SERVICE MANUAL

SUBARU 360 SEDAN

BODY SECTION

FUJI HEAVY INDUSTRIES LTD.
TOKYO JAPAN

FOREWORD

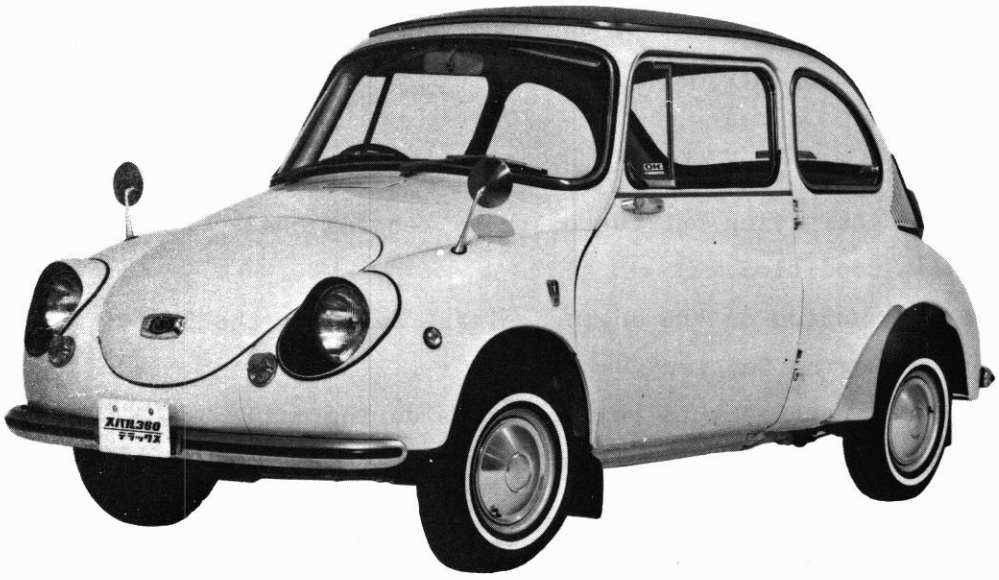
This service manual has been prepared as reference for effective service and maintenance of the body for Subaru 360 Sedan, Subaru 360 Custom.

Please utilize this manual fully to ensure complete maintenance work for satisfying our customers by keeping their vehicles in the best condition.
(For information on the engine, please refer to the "Service Manual - Engine Section".)
When it is necessary to replace parts during maintenance, be sure to use genuine Subaru parts.

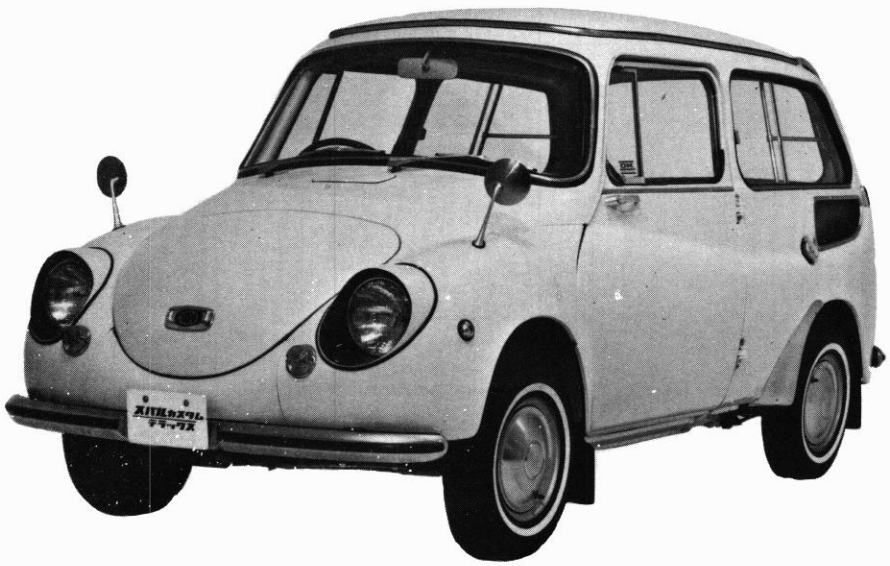
FUJI HEAVY INDUSTRIES LTD.

EXTERIOR PHOTOGRAPHS

SUBARU 360 SEDAN

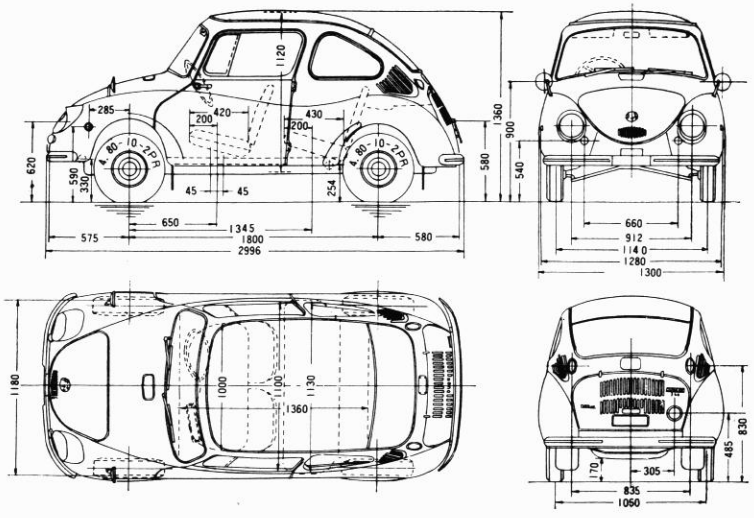


SUBARU 360 CUSTOM

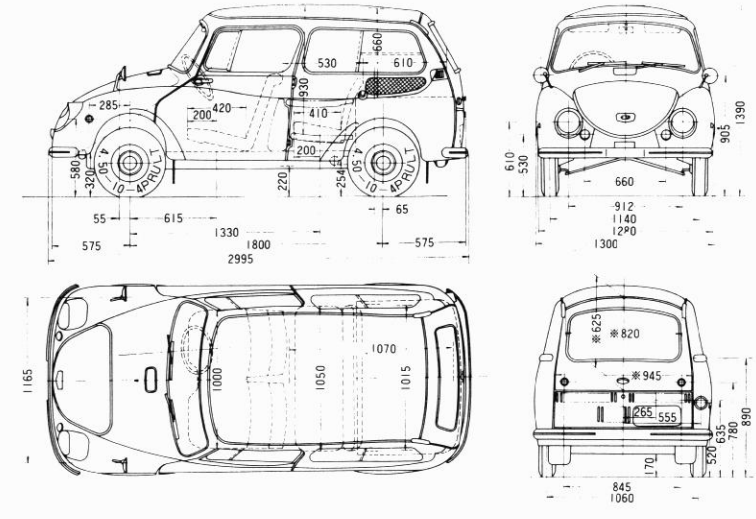


VIEWS OF FRONT, BACK, SIDE AND TOP

SUBARU 360 SEDAN

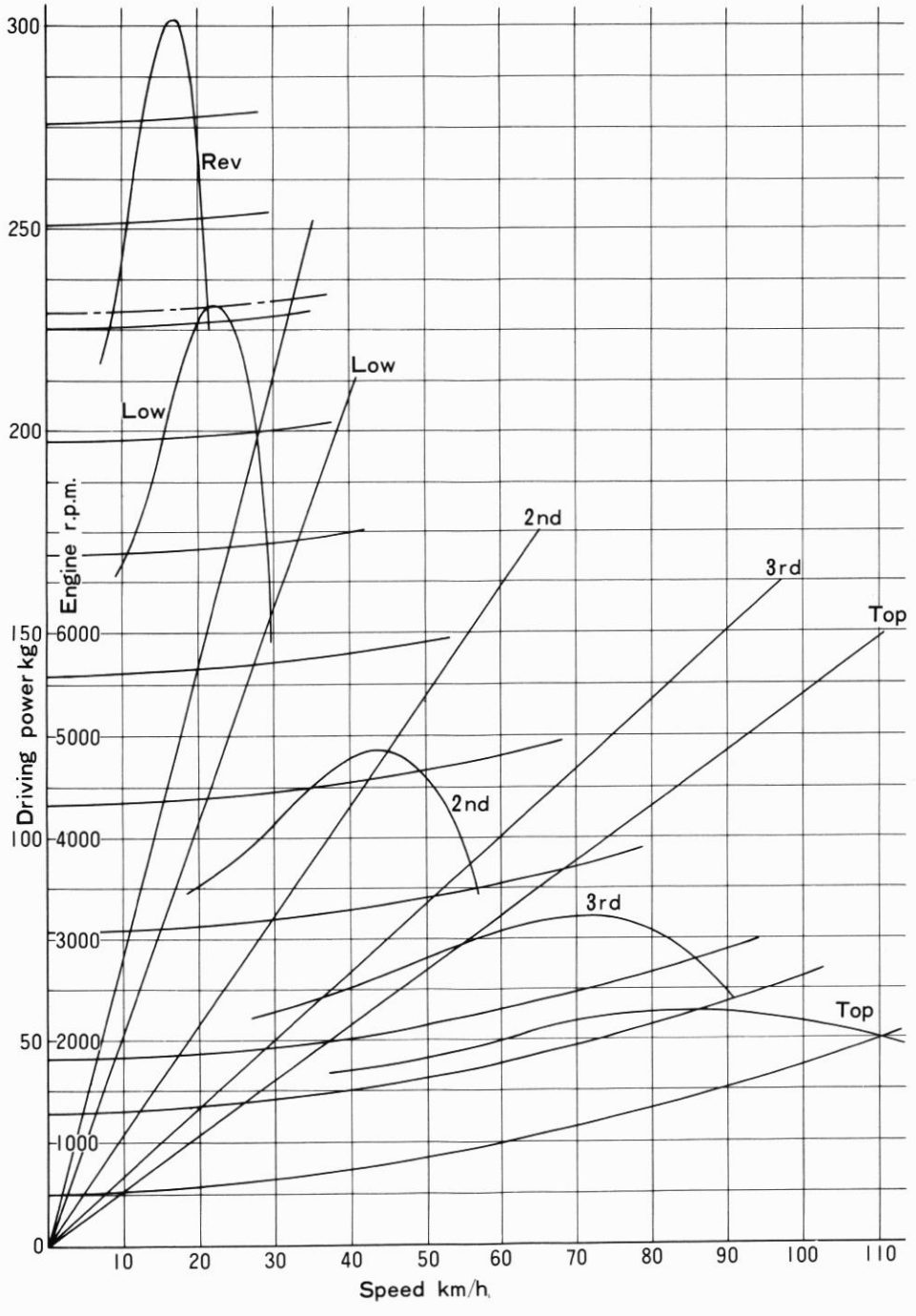


SUBARU 360 CUSTOM

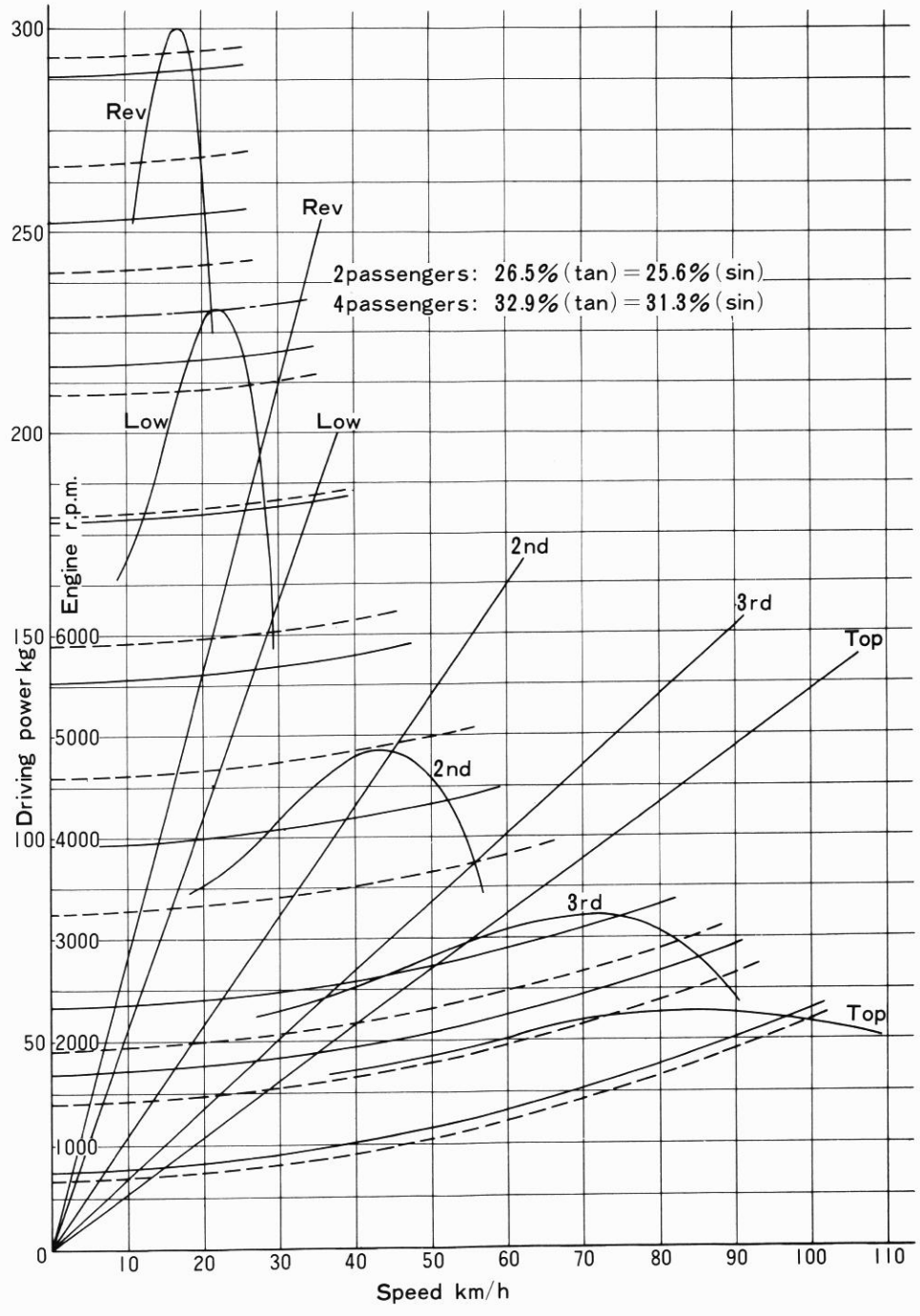


Unit : mm

Subaru 360 Sedan Performance Curve



Subaru 360 Custom Performance Curve



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CHAPTER 1: SPECICATIONS AND PERFORMANCES

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CHAPTER 1. SPECICATIONS AND PERFORMANCES

1-1: MAJOR SPECICATIONS AND PERFORMANCES

	Subaru 360 Sedan	Subaru 360 Custom	
Model	K111D (K111DL)	K142 (K142L)	
Category	Sedan	Sedan-type Van	
Dimensions and Weights			
Length	2995 mm (117.9 in)	"	
Width	1300 mm (51.2 in)	"	
Height	1350 mm (53.1 in)	1390 mm (54.7 in)	
Compartment (Interior Dimensions)		(2 pass.)	(4 pass.)
Length	1410 mm (55.5 in)	1070 mm (42.1 in)	579 mm (22.8 in)
Width	1100 mm (43.3 in)	1050 mm (41.3 in)	1000 mm (39.4 in)
Height	1120 mm (44.1 in)	928 mm (36.5 in)	660 mm (26.0 in)
Floor Height	220 mm (8.7 in)	"	
Minimum Road Clearance	160 mm (6.3 in)	"	
Wheelbase	1800 mm (70.9 in)	"	
Tread (Front Wheel)	1140 mm (44.9 in)	"	
Tread (Rear Wheel)	1070 mm (42.1 in)	"	
Vehicle Weight	420 kg (925.0 lb)	460 kg (1014.1 lb)	
Load Distribution (empty)			
Front Wheel	160 kg (352.0 lb)	175 kg (385.7 lb)	
Rear Wheel	260 kg (573.0 lb)	285 kg (628.0 lb)	
Height of Center of Gravity	670 mm (26.4 in)	530 mm (20.9 in)	
Maximum Tipping Angle (both sides)	44°30'	45°50'	
No. of Passengers	Four	Two	Four
Maximum Cargo Load	-	250 kg (550 lb)	150 kg (330 lb)
Gross Vehicle Weight	640 kg (1411.0 lb)	820 kg (1807 lb)	680 kg (1499 lb)

		Subaru 360 Sedan	Subaru 360 Custom	
Load Distribution (loaded)				
Front Wheel		260 kg (573.0 lb)	255 kg (562 lb)	275 kg (606 lb)
Rear Wheel		380 kg (837.0 lb)	565 kg (1267 lb)	405 kg (892 lb)
Load on Front Wheels (loaded)		40.6 %	31.0 %	40.4 %
Tire Loading: (loaded)	Front	70.3 %	56.7 %	61.1 %
	Rear	102.7 %	125.6 %	90.0 %
Overhang excl. Bumper:	Rear	580 mm (23.0 in)	575 mm (22.6 in)	
	Front	575 mm (22.6 in)	"	
Tire	Front	4.80 - 10 x 2P	4.50 - 10 x 4P	
	Rear	4.80 - 10 x 2P	4.50 - 10 x 4P	
Cargo Bed Offset		-	65 mm (forward)	
Performance				
Maximum Speed		110 km/h (68 mph)	95 km/h (59 mph)	
Climbing Power		0.340	0.259	0.294
Minimum Turning Diameter		8 m (26.2 ft)	"	
Braking Distance (50 km/h)		12 m (39.4 ft at 31 mph)	"	
Engine				
Manufacturer		Fuji Heavy Ind.	"	
Type		Gasoline Engine	"	
Cooling		Forced Air-Cooled	"	
Cylinders		Two in line	"	
Cycle		2-cycle	"	
Combustion Chamber Shape				
Bore x Stroke		61.5 mm x 60 mm (2.42 in x 2.36 in)	"	
Total Displacement		356 cc (21.7 cu/in)	"	
Compression Ratio		6.7	"	

	Subaru 360 Sedan	Subaru 360 Custom
Max. Mean Effective Pressure	5.3 kg/cm^2 (76.4 lb/in^2)	"
Max. Horsepower	25 HP (5500 rpm)	"
Max. Torque	3.5 m-kg (25.3 ft-lb)/4500 rpm	"
Dimensions	622x618x475 mm (24.5x24.3x18.8 in)	"
Weight	78.3 kg (172.3 lb)	78.8 kg (173.4 lb)
Location	Rear	"
Starting	Starter Motor	"
Ignition	Battery & Ignition Coil	"
Firing Angle	13° before TDC (2000 rpm)	"
Maximum Advande Angle	20° (4000 rpm)	"
Firint Sequence	1 - 2	"
Spark Plug	B7H (N.G.K.) M46 (Hitachi)	"
Spark Plug Thread Size	14 mm	"
Spark Plug Gap	0.7 mm (0.027 in)	"
Distributor	29100 - 136 - 0 (Nihon Denso)	"
Ignition Advance Control	Automatic centrifugal	"
Ignition Coil	C14 - 50 (Hitachi)	"
Carburetor	Solex type (Hitachi)	"
Carburetor Model & Quantity	HAB28 1 ea	"
Air Flow Direction	Side-ways	"
Air Cleaner	Paper filter type 1 ea	"
Fuel Tank Capacity	25 liters (6.6 USgal) (4.5 ImpGal)	20 liters (5.3 USgal) (4.4 ImpGal) Utilizing crankcase compression
Fuel Pump	Mechanical	Disphragm type

		Subaru 360 Sedan	Subaru 360 Custom
Lubrication System		Separate force-feeding type	"
Oil Pump		Plunger type	"
Oil Tank Capacity		2.5 liters (2.64 US qt) (2.20 Imp qt)	"
Steering System			
Steering Gear Type		Rack and Pinion	"
Steering Gear Ratio		20.6	"
Steering Angle (Inner)		36°	"
Steering Angle (Outer)		27°	"
Steering Wheel Diameter		380 mm (15.0 in)	"
Undercarriage and Suspension			
Number and Position of Wheels		2 ea in front and rear	"
Front Wheel Axle		Trailing arm type	"
Toe-in		12-16 mm (0.47-0.63 in)	"
Camber		2°	"
Caster		13°17'	"
Trail		101 mm (3.98 in)	"
King-Pin Angle		7°	"
Rear Wheel Axle		Swing Axle Type	"
Brake Type		Hydraulic on all four wheels	"
Brake Shoe (WxTxL)	Front	30x5x156 mm (1.2x0.2x6.1 in)	"
	Rear	30x5x180 mm (1.2x0.2x7.1 in)	"
Brake Shoe Area	Front	187 cm^2 (29.0 in^2)	"
	Rear	216 cm^2 (33.5 in^2)	"

		Subaru 360 Sedan	Subaru 360 Custom
Brake Drum Diameter	Front	170 mm (6.7 in)	"
	Rear	"	"
Master Cylinder Inner Diameter		19.05 mm (0.75 in)	"
Wheel Cylinder Inner Dia.	Front	20.64 mm (0.79 in)	"
	Rear	17.46 mm (0.68 in)	"
Max. Hydraulic Pressure (foot)		100 kg/cm^2 (1422 lb/in^2)	"
Hand Brake		Mechanical on rear wheels	"
Hand Brake Shoe (WxTxL)		30x5x180 mm (1.2x0.2x7.1 in)	"
Hand Brake Shoe Area		216 cm^2 (33.5 in^2)	"
Brake Drum Diameter		170 mm (6.7 in)	"
Front Suspension		Independent	"
Front Torsion Bar (dia. x length)		18.0 m/m x 435 mm (0.7 in x 16.93 in)	"
Coil Spring (wire dia. x center dia. x length - effective coils)		14.5x57.5x113 mm-4.2 (0.56x2.25x4.7 in-4.2)	"
Rear Suspension		Independent	"
Rear Torsion Bar (dia. x length)		17.6 mm x 427 mm (0.67 in x 16.7 in)	20.5 mm x 434 mm (0.81 in x 17.1 in)
Shock Absorber	Front	Hydraulic, double cylinder	"
	Rear	Hydraulic, single cylinder	"
Body Frame		Frameless monocoque	"
Lighting Equipments			
Headlights		12V50W/40W x 2 ea (S8842 - Koito)	12V50W/40W x 2 ea (S8842 - Koito)
Side turn Signal light		12V6W x 2 ea	"
License Plate Lamp		12V8W x 1 ea (white)	"

	Subaru 360 Sedan	Subaru 360 Custom
Reflector (in tail lamps)	32 mmø x 2 ea (red)	36 mmø x 2 ea
Front combination lights (turn signal/ parking)	12V 23W/7W x 2 ea (red)	"
Rear combination lights (turn signal/ parking/stop/tail)	12V 23W/7W x 2 ea (red)	"
Room Lamp	12V8W / 1 ea (white)	"
Miscellaneous		
Horn	BS (MARUKO) 22W. double	"
Rear View Mirror	Square type x 2 ea	"
Windshield Wiper	Double Blade	"
Speedometer	Magnet type (Nihon Denso)	"
Fuel Gauge	Bi-metal type (Nihon Denso)	"

CHAPTER 2: FRONT END

2

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CHAPTER 2. FRONT END

2-1: SPECIFICATIONS AND STANDARDS FOR FRONT END

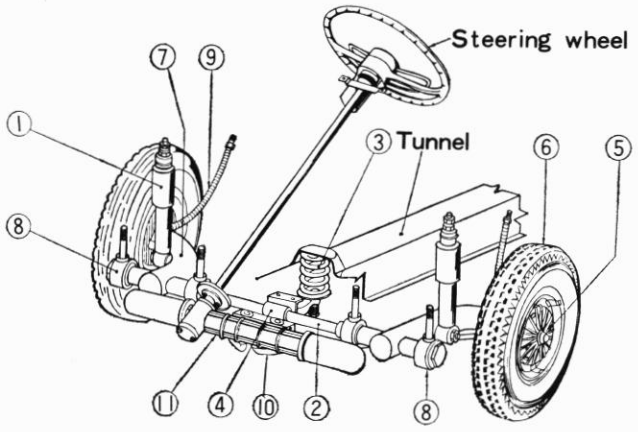
	MODEL K111DL	MODEL K142
Suspension	Independent Suspension	Independent Suspension
Distance between Wheels	1140 mm (44.9 in)	1140 mm (44.9 in)
Toe-in	12-16 mm (0.47-0.62 in)	12-16 mm (0.47-0.62 in)
Camber Angle	2°	2°
Caster Angle	13°05'	13°05'
King-Pin Angle	7°	7°
Trail (by Caster Angle)	101 mm (3.98 in)	101 mm (3.98 in)
Trail (by King-pin Angle and Camper Angle)	30 mm (1.18 in)	30 mm (1.18 in)
King-Pin outer diameter	14 mm (0.55 in)	14 mm (0.55 in)
Adjustment Limits of King-Pin Bushing Clearance	0.1-0.15 mm (0.0394-0.0591 in)	0.1-0.15 mm (0.0394-0.0591 in)
King-Pin Thrust Washer Adjustment	To rotate without play	To rotate without play
Front Tires	4.80 x 10 - 2P	4.50 x 10 - 4P
Front Tire Pressure	0.85-0.99 kg/cm^2 (12-14 psi)	0.9-1.0 kg/cm^2 (13-14 psi)
Front Hub Bearing (Inner)	No. 30204	No. 30204
Front Hub Bearing (Outer)	No. 30203	No. 30203
Tightening Procedure of Front Hub Bearing	Tighten nut completely and return 1/6 to 1/8 revolution; fix in place with cotter pin.	
Load on the Front Wheels Without passengers	160 kg (352 lb)	175 kg (385.5 lb)
With passengers (full load)	260 kg (573 lb)	225 kg (275 lb)

GENERAL DATA:

The front wheels of the Subaru regardless of whether the vehicle is carrying a load or not sustains approximately 41 percent of the gross vehicle weight. It incorporates an unique independent suspension system combining the best qualities of the torsion bar, center spring and trailing arm. It is designed to provide easy and comfortable riding under any type of load condition.

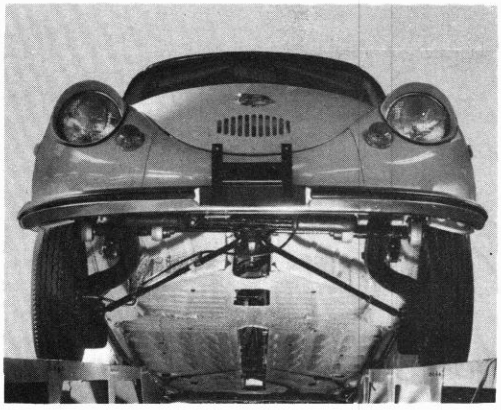
Posture adjustment can be simply accomplished through the center arm minute adjustment bolt. With the exception of toe-in and camber, the Subaru wheel alignment requires no adjustment. As long as proper parts are used and correctly assembled, the wheel alignment will be correct unless the parts are abnormally worn down.

2-2 FRONT END CONSTRUCTION



- Front End
  - Front Suspension
    - (1) Shock Absorber
    - (2) Torsion Bar
    - (3) Center Spring
    - (4) Center Arm
  - Front Axle
    - (5) Brake Drum
    - (6) Tire
    - (7) Trailing Arm
    - (8) Trailing Arm Bracket
  - (9) Rubber Hose
  - (10) Tie-Rod
  - (11) Gear Box

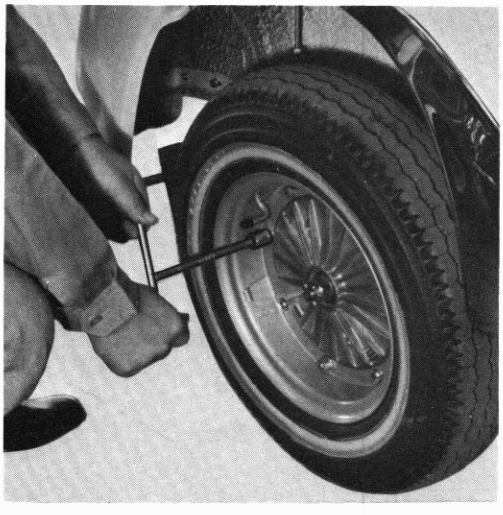
2-3 DISASSEMBLY AND ASSEMBLY OF FRONT END ASSEMBLY



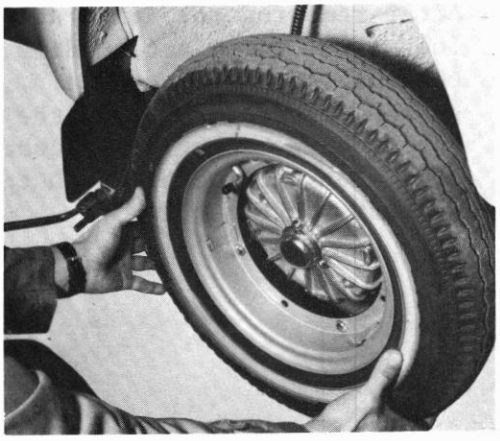
A. REMOVAL

(a) Place the vehicle over a work pit or on a work stand. Jack up the front end so that the wheels are free.

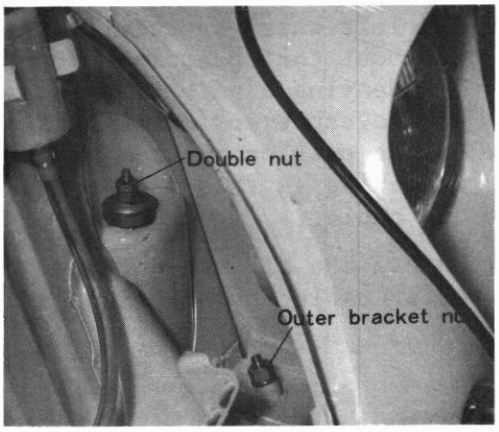
Remove the wheel cap.



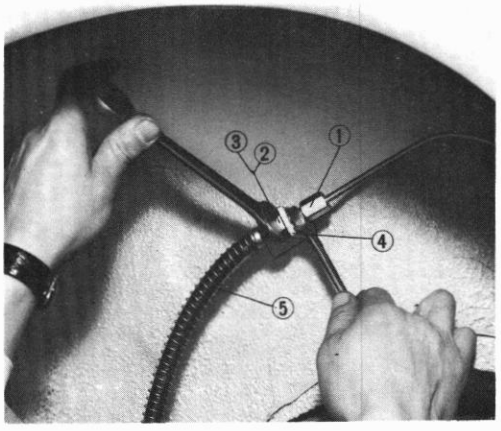
(b) Remove four 8 mm wheel nuts holding the rim and brake drum together.



Pull out the tire toward you.



(c) Remove the nut fixing the oil damper to the body. A double nut is used here. Hold the buttom nut with a wrench and remove the top one. Then remove the lower one.



(d) The brake hose is attached on both the left and right side as shown in the photo. Fit the wrench on the hexagonal part on rubber hose side. Turn the joint nut with another wrench and remove.

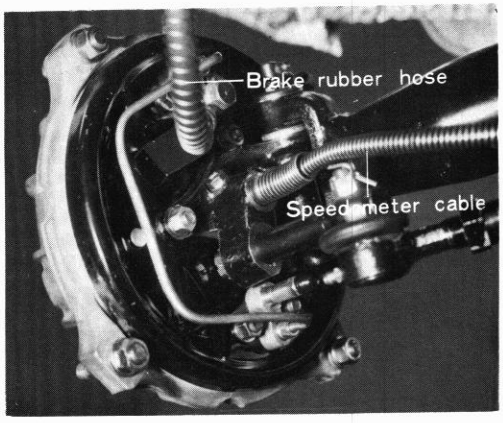
(1) Joint Nut

(2) Nut

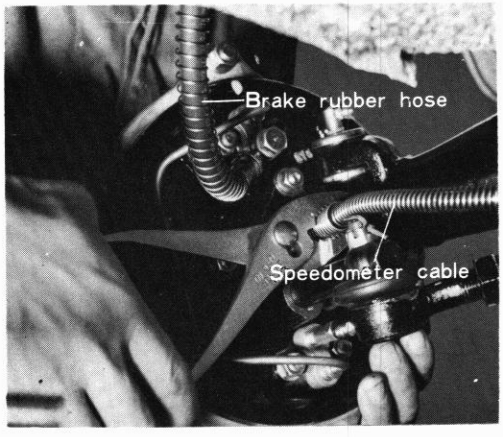
(3) Spring Washer

(4) "L" Bracket

(5) Rubber Hose

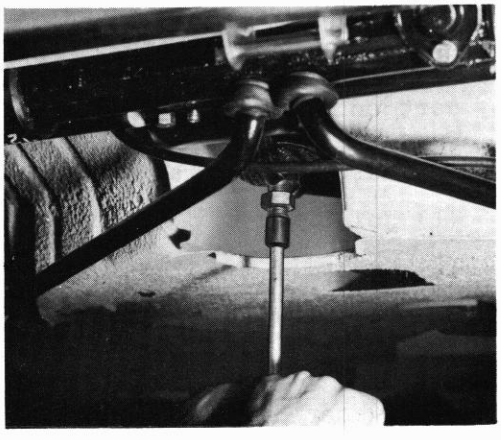


(e) After removing the joint nut, loosen the 14 mm nut holding the rubber hose through a spring washer. Pull out the rubber hose. Cover the rubber hose with a piece of cloth to protect it from dust.

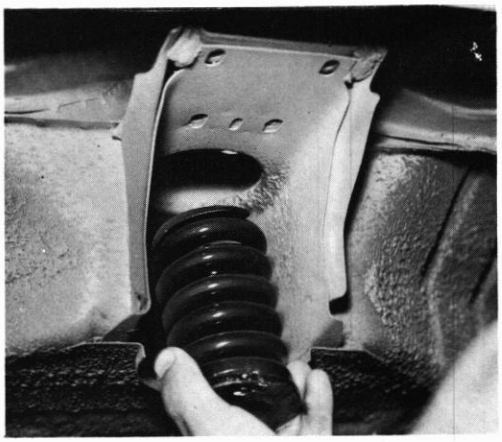


(f) Remove the pressure bolt from the left wheel knuckle and pull out the speedometer cable by applying a pair of pliers on the cable end metal fitting. Do not pull on the cable outer sheathing as this will damage the cable.

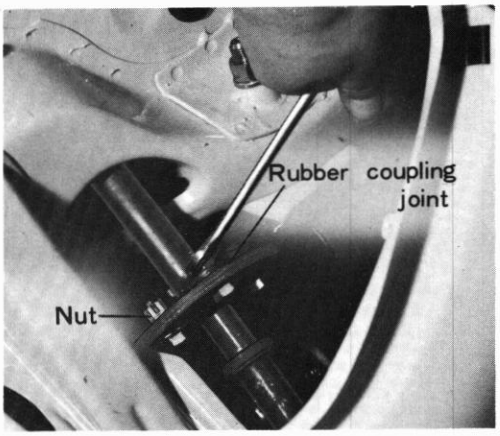
(g) Remove the tie-rod and speedometer cable installation clip.



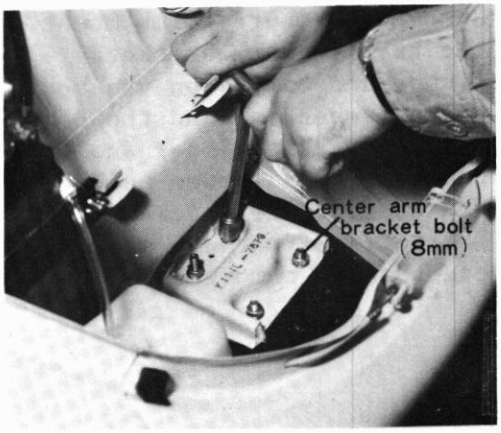
(h) Loosen the center arm adjustment bolt.



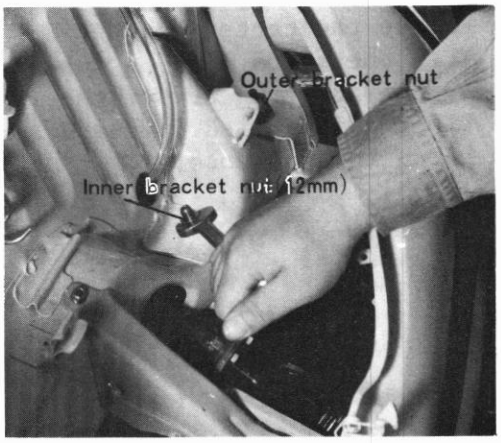
(i) Remove the center spring. This operation will be easier if the trailing arm or the tie rod is pulled downward as shown in the Photo.



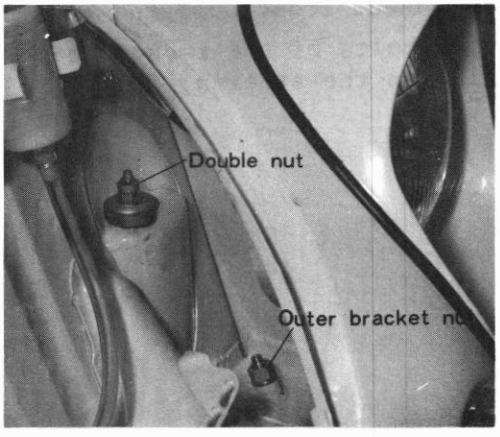
(j) Open the front hood and loosen the bolts of the rubber coupling on the steering shaft.



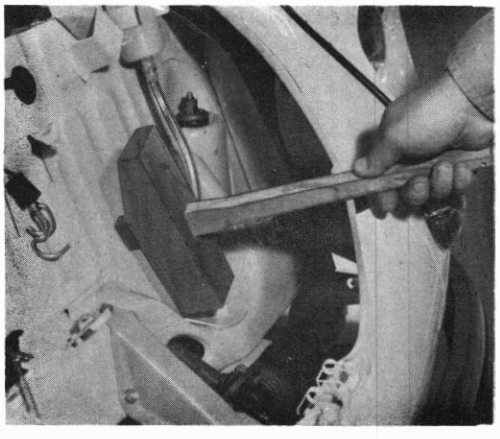
(k) Remove the 8 mm bolt holding the center arm bracket.



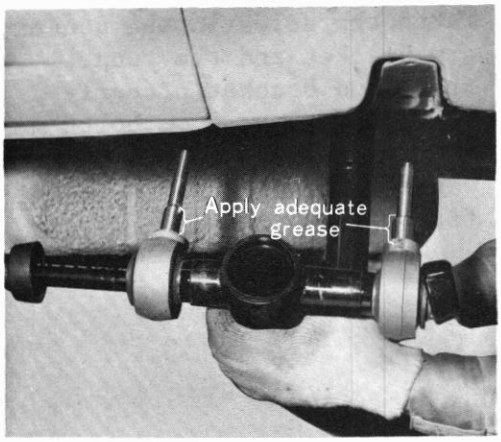
(l) Remove the 12 mm nut holding the inner bracket.



(m) Remove the 12 mm nut holding the outer bracket.

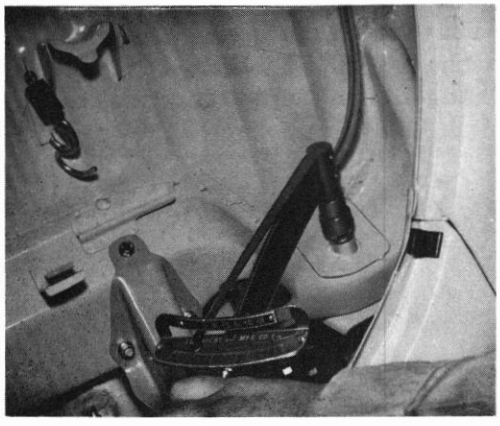


(n) Remove four nuts which mount the trailing arm brackets (inner and outer) on the body cross member. Pound the heads of the bracket (inner and outer) with a wooden mallet and extract the brackets. The entire front end assembly can then be removed.



B. REINSTALLATION

(a) Apply adequate grease to the washer and shim of the trailing arm brackets (inner and outer).

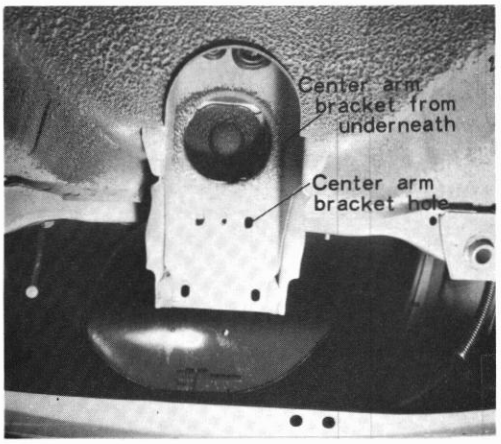


Insert the front end assembly into the sleeve of the body. Insert spring washers and tighten the 12 mm nuts firmly.

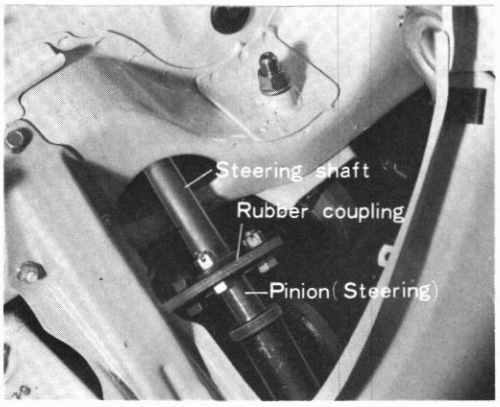
PROPER TORQUE: 7.0 kg-m
(50.6 lb-ft)

CAUTION:

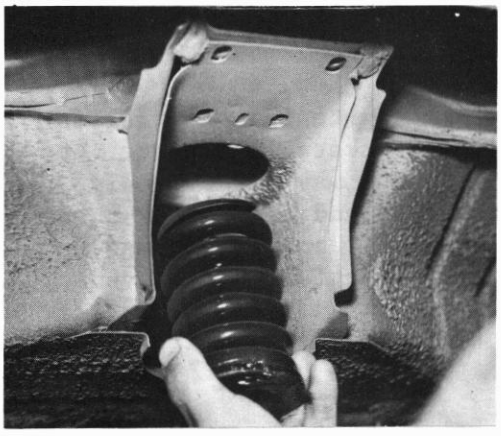
When tightening the trailing arm brackets into place, the brackets may get slightly twisted and the rubber bushings may become deformed in one direction. To prevent this, and tighten the 12 mm nut in place from the top.



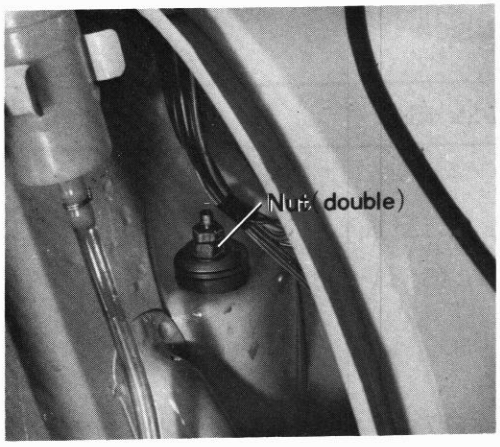
(b) Match the holes in the center arm bracket and the tunnel front end bracket properly and insert four 8 mm bolts from underneath. Insert spring washers and tighten the nuts firmly.



(c) The pinion and joint are of unit construction . Tighten the bolts of the rubber coupling on the steering shaft.

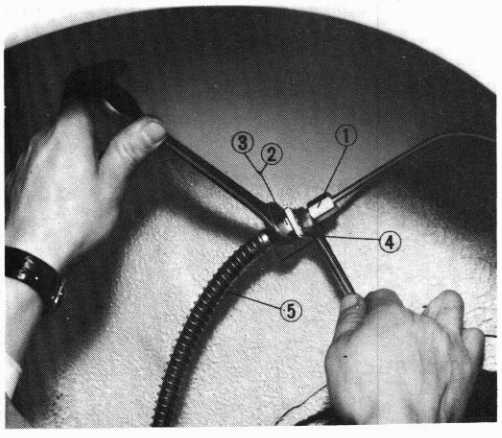


(d) Attach the center spring. this work will be facilitated if the tie-rod is held and pulled forward. After inserting the center spring, check whether the lower plate of the center spring is in the proper position.

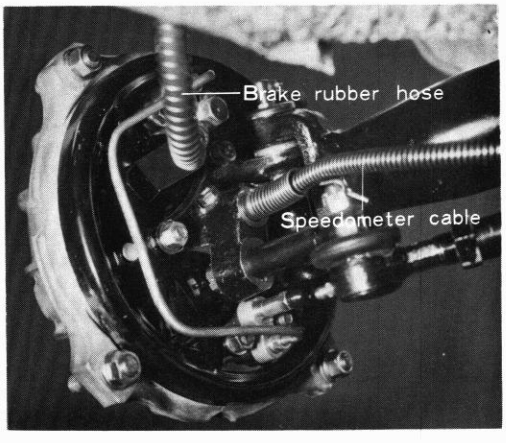


(e) Insert the top part of the oil damper into the body and tighten into place with the 10 mm nut. Fix into place with the lock nut to prevent loosening.

(Loosen the lower 10 mm nut beforehand and after confirming the proper angle of the oil damper, tighten into place.)



(f) Insert the brake hose into the "L" shaped bracket protruding from the body. Fix in place with spring washer and nut. Join the hose with the joint nut. After completing assembly, be sure to expel the air.

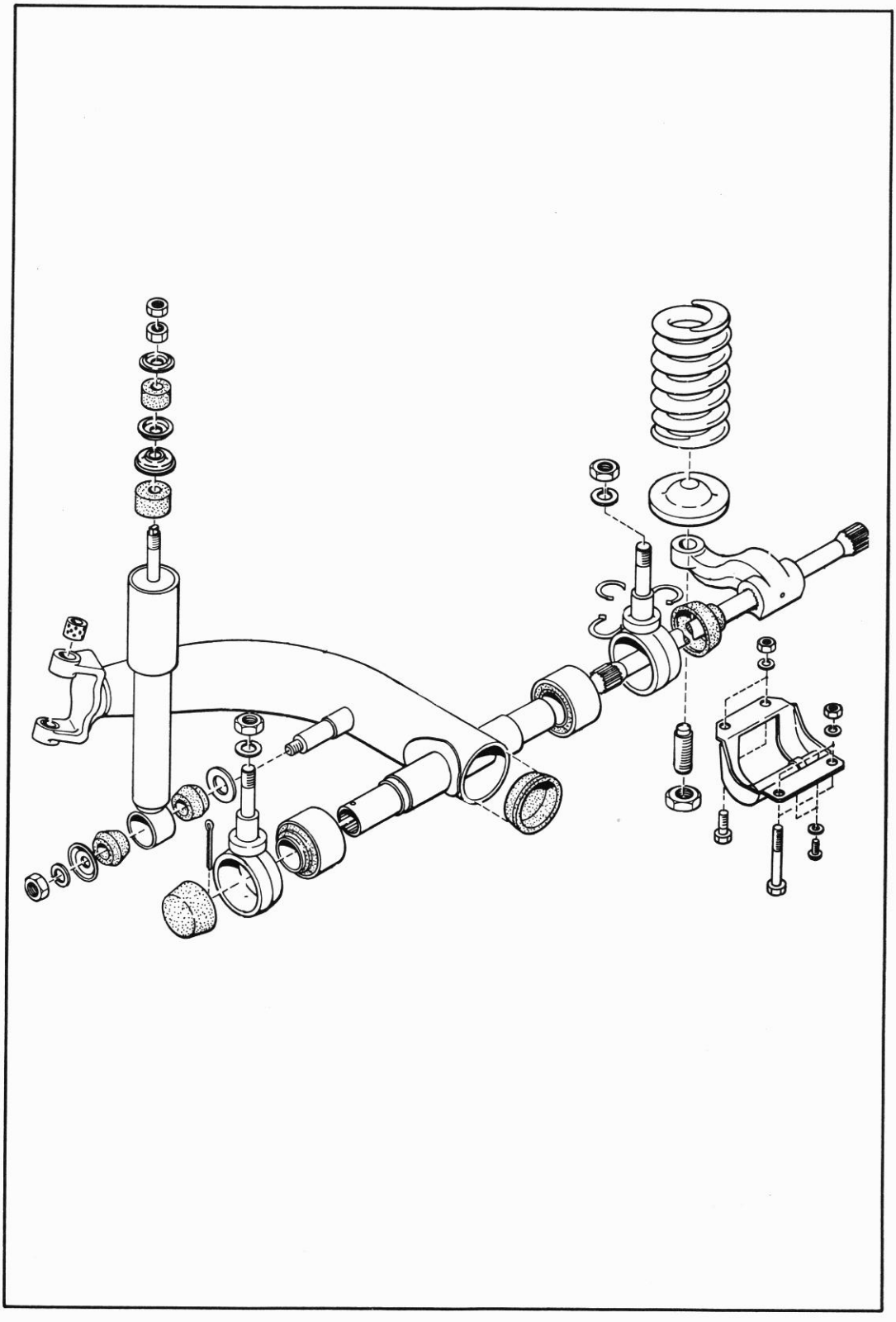


(g) Attach the speedometer cable to the wheel. Fix the wheel cap in place.

2-4 SPECIFICATIONS FOR FRONT SUSPENSION

	MODEL K111	MODEL K142
Center Spring		
Free Length	113 mm (4.3 in)	"
Compressed Length	97.7 mm (3.83 in)	"
Number of Working Coils	4.2	"
Front Torsion Bar		
Working Length	435 mm (17.11 in)	"
Diameter	18.0 mm (0.71 in)	"
Specifications of Front Torsion Bar Serration		
Inside End	0.75/0.375x27	"
Outside End	0.75/0.375x30	"
Position of Missing Tooth	Upper outer side on center line of trailing arm	
Oil Damper Fatigue Factor		
Extended Side	146kg/0.3m/sec	"
Compressed Side	55kg/0.3m/sec	"
Rim Size	300D x 10	"
Rim Deflection	1 mm (0.04 in) in left and right direction	

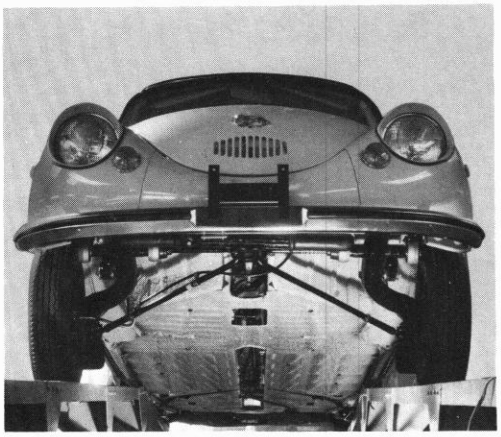
2-5 FRONT SUSPENSION CONSTRUCTION



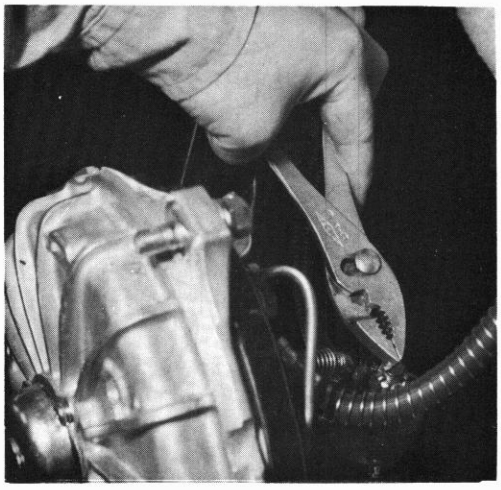
2-6: DISASSEMBLY AND ASSEMBLY OF FRONT SUSPENSION

A. DISASSEMBLY

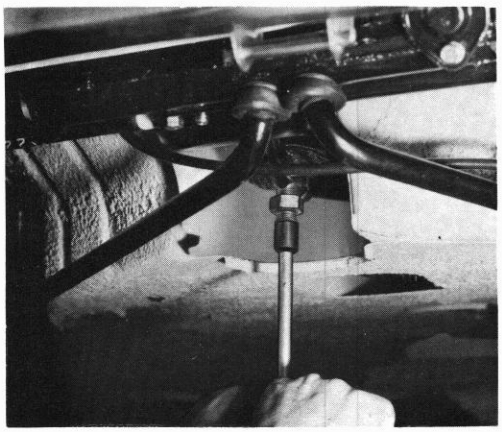
SPECIAL TOOLS	921240000



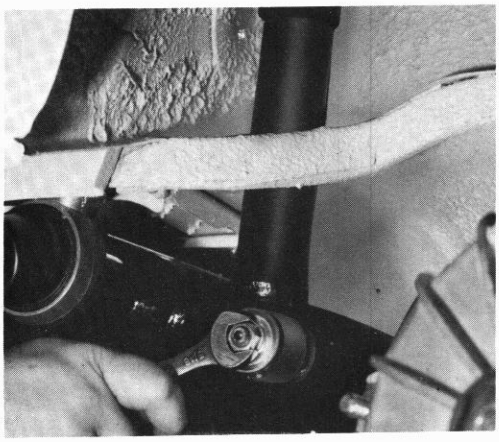
(a) Jack up the front end of the vehicle.



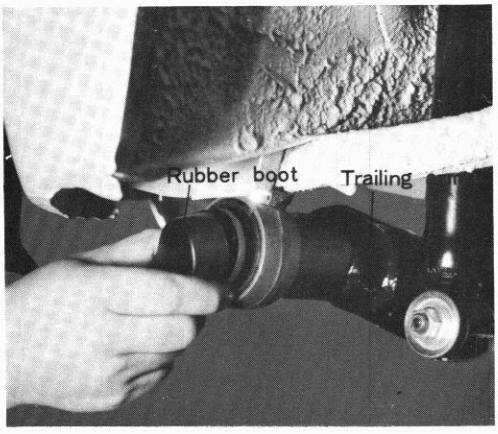
(b) Pull out the cotter pin from the ball stud castellated nut.



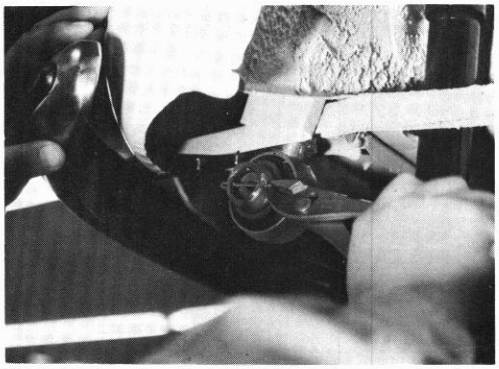
(c) Loosen the center arm adjustment bolt. As the center arm adjustment bolt is fixed with a lock nut, the lock nut must first be loosened.

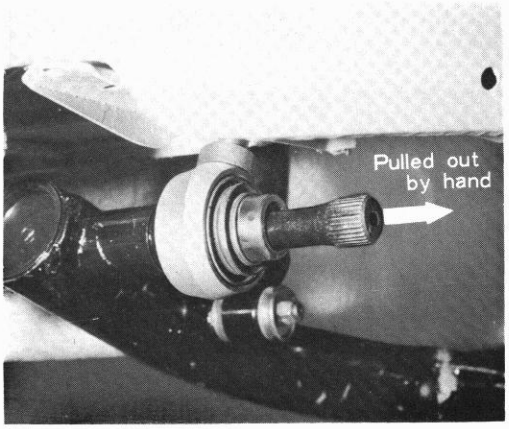


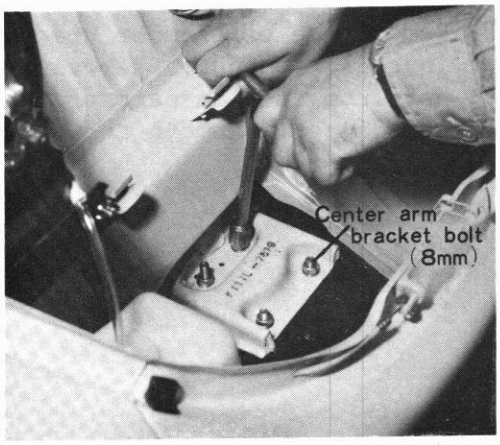
(d) Remove the oil damper bracket installation nut. Remove the nut from the pin part of the oil damper. Remove the center spring.



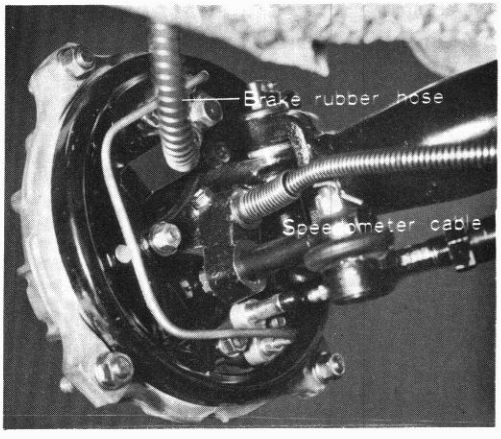
(e) Remove the rubber boots of the trailing arm. Pull out the cotter pin from the trailing arm shaft. Extract the torsion bar. The torsion bar can easily be pulled up by hand.





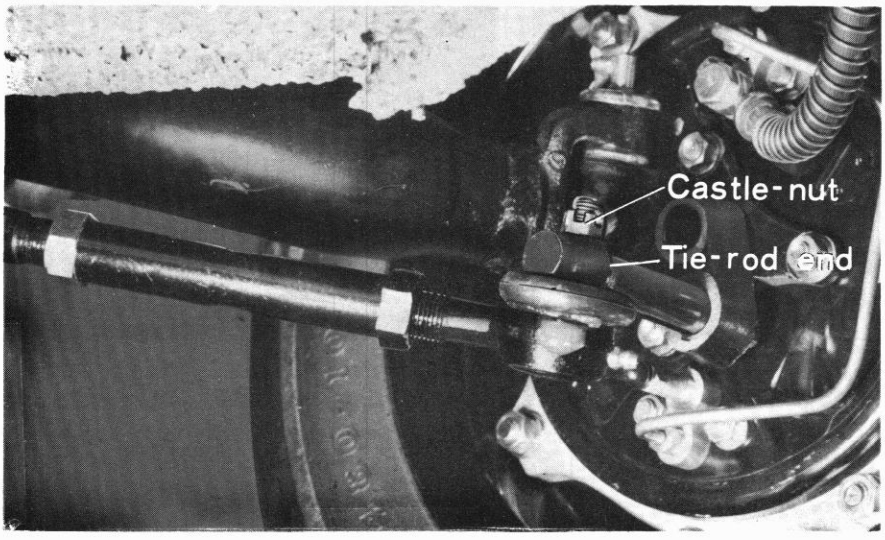


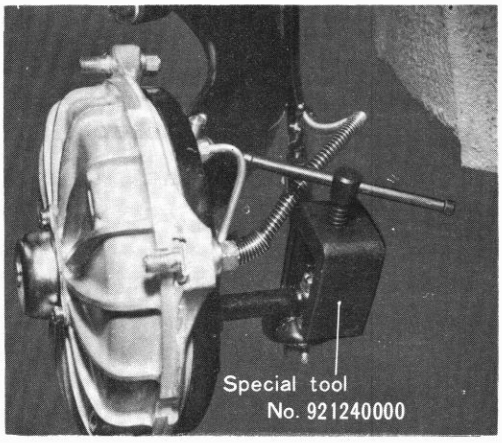
(f) Remove the center arm.



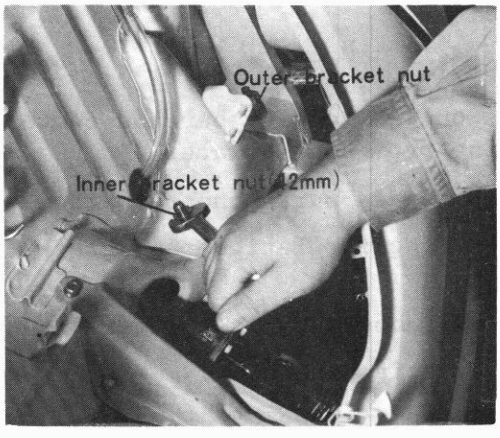
(g) Remove the brake hose and the speedometer cable.

(h) Remove the castellated out on the tie-rod end.



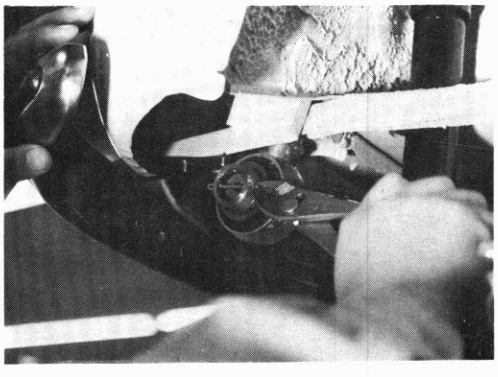


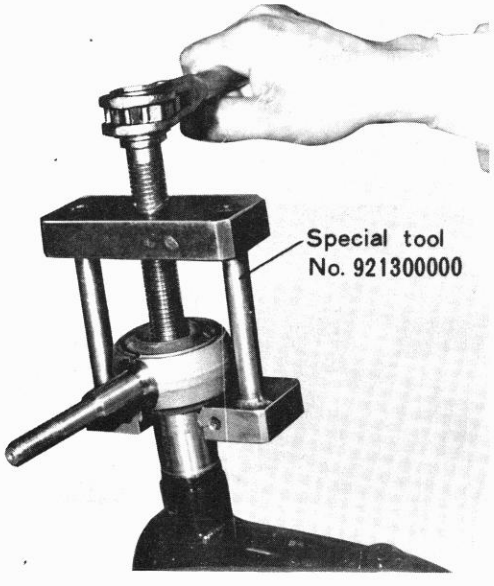
(i) Remove the tie-rod end using special tool No. 921240000.

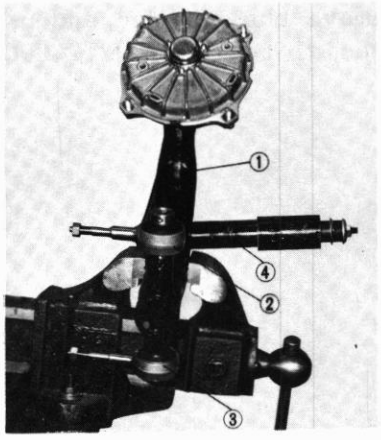


(j) Remove the trailing arm.

(k) Pull out the cotter pin from the trailing arm and take out the torsion bar. Remove the inner and outer brackets the trailing arm using special tool No. 921300000.







(1) Trailing Arm

(2) Trailing Arm Bracket (outer)

(3) Trailing Arm Bracket (inner)

(4) Oil Damper (front)

B. REASSEMBLY

* Special Precautions on Reassembly

(1) Check for scars and scratches on the torsion bar and center spring; check for paint peeling from the surface.

(2) Apply adequate grease to the threaded parts and serrations.

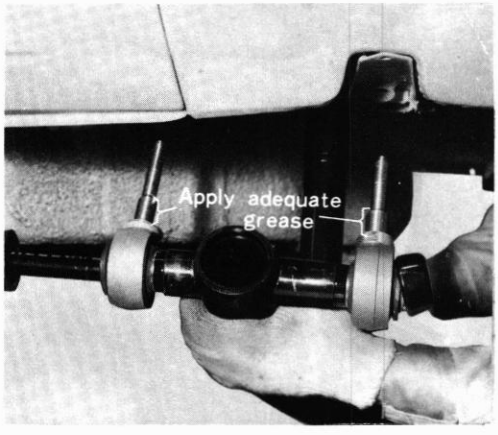
(3) Check torsion bar and center spring for fatigue and slackness.

(4) Check trailing arm brackets and rubber bushings for fatigue.

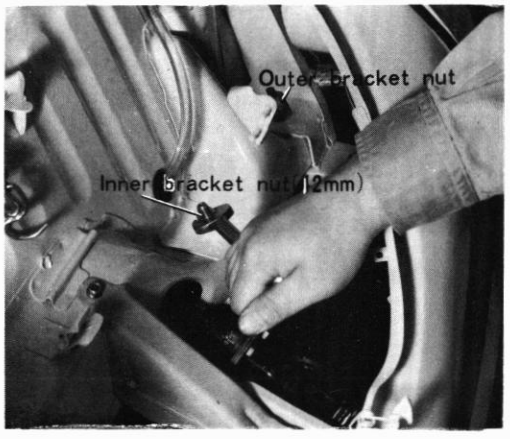
(5) Check whether the center arm bolt is worn down.

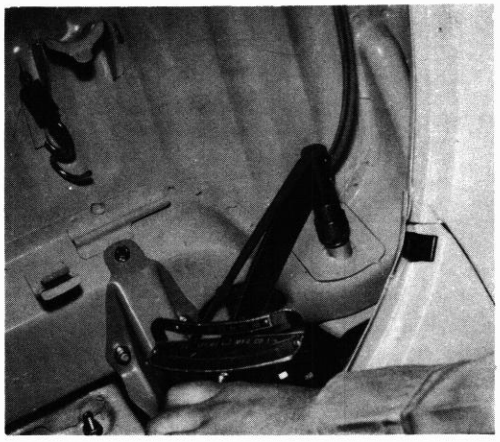
(6) Check inner and outer brackets for damages.

(a) Insert inner and outer brackets into the trailing arm shaft.



(b) Attach the trailing arm to the body.

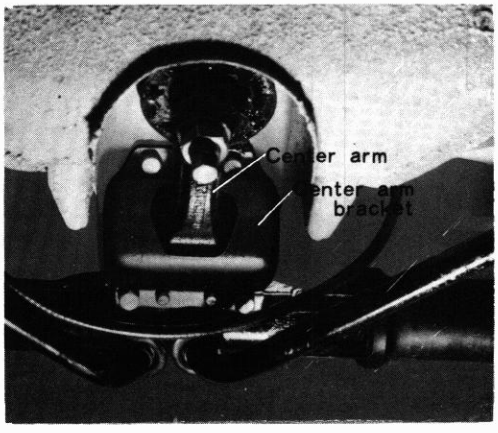




(c) Apply grease to the bracket part that is inserted into the sleeve and also to the washer and shim. Insert washer and shim in the inner bracket and a washer in the outer bracket and insert into the sleeves in the cross member. Tap the bottom with a hammer to make a firm fit. Tighten into place with spring washers and 12 mm nuts.

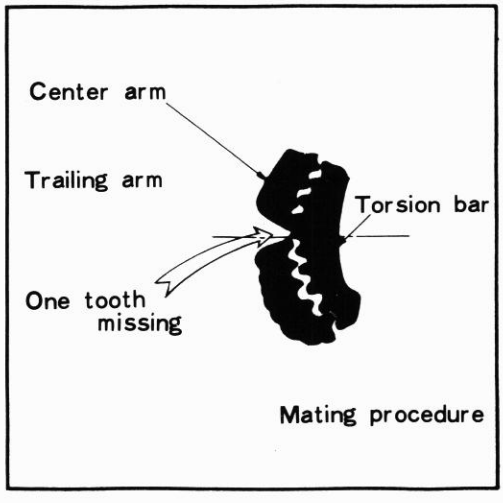
THE PROPER TIGHTENING TORQUE IS 7.0 kg-m (50.6 lb-ft)

(d) The standard number of shims in the inner bracket is two. When one piece is removed, it will change the camber 22 minutes. This is used for adjusting the camber.

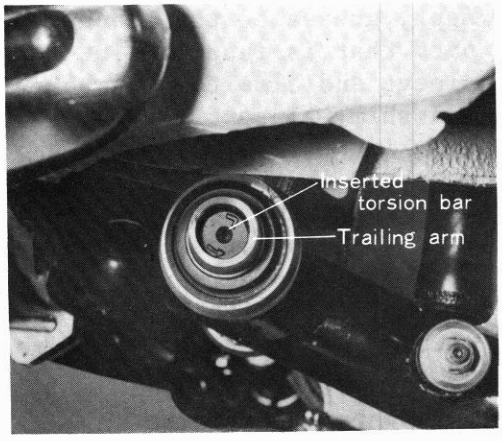


(e) Insert the center arm into the center arm bracket.

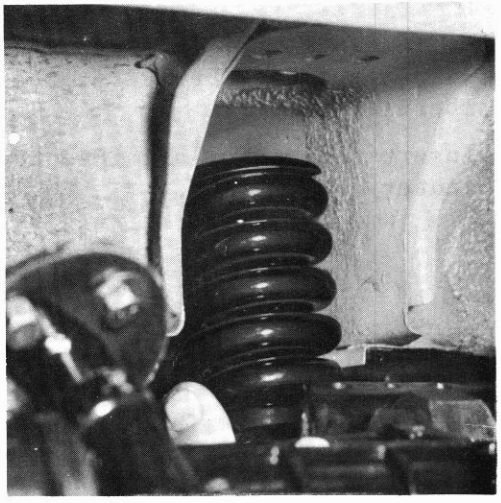
(f) Insert the torsion bar.



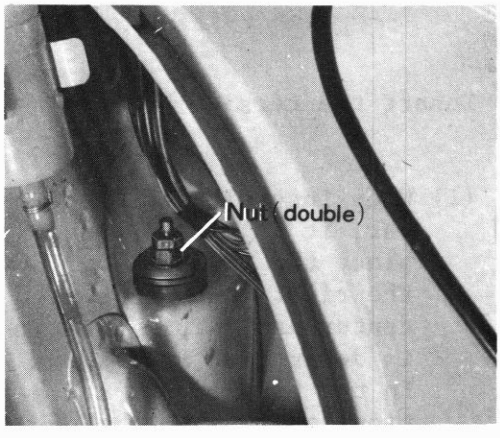
(1) When inserting the torsion bar, it is necessary to place the torsion bar in the right position to the center arm. This position is determined as follows. In the torsion bar serration, there is one ridge missing. This part should coincide with the protrusion in the serration on the center arm side. This is the only position where the torsion bar will fit correctly.



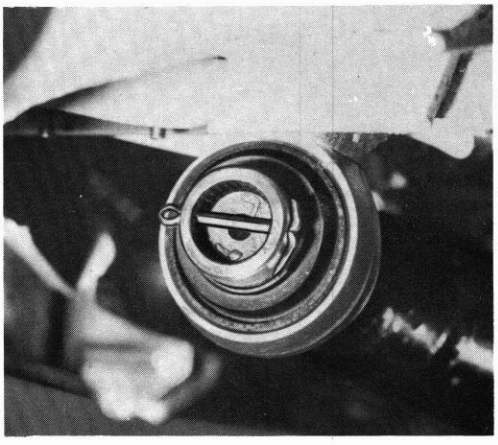
(2) On the torsion bar, there is embossed the letter "R" or "L" on the center arm side (the side with the 27 teeth). This is to signify whether the torsion bar is for the right of left side. If the bars are used incorrectly, it can cause premature breakage.



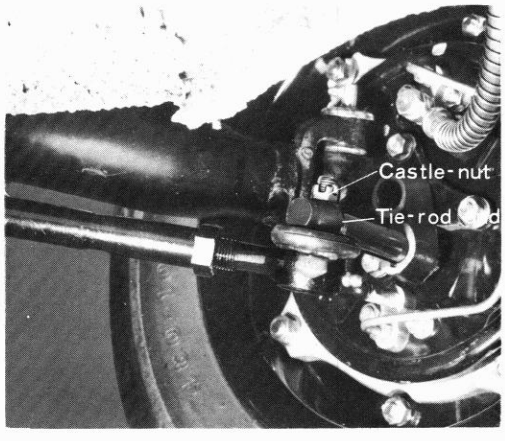
(g) Insert the center spring.



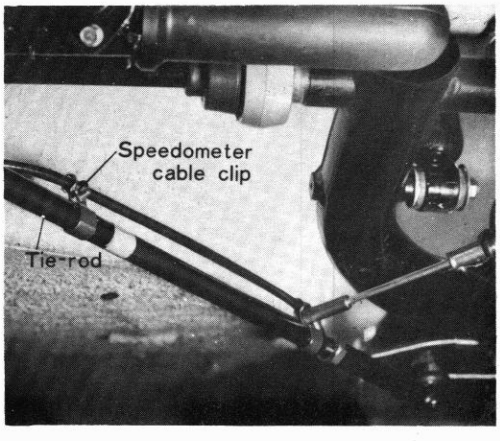
(h) Attach the oil damper to the body. Use a lock nut to prevent loosening.



(i) Fasten the cotter pin and the rubber boots. Do not reusing old cotter pin, use a new a cotter pin.



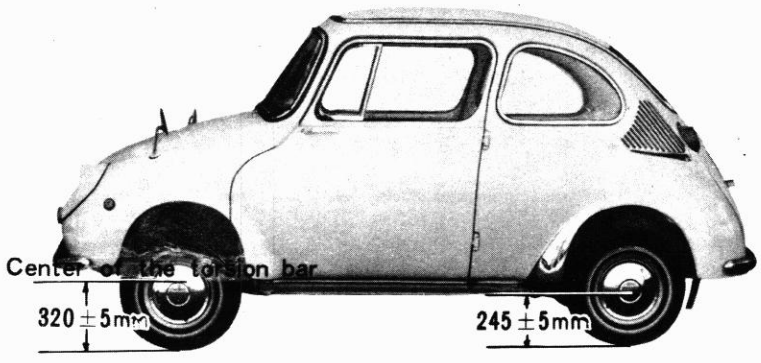
(j) Install the ball stud at the end of the tie-rod into the knuckle and fix in place with castellated nut. Insert a cotter pin into the nut to lock in place. Always use a new cotter pin.

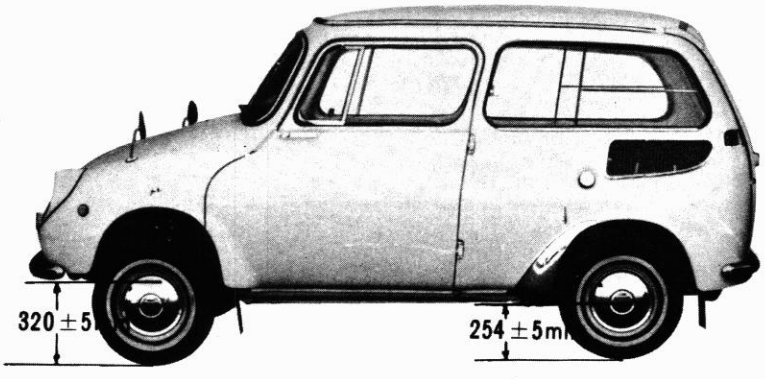


(k) Install the brake hose and the speedometer cable. Do not forget to bleed the air from the brake piping.

(l) Install the wheels and lower the car down.

C. ADJUSTMENT OF GROUND HEIGHT





The ground height is adjusted through the center arm bolt. When the bolt is screwed in, the ground height will be raised, and when screwed out, it will be lowered.

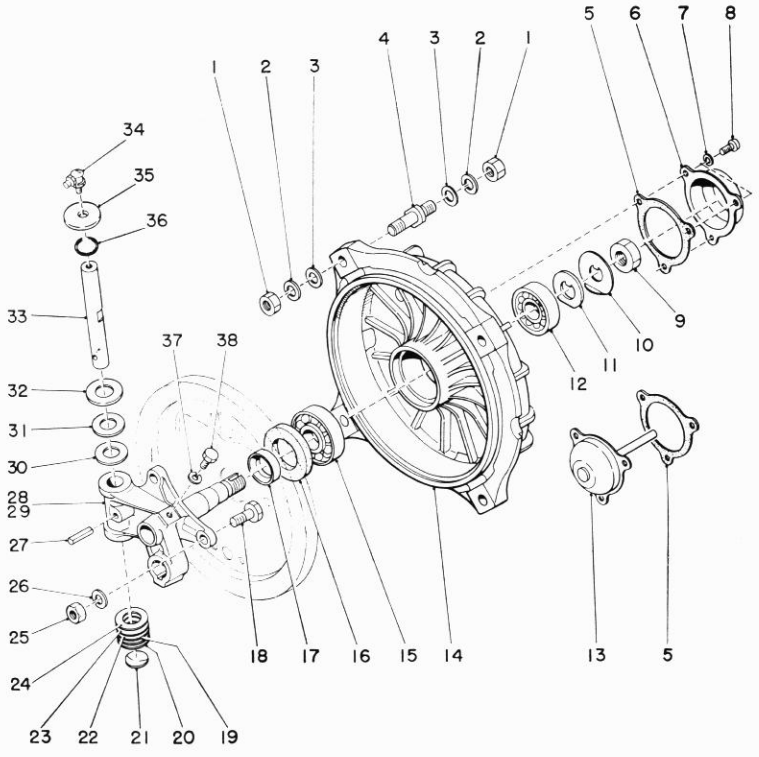
The standard ground height between the center of the torsion bars and the surface of a level road should be as follows:

Unloaded: 320 mm ± 5 mm. (12.59 in ± 0.19 in)

240 mm ± 5 mm (9.450 in ± 0.197 in)

After adjusting the ground height, do not forget to tighten the lock nut in place.

2-7: FRONT AXLE CONSTRUCTION

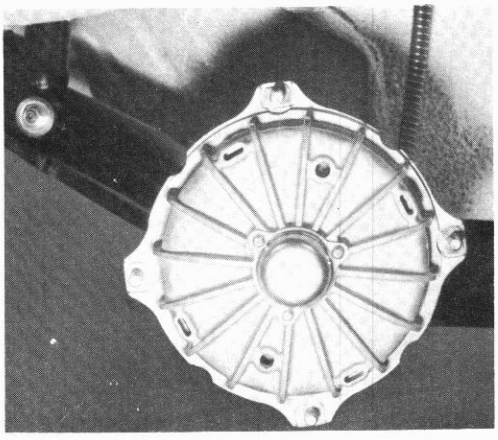


(1) 10 mm Nut
(2) Spring washer
(3) Washer
(4) Brake drum bolt
(5) Packing
(6) Cap
(7) Spring washer
(8) Screw
(9) 16 mm Nut
(10) Locking washer
(11) Washer
(12) No. 30203 Roller bearing
(13) Cap
(14) Brake drum
(15) No. 30204 Roller bearing
(16) Oil seal
(17) Spacer
(18) 8 x 18 Bolt
(19) Thrust washer shim
(20) Thrust washer shim
(21) King pin plug
(22) Thrust washer shim
(23) Thrust washer shim
(24) Thrust washer shim
(25) 8 mm Nut
(26) Spring washer
(27) King pin Knock pin
(28) Knuckle (LH)
(29) Knuckle (RH)
(30) Thrust washer
(31) Thrust washer
(32) Cover
(33) King pin
(34) Grease nipple
(35) Cover (King pin)
(36) "O" ring
(37) Spring washer
(38) 6 x 7.5 Bolt

2-8: DISASSEMBLY OF FRONT AXLE

1: BRAKE DRUM

A. REMOVAL OF BRAKE DRUM



(a) Jack up the body and remove the wheel.

(b) Loosen the three screws on the brake drum cap and remove the cap.

[CAUTION]

A pin which is connected to the speedometer cable is welded on the left side cap. Be careful not to damage this pin.

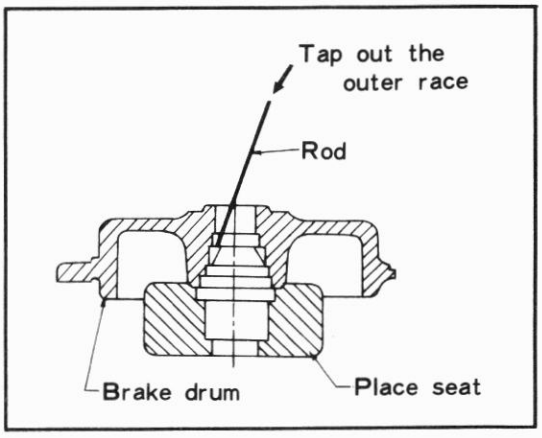
(c) Bend back the tab on the lock washer fastening it to the knuckle and remove the 16 mm nut, lock washer and washer in this order.

(d) Take the special tool 921120000 and hook the four claws on the four stubs of the drum. Turn the handle and fit the center of the threaded pole into the center hole of the knuckle. Turn the handle and remove the drum. The spacer will be left behind.

B. REMOVAL OF BEARING AND OIL SEAL

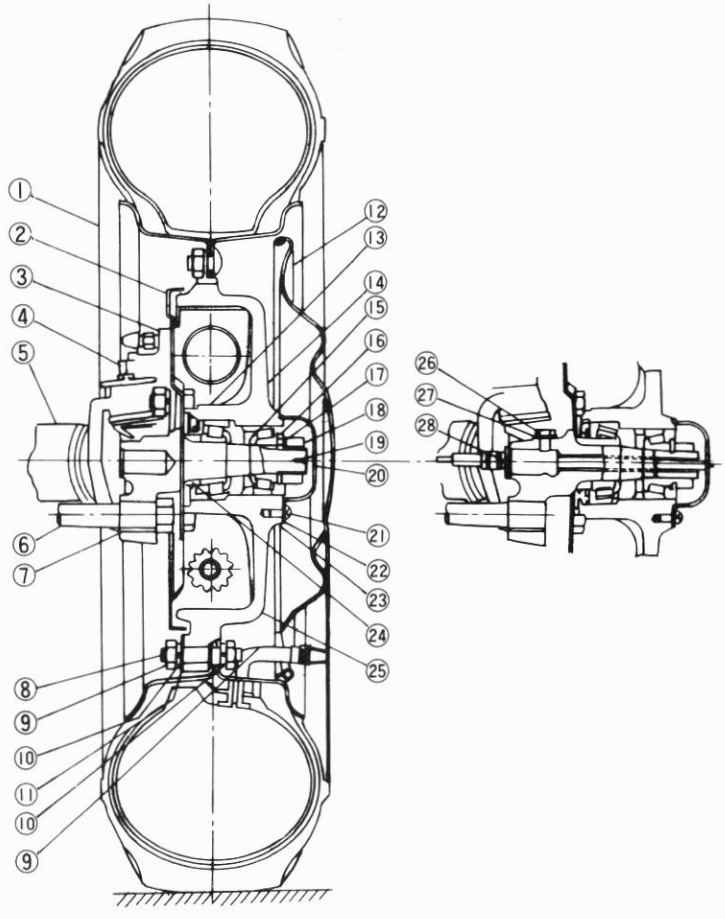
(a) Remove small bearing (No.30203)

Attach a rod to the small bearing outer race in the brake drum and tap out the outer race with a hammer.



(b) Remove large bearing(No.30204). After extracting the small bearing, turn over the drum and tap out the large bearing outer race with a hammer as before.
The inner oil seal and the large bearing will be come out.

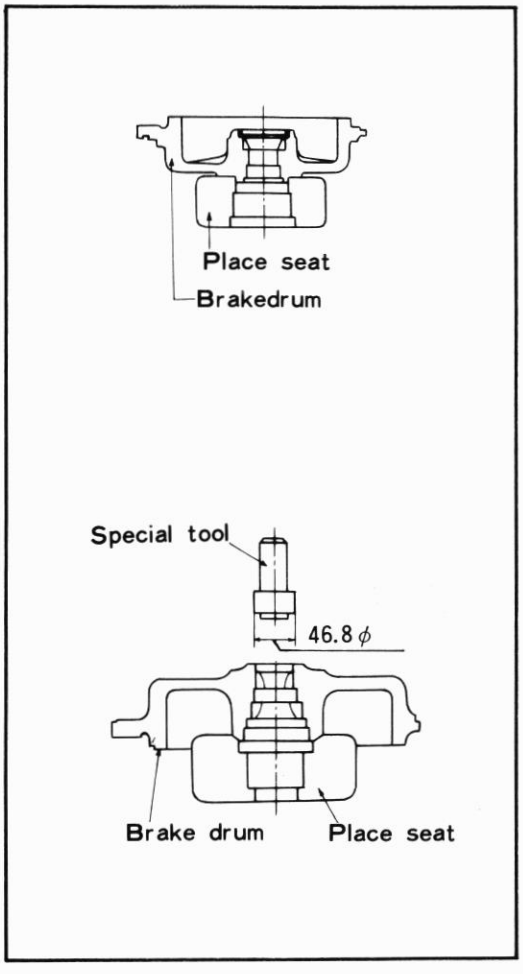
C. INSTALLATION OF BEARING AND OIL SEAL



(1) Wheel
(2) Back Plate
(3) Wheel Cylinder
(4) Grease Nipple
(5) Trailing Arm
(6) Knuckle Arm
(7) Key
(8) Special Bolt
(9) Nut
(10) Spring Washer
(11) Washer
(12) Wheel Cap
(13) Oil Seal
(14) Roller Bearing
(15) Roller Bearing
(16) Washer
(17) Lock Washer
(18) Nut
(19) Knuckle
(20) Cap
(21) Plus Screw
(22) Spring Washer
(23) Packing Cap
(24) Washer
(25) Brake Drum
(26) Bolt
(27) Spring Washer
(28) Speedometer Cable

SPECIAL TOOL	921130000

The proper amount of grease filling the interior of the front hub including those required on the surfaces and inside of the bearing race is 18-20 grams. With regard to the wheel bearing, pay special attention to the fitting and signs of damage to the sealing surfaces. Wear and scratches caused by a loose fit and injuries to the sealing surfaces will cause the infiltration of dust leading to accelerated wear. Exchange for new parts. Wash the bearing cleanly in gasoline before force-fitting in place. If worn down or damaged, exchange for a new part.



(a) Force fit large bearing (No. 30204) using

SPECIAL TOOL	921130000

(1) Place the drum on the seat as illustrated and tap in the bearing into the drum.

(2) Force-fit the oil seal in place. After fitting the bearing, insert the oil seal into the force-fitting tool (2). Adjust the center into the drum hole and tap in with a hammer.

(b) Force fit small bearing (No. 30203) using

SPECIAL TOOL	9 21130000

(1) Place the drum on the seat and tap into the drum using the shank in the same way.

D. REASSEMBLY OF BRAKE DRUM

SPECIAL TOOL	921180000

(a) Insert the drum into the knuckle and tighten into place with washer, lock washer and nut.
Bend back the tab on the lock washer on the nut side and lock firmly in place.

[CAUTION]

If the nut is fully tightened, it may interfere with the rotation of the wheel.
Loosen the nut approximately 1/6 - 1/8 and check the wheel rotation before fixing in place.
Ref: Maintenance Standards.

(b) Insert packing and attach cap with three 5 mm screws.

(c) Adjust the clearance between the brake lining and drum.

* Adjustment Procedures

(1) Adjust the round holes in the drum to the upper adjuster position.

(2) Insert a screw driver into the upper hole and pry up the claws of the adjuster wheel.

(3) Next turn the drum about 180 degrees on the side just adjusted.

(4) Insert a screw driver into the lower hole and pry up the claws of the adjuster wheel.

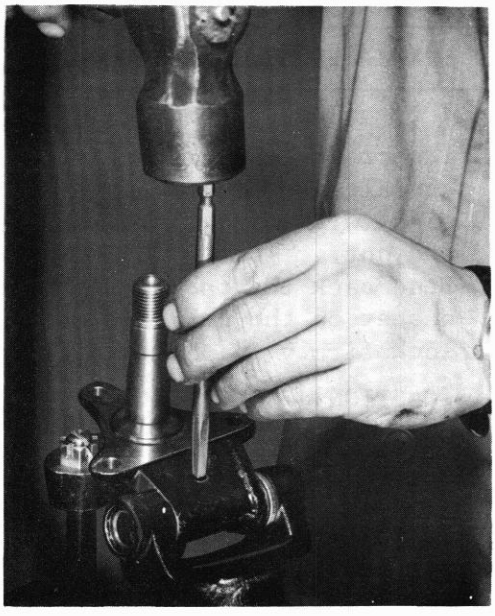
(5) Insert the thickness gauge through the inspection hole and check the clearance.
Adjust the clearance so that a 0.1 mm (0.0039 in) thickness gauge will enter but a 0.15 mm (0.0059 in) thickness gauge will not.

[NOTE]

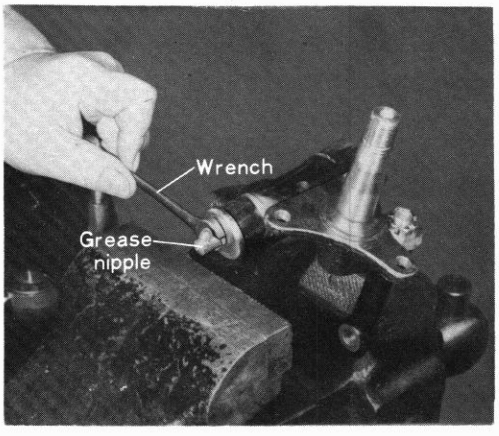
When adjusts the clearance between the brake lining and drum, turn both the upper and lower adjuster wheels toward center of the brake drum. Therefore, the clearance will be reduced.

(d) Attach the wheel and fix into the pleace with four 8 mm wheel nuts. Tighten with a torque of 1.5 - 2.0 kg-m (11 - 14 lb-ft).

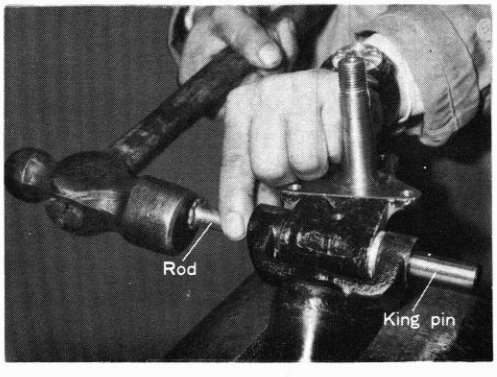
E. REMOVAL OF KING PIN



(a) Apply a pin or bolt of appropriate size against the nock pin from the back plate side and tap with a hammer. The tapered part will loosen and the nock pin can be removed.



(b) After removing nock pin, loosen the grease nipple and remove the nipple, cover and "O" ring in this order.



(c) Place a rod on the upper part of the king pin and tap with a hammer. The king pin will be forced out together with the expansion plug. The trailing arm and knuckle will separate.

[CAUTION]

This expansion plug can not be reused. Always use a new plug for reassembly.

F. REASSEMBLY OF KING PIN

[CAUTION]

Apply adequete grease to the thrust washer and the threading on the grease nipple. Be careful to check for dust on the king pin and the yoke bushing. Wipe off carefully with a clean piece of cloth before reassembly.

(a) Insert the knuckle and upper and lower thrust washers into the trailing arm, adjust with adjuster shim and tap into place fitting the cut-away in the king pin to the nock pin hole in the knuckle.
(The adjuster shims are available in 5 thicknesses: 0.1, 0.2, 0.24, 0.35 and 0.4 mm. Select the most appropriate thickness for the clearance between the yoke and the knuckle.)

(b) Insert the nock pin and tap into the place with a hammer.

(c) After connecting, tap the expansion plug into the place and caulk at three places with a punch to prevent loosening. Fasten the "O" ring and the cover at the top with the grease nipple.

This completes the disassembly and reassembly of the various components. The various check points after disassembly and cautions during reassembly given in the various sections will be compiled in the following paragraphs.

* Check Points and Cautions

(1) Check for extreme wear on the threadings.

(2) Check for cuts and cracks.

(3) Check for shocks and bumps which may have weakened the torsion bars and the trailing arms. Check for paint peeling on the surfaces. Repaint as necessary.

(4) Check for sufficient lubrication at king pin and other bearing locations.

(5) Replace parts showing wear and tear.

[CAUTION]

(1) Wipe off the dirt from the king pin and other bearing parts with a clean cloth before reassembling.

(2) Apply grease to all threadings and serrations.

(3) Supply the proper amount of grease to the wheel bearing. Do not supply too little or too much.

THE PROPER AMOUNT IS 18 - 20 GRAMS.

(4) After reassembly, lubricate all oiling points.

2-9: CHECK ADJUSTMENT OF FRONT ALIGNMENT

A. CONDITION OF FRONT WHEEL

Check the following points before investigating alignment.

(a) Check for severe shocks or bumps to the front part.

(b) Check for abnormal wear on the front tires.

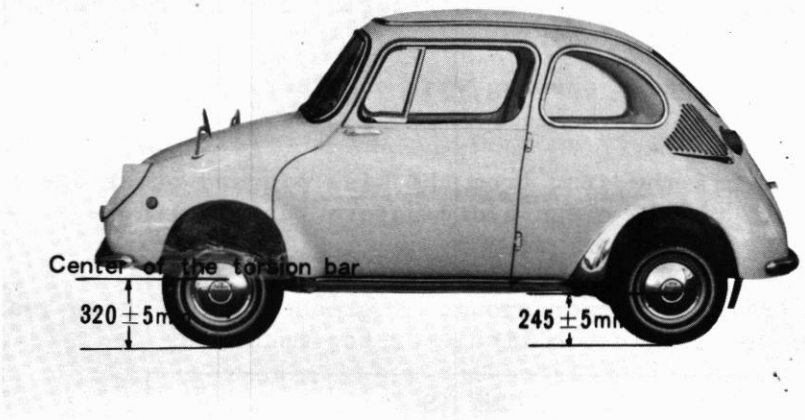
(c) Check for troubles in the steering system.

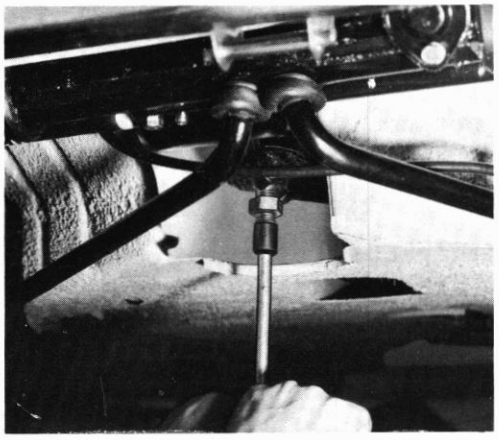
B. CHECKS TO MAKE BEFORE MEASURING ALIGNMENT

The following places effect the alignment. Check carefully. Adjust the tire pressures as follows before conducting checks.

	SEDAN	CUSTOM
Front Wheels	0.85 kg/cm^2 (12 psi)	0.9 kg/cm^2 (13 psi)
Rear Wheels	1.7 kg/cm^2 (24 psi)	1.9 kg/cm^2 (1.9 psi)

(a) As shown in the following illustration, the ground height to the center of the torsion bar with the vehicle empty should be 320 m/m $\pm$ 0.5 m/m (12.5 in $\pm$ 0.15 in) at the front end and 245 m/m $\pm$ 0.5 m/m (9.1 in $\pm$ 0.15 in) at the rear end. Check these heights and if the figures show considerable discrepancies, adjust to the standard values as follows:





(1) Adjustment is made with the center arm bolt used for adjusting the ground clearance height. Loosen the lock nut on the bolt.

(b) Check for looseness in the king pin and the trailing arm yoke bushing.

(c) Check for looseness in the tie-rod joint in the steering system.

(d) Check for looseness in the wheel bearings.

(e) Check tire wear.

(f) Check shock absorbers for correct operation.

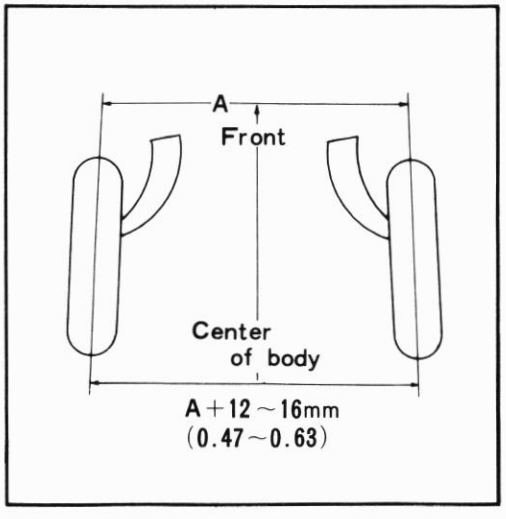
(g) Check the trailing arm installation on the cross member.

* Complete the above checks and make the necessary adjustments before proceeding to the following adjustment.

C. MEASUREMENT AND ADJUSTMENT OF FRONT ALIGNMENT

1: MEASUREMENT AND ADJUSTMENT OF TOE-IN

(a) MEASUREMENT



(1) Mark places on the front tires at hub center height on the forward side and measure distance "A". Roll the vehicle forward until the marks come on the rear side at the same hub center height. Measure distance "B". Check whether the difference between "A" and "B" falls between 12 to 16 mm (0.47 - 0.63 in)

(2) Measure the side slip with a side slip tester. Check whether the slip amount "in" is within 2 to 6 mm (0.08 - 0.23 in).

(3) Check with an angle tester and see if the indicated angle is about 1°30'.

* If the above measurements do not comply with the specified values, adjust the toe-in through the following procedures.

(b) ADJUSTMENT

(1) Toe-in adjustment is made either tightening or loosening the threaded portions of the steering tie-rod joints. Before making this adjustment, remove the 5 mm bolts passing through the joint clamps. On the left tie-rod, the speedometer cable must be removed from the holder.

(2) Apply the wrench against the cutaway part in the tie-rod and adjust the toe-in by turning the tie-rod.

(3) This adjustment is made from the front side. The toe-in will widen when the tie-rod is rotated toward you.

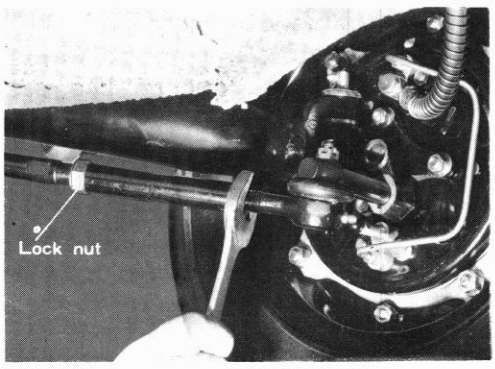
(4) Adjustments must be made in units of one complete rotation and never half or one and a half rotations. Otherwise the clamp bolt can not be inserted. The original part must always come to the front.

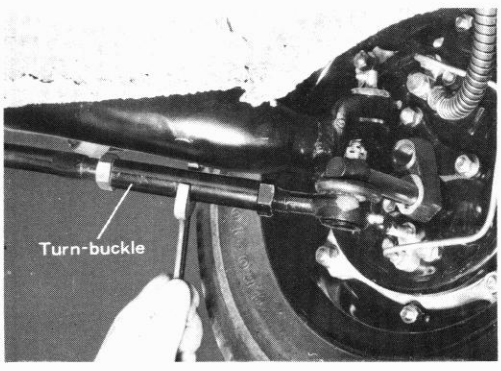
(5) After adjusting to correct toe-in, reinsert the clamp bolt with spring washer and tighten firmly in place.

Tightening Torque : 1.2 - 1.4 kg-m (8.7 - 10.1 lb-ft)

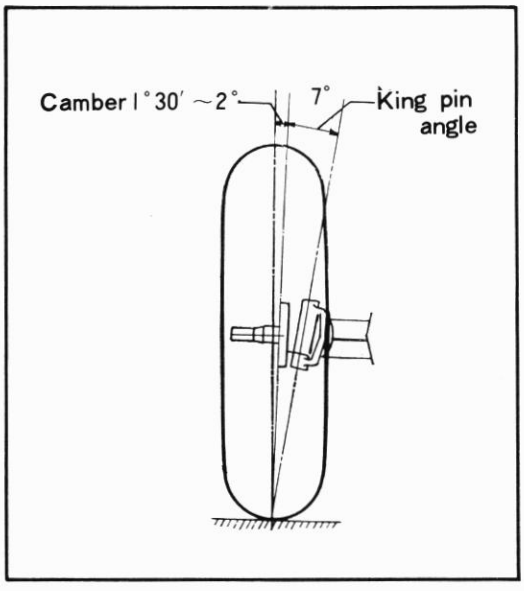
[CAUTION]

In vehicles with right hand steering, a turn-buckle has been newly added to the tie-rod to not only facilitate toe-in adjustments but also to permit delicate adjustments. When adjusting, loosen the lock nuts on both sides of the turn-buckle and turn the turn-buckle with a wrench. After adjusting, retighten the lock nuts on both sides of the turn-buckle with a torque of 8 - 8.5 kg-m (58 - 61 lb-ft).





2· MEASUREMENT AND ADJUSTMENT OF CAMBER



(1) When the camber is measured with the vehicle empty, it should be 1°30' - 2°. With full load, it should be 1° - 1°30'.

(2) Normally, it is not necessary to adjust the camber. When the rubber bushing in the trailing arm bracket is worn down and the correct camber can not be obtained, loosen the inner bracket nut, tap lightly with a hammer and adjust to the correct camber by changing the number of adjuster shims.

The above explanations give the standard values for front alignment and simple adjustment procedures. These values have a great effect on maneuverability and stability. If the vehicle is operated with these values out of order, abnormal vibrations will be felt in the steering wheel, the tires will show accelerated wear and riding will become uncomfortable. Keep your vehicle in proper condition at all times.

CHAPTER 3: REAR END

3-1 SPECICATIONS AND STANDARDS FOR REAR END 3- 1

3-2 DISASSEMBLY AND REASSEMBLY OF REAR END 3- 2

3-3 REAR SUSPENSION SPECICATIONS 3- 8

3-4 REAR SUSPENSION COMPONENTS 3- 9

3-5 DIASSEMBLY AND REASSEMBLY OF REAR SUSPENSION 3-10

3-6 REMOVAL OF REAR AXLE 3-13

CHAPTER 3. REAR END

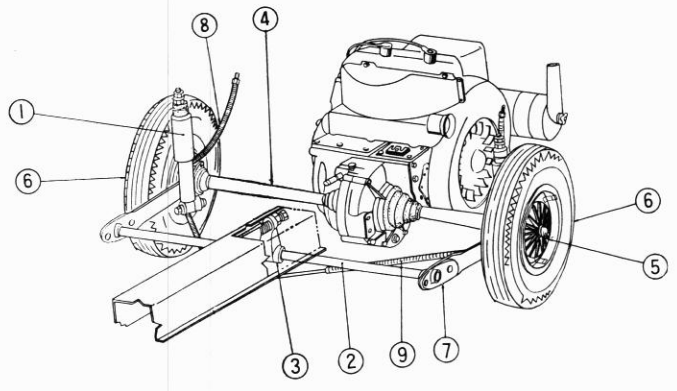
3-1: SPECICATIONS AND STANDARDS FOR REAR END

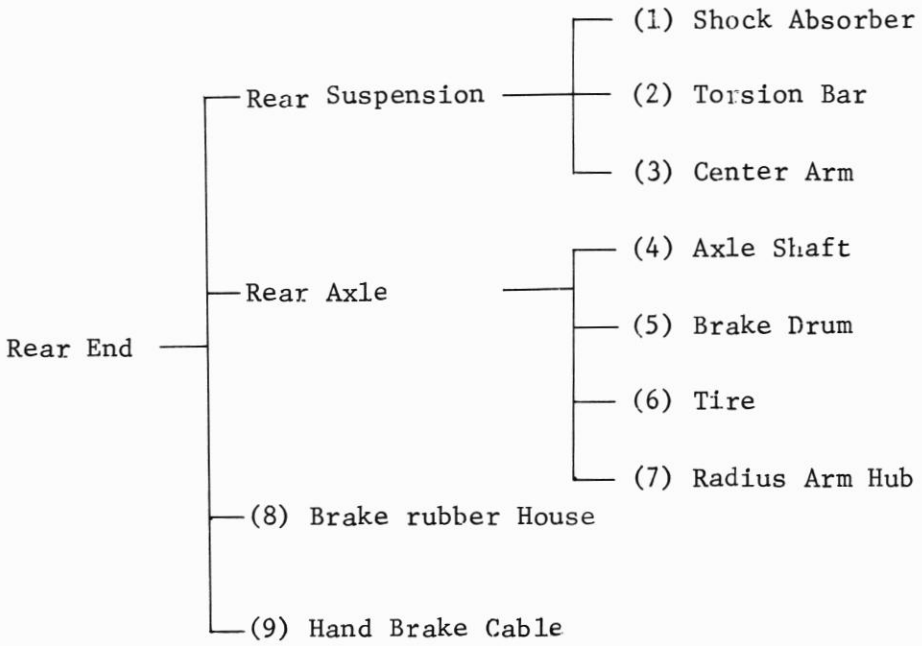
		SEDAN	CUSTOM
Suspension		Independent Suspension	Independent Suspension
Load on Rear Sheels	Empty Load	260 kg (573 lb)	285 kg (628 lb)
	Normal Load	380 kg (837 lb)	405 kg (892 lb)
Distance between Wheels		1070 mm (42.1 in)	1070 mm (42.1 in)
Rear Tire		4.80 x 10 - 2P	4.50 x 10 - 4P
Rear Hub Bearing (Inner)		No. 6206	No. 6206
Rear Hub Bearing (Outer)		No. 6205	No. 6205
Rear Tire Pressure		1.7 - 1.85 kg/cm^2 (24 - 26 psi)	1.9 - 2.0 kg/cm^2 (27 - 28.5 psi)

GENERAL DATA:

Whether empty or loaded, approximately 59 percent of the gross vehicle weight will always be bearing on the rear end. The rear suspension system is of the independent suspension type with torsion bar and incorporates shock absorbers to provide superior riding comfort and stability.

DRAWING SHOWING CONSTRUCTION OF REAR END

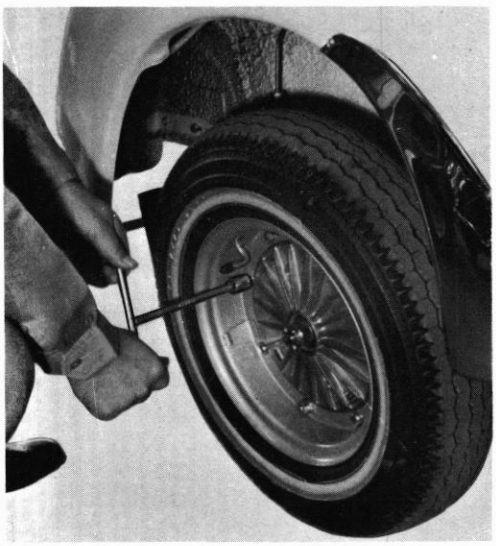




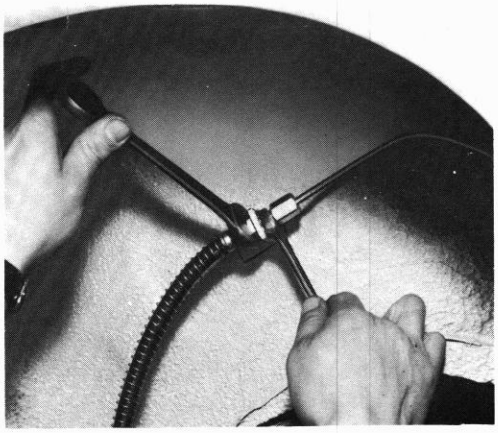
3-2: DISASSEMBLY AND REASSEMBLY OF REAR END

A. DISASSEMBLY OF REAR END ASSEMBLY

(a) Place the vehicle over a work pit or raise it on a jack.

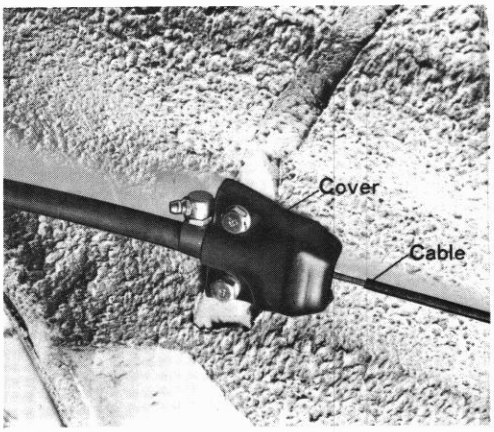


b) Remove the wheel cap. Loosen the four 8 mm wheel nuts joining the rim and brake drum. Pull off the tire.

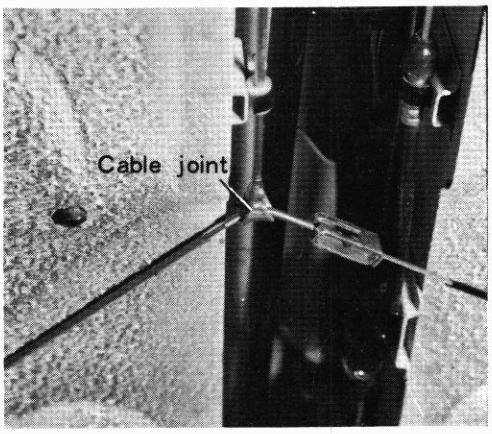


(c) Brake hoses are installed on both the left and right sides as shown in the photos. Hold the square fitting on the rubber hose side with one wrench and loosen the joint n nut with another wrench. Loosen the 10 mm nut holding the rubber hose and remove the rubber hose.

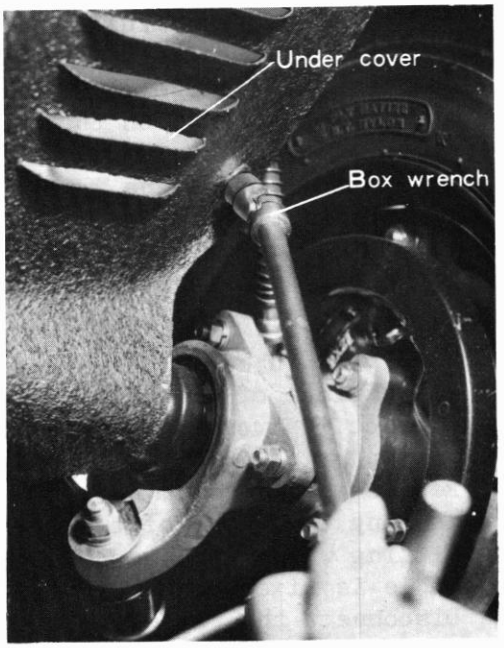
Cover the rubber hose with a clean piece of cloth to protect it from dust.



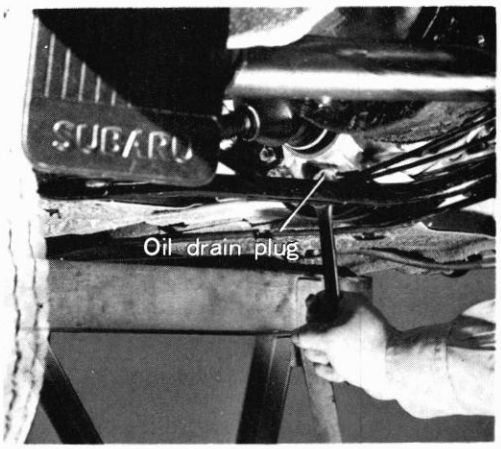
(d) Remove the two 6 mm bolts holding the cover of the fitting where the hand brake cable is fixed to the body. Disconnect the cable.



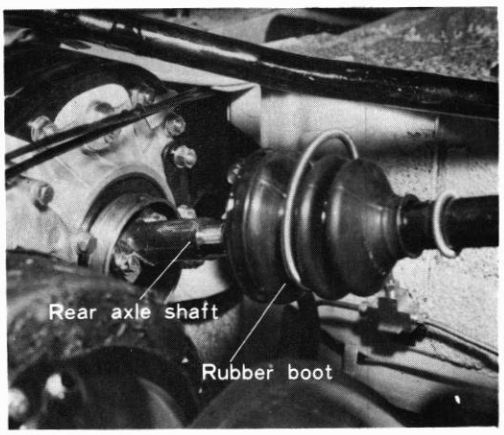
(1) Remove the cable joint at the center part of the underfloor.
The hand brake cable will drop down.



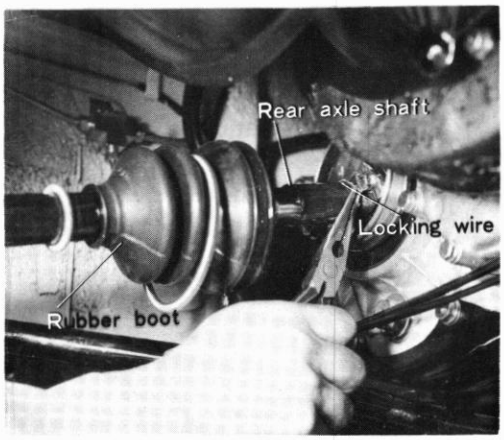
(2) Remove the engine room under cover.



(e) Place an appropriate oil receiving pan beneath the engine. Remove the 22 mm drain plug on the differential casing and drain out the gear box oil.

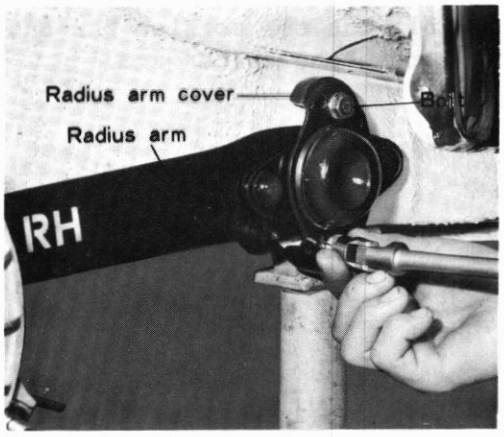


(f) Remove the clip ring from the rubber boot on the universal joint side of the rear axle shaft and push the rubber boot away toward the tire side. This will make the next work easier.

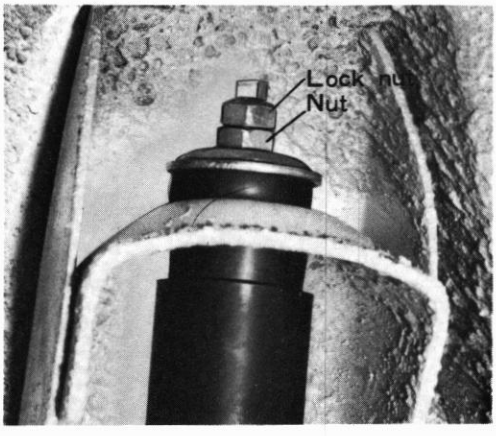


(g) Cut and remove the locking wire on the socket bolt joining the rear axle shaft to the universal joint.

(h) Using special tool 921220000 loosen and remove the socket bolt.

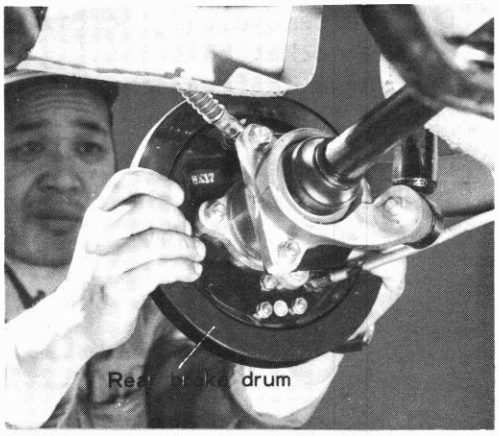


(i) Remove the two 10 mm bolts on the radius arm cover.

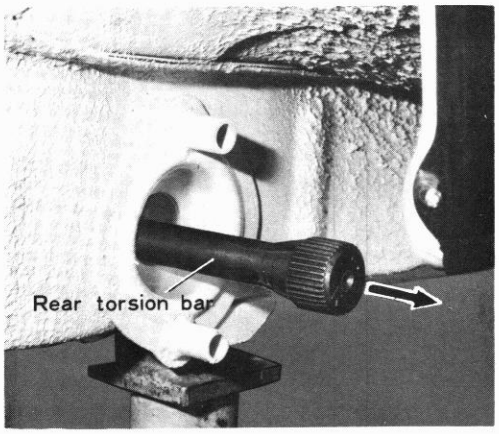


(j) Remove the 10 mm nut fixing the oil dumper to the chassis.

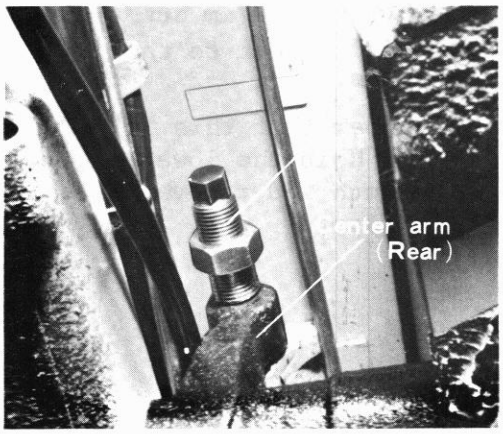
Remember that this is a double nut. Hold the lower one with a wrench and remove the top one first.



(k) Grasp the rear brake drum and radius arm, oil dumper to separate the oil dumper from the chassis and pull out to remove.



(l) Pull out the torsion bar and remove the center arm.



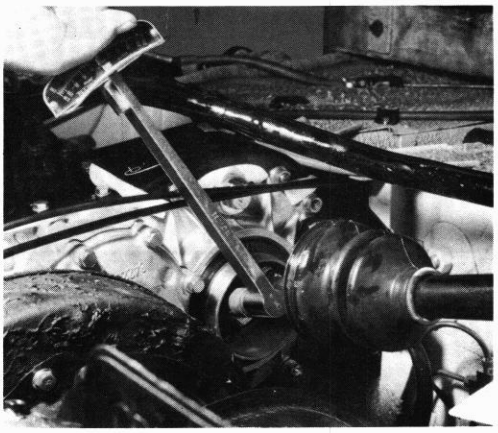
B. REASSEMBLY OF REAR END

Tool Required Special Tool	921220000

Reassembly is effected by performing the disassembly procedures in reverse. Be careful of the following points during reassembly.

(a) Check the rear side rubber bushing. If it shows excessive wear, exchange for a new part.

(b) When installing the torsion bar to the center arm and radius arm, the toothless portions of the serrations must coincide or they will not fit.



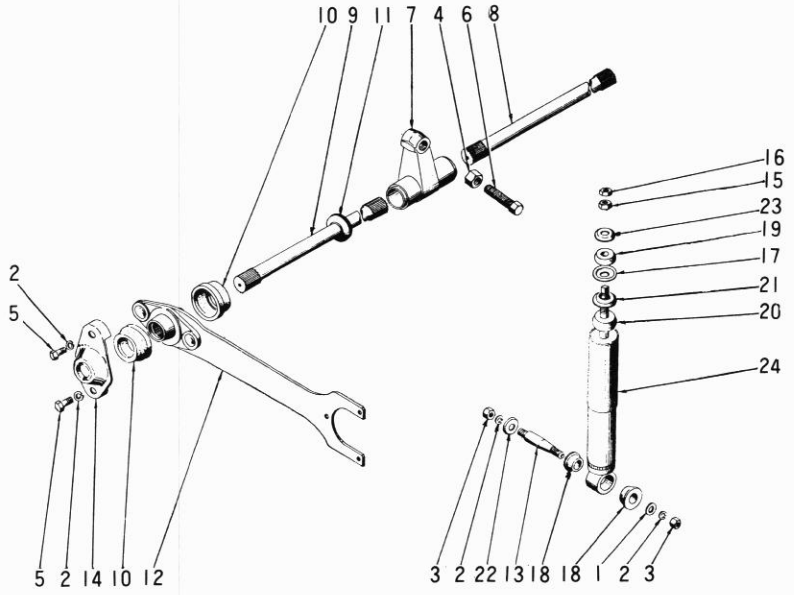
(c) When installing the rear axle shaft and universal joint, be sure to use a genuine part for the rear axle bolt and tighten in place with a spring washer. Use special tool 921220000 Tighten with a torque of 2.8 - 4.2 kg-m (20.2 - 30.4 lb-ft).

(d) Tighten the 10 mm nut connecting the brake pipe and the rubber hose with a torque of 1.5 - 2 kg-m (10.9 - 14.5 lb-ft).

3-3: REAR SUSPENSION SPECIFICATIONS

	Sedan	Custom
Rear Torsion Bar		
Effective Length	434 mm (17.1 in)	434 mm (17.1 in)
Diameter	17.6 mm (0.68 in)	20.5 mm (0.81 in)
Rear Torsion Bar Serration		
Inner Side	0.75/0.375 x 34	0.75/0.375 x 34
Outer Side	0.75/0.375 x 37	0.75/0.375 x 37
Toothless Position in Radius Arm	Outer perimeter on center line	Outer perimeter on center line
Damping Capacity of oil dumper - Extension	0.3 m/s 60 kg	0.3 m/s 60±8 kg
Compression	0	0

3-4: REAR SUSPENSION COMPONENTS



(1) Washer
(2) Spring Washer
(3) Nut
(4) Nut
(5) Radius Arm Cover Bolt
(6) Bolt (Center Arm Rear)
(7) Rear Center Arm
(8) Torsion Bar (Rear Right)
(9) Torsion Bar (Rear Left)
(10) Rubber Bushing (Radius Arm)
(11) Rubber Boot
(12) Radius Arm (Rear)
(13) Pin (Rear Oil Dumper)
(14) Cover (Rear Radius Arm)
(15) Nut
(16) Nut
(17) Washer B (Oil Dumper)
(18) Rubber Mount (Oil Dumper)
(19) Rubber Bushing (Oil Dumper)
(20) Rubber Bushing (Oil Dumper)
(21) Washer C (Oil Dumper)
(22) Washer (Oil Dumper)
(23) Washer A (Oil Dumper)
(24) Oil Dumper (Rear)

3-5: DISASSEMBLY AND REASSEMBLY OF REAR SUSPENSION

1: DISASSEMBLY

To disassemble the rear suspension, it is necessary to remove the rear end components as indicated in the preceding pages.

2: REASSEMBLY

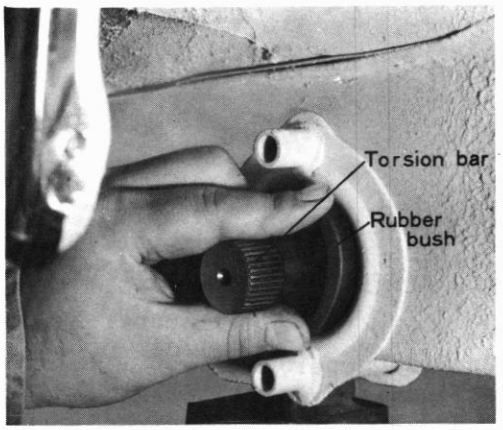
Check the following points carefully before reassembly.

A. Check the torsion bar any scratches and other damages. Check the surfaces for peeling paint.

B. Check the radius arm for any scratches and other damages. Check the surfaces for peeling paint.

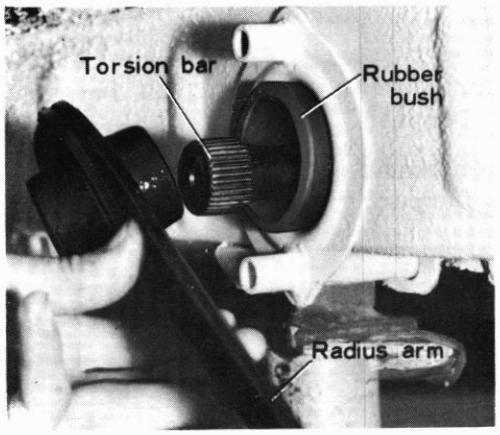
C. Check the radius arm rubber bushing for wear and fatigue.

D. Check the oil dumper rubber mounts for wear and tear.



(a) Apply grease to the serrations on the torsion bar. Pass it through the side sill and the center tunnel and insert into the center arm.

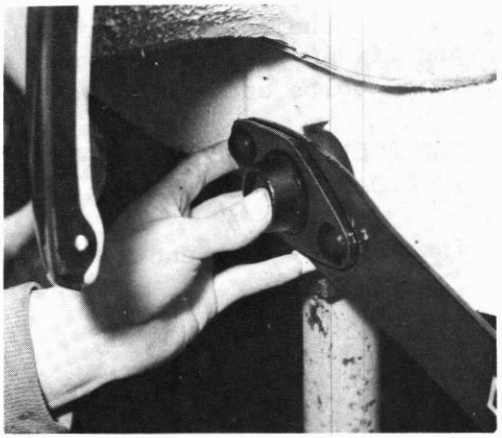
(b) Insert the rubber bushing.



(c) Attach the radius arm.

[NOTE]

White identifications letters are provided on the bars. Do not mistake these bars during installation. Otherwise the radius arm will be weakened and service life shortened.

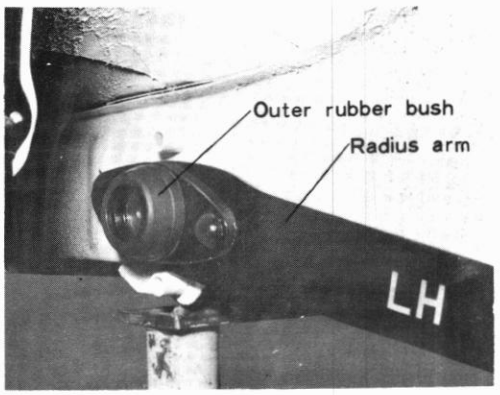


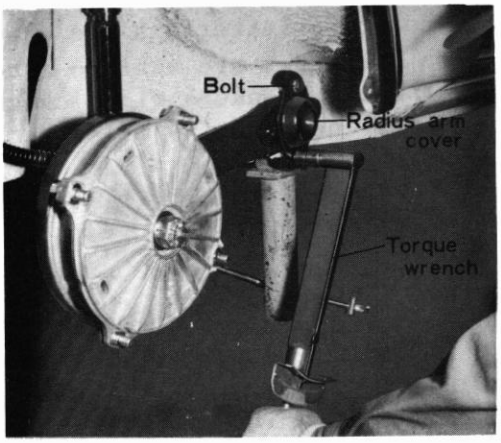
The white letterings are placed so that they are visible after assembly. Make a final check after insertion.

[CAUTION]

When inserting the torsion bar, it is necessary to place the torsion bar in the right position to the center arm. This position is determined as follows. In the torsion bar serration, there is one ridge missing. This part should conicide with the protrusion in the serration on the center arm side. This is the only position where the torsion bar will fit correctly. On the torsion bar on the center arm side (the side with the 34 teeth), the letter "R" or "L" is embossed to signify right hand and left hand torsion bars. If the bars are used incorrectly, it can cause premature breakage.

(d) Insert the outer rubber bushing on the radius arm.

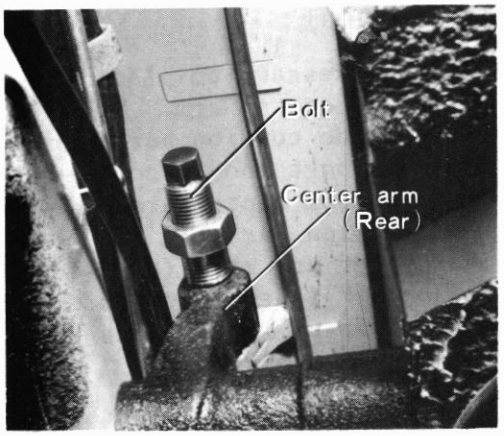




(e) Install the radius arm cover and fix in place with two 10 mm bolts and spring washers.

THE BOLTS SHOULD BE TORQUED TO 4.0-7.0 kg-m (28.9-50.6 ft-lb)

(f) Install the rear end.



(g) Adjust the ground clearance height with the rear center arm bolt. Screwing in the bolt will increase the clearance and loosening will decrease the clearance.

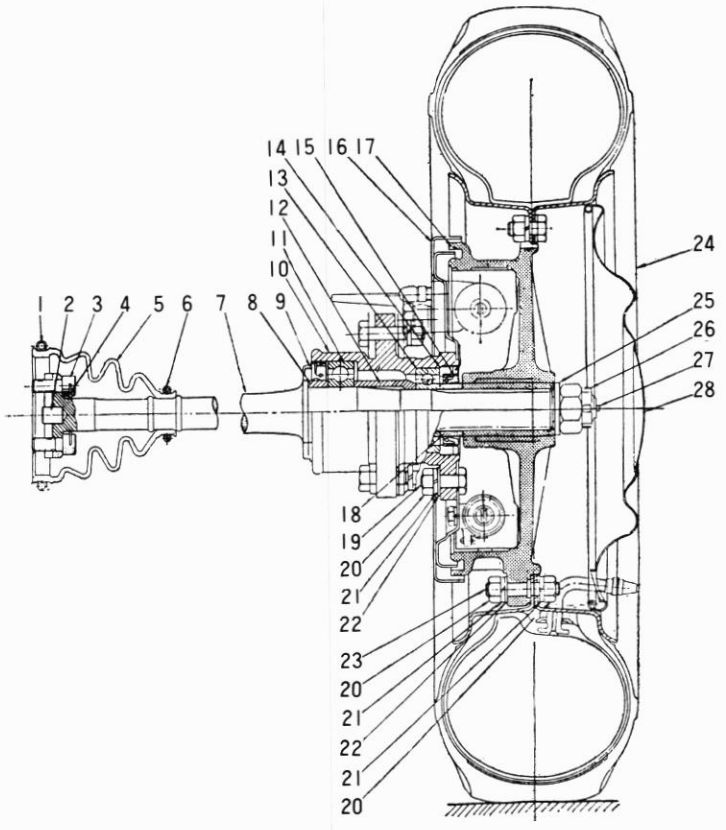
The correct ground clearance as measured from the center of the torsion bars should be as follows:

No Load 245 mm $\pm$ 5 mm
(9.942 in $\pm$ 0.19 in)

Tighten the lock nut securely after adjustment.

3-6: REMOVAL OF REAR AXLE

1: REMOVAL OF BRAKE DRUM

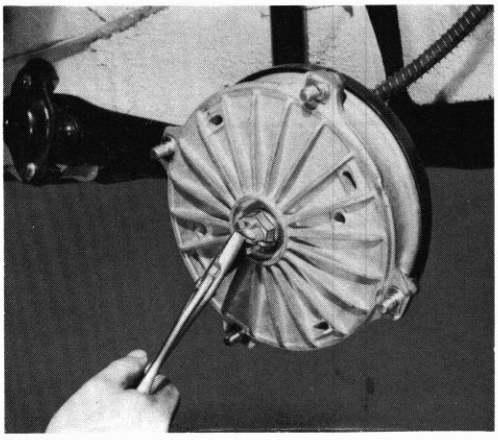


(1) Clip
(2) Nock Pin
(3) Bolt
(4) Locking Wire
(5) Rubber Boot
(6) Clip
(7) Rear Axle Shaft
(8) Spacer "A"
(9) Oil Seal
(10) Rear Hub
(11) Ball Bearing
(13) Spacer "B"
(14) Nut
(15) Oil Seal
(16) Back Plate
(17) Brake Drum
(18) Spacer "C"
(19) Bolt
(20) Nut
(21) Spring Washer
(22) Washer
(23) Bolt
(24) Tire
(25) Washer
(26) Catellated Nut
(27) Cotter Pin
(28) Wheel Cap

A. REMOVING THE BRAKE DRUM

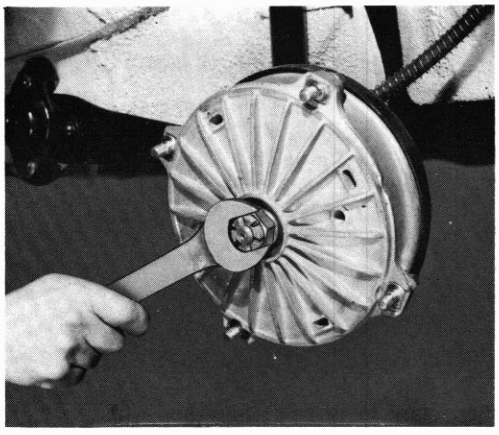
Tool Required Special Tool	921120000

(a) Insert the screw driver between the wheel cap and the rim and pry off the cap.

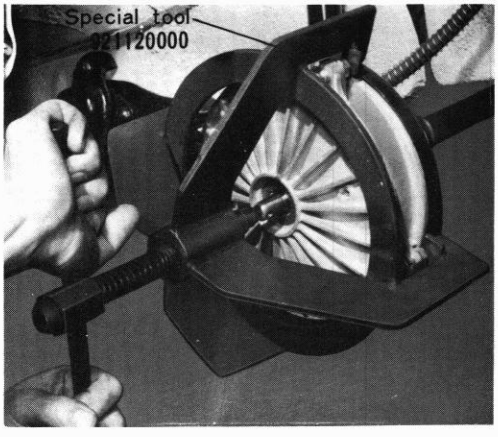


(b) Loosen the four 8 mm wheel nuts joining the rim and the brake drum together. Pull off the wheel assembly.

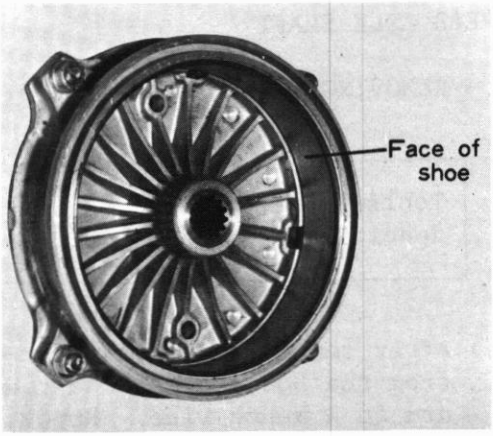
(c) Take out the 4 mm cotter pin in the castellated nut at the brake drum center.



(d) Remove the 16 mm castellated nut.



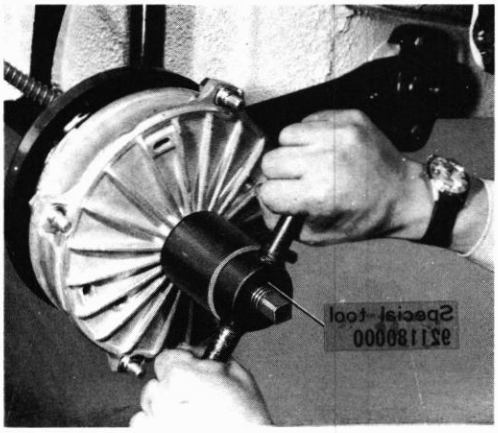
(e) Using special tool 921120000 hook the four prongs on the four protrusions on the brake drum and the center bolt of the tool on the rear axle shaft center. Screw in the bolt and the brake drum can be easily removed.



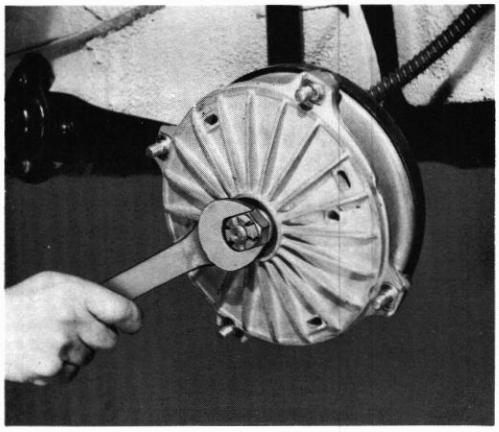
B. BRAKE DRUM INSTALLATION

Special Tool	921180000

(a) Carefully check the surfaces of the drum shoes and clean thoroughly. Wipe off all traces of oil.



(b) Use a special tool, 921180000 for force-fitting brake drum. Insert the brake drum lightly on the axle shaft matching the spline position. Holding the front part of the tool, screw in the tip of the tool into the threaded hole in the axle shaft. Turn the handle and gently force the drum onto the shaft. Application of a little grease on the axle shaft spline will make this fitting easier.



(c) After force-fitting the brake drum, remove the special tool, fasten the castellated nut with a washer on the axle shaft and tighten thoroughly. Insert the 4 mm cotter pin to lock in place.

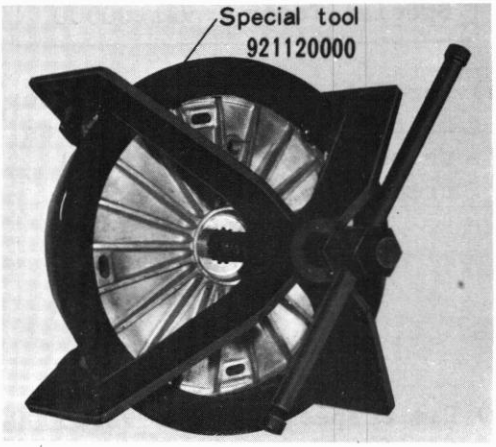
THE TIGHTENING TORQUE FOR THE CASTELLATED NUT IS 13.9-15.3 kg-m (101-110 lb-ft).

(d) Adjust the brake shoe clearance to 0.1-0.15 mm (0.04-0.06 in).

(e) Fix the wheel on the brake drum securely with four 8 mm wheel nuts. Fit on the wheel cap.

THE TIGHTENING TORQUE FOR THE WHEEL NUTS IS 2.4-2.5 kg-m (17.4-18.1 lb-ft).

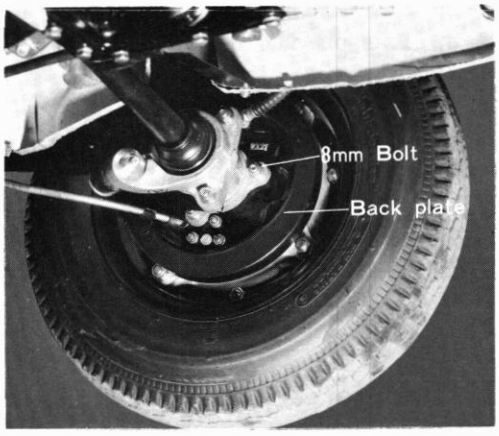
2: DISASSEMBLY AND REASSEMBLY OF REAR AXLE SHAFT



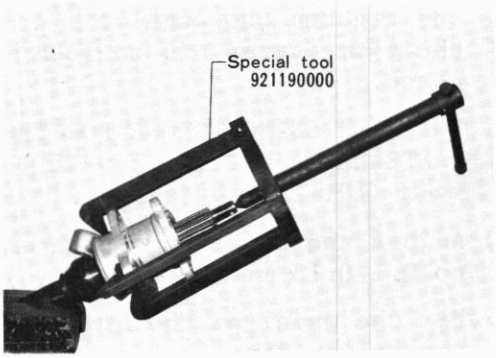
A. REMOVING THE REAR AXLE SHAFT

Tools Required Special Tools	921120000 921190000 921180000

(a) After removing the rear end from the body, clamp the radius arm in a bench vise. Remove the brake drum using special tool 1E-2031.

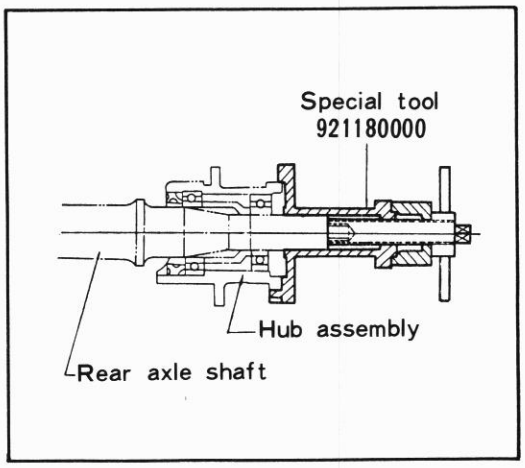


(b) Loosen the three 8 mm bolts fixing the back place and remove the brake assembly from the rear hub.



(c) Using special tool 921190000 hook the three prongs of the tool on the hub protrusions and press the center piece against the center hole of the rear axle shaft. When the handle is turned to screw in the center piece, the shaft will be forced out.

B. REINSTALLATION OF THE REAR AXLE SHAFT



(a) Check the rear axle shaft for any damages. Apply a light coating of grease on the bearing surfaces.

(b) After checking and servicing the hub assembly thoroughly, insert the rear axle shaft. Use of the special tool 921180000 will facilitate the work. Be careful not to permit dirt and grit from entering inside the hub.

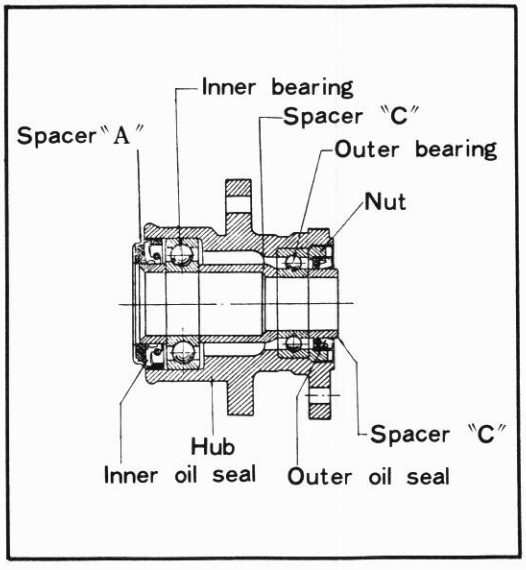
3: DISASSEMBLY AND REASSEMBLY OF REAR HUB AND BEARING

After removing the rear axle shaft, loosen the three 8 mm bolts holding the hub unit to the radius arm. The hub unit will become free.

A. REMOVING THE HUB BEARING

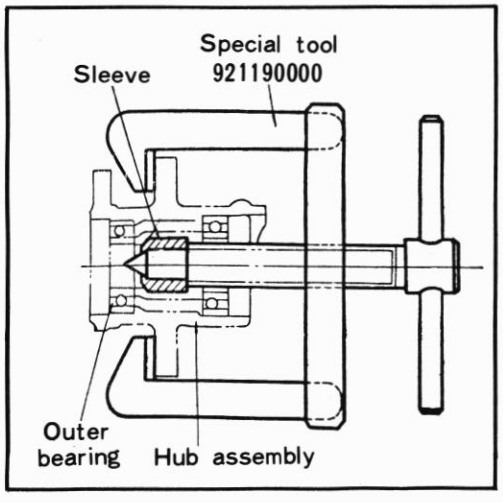
Tools Required Special Tools	921200000 921190000

The bearings are manufactured with great precision. They should be handled with adequate care.

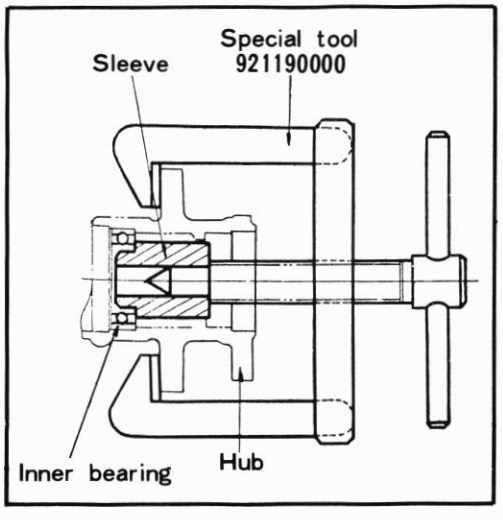


(a) When the back plate is removed, the nut lock will also come off at the same time. After this, remove Spacer "A" and Spacer "C".

(b) Use special tool 921200000 Insert the teeth of the tool into the eight grooves in the nut and turn to the left to remove the nut.



(c) Use special tool 921190000 for removing outer bearing No. 6205. As shown in the illustration. Insert the sleeve from the chamfered side into spacer "B". Insert the tip of the tool center piece into the sleeve hole and hook the three prongs of the tool on the hub protrusions. Turn the handle to screw in and the outer bearing will come off with spacer "B".



(d) Use special tool 921190000 also for removing outer bearing No. 6206.

As shown in the drawing, insert the sleeve inside the hub and operate the special tool in the same manner as above in "C". The bearing can be removed.

B. REASSEMBLY OF HUB BEARING

(a) CHECKS AND CLEANING BEFORE REASSEMBLY

Arrange two sets of cleaning fluid, one for preliminery cleaning and the other for the final cleaning. Use normal neutral anhydrous kerosene.

(1) PRELIMINARY CLEANING

Place the bearing in the fluid and shake vegorously without rotating the bearing. When the bearing is rotated from the start, the dirt and grit present in the bearing will scratch into the bearing and damage its precision finish.

(2) FINAL CLEANING

Rotate the bearing in the fluid and remove the dirt and grit completely.

[CAUTION]

Compressed air should not be used for drying the bearing after washing unless it has an equipment to remove the dirt and rust inside the air pipe.

After drying, apply bearing grease immediately and wrap with clean paper to keep away from dust.

(b) PROCEDURES FOR DISCERNING BEARING DAMAGES

The simplest means of determing whether the bearing is faulty is to observe the degree of soilage of the lubrication oil. If the lubricant is very soiled or if there are metal particles present, it means that dust and grit has infiltrated into the bearing or the bearing has worn down or is damaged. Check the bearing surfaces carefully after washing for roughness and scratches.

If the lubricant is darkly colored but transparent, it does not always mean that the bearing is damaged. Make your checks carefully.

(c) BEARING REASSEMBLY

Special Tool	921190000 921130000

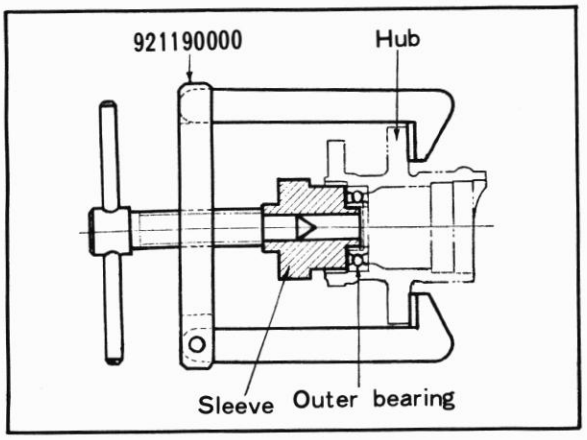
Take every precaution to prevent dust and grit from entering into the bearing. Keep your workshop clean and do not undo the paper wrapping from the bearing until your are ready to install.

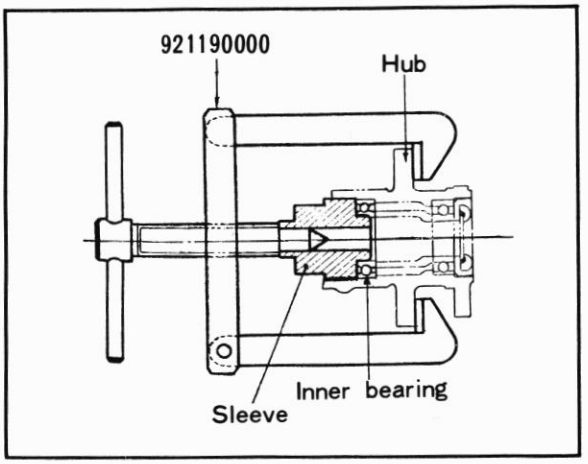
Wash the hub thoroughly also.

Reassembly must be performed in the following sequence:

(1) Outer Bearing No. 6205

(2) Inner Bearing No. 6206





(1) Force-fitting Outer Bearing (No. 6205)

Use special tool 921190000 Fit the smaller side of the sleeve inside the bearing. Hook the prongs on the three protrusions on the hub and insert the center piece of the tool into the sleeve. Turn the handle to force in the bearing.

(2) Install the outer oil seal and fix the nut in place with special tool 921130000

(3) Apply bearing grease to a thickness of about 3 mm on the inner surface of the hub and insert Spacer "B" from the opposite side.

(4) Force-fitting Inner Bearing (No. 6206)

Use special tool 921190000 Fit the inner diameter of the bearing on the opposite larger side of the sleeve. Hook the prongs on the three protrusions on the hub and turn the handle to force in the bearing.

(5) Force-fit the inner bearing in the same manner.

(6) As the final step, insert spacer "A" and spacer "C" on the oil seal. Apply grease lightly on the lips of the oil seal.

CHAPTER 4: STEERING SYSTEM

4-1 SPECIFICATIONS AND STANDARDS FOR STEERING SYSTEM 4- 1

4-2 DISASSEMBLY AND REASSEMBLY OF STEERING GEAR BOX ASSEMBLY 4- 2

4-3 DISASSEMBLY AND REASSEMBLY OF STEERING SHAFT ASSEMBLY 4-16

4-4 REMOVAL AND REINSTALLATION OF TIE-ROD ASSEMBLY 4-24

CHAPTER 4. STEERING SYSTEM

4-1: SPECIFICATIONS AND STANDARDS FOR STEERING SYSTEM

	Subaru 360 Sedan	Subaru 360 Custom
Steering Type	Rack and Pinion	"
Minimum Turning Diameter	8 meter (26.2 ft)	"
Steering Angle (Inner)	36°	"
" " (Outer)	27°	"
Steering Handle Diameter	380mm (15.0in)	"
Steering Shaft Diameter	20mm (0.79in)	"
Rubber Coupling	6 x 5 ply	"
Pinion - No. of Tooth	Module 1.75 x 7	"
Tie-Rod Thread Dimensions	16Ø x 15P	"
Tie-Rod Adjustment Nut	21mm	"
Tie-Rod Adjustment Turnbuckle	17mm	"
Tie-Rod End Pole Stud Nut	14mm	"
Toe-In (Empty Load)	12-16mm (0.47-0.63 in)	"

General Data:

The steering gear box construction is of the rack and pinion type which is simple and at the same time providing sure action.

A back-lash adjustable type has been adopted for greater efficiency.

In addition, a turnbuckle has been incorporated in the tie-rod for making toe-in adjustments to a finer degree.

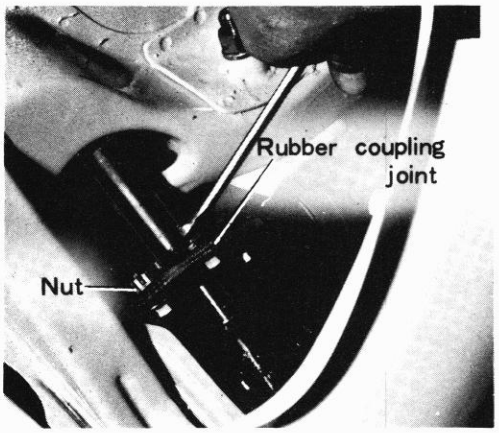
A turning diameter of 8 meters, unparalleled riding comfort, excellent maneuverability, amazing rough road stability - these are the outstanding features of the Subaru.

4-2: DISASSEMBLY AND REASSEMBLY OF STEERING GEAR BOX ASSEMBLY

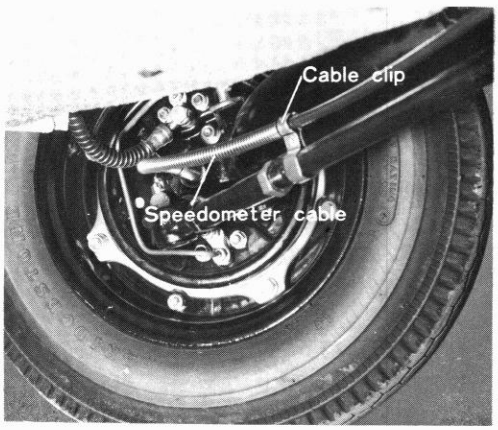
A. REMOVAL OF STEERING GEAR BOX

(a) Place the vehicle over a work pit or on a jack and see that the front part is free.

(b) Open the front hood and remove the spare tire.

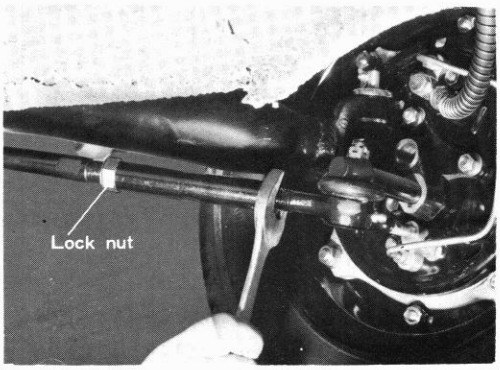


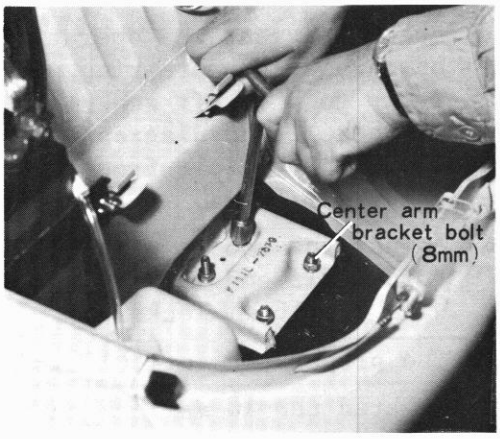
(c) Remove the (8 x 20 mm) bolts fixing the rubber coupling joint. Remove the steering shaft assembly installation bolt on the dashboard and slide the shaft assembly inward into the cabin. The joint and shaft will separate.



(d) On the left hand tie-rod, remove the speedometer cable from the tie-rod.

(e) Loosen the 16 mm nut on the turnbuckle. Turn the turnbuckle and separate it from the tie-rod.





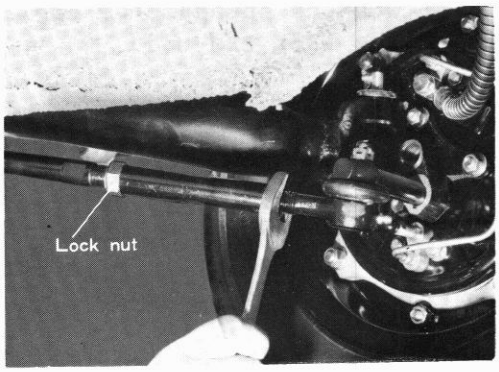
(f) Remove the four 8 mm bolts fixing the gear box to the body.

(g) Remove the gear box downward.

B. REINSTALLATION OF STEERING GEAR BOX

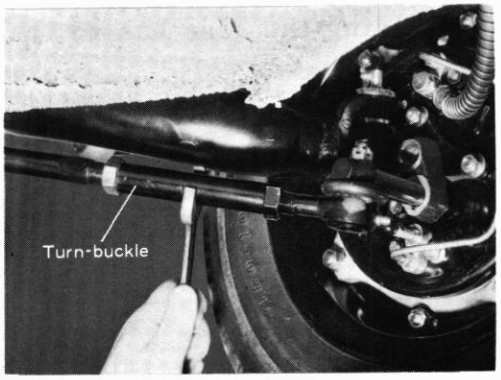
(a) Install the gear box on the center arm bracket block with the four 8 mm bolts with the spring washers and the washers.

Tighten the bolts with a torque of
1.5-2.5 kg-m(10.85-18.1 lb-ft)



(b) Turn the tie-rod turnbuckle and temporarily connect the tie-rod and end.

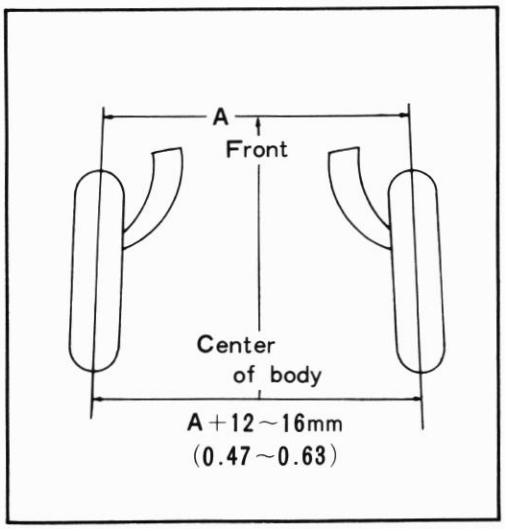
(c) Fix in place provisionally with the 8 mm bolt, plain washer and spring washer. Be sure to use genuine Subaru parts. The bolt has the mark on its head. Also use a new spring washer.



(d) Check the gear box operation by turning the steering wheel fully to the left and right. If there is no discrepancy, lower the vehicle from the jack.

(e) Adjust the toe-in with the turnbuckle and fix in place with the 16 mm lock nuts.

The proper toe-in is 12-16 mm
Tighten the 16 mm lock nuts with a torque of 8-8.5 kg-m(58-61 lb-ft).

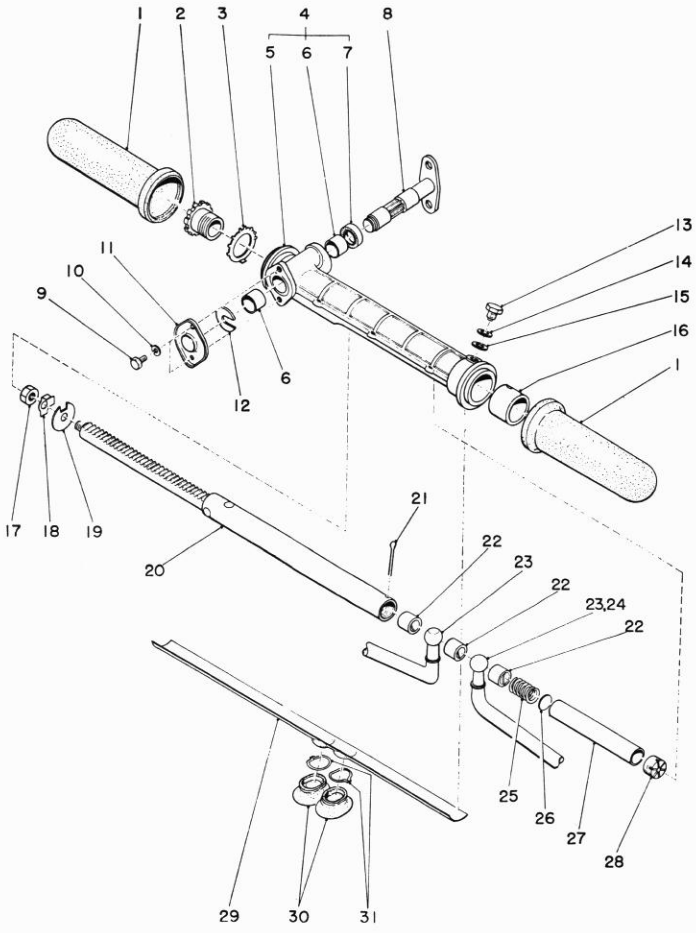


(f) Attach the speedometer cable on the left tie-rod.

(g) Adjust the steering shaft position so that the steering wheel become symmetrical as shown in the photo.
Fix the bolts in the place.

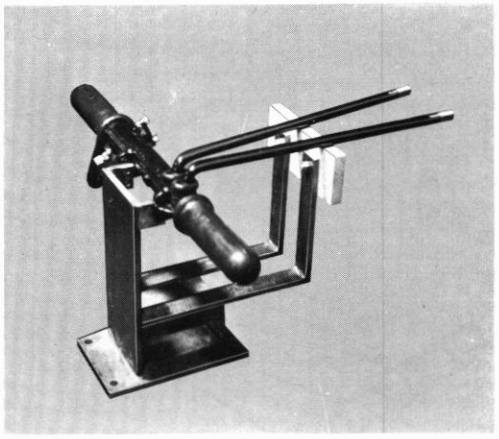
Tighten the bolts with a torque of 1-1.2 kg-m (7.2-8.7 lb-ft).

C. CONSTRUCTION OF THE STEERING GEAR BOX



(1) Cover (Rack)
(2) Bushing
(3) Lock Washer (Eccentric Bushing)
(4) Gear Box Unit
(5) Gear Box
(6) Bushing (Gear Box)
(7) Oil Seal
(8) Pinion
(9) Bolt
(10) Spring Washer
(11) Cap
(12) Thrust Washer
(13) Bolt
(14) Spring Washer
(15) Washer
(16) Bushing (Rack)
(17) Nut
(18) Lock Washer
(19) Stopper (Rack)
(20) Rack
(21) Cotter Pin
(22) Seat (Gear Box Ball)
(23) Tie Rod
(24) Tie Rod
(25) Spring (Ball Seat)
(26) Seat
(27) Spacer
(28) Cap
(29) Slide Cover
(30) Rubber Boot
(31) Snap Ring

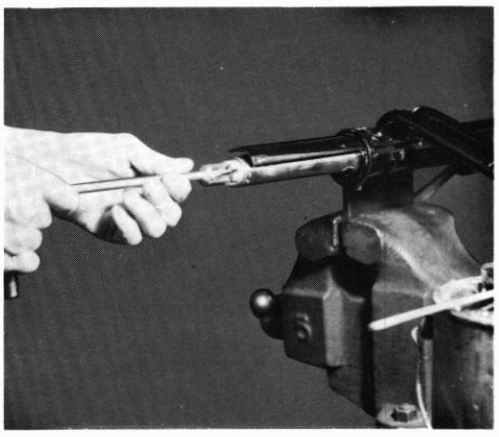
D. DISASSEMBLY OF STEERING GEAR BOX



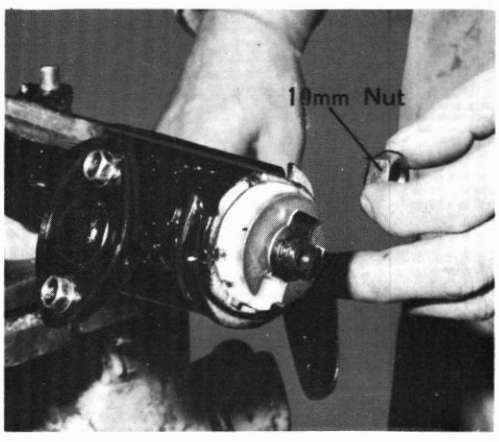
(a) Fix the gear box assembly on a fixture as shown in the illustration.

(b) Remove the rubber covers on both ends.

(c) Pull out the cotter pin from the rack end. Loosen the cap with a screw driver.



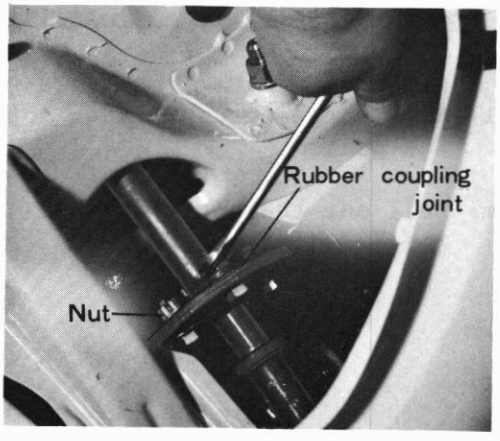
(d) Remove the tie-rod snap rings and the rubber boots from the slide cover to take out the tie-rod.
The slide cover will also become free.



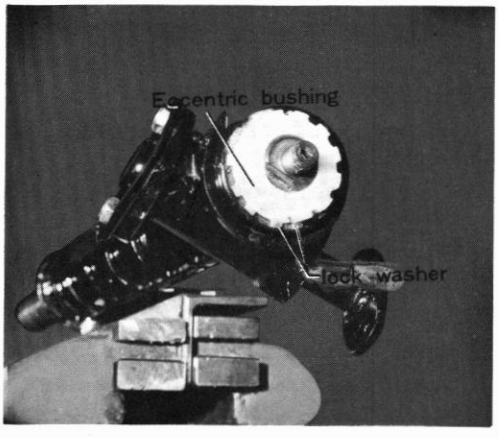
(e) Streighten out the tab of the lock washer and remove the 10 mm nut.
Remove the stopper also.

(f) Remove the rack from the gear box.

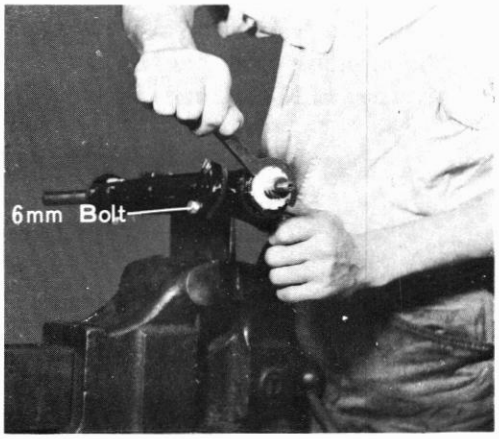
(g) When the rack cap is removed, the spacer and the ball seat spring will become free.



(h) The pinion and joint are integrated into a single unit. Loosen the rubber coupling installation bolt.



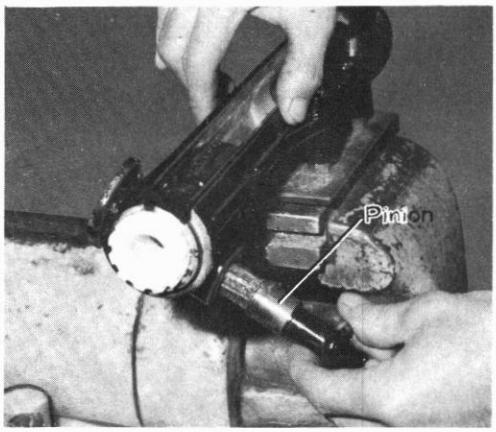
(i) Straighten out the tabs on the lock washer.



(j) Remove the eccentric bushing with the special tool.

[CAUTION]

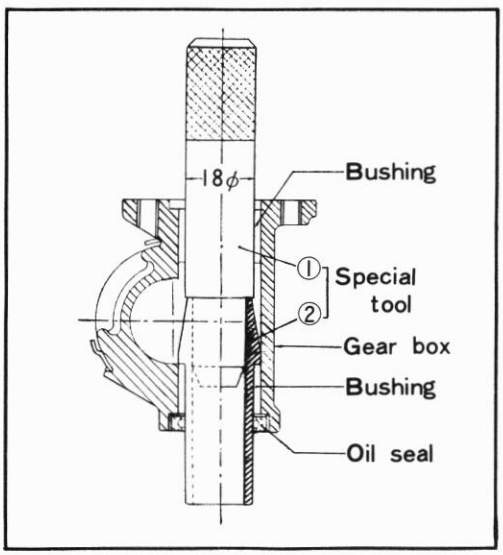
Do not attempt to remove the eccentric bushing by applying a screw driver against the bushing and striking it with a hammer. The flange part will be damaged.



(k) Remove the pinion cap by taking off the 6 mm installation bolt.

(1) Remove the thrust washer from the pinion.

(m) Pull out the pinion.



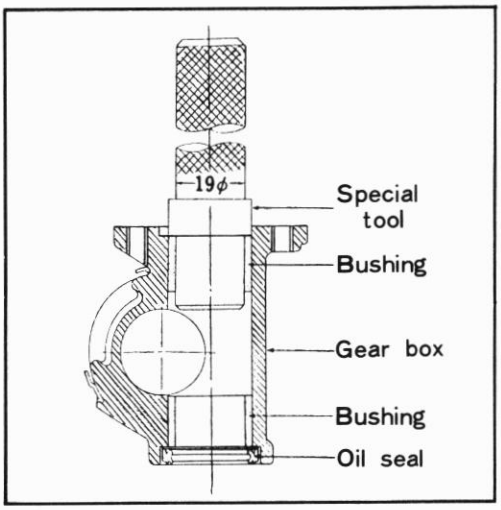
(n) Force special tool 1E-1074 into the gear box and push out the bushing oil seal. First insert part (2) of the special tool and hook on the flanges of the oil seal to be removed. Then insert part (1) from the other side and tap with hammer. The oil seal will come off with the part (2)

The oil seal on the opposite side is removed in the same manner.

(o) Remove the bolt locking the rack bushing in place on the upper surface of the gear box and take out the rack bushing.

E. REASSEMBLY OF STEERING GEAR BOX

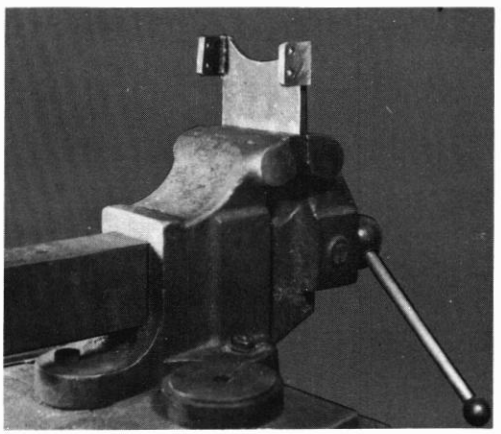
Special Tool	922210000



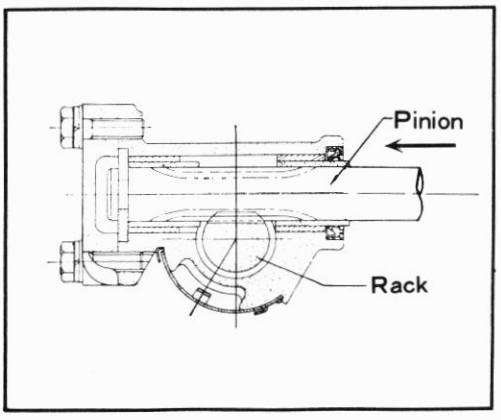
(a) Wash each part thoroughly in cleaning fluid.

(b) Force in the bushing and oil seal into the gear box using special tool

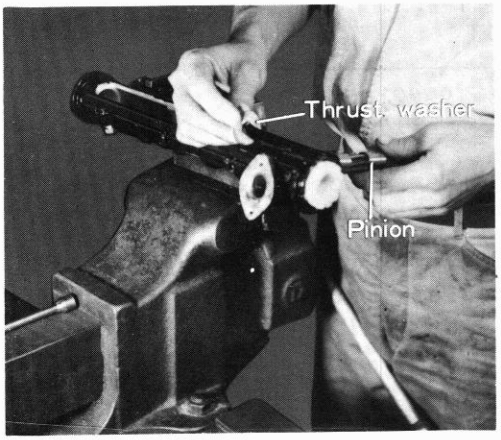
(c) Fix the reassembly fixture in a vise.



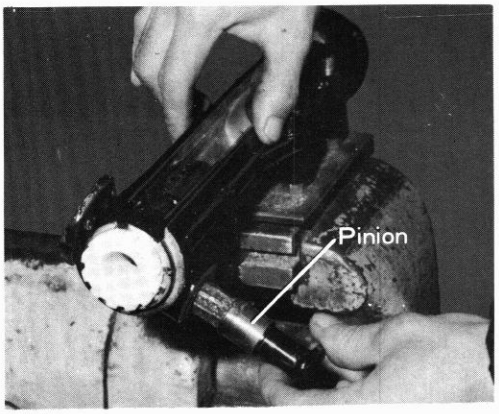
(e) Apply adequate grease on the inner walls of the eccentric bushing, insert a new lock washer and screw into the gear box. Do not bend back the tabs on the lock washer.



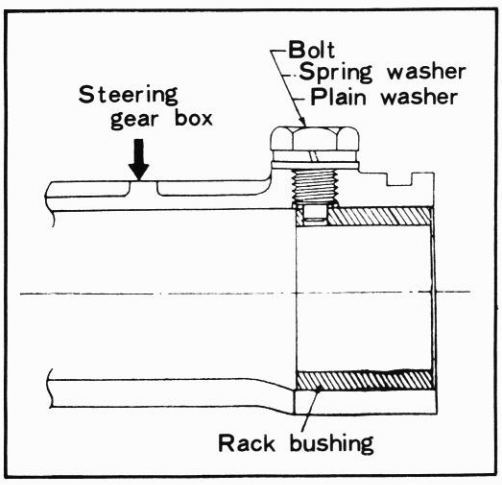
(f) Apply grease on the teeth of the pinion, the bushing surfaces and inside the gear box. Insert the pinion into the gear box from the arrow direction shown in the drawing.



(g) Apply grease to the thrust washer and insert into the pinion groove.
Then install in the gear box.



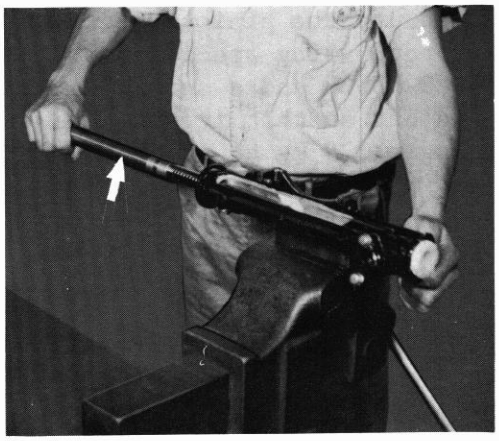
(h) Using a 6 mm spring washer, attach the cap with the bolts to the gear box.



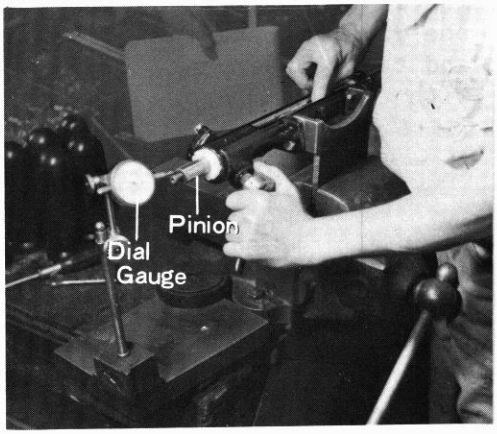
(i) Insert the rack bushing into the gear box and fix the locking bolt into place with plain washer and spring washer.

Tighten the bolt with a torque of 1.0-1.5 kg-m (7.23-10.85 lb-ft).

Apply grease to the inner surfaces of the rack bushing.

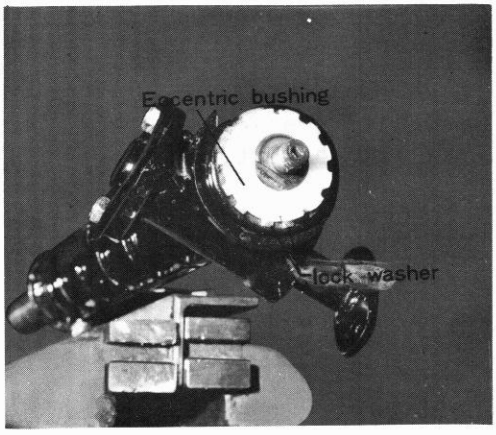


(j) Insert the rack from the rack bushing side.

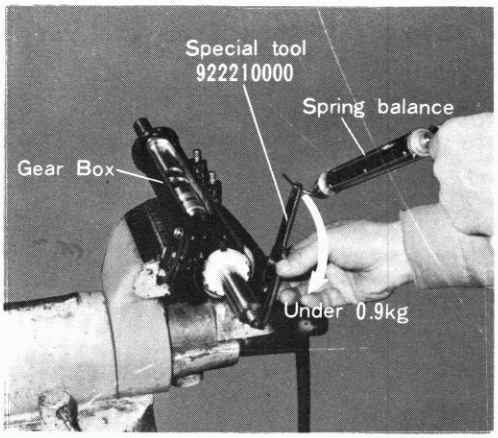


(k) Holding the pinion so that it will not turn, apply a dial gauge at the end of the rack and turn the eccentric bushing while moving the rack along the axle to adjust the back lash.

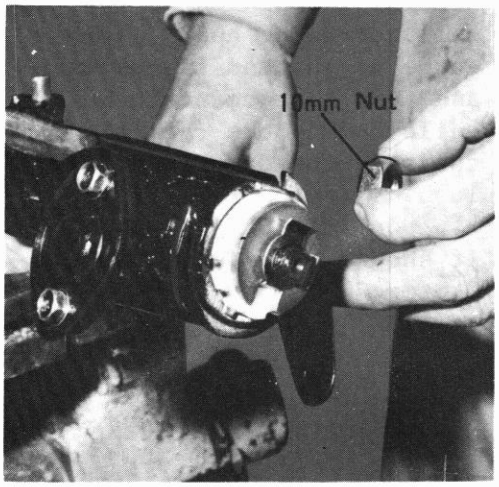
It should be adjusted to 0.0 mm.



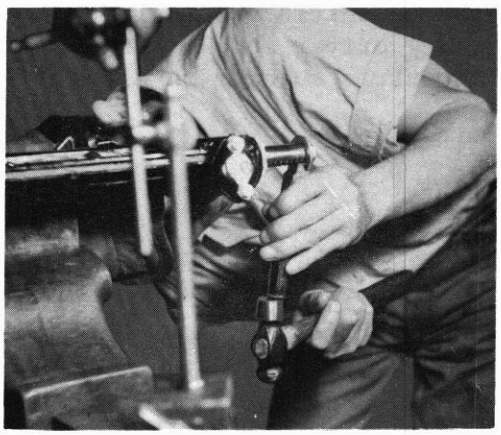
(l) Bend the tabs on the lock washer into the grooves of the eccentric bushing with a screw driver and lock the eccentric bushing in place.



(m) Measure the pinion rotation torque using special tool 922210000 and a spring balance. Adjust so that it will be under 0.9 kg at point 100 R.

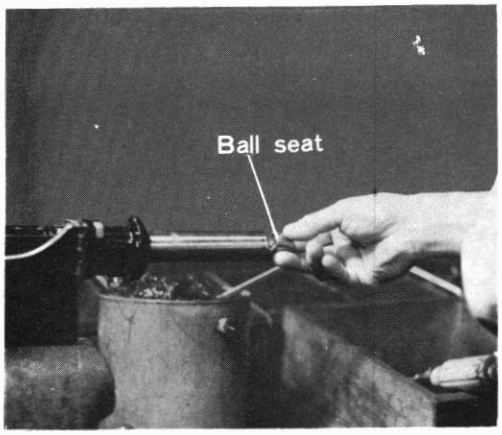


(n) Insert a new lock washer into the rack, attach the stopper and tighten securely in place with the 10 mm nut.

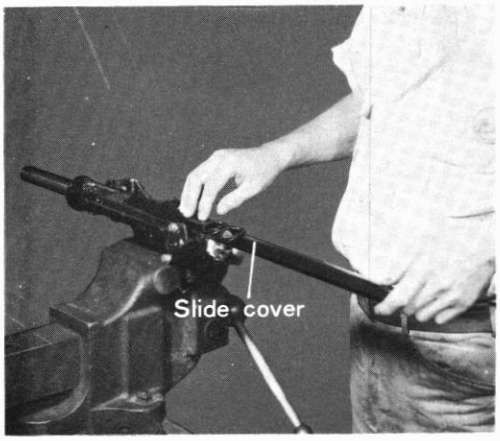


(o) Bend back the tabs on the lock washer securely with a screw driver.

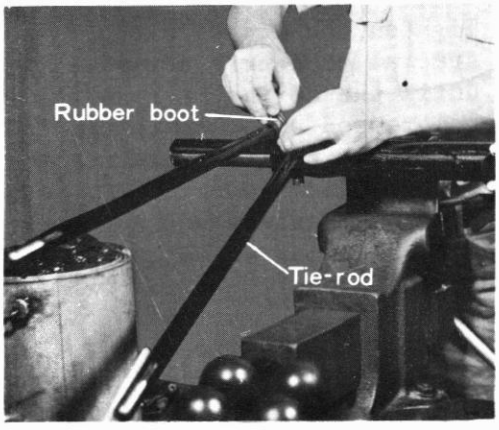
Make sure that there is definite contact with the rack teeth part.



(p) Insert the three ball seats which have been coated with grease into the rack pipe.



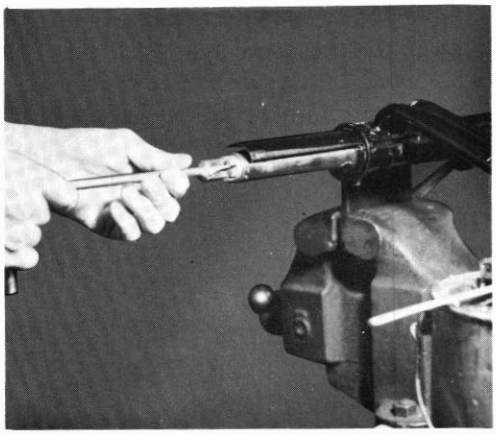
(q) Apply grease on the rubbing surface of the slide cover and install into the gear box guide.



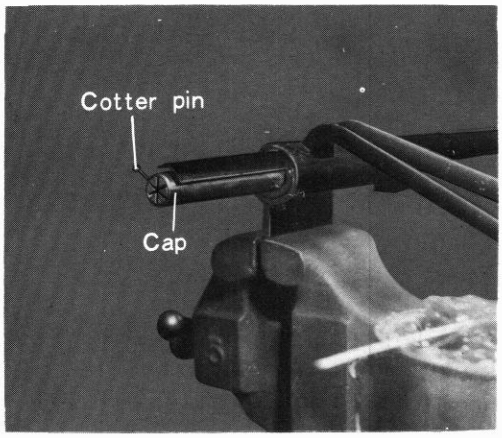
(r) Insert the rubber boot on the tie-rod and install on the rack. Attach the rubber boot on the slide cover with the snap ring.

(s) Insert the spring and the spring seat into the rack.

(t) Insert the spacer.

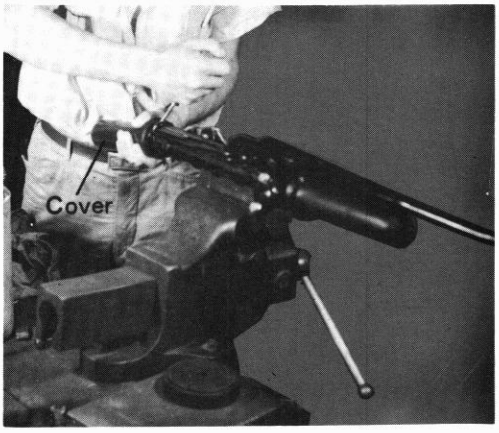


(u) Tighten the cap with the special tool or a screw driver until the spring is completely compressed and then return to the first position where the cotter pin hole coincide. This has a great bearing on the ball wear so be careful on this point.



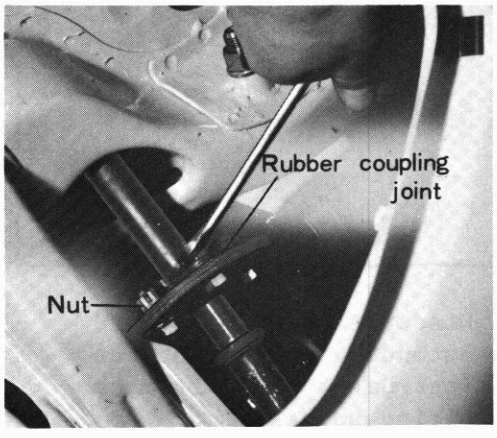
(v) Insert a new 2.5 mm x 30 cotter pin and lock the cap in place.

(w) Install the cover with a screw driver.



(x) Insert the plates into both sides of the rubber coupling, install the joint of the pinion and the steering shaft assemble with the four nuts as shown in the photo.

Tighten the nuts with a torque of 0.5 - 0.7 kg-m (3.61 - 5.06 lb-ft)



(y) Insert a cotter pin into the bolt and lock in place.

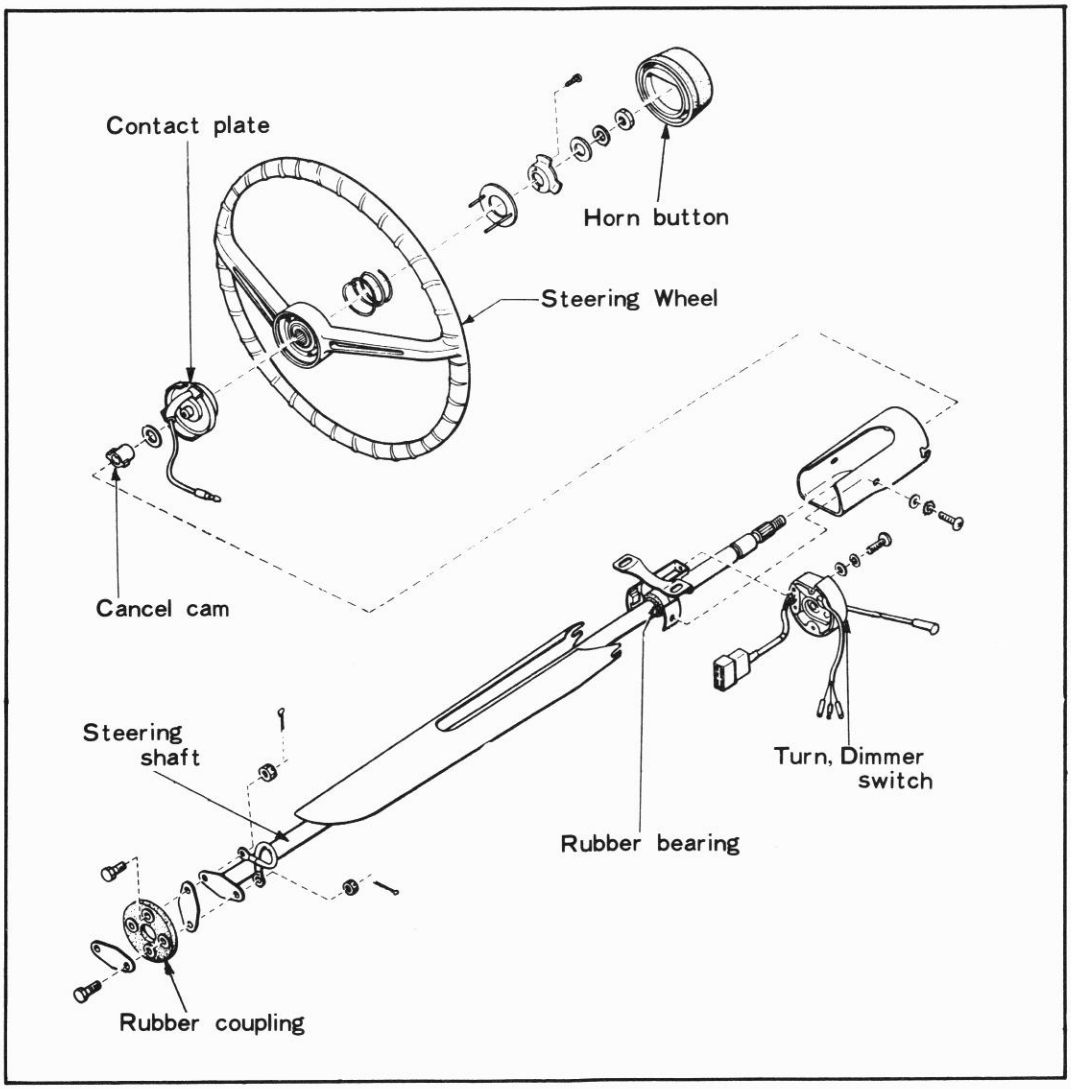
[CAUTION]

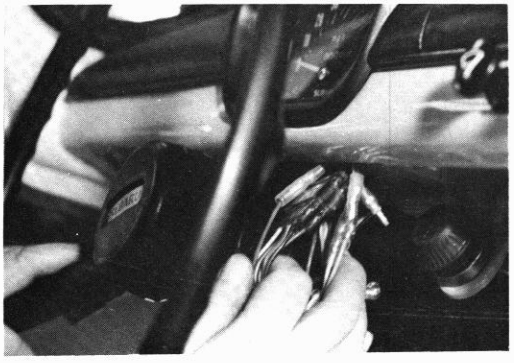
Use a genuine Subaru bolt with the ⑦ mark on the head.

4-3: DISASSEMBLY AND REASSEMBLY OF STEERING SHAFT ASSEMBLY

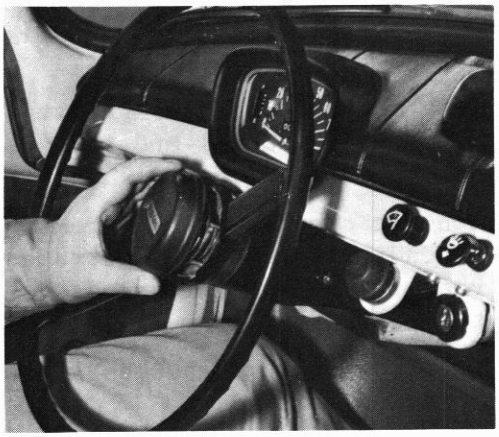
1: STEERING WHEEL AND HORN BUTTON SYSTEM

A. REMOVAL

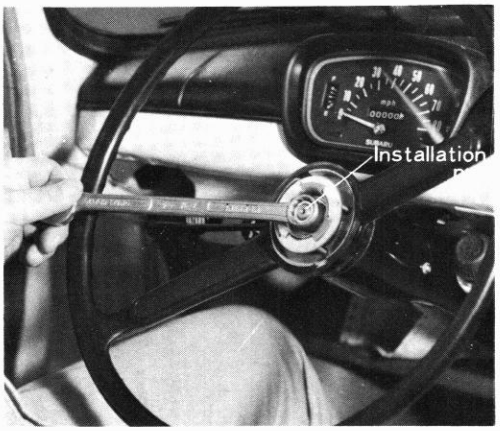




(a) Disconnect the horn cord extending out behing the instrument panel from the wiring harness.



(b) Push the center horn button against the steering wheel and turn to the right, the horn button will come off.



(c) Remove the installation nut on the shaft with the spring washer and plain washer.

(d) Pull out the steering wheel to remove from the shaft.

B. REINSTALLATION

(a) Adjust through the serration on the steering wheel.

(b) Insert plain washer and spring washer in this order into the shaft and fix in place with the nut.

Tighten the nut with a torque of 4 - 4.5 kg-m
(29 - 32.5 lb-ft)

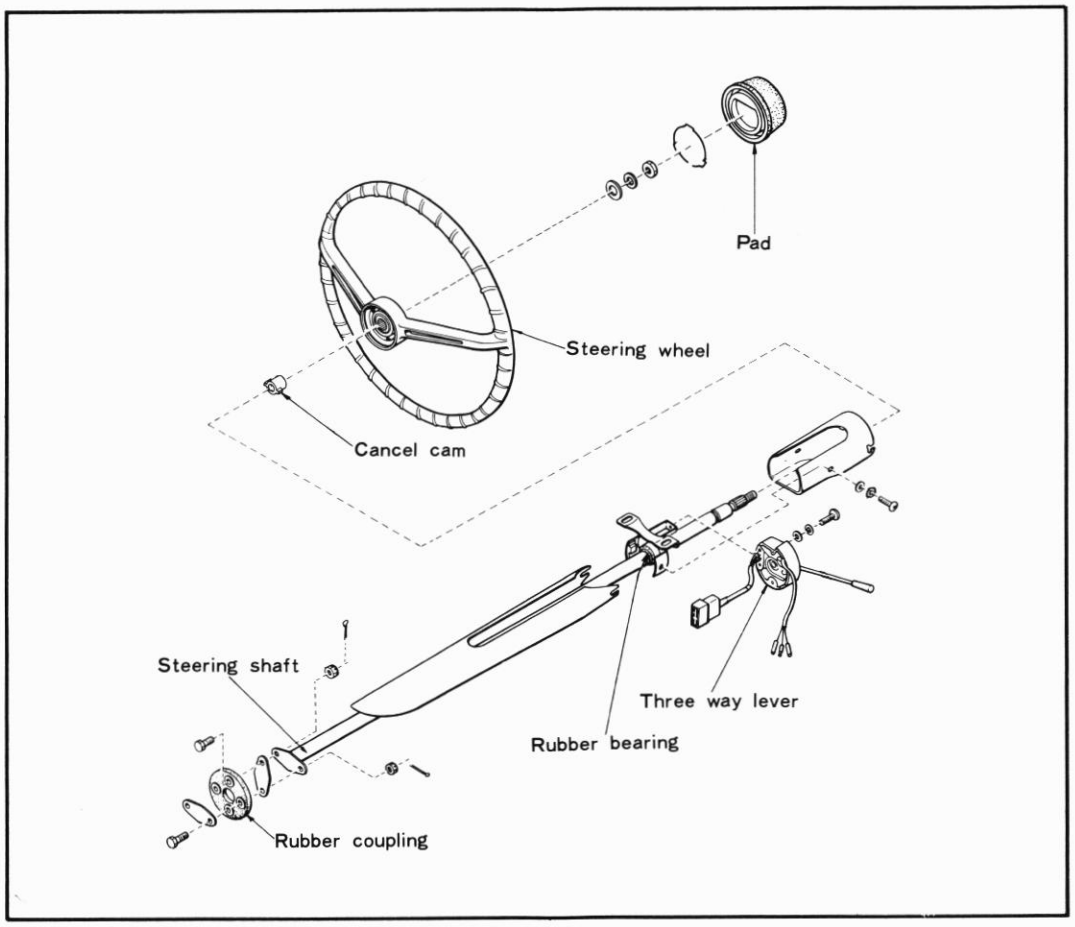
(c) Push the horn button against the steering wheel and turn to the left to install.

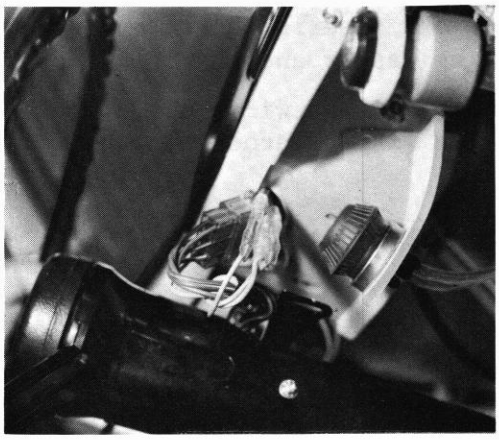
(d) Connect the horn lead wire extending behind the instrumend panel to the wiring harness at the terminal.

(e) Press on the horn button and check operation.

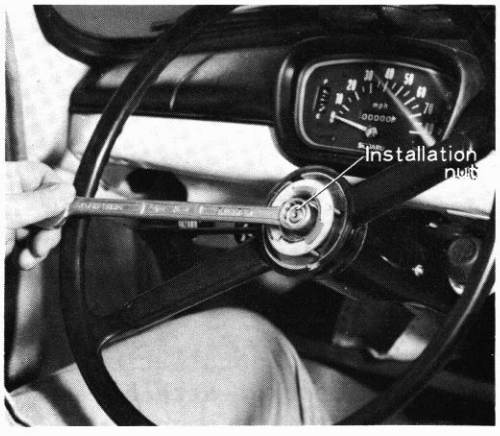
2: STEERING WHEEL AND THREE WAY LEVER (TURN, DIMMER, HORN SWITCH)

A. REMOVAL



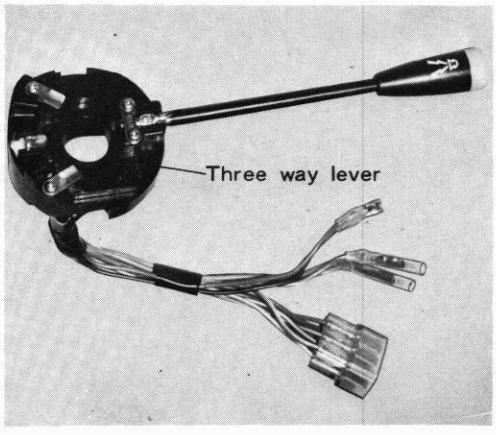


(a) Disconnect the horn, dimmer, turn signal cords extending out behind the instrument panel from the wiring harness.



(b) Push the center pad against the steering wheel and turn to the right. The pad will come off.

(c) Remove the installation the nut (12 mm) on the shaft with the spring washer and plain washer.



(d) Pull out the steering wheel to remove from shaft.

(e) Remove the screws (4 mm) holding the three way lever-assy on the bracket of the shaft.

(f) Pull out the three way lever from the bracket of the shaft with the cencel cam.

B. REINSTALLATION

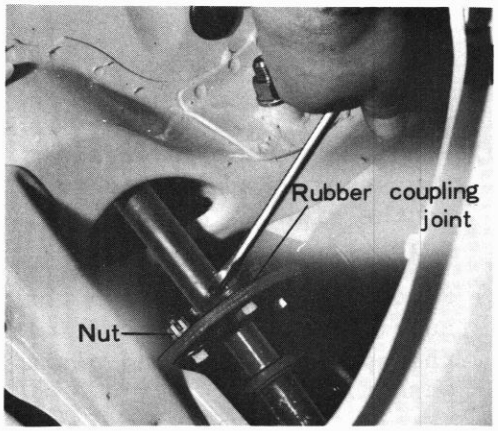
(a) Insert the cancel cam and the three way lever on the shaft and fix in the bracket with 4 mm bolts.

(b) Adjust through the serrations on the steering wheel and, fix in place with plain washer, spring washer and the 12 mm nut.

(c) Connect the horn, dimmer, turn signal lead wires extending behind the instrument panel to the wiring harness at the terminal and check operation.

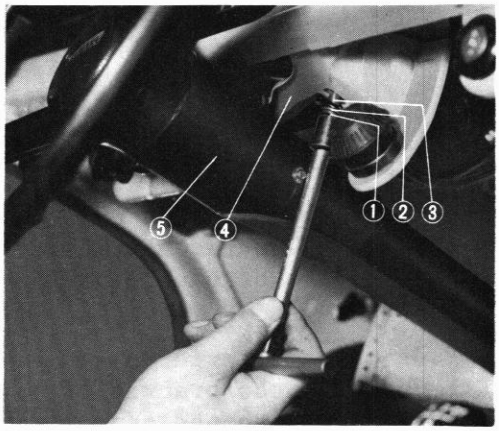
3: DISASSEMBLY AND REASSEMBLY OF STEERING SHAFT

A. REMOVAL



(a) Open the front hood and remove the spare tire.

(b) Remove the installation bolt at the rubber coupling joint.



(c) Remove the installation bolt on the bracket attached to the instrument panel.

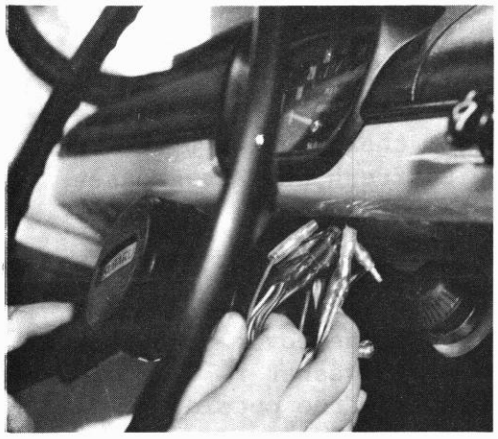
(1) Plain Washer

(2) Spring Washer

(3) Bolt

(4) Bracket

(5) Steering Shaft Assembly



(d) Disconnect the horn cord the dimmer and the turn signal switch cords from the wiring harness.

(e) Remove the shaft assembly from inside the cabin.

(f) Remove the steering wheel from the shaft.

(g) Pull off the plate, contact plate, spacer, etc. from the shaft.

(h) Pull out the shaft toward the rubber coupling side.

(i) Remove the two screws holding the turn signal dimmer switch assy and remove the switch.

(j) Remove the bracket installation screw on the outer side of the cover and remove the bracket through the cutaway on top of the cover.

(k) Turn the rubber bearing 90 degrees in the bracket and remove.

B. REINSTALLATION

(a) Clean the portion of the shaft above the bearing.

(b) Wipe off the grease thoroughly from the interior of the rubber bearing and refill the grooves with fresh chassis grease. Attach to bracket.

When replacing with a new rubber bearing, do not forget to supply adequate chassis grease also.

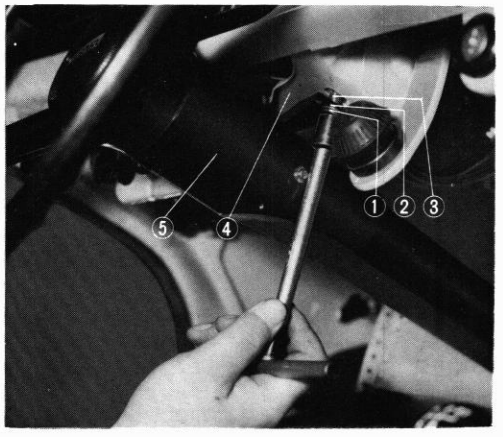
(c) Insert the bracket in position inside the cover through the cutaway. Insert lock washer and plain washer in this order in the screw and fix bracket in place from the outside.

(d) Attach the turn signal, dimmer switch assy with washer, spring washer and screw.

(e) Insert the shaft taking care not to injure the lip of the rubber bearing.

(f) Insert spacer, contact plate and plate in this sequence onto the shaft.

(g) Attach the steering wheel on the shaft temporarily.



(h) Pass the tip of the shaft assembly through the hole in the front bulkhead and into the serrated hole in the rubber coupling joint. Fix in place with 8 mm bolt, plain washer, spring washer and nut. Be sure to use genuine Subaru parts.

TIGHTEN WITH A TORQUE OF
0.4 - 0.7 kg-m (2.9 - 5.1 lb-ft)

(1) Plain Washer
(2) Spring Washer
(3) Bolt
(4) Bracket
(5) Steering Shaft Assembly

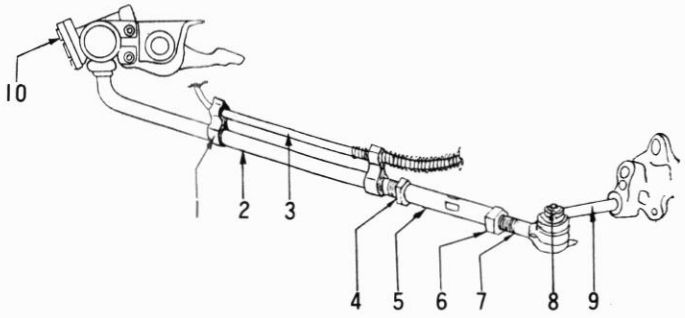
(i) Attach the shaft assembly to the instrument panel with two 8 mm bolts. Be sure to use a spring washer and plain washer. If the part marked with an asterisk (*) in the preceding drawing is touching, insert a plain washer between the instrument panel and bracket.

TIGHTEN THE INSTALLATION BOLT WITH A TORQUE OF
1.0 - 1.8 kg-m (7.2 - 13.0 lb-ft)

(j) Adjust the serration joint of the steering handle and shaft. Fix the handle in place.

(k) Connect the horn cord and turn signal, dimmer switch cord to the wiring harness. Be sure to match the color codes.

4-4: REMOVAL AND REINSTALLATION OF TIE-ROD ASSEMBLY



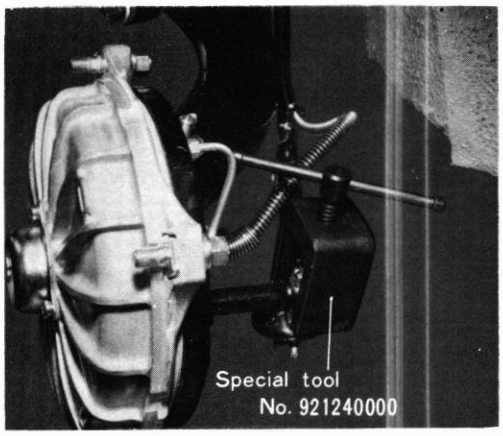
(1) Speedometer-Cable Clamp
(2) Tie-Rod
(3) Speedometer Cable
(4) Lock Nut
(5) Turnbuckle
(6) Lock Nut
(7) Tie-Rod End
(8) Castellated Nut
(9) Knuckle Arm
(10) Steering Gear Box

A. REMOVAL

Special Tool	921240000

(a) Place the vehicle over a work pit or raise on a jack. If on a pit, jack up the front part to keep the front part free.

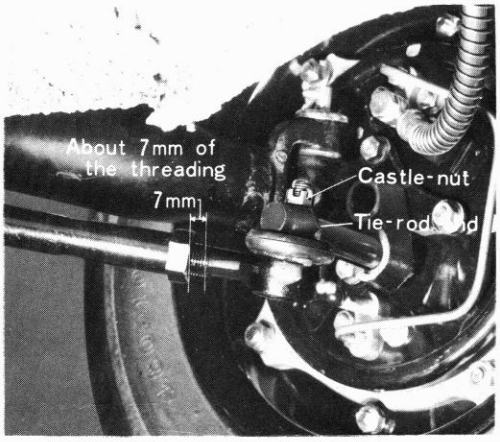
(b) Remove the speedometer cable from the left hand tie-rod.



(c) Take out the cotter pin from the castellated nut joining the tie-rod end and knuckle arm and remove the nut.

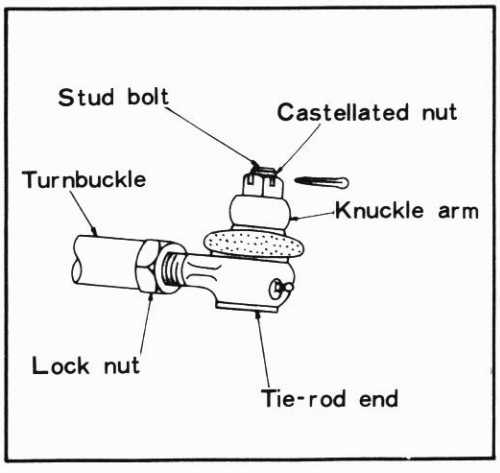
(d) Using special tool 921240000, pull out the tie-rod end stud bolt from the knuckle arm.

(e) Loosen the lock nuts on the turnbuckle and separate the turnbuckle from the tie-rod and tie-rod end.



B. REINSTALLATION

(a) Screw in the lock nuts so that about 7 mm of the threading is showing on the tie-rod end and tie-rod sides.



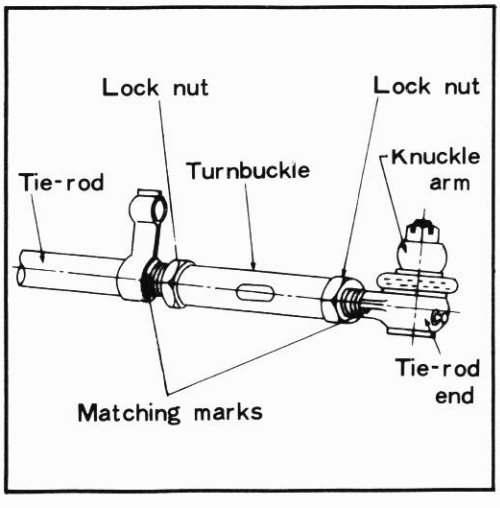
(b) Screw in the turnbuckle almost up to the lock nuts.

(c) Insert the stud bolt of the tie-rod end through the knuckle arm installation hole and tighten the castellated nut in place.

(d) Take a new cotter pin and insert into the castellated nut.

(e) Lower the front wheels on the ground and check the operation by turning the steering wheel. If good, adjust the toe-in by turning the turnbuckle.

PROPER TOE-IN WITH THE VEHICLE EMPTY IS 12 - 16 mm
(0.47 - 0.63 in)



(f) Make sure that the matching marks on the tie-rod and tie-rod end are on a straight line as illustrated and tighten the lock nuts.

TIGHTEN WITH A TORQUE OF
8 - 8.5 kg-m (58 - 61.5 lb-ft)

(g) Attach the speedometer cable on the left hand tie-rod.

CHAPTER 5: BRAKE SYSTEM

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CHAPTER 5: BRAKE SYSTEM

5-1: BRAKE SYSTEM SPECIFICATIONS AND STANDARDS

		SEDAN	CUSTOM
Brake Type	Front	Two-leading	(same as sedan)
	Rear	Leading and trailing shoes	"
	Pedal	Hydraulic on 4 wheels	"
	Hand (parking)	Mechanical on rear wheels	"
Master Cylinder	Body Material	Cast Aluminum Alloy	"
	Piston Material	Zinc Die-cast	"
	Inside Diameter	19.05 mm (0.75 in)	"
Clearance between and Piston	Master Cylinder	0.019-0.086 mm (0.0007-0.0034 in)	"
Front Wheel Cyl.	Material	Cast Aluminum Alloy	"
	Inner Diameter	20.64 mm (13/16")	
Rear Wheel Cyl.	Material	Cast Aluminum Alloy	"
	Inner Diameter	17.46 mm (11/16")	"
Brake Drum Inner Diameter	(front & rear) (Usable limit)	170 mm (6.69 in) 170.5 mm(6.71 in)	" "
Brake Drum Eccentricity	(front & rear)	Under 0.05mm (0.0020in)	"
Thickness at Brake Steel Pipe Opening		Over 1.3mm - 1.5mm (0.05in - 0.059in)	"
Tightening Torque at Tapered Union		1.5-2.0 kg-m (10.9-14.4 lb-ft)	"
Tightening Torque of Union Bolt through flat Packing		1.2-2.2 kg-m (9.8-15.9 lb-ft)	"
Brake Lining Thickness (all brakes)	After bonding and finishing	4.8 mm (0.19 in)	"
	For servicing	5.0 mm (0.20 in)	"

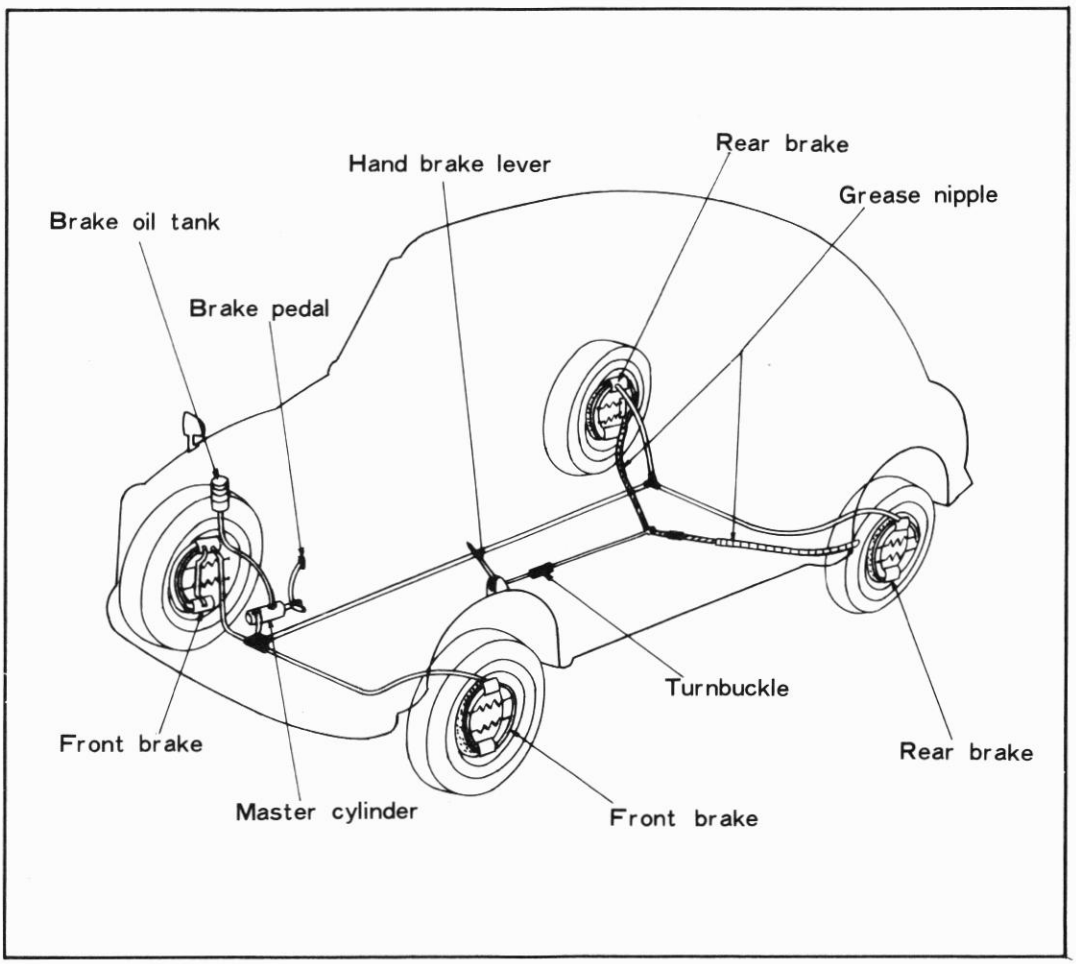
Brake Lining	Usable Limit	1.0 mm (0.04 in)	(same as sedan)
	Width	30 mm (1.18 in)	"
	Length-Front	156 mm (6.14 in)	"
	Rear	180 mm (7.09 in)	"
	Installation	Bonding	"
Clearance between Brake Lining and Drum		0.1-0.15 mm (0.004-0.006 in)	"
Brake Oil Volume (To oil tank level mark)		0.45 (0.95 US pt) (0.79 Imp pt)	"
Brake Pedal Play		20-25 mm (0.79-0.98 in)	"
Brake Pedal Play Adjustment Limit		40-50 mm (1.57-1.97 in)	"
Clearance between Pedal Bushing and Shaft		0.020-0.083 mm (0.0008-0.0083 in)	"
Adjustment Standard for Pulling Range of Hand Brake		3 to 4 steps	"
Hand Brake Cable Diameter		2.5 mm (0.1 in)	"
Hand Brake Cable Length	Right Side	971 mm	"
	Left Side	925 mm	

General Data:

The brake is an essential part of any motor vehicle. It is given top priority as a pre-operation check point. Periodical checks and daily cares must be made on the brake system for proper functioning at all times for safer driving.

The Subaru employs two types of brakes, the hydraulically operated main brakes and the mechanically operated hand brake on the rear wheels for parking.

Brake shoes for the front and rear are of the simple construction and reliable floating shoe type. Since the greater part of the vehicle weight is sustained on the front wheels when brakes are applied, the front wheel cylinder diameter are made larger than the rear. These factors assure stability even when sudden braking is applied at high speeds. It is also recommended that on slippery roads, refrain from applying sudden brakes.



5-2: PRECAUTIONS WHEN SERVICING BRKE SYSTEM

(a) Do not mix oil of different brands.

(b) If a different brand of oil must be used, disassemble the brake assembly and wash in clean alcohol together with the brake pipings. In this process, be careful not to allow dirt or grease to infiltrate into the piping or cylinder.

After reassembly, do not forget to bleed the air out of the pipings.

(c) If the brake pipe junction bolt is tightened excessively, the cone-shaped pipe opening may become deformed and weakened. Tighten with the proper torque.

THE PROPER TIGHTENING TORQUE 1.5-2.0 kg-m(10.9-14.4 lb-ft).

(d) Do not handle the brake lining with oily hands or allow it to become wet.

(e) In order to attain balanced braking, it is recommended that the brake linings on all four wheels be changed together.

(f) The inner surfaces of the brake drum should be smooth and dry.

(g) Check for damages on the inner surfaces of the brake drum. If there are damages, new linings will be meaningless. Correct or replace with new brake drums.

USABLE LIMIT OF BRAKE DRUMS: Inner Diameter 170.5mm (6.71 in)

(h) After adjustment of the brake shoes, the linings should not be in contact with the drum.

(i) Brake pedal operation is determined by the following three factors:

(1) Brake pedal play (Clearances between pedal and pedal shaft, and piston and push rod)

(2) Clearance between brake shoe and drum.

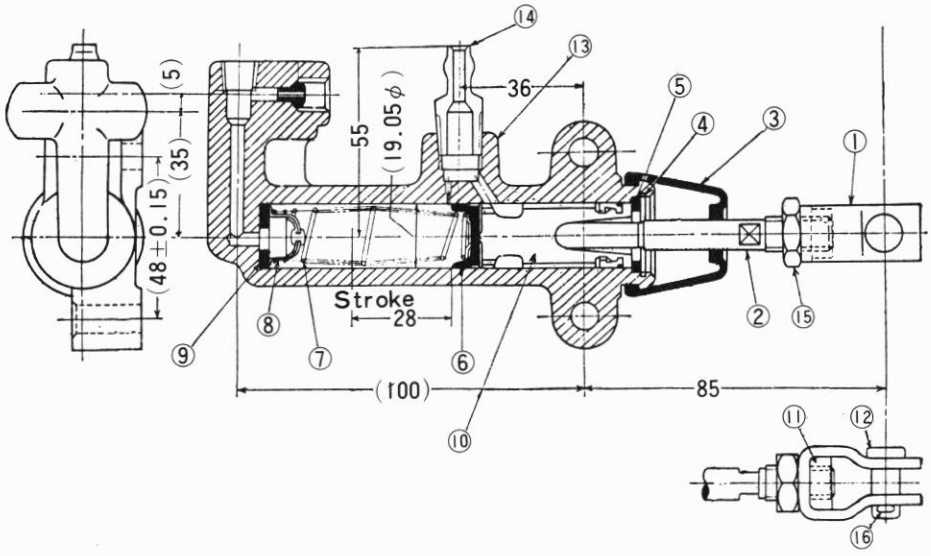
(3) Transmission of hydraulic force (compression of brake oil and expansion of brake hose)

(j) Refer to the following chart for determining the nature of your brake trouble and the appropriate countermeasures.

TROUBLE	PROBABLE CAUSE	COUNTER-MEASURE
No resistance is felt when stepping on brake like stepping on a sponge.	Air in the brake system	Bleed the air out system piping.
Resistance is felt when braking but stepping range diminishes as you keep pumping.	Excessive clearance between drum and lining. Swollen brake hose. Air in piping.	Adjust gap. Replace hose. Bleed the air out.
Loss of brake oil.	Leak in the piping. Leak from cylinder.	Tighten leaking joints. Replace cylinder cup.
Brake becomes over-heated from braking too hard and starts to drag.	No pedal play. Master cylinder return port is clogged. Faulty adjustment of hand brake. Brake shoe return spring is faulty. Brake oil piping is clogged.	Adjust play. Wash cylinder. Adjust correctly. Replace spring. Replace piping.
Car pulls to one side when braking or the braking effect is unstable.	Brake lining is dirty with grease or oil. Materials of lining are incorrectly matched. Drum has become deformed.	Replace lining. Replace lining. Repair or replace drum.
	Piston cup is swollen. Rust in the wheel cylinder. Piping is clogged.	Replace cylinder cup. Replace wheel cylinder. Replace piping.
	Hand brake reacts unevenly for no apparent reason.	Replace drum; replace brake shoes also if necessary.
Brake catches on one or two wheels.	Inadequate chamfering of the brake lining. Oil leakage from cylinder.	Make the necessary chamfering. Replace cylinder cup.

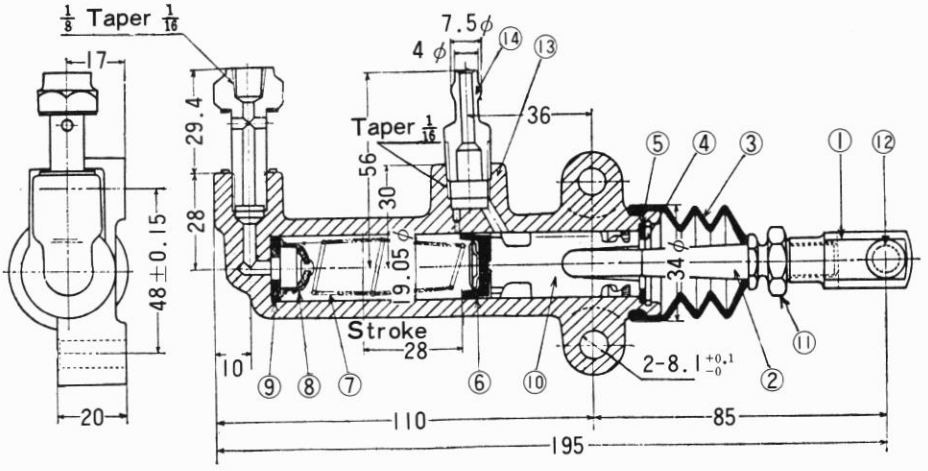
5-3: DISASSEMBLY AND REASSEMBLY OF MASTER CYLINDER

[RIGHT HANDLE DRIVE]



(1) Connector
(2) Push Rod
(3) Boot
(4) Stop Ring
(5) Stop Washer
(6) Primary Cup
(7) Spring
(8) Check Valve
(9) Valve Seat
(10) Piston
(11) Nut
(12) Pin
(13) Body
(14) Nipple
(15) Nut
(16) Cotter Pin

[LEFT HANDLE DRIVE]



(1) Connector
(2) Push Rod
(3) Boot
(4) Stop Ring
(5) Stop Washer
(6) Primary Cup
(7) Spring
(8) Check Valve
(9) Valve Seat
(10) Piston
(11) Nut
(12) Pin
(13) Body
(14) Nipple

A. REMOVAL OF MASTER CYLINDER

(a) Disconnect the battery cable from the minus terminal.

(b) Remove the floor mat from the driver side. Loosen the three screws holding the kick board.

(c) Disconnect the stop light switch wiring and remove the stop light switch from the connecting joint of the master cylinder.

(d) Plug the outlet port of the brake oil tank.

(e) There is a vinyl tube leading from the brake oil tank to the master cylinder. Leaving the tank side as it is, remove the locking wire from the cylinder side and pull off the tube from the nipple. After removal, plug the end of the vinyl tube or drain the oil from the oil tank into a container.

(f) Loosen the piping joint bolt and remove the pipe from the master cylinder.

(g) Loosen the two installation bolts on the master cylinder and take out the master cylinder by pulling the push rod upward.

B. REINSTALLATION OF MASTER CYLINDER

(a) Fix the master cylinder securely in position with two 8 mm bolts. Attach the rubber boot and push rod to the cylinder.

(b) Screw in the three joint bolts of the pipe into the threaded holes in the connection part of the master cylinder.
(Right Handle)
Screw in the three joint bolts of the pipe into the threaded holes of the connector.
Insert the union bolt into the connector and screw in the union bolt with the gasket into the master cylinder.

TIGHTEN WITH A TORQUE OF 1.5-2.0 kg-m (10.9-14.4 lb-ft)

(c) Fit the vinyl tube from the oil tank onto the nipple and fix in place with locking wire.

(d) Screw in the stop light switch into the top part of the connecting part of the master cylinder or the top part of union bolt in case of left handle. Connect the wiring to the terminal.

(e) After adjusting the pedal play, install the kick board with three screws and lay the floor mat on the driver side.

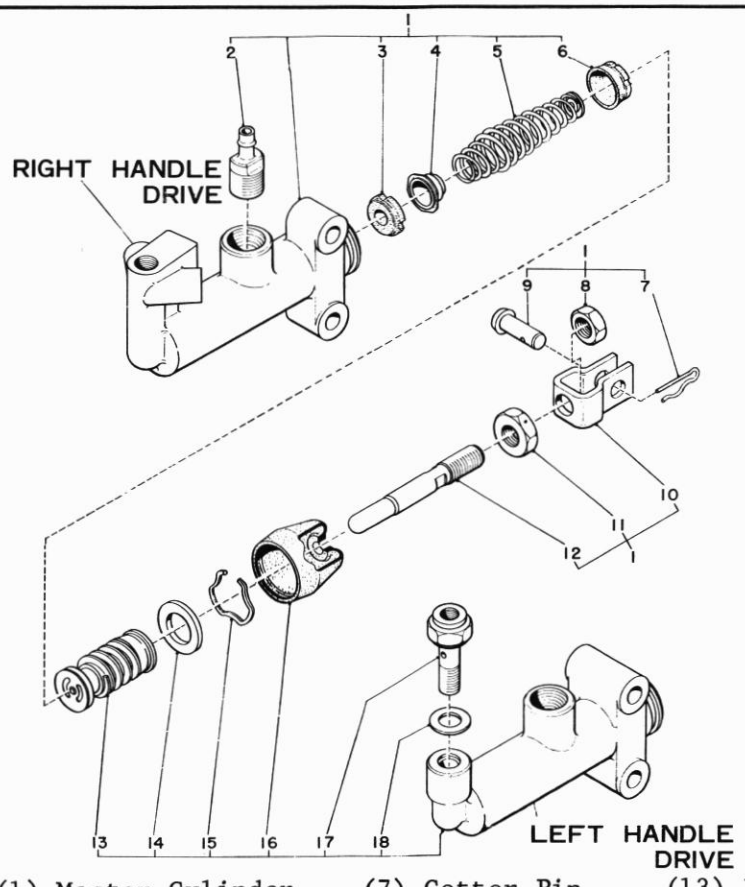
(f) Bleed the air from the brake piping and check the master cylinder operation. Connect the battery cable.

5-4: DISASSEMBLY AND CHECKING PROCEDURES FOR MASTER CYLINDER AND OPERATING PRINCIPLE

The master cylinder bore should be smooth and perfectly circular.
If the bore shows evidences of wear in steps or scratches, replace with a new part. It is not a good policy to attemp repairs with a sandpaper. Always use genuine Subaru rubber parts.

Dip the rubbing parts inside the cylinder in fresh clean brake oil before reassembly. Be careful not to allow the infiltration of dust and grit inside the cylinder.

A. ASSEMBLY PROCEDURES



(1) Master Cylinder	(7) Cotter Pin	(13) Piston
(2) Nipple	(8) Nut 10 mm	(14) Stop Washer
(3) Valve Seat	(9) Pin	(15) Stop Ring
(4) Check Valve	(10) Connector	(16) Boot
(5) Spring	(11) Nut	(17) Union Bolt
(6) Primary Cup	(12) Push Rod	(18) Gasket

(a) Insert the valve seat first deepest into the cylinder.

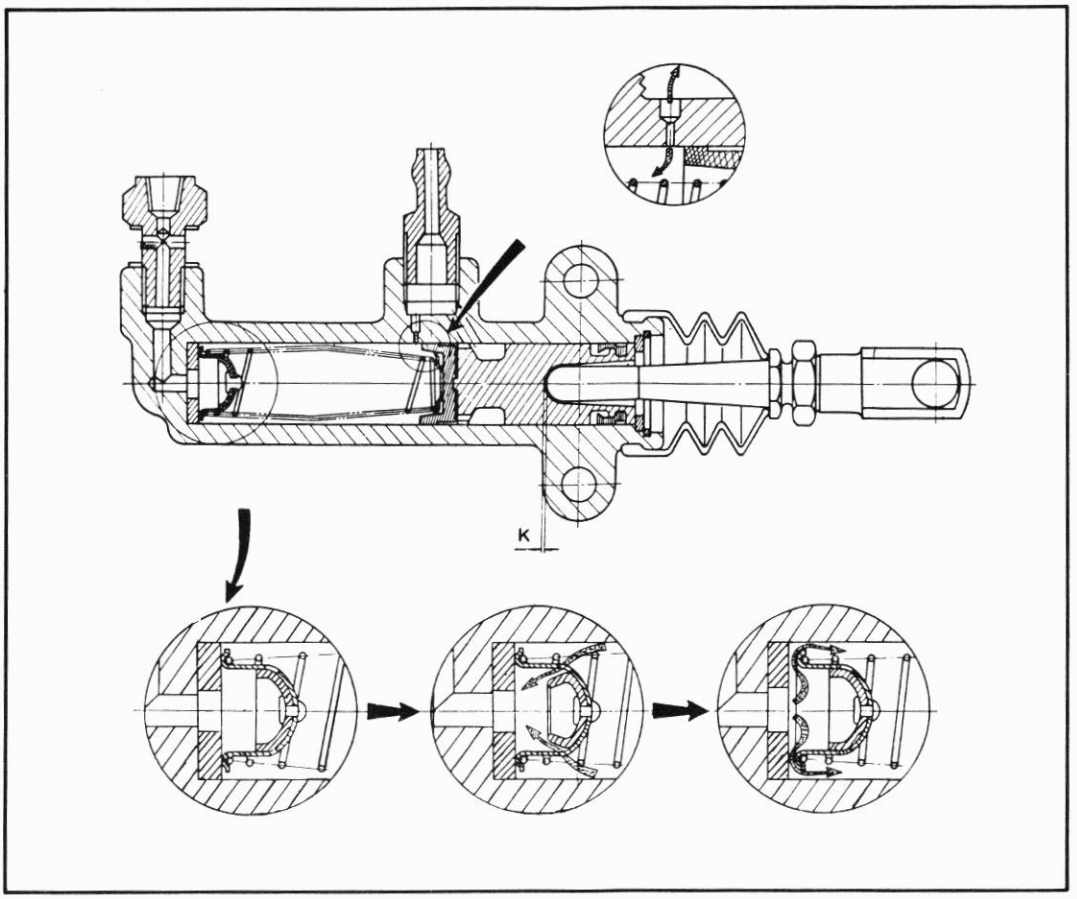
(b) Next, insert check valve, spring and then the primary cup so that the bottom part is touching the piston.

(c) Attach the secondary cup and insert the piston.

(d) Insert the stop washer and finally fit the stop ring into the groove.

(e) After reassembly, check whether the piston moves freely. After checking, install the rubber boot and push rod together.

B. OPERATION PRINCIPLE



When the brake pedal is stepped on, it actuates the piston through the push rod. The primary cup closes the relief port which connects the cylinder and oil tank. Through the compression stroke, oil is forced against the check valve located at the end of the cylinder opening it. The oil flows into the wheel cylinders through the pipings.

When the pressure on the pedal is released, the piston returns to its original position by the action of the spring. Brake oil flows from the back of the primary cup toward the spring and at the same time, oil in the wheel cylinders flows back to the master cylinder by the action of the return spring on the brake shoes. This forces the valve proper toward the piston and the oil flowing around the valve returns toward the piston spring. When the primary cup returns to its original position, the oil flowing back toward the spring returns to the oil tank through the small hole. However since the piston spring has its original forcing power, it closes the valve before all the hydraulic pressure in the wheel cylinders return to the master cylinder, and there will remain an hydraulic pressure of 0.8-1.2 kg/cm^2 in the system. This remaining pressure forces the cups in the wheel cylinders to the cylinder walls which prevents leakage of brake oil and keeps air and dust out of the cylinder.

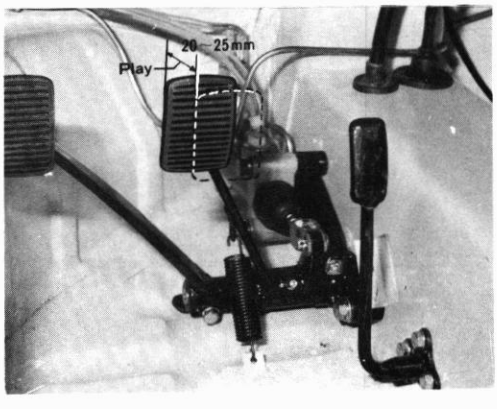
If there is no clearance between the push rod and piston or if the relief port is closed by the primary cup, the oil in the wheel cylinder will not return completely and the lining will scratch the brake drum. Check this point. The clearance between the push rod piston should be 0.4-0.6 mm (0.016-0.023 in).

[CAUTION]

If sufficient hydraulic pressure for braking can not be obtained by a single step on the brake pedal, release the pedal and step on it a second time. The piston will return by spring action but as the pressure at the spring side will be negative, the brake oil will flow toward the spring from the back of the primary cup through the cup perimeter. When the pedal is stepped the second time, the hydraulic pressure will increase.

Such inadequate pressure when the brake pedal is stepped on is usually caused by air in the pipings. Bleed the air out.

5-5: ADJUSTMENT OF BRAKE PEDAL PLAY



Excessive play in the brake pedal can be dangerous when driving. Make the necessary adjustments.

(a) The clearance between the push rod and piston should be 0.4-0.6 mm (0.016-0.023 in) and with the pedal in center position, it should be 1.8-2.7 mm (0.071-0.106 in).

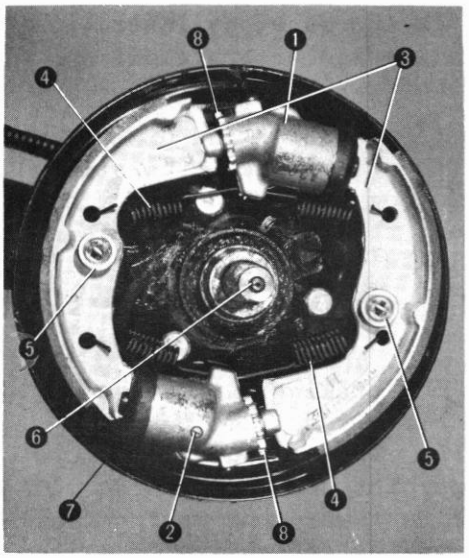
Loose the lock nut on the push rod with the wrench and adjust. Fix the lock nut in place after adjustment.

(b) The brake should begin to take effect when the pedal is stepped from 20 to 25 mm (0.79-0.98 in)

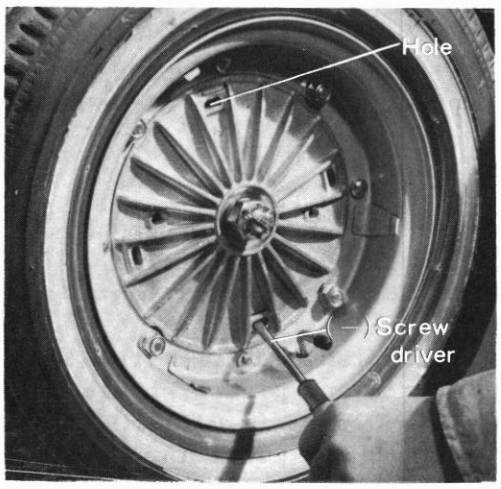
5-6: REMOVAL AND REINSTALLATION OF BRAKE SHOES, WHEEL CYLINDERS AND ANCHOR BLOCK

A. REMOVAL OF FRONT BRAKE

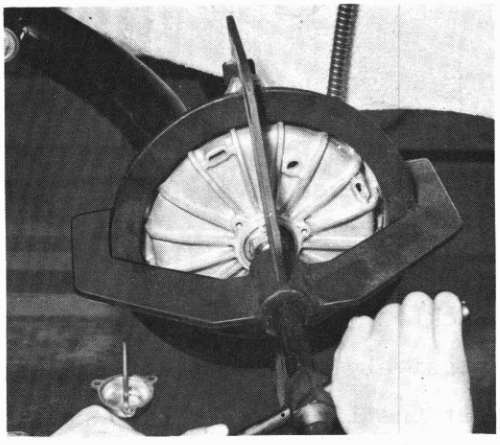
Special Tool	921120000



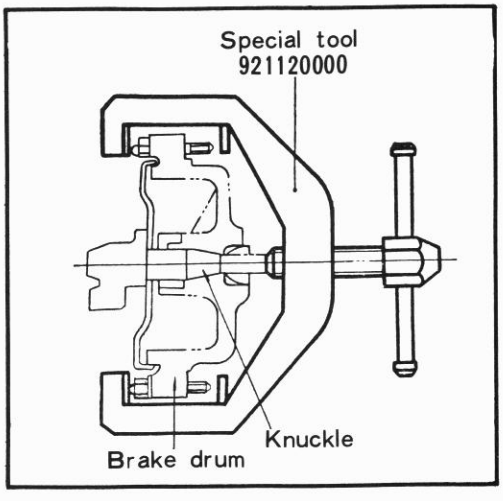
(1) Wheel Cylinder (UPPER)
(2) Wheel Cylinder (LOWER)
(3) Brake Shoe
(4) Spring
(5) Shoe Set Seat
(6) Knuckle
(7) Back Plate
(8) Adjuster Wheel



(a) Remove the wheel cap with the screw driver.
Insert the screw driver into the brake drum as illustrated and return the both upper and lower adjuster wheel to increase the clearances.

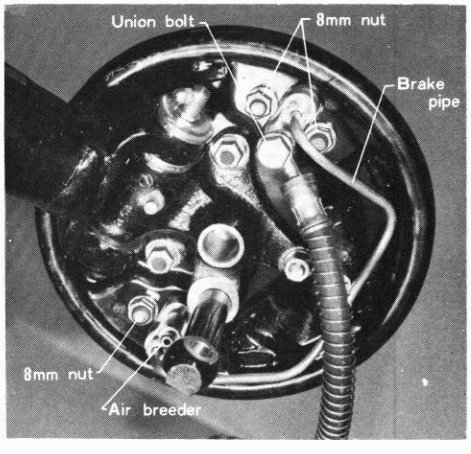


(b) Remove the front wheel, and using special tool 921120000, remove the brake drum.



How to use special tool 921120000.

Hook the prongs on the four protrusions on the brake drum and fit the center shaft on the knuckle center hole. When the handle is turned, the drum will come off leaving the spacer behind.



(c) To remove the brake shoe, free it first from the adjuster wheel supporter side and then from the wheel cylinder.

(d) Loosen and remove the union bolt behind the wheel cylinder.

(e) Loosen and remove the brake pipe of connecting the upper and lower behind the both wheel cylinders.

(f) Loosen the four 8 mm nuts behind the back plate and remove the both upper and lower wheel cylinders.

(g) In order to remove the back plate, first perform the procedures from (a) to (f). Remove the three 8 mm bolts on the knuckle. They can be removed with the upper and lower wheel cylinders.

B. REINSTALLATION OF FRONT BRAKE

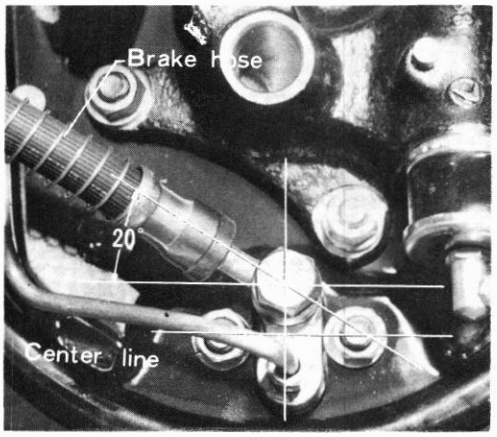
Special Tool	921230000

(a) If the back plate is defective or worn excessively where it contacts the shoe supporter, replace it.

(b) Install the both wheel cylinder on the back plate.

(c) Install the back plate on the knuckle.

(d) If the shoe holder spring is excessively worn, replace it.



(e) If the lining of the brake shoes is worn down in some places to less than 1 mm or the brake shoe is deformed, replace them.

(f) Install the upper and lower return spring in the brake shoe. Hook the shoe to the wheel cylinder supporter first and then hook it to adjuster wheel side supporter.

(g) Adjust the brake shoe for centering and uprightness against the knuckle spindle, using special tool 921230000.

(h) Tighten the brake hose union so that it is facing about 20 degrees upward from the center-line of the wheel cylinder.

TIGHTEN THE UNION BOLT A TORQUE OF 1.2 - 2.2 kg-m
(8.6 - 15.9 lb-ft)

(i) Install and tighten the brake pipe connecting upper and lower to the both wheel cylinders.

TIGHTEN THE JOIN BOLT A TORQUE OF 1.5 - 2.0 kg-m
(10.8 - 1414 lb-ft)

(j) Install the wheel and drum. Adjust the brake and expel air out of the system.

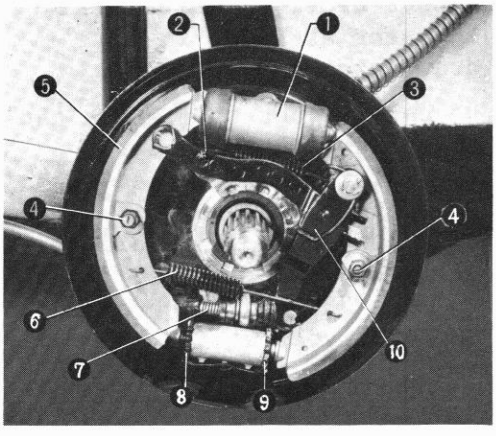
C. REMOVAL OF REAR BRAKE

Special Tool	921120000

(a) Remove the rear wheel. Using special tool 921120000, remove the brake shoe. To use the special tool 921120000, hook the prongs on the protrusions on the drum and fit the center shaft into the axle shaft center hole. Turn the handle to remove drum.

(b) Move the anchor block supporter to its lowest position.

(c) Remove the brake shoe first from the anchor block and then from the wheel cylinder. Remove the cable end from the hand brake lever "B".



(d) Remove the union located at the back of the wheel cylinder.

(e) Loosen the two 6 mm nuts on the back plate and remove the wheel cylinder.

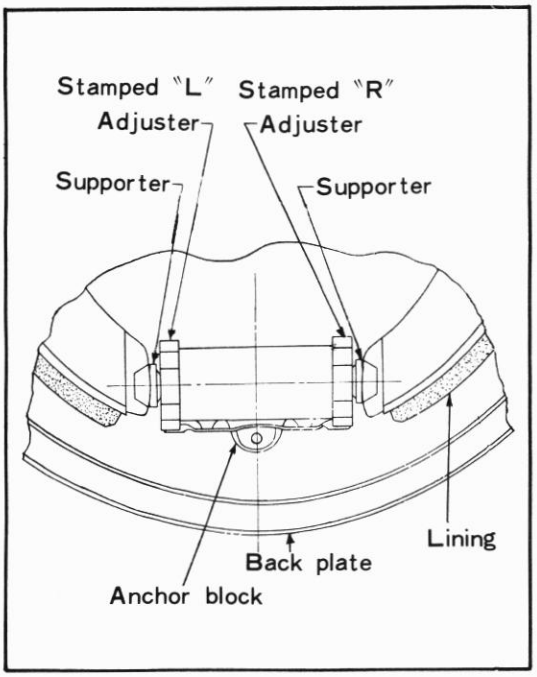
(1) Wheel Cylinder
(2) Lever "A"
(3) Apring
(4) Supporter
(5) Rear Shoe
(6) Spring
(7) Hand Brake Cable
(8) Adjuster (Left)
(9) Adjuster (Right)
(10) Lever "B"

(f) Loosen the two 6 mm bolts on the back plate and remove the anchor block.

(g) To remove the back plate, first perform procedures (a) through (e) and then remove the three bolts which connect it to the hub. It may be removed with the wheel cylinder and anchor block attached.

D. REINSTALLATION OF REAR BRAKE

Special Tool	921230000



(a) If the back plate is deformed or worn excessively where it contacts the shoe supporter, replace it.

(b) Install the anchor block and the wheel cylinder to the back plate.

Further, when installing the anchor block, install the adjuster as shown in the drawing on the left.

Be careful not to mistake the left and right adjusters. The left one is stamped with the letter "L" and is parckerized (colored black) while the right one is stamped "R" and is chromated (colored yellow).

(c) Install the back plate on the hub with three 8 mm bolts.

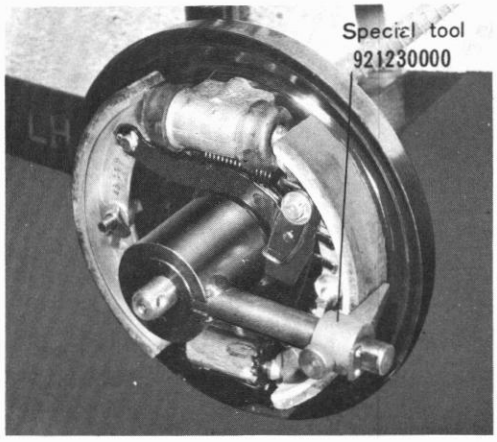
(d) If the nylon shoe at the tip of the shoe supporter is excessively worn, replace it.

(e) If the brake shoe lining is worn down in places to less than 1 mm or if the brake drum is deformed, replace them.

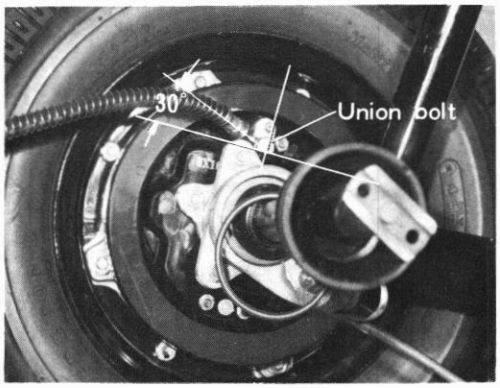
(f) Insert the end of the hand brake cable into the back plate. Fit the back plate snugly into the groove in the rubber boot to seal it against infiltration of muddy water.

(g) Install the hand brake lever A and B on the brake shoe and attach the end of the hand brake cable to the hook on the tip of the lever B. Install the upper and lower return springs.

(h) Hook the brake shoe first to the shoe supporter on the wheel cylinder side and then to the shoe supporter on the anchor block side.



(i) Adjust the centering and uprightness of the brake shoe against the rear axle by using special tool 921230000. In making this adjustment, adjust the uprightness through the shoe supporter and tighten the lock nut. Bend the tab to lock in place.



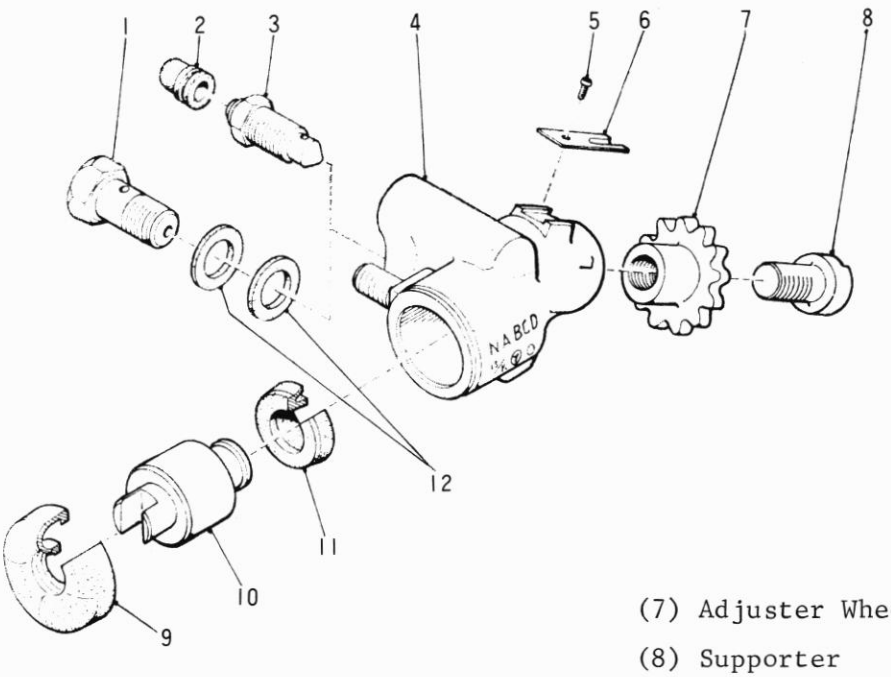
(j) Tighten the brake hose union bolt in a position facing about 30 degrees upward from the wheel cylinder center-line.

(k) Install the drum and wheel. Adjust the brake and expel air from the brake system.

5-7: DISASSEMBLY AND INSPECTION OF WHEEL CYLINDER

A. WHEEL CYLINDER (FRONT)

As described in the case for the master cylinder, the bore of the wheel cylinder should be a true circle. If it is worn down in steps or shows scratches, replace it. Do not try and repair it with sandpaper. Always use genuine Subaru rubber parts.



(1) Union Bolt
(2) Cap
(3) Air Bleeder
(4) Wheel Cylinder Body
(5) Screw
(6) Lock Spring
(7) Adjuster Wheel
(8) Supporter
(9) Rubber Boot
(10) Piston
(11) Cup (Wheel Cylinder)
(12) Gasket

Reassembly procedures are as follows:

(a) Wash and clean the wheel cylinder thoroughly. Fit the rubber cap on the air bleed plug and screw the plug into the wheel cylinder.

(b) Wash all the rubbing parts in the cylinder in alcohol and carefully wipe off all impurities with clean cloth. Dip in clean brake oil before assembly.

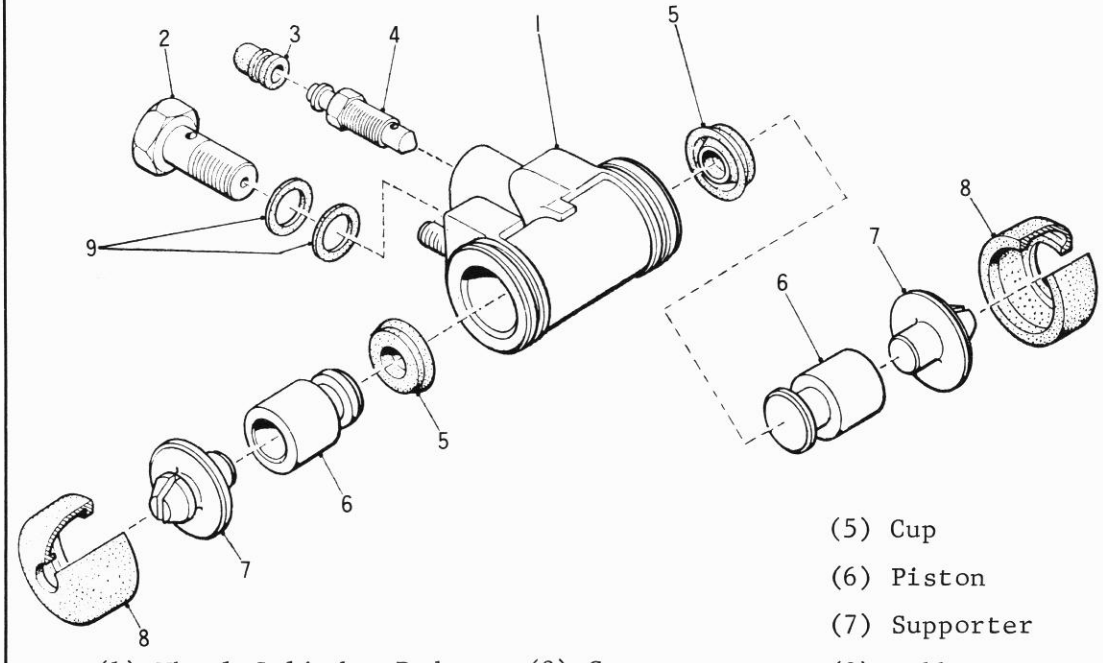
(c) Install the cup on the piston. Be sure that the back of the cup is facing the supporter. If damaged or deformed, replace with a new part.

(d) When inserting the piston into the cylinder, be careful not to damage the lip of the cup.

(e) Fit the rubber boot on the piston side, insert the adjuster wheel and screw the supporter into the adjuster wheel. After assembly, check whether the operation is smooth and easy.

B. WHEEL CYLINDER (REAR)

As described in the case for the master cylinder, the bore of the wheel cylinder should be a true circle. If it is worn down in steps or shows scratches, replace it. Do not try and repair it with sandpaper. Always use genuine Subaru rubber parts.



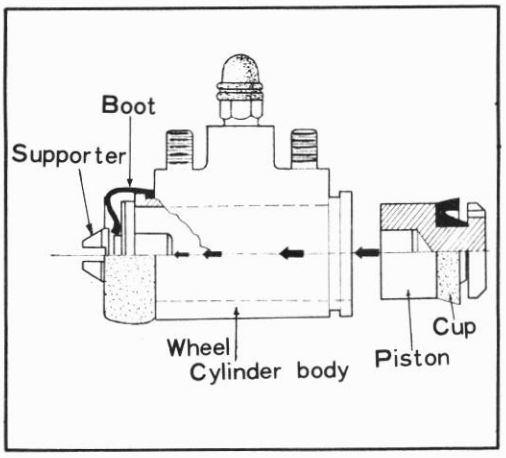
(1) Wheel Cylinder Body
(2) Union Bolt
(3) Cap
(4) Air Bleeder
(5) Cup
(6) Piston
(7) Supporter
(8) Rubber Boot
(9) Gasket

Reassembly procedures are as follows:

(a) Wash and clean the wheel cylinder thoroughly. Fit the rubber cap on the air bleed plug and screw plug into the wheel cylinder.

(b) Wash all the rubbing parts in the cylinder in alcohol and carefully wipe off all impurities with clean cloth. Dip in clean brake oil before assembly.

(c) Install the cup on the piston. Be sure that the back of the cup is facing the supporter. If damaged or deformed, replace with a new part.

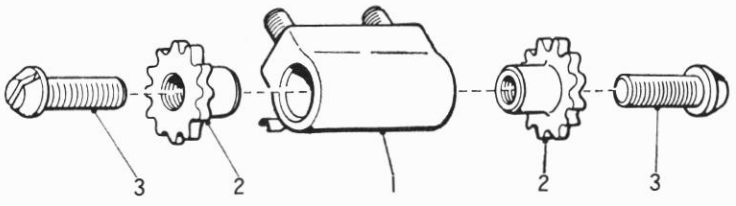


(d) When inserting the piston into the cylinder, be careful not to damage the lip of the cup.

If it is inserted as shown in the left drawing, the lip will eat into the oil port and become damaged when the cup is passing through the center part. Do not insert in this manner.

(e) Fit the rubber boot on the supporter side, insert the piston and cover the cylinder body with the boot. After assembly, check whether the operation is smooth and easy.

C. AN CHOR BLOCK (REAR)



(1) Anchor Block Body

(2) Adjuster

(3) Supporter

(a) The supporter is provided with a right hand thread and a left hand thread. If the supporter is deformed or the threading worn, replace with a new part. Replace the adjuster at the same time.

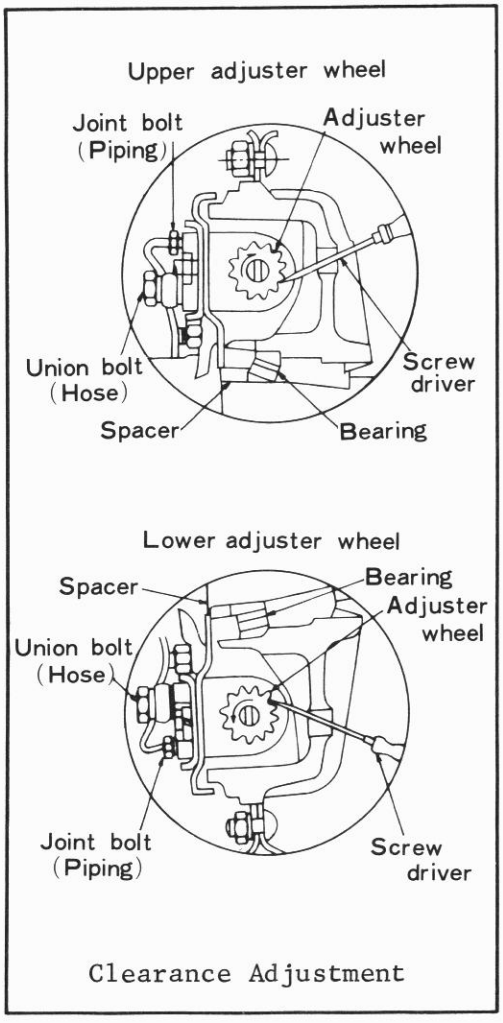
(b) The adjuster should turn easily by hand. Replace if the teeth are excessively deformed or worn.

(c) The anchor block is provided with two stud bolts at the bottom. If the threading is worn or damaged, replace it.

(d) Before reassembly, clean the anchor block interior, outer surfaces of adjusters, the adjuster threaded holes and supporter threading thoroughly and coat lightly with grease.

5-8: ADJUSTMENT OF CLEARANCE BETWEEN BRAKE SHOE AND DRUM

A. ADJUSTMENT OF THE FRONT BRAKE SHOE



Clearance Adjustment

(a) Turn both adjuster wheels as follows to decrease the upper and lower clearance.

upper adjuster wheel ;
to the arrow direction

lower adjuster wheel ;
to the opposite direction

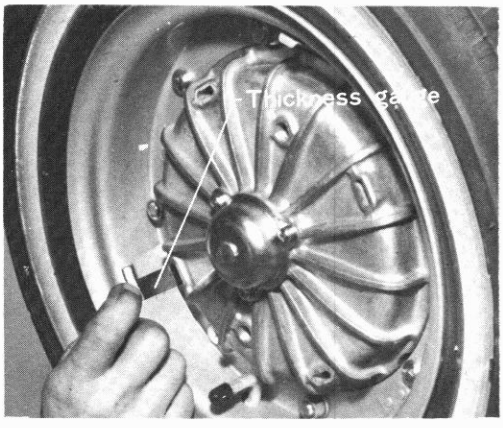
After adjustment, insert the thickness gauge through the inspection hole and check the clearance using the thinkness gauge.

(b) The clearance between the brake shoe and drum should be such that the 0.1 mm gauge will enter, but the 0.15 mm gauge will not.

STANDARD CLEARANCE 0.1-0.15 mm
(0.0039-0.0059 in)

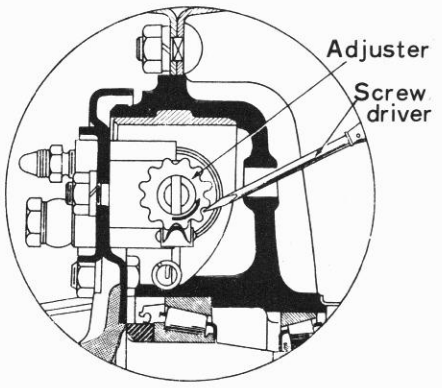
Tightening torque of Joint Bolt ; 10.7lb-ft - 14.4lb-ft
(1.5-2.0 kg-m)

Tightening torque of Union Bolt ; 8.7lb-ft - 15.9lb-ft
(1.2-2.2 kg-m)



(c) The air bleeder is located behind the lower part of the back plate photo.

B. ADJUSTMENT OF THE REAR BRAKE SHOE



Clearance Adjustment

(a) Insert the screw driver into the adjustment hole in drum and hold it against the adjuster.

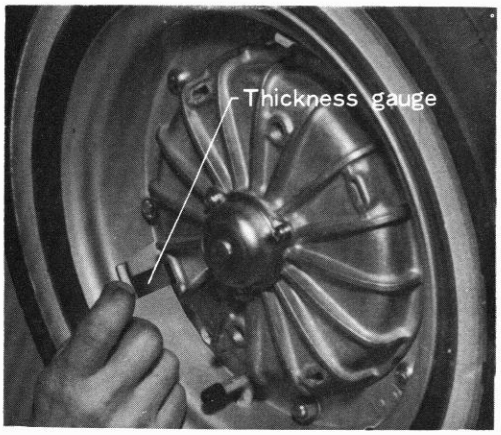
(b) Hook the screw driver on the adjuster tooth and pry upward. This will cause the clearance to close. Turn the drum about 20 degrees and insert the thickness through the inspection hole. Check the clearance. Check the clearance at both ends of the shoe in the same manner.

(c) The clearance between the brake shoe and drum should be such that the 0.1 mm gauge will enter but the 0.15 mm gauge will not.

When adjusting the rear wheel brake, be sure to have the hand brake completely loosened.

STANDARD CLEARANCE

0.1-0.15 mm (0.0039-0.0059 in)

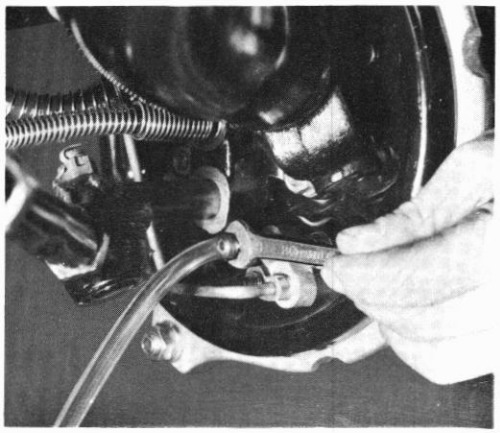


(d) The air bleeder is located behind the top part of the back plate.

5-9: AIR BLEEDING PROCEDURE

Bleeding of air from the brake system piping should be performed on all four wheels. This operation can be conducted easily by placing the vehicle over a work pit or raising it on a jack. Before starting, check the pedal for play and the oil level in the brake oil tank.

Start the bleeding operation from the wheel farthest from the master cylinder finishing with the nearest one. Fill the brake oil tank with oil as the air bleeding operation will drain off oil and you must not allow the tank to become completely empty. If the oil drainage is excessive, it may become necessary to add more oil during bleeding.



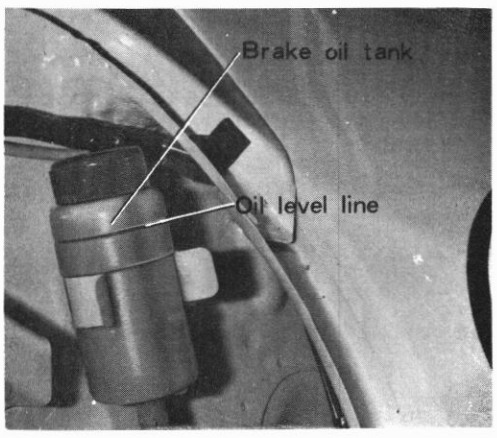
(a) Remove the bleeder cap and wipe off the dirt and dust. Connect a vinyl hose to the plug.

(b) Insert the other end of the vinyl hose into a transparent bottle or container partially filled with brake oil.

(c) Loosen the bleeder plug with a wrench and have someone step lightly on the brake pedal.

(d) Keep stepping on the brake pedal until no more air bubble is expelled from the hose.

(e) When the air bubble stop coming out, tighten the bleeder plug with the brake pedal stepped completely down. After tightening, release the pedal.



(f) Pull off the vinyl hose from the bleeder plug and replace the cap. Repeat the same processes at the next wheel.

(g) After finishing all four wheels, check the brake oil tank level and fill to required level.

[CAUTION]

Do not use old oil. When unavoidable, filter it through a fine mesh (about 200 mesh) and let it stand for about 15 minutes.
Take the upper clean part and use.

5-10: DISASSEMBLY AND REASSEMBLY OF BRAKE PEDAL

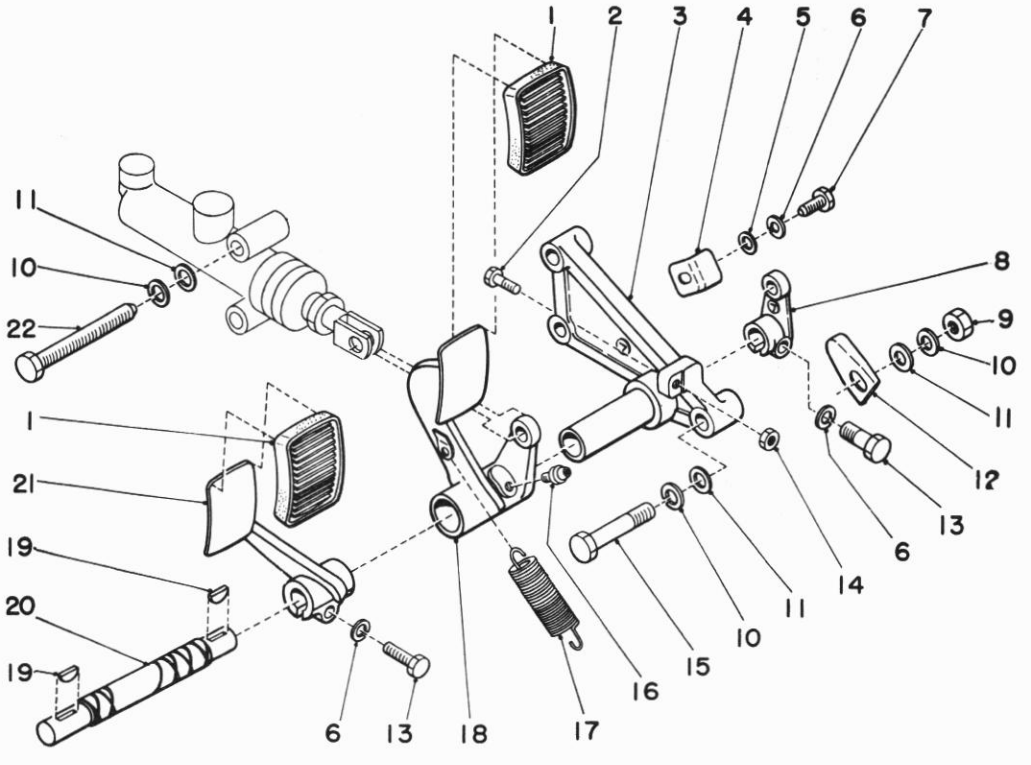
1: LEFT HANDLE DRIVE

A. REMOVAL OF BRAKE PEDAL

When the brake pedal is removed, the clutch pedal will also become free.

(a) Place the vehicle over a work pit or raise on a jack.

(b) Remove the 6 mm bolt and spring washer from tunnel interior and take off the clutch lever and woodruff key.



(1) Cover (Pedal Pad)	(8) Lever (Clutch)	(15) Bolt
(2) Bolt	(9) Nut	(16) Grease Nipple
(3) Bracket	(10) Spring Washer	(17) Spring
(4) Stopper	(11) Washer	(18) Brake Pedal
(5) Washer	(12) Stopper	(19) Key
(6) Spring Washer	(13) Bolt 6 mm	(20) Shaft
(7) Bolt	(14) Lock Nut	(21) Clutch Pedal
		(22) Bolt

BRAKE & CLUTCH COMPONENTS

(c) Remove the return spring toward the brake pedal side.

(d) Remove the three 8 mm bolts fixing the pedal bracket and take off the bracket.

(e) Take out the cotter pin from the brake pedal, pull out the pin and remove the pedal from the push rod.

(f) Take out the pedal assembly from the tunnel.

(g) Remove the clutch pedal installation bolt and take out the clutch pedal.

(h) When the shaft is pulled out, the brake pedal can be removed.

B. REINSTALLATION OF BRAKE PEDAL (LEFT SIDE)

(a) Install the brake pedal followed by the bracket on the shaft.

(b) Insert the woodruff key in the shaft and install the clutch pedal in place with bolt and spring washer.

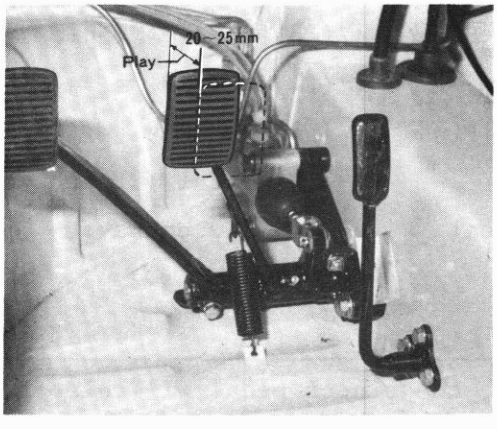
(c) Insert the pedal assembly into the tunnel and tighten the bracket with the master cylinder at three place with bolts.

(d) Insert the brake pedal lever into the push rod connector, fit the pin and lock in place with a cotter pin.

(e) Install the return spring on the brake pedal.

(f) Inside the tunnel, insert the woodruff key and secure the clutch lever with bolt and spring washer on the shaft.

(g) After installation, step on the pedal and check for proper operation.

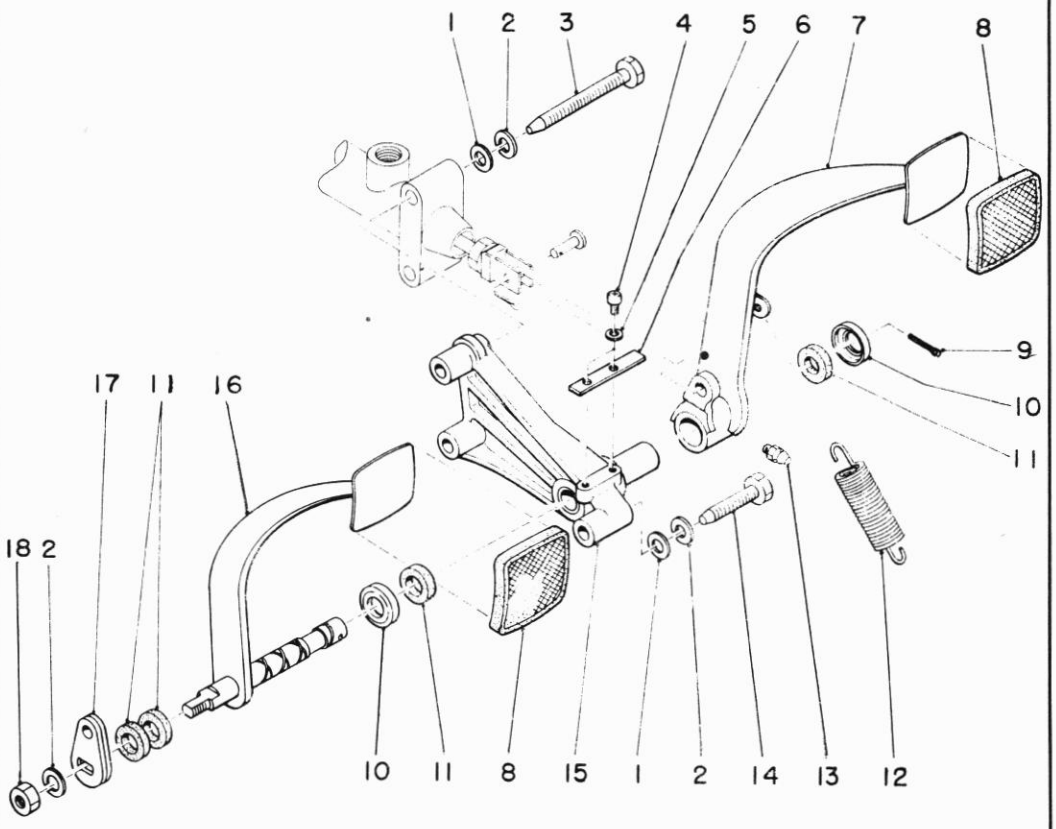


[CAUTION]

For reassembly, be sure to wash thoroughly the bearing surfaces of the shaft, bracket and brake pedal and apply a little grease.

2: RIGHT HANDLE DRIVE

A. REMOVAL OF BRAKE PEDAL



(1) Washer	(7) Pedal (Brake)	(13) Grease Nipple
(2) Spring Washer	(8) Cover	(14) Bolt 8 mm
(3) Bolt	(9) Cotter Pin	(15) Bracket
(4) Screw	(10) Cover	(16) Pedal (Clutch)
(5) Spring Washer	(11) Dust Seal	(17) Clutch Lever
(6) Stopper	(12) Spring	(18) Nut

BRAKE & CLUTCH COMPONENTS

When the brake pedal is removed, the clutch pedal will also become free.

(a) Place the vehicle over a work pit or raise on a jack.

(b) Remove the cotter pin from the lever of the clutch pedal in the tunnel and pull out the pin of the clutch cable end.

(c) Remove the return spring toward the brake pedal side.

(d) Take out the cotter pin from the brake pedal, pull out the pin and remove the pedal from the push rod.

(e) Remove the three 8 mm bolts fixing the pedal bracket and take off the pedal and bracket assembly.

(f) Loosen the 8 mm nut of the clutch pedal side and take out the dust seal cover and the cotter pin of the brake pedal side.

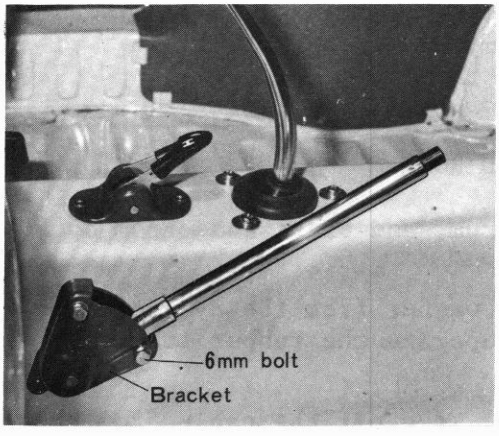
(g) When the clutch pedal is pull out, the brake pedal can be removed.

B. REINSTALLATION OF BRAKE PEDAL

Reinstallation is effected by performing the Removal procedures in veverse.

5-11: REMOVAL AND REINSTALLATION OF HAND BRAKE LEVER ASSEMBLY

A. REMOVAL



(a) Remove the tapered pin from the tunnel and disconnect the hand brake lever and arm.

(b) When three 6 mm bolts are removed from the cabin side, the brake lever can be removed from the body.

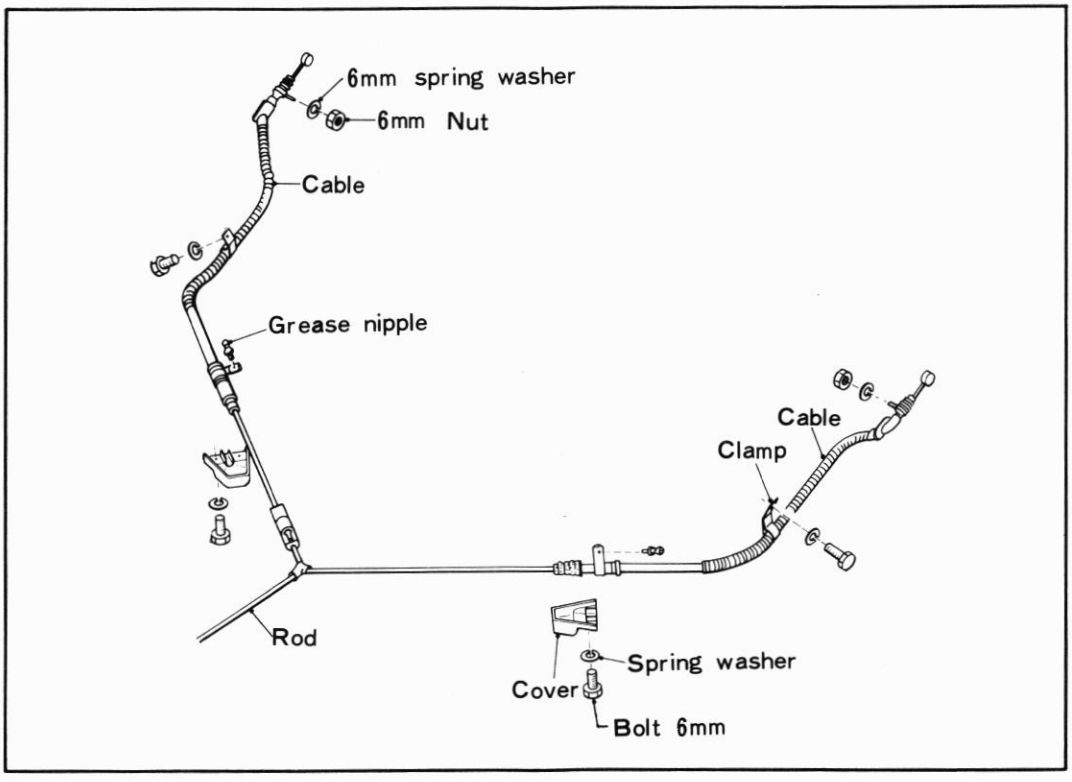
B. REINSTALLATION

(a) Insert the lever assembly into the tunnel and attach it to the tunnel with 6 mm bolts at three places from inside the cabin.

(b) Insert the taper pin into the arm from inside the tunnel and fix in place with spring washer and nut.

(c) After installation, move the lever and check the operation. The hand brake should catch at the third or fourth step.

5-12: REMOVAL AND REINSTALLATION OF HAND BRAKE CABLE AND CABLE ROD

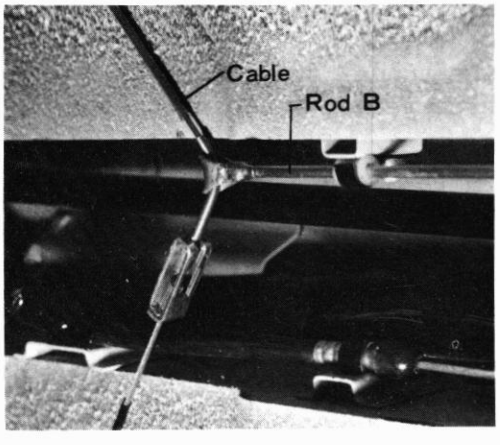


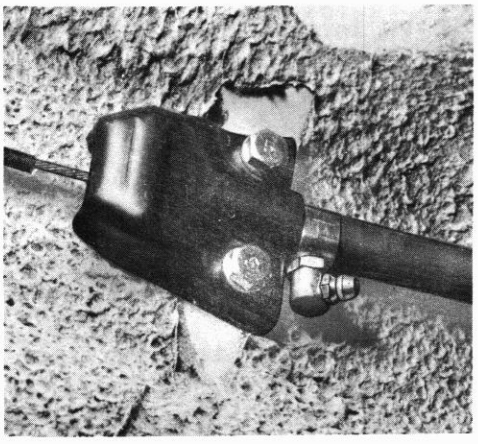
A. REMOVAL OF HAND BRAKE CABLE AND ROD

(a) Remove the rear wheel, brake drum, and brake shoe from both the right and left sides.

(b) Remove the 6 mm nut and spring washer from the eye bolt attached to the back plate. Separate the rubber tube on the cable from the back plate.

(c) Take off the cable from the hand brake rod and the cable will separate.

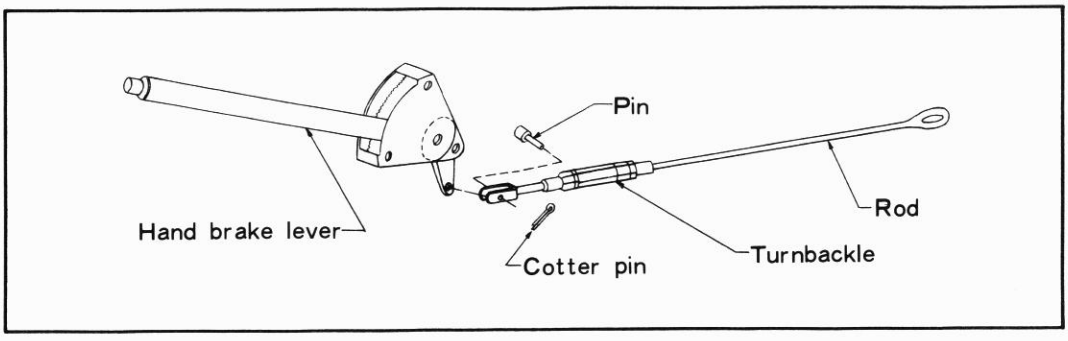




(d) Remove the 6 mm bolt on the triangular cover located underneath the floor and the cable will become free.

(e) Loosen the lock nut nuts on the turbuckle and turn the turnbuckle to disconnect the rod. Pull out the rod from the bracket located underneath the floor.

(f) Remove the cotter pin and the 6 mm pin connecting the rod and lever on the other end. The rod will become free.



B. INSTALLATION OF HAND BRAKE CABLE AND ROD

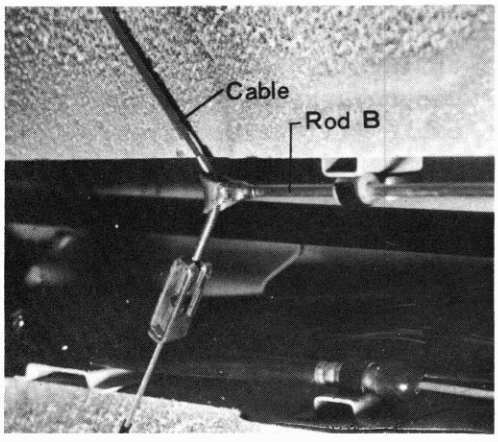
(a) Insert both ends of the hand brake cable into the back plate hole. With the grease nipple facing downward about 45 degrees, fit the groove in the rubber tube on the back plate and attach the eye bolt to the required position on back plate with 6 mm nut and spring washer.

(b) Attach the cable end to the lever B on the brake shoe and install the brake drum and rear wheel in this order.

(c) Fit the cable into the triangular cover and fix the cover in position under the floor with spring washer and bolt.

(d) Insert the cable through the yoke on the rear end of hand brake rod B.

(e) After passing the rod B through the hand brake rod bracket located in the tunnel, fit the lock nut and screw in completely.



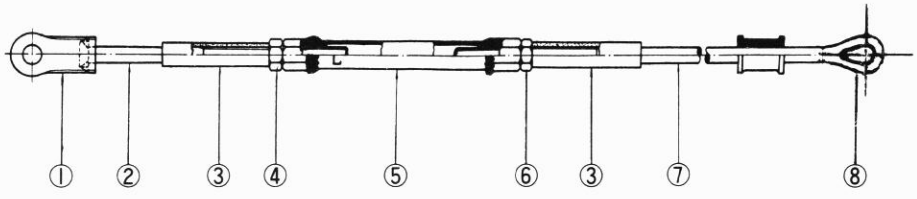
(f) Screw in the lock nut in rod A fully and connect rods A and B with the turnbuckle.

(g) Insert the lower part of the lever assembly into the yoke at the end of Rod A. Insert the 6 mm pin and the cotter pin to connect the rod and lever.

(h) While checking the operation by moving the brake lever, adjust rod by turning the turnbuckle. Lock in place with the lock nuts.

Supply adequate grease to the rear end of rod, nylon bushing, lever assembly, rod connection and the cable grease nipple.

5-13: ADJUSTMENT OF HAND BRAKE ROD



(1) Yoke (Lever Side)
(2) Rod A
(3) Rubber Tube
(4) Nut (Right Hand Thread)
(5) Turnbuckle
(6) Nut (Left Hand Thread)
(7) Rod B
(8) Yoke (Cable Side)

If braking action is inadequate even with the brake lever pulled back fully, adjust in the following manner:

(a) Peel back the rubber tube covering the turnbuckle.

(b) Loosen the lock nuts at both ends of the turnbuckle. Remember that the nut on the rod B side is a left hand thread nut.

(c) With the hand brake lever pushed forward and down fully, adjust the length of the rod by turning turnbuckle with a wrench.

(d) Adjust so that the brake is effective when the brake lever is pulled back three or four ratchet stops.

(e) Tighten the lock nuts in place and return the rubber tube.

[CAUTION] The hand brake system utilizes the same brake shoes as the hydraulic brakes. Therefore it is necessary that the hydraulic foot brakes be adjusted correctly before adjusting the hand brake.

CHAPTER 6: CONTROL SYSTEM

6- 1 SPECIFICATIONS AND STANDARDS FOR CONTROL SYSTEM ... 6- 1

6- 2 REMOVAL AND REINSTALLATION OF GEAR SHIFT SYSTEM ... 6- 1

6- 3 REMOVAL AND REINSTALLATION OF THE FUEL STRAINER ASSEMBLY (SEDAN) 6- 4

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6- 9 CLUTCH PEDAL 6-13

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CHAPTER 6: CONTROL SYSTEM

6-1: SPECIFICATIONS AND STANDARDS FOR CONTROL SYSTEM

		SEDAN	CUSTOM
Fuel Strainer Mesh	Upper Filter	105 mesh	element
	Lower Filter	177 mesh	type
Fuel Strainer Capacity		300-350cc/min at 200mm Hg	Same as sedan
Fuel Strainer Functional Power		OFF-ON 1.2-0.4 kg	-
		On-OFF 2.7-3.5 kg	-
Fuel Tank Capacity		25 liters (6.60 USgal) (5.5 Imp.gal)	20 liters (5.3 USgal) (4.4 Imp.gal)
Neutral Set Spring	Spring Constant	0.232 kg/mm	Same as sedan
Accelerator Pedal Standard Position		About 60 mm from floor to pedal tip.	—
Clutch Pedal Paly		20-25 mm (0.79-0.98 in)	

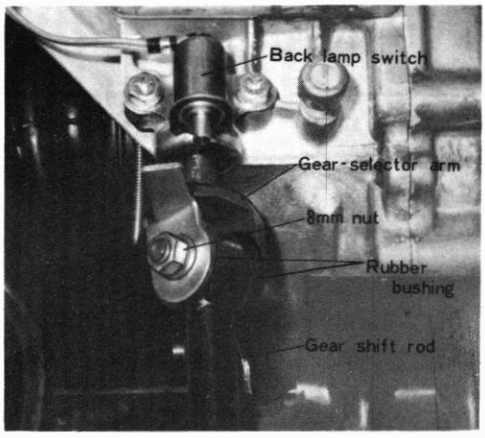
6-2: REMOVAL AND REINSTALLATION OF GEAR SHIFT SYSTEM

A. REMOVAL

(a) Place the vehicle over a work pit or raise on a jack.

(b) Remove the two 6 mm screws holding the back rest of the rear seat and fold the back rest forward. A trap door will appear.

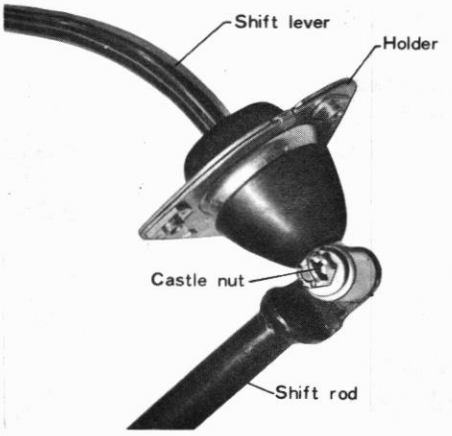
(c) Remove both the left and right trap doors. In the case of the custom, remove the mat and open the trap door.



(d) Remove the 8 mm nut and separate the gear shift rod and the gear-selector arm shaft.

(e) On underneath the body, take out the 2 mm cotter pin from the castellated nut 8 mm joining the end of the shift lever and remove nut, washer (2), spring A, and bushing A (2) in this order.
The gear shift rod can be freed downward.

(f) In the cabin, remove the rubber boot from the gear sh shift lever.
Loosen the three 6 mm screws holding the bracket and the shift lever can be pulled free inside the cabin.



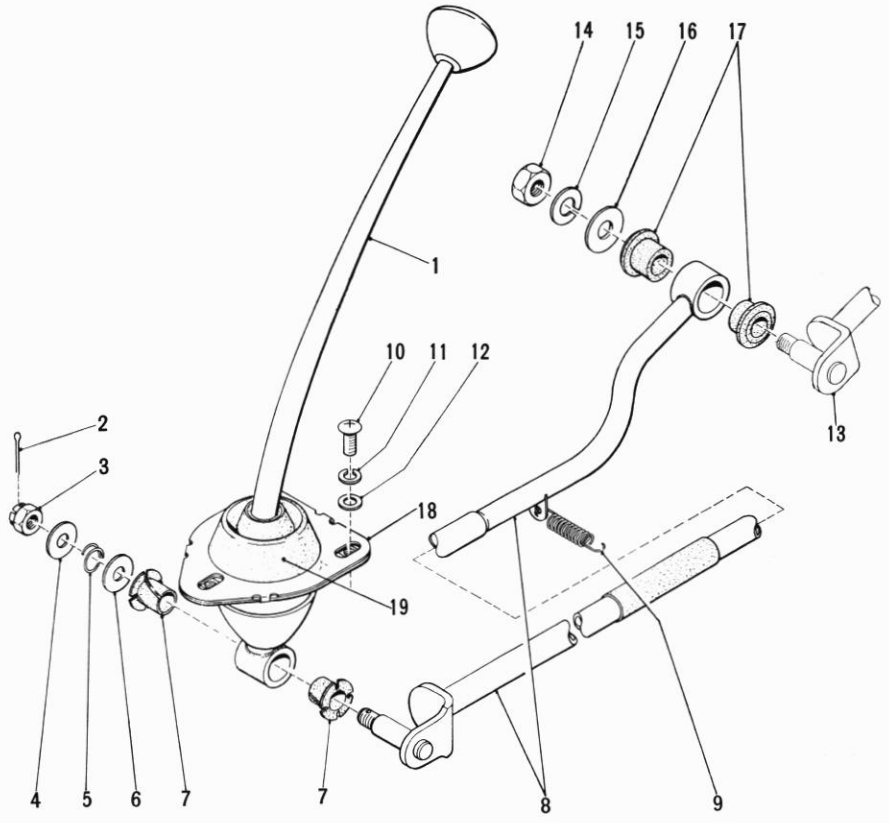
B. REINSTALLATION

(a) Insert the shift lever, bracket, spring bushing B and rubber boot as a unit into the tunnel and fasten the bracket temporarily with the 6 mm bolt.

(b) Insert the bushing A into the hole on the gear shift lever end and, fix the gear shift rod with the washer, spring and washer through the gear shift lever hole and tighten the 8 mm castellated nut in place.

(c) Fix the gear shift rot with the 8 mm nut to the gear selector arm shaft.

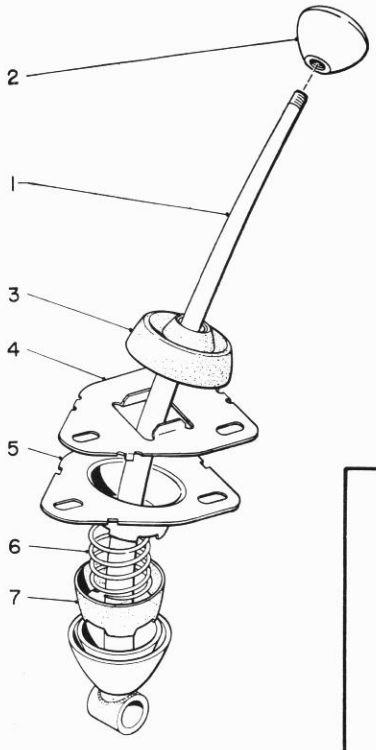
(d) Operate the gear shift lever and adjust so that the knob is at the correct position by moving the bracket back and forth. Fix in place with the 6 mm bolt.



(1) Shift Lever	(7) Bushing A	(13) Gear-Selector Arm
(2) Cotter Pin	(8) Gear Shift Rod	(14) Nut 8 mm
(3) Castle Nut	(9) Spring	(15) Spring Washer
(4) Washer	(10) Screw	(16) Washer
(5) Spring A	(11) Spring Washer	(17) Rubber Bushing
(6) Washer	(12) Washer	(18) Stopper & Holder
		(19) Rubber Boot

(e) At the end, fasten the shift lever rubber boot on the tunnel.

C. COMPOSITION OF GEAR SHIFT LEVER



(1) Shift Lever
(2) Knob
(3) Rubber Boot
(4) Stopper
(5) Holder
(6) Spring
(7) Bushing

(a) Remove the castle nut from the gear shift rod end in the tunnel on the underneath the body.

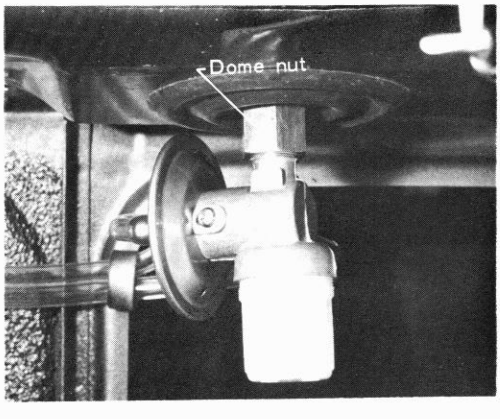
(b) Remove the three 6 mm screws holding the stopper and holder on the tunnel in the cabin.

(c) Reassembly is effected by performing the disassembly procedures in revers. Be careful of the following points during reassembly.

(d) Check the bushing B, spring and rubber boot, if they are shows excessive wear and any clameges, exchange for a new parts.

6-3: REMOVAL AND REINSTALLATION OF THE FUEL STRAINER ASSEMBLY (SEDAN)

A. REMOVAL



Remove through the following procedures:

(a) Drain the gasoline from the fuel tank.

(b) Remove the nut at the connection of the carburetor and the fuel pipe. Take out the rubber pipe at the connection of the intake manifold and fuel strainer controler side. Have a container ready to catch the fuel that may flow out. Make sure all the fuel is drained out.

(c) Remove the clip fixing the fuel pipe to the fan case.

(d) Finally, remove the fuel strainer dome nut at the fuel tank installation by turning counter-clockwise when viewed from underneath.

B. REINSTALLATION

(a) Install the strainer on the fuel tank with strainer packing and tighten the strainer dome nut by turning clockwise.

(b) Finally, tighten the nut at the carburetor connection and fit the rubber pipe at the connecting intake manifold.

6-4 DISASSEMBLY AND REASSEMBLY OF FUEL STRAINER PARTS (SEDAN)

This fuel strainer is operated automatically by the negative pressure in the intake manifold.

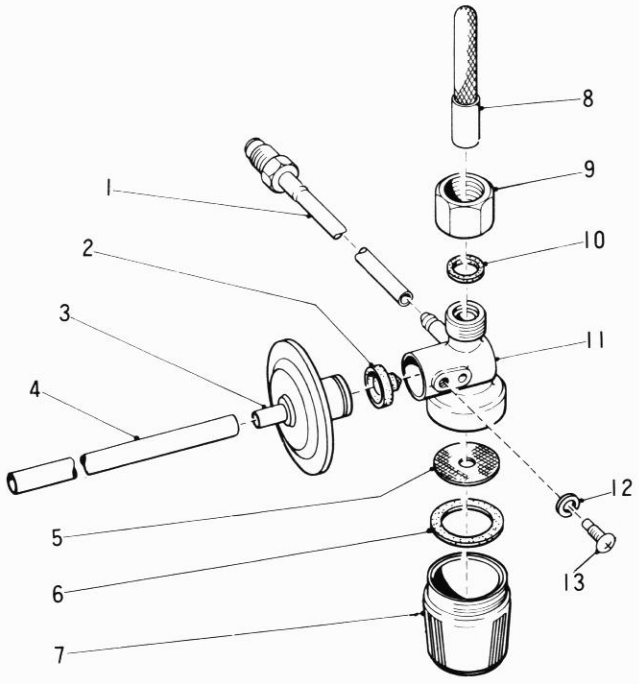
A. DISASSEMBLY (SEDAN)

(a) First, remove the cup and take out packing and filter element. Filter element is installed in recessed part and may be difficult to remove. Tap the edge of the body lightly and it will come out.

(b) Remove the 4 mm screw which holds the strainer controler.

(c) By holding the controler and pulling it while turning, the fuel strainer valve body can be removed and the valve will come off.

(d) Do not remove the filter unit and the vinyl pipe unless they are damaged. If replacement must be made, hold the brass pipe and tap off with a wooden mallet.



(1) Fuel Pipe
(2) Valve
(3) Controler
(4) Pipe
(5) Fuel Element
(6) Fuel Packing
(7) Filter Cup
(8) Strainer
(9) Nut (dome)
(10) Nut Packing
(11) Body
(12) Spring Washer
(13) Screw

B. PRE-ASSEMBLY CHECKS

(a) Check the fuel strainer parts to see whether they have been washed clean. The specially important parts are the filter unit, filter element, valve and the cup packing inside the body. Make sure that they are free from adhesion of impurities.

(b) Check the cup, body vinyl pipe and filter for cracks and damages. Replace those that are excessively damaged.

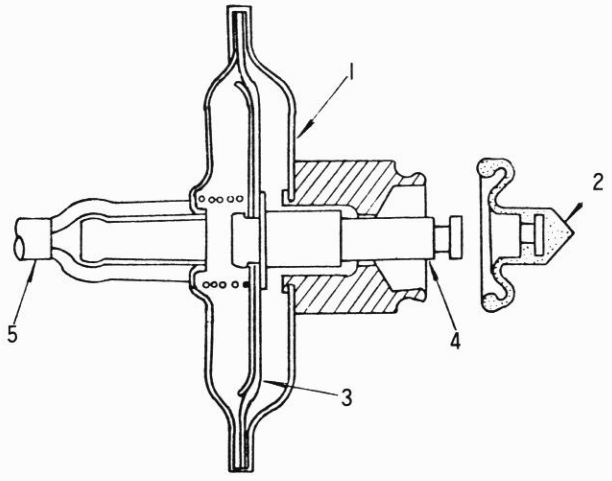
C. REASSEMBLY

(a) Fit the filter element into the recessed part in the valve body and the fule outlet pipe. Insert packing and screw the cup into the body until the cup touches packing. Then tighten further 1/8 to 1/10 rotation which will give you the proper cup fitting tightness.

(b) Holding the controler, turn it and insert it into the body with the valve. When installing, put on the valve properly to the rod which is connected to the controler.

(c) Fix the controler in place with the 4 mm bolt which holds it.

D. CHECK ON FUNCTION



(1) Controller
(2) Valve
(3) Diaphragm
(4) Rod
(5) Pipe

(a) Pull out the controller case from the body by gently turning.

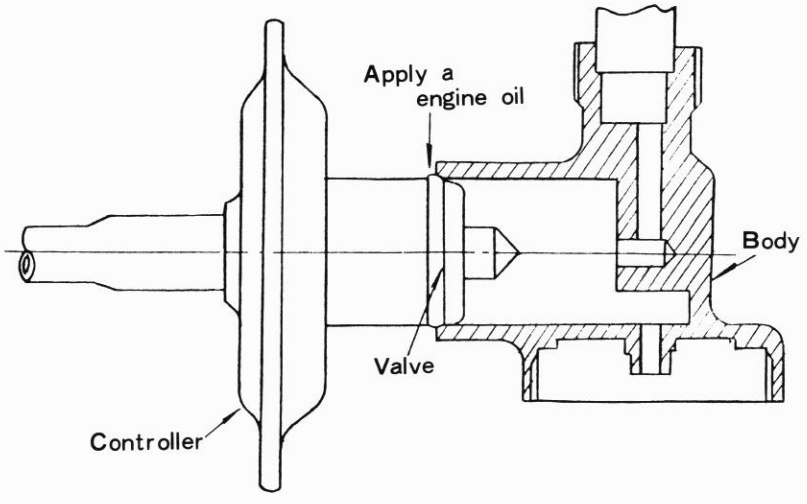
(b) Put out the shield valve from the controller.

(c) Check the diaphragm functions properly by sucking and blowing the negative pressure pipe by mouth.

(d) Check the valve for damage and adhesion impurities. Replace it that is excessively damaged.

(e) After the bheck, put on the valve properly to the rod which is connected to the diaphragm.

(f) Apply a small amount of engine oil on the circumference of the valve, and insert into body by turning lightly.



[CAUTION]

(1) When the valve passes below the tapped hole for the controller fixing screw, the valve tends at to be injured by the sharp edge at the hole.

(2) Insert the controller case fully until it closely contact the body, if it is not set property, it can cause leakage.

E. THEORY OF FUNCTION

When the engine is turned, the pressure in the intake manifold becomes negative. If this negative pressure is lead to the controller of the fuel strainer, the diaphram is sucked toward the negative pressure side, so that the valve, which is connected to diaphragm, move the fuel passage opens.

Therefore, when the engine is turning (including turning by the starter), the fuel flow to the carburetter. But, when the engine is stopping or the negative load is small, the diaphragm does not work, so that the fuel does not flow.

F. HOW TO KEEP THE STRAINER BEING OPENED

When the engine is started after the overhaul of the strainer, or the strainer is wanted to be open as the function of the valve, because if some disorder occured on the diaphragm. Follow the procedure as explained below.

(a) Loosen the screw fixing the controller case, by one turn. (don't pull out the screw.)

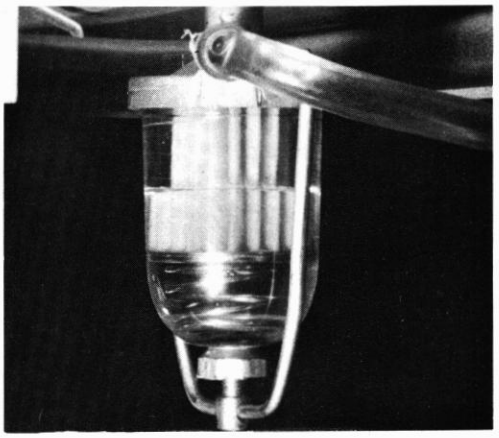
(b) Pull the controller case outward the air intake manifold pipe side about 3 mm.

(c) Tighten the screw keeping the controller case at that position. Then, the strainer is always kept open.

(d) When the engine is started, reset the controller case before position.

6-5: REMOVAL AND REINSTALLATION OF THE FUEL STRAINER ASSEMBLY (CUSTOM)

A. REMOVAL

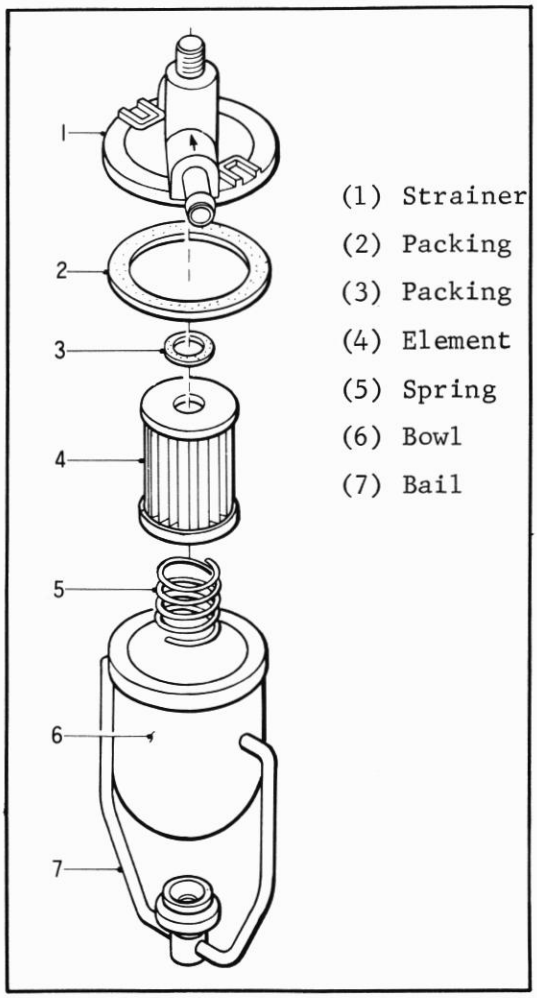


(a) When the engine cover is removed, the fuel strainer can be seen on the left side.

(b) Remove the dome nut at the Pipe A (from the fuel tank) connection.

(c) Remove the dome nut at the Pipe B (to the carburetor) connection.

(d) When the 6 mm nut fixing the strainer is loosened, the strainer assembly can be removed.



(1) Strainer
(2) Packing
(3) Packing
(4) Element
(5) Spring
(6) Bowl
(7) Bail

B. DISASSEMBLY AND REASSEMBLY OF THE FUEL STRAINER PARTS

(a) DISASSEMBLY

(1) When the round nut is loosened, the ball will become free and the element and packing can then be removed.

(2) Do not remove the pipe unless it is damaged and unusable. It can be removed for replacement by screwing it outward.

(b) PRE-ASSEMBLY CHECKS

(1) See whether the various strainer parts have been thoroughly washed. The elements and packing are specially important. Check for adherence of impurities.

(2) Check the body, ball and element for damages. If excessive damages, replace with new parts.

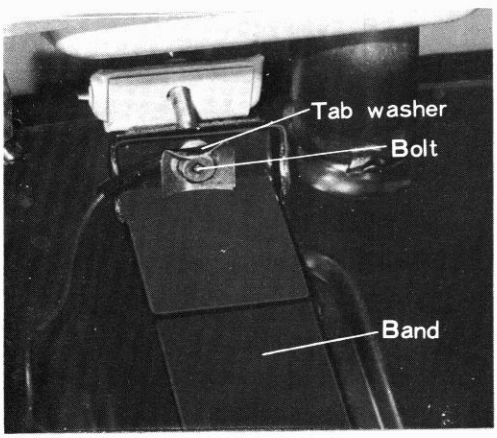
(c) REASSEMBLY

(1) Insert packing in the strainer body and install the element and ball. Fasten in place with the round nut on the pile. Do not tighten too strongly or you may damage the ball.

(2) Attach to the vehicle body with spring washer and 6 mm nut.

(3) Connect Pipe A and Pipe B to the strainer.

6-6: REMOVAL AND REINSTALLATION OF THE FUEL TANK (SEDAN)



A. REMOVAL

(a) First, remove the fuel cap and the fuel strainer as previously explained.

(b) Remove the tank cover inside the cabin.

(c) Loosen the bolt fixing the fuel tank band and take out the tank.

(d) First take out the tank slightly, disconnect the fuel meter unit wiring and then take out the tank.

B. REINSTALLATION

(a) Reinstallation is performed by following the removal processes in reverse. However before installing the tank, check the inside for dirt and fibrous impurities. Wash and dry thoroughly before reinstalling.

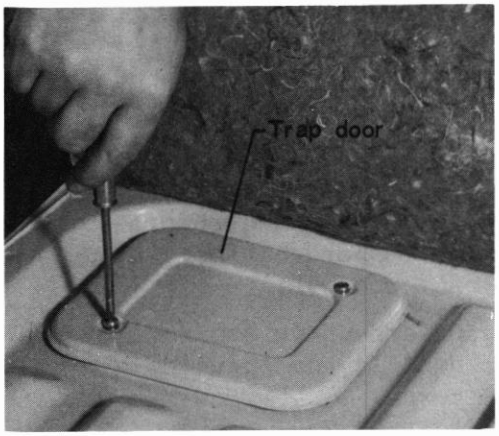
(b) Connect the fuel meter wiring on top of the tank. Install the tank cover.

(c) Tighten all connections securely to prevent leakage.

6-7: REMOVAL AND REINSTALLATION OF THE FUEL TANK (CUSTOM)

A. REMOVAL OF FUEL TANK

(a) Remove the drain plug underneath the fuel tank and drain the fuel.



(b) Remove the rear seat and the covering on the tank surface.

(c) Loosen the screws holding the trap doors on top of the engine compartment and remove all three trap doors.

(d) Insert your hand from the center trap door and disconnect the fuel meter unit and the wiring harness.

(e) Insert your hand from the left trap door and loosen the to part of the clip fixing the fuel filler and take out the fuel filler with the cap.

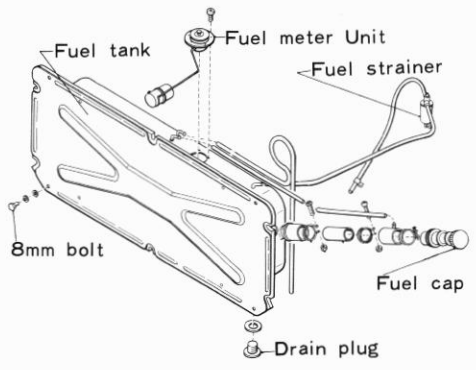
(f) Loosen the four 8 mm bolts fixing the fuel tank and the fuel tank can be removed.

B. REINSTALLATION OF FUEL TANK

Before installing the tank, check the inside for dirt and fibrous impurities. Wash and dry thoroughly before reinstalling.

As loose connections can cause fuel leakage, tighten each connection securely.

Reinstallation is performed by following the removal processes in reverse.

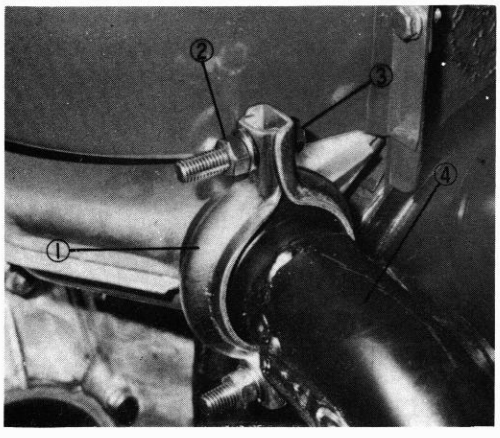


6-8: REMOVAL AND REINSTALLATION OF THE MUFFLER AND EXHAUST PIPE.

A. REMOVAL

(a) First, tilt the back rest of the rear seat forward and remove the trap door on the left side. The connection of the exhaust pipe and the engine will become visible.

In the Custom remove the trap door on the top of the engine compartment.



(1) Clamp (3) Bolt

(2) 8 mm Nut (4) Exhaust Pipe

(b) Remove the 8 mm bolts holding the clamps and remove both the upper and lower clamps and rings.

(c) Go around to the rear of the vehicle and open the engine cover.

(d) Remove the rear bumper.

(e) Loosen the 5 mm bolt on the clip fixing the engine cover lock release cable to the rear skirt.

(f) Remove the cover lock base with cable attached from the rear skirt.

(g) Remove the rear skirt.

(h) Remove the clips holding the accelerator cable and the choke cable.

(i) The muffler is installed on the engine with two bolts. Remove these bolts and take off the muffler.

(j) When the muffler is moved slightly, the ring at the connection between the exhaust pipe and the engine side exhaust manifold will drop down. Be careful to prevent this.

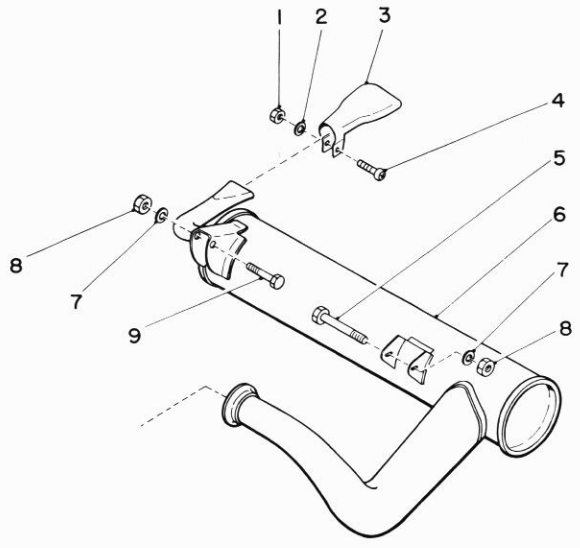
B. PRE-INSTALLATION CHECKS

(a) Check the exhaust pipe flange and curvatures for carbon deposits. Carbon deposits will increase under the following conditions:

(1) When intermittent operation of the vehicle at low speed is often done.

(b) If carbon deposits are found, rub it off from the outside with a wire brush. When burning the carbon out, be careful of blowbacks caused by carbon dust combustion.

(c) Reinstallation is performed by following the removal operations in reverse. Be careful to tighten the exhaust pipe and the exhaust manifold connection securely.

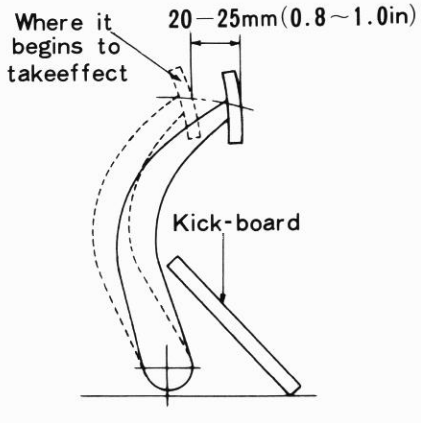


(1) Nut
(2) Spring Washer
(3) Muffler Cotter
(4) Screw
(5) Bolt
(6) Muffler
(7) Spring Washer
(8) Nut
(9) Bolt

6-9: CLUTCH PEDAL

When the clutch pedal is stepped on, the clutch is actuated through the clutch cable and release mechanism.

A. REMOVAL AND REINSTALLATION OF CLUTCH PEDAL
(See chapter on brakes)

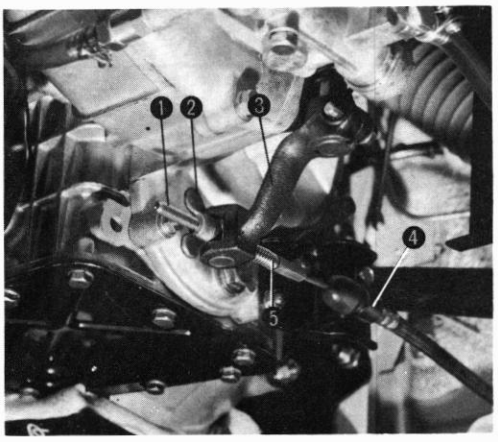


B. ADJUSTMENT OF CLUTCH PEDAL PLAY

(a) The clutch pedal play should be the same as that for the brake pedal, 20-25 mm (0.79 - 0.98 in).

If the play is inadequate, it will cause the clutch to slip and injure the clutch facing prematurely. If the play is excessive, the clutching action will be slow causing gear noise when shifting.

Adjust to 20-25 mm (0.79-0.98 in) as shown in the photo. Make the adjustment through the wing nut at the end of the clutch cable.
In this case, hold the tip of the cable with pliers.

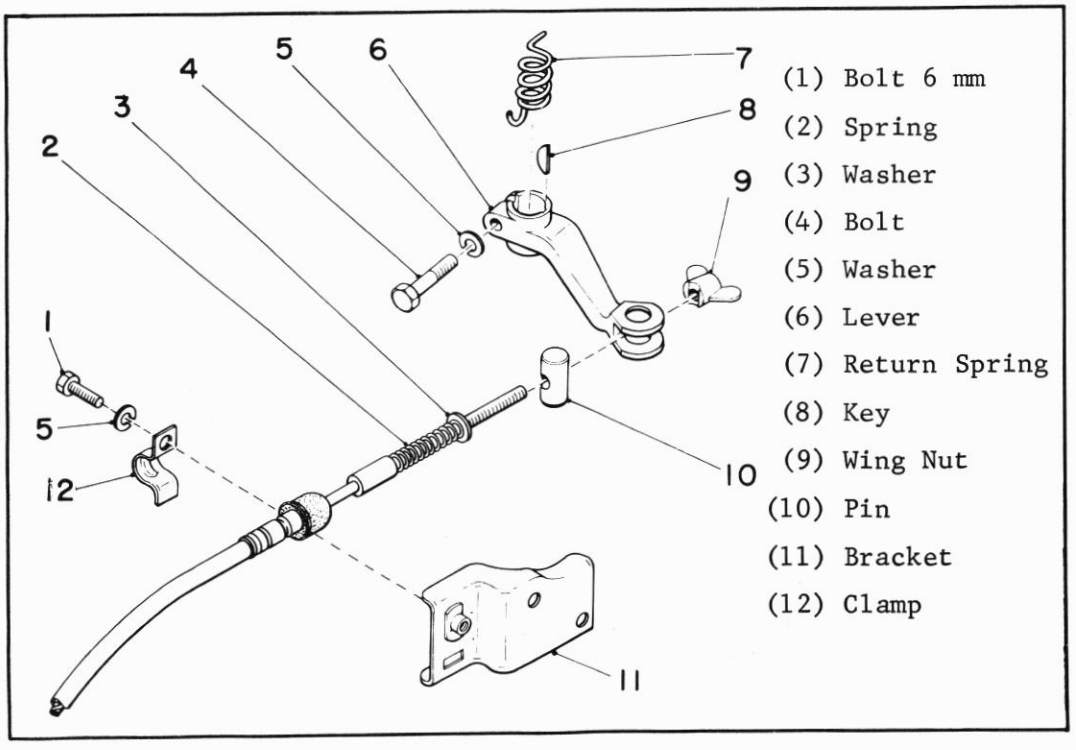


(1) Clutch Cable
(2) Wing Nut
(3) Lever
(4) Clamp
(5) Spring

(b) If the clutch pedal play can not be adjusted to 20-25 mm (0.79-0.98 in) and the cable shows excessive worndown or damaged, exchange for a new part.

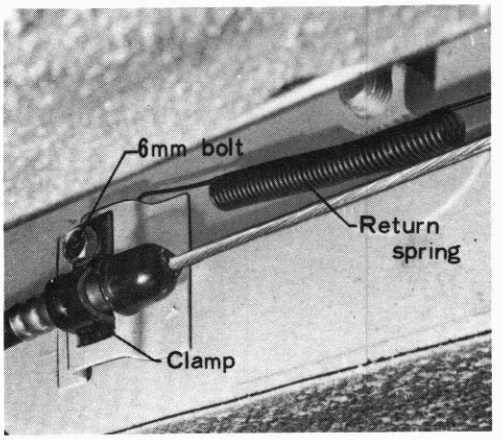
6-10: REMOVAL AND REINSTALLATION OF CLUTCH CABLE

A. REMOVAL OF CLUTCH CABLE



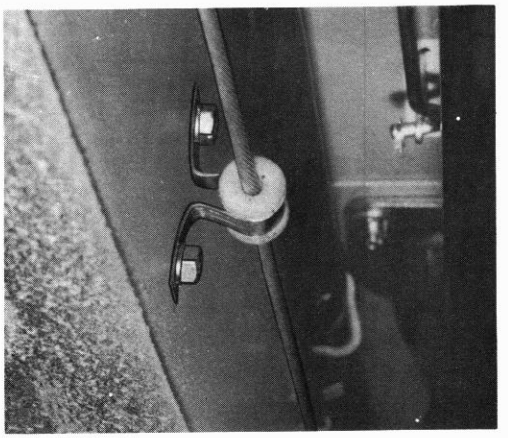
(a) Remove the wing nut. Loosen the 6 mm nut on the clamp at the bracket part.

(b) Remove the cable support spring and the washer.



(c) In the tunnel, there are two clamp to prevent the cable from swaying.

Remove the 6 mm bolt on this clamp and remove the clamp.



(d) Remove the clutch pedal return spring from the end of the outer cable of the clutch pedal side and take out the 6 mm bolt holding the clamp.

(e) Remove the two bolts holding the holder of inercable at the clutch pedal side.

(f) Remove the 2 mm cotter pin from the pin and pull out the pin from end of the clutch cable of the pedal side, the clutch cable can be removed.

B. REINSTALLATION OF THE CLUTCH CABLE

Check each part of the clutch cable. If satisfactory, reinstall by reversing the removal processes. After installing, adjust the clutch pedal play and supply adequate grease.

CHAPTER 7: SHOCK ABSORBER

7-1 SHOCK ABSORBER SPECIFICATIONS 7-1

7-2 SHOCK ABSORBER DAMPING FORCE CHARACTERISTIC CURVE .. 7-1

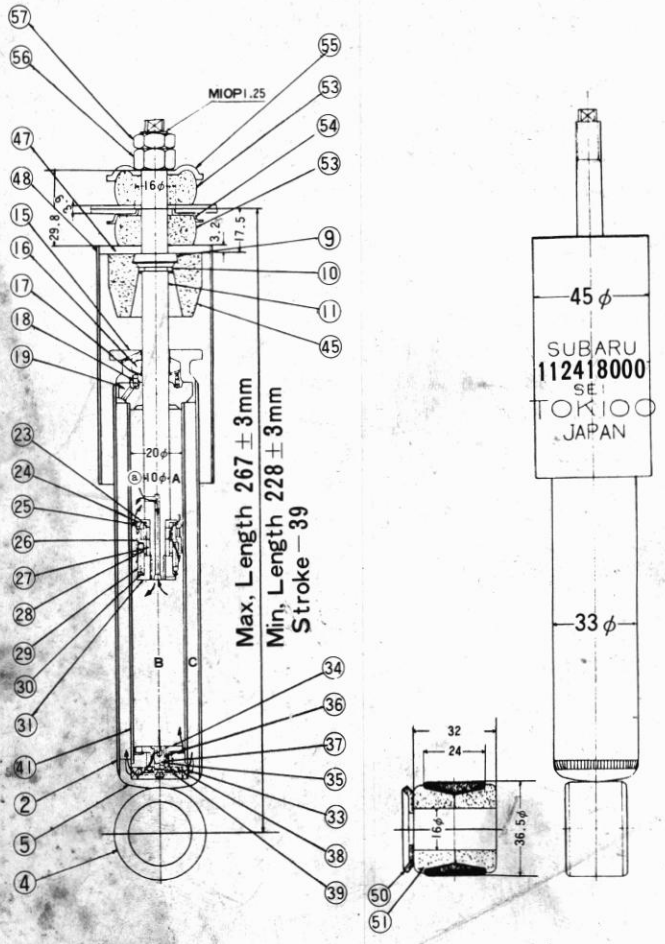
7-8 FUNCTION OF THE SHOCK ABSORBER 7-2

7-4 CONSTRUCTION AND OPERATION OF THE SHOCK ABSORBER ... 7-3

7-5 SIMPLE PROCEDURES FOR CHECKING SHOCK ABSORBER 7-5

7-6 REMOVEL AND REINSTALLATION OF SHOCK ABSORBER 7-6

7-4: CONSTRUCTION AND OPERATION OF THE SHOCK ABSORBER



(2) Base Shell
(4) Eye
(5) Cap
(9) Bolt
(10) Cap
(11) Piston Rod
(15) Cap
(16) Rod Packing
(17) Retainer
(18) Spring
(19) Piston Rod Guide
(23) Guide
(24) Intake Valve Spring
(25) Disc Valve
(26) Piston
(27) Valve Guide
(28) Rebound Valve
(29) Valve Body
(30) Shim
(31) Nut
(33) Valve Body
(34) Compression Valve Retainer
(35) Guide
(36) Disc Valve
(37) Valve Spring
(38) Suction Valve Spring
(39) Retainer
(41) Pressure Tube
(45) Stop Rubber
(47) Cap
(48) Outer Shell
(50) Washer
(51) Rubber
(53) Rubber
(54) Washer
(55) Washer
(56) Nut
(57) Nut

The principle behind the operation of the hydraulic resistance generating mechanism of the shock absorber is as follows:

A. COMPRESSION

When the shock absorber is compressed due to the reacting force from the road, the oil in chamber "B" below the piston (26) passes through the oil path (a) of the piston rod, and at the same time, it compresses the intake valve spring (24), lifts up the disc valve (25) and flows into chamber "A" above the piston (26) with almost no resistance. Simultaneously, the amount of oil equivalent to the volume of the piston rod (11) that intruded into the pressure tube (41) passes through the hole in the compression valve retainer (34), compresses the valve spring (37), forces down the disc valve (36) on the compression side, passes through the cutaway in the valve body (33) and enters the chamber "C" between the base shell (2) and the pressure tube (41).

The resistance that appears when the oil depresses the disc valve (36) and flows through creates hydraulic pressure which becomes the resisting force when the shock absorber is compressed; that is, the damping force. Furthermore when the shock absorber is compressed, the cap (15) contacts the stopper rubber (45) and compresses the rubber which serves to limit the minimum length of the shock absorber.

B. EXPANSION

When the shock absorber is expanded due to the reaction of the torsion bar, the oil in chamber "A" above the piston (26) flows through the oil path (a) of the piston rod, and passing through the piston hole, it depresses the valve spring (29) and the rebound valve (28) and is forced into chamber "B" below the piston (28).

The resistance occurring when the oil depresses rebound valve (28) and flows through creates hydraulic pressure which becomes the damping force when the shock absorber is expanded.

At the same time, the piston rod (11) is extracted from the pressure tube (41) and the oil equal to the volume of the piston rod flows from chamber "C" and compresses the very weak spring force of the suction valve spring, raises the valve (34), guide (35) and retainer (39) as a unit and fills the chamber "B" below the piston (26).

Further, when the shock absorber is expanded, the oil path (a) in the piston rod becomes closed gradually by the piston rod guide. When the opening is completely closed, the damping force reaches its limit and the maximum extension of the shock absorber is limited.

In this manner, the damping force is adjusted through the valve inside the shock absorber making it react strongly when the vehicle is vibrating violently and weakly when the vibrations are gentle.

The oil from the piston rod (11) is sealed by rod packing (16) of high oil and wear resistant synthetic rubber, and for longer rod packing (16) service life, the surface of the piston rod (11) has been given a fine finish plus a hard chrome plating.

On the outside of the shock absorber are the hard chrome-plated surface of the piston rod (11) and the outer shell (48) protecting the stopper rubber (45). At the top and bottom are provided the eye (4) and bolt (9) for attaching the shock absorber to the chassis.

7-5: SIMPLE PROCEDURES FOR CHECKING SHOCK ABSORBER

In the following cases, remove the shock absorber from the vehicle and make the checks explained below.

(1) When considerable oil leakage is noticeable.

(2) When excessive vehicle vibration is felt and this vibration does not stop.

A. VISUAL CHECK

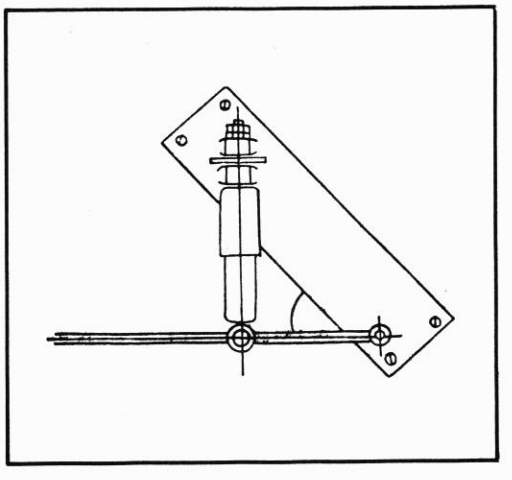
Check the shock absorber for the following points:

(a) Dents and scratches on the cylinder.

(b) Damages on the piston rod.

(c) Signs of oil leakages.

(d) Signs of damage on the rubber bushing mounting the shock absorber.



B. CHECKS ON FUNCTION AND FOR ABNORMAL NOISE

Checks for inadequate damping force and abnormal internal noise due to oil leakage can be made through manually operated tests using an equipment as illustrated on the left.

Operate the lever quickly 8 to 10 times expanding and compressing the shock absorber.

During these pumping operations, there should be a uniform resistance during both expansion and compression without any very soft or very hard spots.

When you change directions and there is a place where you feel no resistance, the shock absorber is faulty and should be exchanged for a new one. On the other hand, if it gets so hard that it refuses to move, this means a faulty shock absorber also. If you can hear noises during your pumping operations, these noises will appear when you are driving also and the shock absorber should be exchanged for a new one.

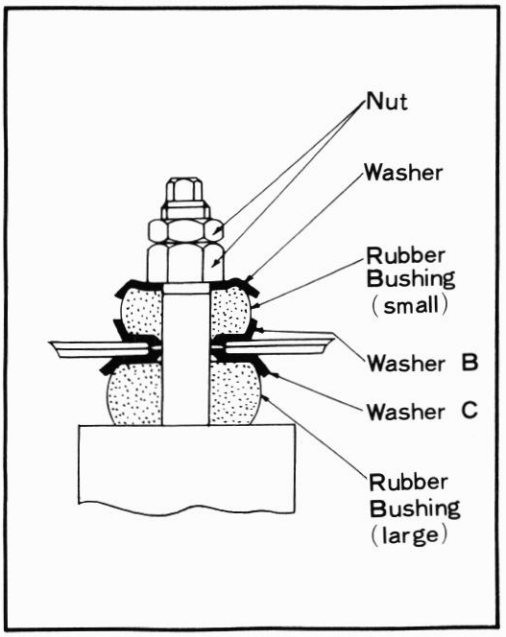
C. WHEN NO TESTING DEVICE IS AVAILABLE

The shock absorber can be checked to a certain degree by the following methods:

(a) Insert a rod through the lower rubber bushing mount. Step on the rod and keep the shock absorber upright by holding the installation bolt with both hands. Push-pull the shock absorber 8 to 10 times by hand.

(b) When you can feel no resistance, exchange for a new unit. When resistance is felt, the shock absorber is all right. However, this manual operation is actually very slow when compared to actual riding condition shocks and the check itself can only be an incomplete one. The check for noise would be incomplete also.

7-6: REMOVEL AND REINSTALLATION OF SHOCK ABSORBER

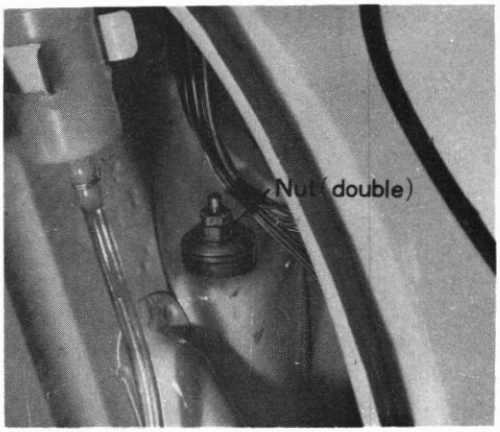


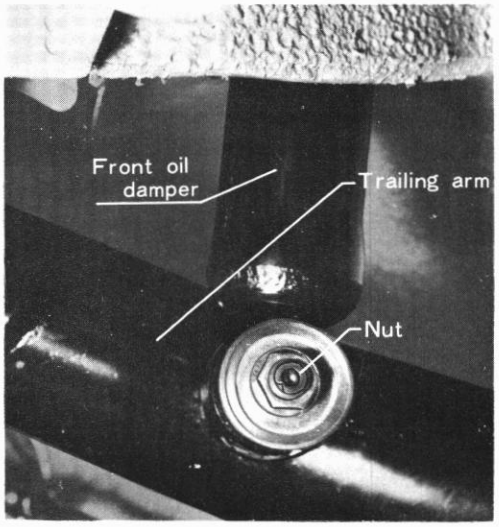
A. REMOVAL OF FRONT SHOCK ABSORBER

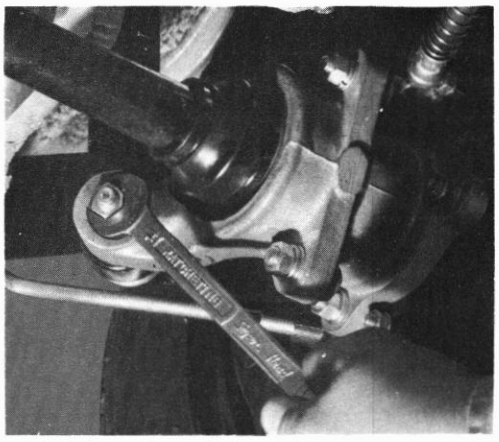
(a) Open the front hood. Holding the top part of the installation bolt, loosen the two 10 mm nuts.

(b) Release the bolt and remove the two nuts. Further remove washer A, B, and the small rubber bushing.

(c) Remove the 10 mm nut fixing it to the trailing arm. Take out the spring washer and flat washer, and pull out the eye toward you. Then pull the unit down and out.







B. REINSTALLATION OF FRONT SHOCK ABSORBER

(a) Insert the rubber bushing (large) and washer C in this order into the upper installation bolt. Keep the unit compressed.

(b) In this condition, insert the shock absorber through the front stay hole and the upper installation bolt through the bracket hole. Then from the top side, insert the washer B, the small rubber bushing and the washer A in this order, and fix in place with the two 10 mm nuts temporarily.

(c) Insert washer and cushion rubber into the shock absorber pin on the trailing arm and fit through the lower eye. Insert cushion rubber, flat washer and spring washer, and fix in place with 10 mm nut. Tighten until the flat washer reaches the shoulder of the bolt.

(d) Tighten the upper nut with a torque of 0.55-0.70 kg-m (4.0-5.0 lb-ft).

C. REMOVAL OF REAR SHOCK ABSORBER

Jack up the vehicle and remove the rear wheel. This will make this operation simpler. The actual removing operation is the same as that for the front shock absorber.

In the custom, the top of the upper installation bolt will become visible if you remove the side trap door of the engine compartment.

D. REINSTALLATION OF THE REAR SHOCK ABSORBER

The actual reinstalling operation is the same as that for the front shock absorber.

CHAPTER 8: TIRE

8-1 SPECIFICATIONS, CONSTRUCTION AND HANDLING PROCEDURES ON TIRES 8-1

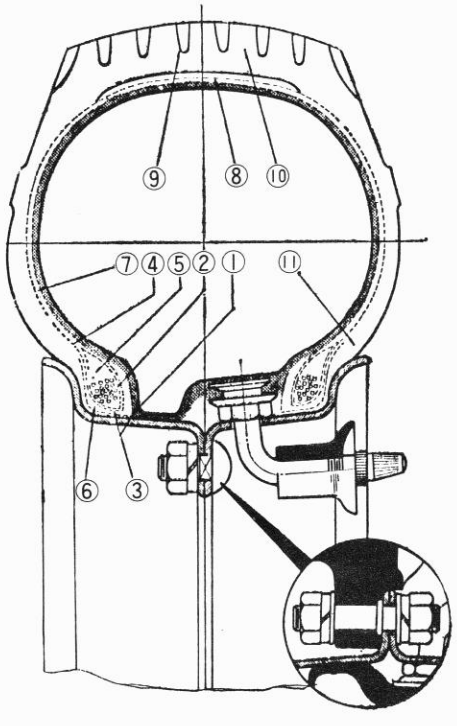
CHAPTER 8: TIRE

8-1: SPECIFICATIONS, CONSTRUCTION AND HANDLING PROCEDURES ON TIRES

A. SPECIFICATIONS

	Subaru 360 Sedan	Subaru 360 Custom
Tire	4.80 x 10 - 2P	4.50 x 10 - 4P
Rim	3.00D x 10	3.00D x 10
Tire Width	Approx. 121 mm (4.76 in)	Approx. 122 mm (4.84 in)
Tire Outer Diameter	Approx. 500 mm (19.6 in)	Approx. 485 mm (19.0 in)
Valve	TR-244	TR-244
Standard Air Pressure		
Front Tire	0.85-0.99 kg/cm^2 (12-14 psi)	0.9-1.0 kg/cm^2 (13-14 psi)
Rear Tire	1.7-1.85 kg/cm^2 (24-26 psi)	1.9-2.0 kg/cm^2 (27-28.5 psi)
Spare Tire	1.85 kg/cm^2 (26 psi)	2.0 kg/cm^2 (28.5 psi)

B. FUNCTION AND CONSTRUCTION



(1) Bead Toe
(2) Bead Wire
(3) Chafer
(4) Flipper
(5) Head Rubber
(6) Bead Heel
(7) Cord
(8) Breaker
(9) Croove
(10) Tread
(11) Thumb Cushion

(a) TIRE FUNCTIONS

The tire acts as a part of the springing system supporting the vehicle body and absorbs shock from the road surface for greater driving comfort. At the same time, it transmits the driving force from the engine as well as the braking force. When the vehicle swerves to one side, the tires produces a force which compensates for the centrifugal force to provide good maneuverability and high stability. Since the tires have such important functions, adequate care must be exercised in their handling and maintenance.

(b) FEATURES OF THE SUBARU TIRES

The 4.80 x 10 tires used on the Subaru is of 2-ply construction with high durability. In order to achieve good maneuverability, high stability and superior riding comfort, the following factors have been incorporated into their design. (The tires on the Custom are 4.50 x 10 - 4P.)

(1) Lightweight

(2) Low Spring Constant

(3) High Stability

(4) High Frictional Constant

(5) Durability

(c) THE CONSTRUCTION DETAILS OF SUBARU TIRES

The tire and tube can be considered as a container for air which supports the load made to bear on the tire. The core of the tire is the cord which supports the inner pressure through tensile force. Rubber is used along with the cord as an insulation to eliminate friction of the cords and also as protection from wear and tear. To absorb shocks from the outside, the breaker is incorporated between the cord and tread. A cushion layer is formed here which with the breaker serves to prevent separation through minimizing sudden changes in flexibility. The bead which is a rigid piece of steel wire helps to secure the tire in the rim. The surface which contacts the rim is protected by the chafter to prevent frictional damage to the cord. The flipper is inserted to gradually reduce the rigidity from the very hard bead to the side where more flexibility is required.

The outside surface of the tire which contacts the road surface is provided with treads for protection against wear. It has a pattern which has been functionally designed to adequately carry out the functions of the tire. The tread further provides a larger exterior surface for dissipating the internally accumulated heat.

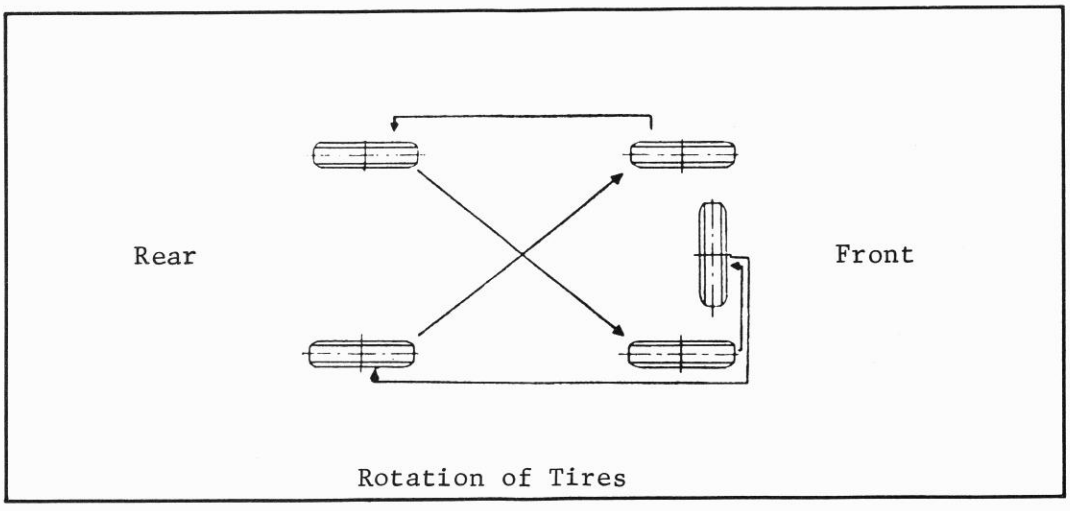
C. TIRE MAINTENANCE

(a) TIRE PRESSURE CHECK

Check and adjust the tire pressures daily. As explained previously, the compressed air in the tire supports the vehicle load, and a certain inner pressure has been set as a standard for performing this function the best. The design of the vehicle body, its suspension system and its steering system is based on tires inflated to a certain standard pressure. Therefore insufficiently or excessively inflated tires will not only shorten the tire service life but will also lower the vehicle performance and vehicle life.

(b) ROTATION OF TIRES

Due to the differences in the functions of the different wheel suspensions, in the road conditions and the everyday driving procedures, the amount of wear on the individual tire will vary to some extent. This will cause unevenness in the tire life. To obtain even wear on all tires, the tires should be rotated periodically after about every 6000 kilometers (3700 miles) of operation. See the following illustration for rotation procedure.



Rotation of Tires

(c) CLEANING THE TIRES

Clean the tires from time to time not only for neat appearance but also for early discovery of trouble. While pouring water on the tire, scrub off dirt and sand with a brush. Be sure to clean the inner side walls and inside the grooves in the tread also. Stones stuck in the grooves will cause damage to the cord. These stones can be removed with a screw driver. Remove nails and wires stuck in the tire with pliers. If these items have gone in deeply and there is a chance that they may have punctured the tube, be sure to check for air leakage after removal.

(d) TIRE AIR PRESSURE INSPECTION

Insufficient Proper Excessive

PROPER AIR PRESSURE	
FRONT TIRE	0.85 - 0.99 kg/cm^2 (12 - 14 lb/in^2)
REAR TIRE	1.70 - 1.85 kg/cm^2 (24.2 - 26.3 lb/in^2)
SPARE TIRE	1.85 kg/cm^2 (26.3 lb/in^2)

D. TIRE DEFECTS AND THEIR CAUSES

(a) DEFECTS CAUSED BY FLEX, FATIGUE AND HEAT

The side walls of the tire flex as the tire revolves. If the tire pressure is insufficient or excessive loads are carried on the vehicle, this flexing will become abnormally large leading to separation of the cord from the rubber and ultimately cord breakage. If you drive a vehicle with a flat tire, the tire cords in this flat tire will break almost immediately.

(b) DEFECTS CAUSED BY SHOCK

When the vehicle runs over an object at high speed, the shock that the tire receives will be transmitted to the cording between the beads causing it to break. This is called "shock burst" and the tire will break in a straight line or in a cross. Separation will not normally appear in this case. This trouble is usually caused by over-inflated tires, overloading of vehicle and hazardous high speed operation.

(c) DAMAGES CAUSED BY THE RIM

If the tire are insufficiently inflated, the side walls may become pinched between the rim and the road surface specially when the tire passes over some object. This pinshing will

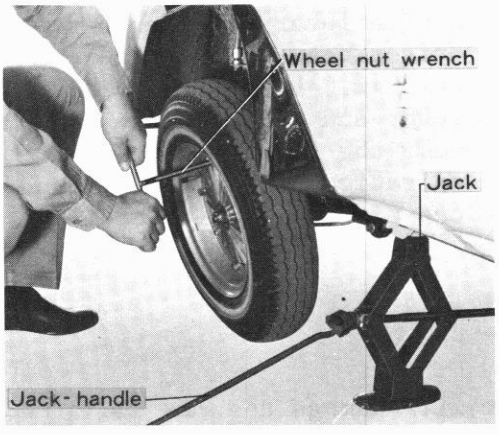
sometime cause the side walls to break. Overloading and over-speeding are contributing factors to such damages. This will also occur when the vehicle is driven with a flat tire.

(d) EXTERIOR DAMAGES AND PUNTURES

These damages are caused when the vehicle runs over pieces of broken glasses and nails. These damages can be easily repaired if attened to right away. If left unattended and dirt and water enters through these holes, the damages will become more serious. Repair such damages to the tire surfaces as soon as possible. It would be a good policy to have them repaired whenever you have a flat tire.

(e) TIRE WEAR

Normal wear and tear on the tires can not be avoided, but every care should be taken to prevent abnormally accelerated wear. The major caused are improper tire pressures and improperly adjusted suspensions systems.



E. DISASSEMBLY AND REASSEMBLY OF WHEEL, TIRE AND TUBE

(a) REMOVING THE TIRE

First, set the parking brake and remove the wheel cap with a screw driver. Loosen the clip nuts. Now, jack up the vehicle. The Subaru is provided with four jacking points, one near each wheel. Be careful to set the jack up straight. After completely jacking up the wheel, remove the wheel nuts and washers to take off the wheel.

(b) REMOVING THE INNER TUBE

Deflate the tube. The rim is of the two-piece type and when the four bolts connecting the two halves are removed, the two pieces will separate. The tube can be taken out through the gap between the two half-rims without actually removing the tire from the rim. When reinserting the tube and reassembling the rim, the following precautions must be taken:

(1) Check the interior surfaces of the tire and repair any damages. Remove any foreign objects found inside.

(2) Before installing, tighten the tube valve and inflate. Check the tube and valve thoroughly for leaks in water.

(3) Insert the tube after deflating through the rim gap and properly align the valve with the valve hole.

(4) Inflate the tube sufficiently so that it will not be caught between the two rims when they are reassembled.

(5) Match the two rim-halves and join together with bolts, spring washers and nuts. Be careful to insert the bolts from the outer rim-half with the three claws for attaching the wheel cap. When the bolt holes are cleanly matched, it will make the installation of the brake drum easier.

(6) Inflate the tire to the required pressure and attach the valve cap. Care must be taken when measuring tire pressure with pocket gauges as the readings are affected by how it is applied. Check such pocket gauges against master gauges in garages and service stations from time to time.

(c) REMOVING THE RIM FROM THE TIRE

Remove the tube and lay the wheel on the floor. Insert a tire lever or a large screw driver between the tire and the rim. Bear down on the lever and separate the rim from the tire. Repeat this operation around the rim and one rim-half can be easily removed.

Refrain from using a hammer as it will damage the rim and tire. If it becomes unavoidable, try and use a rubber hammer to lessen the chances of damage as much as possible.

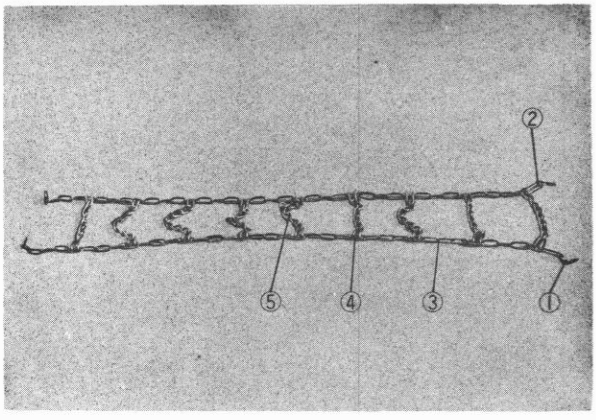
To remove the remaining rim-half, turn the tire over and repeat the above operation. This will be made easier if the tire is placed on top of the rim-half already removed.

F. TIRE CHAIN

(a) When the road conditions are bad with snow, mud or gravel, use tire chains for safe operation to prevent slipping. It will also help to keep down your fuel consumption.

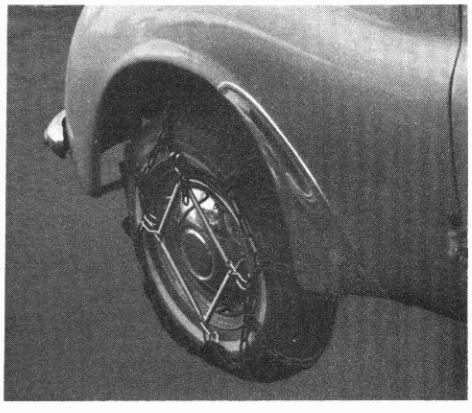
(b) The Subaru tire chains have been specially designed for maximum safety and long service life.

(c) The Subaru tire chain is constructed as shown in the following in the photo.



(1) Fastener
(2) Clip
(3) Side Chain
(4) Hook
(5) Cross Chain

(d) To install the tire chain, jack up the vehicle and place the center of inner side of the chain under the tire. Bring the ends of the inner chain around the tire and connect at the top with fastener. Then fasten the outside part of the chain.



CHAPTER 9: ELECTRICAL EQUIPMENTS

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CHAPTER 9: ELECTRICAL EQUIPMENTS

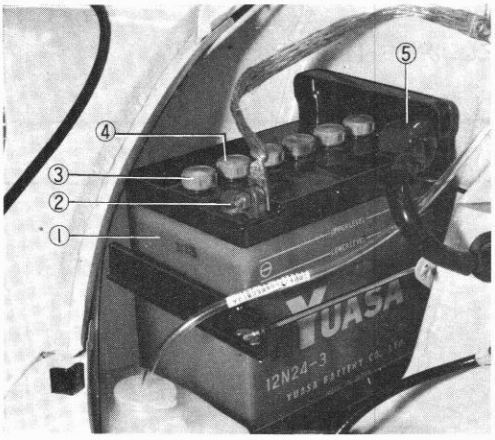
9-1: SPECIFICATIONS ON ELECTRICAL EQUIPMENTS ON BODY

	SEDAN	CUSTOM
Battery		
Type	12N24-3	Same as SEDAN
Capacity	12V/26AH	"
Charging Current	3A	"
Specific Gravity when fully charged (20°C)	1.280	"
Ground Pole	Negative	"
Electrolyte	1.5 ℓ (1.6USqt,1.3Imp.qt)	"
Turn Signal Relay Type	F1311 Type	"
Turn Signal Frequency	70-90/min at 12±0.2V	"
Oil Level Indicator	Lights at 0.5 ℓ (1 USpt, 0.9 Imp.pt)with car parked	"
Fuel Gauge	F=25 liters (6.6US gal. 5.5 Imp.gal)	F=20 liters (5.3US gal.4.4 Imp.gal)
	E=2 liters (0.5US gal. 0.4 Imp.gal)	E=2 liters (0.5US gal.0.4 Imp.gal)
Horn		
Type	BS10-D	Same as SEDAN
Volume	100±5 Phon	"
Current	1.8A	"
Stop Lamp Switch		
Lighting Pressure	4-8 kg/cm^2(57-114 lb/in^2)	"
Maximum Current	5A	"
Strength Factor	150 kg/cm^2(2140 lb/in^2)	"

Windshield Wiper Motor

		Mitsuba Denki
Type		WM-2
Current:	Standard Load	Under 1.5A
	No Load	Under 1.0A
RPM:	Standard Load	33-50 rpm
	No Load	45-55 rpm
Motor Torque		Over 60cm-kg

9-2: BATTERY



(1) Cell
(2) Terminal Pole (-)
(3) Filler Cap
(4) Cover
(5) Terminal Pole (+)

A. CONSTRUCTION

The 12V battery is composed of six 2V batteries. The main components are as follows:

ANODE PLATE:

Fine, dark-brown and hard lead dioxide is filled into a lead alloy grid which is provided with great porosity to allow free penetration of electrolyte to the plate. One anode plate group is made up of four of these plates.

CATHODE PLATE:

Grey, spongy and porous lead is filled into a lead alloy grid. A cathode plate group consist of five plates.

SEPARATOR:

In order to prevent short-circuits between the anode and cathode plates, a non-conductive, porous separator is inserted between these plates. A glass mat is used together with such separators usually made of reinforced fiber or wood.

ELECTROLYTE:

An electrochemical action will take place only when there is electrolyte fluid around the reacting plates. The electrolyte should be refined diluted sulphuric acid for industrial use. It must be colorless, odorless and of high purity complying with major industrial standards.

Care must be taken in selecting the electrolyte because electrolytes made from impure water or sulphuric acid containing impurities will corrode the plates, increase spontaneous discharging and shorten the service life of battery.

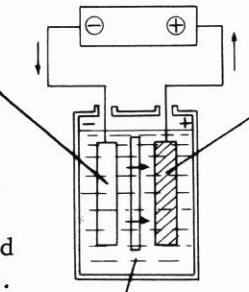
B. CHEMICAL REACTION IN BATTERY

When the battery is being discharged, a chemical reaction is occurring on the reacting materials in accordance with the degree of discharging, and conversely, when charging, the reacting materials are returning to their original conditions. The chemical formulae for this phenomena is as follows:

CHARGING				DISCHARGING		
PbO_2	+ $2H_2SO_4$	+ Pb	=	$PbSO_4$	+ $2H_2O$	+ $PbSO_4$
Anode	Electro-lyte	Cathode		Anode	Electro-lyte	Cathode
(Lead Dioxide)	(Sulphuric Acid)	(Sponge Lead)		(Lead Sulphate)	(Water)	(Lead Sulphate)

A more simplified explanation can be seen in the following drawings:

Charging

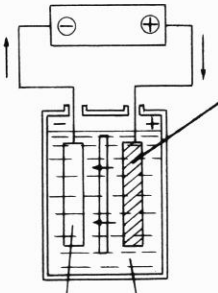


Cathode Plate (Sponge lead) is changed into lead sulphate.

Anode Plate (lead dioxide) is changed into lead sulphate.

Electrolyte
The electrolyte becomes deluted because when the sulphuric, acid reacts on the plates, the H in the sulphuric acid and the O in the lead dioxide combine to from water.

Discharging



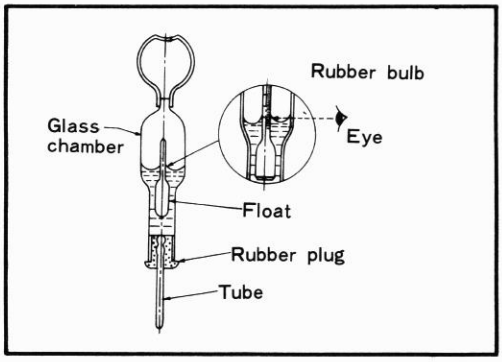
Anode Plate (lead sulphate) returns to lead dioxide.

Cathode Plate (lead sulphate) returns to sponge lead.

Electrolyte
The electrolyte gradually becomes more concentrated by the sulphuric acid discharged from the plate.

C. MEASUREMENT OF SPECIFIC GRAVITY

Use a hydrometer for checking the specific gravity of the electrolyte. Place the hydrometer vertically into the electrolyte and carefully take up fluid into the glass chamber. Remove from battery and shake slightly to loosen float. Hold at eye-level and make your reading. Clean off any oily substance which may be adhering to the hydrometer as it may distort the reading. Furthermore, the specific gravity will differ with the temperature. All values are measured at 20°C. Therefore, after checking the specific gravity, be sure to check the temperature of the electrolyte at the same time and



adjust your reading accordingly. Adjustment is made through the following formula.

S = St + 0.0007 (t-20)
S = SG at 20°C
St = SG at t° temperature
t = Temperature at reading
0.0007 = SG change per 1°C.

D. PERIODICAL INSPECTION

Check your battery once every 1500 km (900 mi) or once a month in the following manner.

(a) VISUAL INSPECTION

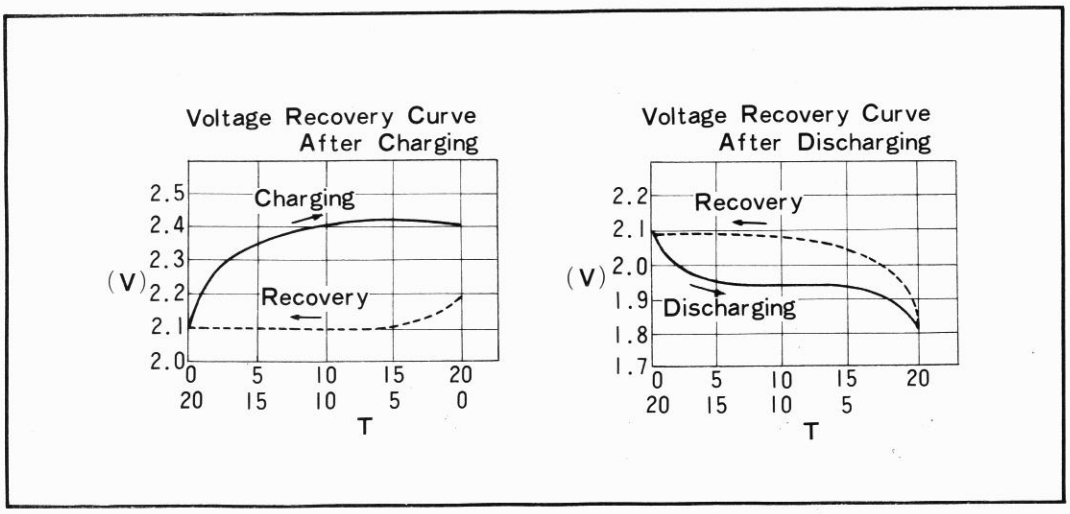
Check cell, cover, filler cap, and terminal (+) (-), for damaged, cracks and soils. Wash the battery exterios with water to remove sulphuric acir and clean off with dry cloth. Coating with grease will prevent corrosion.

(b) INSPECTION OF SPECIFIC GRAVITY AND TEMPERATURE, AND ELECTROLYTE LEVEL

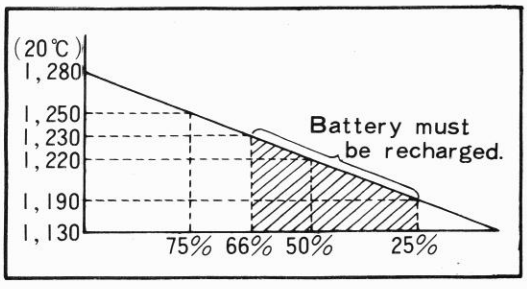
Measure the specific gravity and temperature of electrolyte, and convert the reading to 20°C. The electrolyte should be between 1.220 and 1.280. Do not allow the specific gravity to drop below 1.220. Check the electrolyte level. If the level is below the MINIMUM LEVEL line, add distilled water. Be sure to check each cell for correct fluid level. Do not raise the level above the MAXIMUM LEVEL line. The electrolyte may spill out while driving. Do not use sulphuric acid to raise electrolyte level as this will raise the specific gravity of the electrolyte and damage the plates and separators.

(c) VOLTAGE MEASUREMENT

Battery voltage should always be about 2V per cell in its static condition, a condition in which the battery is neither charging or discharging. As can be seen in the following graphs, the voltage rises or drops acutely initially when charging or discharging and then gradually levels off. This takes place when the voltage reaches the starting voltage of 2V depending on the concentration of the electrolyte. This means that the condition of battery can not be determined by measuring the voltage in a static condition. It must be measured when the battery is being charged or discharged. A simple procedure is to use an excel tester (4-0-4 Volt Meter). Check each cell, and check again five seconds later. If the voltage remains over 1.5V and the mutual differences between each of the cells is under 0.1V, the battery is all right.



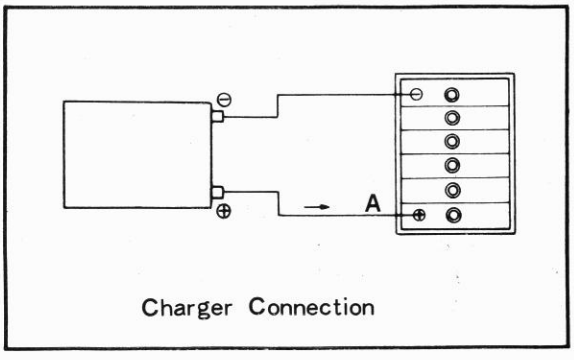
E. NORMAL CHARGING AND RAPID CHARGING



The condition of the battery can be determined by measuring the specific gravity of the electrolyte. The relationship between electrolyte and charging condition is shown in the left charg.

(a) NORMAL CHARGING

When the specific gravity of the electrolyte falls to 1.220 and under when computed to 20°C, the battery must be recharged in the normal manner. If you have access to a charging apparatus, connect it to the battery as shown in the following drawing. Charge with a 3A current until the battery voltage and specific gravity are restored to the standard values. After charging, check three times at thirty minute intervals, and if the values become constant, the battery is properly charged.



Charger Connection

PRECAUTION

When charging, a great deal of gas bubbles will be generated in each cell. Be sure to leave the battery plugs open and be careful of fire.

(b) RAPID CHARGING

When a discharged battery must be recharged in a short time, a rapid charger may be used. Rapid charging is done by using a very large current. Such large current can be used only in the initial stages of charging. It will also cause high temperatures in the battery and its prolonged use may result in damages to the battery. In performing rapid charging, it is necessary to control the current to keep the battery temperature below 40°C.

The rapid charging procedure is an emergency procedure, and for best battery performance, the normal charging with a low current is the proper procedure.

9-3: LIGHTING EQUIPMENTS

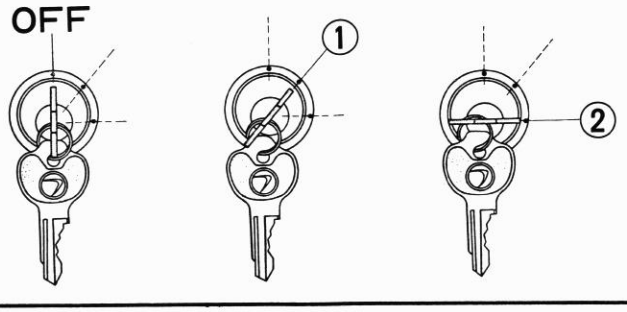
A. LAMP SPECIFICATIONS

Use lamps and bulbs conforming to the following specifications.

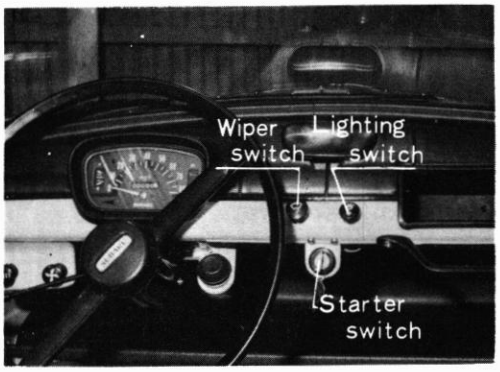
Item	Voltage	Specification	Q'ty
Headlamp (Sealed beam unit)	12 V	50/40 W	2
Front Turn Signal & Parking Lamp	12 V	23W/7W(2 points)	2
Rear Turn Signal & Stop Lamp	12 V	23W/7W(")	2
Tail, License Plate Lamp	12 V	8 W(Single point)	1
Room Lamp	12 V	8 W(" ")	1
Speedometer Lamp	12 V	3 W(" ")	1
Pilot Lamp	12 V	3 W(" ")	4
Side Signal Lamp	12 V	6 W(" ")	2

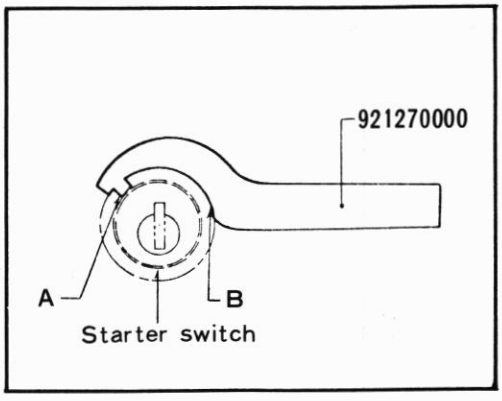
B. IGNITION/STARTER SWITCH

(a) When the ignition key is inserted and turned one step to the right, the electrical circuits will be turned on. When it is turned further to the right against the spring pressure to the second step, the starter switch will operate and the engine will start. Once the engine starts, release the key and allow it to return to the first step. If something happens and the key fails to return, force it back manually to the first step. Do not operate the starter switch for more than five or six seconds at a time. If the engine does not catch, allow it to return to the first step and wait about ten seconds before trying again.



DO NOT TURN THE KEY TO THE SECOND STEP WHEN THE ENGINE IS TURNING OVER.

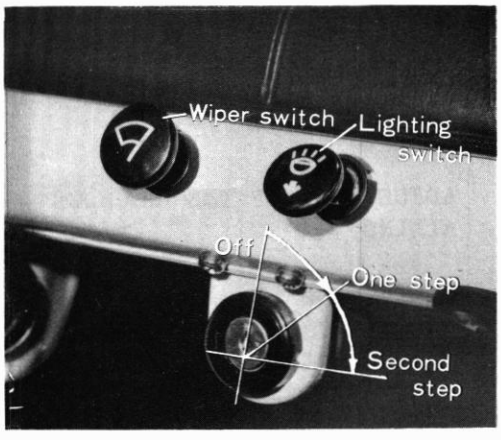




(b) The switch is installed on the dashboard with special tool 921270000. Hook the claw in the top part of the tool in the cutaway on the outer perimeter of the nut. Turn tool clockwise to tighten. To remove, use the tool in the opposite manner and turn counter-clockwise.

C. LIGHT SWITCH

The light switch is a 2-stage pull-out type switch.



(a) When the switch is pushed down to the first step, the parking lamps, tail/license plate lamps and speedometer lamp will light.

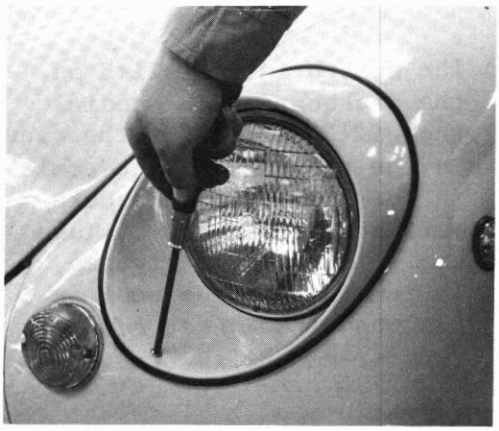
(b) When the switch is pushed further down to the second step, the headlamps, tail/ license plate lamps and speedometer lamp will light.

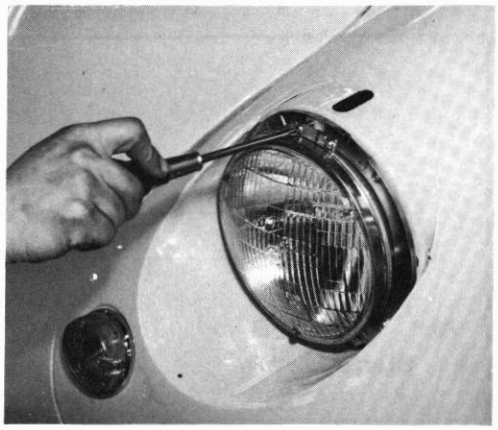
9-4: HEADLAMPS

A. REMOVAL

(a) To remove the sealed beam unit, first remove the headlamp ring retainer screws, and then release the spring in the back. Next, press the lamp unit against the spring force and turn to the left. Then, pull out it and disconnect the headlamp cord connector. The rim and sealed beam unit will come off together. The sealed beam unit can be separated from the rim and set plate by removing three setting screws.

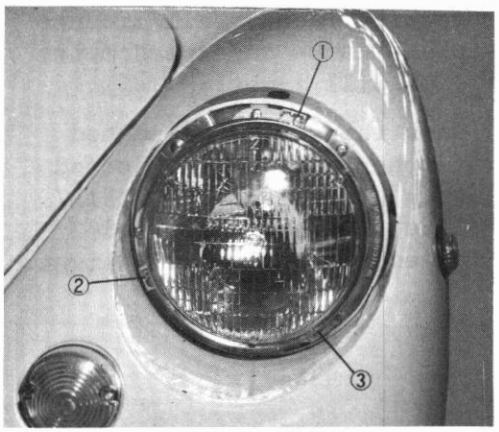
(b) When removing the entire front lamp assembly, remove the three screws fixing the assembly to the body. The lamp assembly can be removed as an assembly.





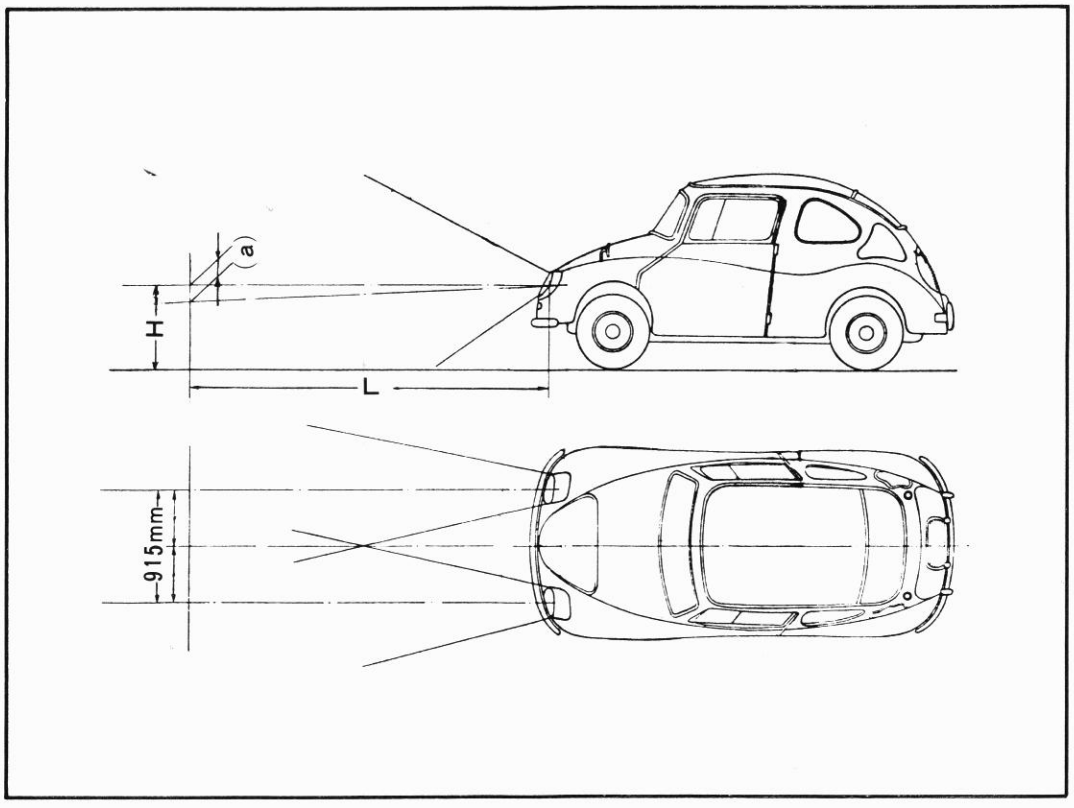
B. REINSTALLATION

The lamp unit is reinstalled by reversing the removing procedures.



C. ADJUSTMENT OF THE HEADLAMP AIMING

Remove the headlamp ring. Screw (1) is used for vertical adjustment and Screws (2) and (3) for horizontal adjustment.

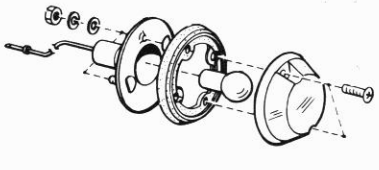


9-5: TURN SIGNAL LAMP

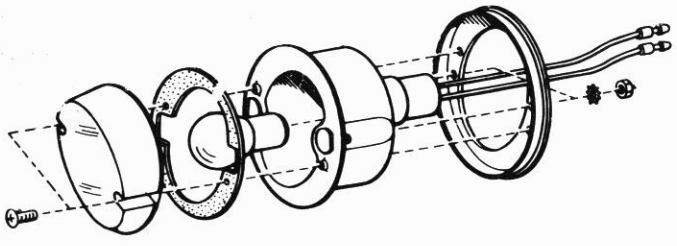
The turn signal lamps are controlled by the flasher unit which is turned on by the lever switch. If the flashing becomes inconsistent, this is usually due to a burnt out bulb or a defect in the flasher relay.

The stop lamp is actuated when the brake pedal is pressed through a hydraulic switch.

Light bulbs can easily be replaced by removing the globes.



Side Turn Signal Lamp



Front Turn Signal Lamp

9-6: STOP LAMP SWITCH

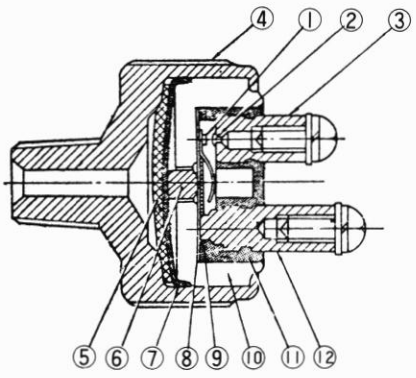
The stop lamp switch is installed on the master cylinder. When the brake is actuated, the oil pressure is transmitted through a rubber seal to a plate which deforms and pushes at spacer causing points (1) and (2) to contact causing the circuit to close through the valve spring.

When the following discrepancies occur, exchange for a new switch.

(1) When the lighting hydraulic pressure is not between 4 kg/cm^2 - 8 kg/cm^2.

(2) When the voltage drop at the two terminals is over 0.2V when 10A current is passed through the switch.

(3) When there is oil leakage at a pressure under 150 kg/cm^2.

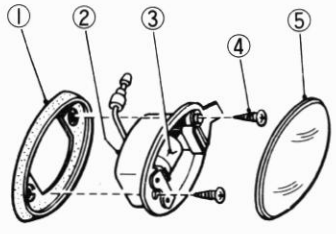


(1) Contact Point (Short)
(2) Contact Point (Long)
(3) Terminal (Small)
(4) Casing
(5) Rubber Seat
(6) Spacer
(7) Plate
(8) Insulation Paper
(9) Valve Spring
(10) Retainer
(11) Terminal Plate
(12) Terminal (Large)

9-7: TAIL AND LICENSE LAMPS

The tail and license lamp will operate in conjunction with the headlight. To replace bulb, remove the two screws holding the globe. Push the bulb inward and turn left to remove.

9-8: ROOM LAMP

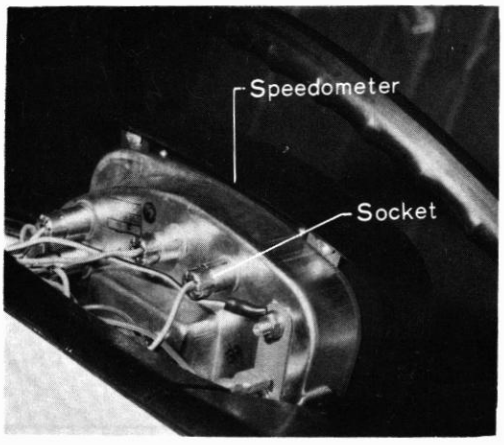


When the switch lever located beside the room lamp is pressed downward, the lamp will light. The globe is removed for replacing bulb by pressing upward.

The lamp unit is attached to the body with two tapping screws.

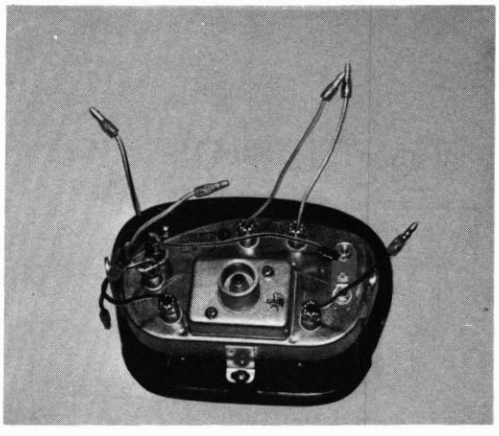
(1) Base (3) Bulb (5) Globe
(2) Room Lamp Body (4) Screw

9-9: SPEEDOMETER LAMP



The speedometer lamp is designed to light in conjunction with the headlamp and parking lamp.

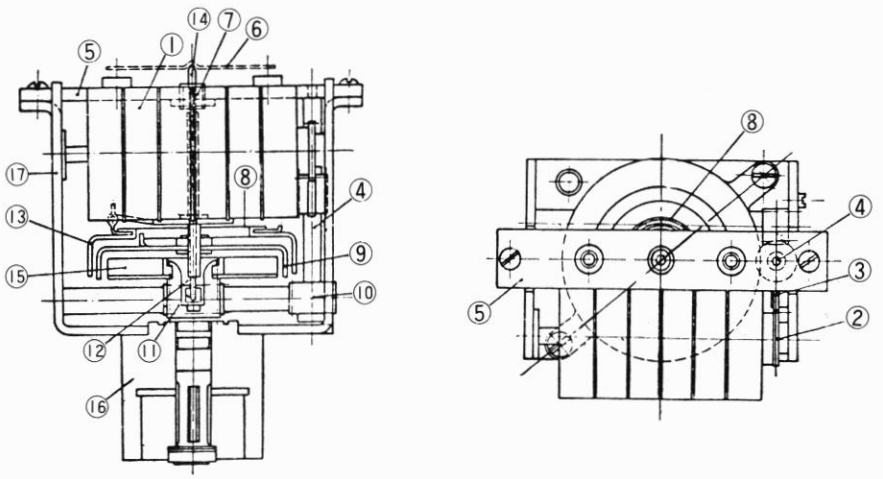
To replace bulb, pull out the socket on the back side of the speedometer unit, and turn the bulb counter clockwise while pressing it in.



9-10: COMBINATION METER

A. SPEEDOMETER

The speedometer is composed of the speed indicating unit (6) and the mileage counter (1). The internal permanent magnet (15) rotates at the same speed as the flexible shaft. The non-magnetic aluminum wheel of high conductivity (9) operates on the same shaft as the pointer needle. The magnetic flux created between the rotating permanent magnet (15) and the iron yoke (12) causes an eddy current to appear on the aluminum wheel. The interaction between this eddy current and the permanent magnet creates a rotating force which is controlled by a hair spring which acts to indicate the vehicle speed on the speedometer.



(1) Counter
(2) Fifth Shaft
(3) Fourth Shaft
(4) Third Shaft
(5) Needle Support Frame
(6) Disc-Tupe Pointer
(7) Needle Shaft Retainer
(8) Hair Spring
(9) Aluminum Wheel
(10) Second Shaft
(11) First Shaft (Speedometer Drive Shaft)
(12) Needle Shaft Retainer
(13) Iron Yoke
(14) Needle Shaft
(15) Permanent Magnet
(16) Speedometer Main Body
(17) Housing

On the other hand, the permanent magnet shaft (11) (the flexible cable) rotation is gradually reduced through (10), (4), (3), (2) and (1) to operate the counter indicating the aggregate distance covered.

Speed Indicator: When the flexible cable turns at 637 rpm, the indicator will show 60 km/h.

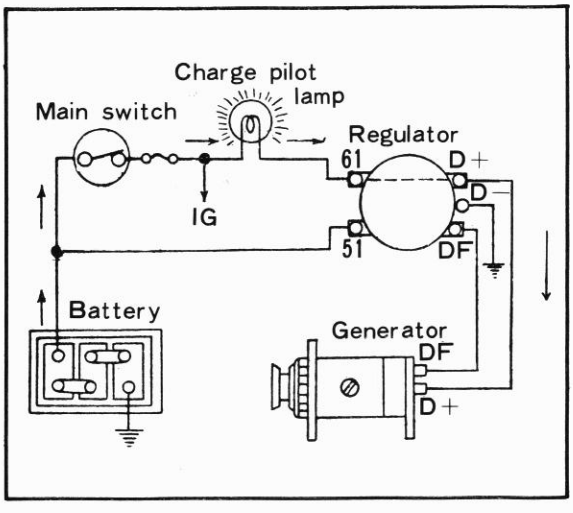
Mileage Meter : It will count 1 km for every 637 rotations of the flexible cable.

When the indicator shows excessive vibrations, this is due to damage to the flexible cable. Replace.

B. CHARGE LAMP

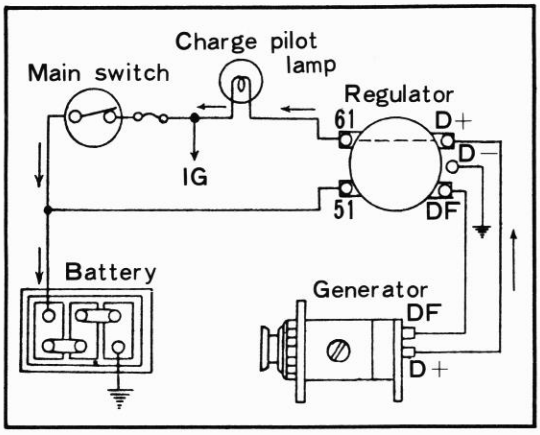
The charge lamp will light when the ignition key is turned on. After the engine starts, the generator will start working and the cutout relay will close to turn off the charge lamp when the generated current begins to flow. If the lamp fails to go out when the generator is properly rotating, a check must be made on the generator or the regulator. However if there is a poor connection in the key switch, fuse or the relay points, the lamp will give off a feeble light even when the generator is operating properly. In this case, this will not affect the charging operations.

(a) CHARGE LAMP OPERATIONS



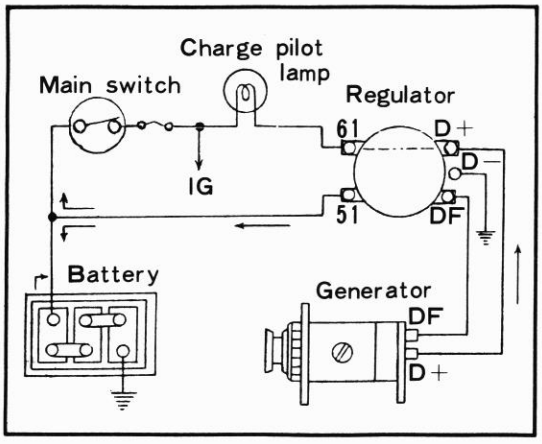
(1) When ignition is turned on -

When ignition is turned on, a current will flow from the battery to the charge lamp and the generator armature lighting the lamp. The lamp and the generator armature are connected in series, but the armature resistance when compared with that of the lamp is extremely small so that the battery voltage is almost wholly transmitted to the lamp turning it on.



(2) When the engine is started -

When the engine starts and the generator (rpm) starts to rise, a current starts to flow back toward the battery. Therefore a voltage equal to the difference between the battery terminal voltage and the generated voltage will be applied to the lamp. That is, if the battery voltage is 12 Volt and the generated voltage is 10 Volt, the lamp voltage will be 2 Volt. In this manner, when the generated voltage reaches 12 V or the same as the battery, the lamp voltage will become zero and the lamp will go out.



(3) When the generator voltage rises -

With the rise in engine rpm, the generated voltage will become higher than that of the battery. The same principle will apply and normally the lamp will light. However when the generator voltage reaches 12.5 V, the cut-out relay will close creating a new charging current circuit in addition to the one through the lamp which is short-circuited by the new circuit. Therefore in this case, the lamp will not light.

C. HIGH BEAM PILOT LAMP

The blue lamp is connected to the headlamp high-low beam switch and is lighted when the beam is high.

D. FLASHER PILOT LAMP

The green lamp is connected to the flasher unit and indicates the flasher operation.

E. FUEL GAUGE

The fuel gauge contained in the combination meter is of the electromagnetic type. The general principles behind such meters are as follows.

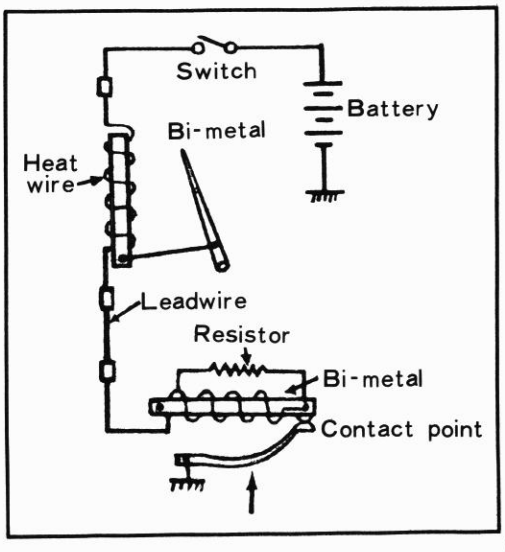
(a) OPERATION PRINCIPLE OF ELECTROMAGNETIC METERS

The ordinary pressure meter, fuel meter and water thermometer all utilize the special characteristic of the bi-metal and each of these meters can be understood with a single common explanation. Each meter is separated into the gauge and the unit connected by a single electric wiring.

When the switch is turned on, the current passes to the heat wire of the gauge, the heat wire and terminal of the unit and is then grounded. This current causes heat to appear in the heat wire which is transmitted to the bi-metal.

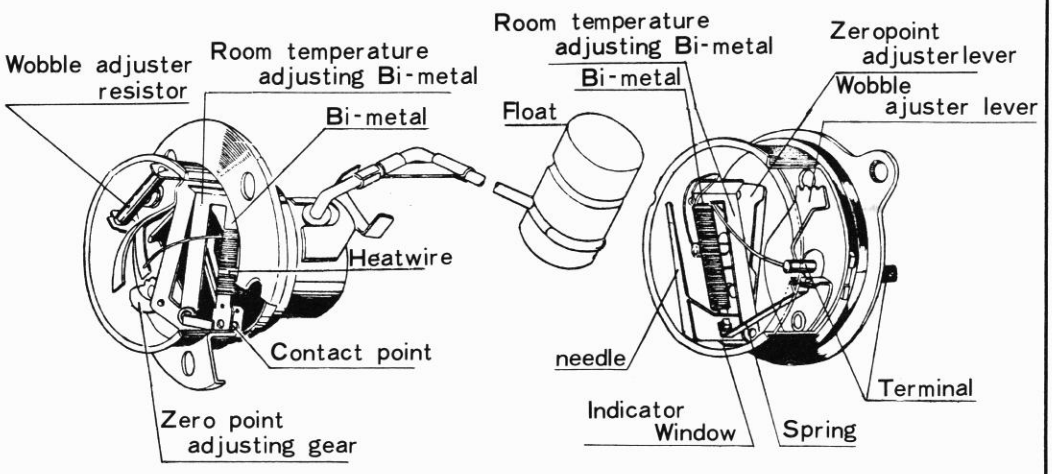
Bi-metal is made by bonding two different types of metal with different rates of expansion when heated. When such a bi-metal is heated, it will tend to bend from the side with the higher expansion rate to the lower side. This degree of curving will depend on the heat or current = (current ampere x flow time). As the current flowing through the gauge and unit parts are the same, the degree of curvature of the gauge bi-metal will correspond to that of the unit bi-metal.

The bi-metal of the gauge part is connected to the indicator and the unit part bi-metal is provided with points which controls the current flowing to the heat wire. If the points are contacting lightly when the key is switched on, the current will be small and the bi-metal will hardly curve. If the points are contacting strongly, the current will be large and the indicator will be greatly actuated. The time required to open these points is designed so that it changes with the amount of fuel, the water temperature and the oil pressure.



That is, the contact points operates in accordance with the amount of gasoline, the temperature of the cooling water and oil pressure and controls the current flow. This current causes the bi-metal to curve and make the individual indications.

(b) CONSTRUCTION OF THE FUEL GAUGE

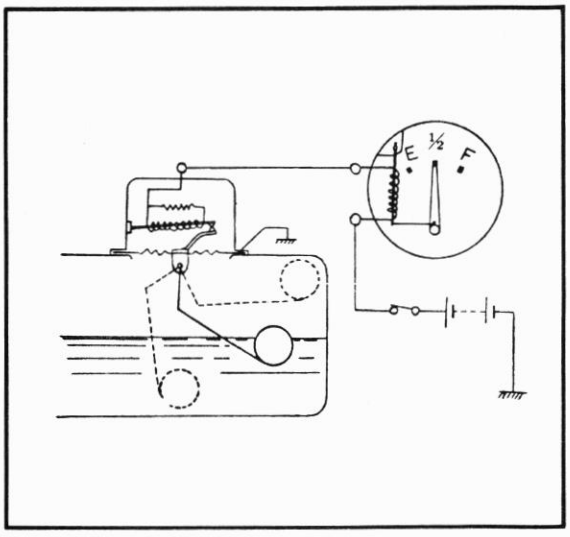


Construction of Unit Construction of Gauge

The fuel gauge consists of the gauge and unit parts. In the gauge side, there is a scale indicating E, 1/2 and F. E indicates Empty and F Full. The unit is provided with a float which moves in accordance with the fuel level.

(1) When the fuel level is low -

When the fuel level is low, the float will drop close to its lowest position and the points will be contacting very lightly. In this condition, the points will open at the slightest curving of the bi-metal, that is, the points will open with a very short flow of current. Therefore the bi-metal temperature in the gauge side will not rise either and the indicator will show close to E or empty. (When the float drops to its lowest position, the points will be slightly open.)



(2) When the fuel tank is half-full -

When the fuel tank is half-full with fuel, the float will be in an intermediate position with the points contacting stronger than at low position and weaker than when higher. The temperature required to open the points will therefore be higher that when nearly empty. The gauge bi-metal will rise to almost the same temperature and the indicator will point to "1/2".

(c) TROUBLES WITH THE FUEL GAUGES AND THEIR CAUSES

(1) When the indicator always points to Empty -

* The wiring between the ignition switch and gauge is cut.
* The points are burnt causing poor conductivity.
* The float does not float. (The float arm is caught.)

(2) The Indicator always points to Full -

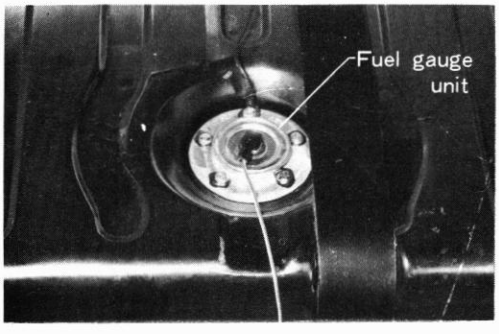
* The wiring between the gauge and unit is grounded.
* The heat wire is short-circuited or grounded.

(3) The indicator does not return to Empty when the key switch is turned off -

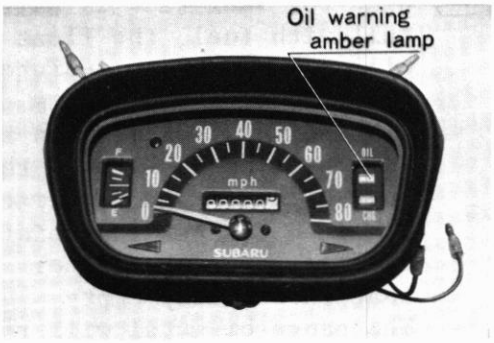
* The bi-metal has become deformed due to an excessively large current.

(4) Unstable indication -

* Trouble in the float shaft operation.
* Gasoline leakage at unit part.
* The heat wire is close to cutting.



F. OIL WARNING LAMP AND OIL LEVEL UNIT



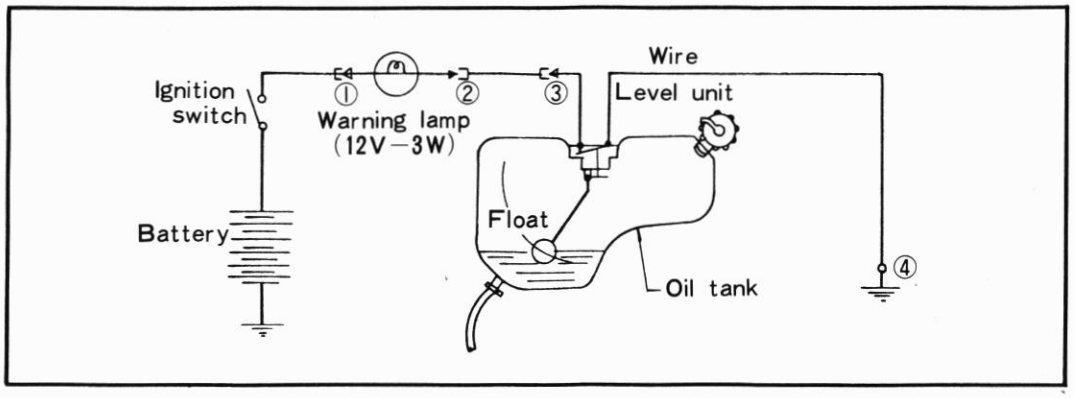
(a) The oil warning amber lamp is contained in the combination meter.

(b) The oil level unit is attached to the oil tank located in the engine room.

(c) OPERATION

(1) When the ignition switch is turned one step and there is sufficient oil in the tank, the oil warning lamp remains off.

(2) When the oil reduces to 0.5 liter (1.0 US.pt, 0.9 Imp.pt), the contact point will be contacted and the current will flow. The warning lamp light steadily.



[NOTE]

When driving, the oil reduces to 0.8 liter (1.7 US.pt, 1.4 Imp.pt), the warning lamp starts flashing.

(d) The oil tank capacity is 2.5 liter (2.6 US.qt, 2.2 Imp.qt) and the oil quantity is easily legible through the embossed scale on the wall of the oil tank.

[CAUTION]

When the amber warning lamp light steadily, supply recommended two-stroke engine oil immediately.

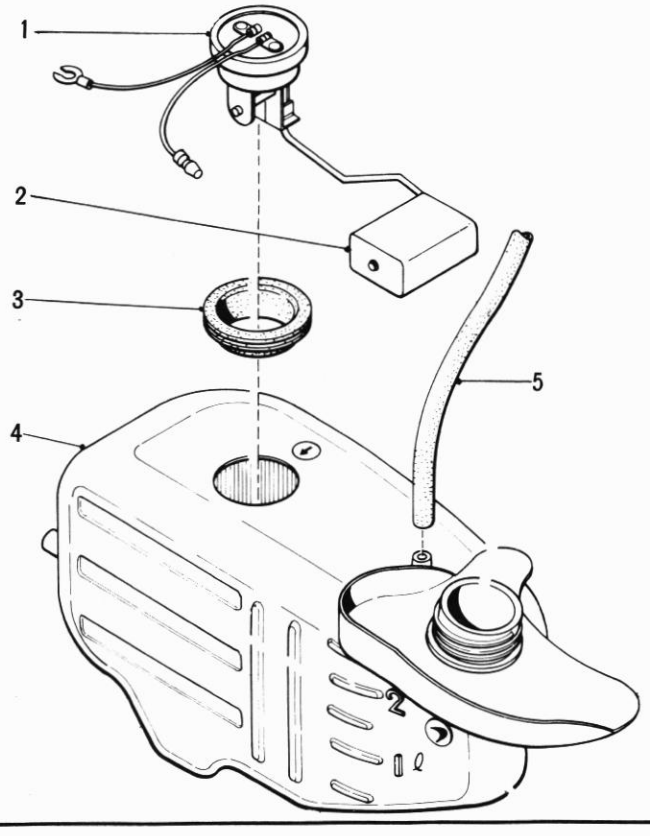
(e) TROUBLE SHOOTING

(1) When the oil is more than 0.8 liter (1.7 US.pt, 1.4 Imp.pt), but the warning lamp remains lit.

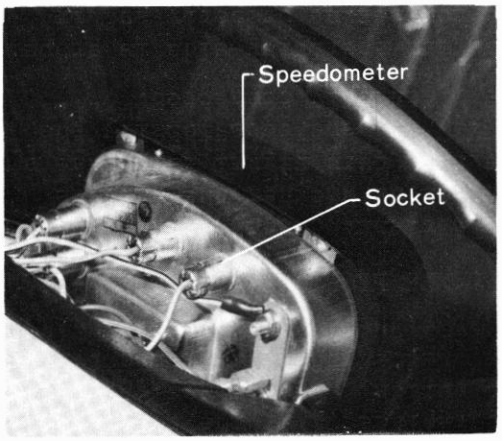
- o Short-circuited between (2) and (3) wires.
- o The float leakage.
- o Damaged oil level unit.

(2) When the oil is less than 0.5 liter (1.0 US.pt, 1.4 Imp.pt), but the warning lamp does not light.

- o Blown fuse.
- o Damaged oil level unit.
- o Blown lamp.
- o Disconnected the each points or the wires is cut.
- o The float is caught on the wall of the oil tank.
- o The grounded wiring defective contact.



(1) Oil Level Unit
(2) Float
(3) Packing
(4) Oil Tank
(5) Air Vent Pipe

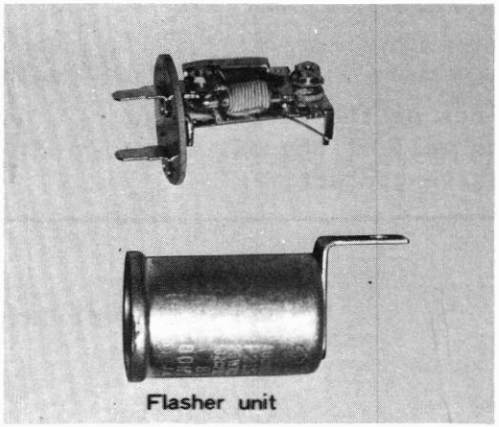


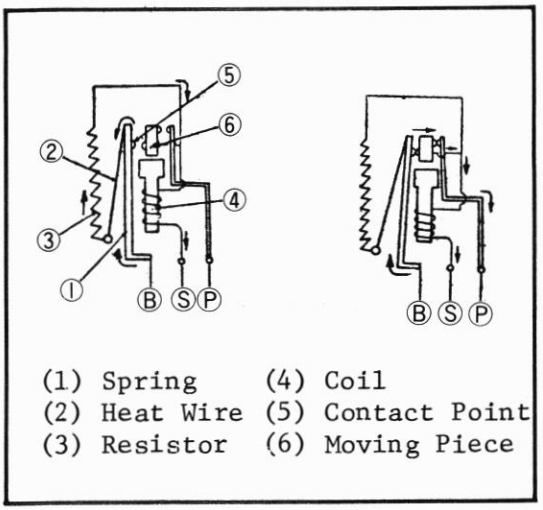
G. REMOVAL OF COMBINATION METER AND BULB REPLACEMENT

The Combination Meter is attached from the back side of the dashboard with two 6 mm bolts. When these two bolts are loosened, the meter with the visor will become free. When replacing bulbs, pull out the socket. Push down on the bulb and turn counter clockwise to remove.

9-11: FLASHER UNIT (HEAT WIRE TYPE)

A. CONSTRUCTION AND OPERATION


Flasher unit



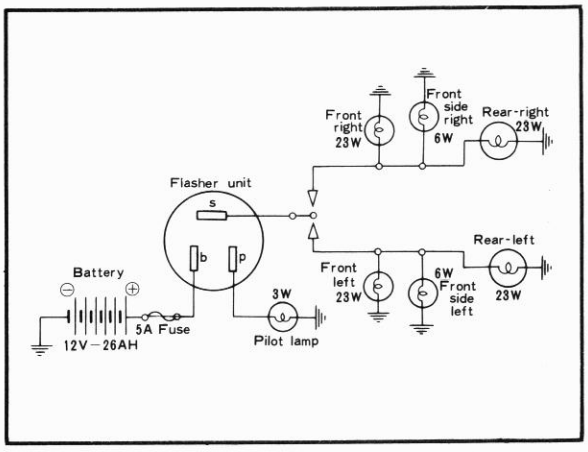
(1) Spring (4) Coil
(2) Heat Wire (5) Contact Point
(3) Resistor (6) Moving Piece

When the turn signal lever is pressed, the switch is closed and the current will flow in the arrow direction. That is, (B) terminal - spring - heat wire - resistor - coil (S) terminal. When the switch is closed, the heat wire is heated by the resistor and the current is consumed which means that the turn signal light will not light. The heat wire which has been heated will lengthen and through the action of the spring, the contact point will touch and the current will flow in the arrow direction. That is,

(B) Terminal - Spring - Point - Moving Piece < Spring-(P) Terminal / Coil -(S) Terminal

As the resistance disappears, a large current is transmitted which lights the turn signal bulb and the pilot lamp. As almost no current will pass through the heat wire, it will cool and shrink pulling the moving piece against the magnetic force of the coil causing the points to separate.
This is, in other words, the original position.

B. WIRING CIRCUIT



The foregoing explanation has clarified the construction and operation of the flasher unit.
The wiring diagram of the flasher system is given on the left. Us it as reference data for judging the following troubles and counter-measures.

C. TROUBLES AND COUNTER-MEASURES

(a) THE TURN SIGNAL LAMP REMAINS LIGHTED WITHOUT FLASHING

Replace the flasher unit.

(b) NEITHER THE LEFT NOR THE RIGHT PAIR OF TURN SIGNAL LAMPS WILL LIGHT

Disconnect the wirings from terminal (B) and (S) of the flasher unit. Connect these wirings directly with each other. Operate turn signal lever and if both sides light, the flasher unit is defective and should be replaced. If the turn signal lamps does not light, check the switch, the wirings, bulbs, the grounding wire, etc. Check whether the bulbs aren't smaller than the specified sizes.

(c) ONLY ONE SIDE SIDE TURN SIGNAL LAMPS LIGHT REMAINS DIMLY LIGHTED

In this case, flasher unit is all right. Check if the bulb on the non-operating side is broken or whether the wattage is smaller than specified. The rear turn signal lamp uses a bulb with a double filament of 23W/7W and occasionally the stop light circuit and cord are mistakenly connected.

Check further if the lamp on the non-operating side is properly grounded, if the wirings are contacting properly and if the contact points in the switch are all right.

(d) ONLY ONE OF THE TURN SIGNAL LAMPS WILL NOT LIGHT

There is nothing wrong with the flasher unit. Check if the non-operating lamp bulb is broken or if it is grounded properly.

(e) THE FLASHING FREQUENCY IS TOO FAST
(over 110 times a minute)

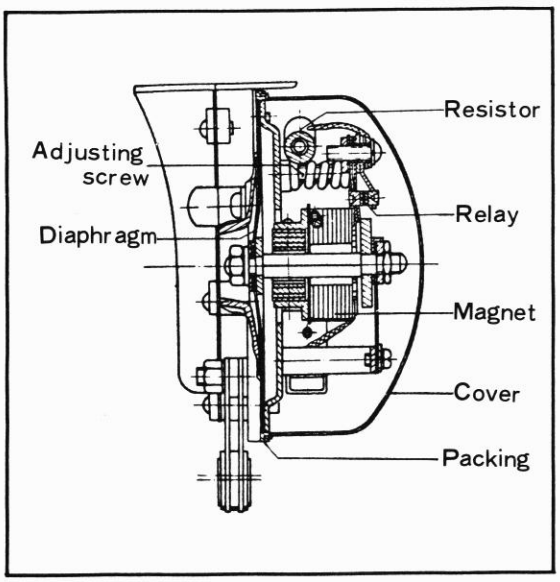
Check whether the front and rear bulbs are flashing in unison. check whether standard bulbs are being used.

(f) THE FLASHING FREQUENCY IS TOO SLOW
(under 50 times a minute)

Check all the lamp bulbs and see whether standard bulbs are being used. With the turn signal almps working, check whether the voltage is over 11V Disconnect the wiring from terminal (B) and connect a DC ammeter to the terminal and to the wiring. Operate the switch and see if a large current (over 5A) is flowing.

9-12: HORN

A. CONSTRUCTION AND OPERATION



The internal construction of the horn is as shown in the drawing at the left. Sound is generated through the excessive vibration of the diaphragm by the action of the internal magnet and relay.

Defects in volume and tone are caused by loose terminals, weak battery, poor contact of ring horn points due to accumulated dirt and poor insulation of horn and condensor.
Check these points.

When the horn does not sound, check the wiring inside the steering shaft leading to the horn button or the push button of the three way lever and the grounding wire at the steering shaft rubber coupling joint for breakage or the grounding wire of the three way lever switch on the steering shaft for wrong contacting.

If the contact points in the horn button are worn, replace as an assembly. The points are electrolytically polished and the use of files will shorten their service lives.

B. PRECAUTIONS ON USAGE

(a) When washing the vehicle, do not allow water or oil to contact the horn. If water enters inside the horn by mistake, remove the horn from the vehicle and rotate the horn to fling off the moisture.

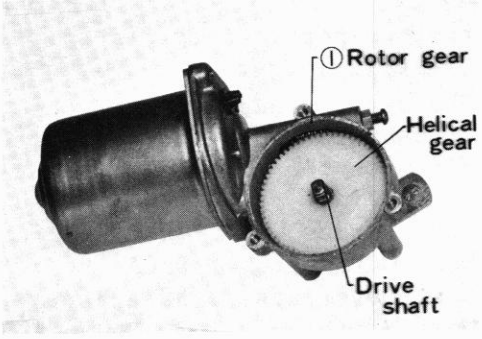
(b) If the horn does not sound correctly, check the battery, the horn button and the lead wires.

(c) There is an adjusting spring-loaded screw near the contact points. If the horn is defective, turn this screw to the left or right and find the best position.

(d) When attaching the cover, fit the waterproof rubber packing firmly inside the cover.

(e) The horn has been precision-adjusted and unnecassary disassembly should be avoided.

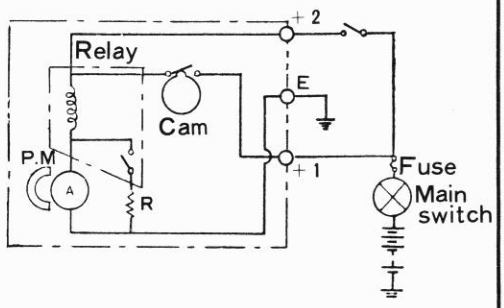
9-13: WINDSHIELD WIPER



A. Construction and Operation of the Double-Bladed Windshield Wiper

The rotation of the small DC electric motor ((1),rotor gear) is reduced through the helical gear (2). The reduced rotation from the motor is transformed into a push-pull movement by a link mechanism and a wiping angle of 113 degrees is obtained.

B. WIRING



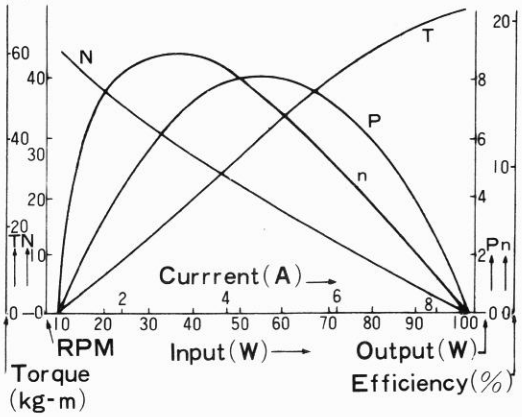
Double Wiper Motor
Wiring Diagram

Auto-Stop Mechanism

The auto-stop mechanism is composed of a commutator and a reply coil wound in series. When the motor is in operation, the relay armature is pulled back. This armature is in series with the commutator and the points are separated when the armature is pulled back. When it is returned, the points contact and will complete a circuit with the commutator terminal through small resistor (R). Consequently, when the windshield wiper switch is turned off, the current from +2 is cut off while the current from +1 will flow until the cam lever pushes up the contact point arm to cut the current.

When the current from +1 is cut off, the relay armature will return to complete the circuit between the commutator terminals to cause the blades to stop at the specified positions.

C. PERFORMANCE



The performance curve of the windshield wiper motor is given on the left.

Max. Torque ..... 70 kg-cm
Max. Current 9.0A
Max. Movements .. 50 ± 5/min
Max. Efficiency . 20 Percent
Wiping Angle .... 110° ± 5°

D. REMOVAL OF WINDSHIELD WIPER ASSEMBLY

(a) REMOVAL

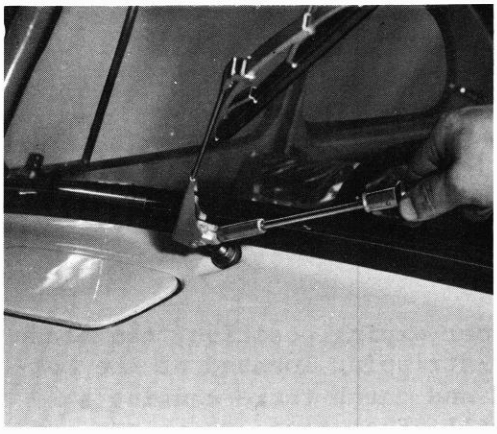
(1) Disconnect the battery cable grounding wire.

(2) Loosen the blade arm fixing bolt and remove the blade arm.

(3) Pull out the wiper arm shaft rubber cap, loosen the shaft installation nut and remove the washer, rubber bushing, etc. in their installation order.

(4) Pull out the wiper from inside the cabin.

(5) When the wirings are disconnected, the wiper can be removed.



(b) REINSTALLATION

Reinstallation is performed by reversing the removing procedures. If the rubber cap for the end of the wiper arm shaft is defective, rain water will be directed inside the mechanism along the shaft and cause trouble. Replace such defective caps. Make sure that the waterproof rubber cap completely covers the moving tube and that the wiper arm is inserted completely in the shaft and fixed lightly in place with the bolt. After adjusting the blade to conform with the windshield curve by operating the wiper, fix tightly in place.

E. CHECK POINTS AND PRECAUTIONS ON USE

(a) High quality grease is sealed inside the gear box which will permit several years of use without lubrication. When the gear noise become excessive, disassemble and service it.

(b) If the wiping angle becomes too small, this is due to the loosening of the wiper arm installation bolt. Check the arm installation.

(c) BURNING UP OF THE WIPER MOTOR

Under normal conditions, the motor will not burn up even when subjected to long hours of continuous use. However if some undue load is brought to bear on the motor and the wiping frequency falls below 20 times a minute, or when the motor stops, the mechanism will become overheated causing the soldered connections to melt and the motor to burn up. The following are the major reasons which may cause the motor to stop.

(1) Use of a Non-Genuine Part

There are some blades on the market which has a tendency to adhere to the windshield glass surface. If such blades are used, the load on the blade will become excessive reaching almost ten times the normal load when the glass surface is dry. This will cause the motor to overheat and burn up. Always use genuine parts.

(2) Overloading when driving in snow

If the wiper is used when the glass surface is piled thick with snow, it will cause an abnormally large load to bear on the motor. Remove snow manually when it accumulates to such thickness.

(3) Poor wiping location

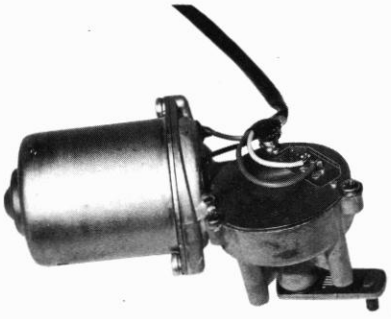
If the wiper is used in a poor wiping position, the blade will drop below the weather-stripping located at the bottom of the front windshield and catch there causing a shock to the motor. This will often cause the blade arm installation to become loose. Always rectify such discrepancies before use.

(d) INTERNAL DAMAGE

Adequate strength factors are incorporated in the inner mechanism but if the arm is moved from the outside, it will cause undue strain internally leading to trouble. Moving the blade arm from the outside may seem a light pressure, but when this is transmitted to the internal gearings, it becomes an excessive force.

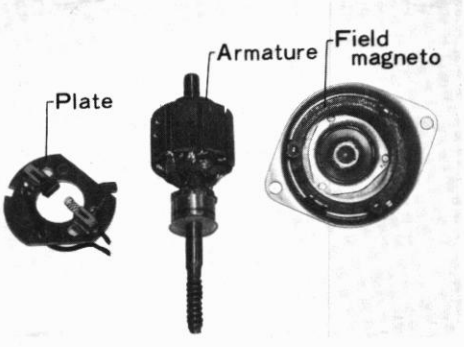
F. SERVICE POINTERS ON THE WINDSHIELD WIPER MOTOR

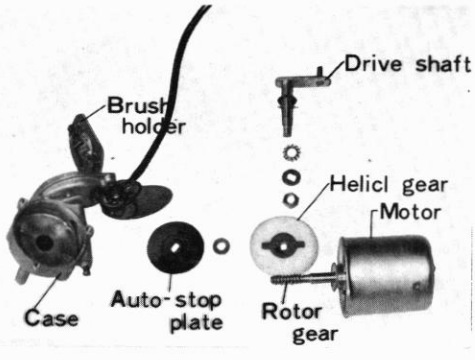
(a) INSIDE THE MOTOR



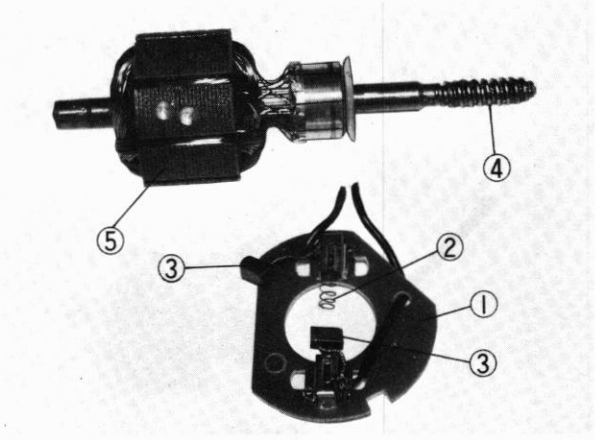
Wiper Motor

Auto Stop



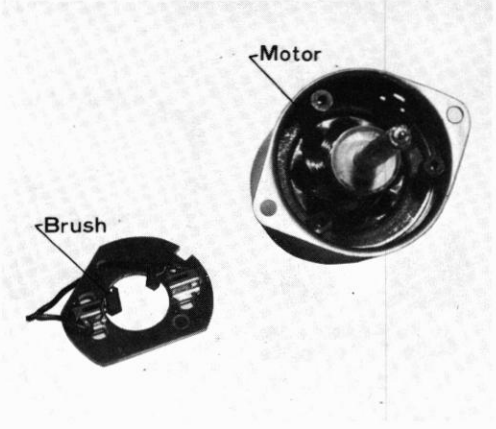


(b) TO REMOVE THE BRUSH HOLDER SPRING



(1) Plate
(2) Spring
(3) Bursh
(4) Rotor Gear
(5) Armature

Be careful not to lose the hook and not to stretch the spring excessively.



Remove the worn down brush and replace with a new brush.

CHAPTER 10: BODY CONSTRUCTION, COMPONENT PARTS AND REPAIR PROCEDURES

10-1 BODY SPECIFICATION 10- 1

10-2 OUTLINE OF BODY ASSEMBLY 10- 2

10-3 REPAIR PROCEDURES FOR BODY PARTS 10-11

10-4 BODY PARTS 10-15

10-5 FRONT AND REAR BUMPERS 10-25

CHAPTER 10: BODY CONSTRUCTION, COMPONENT PARTS AND REPAIR PROCEDURES

10-1: BODY SPECIFICATION

Body Overall Length	2996 mm (118.0 in)
Body Overall Width	1300 mm (51.2 in)
Body Overall Height	1350 mm (53.1 in)
Wheelbase	1800 mm (70.9 in)
Tread (Front)	1140 mm (44.9 in)
Tread (Rear)	1060 mm (41.7 in)
Minimum Ground Clearance (Under the differential)	170 mm (6.7 in)
Horizontal distance between centers of front and rear torsion bars	1792 mm (70.6 in)

General Description:

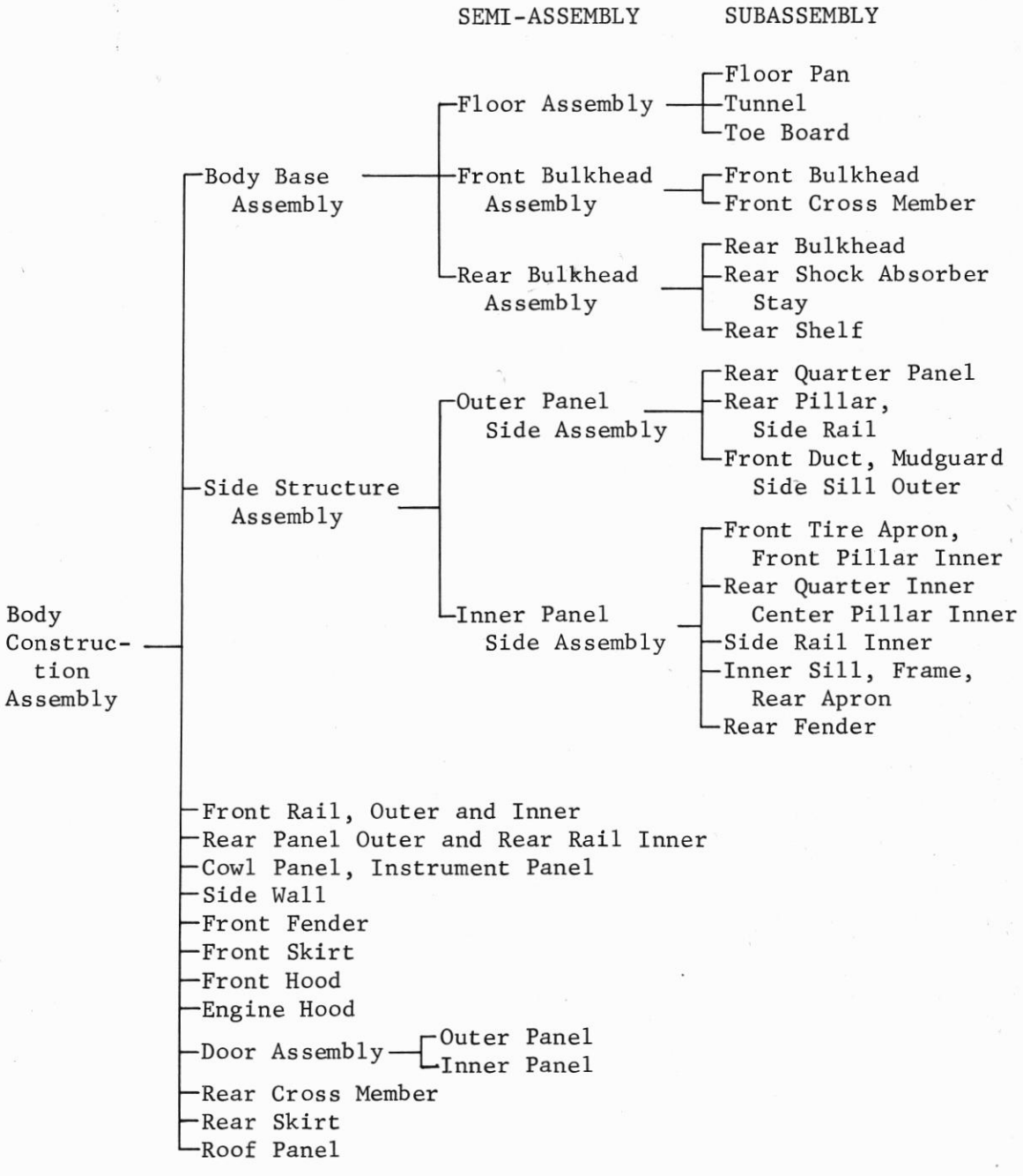
The vehicle is very sensitive to changes in weight affecting its performance. The body does not have what is normally called a frame being of what is generally called the monocoque type construction where the body itself incorporates the functions of the frame. This construction is also referred to as the platform type frameless construction.

The monocoque type construction has greater rigidity and strength when compared to the normal body-on-frame type, and therefore it is not necessary to use thick, heavy material making a very lightweight vehicle possible. If the body is light, the engine output requirement becomes smaller, resulting in lower fuel consumption and a light, economical vehicle.

The main components of the Subaru body are made of thin, pressed steel sheets. For those parts requiring extra strength and rigidity, pressed steel sheets of 1.2 mm to 2.3 mm thickness are spot-welded or gas-welded in place.

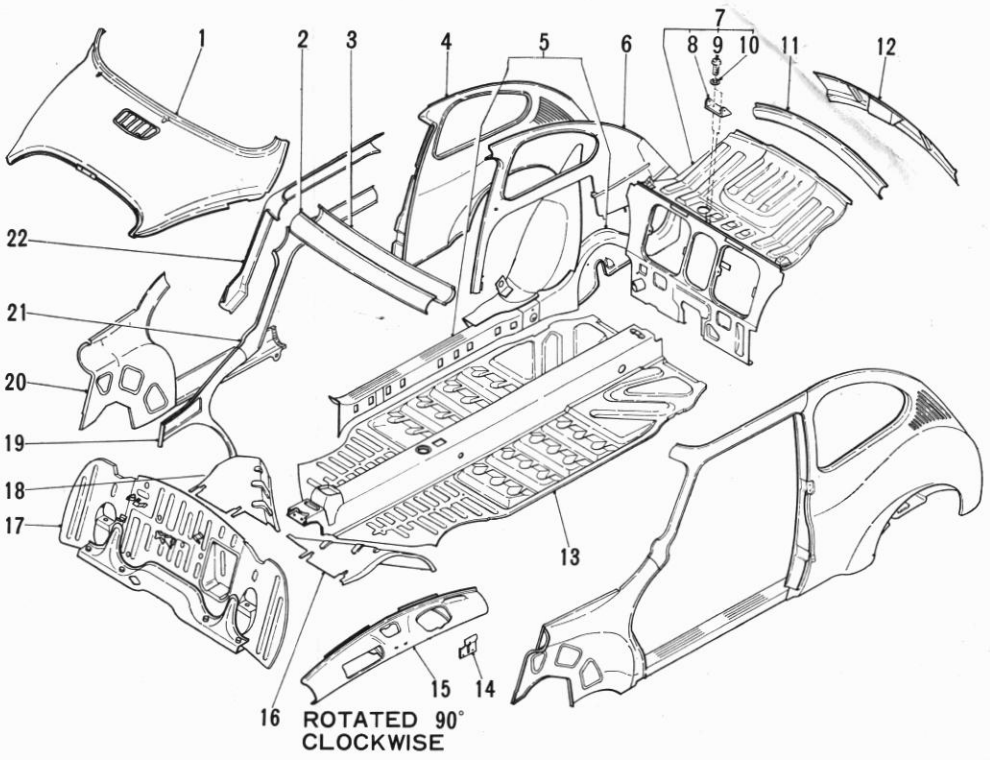
10-2: OUTLINE OF BODY ASSEMBLY

The major body components given on the next page are assembled in accordance with the order shown below.



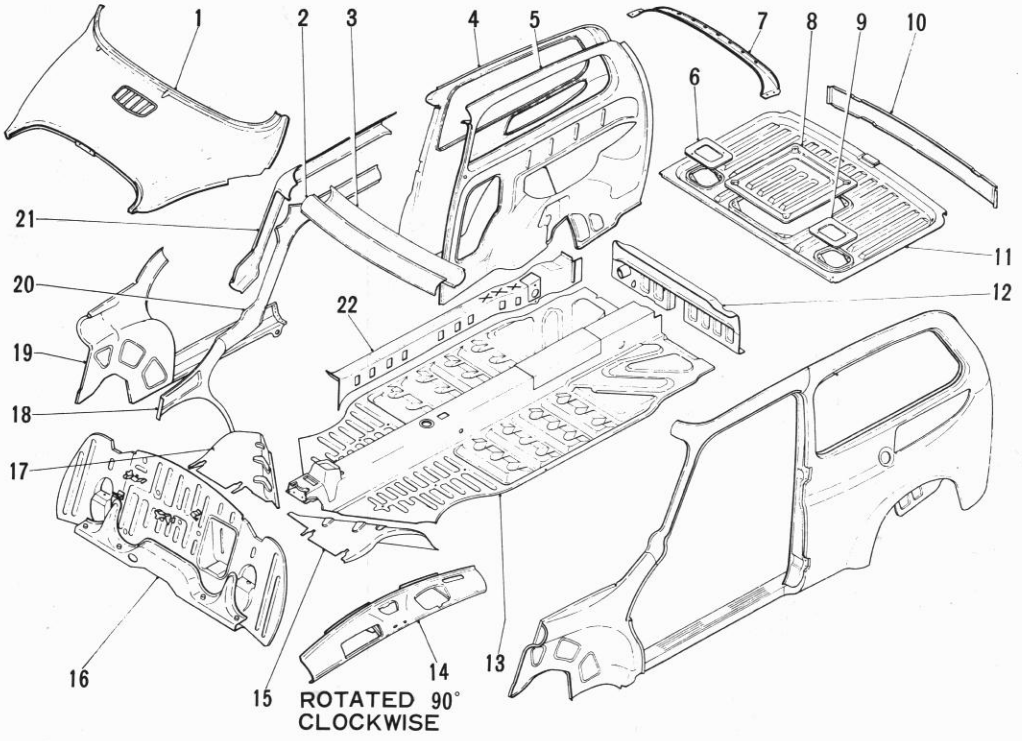
A. MAJOR STRUCTURAL COMPONENTS

[SEDAN]



(1) Cowl Panel
(2) Front Rail (Out)
(3) Front Rail (In)
(4) Rear Quarter Panel (Out)
(5) Rear Fender Apron Frame
(6) Rear Quarter Panel (In)
(7) Rear Bulkhead
(8) Bracket
(9) Screw
(10) Spring Washer
(11) Rear Rail
(12) Rear Panel
(13) Floor Tunnel
(14) Bracket
(15) Instrument Panel
(16) Toe Board (LH)
(17) Bulkhead Cross Member
(18) Toe Board (RH)
(19) Duct
(20) Tyer Apron Side Sill
(21) Front Pillar (In)
(22) Front Pillar (Out)

[CUSTOM]



(1) Cowl Panel
(2) Front Rail (Out)
(3) Front Rail (In)
(4) Rear Quarter Panel (Out)
(5) Rear Quarter Panel (In)
(6) Trap Door
(7) Rear Rail (In)
(8) Trap Door
(9) Trap Door
(10) Rear Skirt
(11) Rear Floor
(12) Rear Bulkhead
(13) Floor Tunnel
(14) Instrument Panel
(15) Toe Board
(16) Bulkhead Cross Member
(17) Toe Board
(18) Duct
(19) Tyre Apron Side Sill
(20) Front Pillar (In)
(21) Front Pillar Side Rail
(22) Side Sill Inner

B. BODY ASSEMBLY

The monocoque construction body is made up of approximately 700 parts which have been spot-welded and gas-welded together in jigs.

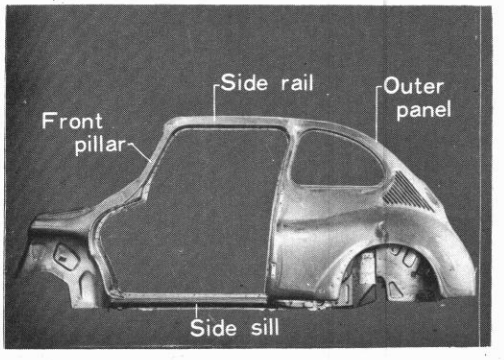
(a) PROCESS 1

(1) The tunnel and toe board is attached to the floor pan.

(2) The rear cushion rubber stop plate is fixed.

(3) The front and rear bulkheads are welded in place.

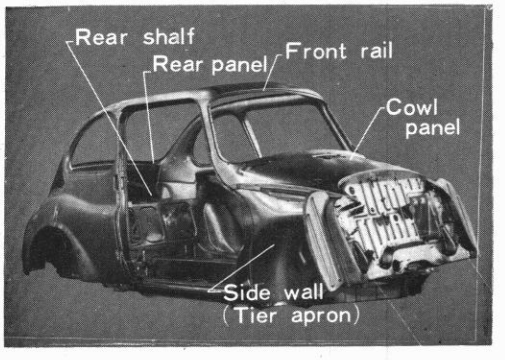
(4) The rear shock absorber stay and plate are bolted in place.



(b) PROCESS 2

(1) The inner panel assembly is installed in the outer panel assembly and spot-welded. A part of the side sill seam is gas-welded.

(2) The side rail seam in the outer panel is soldered.



(c) PROCESS 3

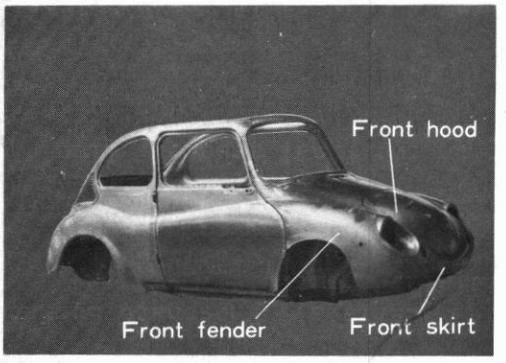
(1) The left and right side structure are assembled on the body base.

(2) The front rail and rear panel are fixed in place.

(3) The left and right side walls are fixed to the front bulkhead.

(4) The cowl panel and instrument panel installed.

(5) The rear shelf is placed on the rear bulkhead and attached to the rear panel.



(d) PROCESS 4

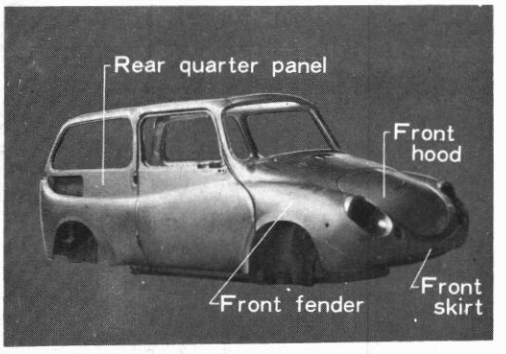
(1) The front fender and front skirt are bolted in place.

(2) The rear cross member are bolted in place and the skirt is fixed.

(3) The front hood is screwed in place.

(4) The door hinges are screwed on the center pillar.

(5) The soldered parts are smoothened out and the body sent to the paint ship.



C. PAINT SHOP

The assembled body is sent to the paint shop.

(a) PAINTING PROCESS

Prior to application of the primary coating, the body is chemically treated to prevent corrosion. A thick undercoating is applied under the floor. The body is subjected to two coatings of anti-corrosion paint.

All painting including the primary coatings are of the baking in type. The finishing paint of the newest synthetic resin type which provide lasting finish after baking. The finish will reatin its color and gloss for a long time without polishing.

For minor repairs, the use of natural drying high solid lacquer is adequate. However if the area to be apinted is rather large, the specified baking type should be used to obtain matching color.

If baking facilities are not available and natural drying paint must be used, the old top coating must be scraped off before painting.

(1) Rust Removing	(2) Degreasing	(3) Surface Treatment	(4) Drying
(5) Primer Surfacer	(6) Baking	(7) Undercoating	(8) Putty
(9) Drying			
(10) Water Polishing	(11) Drying	(12) First Finishing Coat	(13) Baking
(14) Polishing	(15) Second Finishing Coat	(16) Baking	

(b) PAINTING MATERIALS

(1) Primary Coating - Primer Surfacer

(2) Undercoating - Special Under-Seal, Chassis Black

(3) Putty - Special Baking Putty and Non-Soluble Putty

(4) Finishing Coat - No. 1F Baking Paint (No. 1 and No. 2)

(c) OTHER MATERIALS

(1) Special Leak-Proof Agents

(2) Waterproof Sandpaper, Masking Tape, Spatula

(3) Pre-Painting Surface Treating Materials - Phosphate Surface Film Treating Chemical, Degreasing Agent.

D. FINAL ASSEMBLY LINE

After painting, the body is sent to the final assembly line for the following processes.

(a) PROCESS 1

Cementing of soundproofing material - Rear shelf, rear bulkhead, side shelf.

Installation of trim board - Cowl panel.

Provisional wiring of room lamp cord and fuel level gauge cord.

Insertion of rubber plug in floor, installation of vinyl moulding (front rail, instrument panel)

(b) PROCESS 2

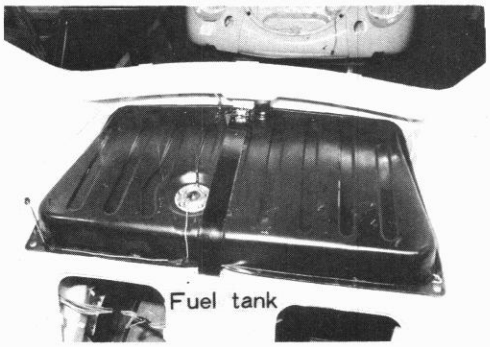
Bonding of weather-stripping - Door, side window, cowl ventilator.

Installation of leather trimming (front tire apron), trim board (rear quarter panel).

(c) PROCESS 3

Installation of front window, fuel tank (tank, packing, felt, band).

Installation of rear Subaru mark, top ornament, instrument panel mark, side ornament.



(d) PROCESS 4

Installation of heater duct (hose, joint, cover)

Bonding of instruction plates (tire pressures, running in)

Installation of cowl ventilator and reflector.

(e) PROCESS 5

Installation of roof panel (bracket, rear glass, rear rail) and side window.

Installation of turn signal lamps (front and rear) and windshield wiper.

(f) PROCESS 6

Installation of wiring harness (front, rear, center) and battery cable.

Installation of brake oil tank, front hood lock and front hood wire and hook.

Installation of cover (rear shelf, fuel tank), splash board (front).

(g) PROCESS 7

Installation of switches (ignition/starter switch, windshield wiper switch, light switch), speedometer, sun visor, fuse box, dust seal (steering shaft), etc.

Connection of speedometer wiring, turn signal lamp cord (front, rear), room lamp cord.

(h) PROCESS 8

Installation of grill, upper duct, brake pipe (rear), fuel strainer.

Installation of engine hood lock cable, hand brake lever, turn signal lever.

(i) PROCESS 9

Installation of pedal (brake, clutch), accelerator pedal, stop light switch, brake pipe (front, center), fuel strainer control cable.

Installation of center arm, torsion bar, axle, choke, heater cable, clutch cable.

(j) PROCESS 10

Installation of metal moulding (roof, front glass).

(k) PROCESS 11

Installation of gear change system.

Installation of brake pipe and front suspension.

(l) PROCESS 12

Connection of ignition coil wiring, voltage regulator wiring.

Installation of heater valve, battery cable wiring, rear suspension.

(m) PROCESS 13

Engine installation. Connection of rear axle. Installation of hand brake cover. Connection and adjustment of hand brake rod. Installation of case. Connection of gear change system and adjustment. Connection of heater valve hose. Filling of gear oil. Installation of room lamp. Tightening of center arm bolt. Connection of speedometer cable.

(n) PROCESS 14

Installation of front bumper, battery, rear back rest, trap doors and sun visors.

Connection of tail lamp, installation of luggage shelf, horn, flasher unit, connection of battery cable.

Installation of air duct, steering shaft, splash board and rear view mirrors.

(o) PROCESS 15

Installation of rear skirt, connection of accelerator and choke cables and bracket. Filling of brake oil and adjustment. Clutch adjustment, rear bumper installation, connection of generator wiring, connection of accelerator and choke cables to levers. Wiring of horn and indicator cords. Battery wiring, application of sealant, installation of head lamps and grounding band.

(p) PROCESS 16

Installation of rear seat, front seat, tires, doors, door lock, ash tray, air cleaner hose, and adjustment of engine hood lock.

(q) PROCESS 17

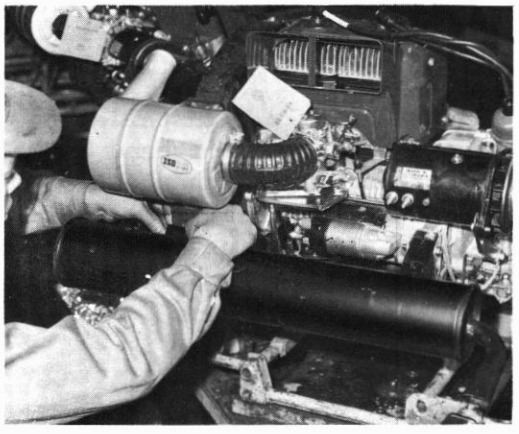
Grease-up. Installation of diagonal member. Installation of under cover and plate.

E. SUB-ASSEMBLY LINE TO FINAL ASSEMBLY LINE

(a) DOOR SUB-ASSEMBLY LINE

The door which had been removed in the Process 1 is taken by a conveyor system to the door subassembly line where are the various parts are installed to complete the door assembly.

These processes are bonding of weather stripping, installation of run channel, spacer and regulator. Installation of window glass channel, glass, door lock link system, lock bracket, ventilator glass, etc. Adjustment of regulator operation. Installation of sealing cover, rubber frame, frame cover, trim plate, and installation and adjustment of various types of handles. The completed door is carried by the conveyor system to the door installation process in the main assembly line.



(b) ENGINE SUB-ASSEMBLY LINE

The completed engine is sent to the sub-assembly line. The following parts are installed on the engine before installation on the body.

Air cleaner, rubber shock mounts (front and rear), clutch lever, protector spacer, spring (ignition wire), grounding band, cross member, muffler, etc.

When these parts have been installed, the engine is sent to the main assembly line and installed on the body.

(c) MECHANICAL SUB-ASSEMBLY LINE

Mainly, the suspension parts are assembled here for installation on the body. The main parts assembled and prepared here are as follows:

Front brake drum, knuckle, knuckle arm, trailing arm, rear brake drum, hub, front back plate, rear back plate, cable, steering gear box, gear change system, steering shaft, rubber coupling, wheels, etc.

The assembled parts are furthered assembled as the front suspension assembly and rear axle assembly prior to installation on the main assembly line.

10-3: REPAIR PROCEDURES FOR BODY PARTS

A. FRONT END

(a) FRONT FENDER

The front fender can be easily removed by first removing the front bumper, head lamps, turn signal lamps, etc. and then removing the bolts fixing it to the body. The fender after removal can be repaired and painted in the normal manner.

(b) FRONT SKIRT

The front skirt can similarly be removed by removing the installation bolts. It is repaired in the ordinary way. If it is severely damaged, replace it with a new part.

(c) FRONT BULKHEAD

Hammer out simple dents and gas weld little cracks.

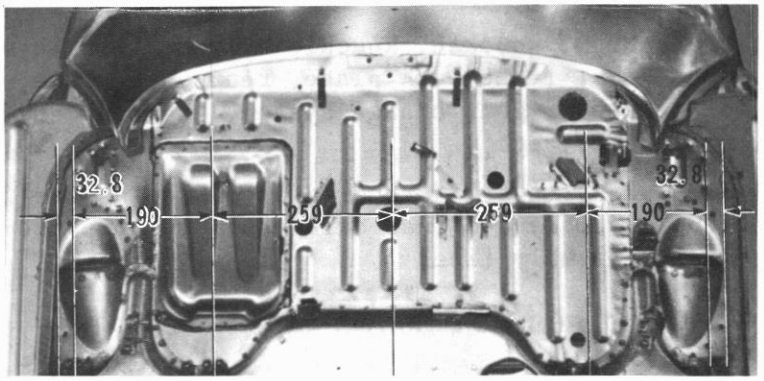
(d) FRONT CROSS MEMBER

If the front alignment becomes defective due to deformation of the front cross member, the front end is removed and the cross member corrected. If the cross member is deformed beyond repair, remove the cross member from the bulkhead by applying a 6 mm drill to the spot welded locations lightly. Correct the body and sleeve. Note carefully how it was installed before removal. Hold in place with clamps or squill vises and gas weld together by filling the holes. If the cross member is severely damaged, replace with a new part.

(e) PROCEDURE FOR DETERMINING FRONT SUSPENSION BRACKET POSITION

Insert two additional camber adjustment shims to the inner bracket. Leave the outer bracket in its normal state and tighten both brackets. Find the center line of the four trailing arm brackets and adjust so that they will be in their normal positions.

Remove the two added adjustment shims, check whether the center lines of the center arm brackets and the two inner brackets coincide, and install the cross member in place.



(f) The front hood is removed by taking off the screws on the hinge. Normal repair procedures are applicable. If it is severely damaged, replace it with a new part.

B. REPAIRING THE CENTER PART OF BODY

(a) DOORS

If the doors are severely damaged and are difficult to repair by beating back into shape, replace with new parts.

(b) CENTER PILLARS AND REAR QUARTER PANELS

To repair these parts, remove the trim-boards and apply a 6 mm drill to the spot weldings. Remove and repair. After repairing, locate the parts in their original positions by matching the spot weld holes and gas weld in place filling up the holes.

(c) SIDE SILLS

If the side sills are damaged, cut out the damaged portion, drill out the spot weldings, hammer it back into shape and reinstall in place with gas welding.

(d) REAR QUARTER PANELS

Small dents in the rear quarter panels may be repaired by filling in the dents with solder. If they are severely damaged, remove the trim-board and repair. When there are dents on the surface, smoothen out with solder. If the area to apply solder is quite large, use a torch lamp or a gas welder flame to melt the solder and spread out with a spatula. Before painting such surfaces, neutralize the hydrochloric acid used in soldering and pickle the surfaces.

C. REPAIRING THE REAR END

(a) REAR QUARTER PANELS

If the panels are difficult to repair, they should be replaced as a complete assembly including the center pillars. The inner side of the body where it is joined to the side rail outer is provided with a step. After replacing, fill in the dents with solder for a smooth and clean job.

(b) REAR SKIRT

The rear skirt is removed from the body by loosening the bolts. They are repaired through normal procedures. If severely damaged, they should be replaced.

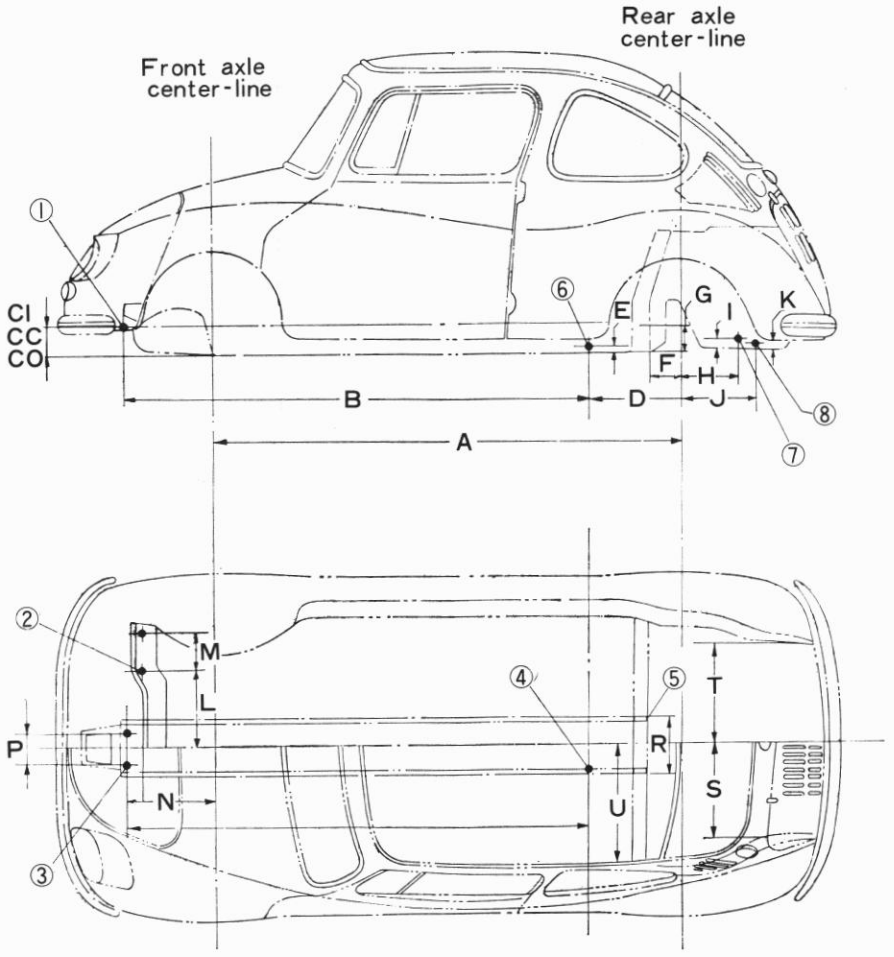
(c) REAR APRON

If the rear apron is deformed or damaged, hammer it back into the proper shape. Gas weld any cracks.

(d) ENGINE HOOD

Engine hood is repaired after removing the tail lamp, the hinge installation screws and the outlet duct. If the damage is severe, it should be exchanged for a new part.

D. BODY DIMENSIONS (SEDAN) FOR USE AS REPAIR STANDARDS



A = 1800	G = 62	N = 388
B = 1823	H = 203.6	P = 67
CI, CC = 101	I = 65.3	R = 144
CO = 98	J = 293.3	S = 377
D = 365	K = 57.8	T = 348
E = 35	L = 259	U = 479 (Rear housing spacer tip)
F = 132	M = 190	

CO, CI, CC = Plumb line ordinates of each outer, inner, and center bracket centers. (unit = mm)

(1) Front torsion bar center line

(2) Front cross-member sleeve hole center line

(3) Front center arm bracket installation hole

(4) Rear torsion bar tunnel through hole

(5) Rear shock absorber stay engine support installation hole

(6) Rear housing hole center line (coincides with hole 4)

(7) Left hand rear cross member installation hole

(8) Right hand rear cross member installation hole

10-4: BODY PARTS

A. WINDOW GLASS

(a) FRONT WINDSHIELD GLASS

To remove the front windshield glass, pull out the rubber wedge strip from the weather strip and separate the glass from the weather strip by inserting a screw driver in the weather strip groove from the outside gently.

When fitting the glass to the windshield, apply windshield on the outer flange part of the body and install the weather strip. Insert the glass into the groove at the bottom. Gradually install the rest of the glass by prying open the weather strip groove with a screw driver. When the glass if fully installed, apply adhesive into the weather strip groove by inserting the tip of the adhesive tube into the groove from the outside and passing it around the frame while injecting seal. Insert the rubber wedge strip into the weather strip. Use of the special tool will facilitate this operation.

(b) The weather strip or a screw driver are provided with endless weather strips which call for a slightly different installation procedure.

B. REPLACEMENT OF FRONT WINDOW METAL MOULDING

(a) REMOVAL

(1) Removal of the metal moulding

Remove the joints at four places with a screw driver. Be careful not to deform the moulding.

(2) Removal of the glass

Pry open the weather strip from inside the cabin starting at the top. When about two-thirds of the glass is freed, pull outward and the glass and weather strip will come out together.

(b) INSTALLATION

(1) Installation of glass

Install the weather stripping on the glass placing the joint on the bottom and insert the cord in the rubber groove. Apply soap water to the body side. Hold the windshield glass in proper position in the frame. Fit into place by pulling the cord inward at right angles while tapping lightly with a rubber mallet. Use a screw driver to cover the rubber properly over the flange on the body side. Starting at the bottom center, pull the cord one-third of the way up on the front pillars, and fit the rubber properly over the flanges. Then finish the rest of the insertion. When the glass is completely installed, tap the circumference with a rubber mallet to fit securely. Insert the rubber chips between the weather strip and body from the body center line and at position 545 mm. If there should be rain leakage, apply windshield adhesive.

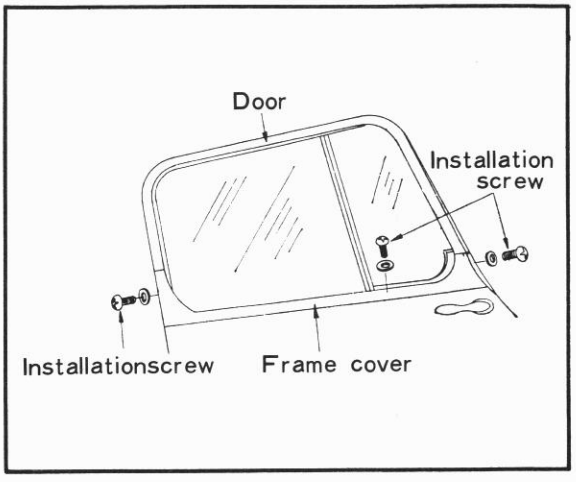
(2) Installation of metal moulding

In order facilitate insertion into the weather stripping, apply soap water on the cord. Place the metal moulding against the weather stripping and tap lightly in while pulling out the cord weather strip groove. After installing mould, insert the joint-covers into the connections with a screw driver.

C. DOOR

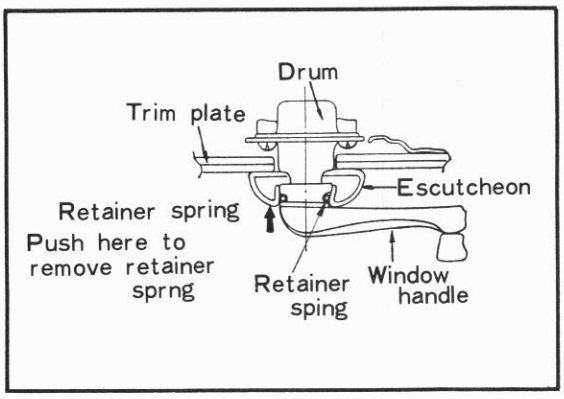
The roll-up and down type door glass was adopted from the later 1963 models (Chassis No. K111-52081). This type is more complicated than the previous sliding types. The regulator disassembly and reassembly is quite difficult. Keep the following points in mind.

(a) REMOVAL OF DOOR REGULATOR



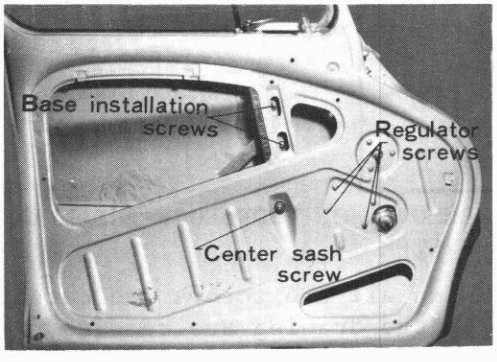
(1) Removal of frame cover

Remove the frame cover by removing the three installation screws.



(2) Removal of door lock handle and regulator handle

Remove the regulator handle and the door lock handle before removing the Door trim plate. Press the escutcheon and pull out the retainer spring. The serration fitted handle can then easily be removed.



If the door glass is not parallel with the door frame, insert washers into the asterick marked screws.

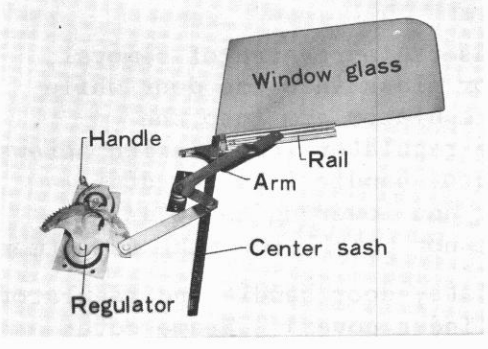
Furthermore, if the upper part of the sash and the glass are not parallel, adjust with the elongated hole at the asterisk mark upward of downward.

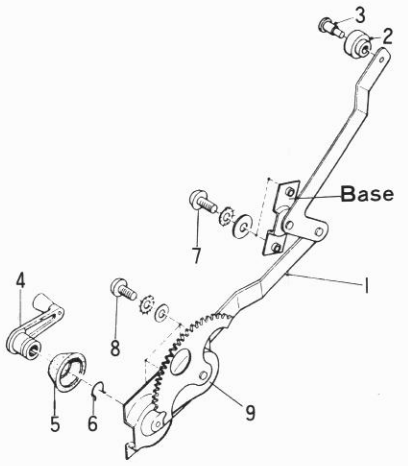
(3) Removal of the door inner trim plate and regulator base.

This is removed by removing all the installation screws. It is not necessary to remove all the vinyl film sealing cover. The bottom part can be left on the door.

(4) Removal of the center sash

When the center sash installation screw is removed and the three (above left) shown in the photo are removed, the center sash can be pulled out from the door.

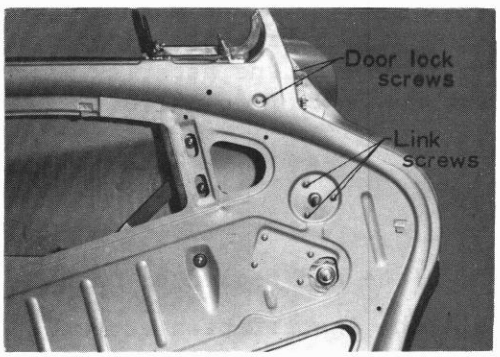




(1) Arm
(2) Roller
(3) Roller Shaft
(4) Handle
(5) Escutcheon
(6) Retainer Spring
(7) Screw
(8) Screw
(9) Regulator

(5) When removing the regulator from the door glass, remove the two installation screws on the base and lower the door glass down gently, so that the regulator assembly will become free from the door glass (when exchanging glass)

Remove the four installation screws on the regulator, then the regulator will be free.



(b) REMOVAL OF DOOR LOCK AND LINK SYSTEM

When all the screws indicated in the drawing are removed, the door lock and link system can be removed.

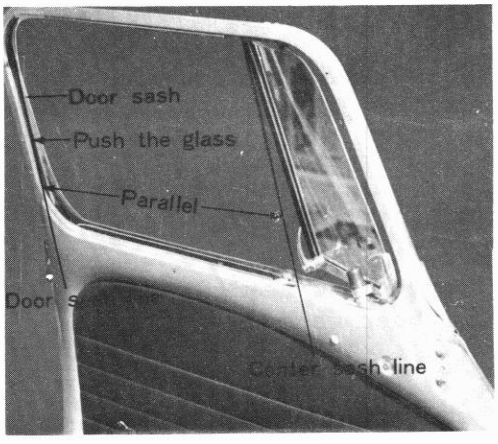
For work requring merely the removal and installation of these units, the work can be performed through the access windows. It will not be necessary to remove the regulator.

(c) INSTALLATION PROCEDURE INTO DOOR

(1) Regulator assembly installation - Center sash installation - Door glass installation.

When installing the glass, insert in reverse of removal, put the regulator and the door glass into the door while inserting the roller of the regulator arm into the glass rail. Install each the regulator installation screws in place. Install the regulator handle into the drum provisionally and try raising and lowering the glass. If the door and the glass are not paralleld, make adjustment.

Installation of inner trim plate, door handle and regulator handle (do not forget the cylinder cover) - Frame cover installation.

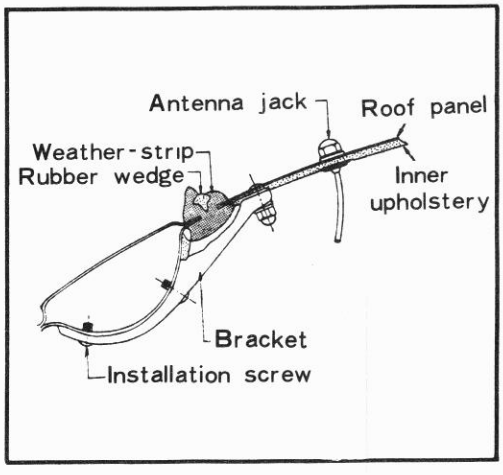


(2) Adjustment of the door glass.

Ordinary, keep parallel between the center sash and door sash.

When the door glass adjust lower the glass down middle, and push the side of the glass toward the door sash, Fix and tighten the screws on the center sash. Therefore, it can be make adjustment.

D. ROOF PANEL



(a) To remove the roof panel, take off the inner rail (roof panel) and the two screws on both the bracket and the front rail bracket. Pull off the weather strip and rubber wedge. Remove the rear window glass by raising the rail with the weather strip. Separate the roof and rail afterward.

When reinstalling, first apply bonding cement No. 506 to both sides of the flange and fit the weather strip with the rear part and working forward.

Attach the rail to the roof by applying cement to the grooves and pounding in. Take this roof and place it over the vehicle. Take a screw driver, and lifting the weather strip, fit into the weather strip groove while tapping the roof firmly in place with your hand. Insert the tip of the cement tube between the roof and weather strip, and apply cement. Install the rear window glass and the rubber wedge. Tighten the four screws on the rail and the front rail bracket.

E. INNER UPHOLSTERY

(a) CEILING

The ceiling is lined with plastic foam cemented in place. When inserting the rail, care must be taken to see that this foam is not peeled back.

(b) COWL PANEL

On the inner surface of the cowl panel with the exception of the ventilator, a trim plate (waterproof paper) is inserted.

(c) DOOR AND REAR QUARTER PANEL

The linings in these parts are inserted at the top and screwed in place on the bottom.

(d) The trim leather on the front tire apron and rear fender is installed with rubber plug through rubber washers.

(e) ENGINE ROOM

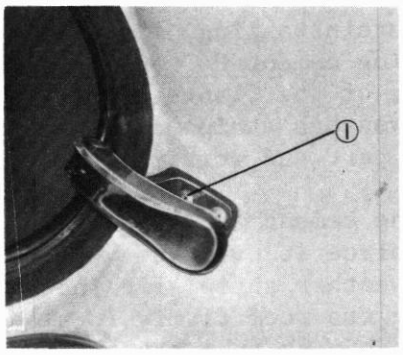
On the inner surfaces of the rear shelf, rear quarter panel inner, a plastic foam material is cemented in place with Cemedine No. 550. The rear bulkhead lining is installed with clips.

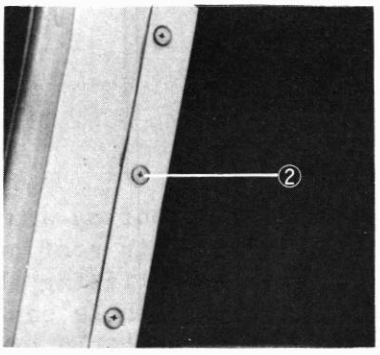
(f) DOOR WEATHER STRIP

Weather stripping is bonded in place on the door closing surfaces. When they become loose, clean off the cementing surface and apply cement on both sides. Install in place and clip in place for about 20 minutes.

F. REMOVAL AND REINSTALLATION OF SIDE WINDOW

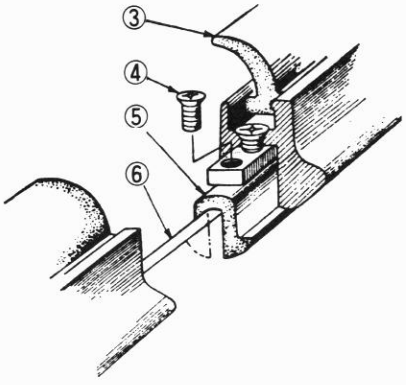
(a) The side window can be removed by removing two screws (1) holding the rear lock and the three screws (2) holding the hinge.





(1) Screw
(2) Screw

(b) To install, tighten the screws at (1) and (2) in place.



(3) Weather strip

(4) Weather strip

(5) Screw

(6) Glass

(c) To remove the side window glass, first remove the side window as explained above. Remove the weather strip (3) from the frame. Remove the four screws at the top and bottom joints. The frame will separate into two pieces freeing the glass.

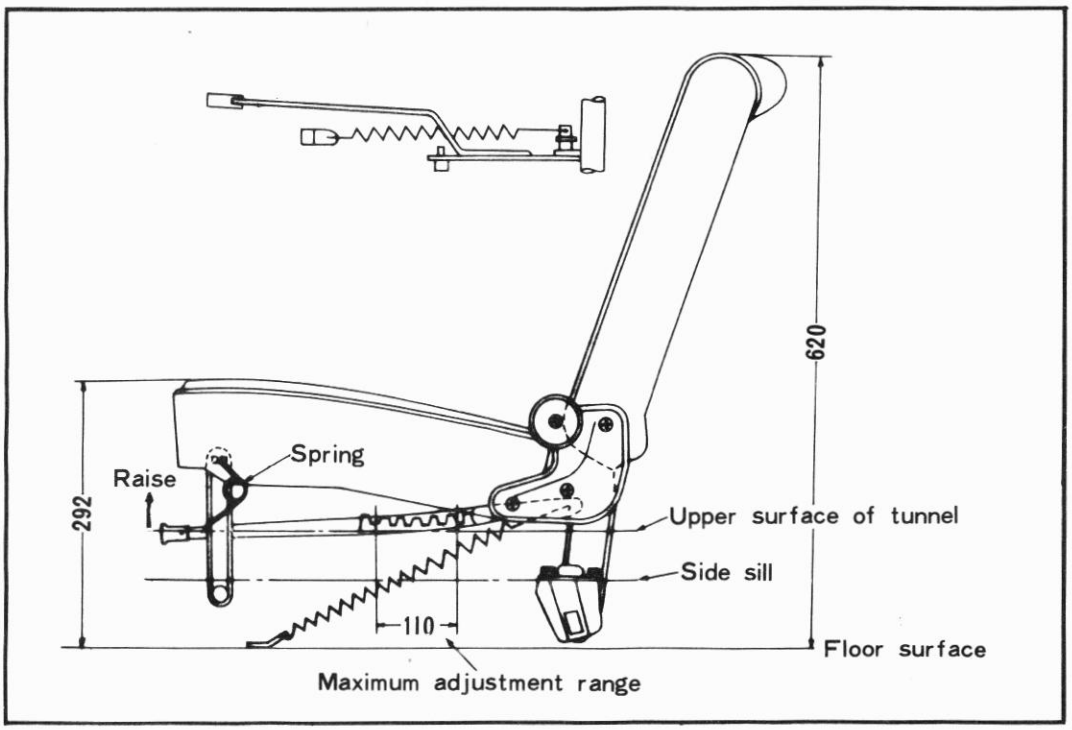
(The glass is encircled by the weather strip and placed in the frame groove.)

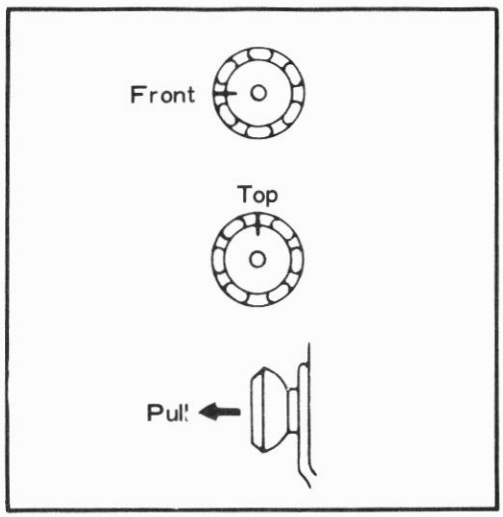
(d) Reinstallation is performed by reversing the above processes.

G. FRONT SEAT

The front seat is adjustable forward and backward while seated. The back rest is divided into the left and right sides and both sides are of the full reclining types. There are six horizontal adjusting position set 22 mm apart for a maximum adjusting range of 110 mm. Adjustment is performed by lifting up the lever located below the driver's seat and pressing against the spring force of the link backward.

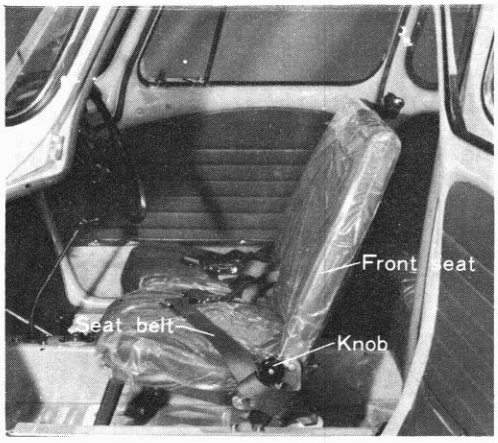
Installation of Adjustment Lever

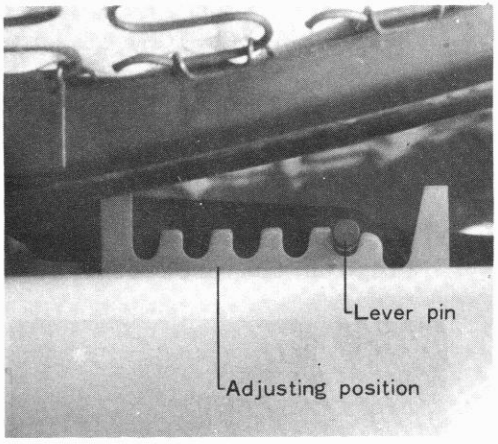




(a) KNOB

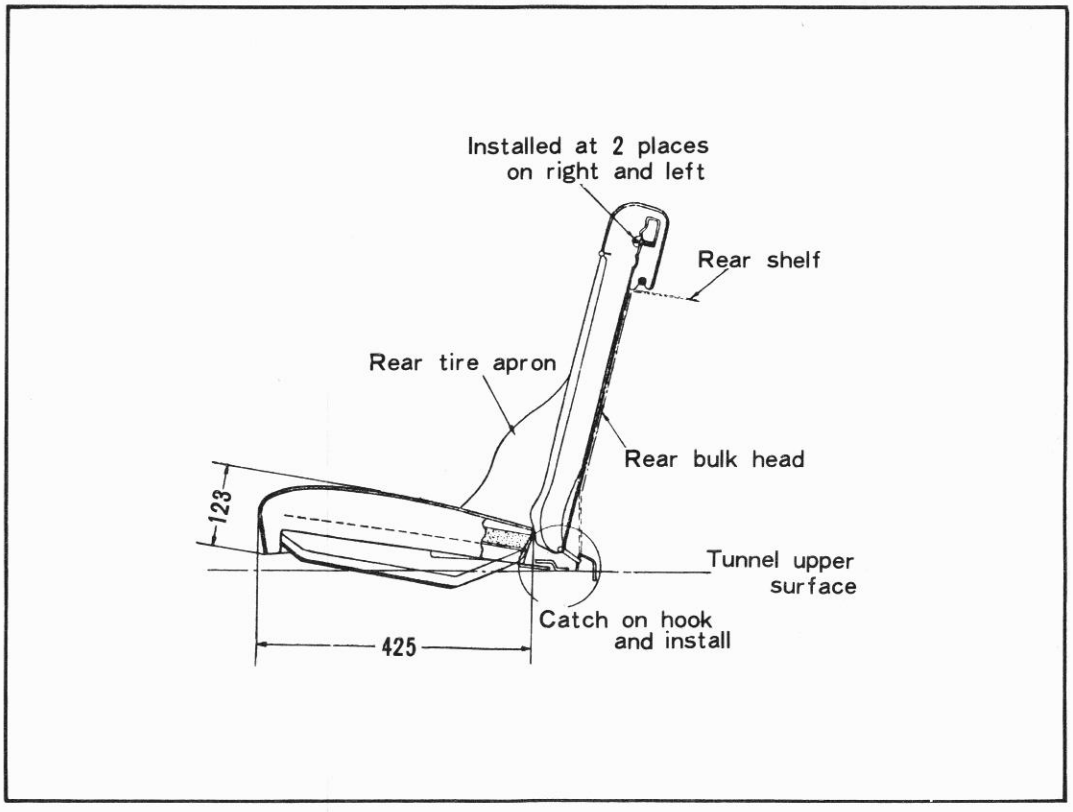
When the knob is turned with the mark forward, the back rest can be pushed forward. When the mark is brought to the top, the back rest will be locked in place upright. When the knob is pulled, the back rest can be moved both forward and backward.





H. REAR SEAT (SEDAN)

The rear seat is fitted with a high back rest fixed in place with no clearance between the rear shelf. The back rest is fixed with screws on both the left and right sides.

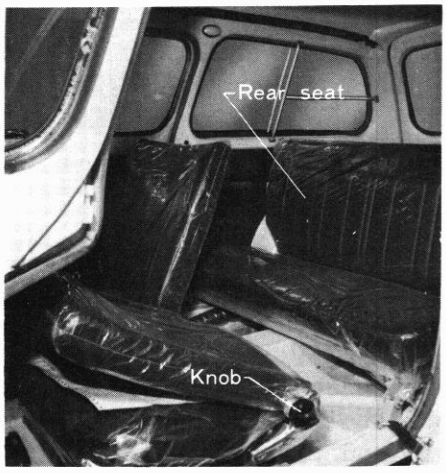


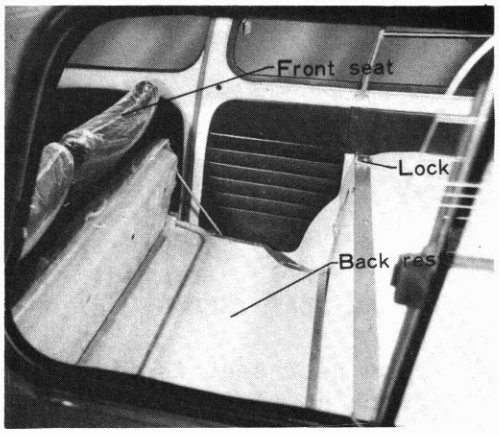
I. REAR SEAT (CUSTOM)

(a) REAR SEAT COLLAPSED TO FORM LOW LOADING BED

Tilt the seat forward against the back of the front seat by grasping the indented part in the center.

Raise the back rest to unlock and tip forward the front seat. Holding the protector rod, lower to the floor.

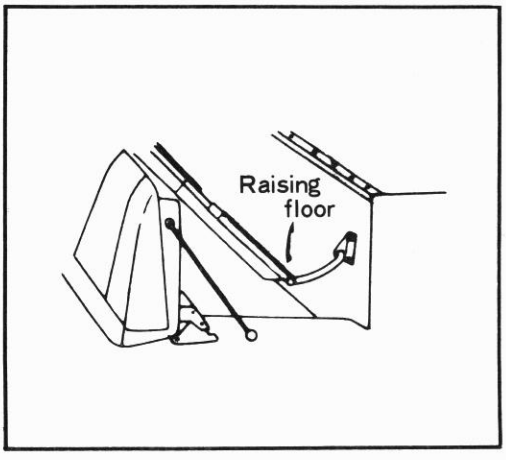


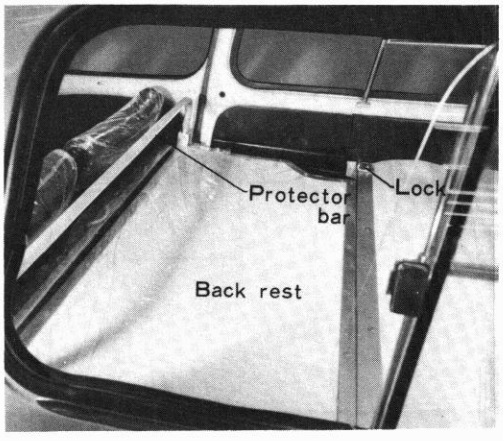


(b) WHEN USING WITH A HIGH LEVEL BED

Tilt the seat forward.

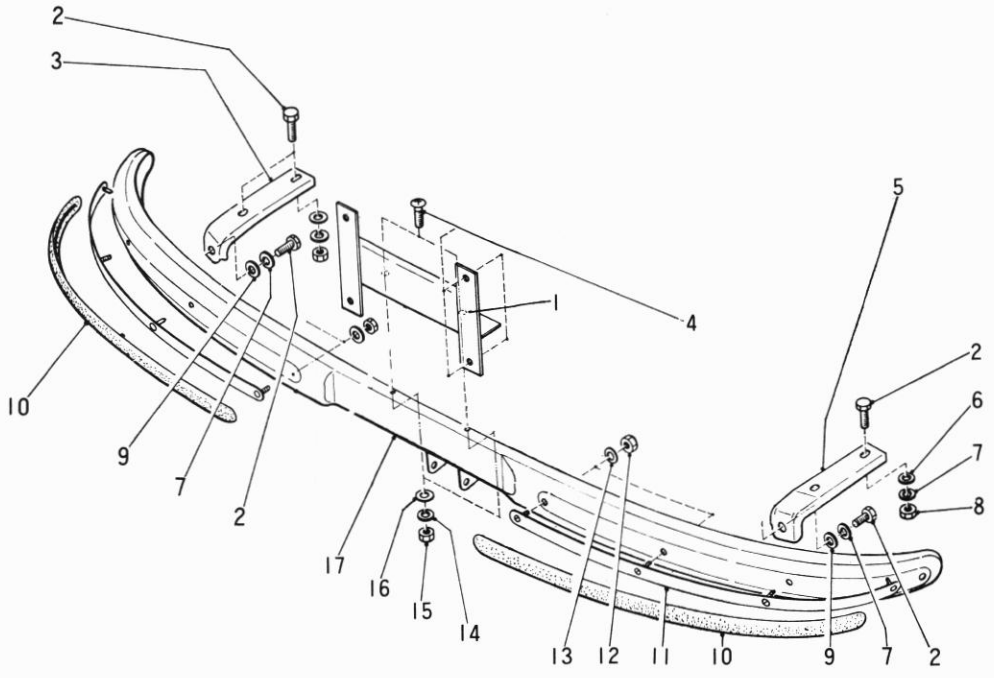
Raise the back rest to unlock and tip forward as if to place it on top of the tipped seat. The rear part will be raised to form a level bed. Raise the protector rod for carrying loads.





10-5: FRONT AND REAR BUMPERS

A. FRONT BUMPER



(1) License Plate Base
(2) 6 mm Bolt
(3) Bracket
(4) Screw
(5) Bracket
(6) Washer
(7) Spring Washer
(8) Nut
(9) Washer
(10) Ornament
(11) Holder
(12) Nut
(13) Washer
(14) Spring Washer
(15) Nut
(16) Washer
(17) Bumper (Front)

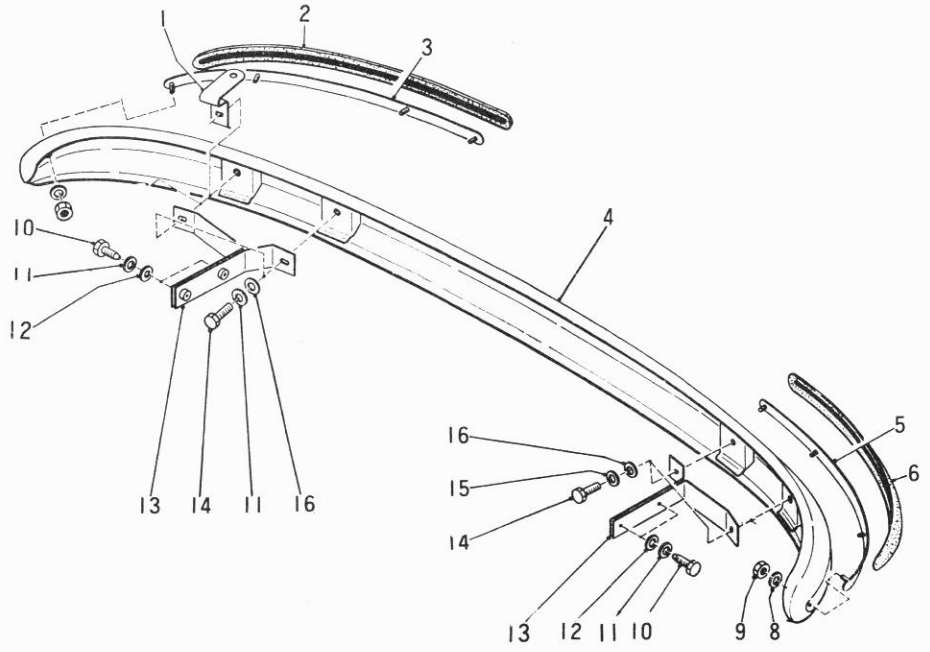
(a) REMOVING AND REINSTALLING

(1) Remove the four 6 mm bolts on the brackets and pull out the front bumper with the brackets and the license plate base.

(2) The license plate base is installed with the two 5 mm screws on the center of the bumper.

(3) Reinstallation is the reverse of removal manner.

B. REAR BUMPER



(1) Bracket
(2) Ornament
(3) Holder
(4) Bumper (Rear)
(5) Holder
(6) Ornament
(8) Washer
(9) Nut
(10) 6 mm Bolt
(11) Spring Washer
(12) Washer
(13) Stay
(14) Bolt
(15) Spring Washer
(16) Washer

(a) REMOVING AND REINSTALLING

(1) Remove the four 6 mm bolts on the both side stays and pull out the rear bumper with the stays from the body.

(2) Reinstallation is the reverse of removal manner.

[CAUTION]
When the bumper installe, keep the interstice equality between the body and bumper.

CHAPTER 11: EQUIPMENT

11-1 REMOVAL AND REINSTALLATION OF HEATER 11-1

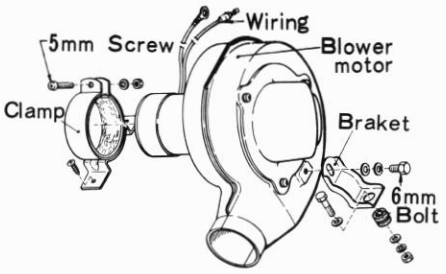
11-2 SAFETY BELT (OPTIONAL) 11-3

11-3 SUN VISOR 11-4

11-1: REMOVAL AND REINSTALLATION OF HEATER

1: HEATER BLOWER MOTOR

A. REMOVAL OF THE HEATER BLOWER MOTOR



(a) Remove the rear seat.

(b) Remove the cabin duct hose from the blower motor.

(c) Disconnect the motor cord from the wiring harness.

(d) Loosen the 5 mm screw on the clamp holding the blower motor and remove the installation bold on the blower motor with the spring washer, plain washer and the blower motor will become free.

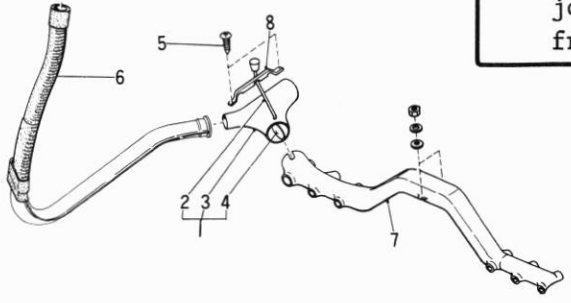
B. REINSTALLATION

(a) Insert the blowe motor into the clamp holding it, and fix the 5 mm screw on the clamp and 6 mm bolt on the bracket of the blower motor.

(b) Install the cabin duct hose of the both side and connect the blower motor cord to the wiring harness.

2: HEATER CHANGE LEVER AND JOINT

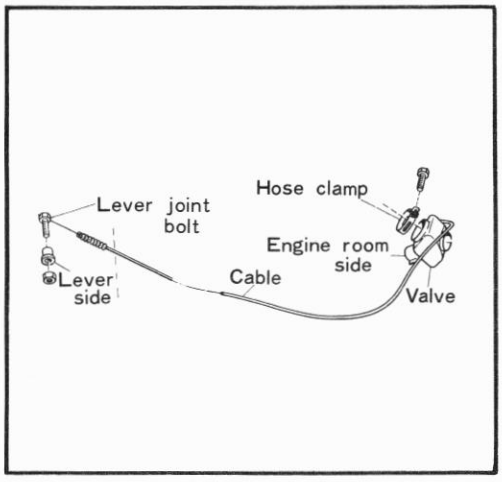
(1) Joint Assembly
(2) Lever
(3) Body
(4) Valve
(5) 4 mm Screw
(6) Defroster Hose
(7) Heater Out Let
(8) Stopper



(a) The change lever is equipped for controlling the air flow toward Room and Defroster, under the front seat.

(b) When removal of the heater change lever, remove the two 4 mm tapping screws on the stopper and pull out the joint assembly under the front seat.

3: HEATER LEVER, CONTROL CABLE AND HEATER VALVE

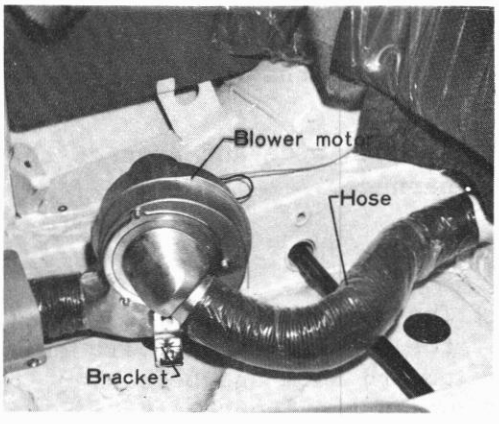


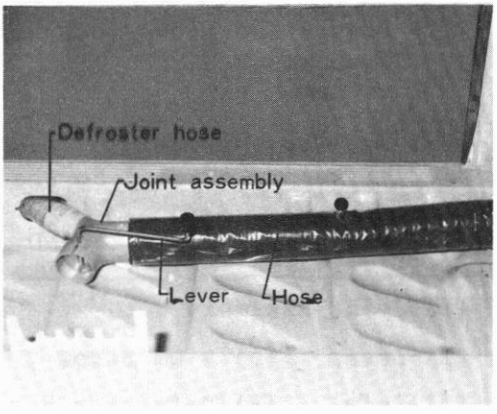
(a) The engine cooling air is used for room heater.
The heater lever marked "H" is located on the floor at the Front of the front seat.
When pulling the lever toward you, the heater begins to work.

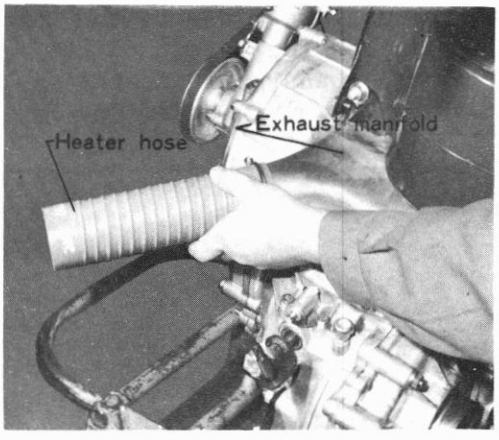
(b) The heater valve is located on the rear bulkhead of the engine room side.

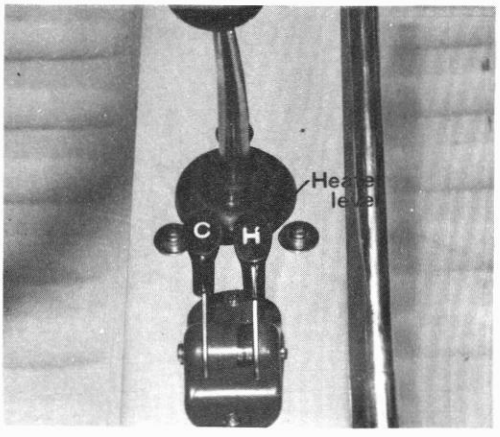
(c) The heater control cable connect between the heater valve and the heater lever, when removal of the heater control cable, loosen the bolts jointing the both side of the cable end and take out the cable.

4: INSTALLATION OF HEATER SYSTEM



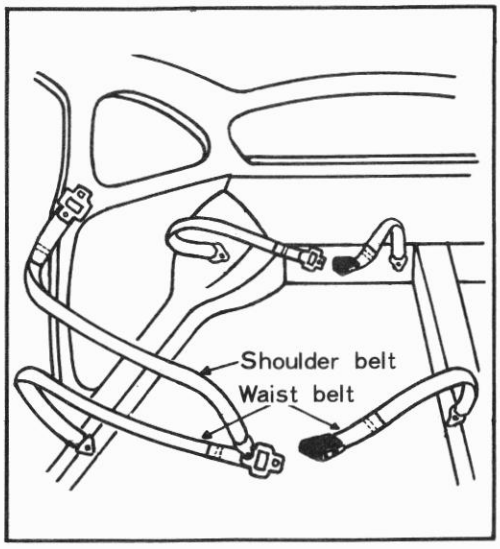






11-2: SAFETY BELT (OPTIONAL)

Subaru 360 sedan can be equipped with the lap type safety belt on the front seat and rear seat.

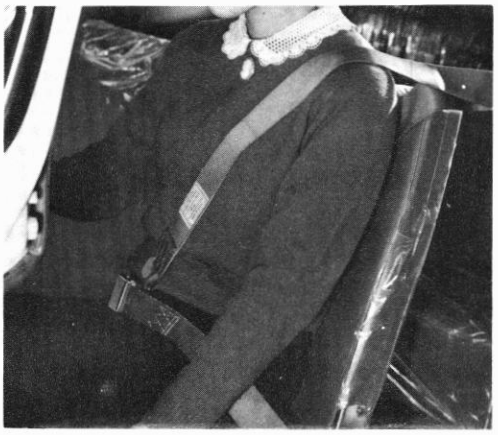


(a) FOR FRONT SENT

The front seat safety belt is installed the three-point on the body with the 12 mm bolts as shown in the picture.

(b) FOR REAT SEAT

The rear seat safety belt is installed the two-point on the body with 12 mm bolts as shown in the picture.

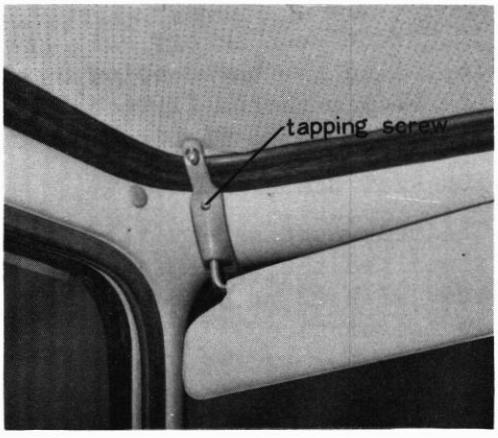


Front Seat Belt

Rear Seat Belt

The installation nut is already welded at the each points on the body.

11-3: SUN VISOR



Sun visors are provided on both sides of the rear-view mirror with the 4 mm tapping screws.

CHAPTER 12: STANDARD ADJUSTMENT TABLE

12-1 MAINTENANCE STANDARDS 12- 1

12-2 PERIODICAL INSPECTION CHART 12-10

12-3 TIGHTENING TORQUE TABLE 12-12

CHAPTER 12: STANDARD ADJUSTMENT TABLE

12-1: MAINTENANCE STANDARDS

(A) SUSPENSION

ITEM	ASSEMBLING STANDARDS	ADJUSTMENT LIMIT	USABLE LIMIT	MILEAGE FOR INSPECTION	REMARKS
1) Front:-					
Center Spring					
free length	113 mm (4.30in)				
compressed length	97.7mm (3.83in)				maximum load (764kg)
effective layers	4.2				
Torsion Bar					
effective length	435 mm (17.1in)				
diameter	18.0mm (0.71in)				
inner serration	0.75/0.375x27				
outer serration	0.75/0.375x30				
Oil Damper					
damping force	extension side 0.3m/s 146kg compression side 0.3m/s 55kg				
2) Rear:-					
Torsion Bar					
effective length	427 mm				
diameter; SEDAN	17.6mm				
CUSTOM	20.5mm				
inner serration	0.75/0.375x34				
outer serration	0.75/0.375x37				

Oil Damper damping force; SEDAN CUSTOM	 extension side 0.3m/s 60kg compression side 0 extension side 0.3m/s 60±8kg compression side 0				
3) Tire:- Rim Size Tire Size:- SEDAN CUSTOM Valve Tire Pressure front; SEDAN CUSTOM rear; SEDAN CUSTOM spare; SEDAN CUSTOM Tire Width; SEDAN CUSTOM	 3.00D x 10 4.80-10-2ply 4.50-10-4ply TR244 0.85-0.99kg/cm^2 0.90-1.00kg/cm^2 1.70-1.85kg/cm^2 1.90-2.00kg/cm^2 1.85 kg/cm^2 2.00 kg/cm^2 121mm (at 1.7kg/cm^2 internal pressure) 122mm (24 2.4kg/cm^2 internal pressure)				

(B) AXLE

ITEM	ASSEMBLING STANDARDS	ADJUSTMENT LIMIT	USABLE LIMIT	MILEAGE FOR INSPECTION	REMARKS
1) Front Axle					
Alignment					
toe-in	12-16 mm		Check and adjust every 12,000km.		When checking these items, adjust the tire pressure to the standard value and keep the ground height of the center of the torsion bar as follows: FRONT: 320±5 mm REAR: 245±5 mm
camber angle	1°30'-2°				
Knuckle Kingpin & Related Parts					
kingpin outside diameter	14 mm				
clearance between kingpin and bushing		0.1-0.15mm			
play of kingpin in the direction of shaft	Assemble so that kingpin turns freely without play				Adjustment shims are furnished in five thickness: 0.1, 0.2, 0.25, 0.35 & 0.4mm
Brake System drum bearing; inside (#30204) outside (#30203)			Lubricate every 12,000km. Always sufficient amount of grease 18-20gr. Be especially careful not to supply grease excessively to the left side. When inspecting at first 1,000km, check for wear of bearing. Excessive wear of bearing creates play in direction of shaft.		

tightening of drum bearing	Loosen nut by 1/6-1/8 turn from position where it is fully tightend, and bend edge of washer. The starting torque after tightening in this case is 7-10 cm-kg most appropriately.				
2) Rear Axle Tightening amount of spline of drum and rear axle	-0.003-0.020mm				
Hub Bearing inside (#6206) outside (#6205)			Disassemble and lubricate every 12,000km.		Always keep sufficient amount of grease 35-40gr

(C) BRAKE SYSTEM

ITEM	ASSEMBLING STANDARDS	ADJUSTMENT LINIT	USABLE LIMIT	MILEAGE FOR INSPECTION	REMARKS
1) Master Cylinder Inside diameter	19.05mm				
Clearance between master cylinder and piston	0.019-0.086mm				
2) Wheel Cylinder Inside diameter					
front	20.64mm				
rear	17.46mm				
3) Brake Drum Inside diameter	170 mm		170.5mm		
Eccentricity	Less than 0.05mm				

4) Brake Lining Thickness Width Length front rear	 5.0mm 30.0mm 156.0mm 180.0mm				
5) Brake Fluid Quantity	 0.45 (L)				Supply brake fluid until level reaches indication line on tank.
6) Brake Pedal Play of Brake Pedal Clearance between Bushing and Shaft	 20-25mm 0.020-0.083mm	 40-50mm			
7) Tightening Torque of Union Bolt (Brake Rubber Hose)	1.2-1.8 kg-m				
8) Hand Brake Pulling range Cable diameter Cable length right left	 3-4 notches 2.5 ϕ 971mm 925mm				

(D) STEERING SYSTEM					
ITEM	ASSEMBLING STANDARDS	ADJUSTMENT LIMIT	USABLE LIMIT	MILEAGE FOR INSPECTION	REMARKS
1) Play of Steering Wheel	Less than 20mm On the periphery				
2) Steering Angle Inner	36°				
Outer	27°				
3) Turning Radius (Minimum)	4m				
4) Turning Torque of Steering Shaft	Less than 11 kg-cm				
5) Gap in Horn Contact Point	1.1m				
6) Clearance between Rack and Bushing	0.061-0.073mm	0.20mm	0.35mm		Adjust the backlash to 0mm.
7) Clearance between Pinion and Bushing	0.055-0.097mm		0.35mm		
8) Clearance between Rack Socket and Bushing	0.1-0.252mm		0.35mm		
9) Gap of Pinion Shaft in direction of shaft	0.1-0.2mm		0.4mm		

(E) BODY

ITEM	ASSEMBLING STANDARDS	ADJUSTMENT LIMIT	USABLE LIMIT	MILEAGE FOR INSPECTION	REMARKS
1) Overall Length	2995mm				
2) Overall Width	1300mm				
3) Overall Height					
SEDAN	1350mm				
CUSTOM	1390mm				
4) Wheelbase	1800mm				
5) Tred					
Front	1140mm				
Rear	1070mm				
6) Ground Clearance	160mm				
7) Distance between Front Torsion Bar Center and Rear Torsion Bar Center	1792mm				

(F) ENGINE CONTROL SYSTEM

ITEM	ASSEMBLING STANDARDS	ADJUSTMENT LIMIT	USABLE LIMIT	MILEAGE FOR INSPECTION	REMARKS
1) Fuel Strainer					
Capacity	300-350cc/min in 200mm water column				
Filter Mesh	150				

(G) SHOCK ABSORBER

ITEM	ASSEMBLING STANDARDS	ADJUSTMENT LIMIT	USABLE LIMIT	MILEAGE FOR INSPECTION	REMARKS
1) Front					
Maximum Length	267±3mm				
Minimum Length	228±3mm				
Stroke	39mm				
Damping Force	extension side 0.3m/s 146kg compression side 0.3m/s 58kg				
2) Rear					
Maximum Length					
SEDAN	355±2mm				
CUSTOM	343mm				
Minimum Length					
SEDAN	270±3mm				
CUSTOM	263mm				

Stroke SEDAN CUSTOM	 85mm 80mm				
Damping Force SEDAN CUSTOM	extension side 0.3m/s 60kg compression side 0 extension side 0.3m/s 60+9kg compression side 0				

12-2: PERIODICAL INSPECTION CHART

AFTER 40000 km 24000 miles, repeat the process for every 5000 km (3000 miles) as shown in the chart.

	INSPECTION ITEM	First 1000 km (600 miles)	First 3000 km (1800 miles)	Every 5000 km (3000 miles)	Every 10000 km (6000 miles)
1	QUANTITY & SPECIFIC GRAVITY OF BATTERY ELECTROLYTE: inspection BATTERY TERMINAL: cleaning	O	O	O	
2	BRAKE FLUID: inspection and supplement	O	O	O	
3	PLAY OF BRAKE PEDAL: inspection and adjustment	O	O	O	
4	HAND BRAKE: inspection and adjustment	O	O	O	
5	OPERATION OF CLUTCH, ACCELERATOR & CHOKE: inspection	O	O	O	
6	OIL PUMP: inspection	O	O	O	
7	V BELT: inspection & adjustment	O		O	
8	DISTRIBUTOR CAP, ROTOR HEAD & POINTS: inspection	O		O	
9	SPARK PLUG: inspection, cleaning & adjustment		O	O	
10	SPARK PLUG: replacement				O
11	AIR CLEANER ELEMENT: replacement	every 18000 miles			
12	FUEL STRAINER: inspection & cleaning		O	O	
13	ENGINE IDLING: inspection & adjustment	O		O	
14	IGNITION TIMMING: inspection & adjustment	O		O	
15	BOLTS & NUTS FOR INTAKE SYSTEM, EXHAUST SYSTEM & ENGINE: inspection & retighten	O		O	
16	ENGINE MOUNTING BOLTS & NUTS: inspection & retightening	O		O	
17	BRAKE PIPING & CONNECTION PARTS: inspection	O	O	O	
18	STEERING SYSTEM: inspection & adjustment	O	O	O	

	INSPECTION ITEM	First 1000 km (600 miles)	First 3000 km (1800 miles)	Every 5000 km (3000 miles)	Every 10000 km (6000 miles)
19	WHEEL: rotation			O	
20	WHEEL NUT: inspection & retightening	O	O	O	
21	TIRE PRESSURE: inspection & adjustment	O	O	O	
22	CLEARANCE BETWEEN BRAKE DRUM & LINING: inspection & adjustment			O	
23	STARTER, GENERATOR & REGULATOR: inspection				O
24	ELECTRIC CHARGING PERFORMANCE: inspection			O	
25	WORKING OF LIGHTS, WIPER & HORN: inspection				O
26	WIRING HARNESS & TERMINALS: inspection			O	
27	WHEEL ALIGNMENT: inspection & adjustment			O	
28	PLAY OF CLUTCH PEDAL: inspection & adjustment	O	O	O	
29	SUSPENSION PARTS: inspection & tightening				O
30	REAR AXLE BOLT: inspection & retightening		O	O	
31	FRONT WHEEL BEARING: inspection			O	
32	REAR WHEEL BEARING: inspection				O
33	TORSION BAR & CENTER SPRING: inspection			O	
34	KING PIN: inspection				O
35	ABRASION OF BRAKE LINING: inspection				O
36	OIL DAMPER: inspection				O
37	MASTER CYLINDER & WHEEL CYLINDER: inspection				O
38	DAMAGE OF BODY PARTS: inspection				O
39	LEAKAGE OF FUEL & OIL: inspection	O	O	O	
40	HEADLIGHT AIMING: inspection & adjustment			O	

12-3: TIGHTENING TORQUE TABLE

Classification	Tightening Position	Normal diameter mm (in)	Tightening Torque kg-m (lb-ft)
Suspension and axle relationship	Wheel nut (wheel installing)	10 (0.39)	3.6 - 5.5 (26.04 - 39.78)
	Brake drum and hub bolt	10 (0.39)	2.8 - 4.2 (20.25 - 30.38)
	Back plate and knuckle joint	8 (0.32)	1.2 - 2.5 (8.68 - 18.08)
	Back plate and hub joint	8 (0.32)	1.2 - 2.5 (8.68 - 18.08)
	Rear axle shaft and drum	16 (0.63)	10.0 - 20.0 (72.33 - 144.64)
	Rear axle and differential	8 (0.32)	2.8 - 4.2 (8.68 - 18.08)
	Radius arm and hub joint	8 (0.32)	1.2 - 2.5 (8.68 - 18.08)
	Front suspension	12 (0.47)	6.2 - 8.7 (44.84 - 62.94)
	Front suspension bracket installing	8 (0.32)	1.5 - 3.0 (10.80 - 21.70)
	Radius cover tightening bolt	10 (0.39)	4.0 - 7.0 (28.93 - 50.63)
Steering relationship	Steering wheel and steering shaft joint	12 (0.47)	2.0 - 4.0 (14.47 - 28.93)
	Steering rubber coupling joint	8 (0.32)	0.4 - 0.7 (2.89 - 5.06)
	Tie-rod lock nut	16 (0.63)	8.0 - 8.5 (57.87 - 61.48)
	Tie-rod and knuckle arm joint	10 (0.39)	3.0 - 5.5 (21.70 - 39.78)

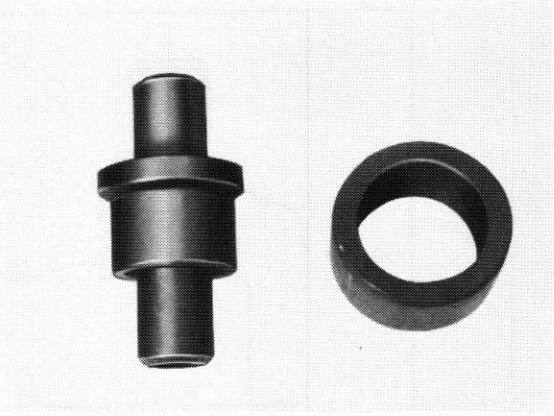
Classification	Tightening Position	Normal diameter mm (in)	Tightening Torque kg-m (lb-ft)
Steering relationship	Knuckle arm and knuckle joint	12 (0.47)	3.5 - 5.5 (25.32 - 39.78)
	Steering shaft shelf joint	8 (0.32)	1.0 - 1.8 (7.23 - 13.02)
Brake relationship	Brake hose and wheel cylinder joint	3/8"	1.2 - 2.2 (8.68 - 15.91)
	Brake shose supporter nut	6 (0.24)	0.45 - 0.75 (3.25 - 5.42)
	Master cylinder installing	8 (0.32)	0.8 - 1.2 (5.78 - 8.68)
	Brake piping joint	3/8"	1.2 - 1.8 (8.68 - 13.02)
Engine mounting relationship	Body and front bracket (front mounting)	10 (0.39)	3.0 - 4.0 (21.70 - 28.93)
	Front bracket and front cushion rubber	10 (0.39)	3.0 - 4.0 (21.70 - 28.93)
	Front cushion rubber and bracket (engine side)	10 (0.39)	3.0 - 4.0 (21.70 - 28.93)
	Rear bracket and engine (rear mounting)	12 (0.47)	5.0 - 7.0 (36.20 - 50.63)
	Cushion rubber and cross member	8 (0.32)	1.2 - 2.5 (8.68 - 18.05)
	Cross member and rear fender apron	8 (0.32)	1.2 - 2.5 (8.68 - 18.05)

CHAPTER 13: SPECIAL TOOL

SPECIAL TOOL LIST

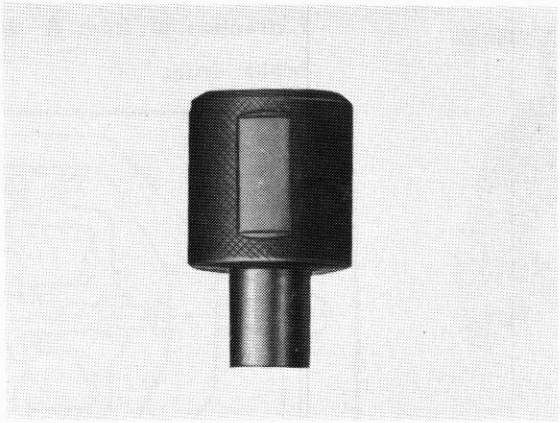
[Body Section]

	TOOL NO.	NOMENCLATURE	APPLICATION
1	921010000 (5E0136000)	REPLACING TOOL	Trailing arm bracket rubber bushing.



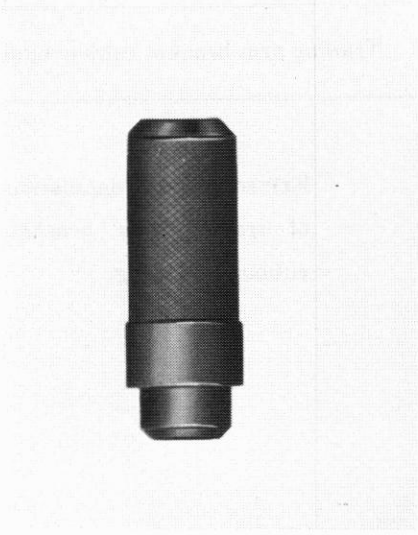
Extraction and Installation of trailing arm bracket rubber bushing.

	TOOL NO.	NOMENCLATURE	ARPLICATION
2	921100000 (5E0133000)	INSTALLER	Trailing arm yoke nylon bushjing.

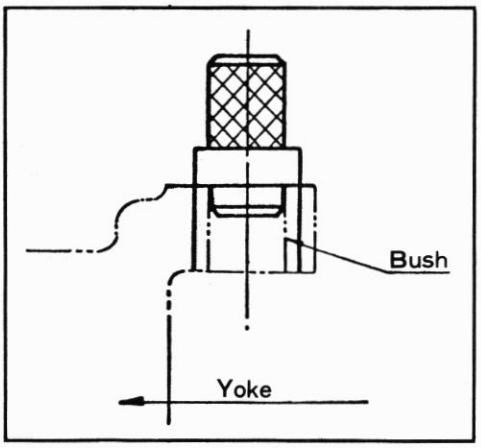


Installation of trailing arm yoke nylon bushing.

	TOOL NO.	NOMENCLATURE	APPLICATION
3	921110000 (1E1071001)	REMOVER	Trailing arm yoke nylon bushing.

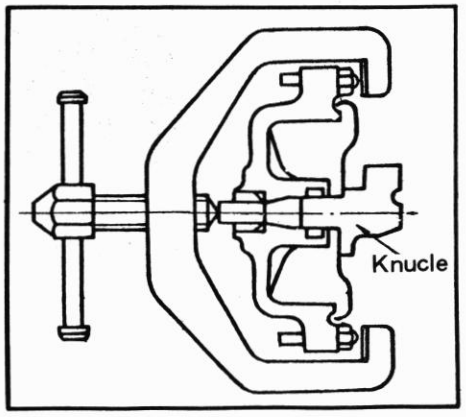


Extraction of trailing arm yoke nylon bushing.

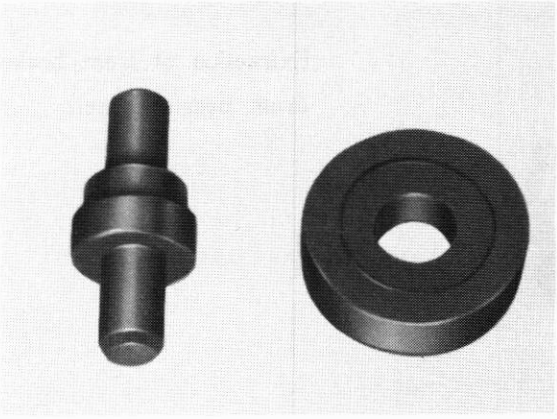


	TOOL NO.	NOMENCLATURE	APPLICATION
4	921120000 (1E2031002)	EXTRACTOR	Front & rear brake drum.

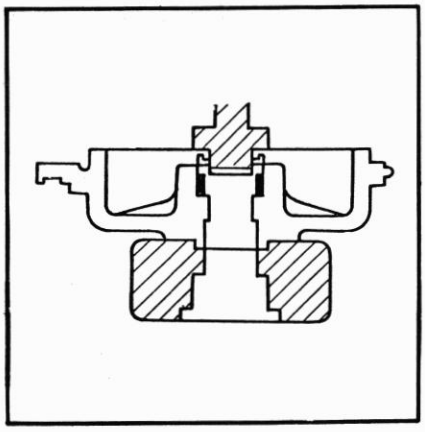
Extraction of front & rear brake drum.



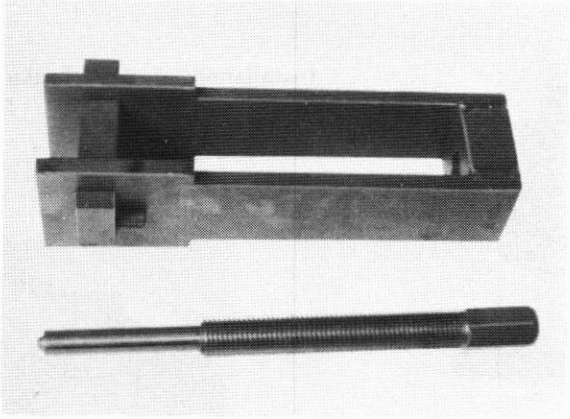
	TOOL NO.	NOMENCLATURE	APPLICATION
5	921130000 (5E0139000)	REPLACING TOOL	Front brake drum bearing.



Installation of front & rear brake drum bearing.

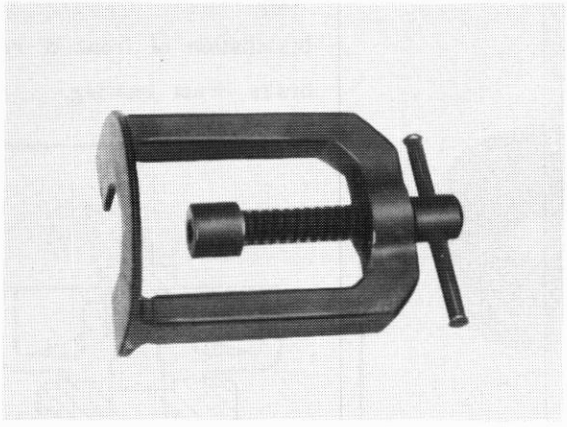


	TOOL NO.	NOMENCLATURE	APPLICATION
6	921140000 (5E0207000)	EXTRACTOR	King pin



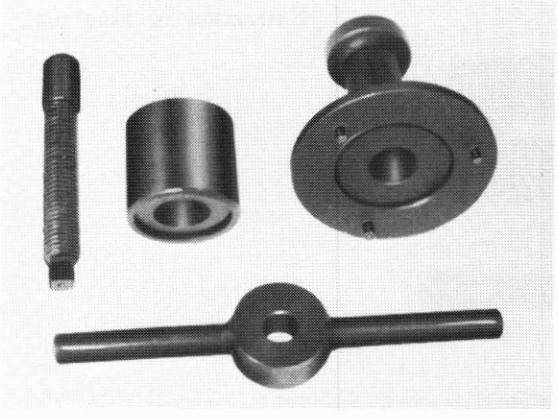
Extraction of king pin.

	TOOL NO.	NOMENCLATURE	APPLICATION
7	921150000 (1E2229001)	EXTRACTOR	Front brake drum bearing inner.

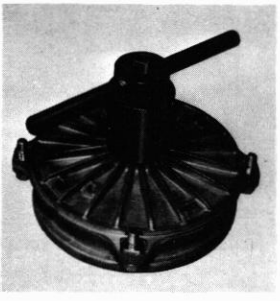


Extraction of front brake drum bearing inner.

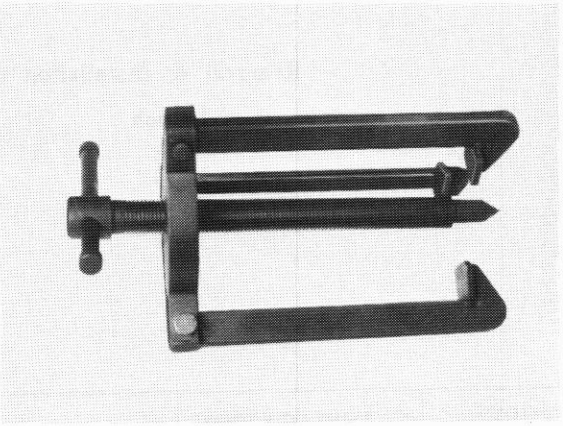
	TOOL NO.	NOMENCLATURE	APPLICATION
8	921180000 (1E1072002)	INSTALLER	Rear brake drum & hub.



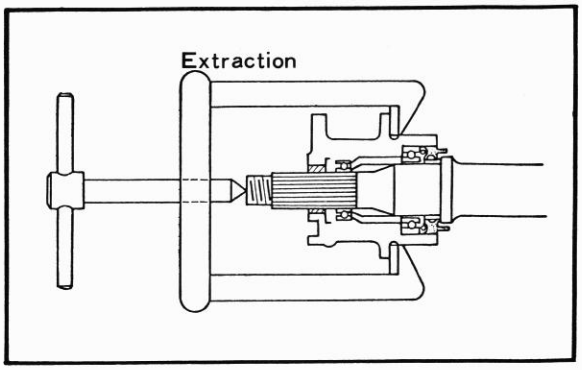
Installation of rear brake drum & hub.

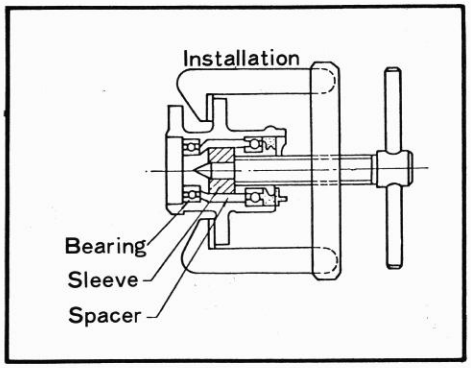


	TOOL NO.	NOMENCLATURE	APPLICATION
9	921190000 (1E1075001)	REPLACING TOOL	Rear hub bearing

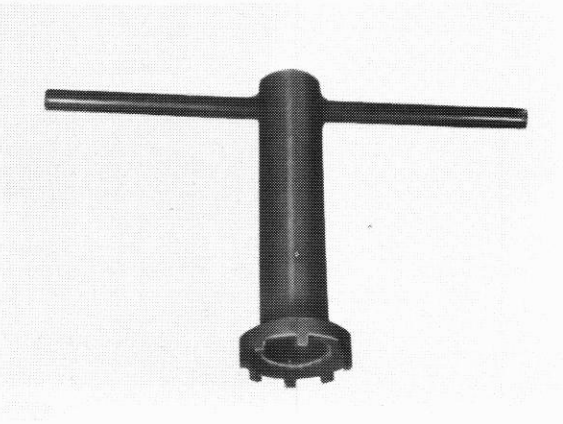


Extraction and Installation of rear axle hub bearing.



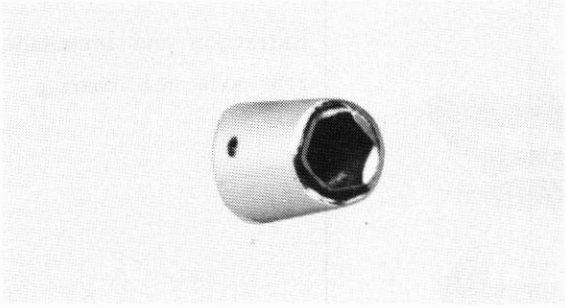


	TOOL NO.	NOMENCLATURE	APPLICATION
10	921200000 (5E0019001)	WRENCH	Rear hub bearing nut.



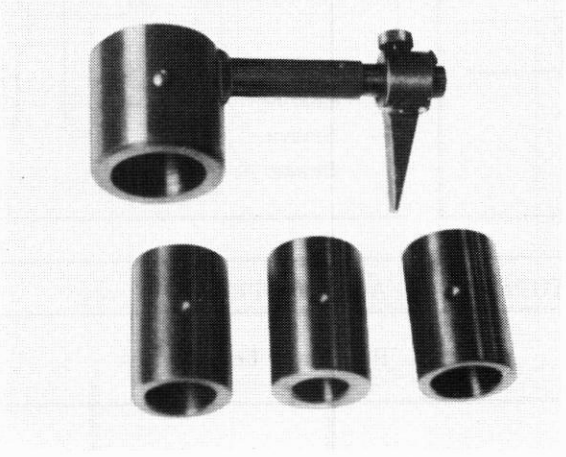
Removal & Installation of rear axle hub bearing nut.

	TOOL NO.	NOMENCLATURE	APPLICATION
11	921220000 (5E0128000)	SOCKET	Rear axle bolt



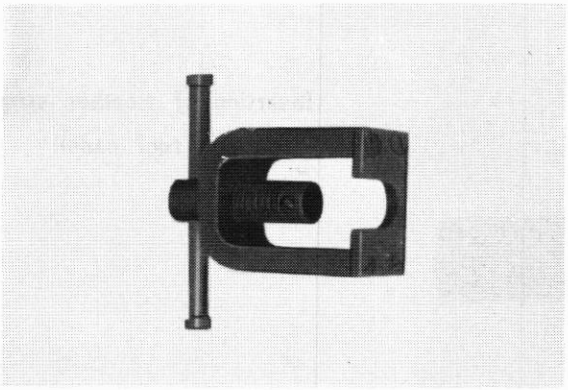
Removal & Installation of rear axle bolt.

	TOOL NO.	NOMENCLATURE	APPLICATION
12	921230000 (1F0034003)	GAUGE	Front and rear brake lining.



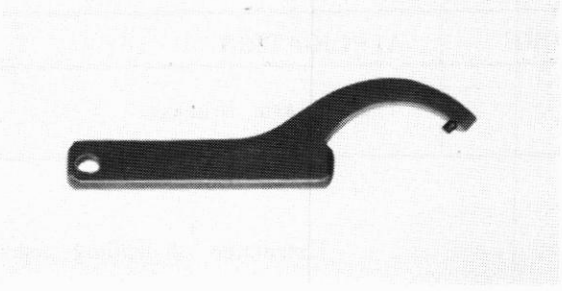
Adjustment of front and rear brake lining.

	TOOL NO.	NOMENCLATURE	APPLICATION
13	921240000 (1F0028003)	REMOVER	Tie-rod end ball stud.



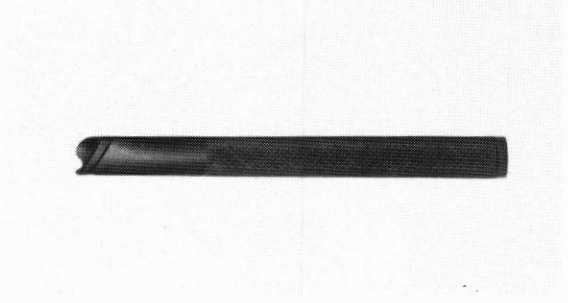
Extraction of tie-rod end bell stud and knuckle arm.

	TOOL NO.	NOMENCLATURE	APPLICATION
14	921270000 (5E0022001)	WRENCH	Ignition & starter switch



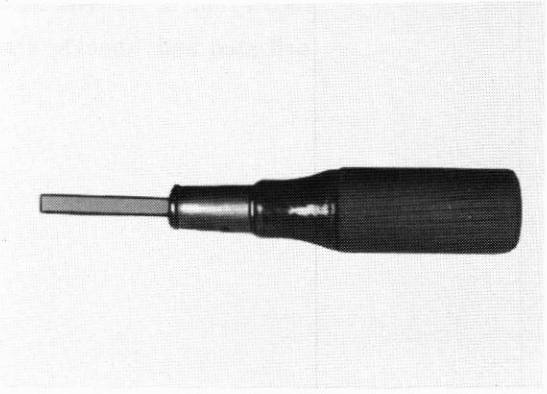
Removal and Installation of key switch.

	TOOL NO.	NOMENCLATURE	APPLICATION
15	921280000 (5E0053001)	INSERTER	Weather strip



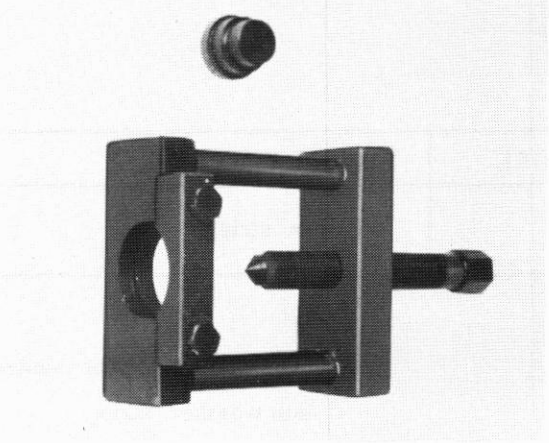
Insertion of rubber wedge into weather strip.

	TOOL NO.	NOMENCLATURE	APPLICATION
16	921290000 (5E0054001)	INSERTER	Weather strip



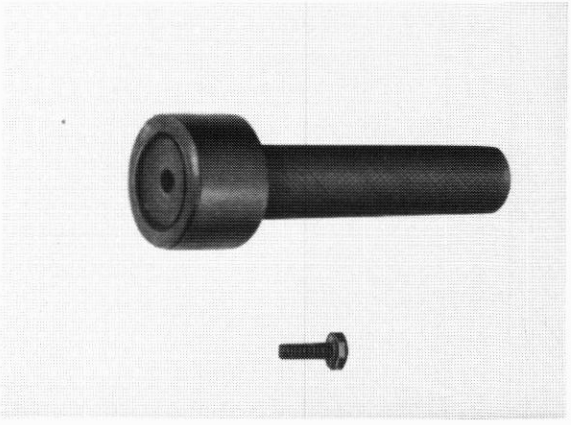
Insertion of weather strip, glass and roof panel.

	TOOL NO.	NOMENCLATURE	APPLICATION
17	921300000 (000921300)	EXTRACTOR	Trailing arm bracket.



Extraction of trailing arm bracket (front suspension).

	TOOL NO.	NOMENCLATURE	APPLICATION
18	921310000 (000921310)	INSTALLER	Trailing arm bracket



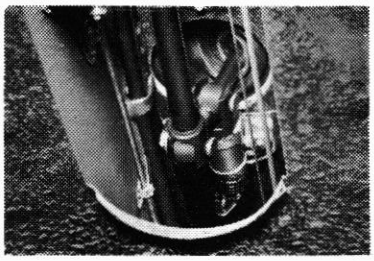
Installation of trailing arm bracket (front suspension).

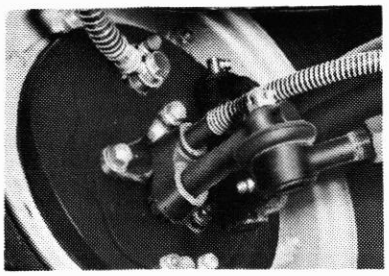
	TOOL NO.	NOMENCLATURE	APPLICATION
19	922310000 (000922310)	CAP	Rear brake drum & hub

Installation of rear brake drum & hub.

: LUBRICATION CHART

The main lubricating points are shown below.

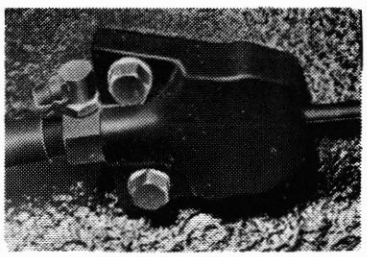




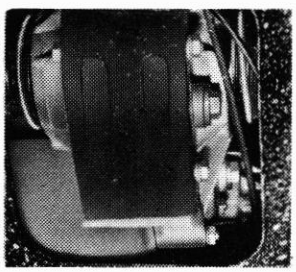
Tie rod end
(use chassis grease)

King pin
(use chassis grease)

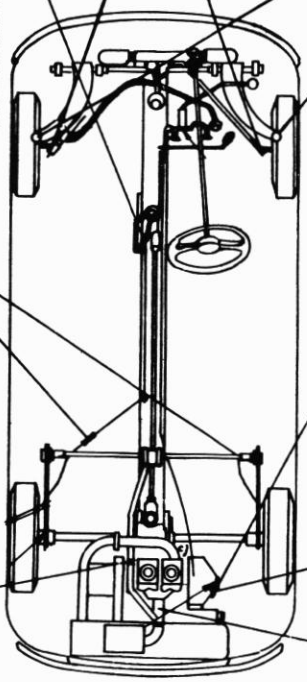
Gear change mechanism



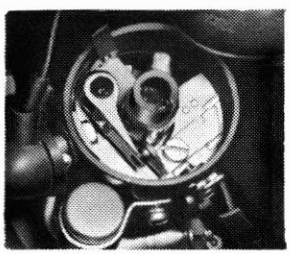
Hand brake cable
(use chassis grease)



Transmission
(In winter: #80 gear oil)
(In summer: #90 gear oil)



Distributor drive gear



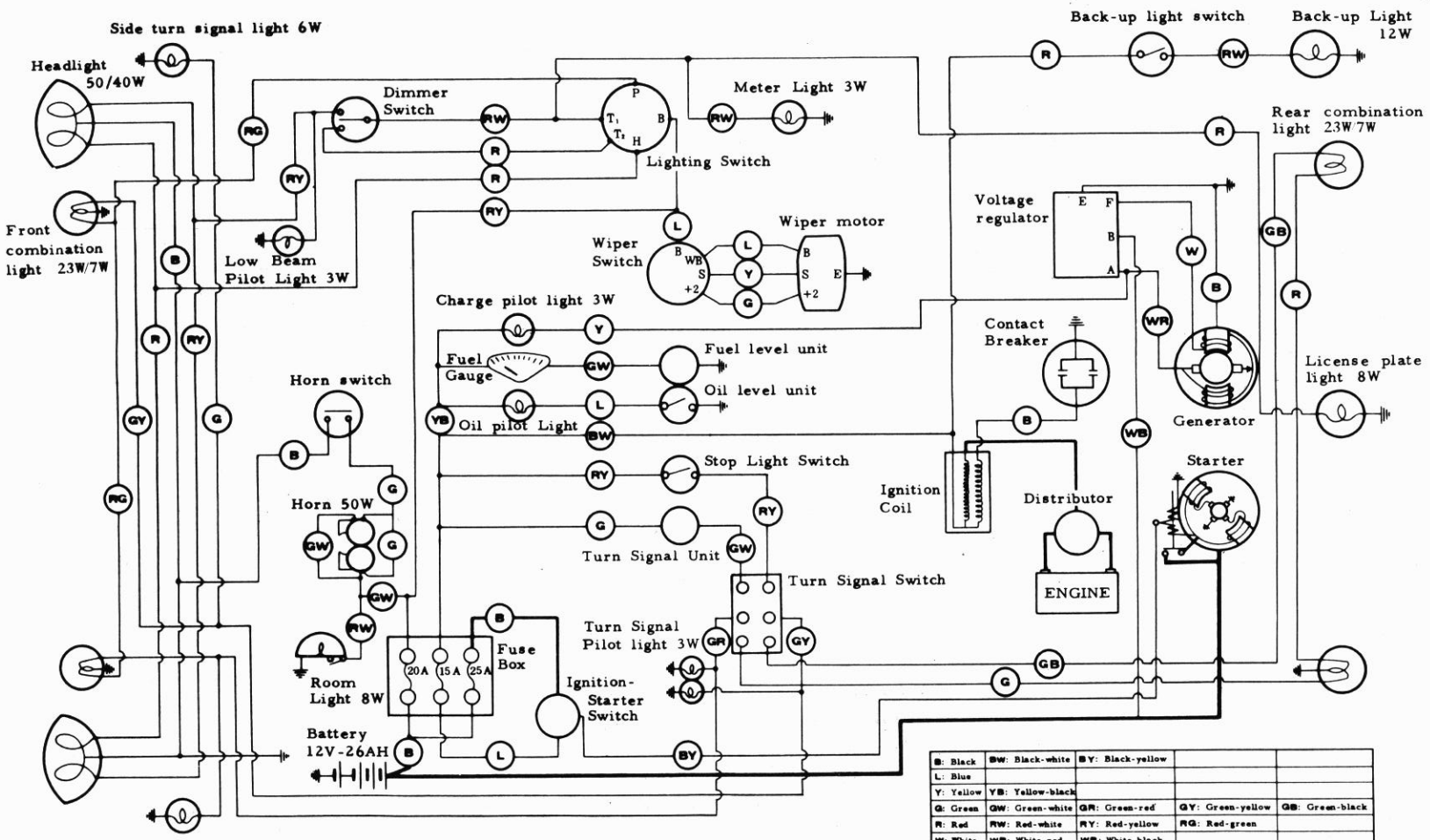
Distributor breaker
arm and bearing

Control cables

LUBRICATION AND WIRING DIAGRAM

LUBRICATION ITEM	First 1000 km (600 miles)	First 3000 km (1800 miles)	Every 5000 km (3000 miles)	Every 10000 km (6000 miles)
TRANSMISSION OIL: inspection			o	
TRANSMISSION OIL: change	o	o		o
DISTRIBUTOR DRIVE GEAR: greasing			o	
DISTRIBUTOR CAM ETC.: greasing			o	
KING PIN: greasing			o	
TIE ROD END: greasing				o
HAND BRAKE CABLE: greasing				o
GEAR CHANGE MECHANISM: greasing				o
PEDAL SYSTEM: greasing				o
CLUTCH CABLE: greasing				o
HOOD, DOOR LOCK & HINGE: greasing				o

WIRING DIAGRAM



B: Black	BW: Black-white	BY: Black-yellow		
L: Blue				
Y: Yellow	YB: Yellow-black			
G: Green	GW: Green-white	GR: Green-red	GY: Green-yellow	GB: Green-black
R: Red	RW: Red-white	RY: Red-yellow	RG: Red-green	
W: White	WR: White-red	WB: White-black		
COLOR CODE OF ELECTRIC WIRES				