacuum pump, and then install the refrigerant canister (HFC134a is used).
2. The air in the charge hose is pushed out by the refrigerant.
3. Open the low pressure valve to charge the specified amount of refrigerant.



Coolant Amount	400 ± 50g

<To Shorten the Refrigerant Charging Time>

1) Heat the refrigerant can and seal it
   - Place the refrigerant can in hot water below 40°C to warm it up.

NOTE

- Make sure the low pressure valve is open before putting it in hot water.
- Never put it in water over 40°C.
- Do not turn the refrigerant can upside down.

2) How to seal by operating the compressor: Make sure the high-pressure valve is closed, start the engine, turn on the A/C switch and turn on the compressor.

NOTE

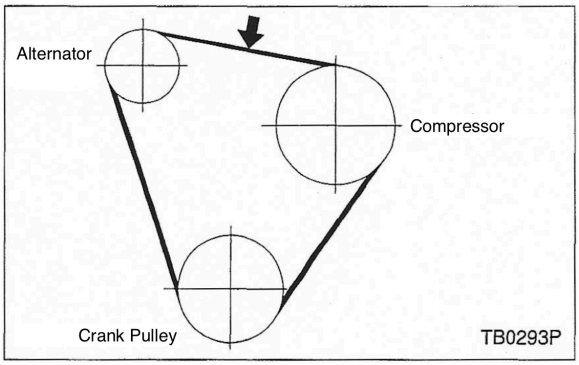
- Do not open the high pressure valve.
- Be sure to follow this precaution when opening the high-pressure valve, as it will cause high-pressure gas to flow back and rupture the refrigerant can.
- Keep engine speed below 1,500 rpm.
- Do not turn the refrigerant can upside down.
  - If the refrigerant can is turned upside down, the liquid refrigerant will enter the compressor, causing the liquid to compress and damage the compressor valve.

(2) V-Ribbed Belt

1. NA Engine

<Removal>

1. Disconnect the battery terminals.
2. Loosen the alternator mounting bolts.
3. Remove the A/C belt.



<Inspection>

- If the belt is cracked or damaged, replace it.

<Installation>

- Reverse the removal procedure.

NOTE

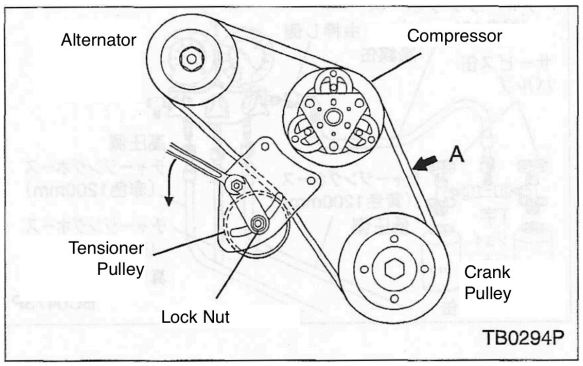
- Insert the bar from underneath the alternator, use the lever to pull up the alternator, and adjust the tension to the specified value at the arrow position. After running the engine (for at least 5 minutes), check that the tension is within the standard value.

Best Deflection (when pressed with 10 kg)		**Belt Tension Gauge Value**	
New Belt	Used Belt	New Belt	Used Belt
5~6mm	6~7mm	70 ± 10kg	50 ± 5kg

2. SC Engine

<Removal>

1. Disconnect the battery terminals.
2. Remove the right rear tire.
3. Remove the wheel apron cover.
4. Loosen the lock nut on the tension pulley.
5. Remove the A/C belt.



<Inspection>

- Replace the belt if it is cracked or damaged.

<Installation>

- Reverse the removal procedure.

NOTE

- While inserting a wrench downward into the mounting bolt of the tension pulley, adjust the tension to the specified level at the position indicated by the arrow, and after adjustment, be sure to tighten the lock nut on the tension pulley securely.

T 20 ± 2 N•m [2.0 ± 0.2 kg•m]

	Best Deflection (when pressed with 10 kg)		**Belt Tension Gauge Value**	
	New Belt	Used Belt	New Belt	Used Belt
A	4~5mm	4~6mm	75 ± 5kg	65 ± 5kg

(3) Capacitor

<Removal>

1. Remove the battery and battery bracket.
2. Recover the refrigerant.
3. Remove the under cover.
4. Remove the right front wheel side cover.
5. Remove the air guides on the left, right and bottom of the radiator.
6. Remove the clip from the condenser inlet high pressure pipe.
7. Disconnect the condenser inlet and outlet pipes.
8. Remove the capacitor mounting bolts and remove the capacitor.

<Installation>

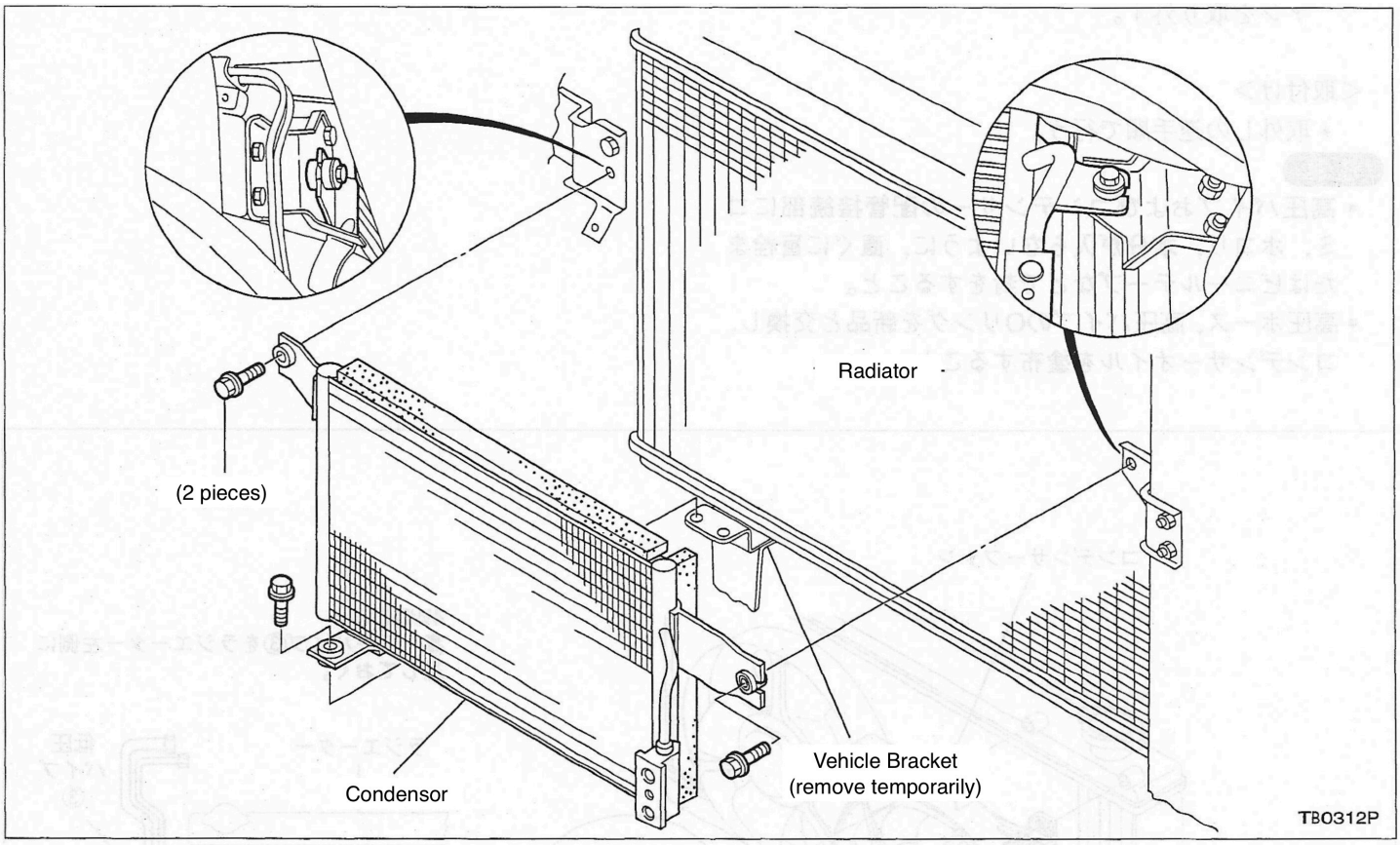
Follow the removal procedure in reverse.

NOTE

- Replace the rings on the high-pressure pipe and hose with new ones and apply compressor oil.

<Inspection>

- Check the condenser fan for damage.
  - If it is crushed, fix it with needle-nose pliers or a small screwdriver.
  - If dirt or mud is attached, clean it with compressed air or clean water. Never use a wire brush.



NOTE

- Immediately seal the high-pressure pipe and condenser piping connections with plugs or vinyl tape to prevent dirt, dust, and moisture from entering.
- Be careful not to damage the radiator core.

(4) Condenser Fan

1. 4WD

<Removal>

1. Remove the battery terminals and the battery.
2. Recover the refrigerant.
3. Remove the under cover.
4. Remove the side cover of the right front wheel.
5. Remove the air guides on the left, right and bottom of the radiator.
6. Remove the clip from the high pressure pipe at the condenser inlet.
7. Disconnect the condenser inlet and outlet pipes.
8. Remove the washer reservoir tank.\
9. Remove the radiator mounting bolts.
10. Remove the battery bracket.
11. Disconnect the condenser fan harness connector.
12. Remove the condenser mounting bolts and remove the condenser fan.

<Installation>

- Reverse the removal procedure.

NOTE

- Immediately seal the high-pressure pipe and condenser piping connections with plugs or vinyl tape to prevent dirt, dust, and moisture from entering.
- Replace the rings on the high-pressure hose and high-pressure pipe with new ones and apply condenser oil.

2. 2WD

<Removal>

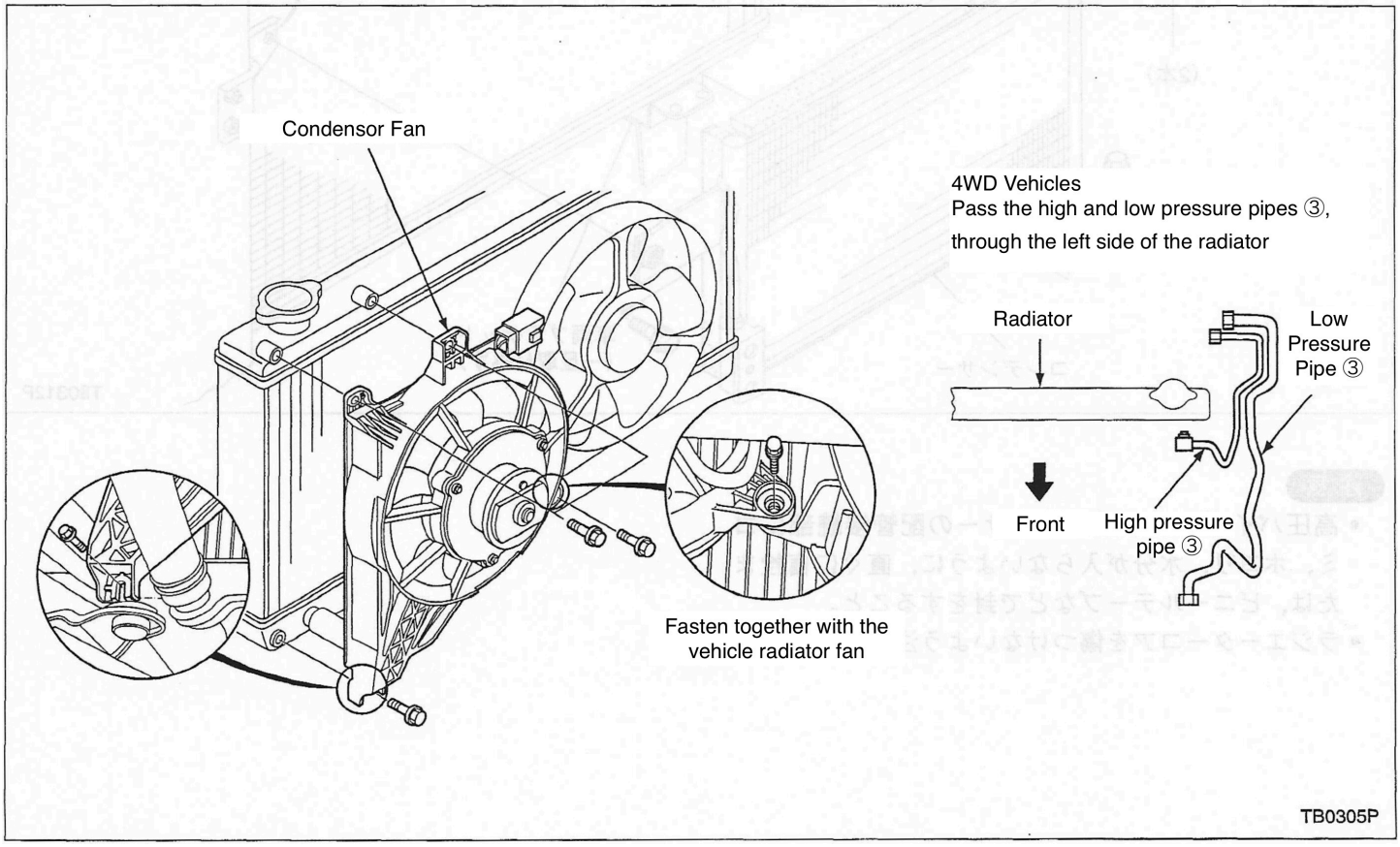
1. Disconnect the battery terminals.
2. Disconnect the condenser fan harness connector.
3. Remove the condenser fan mounting bolts and remove the condenser fan.

<Installation>

- Reverse the removal procedure.

NOTE

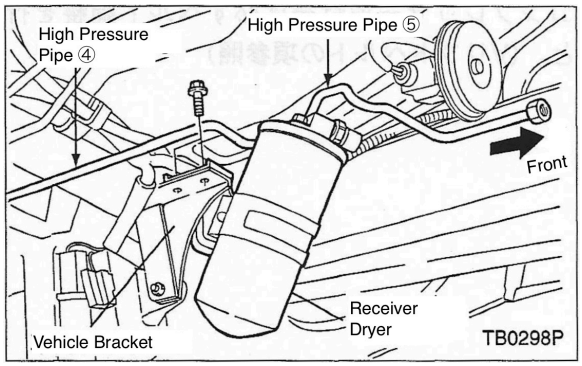
- Immediately seal the high-pressure pipe and condenser piping connections with plugs or vinyl tape to prevent dirt, dust, and moisture from entering.
- Replace the o-rings on the high-pressure hose and high-pressure pipe with new ones and apply condenser oil.



(5) Receiver Dryer

<Removal>

1. Disconnect the negative ⊖ battery terminals.
2. Recover the refrigerant.
3. Disconnect the receiver-drier inlet and outlet pipes.
4. Remove the receiver dryer.



NOTE

- Immediately seal the high-pressure pipe and receiver-drier piping connections with plugs or vinyl tape to prevent the entry of dirt, dust, and moisture.

<Installation>

- Follow the removal procedure in reverse.

NOTE

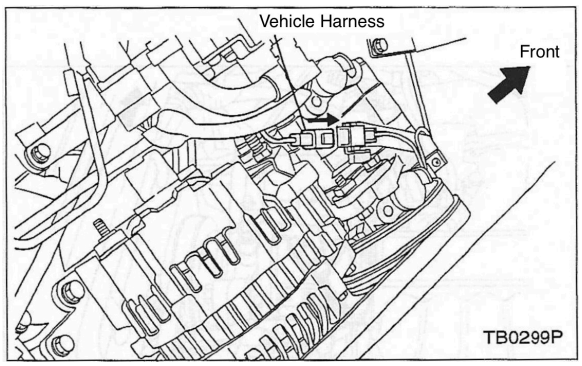
- Replace the high-pressure pipe and receiver-drier rings with new ones and apply compressor oil.

(6) Compressor

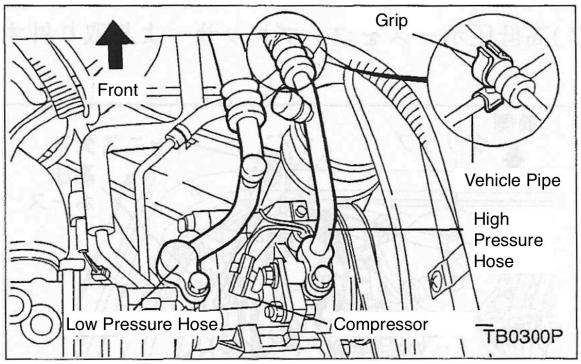
1. NA Engine

<Removal>

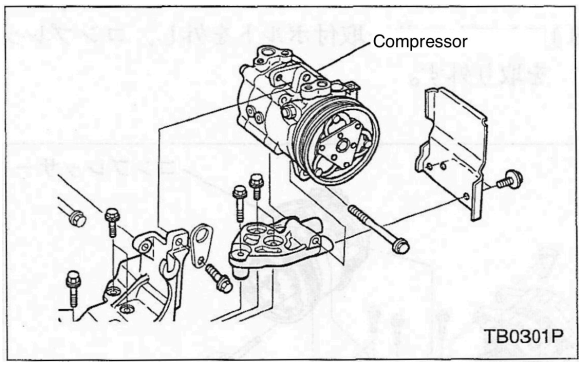
1. Disconnect the battery terminals.
2. Recover the refrigerant.
3. Remove the compressor belt.
4. Disconnect the compressor harness connector.



5. Remove the high and low pressure hoses from the compressor.



6. Remove the compressor mounting bolts and remove the compressor.



<Installation>

- Follow the removal procedure in reverse.

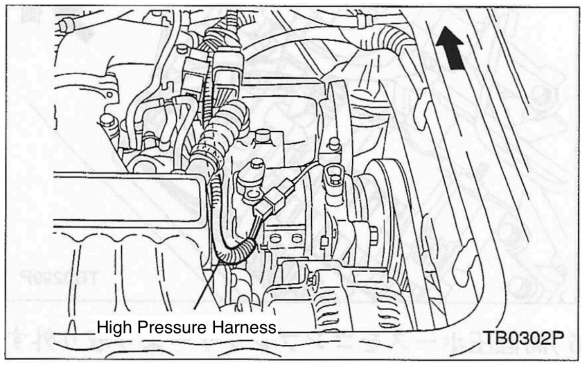
NOTE

- When replacing the compressor, adjust the amount of compressor oil.
- Replace the rings on the high and low pressure hoses with new ones and apply compressor oil.
- After installing the compressor, be sure to adjust the belt (see the V-ribbed belt section).

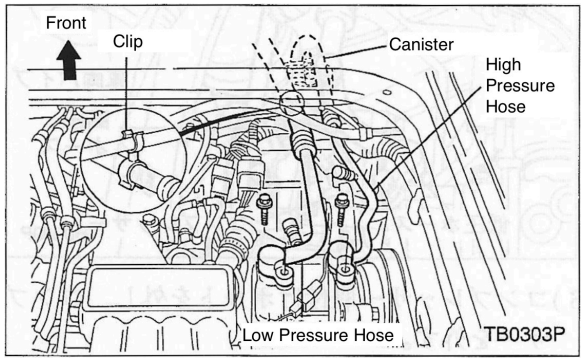
2. SC Engine

<Removal>

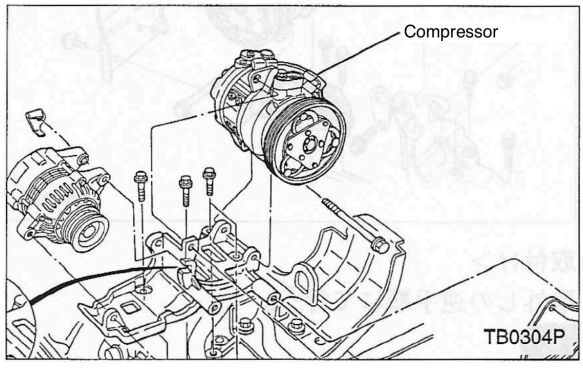
1. Disconnect the battery terminals.
2. Recover the refrigerant.
3. Remove the right rear tire.
4. Remove the wheel apron cover.
5. Remove the compressor belt.
6. Disconnect the compressor harness connector.



7. Remove the high and low pressure hoses from the compressor.



8. Remove the compressor mounting bolts and remove the compressor.



<Installation>

- Reverse the removal procedure.

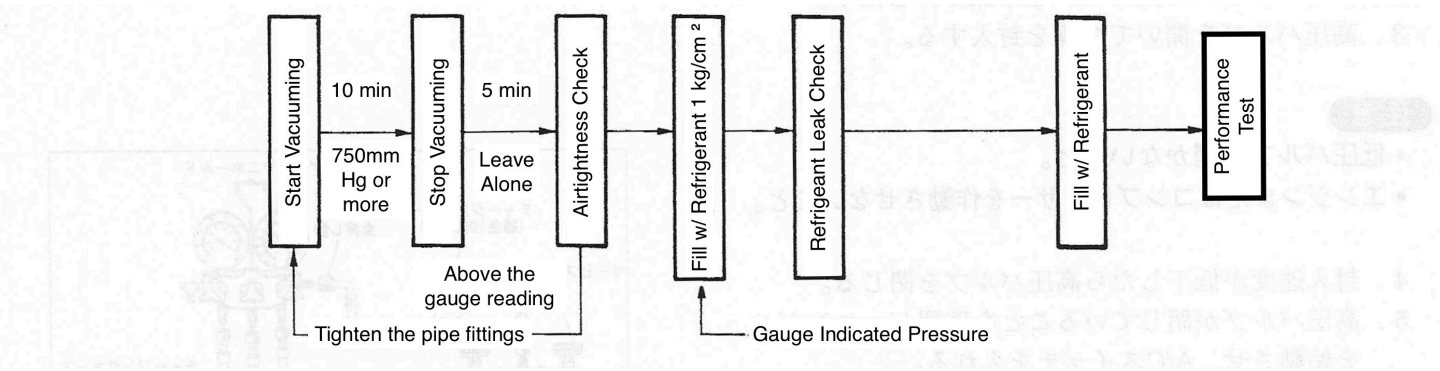
NOTE

- When replacing the compressor, adjust the amount of compressor oil.
- Replace the rings on the high and low pressure hoses with new ones and apply compressor oil.
- After installing the compressor, be sure to adjust the belt (see the V-ribbed belt section).

(7) Filling Refrigerant

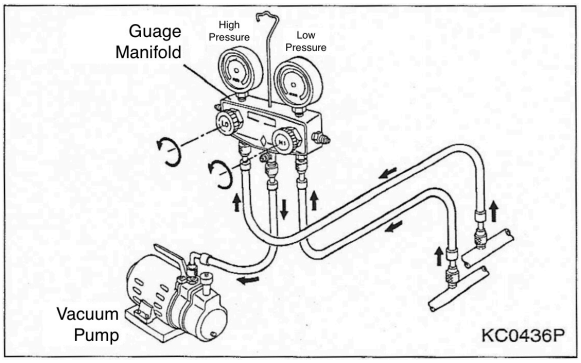
<Vacuuming Instructions>

To remove air and moisture from the air conditioning system, be sure to vacuum the system before charging the refrigerant.



<Vacuum Procedure>

1. Connect the gauge manifold charge hose to the low-pressure and high-pressure pipes on the vehicle body.
2. Use the charge hose to connect the gauge manifold to the vacuum pump.
3. Activate the vacuum pump and continue to draw a vacuum for approximately 10 minutes after the low pressure gauge reaches 750 mmHg or higher.
4. Close the low-pressure and high-pressure valves.
5. Leave for 5 minutes and check that the gauge needle does not change.
   - If the gauge needle returns to 0, tighten the piping and then draw a vacuum again.



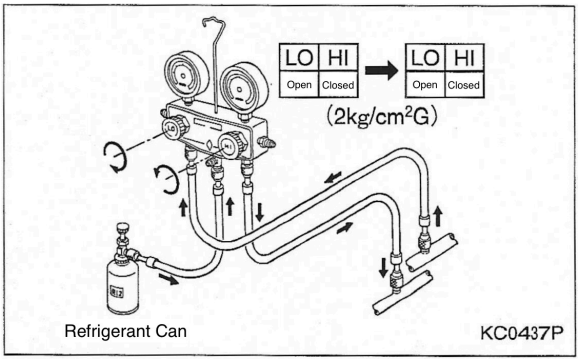
<Leak check>

1. Remove the vacuum pump and connect the refrigerant can.
2. The air in the charge hose is pushed out by the refrigerant.
3. Open the high pressure valve and charge the refrigerant until the low pressure gauge reaches 1 kg/cm³.
4. Close the high pressure valve.
5. Use a detector to check for gas leaks.

NOTE

- Be careful of ignition of gasoline, etc.
- Do not inhale combustion gases (toxic).

6. If there is a leak, tighten it.



<Filling Refrigerant>

1. After evacuation, close the high and low pressure valves, remove the vacuum pump, and then install the refrigerant canister (HFC134a is used).
2. The air in the charge hose is pushed out by the refrigerant.
3. Open the high-pressure valve to seal in the refrigerant.

NOTE

- Do not open the low pressure valve.
- Do not run the engine or compressor.

4. When the injection speed slows down, close the high-pressure valve.
5. Make sure the high-pressure valve is closed, start the engine, and turn on the A/C switch.

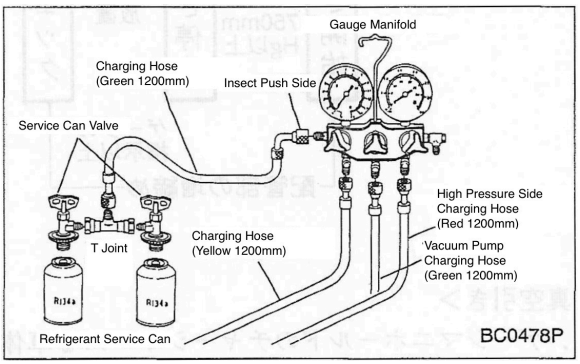
NOTE

- The engine speed must be below 1,500 rpm.

6. Open the low pressure valve and the valve on the refrigerant can to seal in the refrigerant.

NOTE

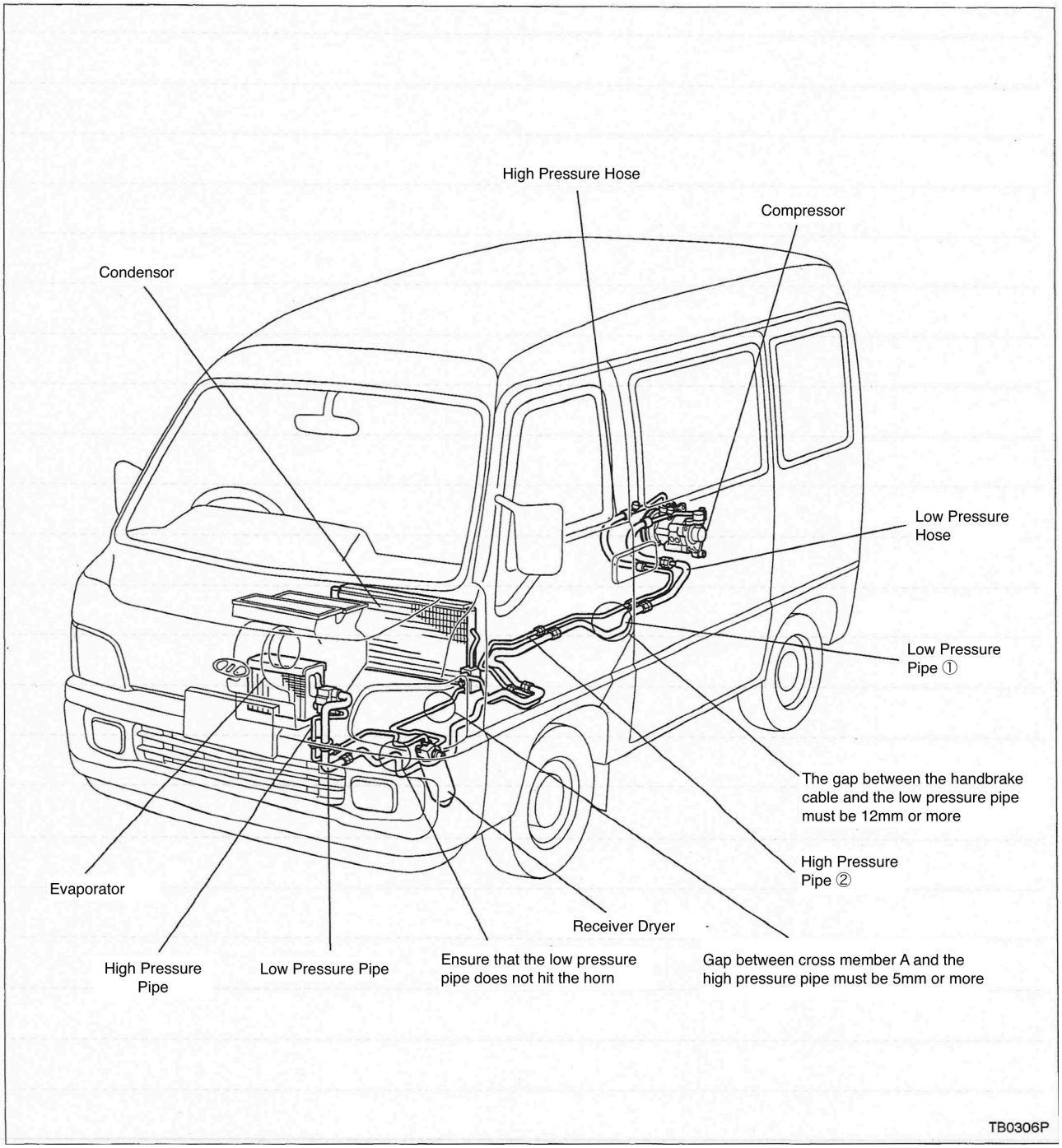
- Do not open the high pressure valve.
- Be sure to follow this precaution as opening the high-pressure valve will cause high-pressure gas to flow back and rupture the refrigerant can.
- Do not turn the refrigerant can upside down.



Refrigerant Amount	400 ± 50g

(8) Safety Checklist

- After completing the maintenance, check the following areas again.
  1) Check whether pipes and hoses are deformed.
  2) Whether the changes will cause interference with other parts.
  3) Gas leakage due to deformation and poor bonding.
- As a general rule, the gap between air conditioning parts and vehicle parts with different vibration systems must be at least 25 mm.
- Ensure that there is a gap of at least 15 mm between flexible hoses or pipes and vehicle parts.
- Make sure to tighten the pipe joints securely to the specified torque.
- Pass the low-pressure pipe ① under the handbrake cable.
- High pressure pipe ② and low pressure pipe ② are passed above the vehicle cable.
- Insert the high-pressure hose from under the floor, pass it over the top of the canister, and connect it to the compressor.
- Insert the low-pressure hose from under the floor and connect it to the compressor.



MEMO

8 Electrical

8 - 1 Lighting

[1] Front Lights

■ Specifications

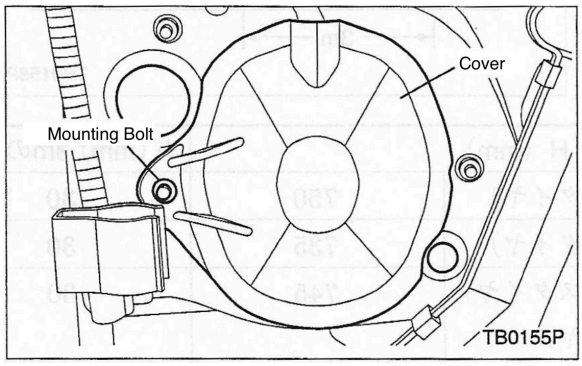
Light Type	Truck & Panel Van	Van & Dias	Dias SC
Headlamps	12V 60/55W (Halogen)	←	←
Front Turn Signal Lamps Side Turn Signal Lamps	12V 21W Orange	←	←
Clearance Lamps	12V 5W Orange	←	←
Fog Lamps	12V 35W White or Yellow	←	12V 35W White

■ Maintenance instructions

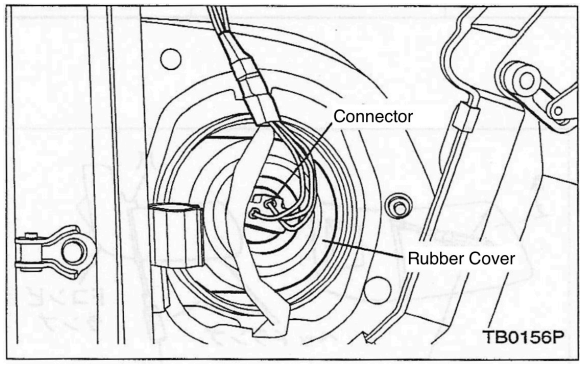
(1) Headlamp

<Valve replacement>

1. From inside the room, remove the mounting bolt (1 piece) and



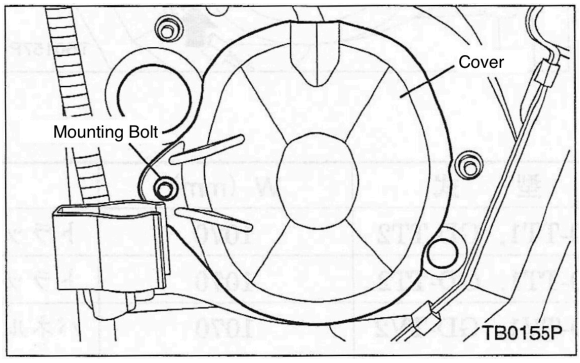
remove the cover.



2. Disconnect the connector and remove the rubber cover.
3. Remove the valve retaining spring and replace the valve.

<Removal>

1. Remove the front combination lamp.
2. From inside the room, remove the mounting bolt (1 piece) and



remove the cover.

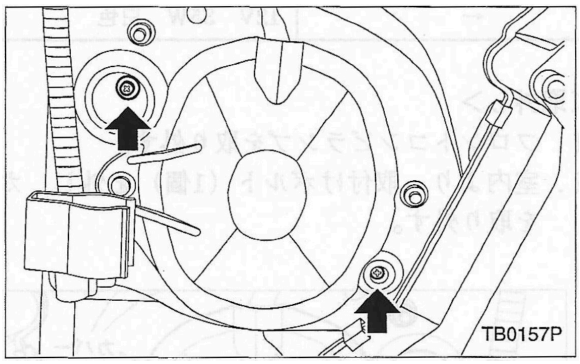
3. Disconnect the connector.
4. Remove the three mounting nuts and remove the headlamp.

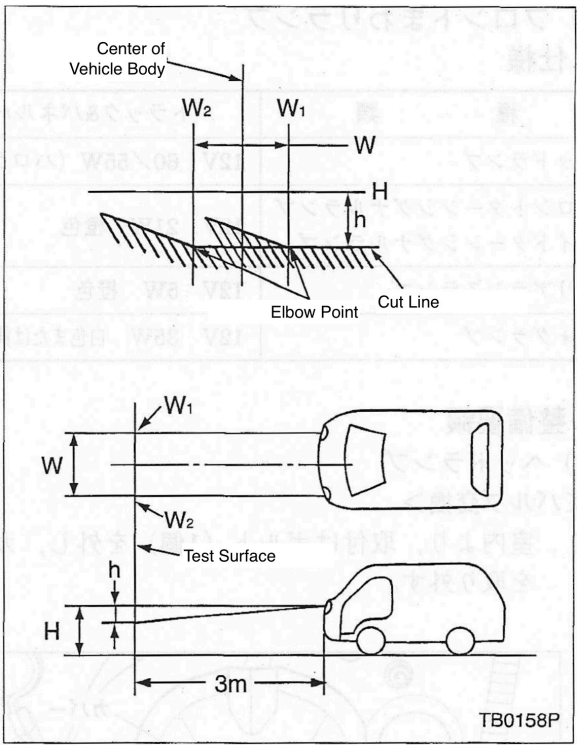
<Installation>

Follow the removal procedure in reverse.

<Optical Axis Adjustment>

1. Adjust the tire pressure to the specified value.
2. Place the vehicle on a level surface.
3. Load the vehicle with 1 passenger, included tools, spare tire, but nothing else.
4. Turn on the passing beams and adjust them using the adjustment screws.



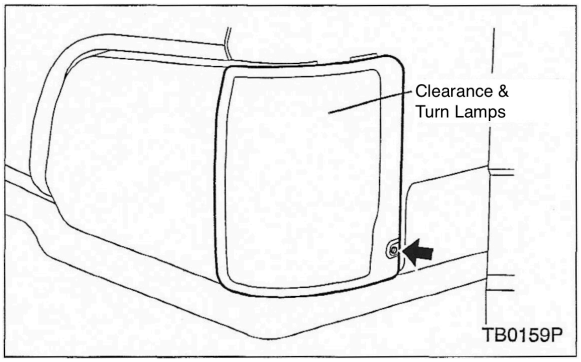


Model	W (mm)	H (mm)		H (mm) at 3m
GD-TT1, GD-TT2	1070	Truck (Bias Tire)	750	30
GD-TT1, GD-TT2	1070	Truck (Radial Tire)	735	30
GD-TV1, GD-TV2	1070	Panel Van (Bias Tire) Van (Bias Tire	745	30
GD-TV1, GD-TV2	1070	Panel Van (Radial Tire) Van (Radial Tire) Dias	730	30

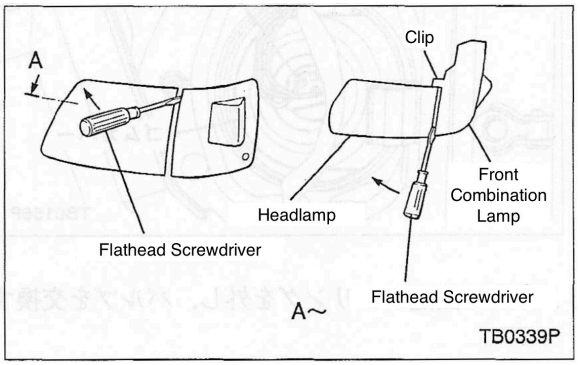
(2) Clearance Lamp & Turn Signals

<Removal>

1. Remove the 1 mounting screw.



2. Insert a flat-head screwdriver wrapped in a rag between the headlamp and the front combination lamp, and while pushing the front combination lamp outward, pull the lamp forward to remove it.
3. Disconnect the connector and remove the lamp.



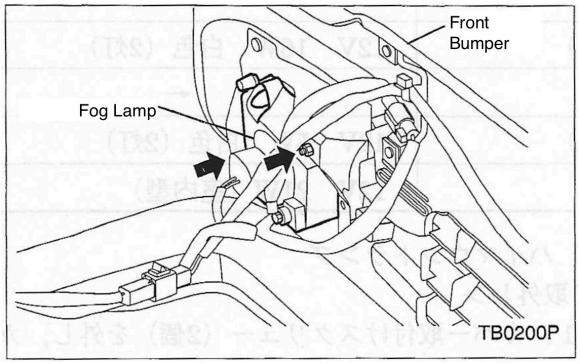
<Installation>

1. Align the insertion part of the F combination lamp with the receiving part of the headlamp and insert it.
2. Tap the top of the front combination lamp with your hand to hook the tab.
3. Install the mounting screw (1 piece).

(3) Fog Lights

<Removal>

1. Remove the front bumper.
2. Remove the two mounting nuts.



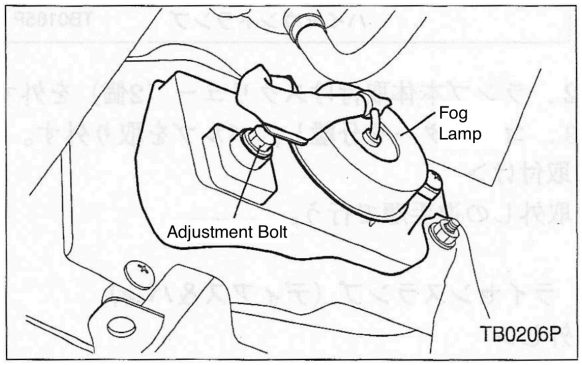
3. Disconnect the connector and remove the fog lamp.

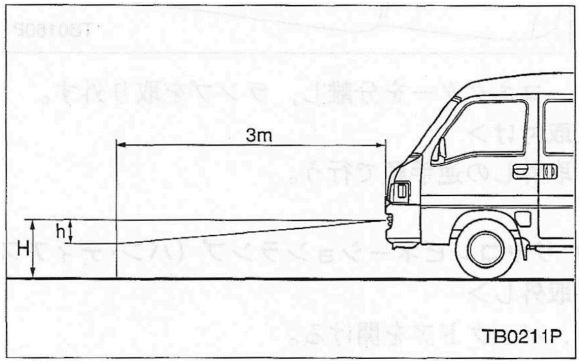
<Installation>

Follow the removal procedure in reverse.

<Adjustment>

Turn the adjustment bolt to adjust.





Model	H (mm)		H (mm) at 3m
GD-TT1, GD-TT2	Truck (Bias Tire)	495	75
GD-TT1, GD-TT2	Truck (Radial Tire)	480	75
GD-TV1, GD-TV2	Panel Van (Bias Tire) Van (Bias Tire	490	75
GD-TV1, GD-TV2	Panel Van (Radial Tire) Van (Radial Tire) Dias	475	75

[2] Rear Lamps

Specifications

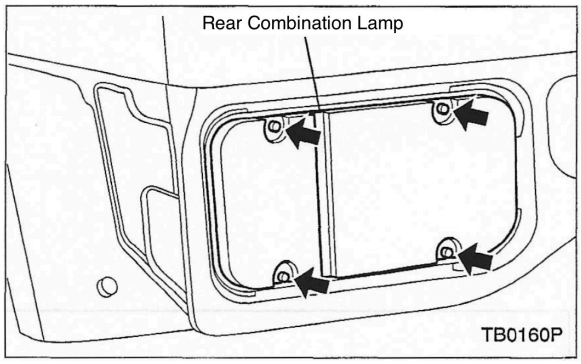
Light Type	Truck & Panel Van	Van & Dias
Rear Turn Signal Lamp	12V 21W Orange	←
Stop & Tail Lamp	12V 21/5W Red	←
Backup Lamp	12V 21W White (1 light)	12V 16W White (2 lights)
Reflex Reflector	Red	←
License Lamp	12V 10W White (1 light)	12V 5W (2 lights)
High Mount Lamp	—	12V 21W (Inside light)

Maintenance Instructions

(1) Rear Combination Lamps (Truck & Panel Vans)

<Removal>

1. Remove the four tapping screws.



2. Disconnect the connector and remove the lamp.

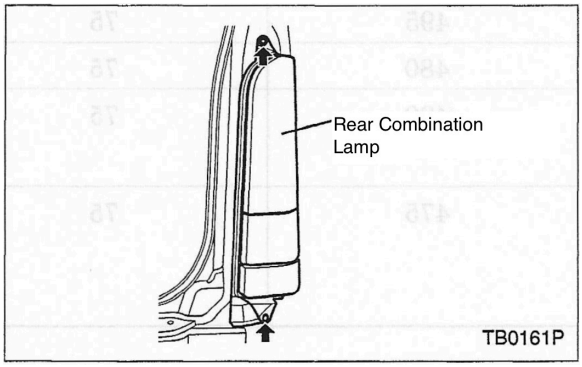
<Installation>

Follow the removal procedure in reverse.

(2) Rear Combination Lamp (Van & Dias)

<Removal>

1. Open the back door.
2. Remove the two tapping screws and remove the rear combination lamp assembly.



3. Disconnect the connector and remove the valve.

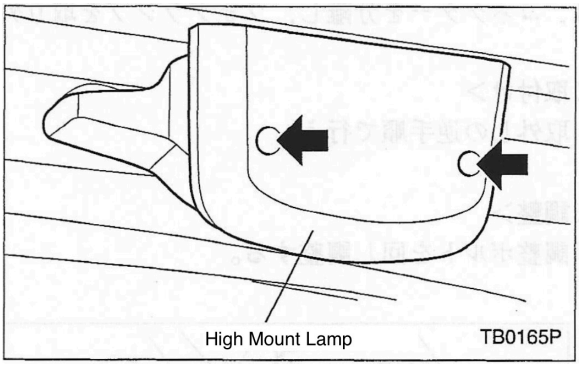
<Installation>

Follow the removal procedure in reverse.

(3) High Mount Lamp

<Removal>

1. Remove the two cover fixing screws and remove the cover.



2. Remove the lamp body mounting screws (2 pieces).
3. Disconnect the connector and remove the valve.

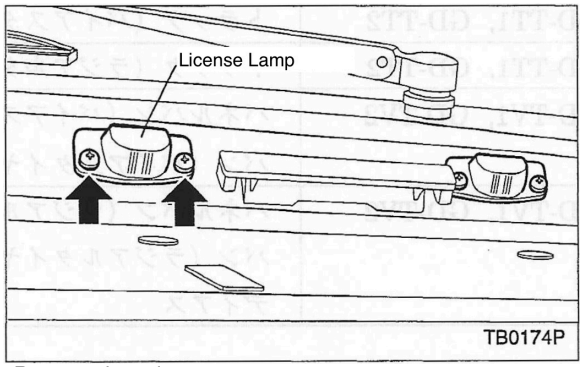
<Installation>

Follow the removal procedure in reverse.

(4) License Lamp (Van & Dias)

<Removal>

1. Remove the two lens mounting screws and remove the lens.



2. Remove the valve.

(5) License Lamp (Truck & Panel Van)

1. Remove the two mounting screws.
2. Disconnect the connector and remove the lamp.

[3] Indoor Lamp

■ Specifications

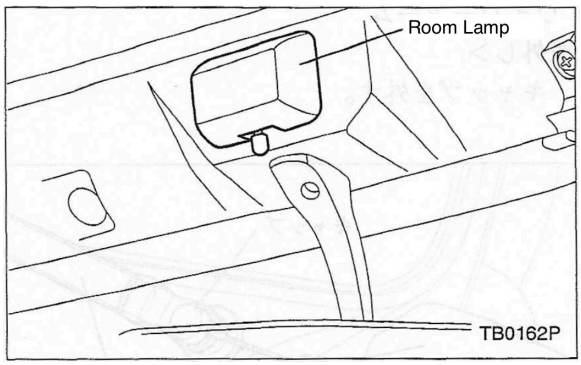
Light Type	Truck	Panel Van	Van & Dias
Work Lamp	12V 10W (Standard) 12V 20W (JA)	—	—
Luggage Compartment Lamp	—	12V 10W (Akabou)	—
Cargo Room Lamp	—	—	12V 8W
Room Lamp	12V 8W 12V 18W (High Roof Vehicle)	←	12V 8W

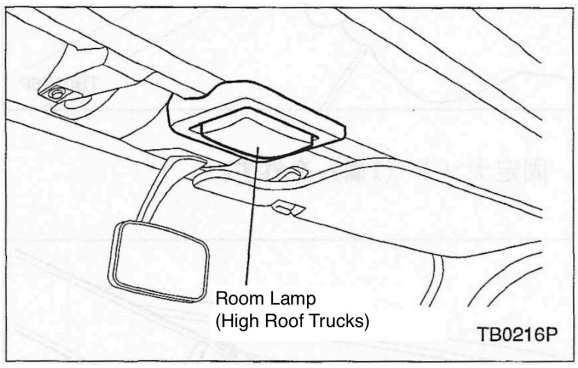
■ Maintenance Instructions

(1) Room Lamp

<Removal>

1. Remove the lens.





2. Remove the two mounting screws.
3. Disconnect the connector and remove the loom valve.

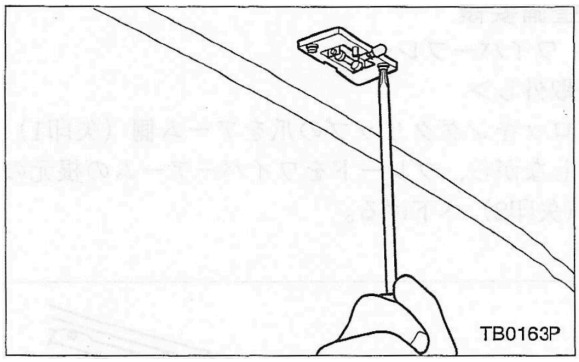
<Installation>

Follow the removal procedure in reverse.

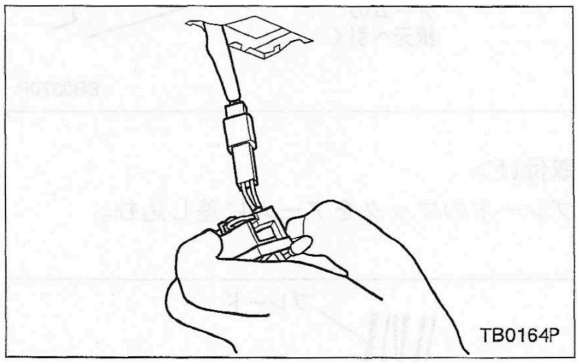
(2) Cargo Room Lamp

<Removal>

1. Remove the lens.
2. Remove the two mounting screws.



3. Disconnect the connector and remove the cargo compartment valve.



<Installation>

Follow the removal procedure in reverse.

8 - 2 Wiper & Washer

[1] Front Wiper

■ Specifications

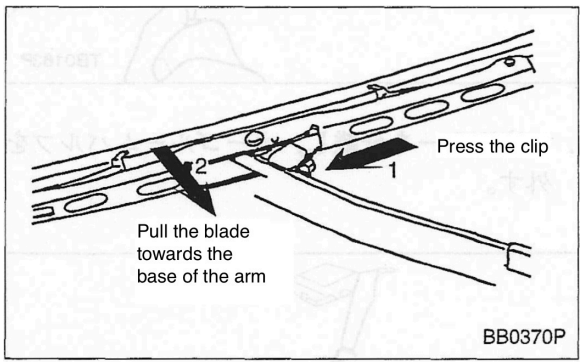
Item				Specification
Wiping Angle (°)			Driver's Side	85
			Passenger Side	102
Motor	Rated Voltage (V)		12	
	Characteristics with No Load	Rotation Speed (rpm)	LOW	50 ± 5
			HIGH	74 ± 8
		Current (A)	2.2 or less	
	Characteristics with Load	Torque (kg•m)	LOW	1.5
			HIGH	1.3
		Current (A)	22 or less	
Blade		Length (mm)	Driver's Side	425
			Passenger Side	425

■ Maintenance Instructions

(1) Wiper blades

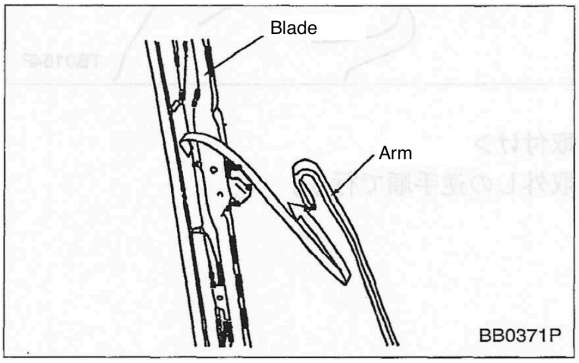
<Removal>

While pressing the locking clip tab toward the arm (arrow 1), lower the blade toward the base of the wiper arm (arrow 2).



<Installation>

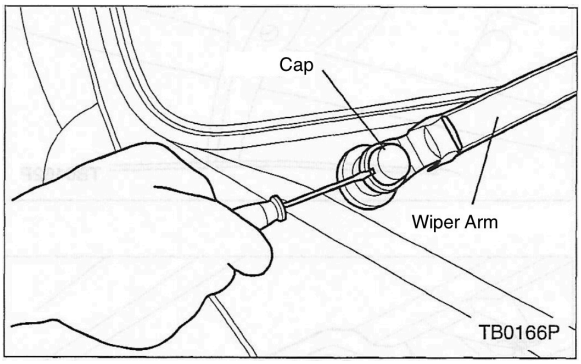
Insert the hook of the plaid into the arm.



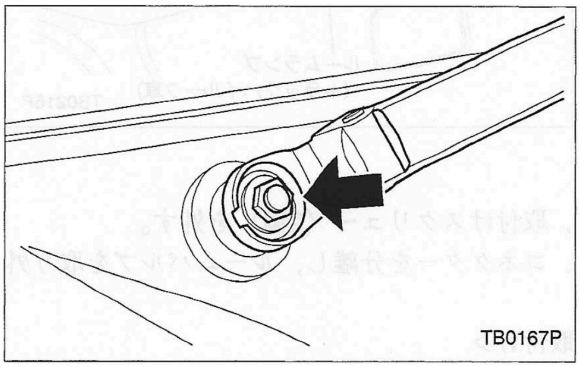
(2) Wiper Arm

<Removal>

1. Remove the cap.



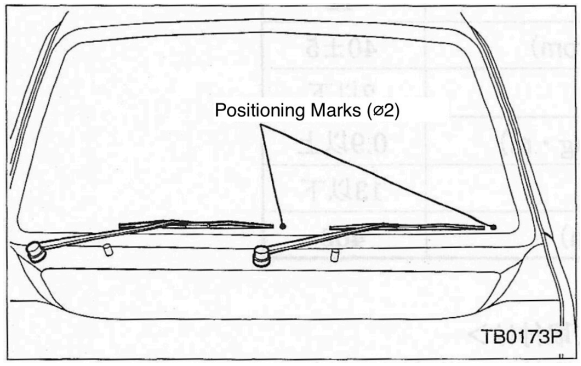
2. Remove the fixing nut (1 piece).



3. Pull the wiper arm off the shaft and remove the wiper arm.

<Installation>

Follow the removal procedure in reverse.
Align the tip of the blade with the alignment mark (2) in the ceramic print.

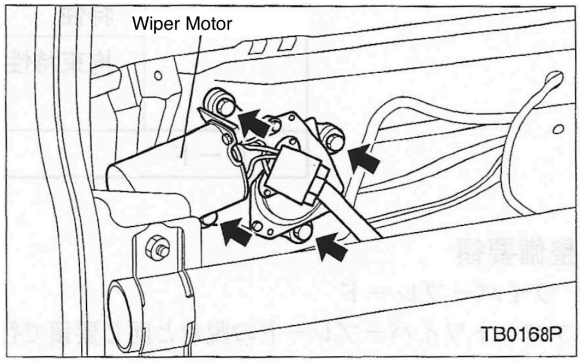


Fixed Nut Tightening Torque
T 13.7 ± 1.9 N•m [1.4 ± 0.2 kg•m]

(3) Wiper Motor

<Removal>

1. Remove the instrument panel.
2. Disconnect the wiper motor connector.
3. Separating the links and the connecting joints.
4. Remove the four mounting bolts.



5. Remove the wiper motor.

<Installation>

Follow the removal procedure in reverse.

[2] Rear Wiper

■ Specification

Item			Specification
Wiping Angle (°)			108
Motor	Rated Voltage (V)		12
	Characteristics with No Load	Rotation Speed (rpm)	40 ± 5
		Current (A)	2 or less
	Characteristics with Load	Torque (kg•m)	0.9 or less
		Current (A)	13 or less
Blade		Length (mm)	400

■ Maintenance instructions

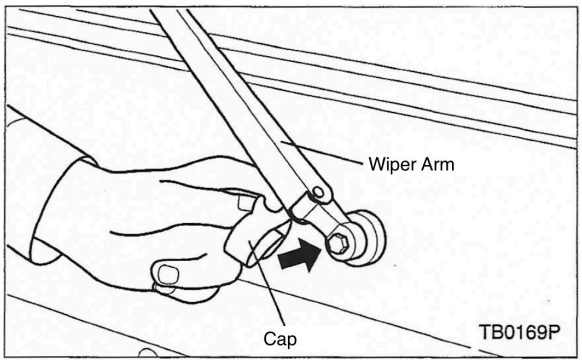
(1) Wiper Blade

Remove and install the wiper blade in the same way as the front wiper blade.

(2) Wiper Arm

<Removal>

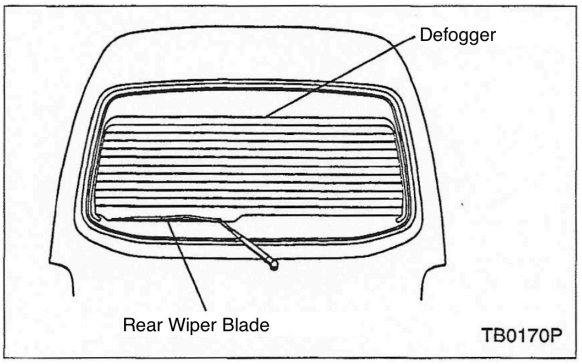
1. Remove the cap.



2. Remove the fixing nut (1 piece).
3. Pull the wiper arm off the shaft and remove the wiper arm.

<Installation>

Follow the removal procedure in reverse.
Align the wiper blade with the lowest heated wire and remove it.

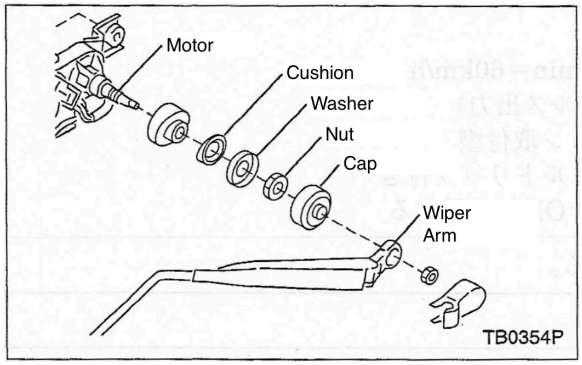


Fixed nut tightening torque
T 11.8 ± 2 N•m [1.2 ± 0.2 kg•m]

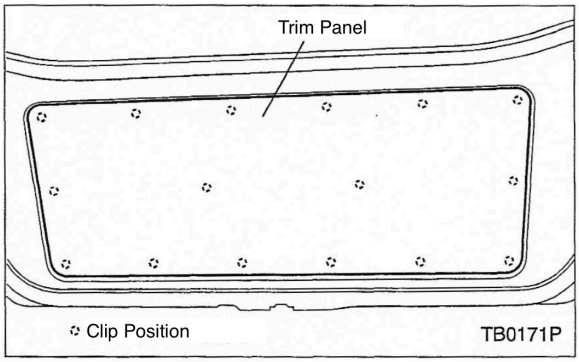
(3) Rear Wiper Motor

<Removal>

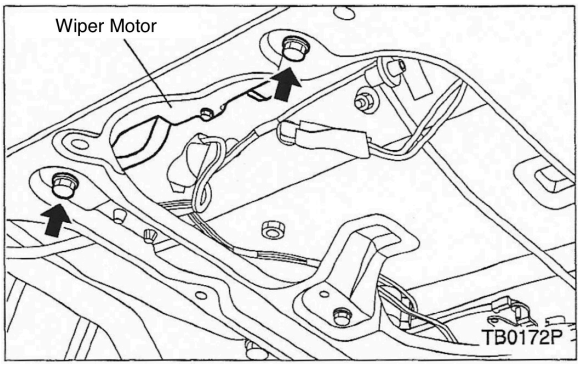
1. Remove the wiper arm.
2. Remove the exterior mounting parts.



3. Remove the back door trim.



4. Remove the two mounting bolts and remove the wiper motor.



<Installation>

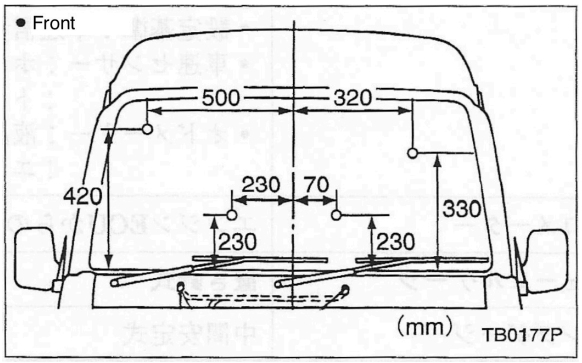
Follow the removal procedure in reverse.
Rear wiper motor mounting nut tightening torque
T 7.8 ± 1.5 N·m [0.8 ± 0.15 kg•m]

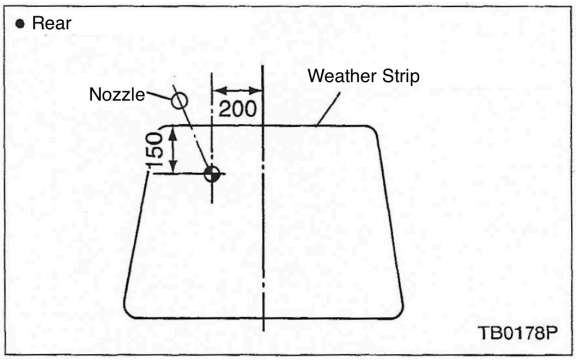
[3] Washer

■ Maintenance instructions

<Adjustment>

Adjust the washer fluid spray position as shown in the diagram.

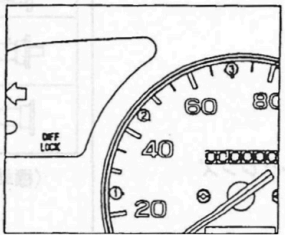




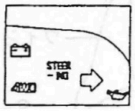
8 - 3 Combination Meter

Overview

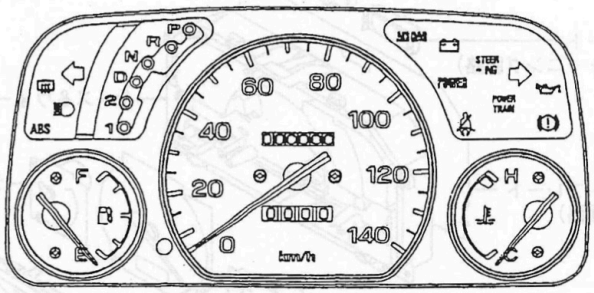
Speedometer and Speed Sensor	<Cable Speedometer> Setting Standard: Vehicle Speed Sensor: Odometer:	 Speed Cable 637rpm = 60 km/h Reed switch type, built-in speedometer With Reverse prevention mechanism
	<Cable Speedometer> Setting Standard: Vehicle Speed Sensor: Odometer:	 Vehicle speed signal 2548 pulses/min = 60 km/h Hall IC type (4 pulse output) Transmission mounted type LCD display with digital trip indicator Displayed when the engine is ON
Tachometer	Driven by a signal from the engine ECU	
Fuel Gauge	Needle type	
Temperature Gauge	Intermediate stable type	



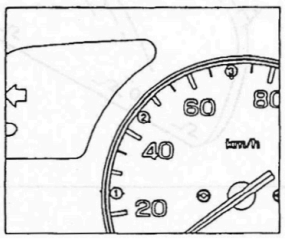
For MT Vehicles
(Speedometer & upper left warning light lens)



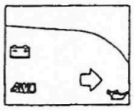
For MT vehicles (upper right warning light lens)



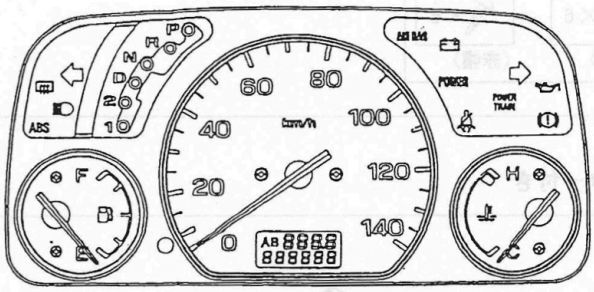
Without Tachometer (Standard)



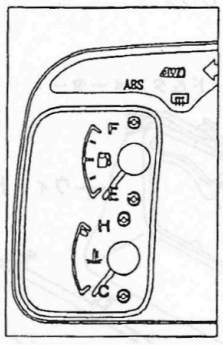
For MT Vehicles
(Speedometer & upper left warning light lens)



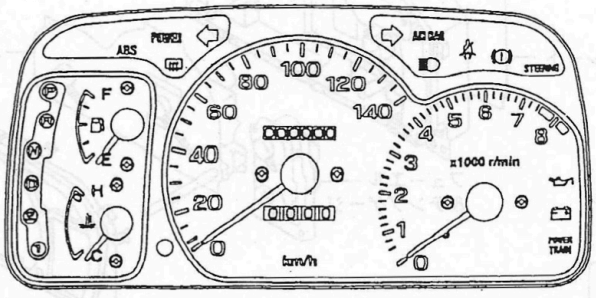
For MT vehicles (upper right warning light lens)



Without Tachometer (Akabou)



For MT vehicles

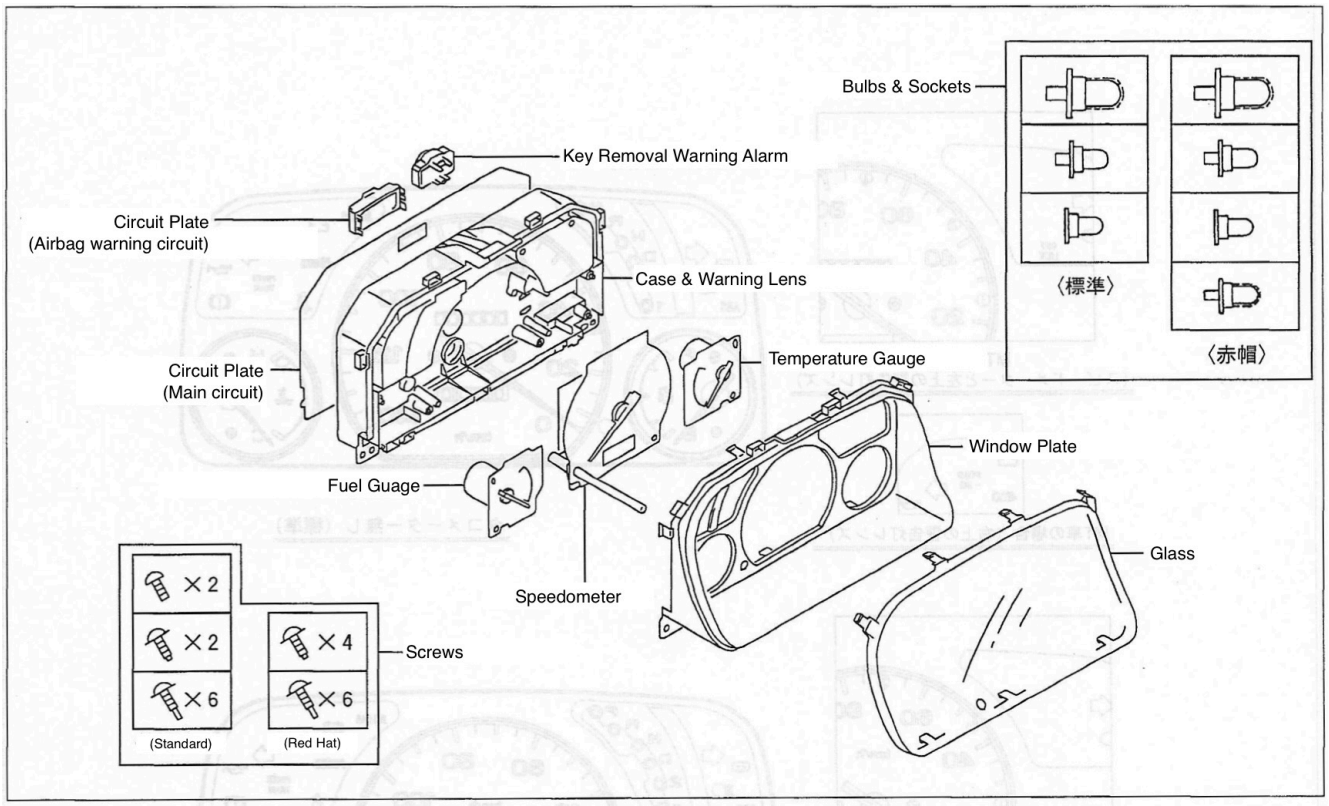


With Tachometer

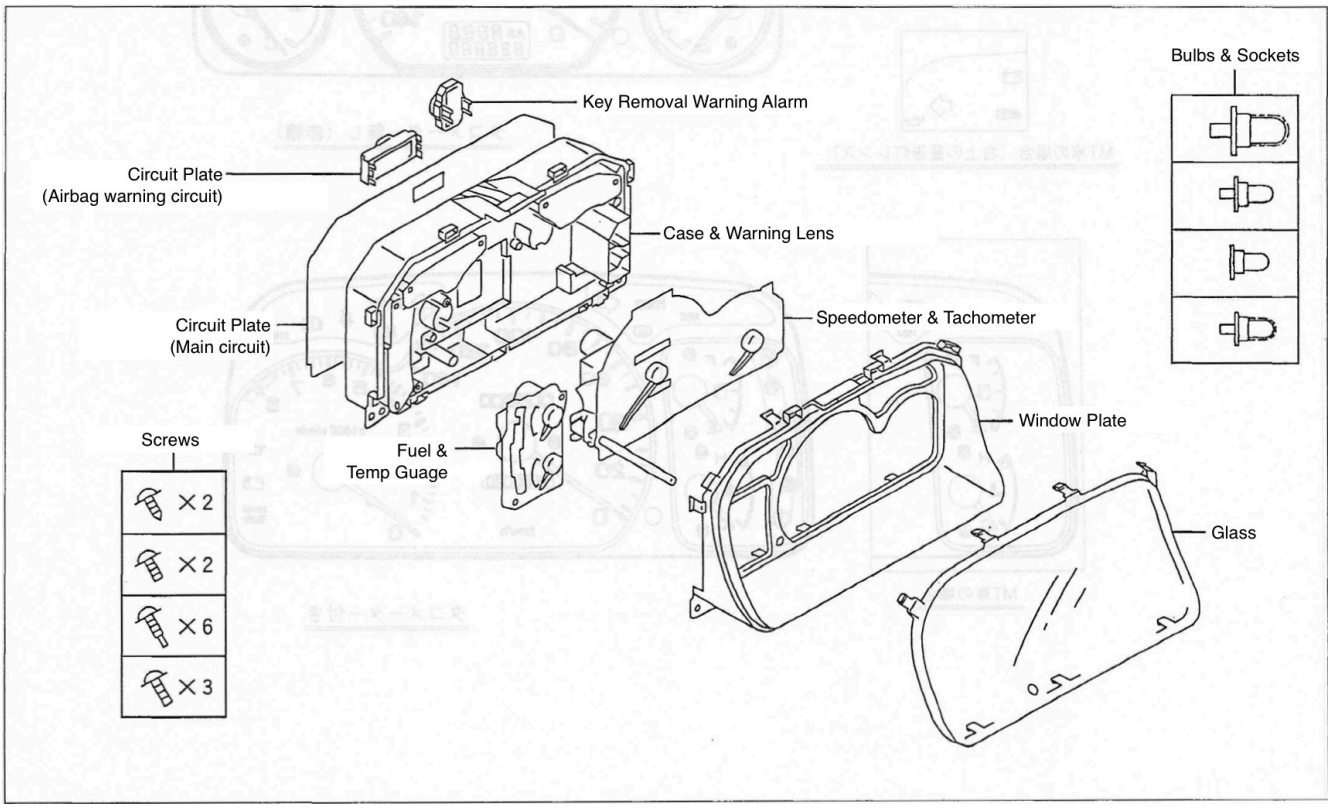
TB0044S

■ Components

(1) Without Tachometer



(2) With Tachometer



■ Structure & Operation

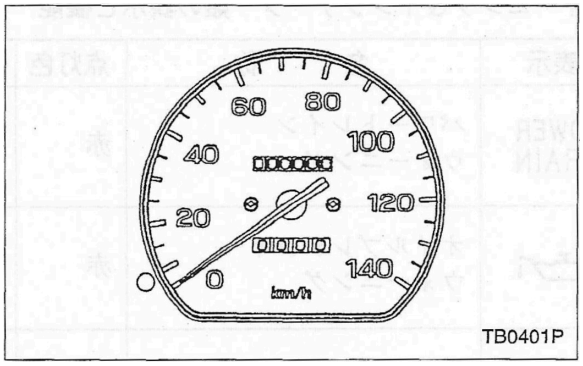
<Warning Indicator Lights & Functions>

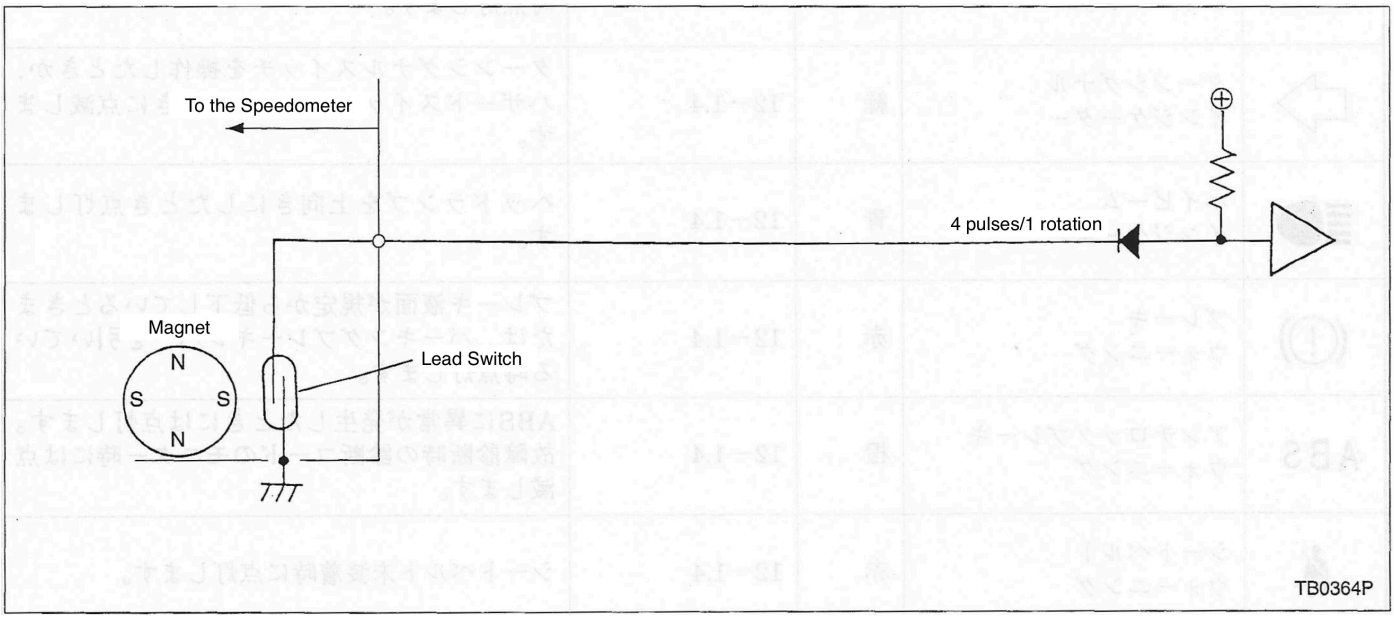
Display	Name	Light Color	V - W	Function
	Powertrain Warning	Red	12 - 1.4	This light comes on when an abnormality occurs in the engine electronic control system or the AT electronic control system while the engine is running.
	Oil Pressure Warning	Red	12 - 1.4	This light comes on when oil pressure drops.
	Charge Warning	Red	12 - 1.4	This light comes on when an abnormality occurs in the charging system while the engine is running.
	Turn Signal Indicator	Green	12 - 1.4	This light flashes when you operate the turn signal switch or turn on the hazard switch.
	High Beam Indicator	Blue	12 - 1.4	This light comes on when the high beam lamps are turned on.
	Brake Warning	Red	12 - 1.4	This light comes on when the brake fluid level is lower than the specified amount or when the parking brake lever is pulled.
	Anti-Lock Brake Warning	Orange	12 - 1.4	This light comes on when an abnormality occurs in the ABS. This light will flash when the diagnostic codes being monitored during fault diagnosis.
	Seat Belt Warning	Red	12 - 1.4	This light comes on when the seat belt is not fastened.
	Airbag Warning	Red	12 - 1.4	This light comes on when there is a problem with the airbag system.
	AT Position Indicator	Orange/ Green	12 - 1.4	This light comes on to indicate the position of the selector lever while the engine is running.
	Steering Warning	Red	12 - 1.4	This light comes on when a malfunction occurs in the power steering system.
	4WD Indicator (Selective 4WD vehicles)	Green	12 - 1.4	This light comes on when 4WD is activated.
	Rear Window Defogger Operation Indicator	Orange	12 - 1.4	This light comes on when the rear window defogger is activated.
	Differential Lock Activation Indicator	Orange	12 - 1.4	This light comes on when the differential lock is activated.
	AT Power Mode	Green	12 - 1.4	This light comes on when the AT Power switch is turn ON.

[1] Speedometer & Vehicle Speed Sensor

(1) Cable-type Speedometer

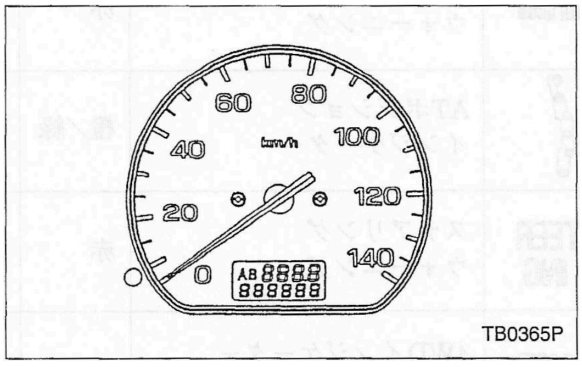
- The speedometer consists of an overcurrent movement, a dial, and a pointer.
- The odometer has a mechanism to prevent rewinding.
- The vehicle speed sensor is a lead switch type and is built into the speedometer.





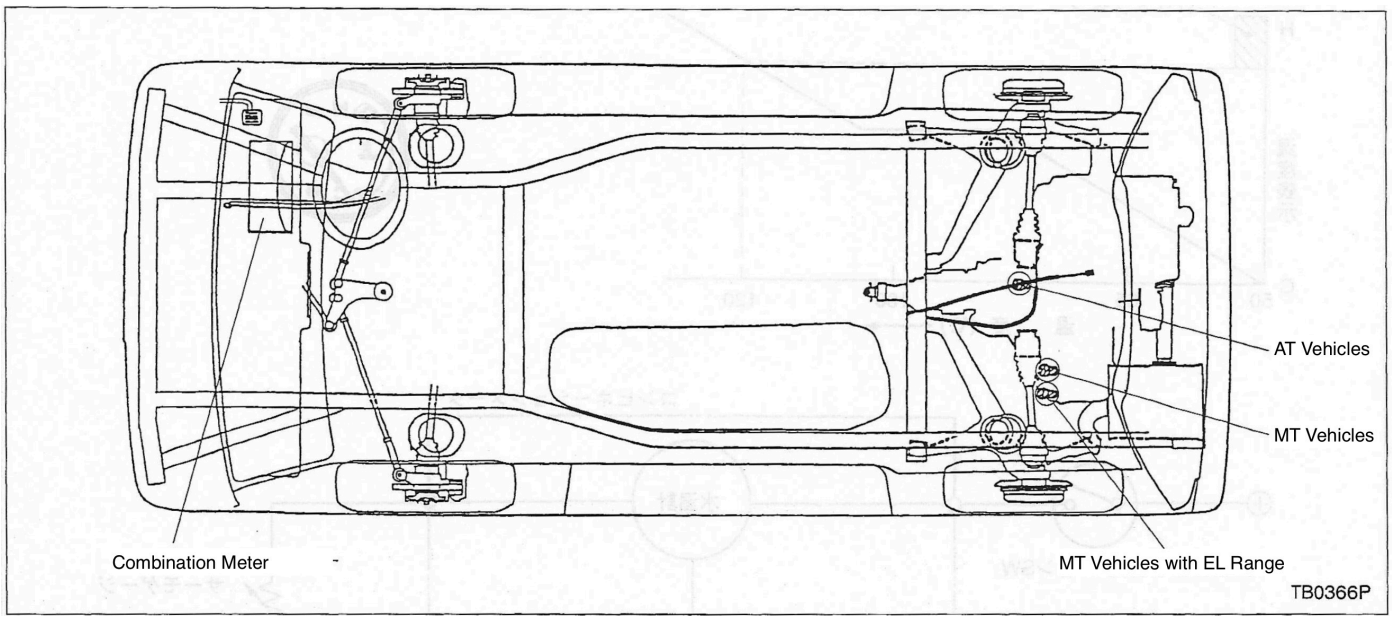
(2) Electric Speedometer

- The speedometer consists of a moving magnet movement, dial, pointer, speedometer circuit, and odometer and trip meter display.
- The setting standard is a vehicle speed signal of 2548 pulses/min = 60 km/h.
- Odometer & trip meter
  - Digital display
  - The display appears when the engine switch is turned on, and the background color dims when the lighting switch is turned on.
  - The odometer is equipped with a mechanism to prevent rewinding.
  - The trip meter accumulates in 0.1km increments from 0 to 1000km, and in 1km increments from 1000 to 9999km.
- The vehicle speed sensor is a Hall IC type.
- The vehicle speed sensor is mounted on the transmission and is driven by the speedometer shaft.
- The output waveform is a rectangular wave with 4 pulses per revolution.



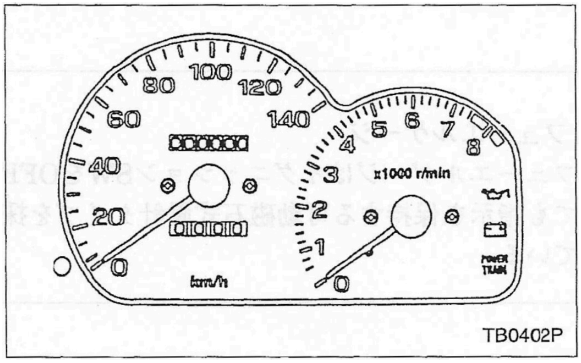
(3) Vehicle Speed Sensor

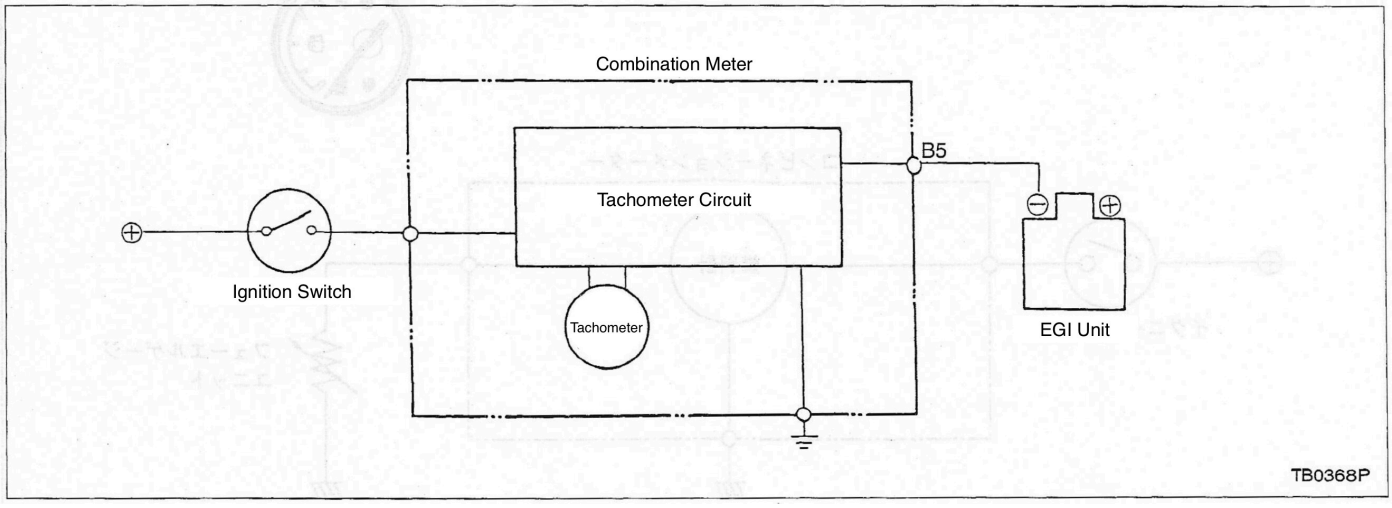
- Vehicle speed sensor installation location
  - The vehicle speed sensor is installed in the same position as the speedometer cable.



[2] Tachometer

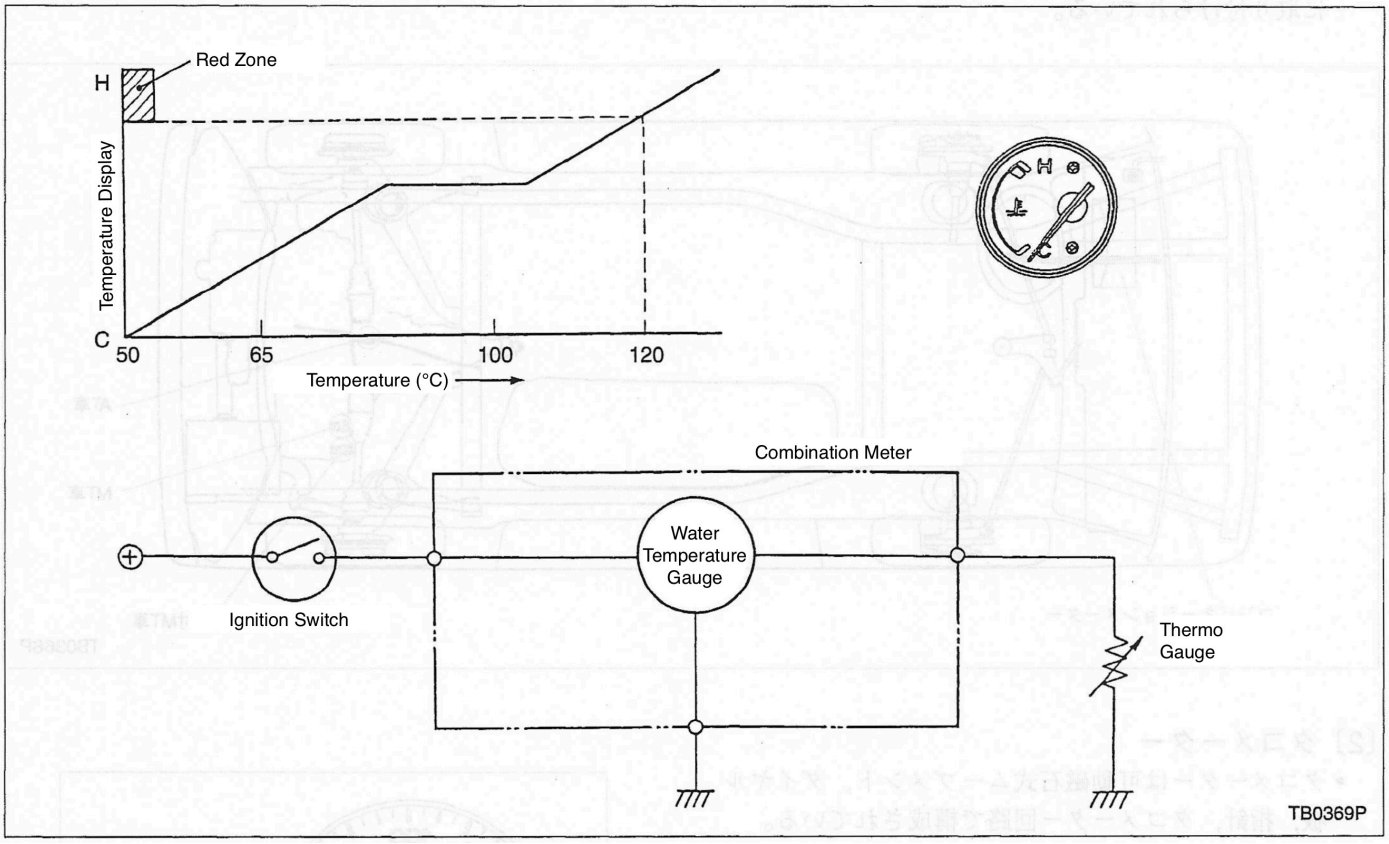
- The tachometer consists of a moving magnet movement, a dial, a pointer, and a tachometer circuit.
- Rotation range: 0~8500r/min





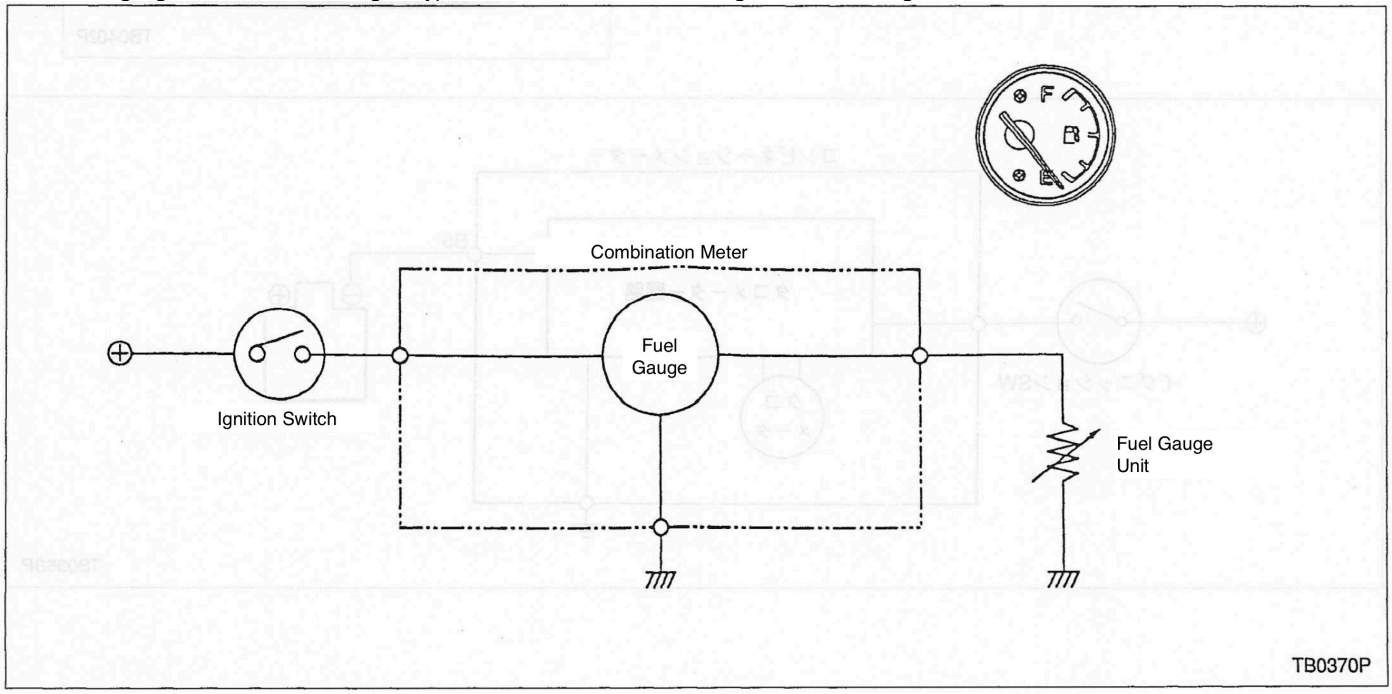
[3] Water Temperature Gauge

• The water temperature gauge uses a movable magnet type with intermediate stability, which keeps the pointer stable between approximately 80 and 100°C.



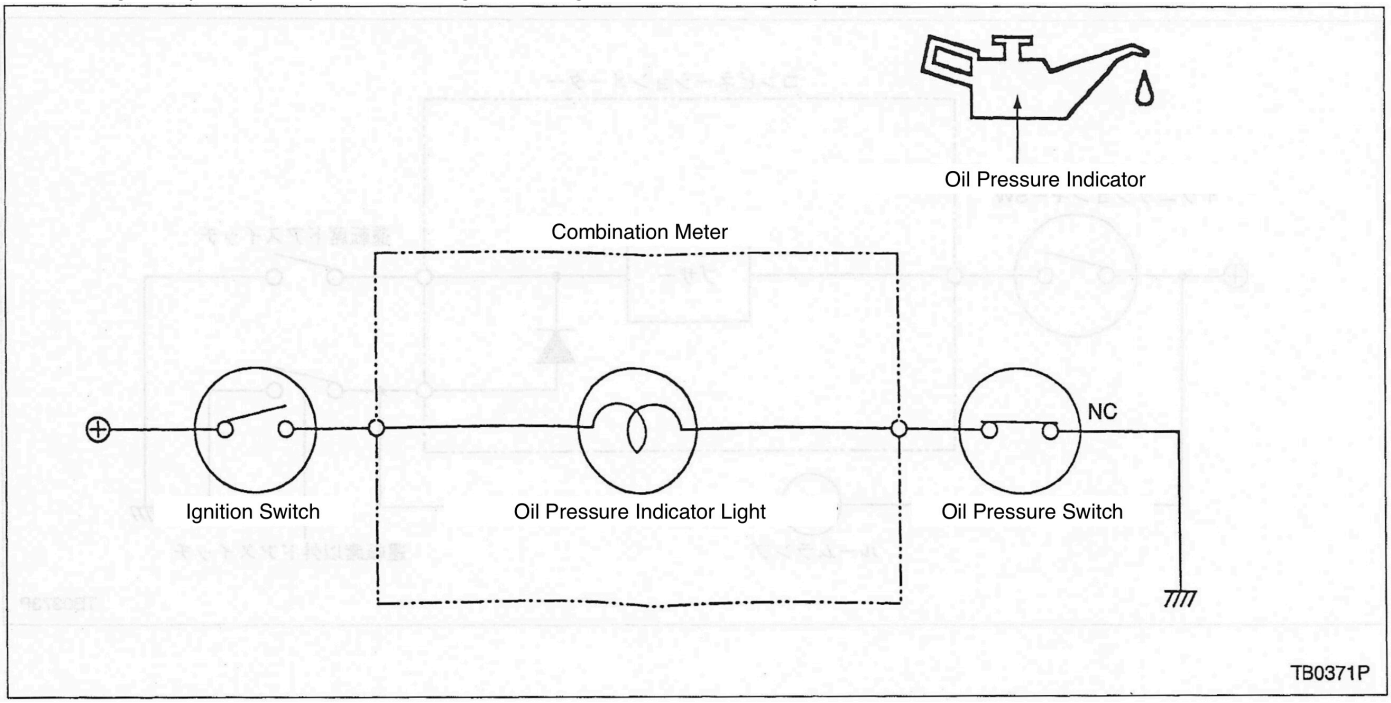
[4] Fuel gauge

• The fuel gauge uses a movable magnet type needle that retains its reading even when the ignition switch is turned off.



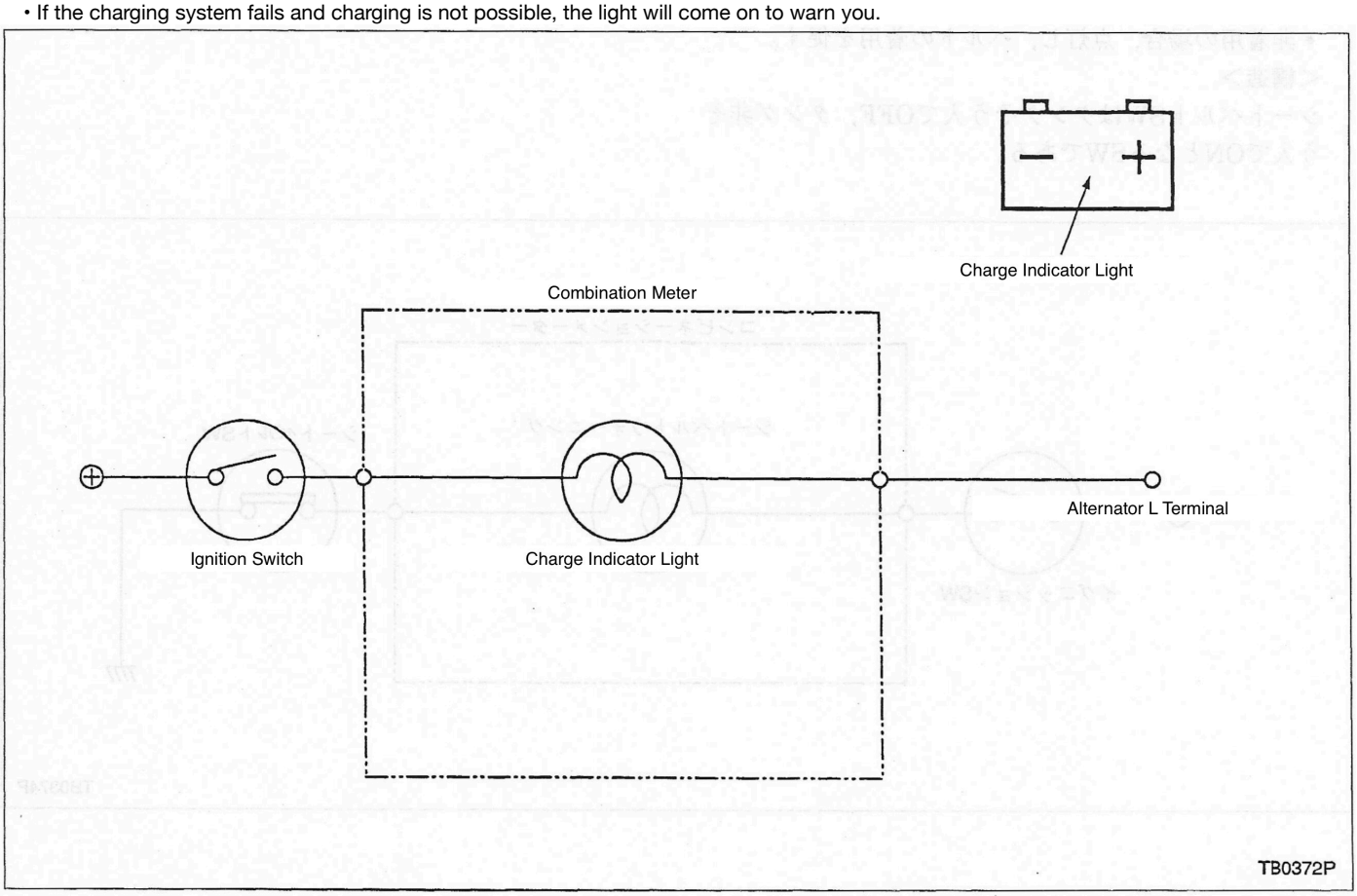
[5] Oil Pressure Warning

• If the engine oil pressure drops below 0.15 kg/cm², the light will come on to warn you.



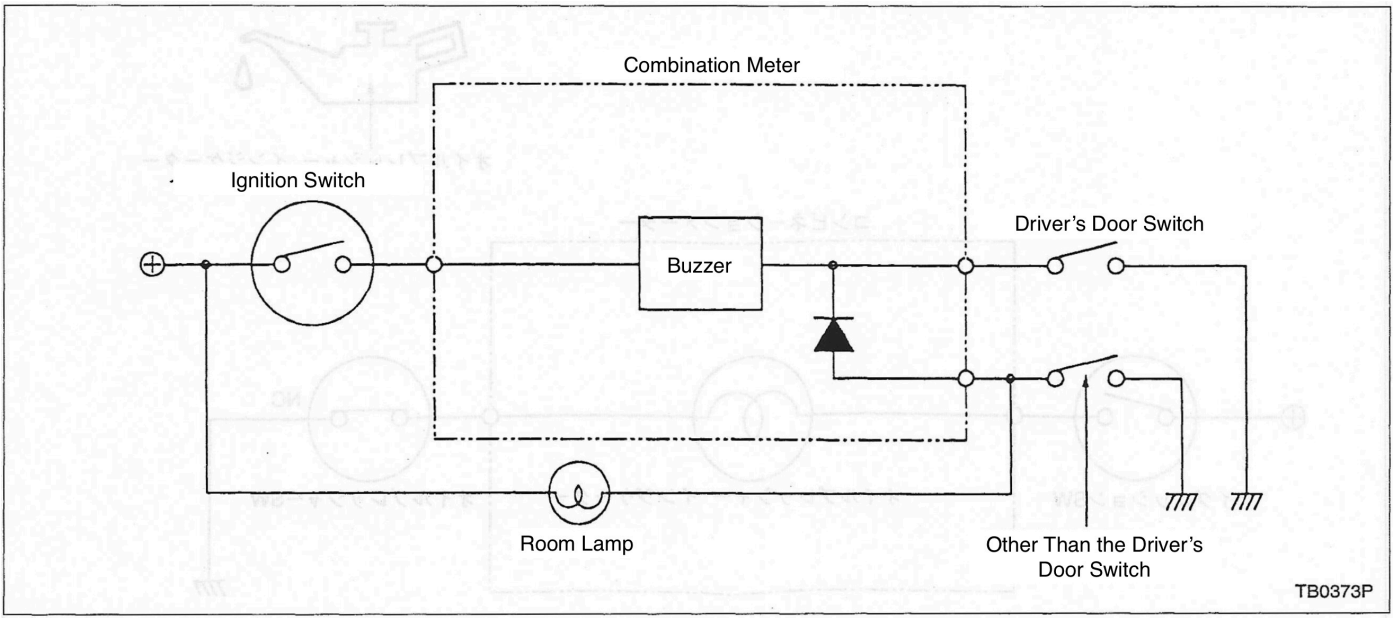
[6] Charge Warning

• If the charging system fails and charging is not possible, the light will come on to warn you.



[7] Key Removal Alarm Circuit

• If the driver's door is opened with the key still inserted in the ignition key cylinder, a buzzer will sound.

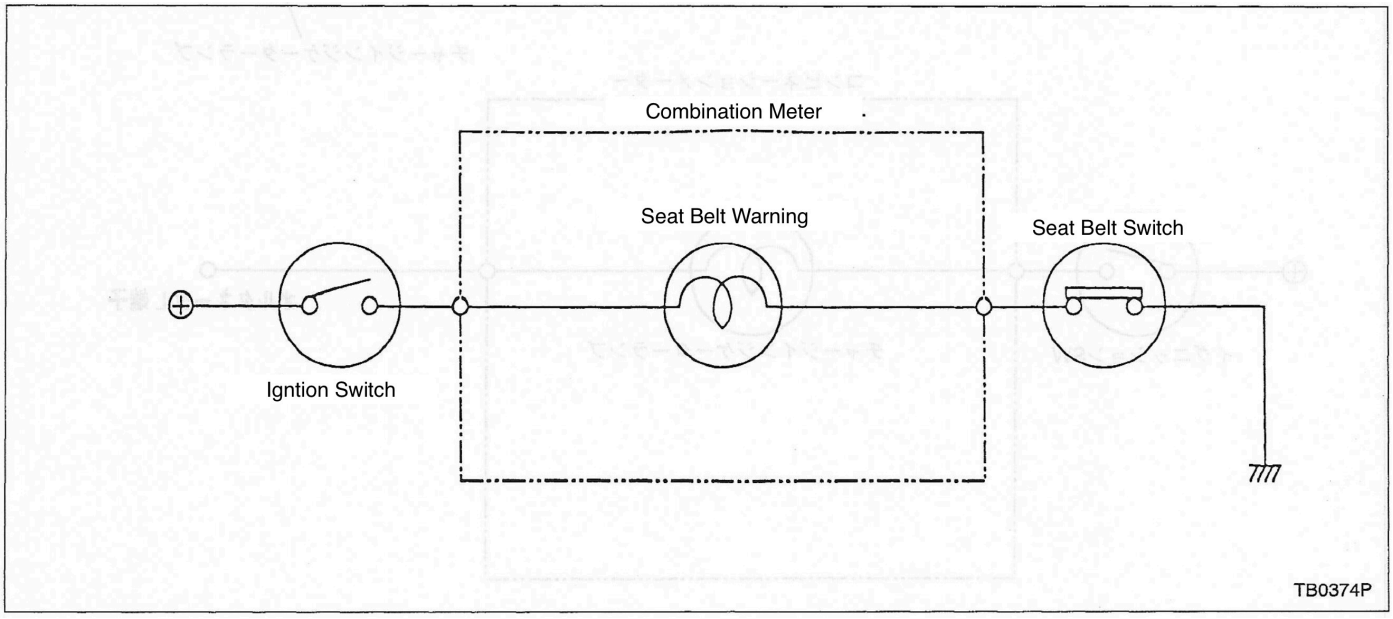


[8] Seat Belt Warning

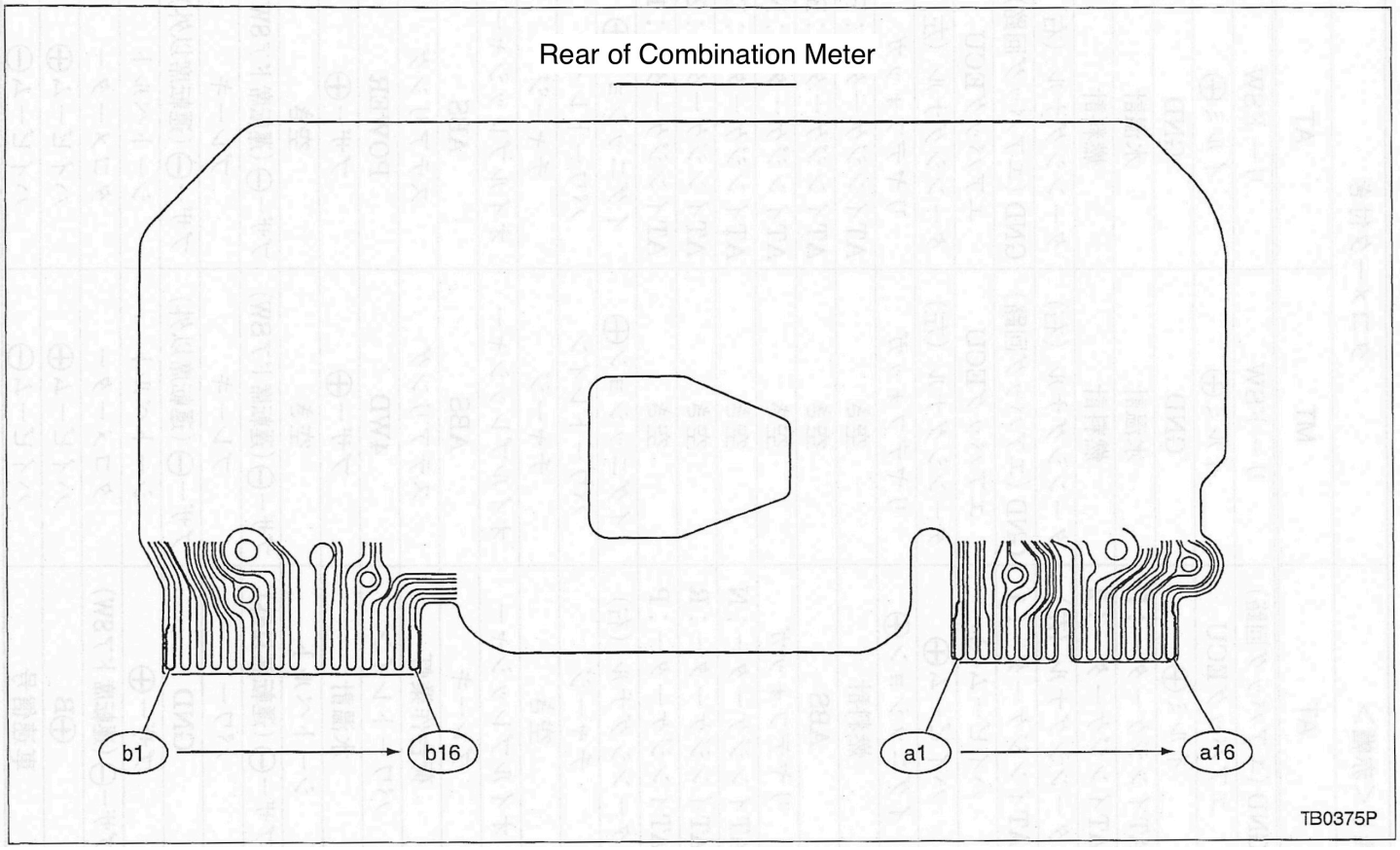
• A switch inside the driver's seat belt buckle detects whether the seat belt is fastened.
• If the belt is not worn, it will light up to remind you to wear it.

<Function>

• The seat belt switch is turned off when the buckle is inserted and turned on when the buckle is not inserted.



■ Connector Arrangement

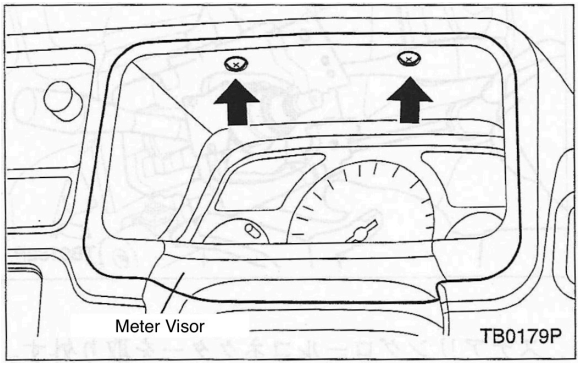


No.	Without Tachometer (Standard)		Without Tachometer (Red Hat)		With Tachometer	
	MT	AT	MT	AT	MT	AT
A1	GND (Airbag Circuit)	GND (Airbag Circuit)	GND (Airbag Circuit)	GND (Airbag Circuit)	Lead SW	Lead SW
A2	Airbag ECU	Airbag ECU	Airbag ECU	Airbag ECU	Illumination Positive ⊕	Illumination Positive ⊕
A3	Illumination Positive ⊕	Illumination Positive ⊕	Illumination Positive ⊕	Illumination Positive ⊕	GND	GND
A4	Vacant	AT Indicator: D	Vacant	AT Indicator: D	Water Temp Gauge	Water Temp Gauge
A5	Vacant	AT Indicator: 2	Vacant	AT Indicator: 2	Fuel Gauge	Fuel Gauge
A6	Turn Signal Left	Turn Signal Left	Turn Signal Left	Turn Signal Left	Turn Signal Right	Turn Signal Right
A7	Differential Lock	AT Indicator: 1	Vacant	AT Indicator: 1	GND (Airbag Circuit)	GND (Airbag Circuit)
A8	High Beam Negative ⊖	High Beam Negative ⊖	High Beam Negative ⊖	High Beam Negative ⊖	Airbag ECU	Airbag ECU
A9	High Beam Positive ⊕	High Beam Positive ⊕	High Beam Positive ⊕	High Beam Positive ⊕	Turn Signal Left	Turn Signal Left
A10	Ignition Positive ⊕	Ignition Positive ⊕	Ignition Positive ⊕	Ignition Positive ⊕	Rear Defogger	Rear Defogger
A11	Fuel Gauge	Fuel Gauge	Fuel Gauge	Fuel Gauge	Vacant	AT Indicator: P
A12	ABS	ABS	ABS	ABS	Vacant	AT Indicator: R
A13	Rear Defogger	Rear Defogger	Rear Defogger	Rear Defogger	Vacant	AT Indicator: N
A14	Vacant	AT Indicator: N	Vacant	AT Indicator: N	Vacant	AT Indicator: D
A15	Vacant	AT Indicator: R	Vacant	AT Indicator: R	Vacant	AT Indicator: 2
A16	Vacant	AT Indicator: P	Vacant	AT Indicator: P	Vacant	AT Indicator: 1
B1	Turn Signal Right	Turn Signal Right	Turn Signal Right	Turn Signal Right	Ignition Positive ⊕	Ignition Positive ⊕
B2	Charge Warning	Charge Warning	Charge Warning	Charge Warning	Powertrain Warning	Powertrain Warning
B3	Steering Warning	Steering Warning	Vacant	Vacant	Charge Warning	Charge Warning
B4	Oil Pressure Warning	Oil Pressure Warning	Oil Pressure Warning	Oil Pressure Warning	Oil Pressure Warning	Oil Pressure Warning
B5	Brake Warning	Brake Warning	Brake Warning	Brake Warning	ABS	ABS
B6	Work light on cargo bed	Work light on cargo bed	Work light on cargo bed	Work light on cargo bed	Steering	Steering
B7	Powertrain Warning	Powertrain Warning	Powertrain Warning	Powertrain Warning	4WD	Power
B8	Water Temp Warning	Water Temp Warning	Water Temp Warning	Water Temp Warning	Buzzer Positive ⊕	Buzzer Positive ⊕
B9	Seat Belt Warning	Seat Belt Warning	Seat Belt Warning	Seat Belt Warning	Vacant	Vacant
B10	Buzzer Negative ⊖ (other than driver's)	Buzzer Negative ⊖ (other than driver's)	Buzzer Negative ⊖ (other than driver's)	Buzzer Negative ⊖ (other than driver's)	Buzzer Negative ⊖ (Driver's door)	Buzzer Negative ⊖ (Driver's door)
B11	4WD	Power	4WD	Power	Brake Warning	Brake Warning
B12	GND	GND	GND	GND	Buzzer Negative ⊖ (other than driver's)	Buzzer Negative ⊖ (other than driver's)
B13	Buzzer Positive ⊕	Buzzer Positive ⊕	Buzzer Positive ⊕	Buzzer Positive ⊕	Seat Belt Warning	Seat Belt Warning
B14	Buzzer Negative ⊖ Driver's door)	Buzzer Negative ⊖ (Driver's door)	Buzzer Negative ⊖ (Driver's door)	Buzzer Negative ⊖ (Driver's door)	Tachometer	Tachometer
B15	Vacant	Vacant	B Positive ⊕	B Positive ⊕	High Beam Positive ⊕	High Beam Positive ⊕
B16	Lead SW	Lead SW	Lead SW	Lead SW	High Beam Negative ⊖	High Beam Negative ⊖

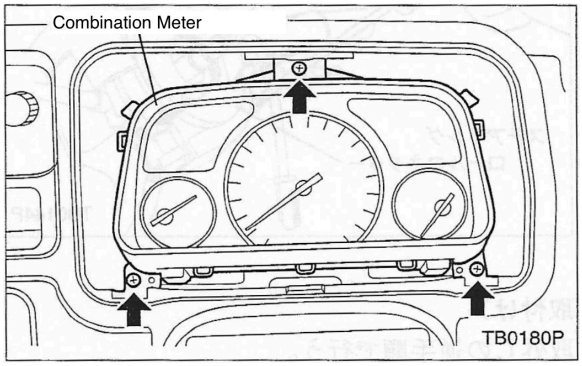
■ Maintenance instructions

<Removal>

1. Disconnect the negative battery terminal.
2. Lower the steering column.
3. Remove the two tapping screws and remove the meter visor.



4. Remove the combination meter mounting tapping screws (3 pieces).

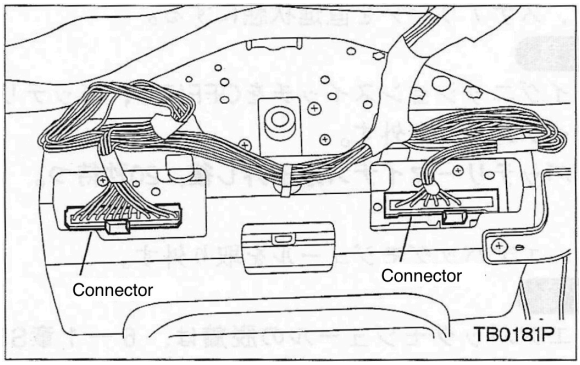


5. Disconnect the speedometer cable from the back of the combination meter.

NOTE

- Akabou vehicles have electric meters, so there are no meter cables.

6. Pull out the combination meter and unplug the two connectors.



<Installation>

Follow the removal procedure in reverse.

8 - 4 Switches

■ Maintenance Instructions

(1) Combination Switch

<Removal>

1. Set the steering wheel to a straight ahead position.

NOTE

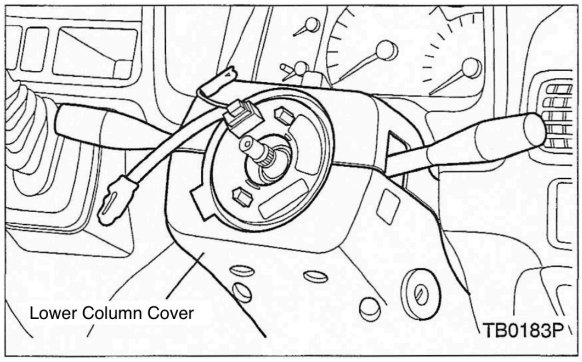
- Turn the ignition switch OFF and disconnect the negative battery terminal.
- After disconnecting the negative battery terminal, wait 20 seconds.

2. Remove the air bag module.

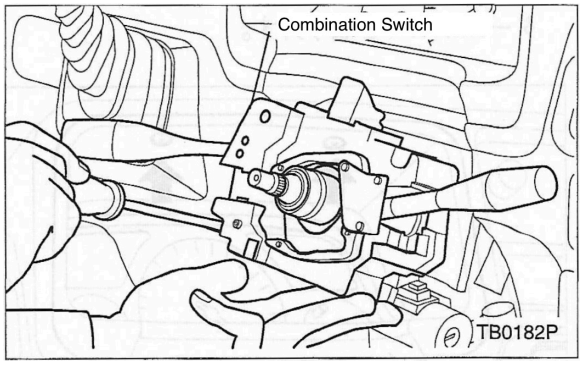
NOTE

- When removing or installing the airbag module, refer to Chapter 6-1 SRS Airbag System.

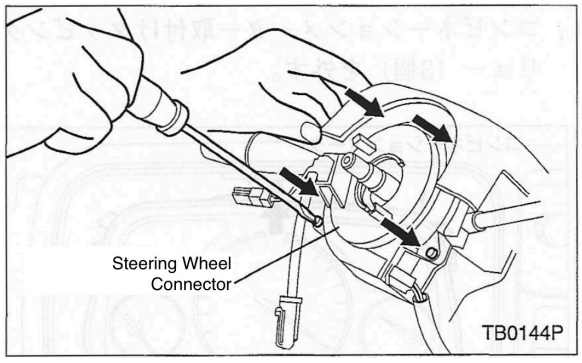
3. Remove the steering wheel.
4. Remove the heater duct and steering column cover lower



5. Lower the steering column.
6. Remove the steering column cover upper.
7. Remove the two mounting screws and remove the combination



switch.



8. Remove the steering roll connector.

<Installation>

- Follow the removal procedure in reverse.
- When installing the steering roll connector, center it.

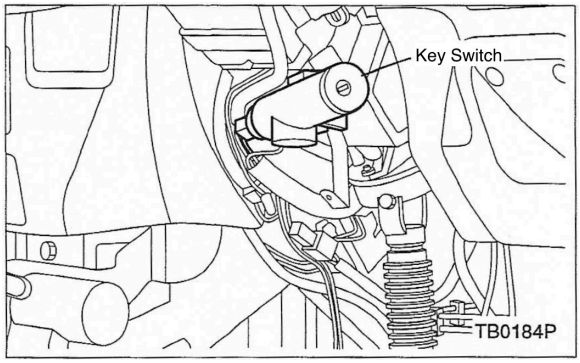
NOTE

- Before installing the steering wheel, make sure that the vehicle is moving in a straight line (that the tires are moving in a straight line). If the steering wheel is turned fully while it is at an incorrect angle, the cable inside the steering roll connector will break.

(2) Ignition switch

<Removal>

1. Turn the ignition switch OFF and disconnect the negative battery terminal.
2. Remove the heater duct and steering column cover lower from the driver's footwell.
3. Disconnect the connectors from the ignition switch and key switch. For automatic transmission vehicles, also remove the solenoid connector.



4. Cut the ignition switch retaining bolt. You can also use a punch and hammer to loosen it.

<Installation>

1. Tighten the connecting bolt until the head breaks off.
2. Connect the connector.
   - After that, follow the removal procedure in reverse.

8 - 5 Audio

[1] Head Unit

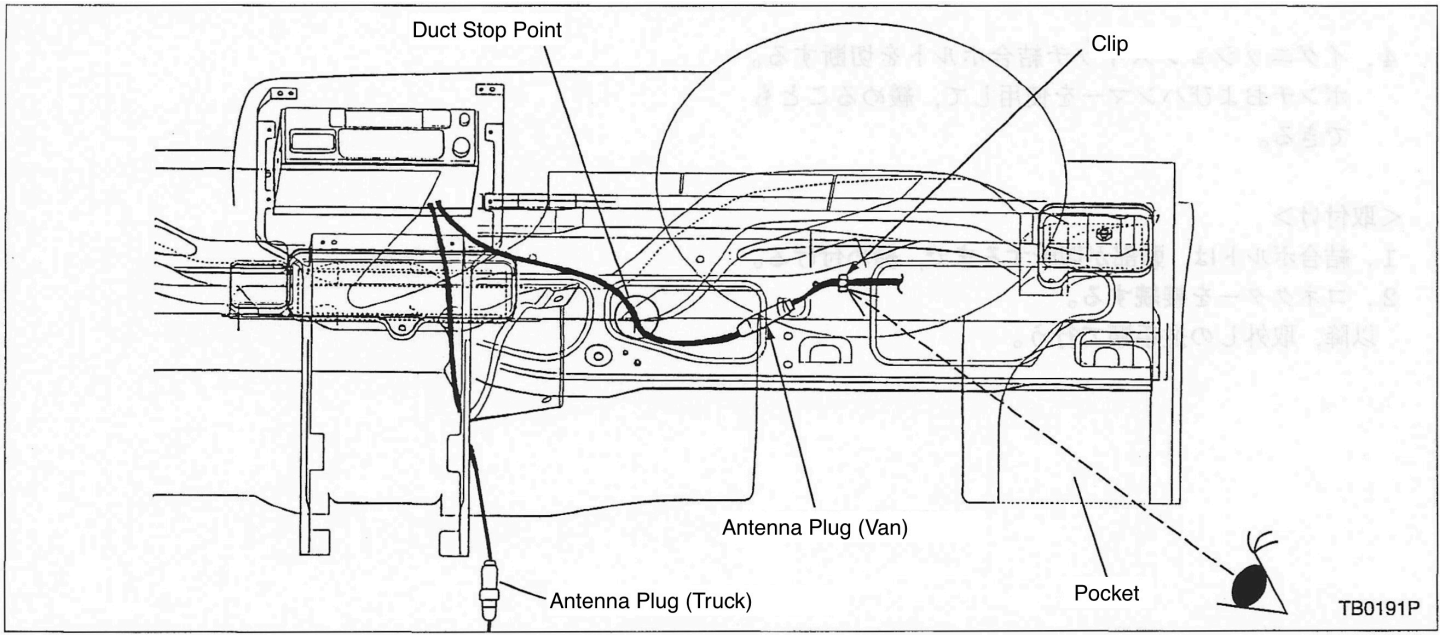
■ Specifications

Name	Manufacturer	Size	Function	Output
AM Electronic Tuner	Matsushita Electric	1 DIN	5 AM Station Presets Traffic Information Reception Clock Function	5.2W x 1
Mechanical Cassette with Integrated AM/FM Electronic Tunner	Subaru Audio	1 DIN	5 AM & 5 FM Station Presets CD/MD Player Connection Available Clock Function	5.5W x 2

■ Maintenance Instructions

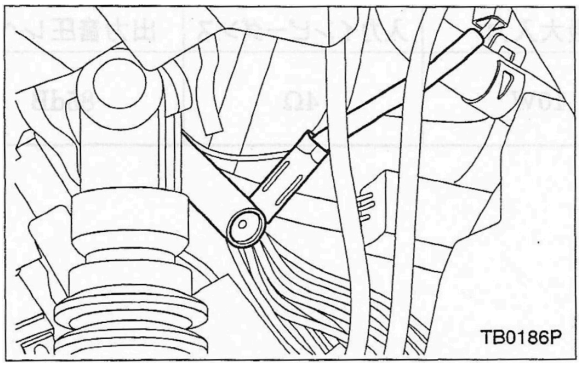
<Removal>

1. Disconnect the negative battery terminal.
2. For the Van/Dias, remove the four screws and remove the side pocket.

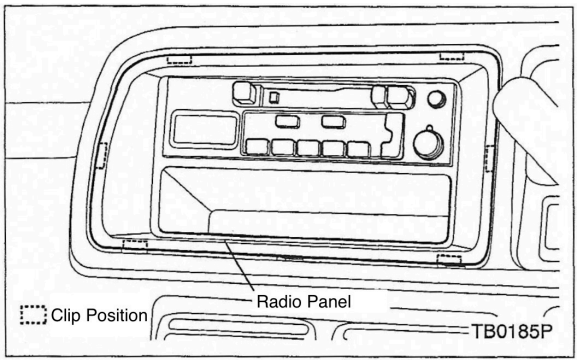


3. For the Van/Dias check the location of the clip.

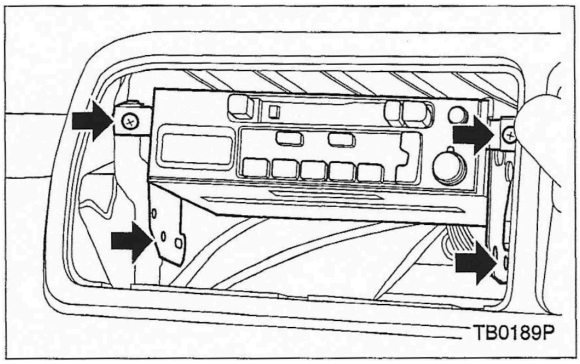
4. Separate the antenna feeder wire.



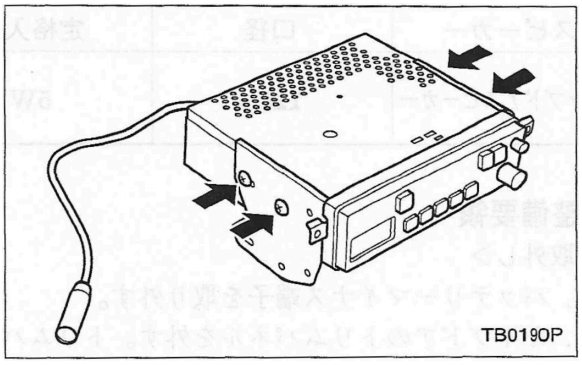
5. For the Van/Dias, remove the antenna feeder wire from the duct.
6. For automatic transmission vehicles, make sure to set the parking brake and shift the selector lever to N.
7. Remove the radio panel.
   - If it is hard to remove, use a clip remover or similar tool to pry the area around the lock position.



8. Remove the four screws from the audio bracket.



9. Pull out the head unit.
10. Disconnect the audio connector.
11. Remove the head unit together with the bracket.
12. Remove the head unit from the bracket.



<Installation>

Follow the removal procedure in reverse.

[2] Speaker

■ Specifications

Speaker	Size	Rated Input	Maximum Input	Input Impedance	Output Sound Pressure Level
Cab Door Speaker	12cm	5W	10W	4Ω	85dB

■ Maintenance Instructions

<Removal>

1. Disconnect the negative battery terminal.
2. Remove the cab door trim panel. Refer to the Trim Panel Removal and Installation section.
3. Remove the three speaker mounting screws.
4. Remove the speaker.
5. Disconnect the connector.

<Installation>

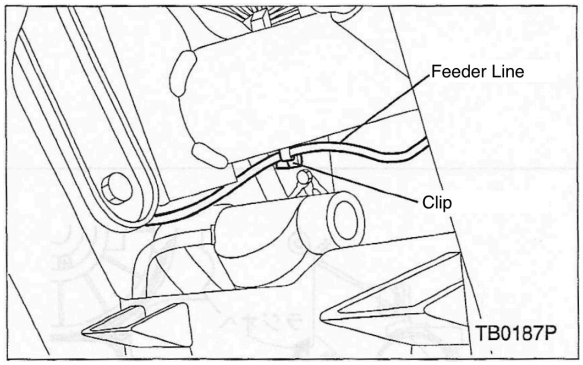
Follow the removal procedure in reverse.

[3] A-pillar Antenna (Van & Dias)

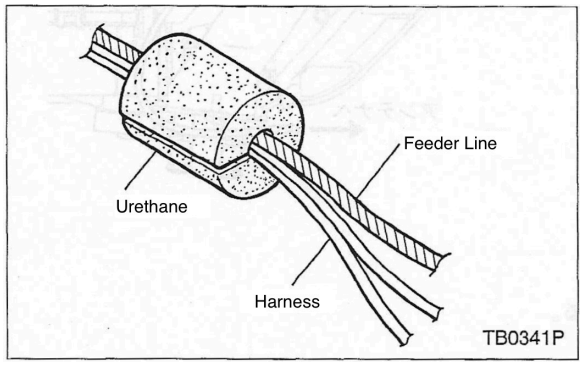
■ Maintenance Instructions

<Removal>

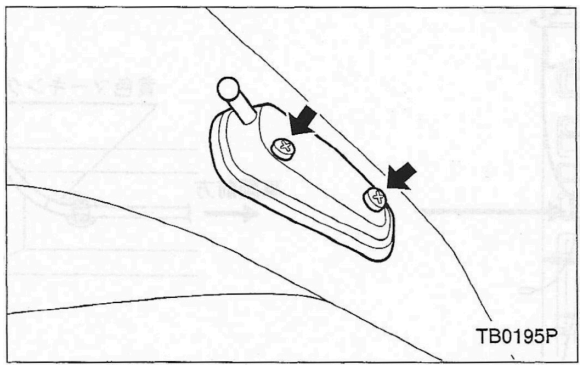
1. Disconnect the negative battery terminal.
2. Remove the four screws and remove the side pocket.
3. Remove the antenna plug and unclip the feeder wire.



4. Remove the tank cover and remove the urethane from the hole at the bottom of the A biller.

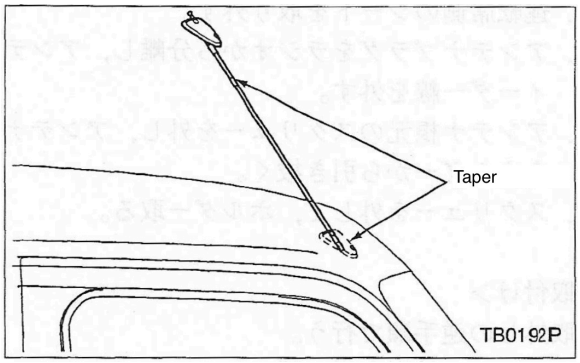


5. Remove the antenna base mounting screws (2 pieces) and pull out the antenna.

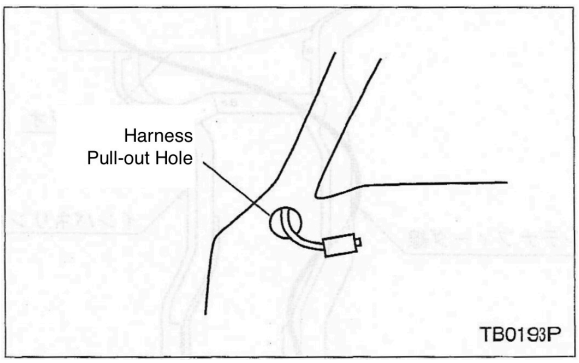


<Installation>

1. Insert the antenna up to the center taper.



2. Remove the tank cover and pull out the feeder wire from the hole at the bottom of the A biller.



3. Insert the antenna completely.
4. Attach the clips to the 7 holes on the corners of the bulkhead.
5. Clip the antenna feeder wire.
6. Connect the antenna plug to the radio.
7. Install the antenna base mounting screws.

[4] B-pillar Antenna (Truck & Panel Van)

■ Maintenance Instructions

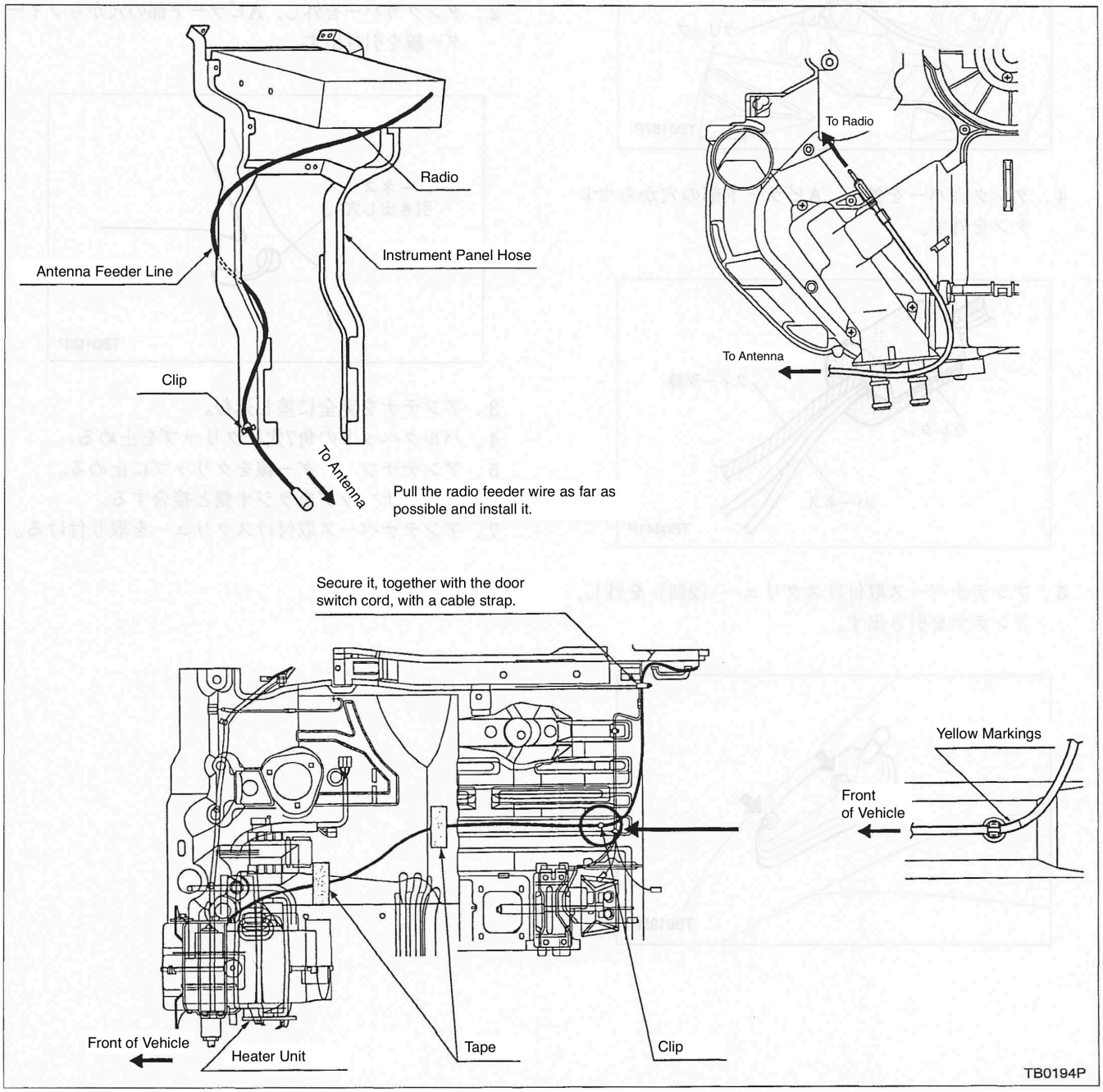
<Removal>

1. Remove the driver's side seat.
2. Separate the antenna plug from the radio and disconnect the antenna feeder wire.
3. Remove the screw at the base of the antenna and pull the antenna body out of the holder.
4. Remove the screws and remove the holder.

<Installation>

Follow the removal procedure in reverse.

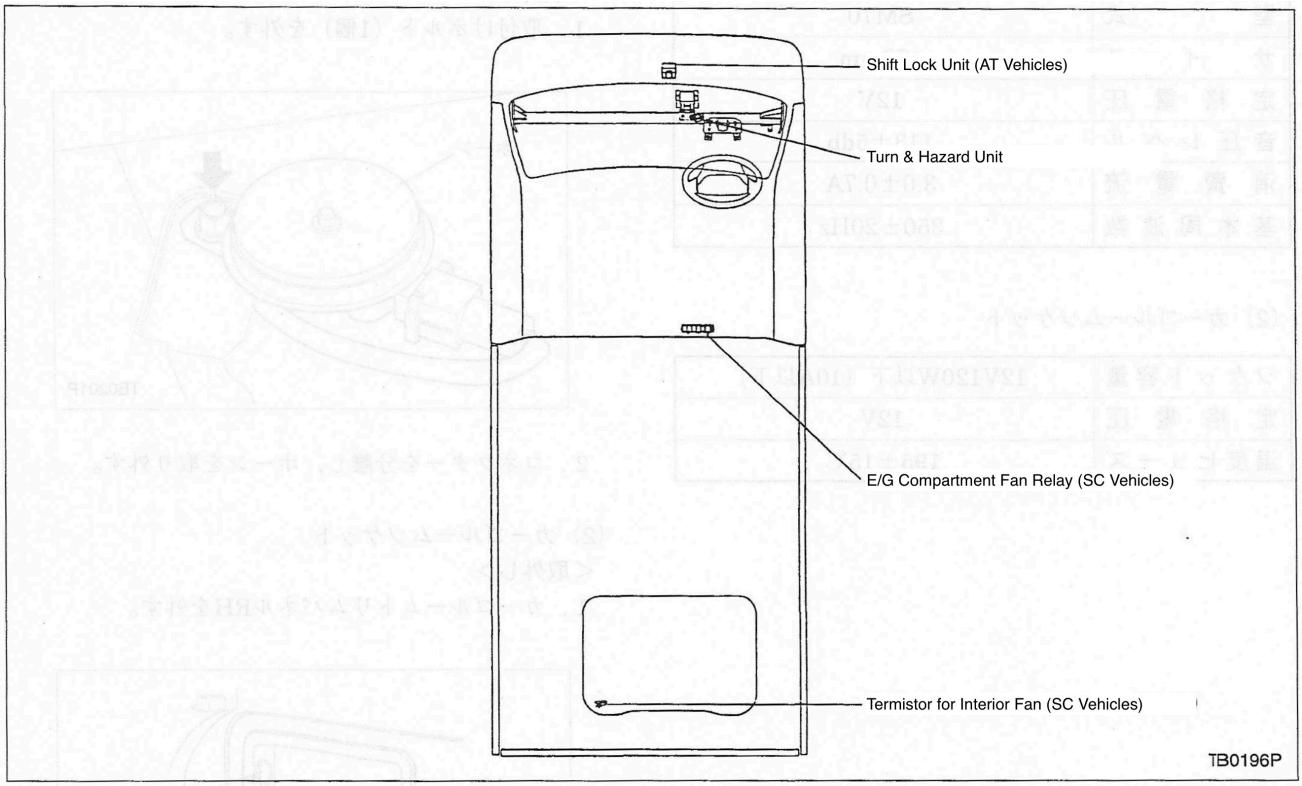
Feeder wire routing diagram



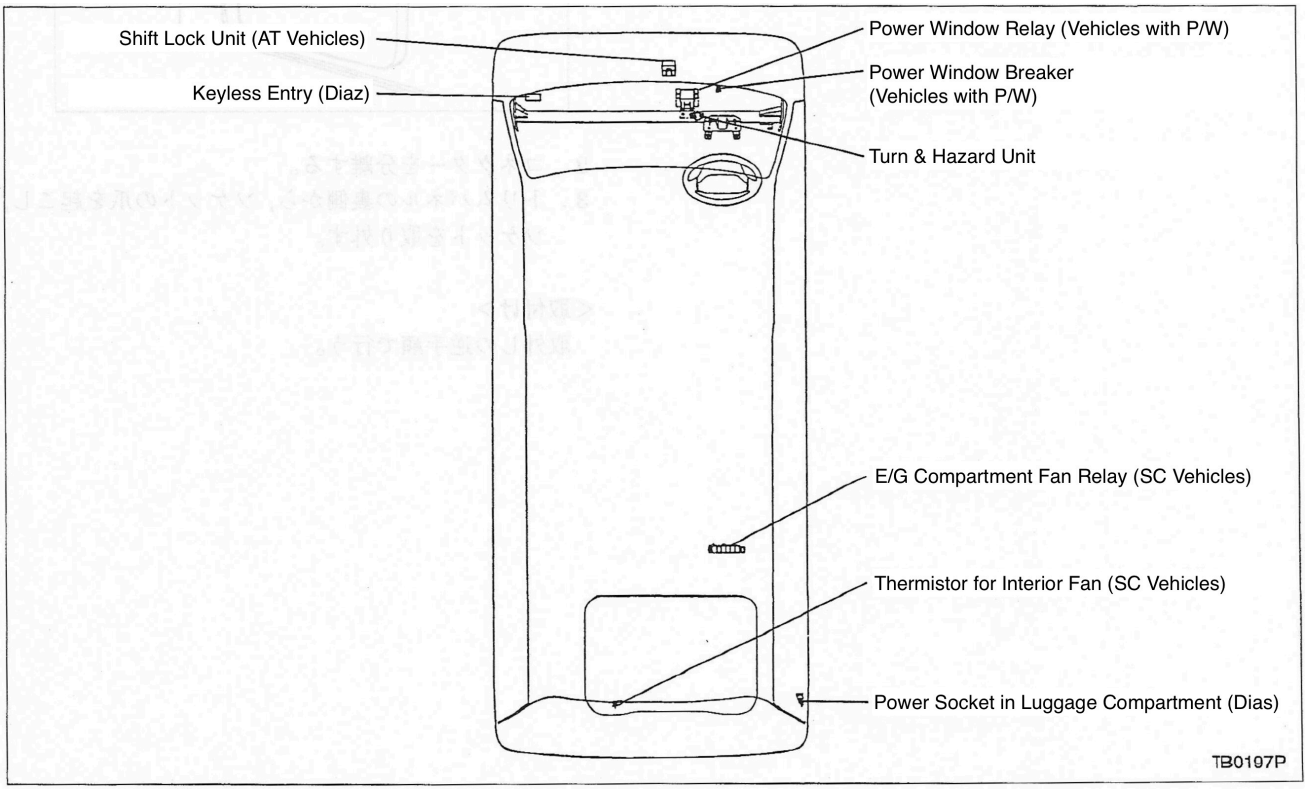
8 - 6 ECU Relay/Layout

■ Parts Layout Diagram

(1) Trucks & Panel Vans



(2) Van & Dias



8 - 7 Other Body Electrical

Specifications

(1) Horn

Model	SM70
Size	ø72mm
Rated Voltage	12V
Sound Pressure Level	113 ± 5 dB
Current Consumption	3.0 ± 0.7 A
Fundamental Frequency	350 ± 20 Hz

(2) Cargo Socket

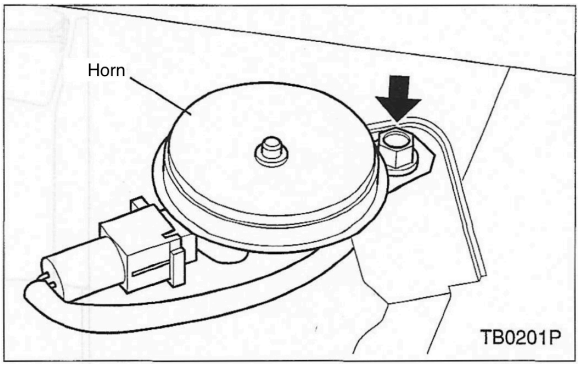
Socket Capacity	12V 120W or less (10A or less)
Rated Voltage	12V
Temp	195 ± 15°C

Maintenance Instructions

(1) Horn

<Removal>

1. Remove the mounting bolt (1 piece).

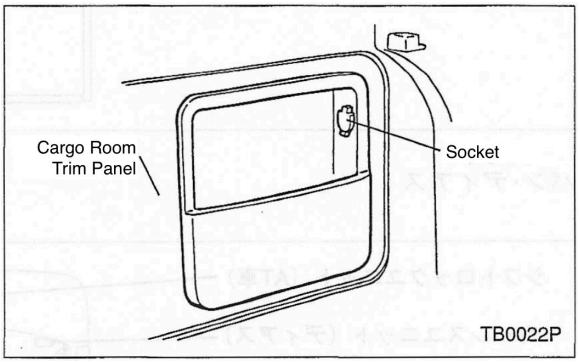


2. Disconnect the connector and remove the horn.

(2) Cargo Room Socket

<Removal>

1. Remove the right cargo room trim panel.



2. Disconnect the connector.
3. Lift the socket tab from the back of the trim panel and remove the socket.

<Installation>

Follow the removal procedure in reverse.

9 Miscellaneous

9 - 1 New Special Tools

[1] Engine

No	Tool Number	Tool Name	Purpose
1	499206400	Wrench COMPL (crank pulley)	Crank pulley removal and installation
2	499206500	Attachment	Crank pulley removal and installation

[2] Body

No	Tool Number	Tool Name	Purpose	
1	28399TC000	Front Puller ASSY	Front hub removal	See Note 1
2	28399TC010	Joint COMPL	Component of 28399TC000	See Note 1
3	28499TC000	Installer	Rear bearing removal & installation	See Note 2
4	28499TC010	Base	Rear bearing removal & installation	See Note 2
5	98299FC001	Airbag test harness E	Checking the quality of the SRS module	

NOTE 1

- The 92259000 hub puller (for older Sambar models) has a different joint assembly. By replacing the joint assembly of this hub puller with the 28399TC010 part, it can be used as a substitute for the 28399TC000 part.

NOTE 2

- The 28499TC000 installer and the 28499TC010 base unit are designed to be used together.

9 - 2 Inspection & Maintenance Method

- Make sure that the criteria for determining daily inspection items are thoroughly communicated to vehicle users.
- The ● symbol indicates a statutory item, and the ○ symbol indicates an item specified by the manufacturer.
- The ◇ symbol indicates the inspection period for severe conditions (manufacturer specified), and the ◆ symbol indicates the inspection period for mileage items (legal).

■ Inspection and Maintenance Items

Inspection and Maintenance Items			Inspection and Maintenance Period							Specifications	Notes
				Private Use			Business Use				
Inspection Points		Inspection Items	Daily	6 Months	1 Year	2 Years	6 Months	1 Year	2 Years		
Steering	Handle	Operating condition				●		○	●		
	Gear Box	Looseness of installation			◇	◆		○	◆		
		Oil leaks							○		
	Rods & Arms	Looseness, rattling, & damage				◆		○	◆		
		Cracks and damage to ball joint dust boots			◇	●		○	●		
	Steering Wheel	Wheel alignment				◆			◆	Toe-in: 0 ± 3mm Camber: Front: 0° ± 45'; Rear: Truck & Panel Van: 0°50' ± 45'; Van & Dias: 0°50' + 45' - 60' Front Caster: Truck & Panel Van: 5°5'; Van & Dias: 5°30'	
	Knuckle (Center Arm)	Play in the connections							○		
	Power Steering	Looseness of installation				◆			◆		
Brakes	Brake Pedal	Play and distance from the pedal bracket nut when pressed	●		●	●		●	●	• Play 1~3mm • When stepping on the pedal with a pedal force of approximately 294N (30kgf), the distance between the pedal and the nut on the pedal bracket is 50mm or more.	
		Brake force	●		●	●	○	●	●	Braking Force: Rear Wheel Sum: 10% or more of the axle load; Difference between left & right wheels: 8% or less of the axle load; Sum Total: More than 50% of the vehicle weight at the time of inspection Note: If all the wheels on the front axle are locked and measurement is difficult, the total will be considered to be met in that state.	
	Parking Brake Lever	Pull, step	●		●	●		●	●	**Operating Power**: 196 N [20 kgf] **Pull Back**: 7~9 Notches **Full Stroke**: 17 Notches	
		Brake force			●	●		●	●	**Operating Power**: 400 N [40 kgf] or less	
	Rods & Cables	Looseness, rattling, & damage				◆			◆		
	Hoses & Pipes	Looseness, rattling, & damage		◇	●	●	○	●	●		

Inspection and Maintenance Items			Inspection and Maintenance Period							Specifications	Notes
				Private Use			Business Use				
Inspection Points		Inspection Items	Daily	6 Months	1 Year	2 Years	6 Months	1 Year	2 Years		
Brakes	Reservoir Tank	Liquid level	●							Between the MAX & MIN lines	
	Master Cylinder, Wheel Cylinder, and Disc Calipers	Liquid leakage			●	●		●	●		
		Function, wear, & damage				●			●		
	Brake Drums & Shoes	Gap between drum & lining			◆	◆		◆	◆		No inspection required as it is an automatic adjustment
		Wear of the sliding parts of the shoe and lining		◇	◆	◆	○	◆	◆	**Standard Thickness**: 4.5mm; **Usage Limit**: 1.7mm	
		Drum wear & damage			◇	●		○	●	**Standard Diameter**: 200mm; **Usage Limit**: 202mm	
	Brake Discs & Pads	Gap between disc & pad			◆	◆	○	◆	◆		No inspection required as it is an automatic adjustment
		Pad wear		◇	◆	◆	○	◆	◆	**Standard Thickness**: 9mm; **Usage Limit**: 1.5mm	Note: Akabou vehicles are 2.0mm
		Disc wear & damage			◇	●		○	●	**Disk**: Ventilated; **Standard Thickness**: 18mm; **Usage Limit**: 16mm	
Driving Device	Wheels	Tire Pressure: Kpa [kgf/cm²] {PSI} Fixed Loading: ( ) indicates 2 people plus 100 kg or less	●							**Tire Specs** / **Front Wheel** / **Rear Wheel**: 5.00-12-4PR/6PR ULT: 240 [2.4] {35} (200 [2.0] {29}) / 300 [3.0] {45} (220 [2.2] {32}) 145R12-6PR LT: 240 [2.4] {35} (200 [2.0] {29}) / 300 [3.0] {45} (220 [2.2] {32}) 145R12-6PR LT ※: 240 [2.4] {35} (200 [2.0] {29}) / 260 [2.6] {38} (220 [2.2] {32}) 155/80R12 77S ※: 220 [2.2] {32} (200 [2.0] {29} / 220 [2.2] {32} (220 [2.2] {32})	※ Dias has a 200kg load limit
		Tire cracks & damage	●								
		Tire tread depth & abnormal wear	●		●	●	○	●	●	Remaining tread up to 1.6mm	
		Loose wheel nuts & wheel bolts			◆	◆		◆	◆	Wheel nut tightening torque 8.0 ~ 10.0 kg•m (58 ~ 72 lb•ft)	
		Front wheel bearing play				◆			◆	Axial play at the center of the axle 0 ~ 0.05mm	
		Rear wheel bearing play				◆			◆	Axial play at the center of the axle 0 ~ 0.3mm	
Shock Absorber	Mounting Bracket & Connecting Bracket	Looseness, rattling, & damage			◇	●		○	●		
	Shock Absorber	Oil leakage & damage				●			●		
Transmission	Clutch	Pedal play & distance from the pedal bracket nut when pressed			●	●		●	●	- Play 5 ~ 15mm - The distance between the nut of the pedal bracket when it is cut off is 30mm or more.	No inspection required as it is an automatic adjustment
	Transmission & Transfer Case	Oil leakage & oil level			●	●		●	●	It must be between F and L of the level gauge	

Inspection and Maintenance Items			Inspection and Maintenance Period							Specifications	Notes
				Private Use			Business Use				
Inspection Points		Inspection Items	Daily	6 Months	1 Year	2 Years	6 Months	1 Year	2 Years		
Transmission	Propeller Shaft & Drive Shaft	Looseness of connection			◆	◆		◆	◆		
		Dust in the universal joint Cracks & damage to boots			◇	●		○	●		
	Differential	Oil leakage and oil level				◆		○	◆	Must be between 0~5mm from the bottom of the filler plug hole	Only the front of 4WD vehicles, no inspection required for rear
Electrical Equipment	Ignition	Spark plug connection			●	●	○	●	●		Platinum plugs do not require inspection
		Ignition timing			●	●	○	●	●	(Unit: BTDC/rpm) MT Vehicles / AT Vehicles SOHC NA: 10/750 / 10/750 SOHC SC: 10/750 / 10/750	When inspecting or adjusting connect the test mode connector
	Battery	Liquid amount	●							Liquid level should be between the UPPER LEVEL and LOWER LEVEL.	
		Terminal connections			●	●		●	●		
	Electrical Wiring	Looseness & damage to connection				●			●		
Motor	Main Body	Condition and abnormal sounds	●								
		Low speed and acceleration conditions	●							(Unit: rpm) MT Vehicles / AT Vehicles Idling RPM – SOHC NA: 750 / 750 Idling RPM – SOHC SC: 750 / 750	P or N range
		Exhaust condition			●	●		●	●		
		Air cleaner		◇	◆	◆	○	◆	◆		
	Lubrication	Oil leak			●	●		●	●		
		Oil level	●							The level gauge should be between ○ and ○.	
	Fuel System	Fuel leak			◇	●		○	●		
		Link mechanism condition				●		○	●		
		Throttle valve & choke valve condition				●		○	●		Throttle valve's condition
	Cooling System	Coolant level	●							Reservoir tank must be between FULL and LOW or F and L.	
		Coolant leak			●	●		●	●		

Inspection and Maintenance Items			Inspection and Maintenance Period							Specifications	Notes
				Private Use			Business Use				
Inspection Points		Inspection Items	Daily	6 Months	1 Year	2 Years	6 Months	1 Year	2 Years		
Emission System	Gas Blow-by Reduction Device	Metering valve status				●			●		
		Damage to piping				●		○	●		
	Fuel Evaporative Emission Control Device	Damage to piping, etc				●		○	●		
		Clogged or damaged charcoal canister				●		○	●		
		Check valve function				●		○	●		
	Carbon Monoxide Dispersion Prevention Device	Loose or damaged catalytic reaction system or other exhaust gas reduction devices				●		○	●		
		Damage to piping and installation condition				●		○	●		
	Heat Shield	Loose or damaged heat shield				●		○	●		
Lighting equipment direction indicators		Function	●								
Windshield Wipers, Cleaning Fluid Sprayers		Function	●								
Exhaust Pipes & Muffler		Loose or damaged equipment			●	●		●	●		
		Muffler function				●			●		
Vehicle Frame & Body		Loose or damaged equipment				●			●		
Areas Where Abnormalities were Found During Operation		Confirm there are not any abnormalities in the area	●								
Electric	Alternator	Loose or damaged belt			○	○	○	○	○		
Engine	Main Body	Valve gap						○	○		Inspect every 40,000km
		Loose and inspect the supercharger belt			○	○	○	○	○		
	Supercharger	Function of the pressure control device				○		○	○		

Regular Replacement Parts

Regular Replacement Parts	Replacement Period				Notes
	Replacement Period by Years		Replacement Period by 1000 km		
	Private Use	Business Use	Private Use	Business Use	
Brake Fluid	2	2			
Wheel Cylinder Rubber Parts	2	2			
Brake Hose	4	4			
Transmission Oil			40	40	
Differential Oil			40	40	
Spark Plugs			100	80	Platinum Plug
			20	20	Non-platinum plug
Air Cleaner Filter			40 [20]	20	
Timing Belt			100	100	
Engine Oil Filter			10 [5]	5	
Engine Oil	0.5 [0.25]	0.25	10 [5]	5	
Fuel Filter			60	40	
Coolant	2	2	40	40	

NOTES

1. Replacement should be done annually or per km, whichever comes first.
2. The [ ] mark indicates the replacement period under severe conditions.

9 - 3 Service Data

(1) Engine

Item		SOHC NA	SOHC SC
Exhaust CC		658	
Inner diameter x stroke mm		56.0 x 66.8	
Maximum power ps/rpm (net)		46/6400	58/6000
Maximum torque kg•m/rpm (net)		5.9/4000	7.5/4000
Compression ratio		10.1	8.3
Compression pressure		11.6/300	9.8/300
Cylinder head distortion limit mm		0.05	
Cylinder head polishing limit mm		0.15	
Spark plug		BKR5E-11	BKR6E-11
		PFR6B-11 Platinum plugs for the Akabou	
Spark plug gap mm		1.0~1.1	
Ignition Coil	Primary coil resistance	Not measurable	
	Secondary coil resistance	24kΩ ± 15%	
	Noise prevention capacitor	None	
	External resistor	None	
Ignition timing BTDC°/rpm	5MT	10/750	
	3AT	10/750	
Valve clearance	Intake	0.15 ± 0.02 mm	
	Exhaust	0.20 ± 0.02 mm	
Head bolt tightening method (cold)		(When replacing) Apply engine oil to the bolt threads and washers. Tighten to 30 ± 3 N•m (3.0 ± 0.3 kg•m), and then loosen. Tighten to 20 ± 0.5 N•m (2.0 ± 0.05 kg•m), then tighten by an additional 90°. [Reference] The tightening torque at this time is in the range of 34 to 39 N•m (3.5 to 4 kg•m)	
Manifold torque (cold)	Intake	19 ± 2 N•m (1.9 ± 0.2 kg•m)	
	Exhaust	30 ± 5 N•m (3 ± 0.5 kg•m)	
Alternator	Output	12V-55A	
	Adjustment voltage	12.4V~14.8V	
Starter	2WD MT	0.65kW	
	4WD MT	0.75kW	
	AT	0.8kW	

Item			SOHC NA	SOHC SC
Thermostat	Valve opening temperature		78°C (172.4°F)	
	Fully open temperature		78°C (172.4°F)	
Engine oil amount (ℓ)		5MT	3.0	3.0
		3AT	3.1	3.1
V-ribbed belt tension mm/10kg ( ) Indicates continuous use	Alternator without A/C		7.5~10.5 (10.5~13.5)	
	Alternator with A/C		5~6 (6~7)	4~5 (4~6)
	SC		—	5.5~6.5 (6.5~7.5)
Idle CO concentration			0.5% or less	
Idle HC concentration			450ppm or less	

(2) Transmission & Front Differential

Transmission Gear Oil Amount (When replacing)	2WD	5MT	2.0 ℓ (1.9)
	Selective 4WD	5MT	2.1 ℓ (1.9)
		Extra Low Gear + 5MT	2.3 ℓ (2.1)
		Extra Low Gear + 5MT + Differential Lock	2.4 ℓ (2.2)
	Fulltime 4WD	Extra Low Gear + 5MT	2.4 ℓ (2.2)
Front Differential Gear Oil Amount		0.8 ℓ	
Automatic Transmission Fluid (3AT only) Total Oil Amount Including Oil Cooler	2WD	3.8 ℓ	
	2WD Red Hat	4.1 ℓ	
	4WD	4.2 ℓ	

NOTE

• When removing the drain plug, only 1.5 liters of fluid will drain. (ATF)

(3) Body

Item			2WD	4WD
Fuel Tank Capacity ℓ			40	
Fuel Pump Discharge Amt ℓ/h	NA		80	
	SC			
Radiator Cap Valve Opening Pressure KPa [kg/cm²]	Positive Pressure Side		88.2 ± 14.7 [0.9 ± 0.15]	
	Negative Pressure Side		-4.9 or less [-0.05 or less]	
Brake Pedal	Play		1~3 mm	
	Distance from the nut of the pedal bracket		140 mm	
Clutch Pedal	Play		5~15 mm	
	Distance from the nut of the pedal bracket		30 mm	
Front Wheel Alignment	Toe-in		0 ± 3 mm	
	Camber		0° ± 45’	
	Caster	Truck	5° 5’	
		Van/Dias	5° 30’	
Ground Clearance: Difference between the left and right mounting bolt heads on the underside of the front cross member within 10 mm	Ground Clearance ⌒ mm ⌣ +12 -24	5.00-12 Bias	331	(Truck)
			329	(Van)
		145R12 Radial	316	(Truck)
			315	(Van)
			314	(Dias)
		155/80 R12	319	(Dias)
Rear Wheel Alignment	Toe-in		0 ± 3 mm	
	Camber		0°50’ ± 45’	(Truck)
			0°50’ +45’ −60’	(Van/Dias)
Ground Clearance: Trailing arm mounting bolt center	Ground Clearance ⌒ mm ⌣ +12 -24	5.00-12 Bias	299	(Truck)
			296	(Panel Van)
			291	(Van)
		145R12 Radial	284	(Truck)
			282	(Panel Van)
			277	(Van)
			276	(Dias)
		155/80 R12	281	(Dias)

Item		2WD	4WD
Steering Wheel Play		0~25 mm	
Steering Angle	Inside	38°	
	Outside	32°	
Front Brake Disc Thickness	Standard	18 mm	
	Limit	16 mm	
Front Brake Pad Thickness	Standard	9 mm	
	Limit	1.5 mm (Red Hat 2.0 mm)	
Rear Brake Lining Thickness	Standard	4.5 mm	
	Limit	1.7 mm	
Rear Brake Inner Diameter	Standard	200 mm	
	Limit	202 mm	
Parking Brake Lever	Operating Power	20 kg	
	Delivery Charge	7~9 Clicks	
Axle Torque Nut N•m [kg•m]	Front	177 ± 20 [18.0 ± 2]	
	Rear	186 ± 20 [19.0 ± 2]	
Wheel Size		12x4.00 B	
Wheel Offset		45.0 mm	
P.C.D.		100 mm	
Wheel Nut Torque N•m [kg•m}		88 ± 10 [9.0 ± 1]	

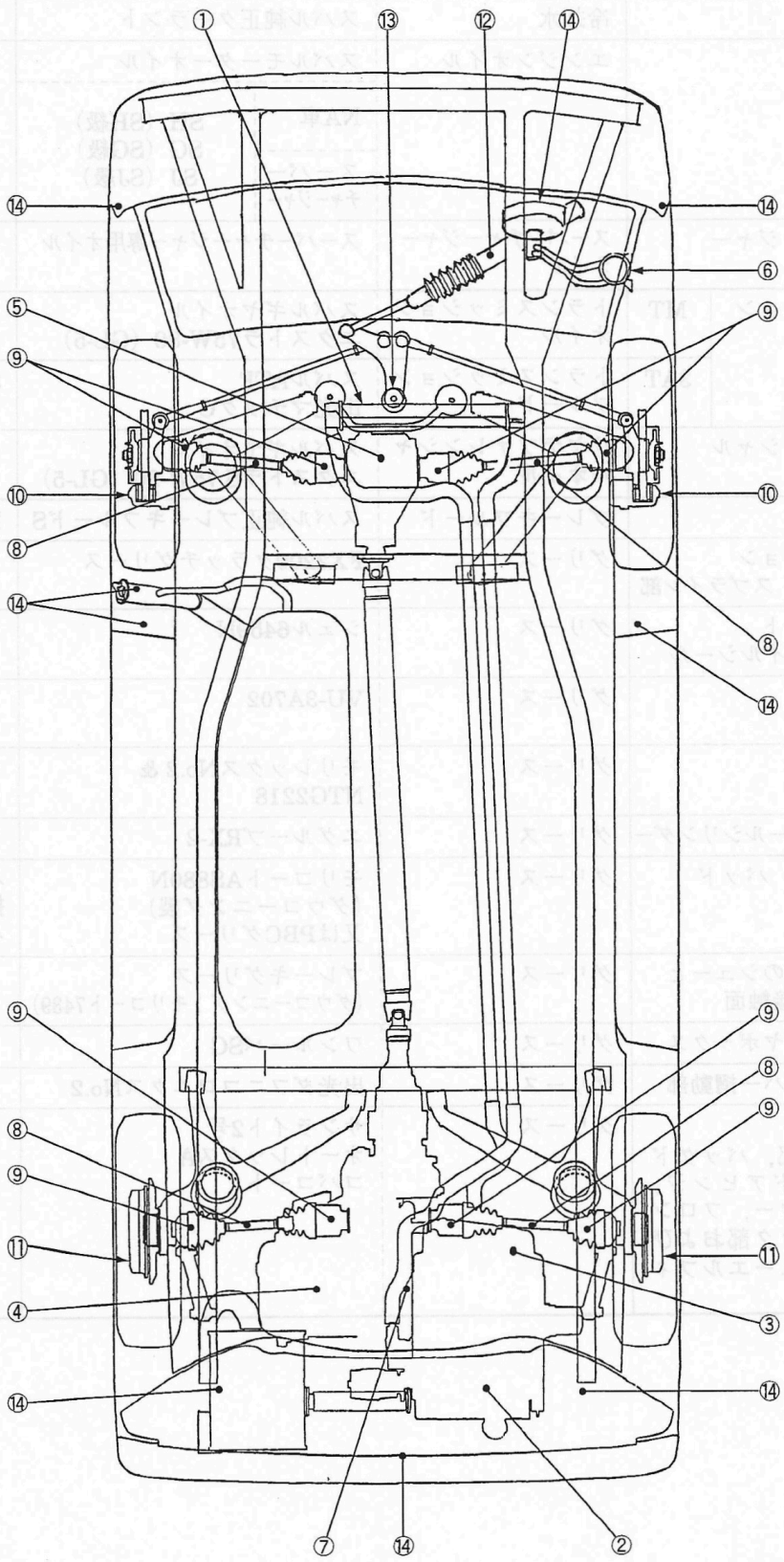
Tire Pressure Kg/cm² [PSI]

Tire Specs	Front Wheel	Rear Wheel
5.00-12-4PR/6PR ULT	2.4 [35]	3.0 [45]
145R12-6PR LT	2.4 [35]	3.0 [45]
145R12-6PR LT (Dias)	2.4 [35]	2.6 [38]
155/80R12 77S (Dias)	2.2 [32]	3.0 [45]

Battery Model ( ) Indicates 5 hour rate capacity			
	Standard	26B17L (12V-21Ah)	38B20L (12V-28Ah)
	Cold Climate	38B20L (12V-28Ah)	

9 - 4 Lubrication

No	Part Name		Fluid Type			Notes
1	Radiator		Coolant	Subaru Genuine Coolant		
2	Engine		Engine Oil	Subaru Genuine Engine Oil		
				NA Vehicle	SH (SH Class) SG (SG Class) SJ (SJ Class)	
				SC Vehicle		
3	Supercharger		Supercharger Oil	Supercharger Oil Only		Maintenance Free
4	Transmission	5MT	Gear Oil	Subaru Gear Oil Extra 75W-90 (GL-5)		
		3AT	Transmission Oil	Subaru ATF Idemitsu Matic C		3AT Only
5	Rear Differential		Rear Differential Oil	Subaru Gear Oil Extra S 75W-90 (GL-5)		
6	Brake Reservoir		Brake Fluid	Subaru Genuine Brake Fluid		DOT3
7	Transmission Main Shaft Spline		Grease	FX2200 Clutch Grease		
8	Axle Shaft Bearing & Oil Seal		Grease	Shell 6459N		
9	DOJ		Grease	VU-3A702		
	BJ		Grease	Morilex No 2 & NTG2218		
10	Brake	Wheel Cylinder	Grease	Niglube Rx-2		Installing piston boots
		Pad	Grease	Molykote AS880N or PBC Grease		Pad & support sliding parts Pad & shim contact surface
11	Contact surface between drum brake shoe and back plate		Grease	Brake Grease Molykote 7439		
12	Steering gear box		Grease	One Luber SG		
13	Gear change lever sliding part		Grease	Idemitsu Daphne Grease No 2		
14	Others: Pedal sliding parts, back door hinges, door hinges, door checkers, front hood locks and hinges, fuel filter hinge		Grease	Shell Sunlight No 2 Autolex A Kopr-Kote		



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