

**SERVICE MANUAL**

**DATSUN  
PICK-UP**

MODEL 520 SERIES



NISSAN MOTOR CO., LTD.



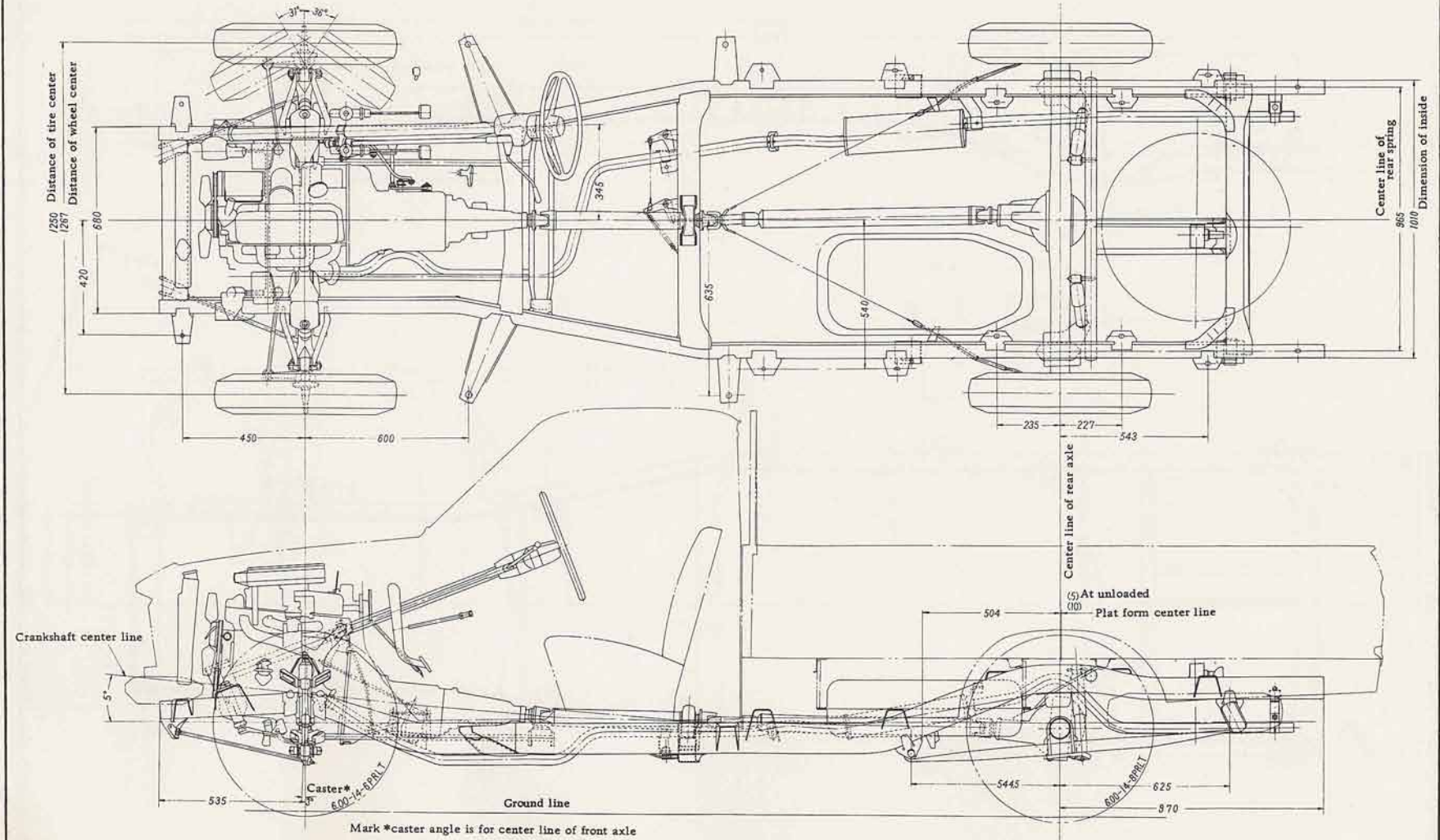
# CHASSIS

**NISSAN MOTOR CO., LTD.**



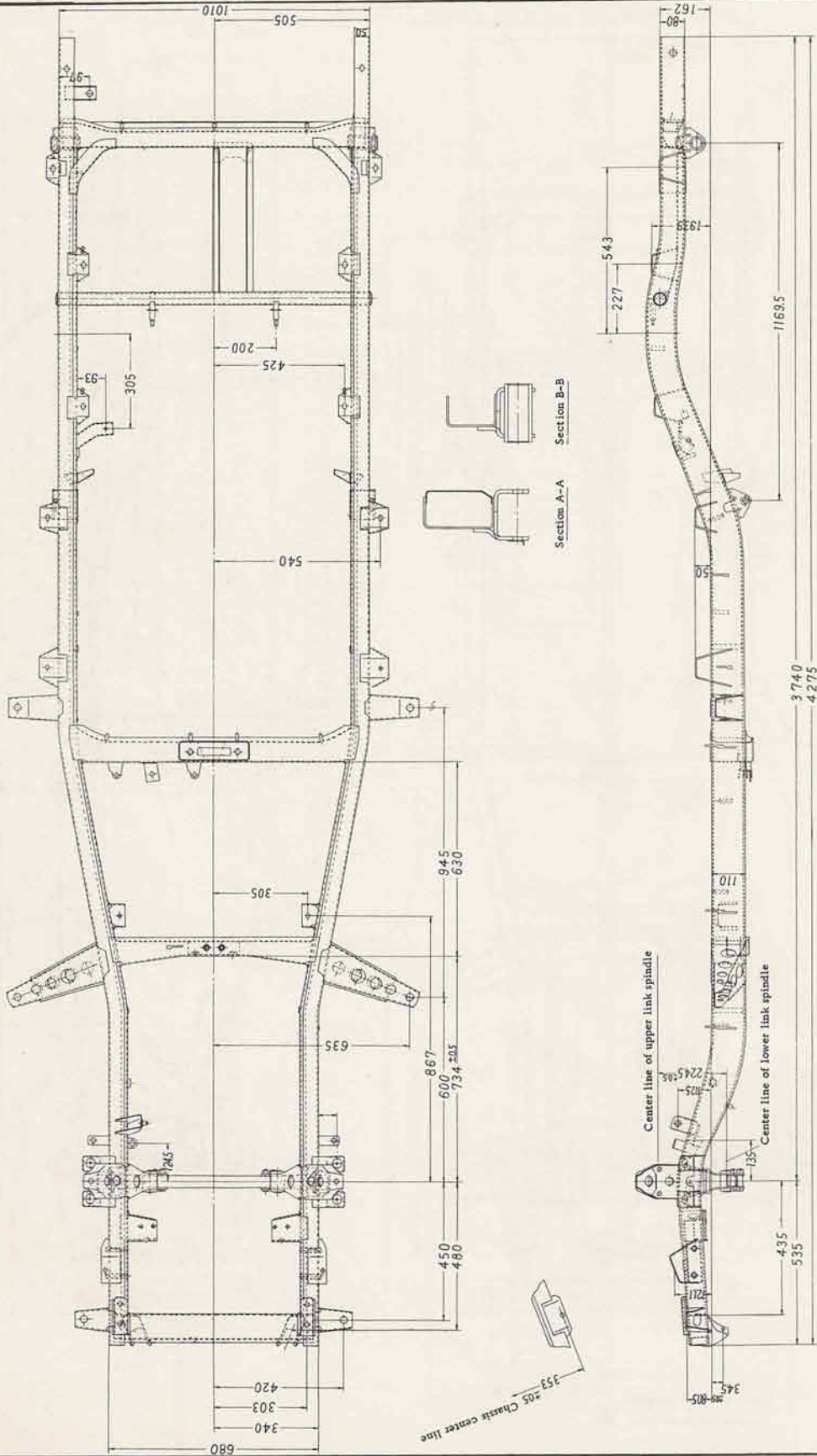


### CHASSIS (for Long Boby)



# DATSUN PICK-UP

## FRAME (for Long Body)



## STEERING

### STEERING GEAR

Type	Semi-external mesh worm and roller
Gear ratio	17.3 : 1

### WORM GEAR

Thickness of adjusting shim for housing end play	
Shim for adjusting front end play	0.762 mm (0.030 in.)
"	0.254 mm (0.010 in.)
"	0.127 mm (0.005 in.)
"	0.075 mm (0.003 in.)
"	0.050 mm (0.002 in.)
Shim for adjusting rear end play	0.254 mm (0.010 in.)
"	0.127 mm (0.005 in.)
"	0.075 mm (0.003 in.)
"	0.050 mm (0.002 in.)
Center distance	52 mm
Locking angle	$\pm 40^\circ$
Starting torque for revolving worm shaft	0.08-0.15 kg
Backlash between worm & roller	0-0.2 mm (at top center of gear arm)
Tightening torque for cover nut	2.5 kg-m
Roller shaft nut	14 kg-m
Gear box fix bolts	4.5 kg-m

The type of steering gear is worm and roller and has the drum type of worm gear at the lowest end of main steering shaft.

The main steering shaft is incased in the jacket tube, and the steering wheel is fixed with at the top end of it.

The worm gear inter locks with the roller which is fixed on the roller shaft and works

upon it to turn and through which turns the steering arm around the axle of shaft at the operation of steering wheel.

The motion of the steering arm is that of back and forth in front of drag link and turns the spindle around the king pin with the connecting knuckle arm, through which changes the bushings of front wheels.

The roller shaft itself is supported by the two bearings both sides in the gear housing.

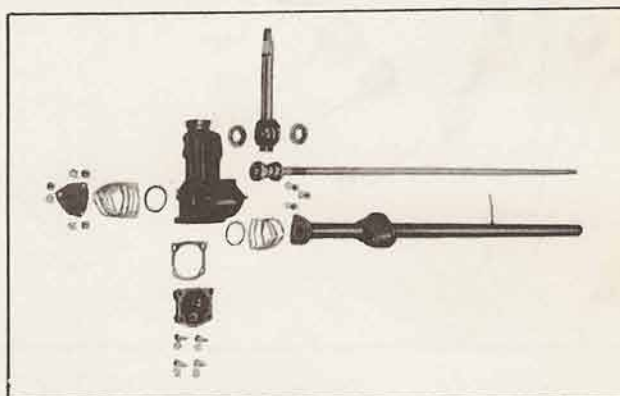
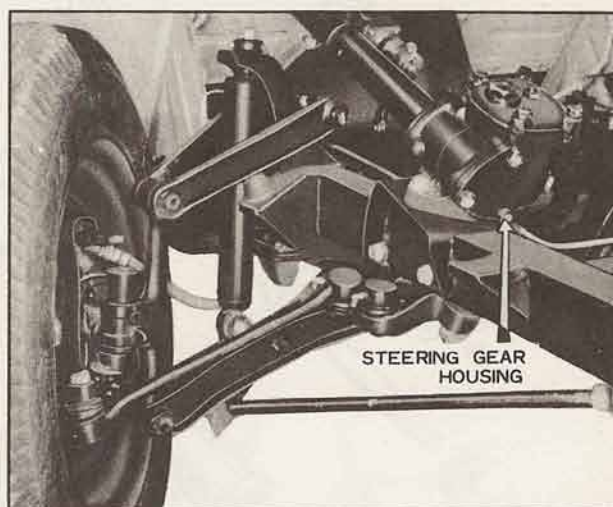
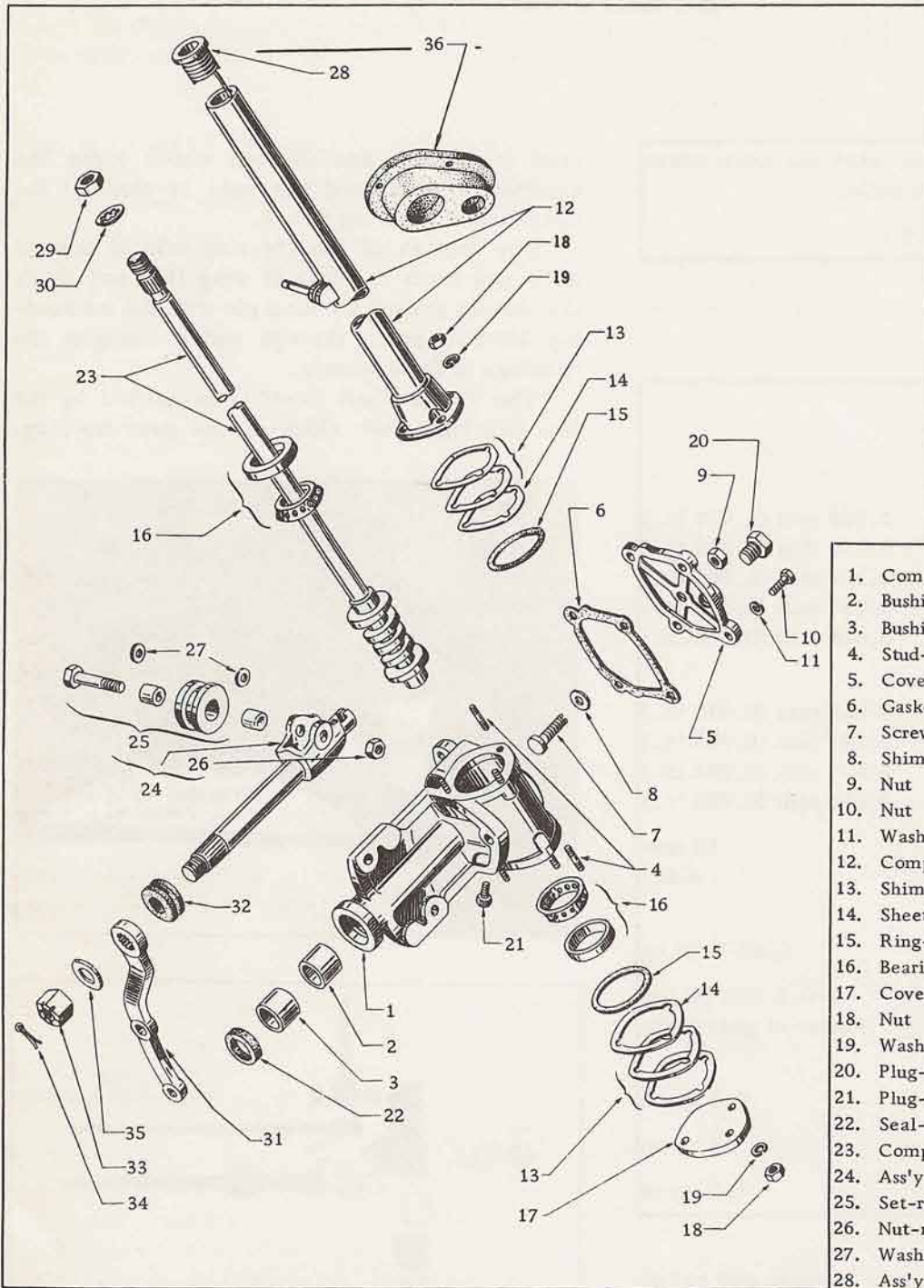


Fig. 1

# DATSUN PICK-UP



1. Com. -housing, steering gear
2. Bushing-steering housing, upper
3. Bushing-steering housing, lower
4. Stud-housing, front
5. Cover-roller shaft cover
6. Gasket-roller shaft cover
7. Screw-adjusting, roller shaft
8. Shim-adjusting, roller shaft
9. Nut
10. Nut
11. Washer-lock
12. Comp. -jacket, column
13. Shim-worm bearing
14. Sheet-"O" ring
15. Ring-"O", housing cover
16. Bearing-steering worm
17. Cover-gear housing, front
18. Nut
19. Washer-lock
20. Plug-filler
21. Plug-drain
22. Seal-oil
23. Comp. -column, steering
24. Ass'y-shaft, roller, steering
25. Set-roller & pin, roller shaft
26. Nut-roller pin
27. Washer-thrust, steering roller
28. Ass'y-bushing, column jacket
29. Nut-steering wheel
30. Washer-lock
31. Arm-steering gear
32. Seal-dust, rocker shaft
33. Nut
34. Pin-cotter
35. Washer-plain
36. Grommet-steering column

Fig. 2 Steering Gear

### Assembling and Inspection

In case the replacement of parts is required due to the defacements and damages of steering gear and housing bush, disassemble and adjust in the following order.

#### Dismounting of the Steering

- 1) Take off the steering wheel.  
Pull out the three screws of the back side of steering wheel boss, then take off the horn button retainer as well as horn button.  
After unscrewing and taking off the wheel nut, pull out the steering wheel with the steering wheel puller.
- 2) Disconnect the clamp on and under the remote control rod which is fixed on the jacket tube after unscrewing the steering jacket clamp bolt under the instrument panel, and disconnect the horn cord.
- 3) Disconnect the steering gear arm with the drag link, unscrewing the end plug at the side of steering gear arm of drag link, thus is taken off from the gear arm.
- 4) Take off the fixing bolt of steering gear box which is fixed with the side member of frame.
- 5) Pull out the steering assembly to the downward direction.

#### Disassembling and Inspection of the Steering Gear

After the steering assembly is dismantled and the gear oil is completely drained, the steering gear box should be fixed on the vice setting the steering tube on level.

- 1) Taking off the steering gear arm.  
Take off the nut of gear arm and roller shaft cover and strike out lightly the bolt, then pull the gear arm out of roller shaft.
- 2) Dismounting the housing cover and roller shaft assembly.  
In dismantling the cover, the column jacket and roller shaft assembly after unscrewing the three nuts, the adjusting shim of the housing gear must be handled with care not loose them.

- 3) Taking off the housing end plate.  
Unscrew the three nuts, at the front end of the housing and they should also be handled carefully not to loose them.
- 4) Dismounting and inspection of the worm shaft and bearing.  
The main shaft could be dismantled together with the roller bearing assembly and upper bearing cover by fixing the wheel nut on the tip of main shaft and striking out lightly, without damage.
- 5) Take the column jacket out of the gear housing, thus the outer race of upper bearing can easily be dismantled. The adjust shim must be carefully handled not to loose them in taking off the housing gear.
- 6) Inspection and adjustment of gear housing column jacket and front cover.  
Adjust the steering gear by changing the total thickness of the adjust shims of the worm bearing so that the starting torque for revolving worm shaft is 0.08-0.15 kg at the circumference of steering wheel. In this case, tighten it with the end cover by applying the "O" ring. Use the said ring 0.3-1.1 mm thicker than the used shims.  
And further adjust by changing the thickness of the worm bearing adjust shims exchanging the rear and front shims.
- 7) Inspection and adjustment of the roller shaft.  
The shaft itself should be checked and replaced with new one when it is worn out. The roller shaft assembly should be replaced in a unit in case the roller pin becomes loose and damages or defacement of surface of roller is found. The replacement can be limited to the worn out parts after disassembling.  
Fit the roller shaft to the gear housing after inserting the adjust shims to the adjust screw and adjusting said screw so as the end clearance along the roller shaft is to be 0.01-0.03 mm with the shims.  
The backlash at the top of gear arm is to be 0-0.2 mm in the vertical rolling center of the roller shaft and lock the nut up after confirming that the roller is smoothly rolling over the worm gear.



## DATSUN PICK-UP

- 8) Assemble and disassemble of the linkage. The joint parts of the linkage are constructed with the spring sheet, spring, plug, and so forth, and this order must be conformed with in assembling the unit.

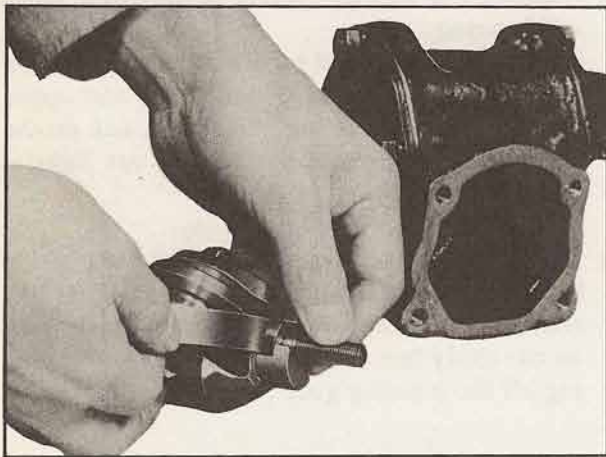


Fig. 3

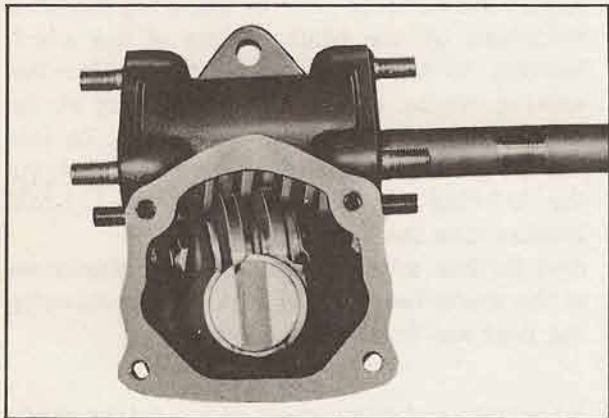


Fig. 4

Otherwise, the spring would not action besides giving a shock to the every part of the unit, wearing out both the steering gear arm and linkage of the steering, which furtherly will be easily pulled off endangering the operation.

It is, therefore, important to check and to set aside the parts in assembling when disassembled.

### Inspection and Adjustment After Assembling

It is important that the center of interlocking roller is located in the center of worm gear. The inspection for this should be made in a

way as to make sure of the equal conditions of backlash at the position of steering wheel when turned fully to left and right. In case the backlash differs, greatly, the interlocking position of worm gear must be adjusted again.

The correct backlash at the both ends of worm gear should be made sure of, after putting the more shim in the side of larger backlash at the gear arm and for equalizing, pull out the shim on the opposite side and tighten up the bolt again, adjusting with the shim in front of and the shim behind the gear housing.

The backlash at the center locking should also be checked and adjusted, if necessary.

### Installation of Steering Wheel

Inspection by steering wheel.

The steering wheel is relation-locked with the shaft and it may as be fixed to the forwarding direction, tightened may as well be fixed to the forwarding direction, tightened with nuts. The standard revolving weight gravity of the wheel on the wheel rim circle, as for as it is rightly assembled, is 500-700 gr., measured by the spring scale.

The play allowed on the circle of wheel is 40-50 mm.

Installation and adjustment of horn button.

The horn button should be installed in a reverse order of dismounting.

### Inspection and Adjustment of Steering Fixed on Car

The inspection and adjustment of the steering system installed in the car should be made in following order.

- 1) Set the car on the levelling place with the front wheels fixed to the forwarding direction. Take measure of the position of lower part of wheel and tube with the finger of one hand, spin the wheel to left and right to the extent of wheel's play by another hand. When the wheel moves up and down, there should be found a play in the worm bearing to the direction of axle.

In this case, the fixing bolts in front and rear (upper or lower) of gear housing are loose on the bearing is worn out.

The shim should be pull off in a way as explained in the item of worm bearing and the

adjustment should be made as explained in the item of inspection and adjustment after assembling.

- 2) In case the roller shaft moves to the direction of axle shaft, as the wheel spined hardly to left and right, the roller shaft adjusting screw is loose. The adjustment should be carried in a way as explained in adjustment of the position of steering roller.
- 3) In case the roller shaft shakes to left and right, the roller shaft or the bush is worn out, therefore, they should be replaced with new one and adjusted.
- 4) In this case the fixing bolt for gear housing front and rear (upper or lower) is loose or the bearing is worn out, for which the shim should be pulled out in a way as mentioned in the item of worm bearing and the adjustment should be made as inspection and adjustment after assembling.
- 5) In case the roller shaft moves to the axle shaft, by returning the wheel to left and right, the roller shaft adjusting screw is loose, for which the adjustment should be made in a way as explained in adjustment of the position of steering roller.
- 6) In case the roller shaft trembles to left and right, the roller shaft or the bush is worn out and they should be replaced with new one and adjusted.
- 7) Take off the drag link at the end of steering gear arm. In case the play should be found by holding the arm and move it strongly back and forth, the backlash of roller and worm gear is too large. The adjustment for this should be done in a way as explained in the above section setting the steering wheel at the center of turning to left and right.
- 8) In case the operation of steering wheel felt heavy and becomes light when the front axle is jacked up, the trouble is with the front axle system.  
In case the wheel is still felt heavy even when the front axle is jacked up, the trouble is connected with the front axle.

- 9) When the front axle is jacked up, the inspection of contacting and tightening parts of tie-rod socket, knuckle arm, drag link and the steering arm should be possible.
- 10) Hold both the top and down end of front wheel and move it strongly, and the pin would rattle if any, as well as the looseness of the wheel should be found.

## Adjustment of Idler

After tightening the idler shaft nut under the torque of 14 kg-m, adjust the idler so as the dimension from the idler body frame fitting plane to the idler arm lower end is to be 157 mm by turning the idler shaft.

## The Cause of Trouble

The cause of the trouble caused in regards with the steering in operation, is closely connected with those of the front axle, therefore it is hard to judge then separately.

The following are main troubles caused in steering.

## Heavy and Difficult Operation of Handle

- 1) The oil in gear box.
- 2) Adjustment of worm and roller is poor.
- 3) Damage on corn of worm bearing.
- 4) Hard locking of column jacket bush.
- 5) Steering shaft or tube is bended.

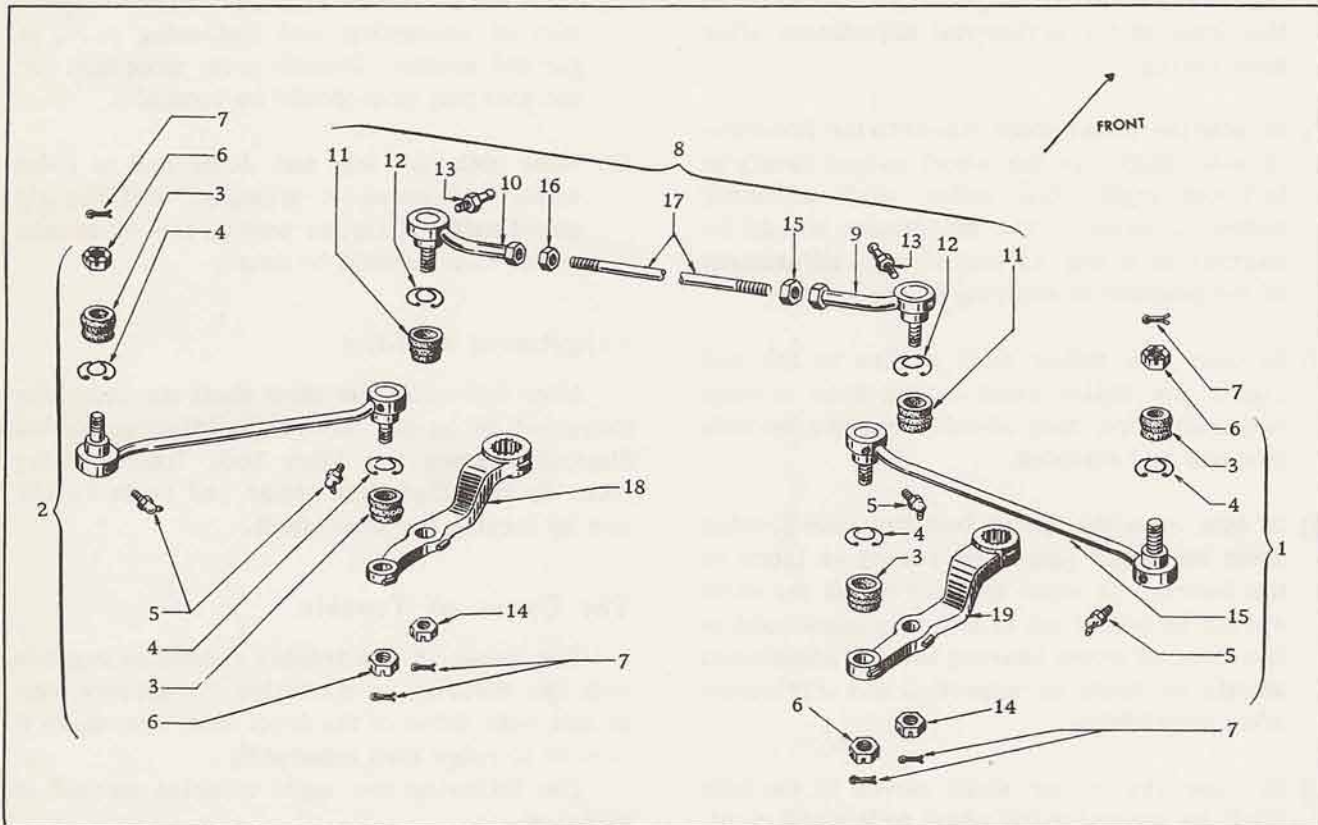
## Insufficient Amount of Turning

- 1) Adjustment of worm and roller is poor.
- 2) Fixing port of gear housing with frame is loose.
- 3) Locking position of roller shaft and steering arm is bad.

## Unsteady or Trembling Handle in Motion

- 1) Too much backlash of worm and roller (wheel play is too large).
- 2) Worm bearing and roller shaft bush is worn out.
- 3) Looseness of each bolts on gear housing.
- 4) Looseness of fixing bolts for frame.

# DATSUN PICK-UP



1.	Ass'y-rod, side (R.H.)	10.	Ass'y-socket, cross rod (L.H.)
2.	Ass'y-rod, side (L.H.)	11.	Seal-dust, ball socket
3.	Seal-dust	12.	Clip-dust seal
4.	Clip-dust seal	13.	Nipple-grease
5.	Nipple-grease	14.	Nut
6.	Nut	15.	Nut
7.	Pin-cotter	16.	Nut
8.	Ass'y-rod, cross	17.	Bar-corss rod
9.	Ass'y-socket, cross rod (R.H.)	18.	Arm-idler
		19.	Arm-steering gear

Fig. 5 Steering Linkage

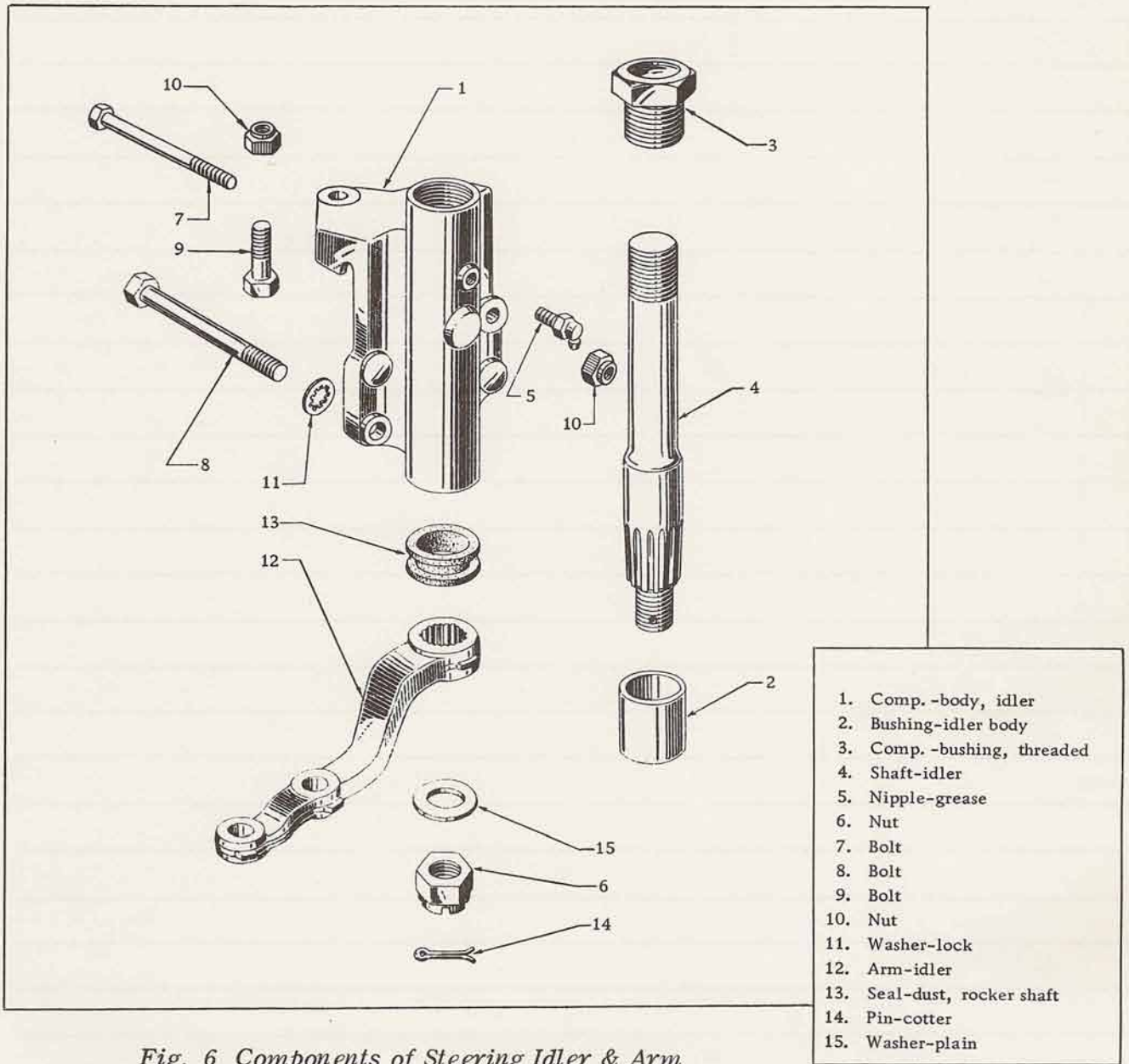


Fig. 6 Components of Steering Idler & Arm

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## FRONT AXLE

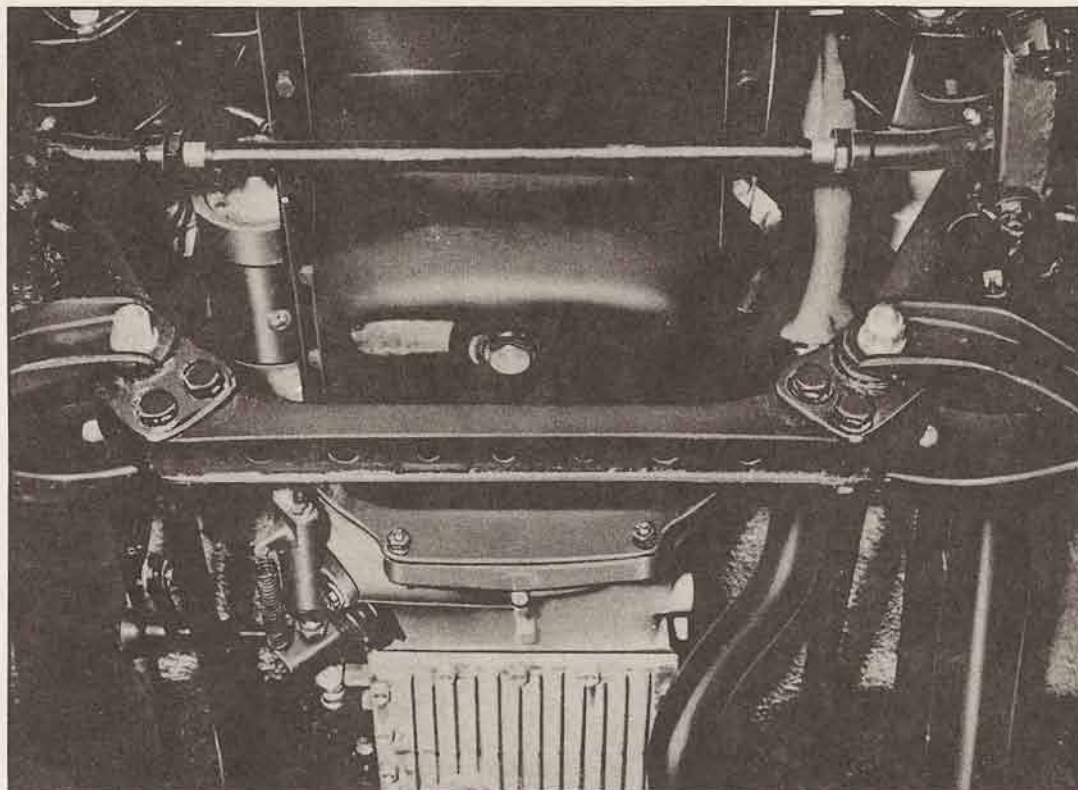


Fig. 1

**Disassembling of Front Axle**

Disassembling and dismantling of the front axle should be carried out in the following order if required in case that it is bended by the violent shock or with any other reason.

- 1) Unscrew the connector of the brake hose for the front wheel on left and right at the side of frame.

- 2) The front axle unit can be disassembled further as follows:

Taking off the cover, loosen the spindle nut after the hub cap is taken off. It can be easily removed first by tapping lightly around the cap and pry with the screw driver.

Take off the front brake disc ass'y.

Pull out first the machine screws and after taking off the oil catcher with the parking, remove the four cap screws which fixed the disc to the spindle.

Thus, the disc ass'y can be dismantled.

Dismounting of the tie rods.

The tie rod ass'y can be dismantled by disconnecting the stud nut of the rod socket on the both end of side rod.

Taking out the spindle of the axle.

The king pin must be pulled out first. Pull out the king pin lock bolt and take off the spindle plug on the spindle by a graver.

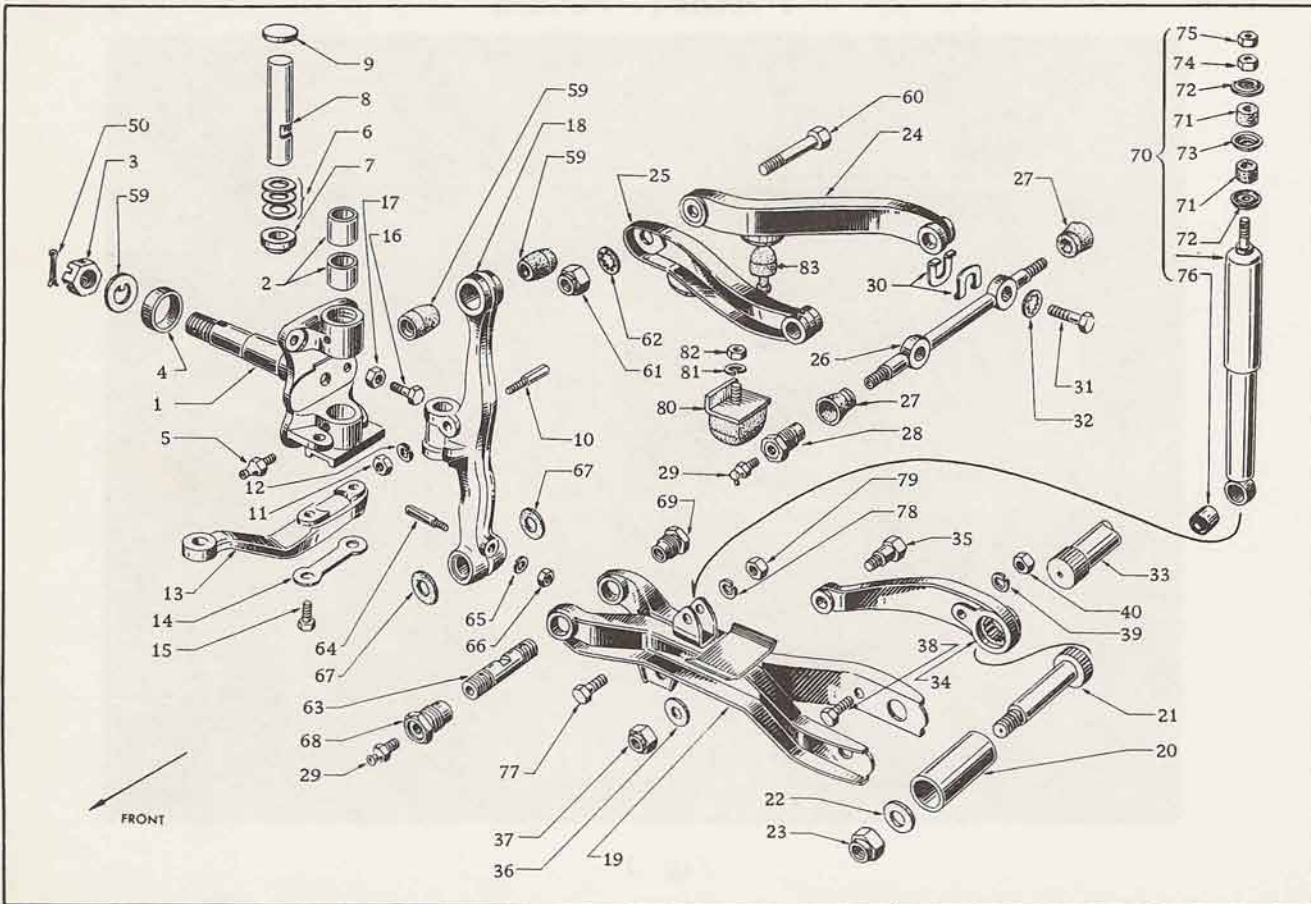
Strike downwards the king pin by the drift and take off the plug at the bottom.

The pin, thus, can easily be removed. The spindle can be dismantled with the spindle shim and thrust washer assembly.

**Inspection & Adjustment After Disassembling**

Every parts must be cleaned with the cleaning oil. Any parts of damage or defect should be replaced and adjusted.

# DATSUN PICK-UP



1. Ass'y-spindle, knuckle, with nut	22. Washer-special lower link	61. Nut-self locking
2. Bushing-front spindle	23. Nut-self lock	62. Washer-lock
3. Nut-knuckle spindle	24. Ass'y-link, upper, front suspension, A (rest)	63. Pin-fulcrum, lower, link, front suspension
4. Collar-front spindle	25. Ass'y-link, upper, front suspension, B (front)	64. Pin-cotter, fulcrum pin
5. Nipple-grease	26. Spindle-upper link front suspension	65. Washer-lock
6. Shim-front spindle	27. Seal-dust upper link bush	66. Nut
7. Ass'y-washer, thrust, front spindle	28. Ass'y-bush, upper link front suspension	67. Ring-fulcrum pin, lower link
8. Pin-king	29. Nipple-grease type B	68. Ass'y-bush, lower link, front suspension, front
9. Plug-front spindle	30. Shim-camber A	69. Ass'y-bush, lower link, front suspension, rear
10. Bolt	31. Bolt-spindle upper link	70. Kit-shock absorber, front
11. Nut	32. Washer-lock	71. Bush-rubber, shock absorber
12. Washer-lock	33. Spring-front	72. Washer-special, shock absorber
13. Arm-knuckle	34. Arm-torque, front spring	73. Washer-special
14. Plate-lock	35. Bolt-torque arm, front suspension	74. Nut
15. Bolt-knuckle arm	36. Washer-plain	75. Nut-lock
16. Bolt	37. Nut-self locking	76. Ass'y-bushing, front shock absorber
17. Nut	38. Bolt	77. Bolt-clamp, shock absorber front
18. Support-knuckle spindle	39. Washer-lock	78. Washer-lock
19. Ass'y-link, lower, front suspension for stabilizer	40. Nut	79. Nut
20. Ass'y-bush, lower link, front suspension	59. Ass'y-bush, upper link	80. Ass'y-bumper, bound, front suspension
21. Spindle-lower link, front suspension	60. Bolt-fulcrum, upper link	81. Washer-lock
		82. Nut
		83. Bumper-rebound, front suspension

Fig. 2 Structures of Swivel Axle & Front Suspension

Adjustment of Spindle

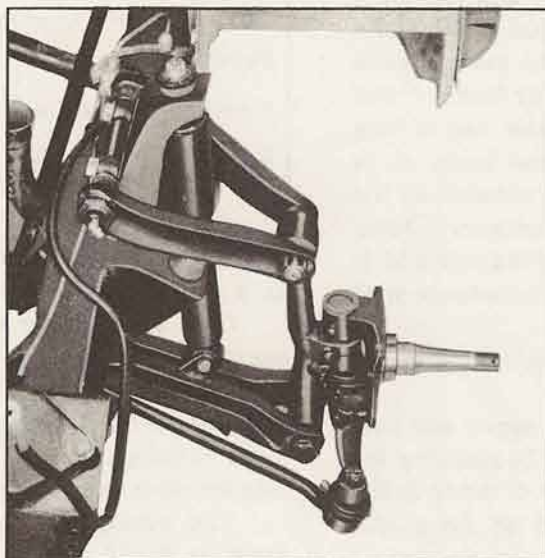
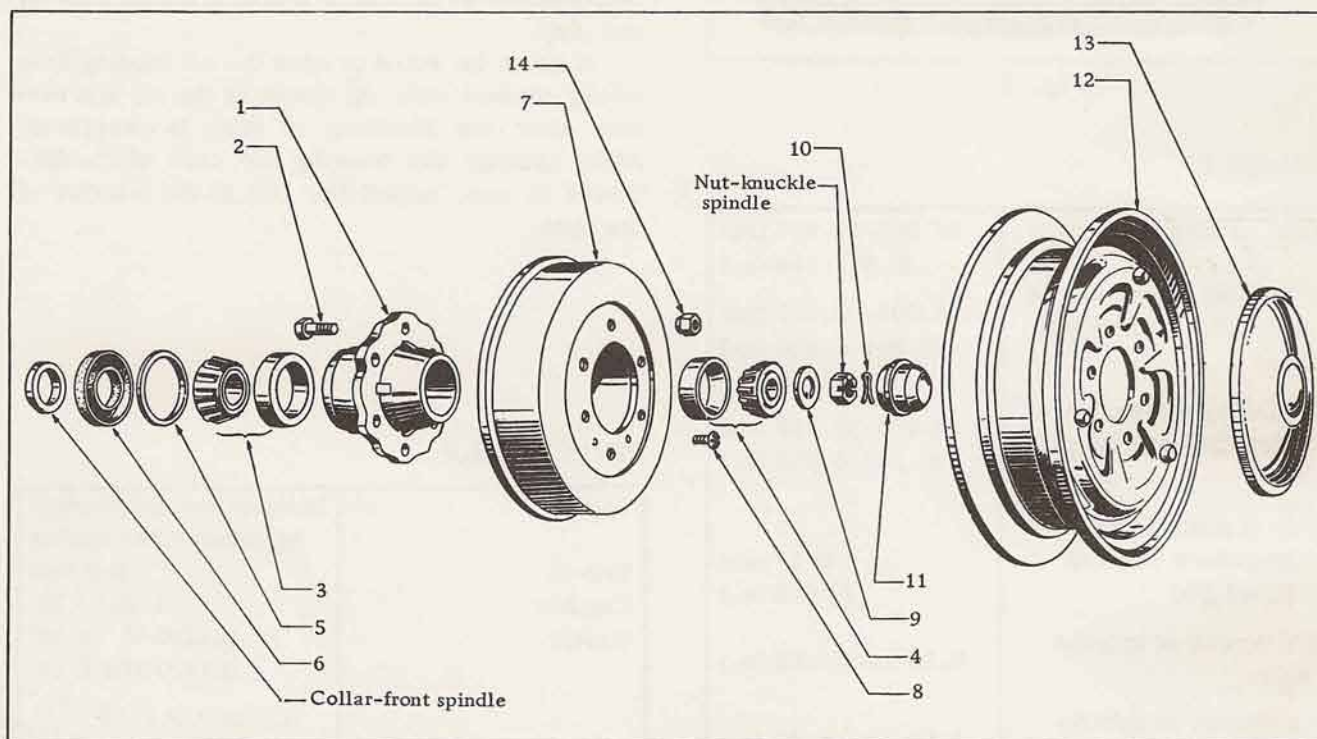


Fig. 3



1. Ass'y-hub, road wheel, front	6. Seal-grease, front hub	11. Cap-hub, front wheel
2. Bolt-hub, road wheel	7. Drum-brake	12. Ass'y-wheel, road
3. Bearing-wheel, inner	8. Screw	13. Cap-road wheel
4. Bearing-wheel, outer	9. Washer-front wheel bearing	14. Nut-road wheel
5. Spacer-grease seal, front hub	10. Pin-cotter	

Fig. 4 Components of Front Hub & Drum



## DATSUN PICK-UP

The inspection should be made specially in regard with the crack and any other scratch. Check the defacement of king pin and spindle bush. If the clearance between the pin and bush is over 0.10 mm replace the pin or bush. For replacement of spindle bush, make use of king pin bush driver and can insert the bush, it is easily removed without giving any scratch on the surface of it tapping with the hammer. After the bush is replaced, the interior diameter of it should be finished up exactly in accordance with the standard measurement.

The king pin bush reamer should be employed in this case.

It can ream the holes at the upper and bottom in exactly a straight line. In reaming the upper hole, insert the adaptor of taper in the bottom hole from up side, and at its guide, scrape the upper side.

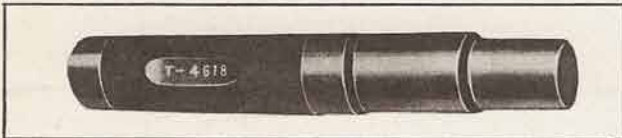


Fig. 5

### SPINDLE

Dia. of king pin	20.000-19.980 mm (0.8-0.799 in.)
Finishing dimension of inner dia. of king pin bush	20.035-20.010 mm (0.801-0.800 in.)
Finishing dimension of outer dia. of king pin bush	22.930-22.880 mm (0.917-0.915 in.)
Gap of pin & bush	
Amendment limit of dittoed gap	0.10 mm (0.004 in.)
Thickness of spindle shim	0.75 mm (0.03 in.)
Thickness of spindle shim	0.25 mm (0.01 in.)
Thickness of spindle shim	0.075 mm (0.003 in.)
Vertical gap of spindle	0.08-0.13 mm (0.0032 in.)
Tightening of wheel bearing nut	Tighten it at 30 ft-lb. and turn it 1/8 revolution back.

Name of Parts	Number of Parts	Thickness
Front spindle shim	40032 25660	0.075 mm
Front spindle shim	40033 25660	0.250 mm
Front spindle shim	40034 25660	0.750 mm

The bottom hole can be made and finished up in a reverse way as well.

Give the reamer an average force and finish up by turning to right so as the scraping face should be made smoothly. At the time of pulling out the reamer it must be handled with much care turning to right direction to avoid giving any scratch on the surface.

The standard fitting of the king pin with the bush is 0.010 mm-0.055 mm. Clean the both of them well, smear with new oil. They should be in a condition that can be turned lightly and be pushed in at the top of it with a thumb without any play.

It must be noted to open the oil feeding hole which connect with oil nipple at the top and bottom after the finishing of bush is completed. After making the hole by the drill of the diameter in mm, adjust the roll at the interior of the bush.

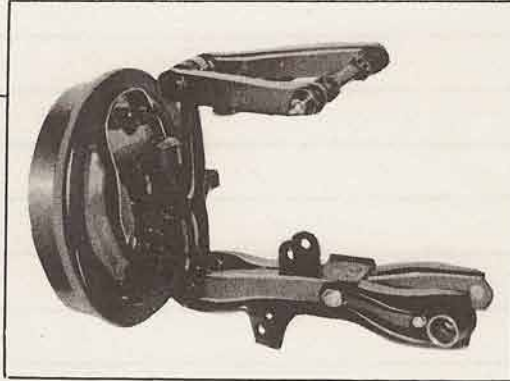
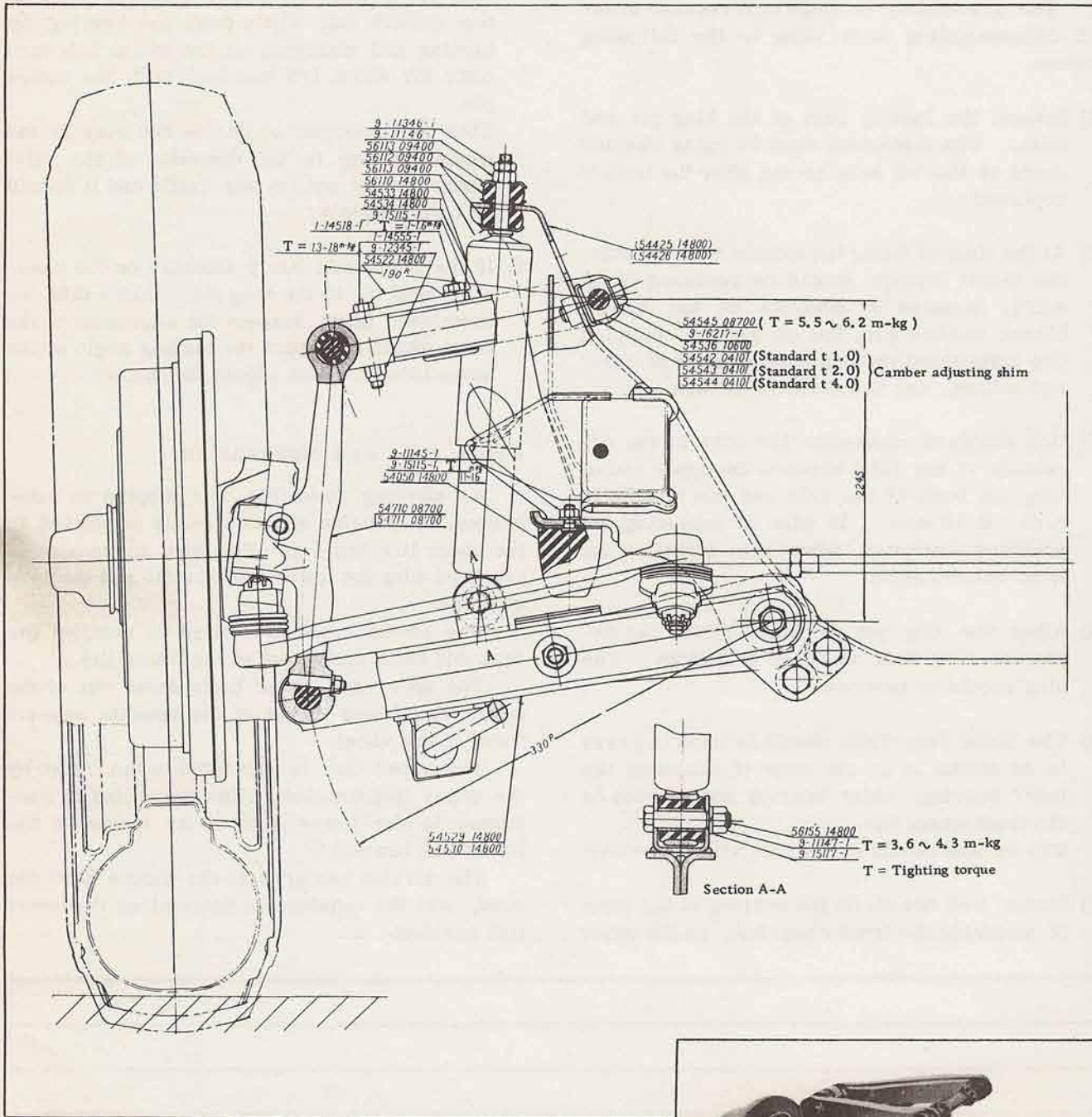
### FRONT AXLE

Type	Independent suspension by torsion bar spring
Toe-in	2-3 mm
Camber	1° 20' ± 30'
Caster	(L)320-U ± 30' (L)320-UN 4° 05' (L)320-UP 1° 30' +1° -30' U(L)320-U 3° 50' V(L)320-U 3° 25'
Angle of inclination of king pin	6°
Tread	1,170 mm
Turning angle of front wheel (inside)	34°
(outside)	29° 30'
Min. turning radius	5° 20' metres



# DATSUN PICK-UP

## FRONT SUSPENSION (NO. 1)




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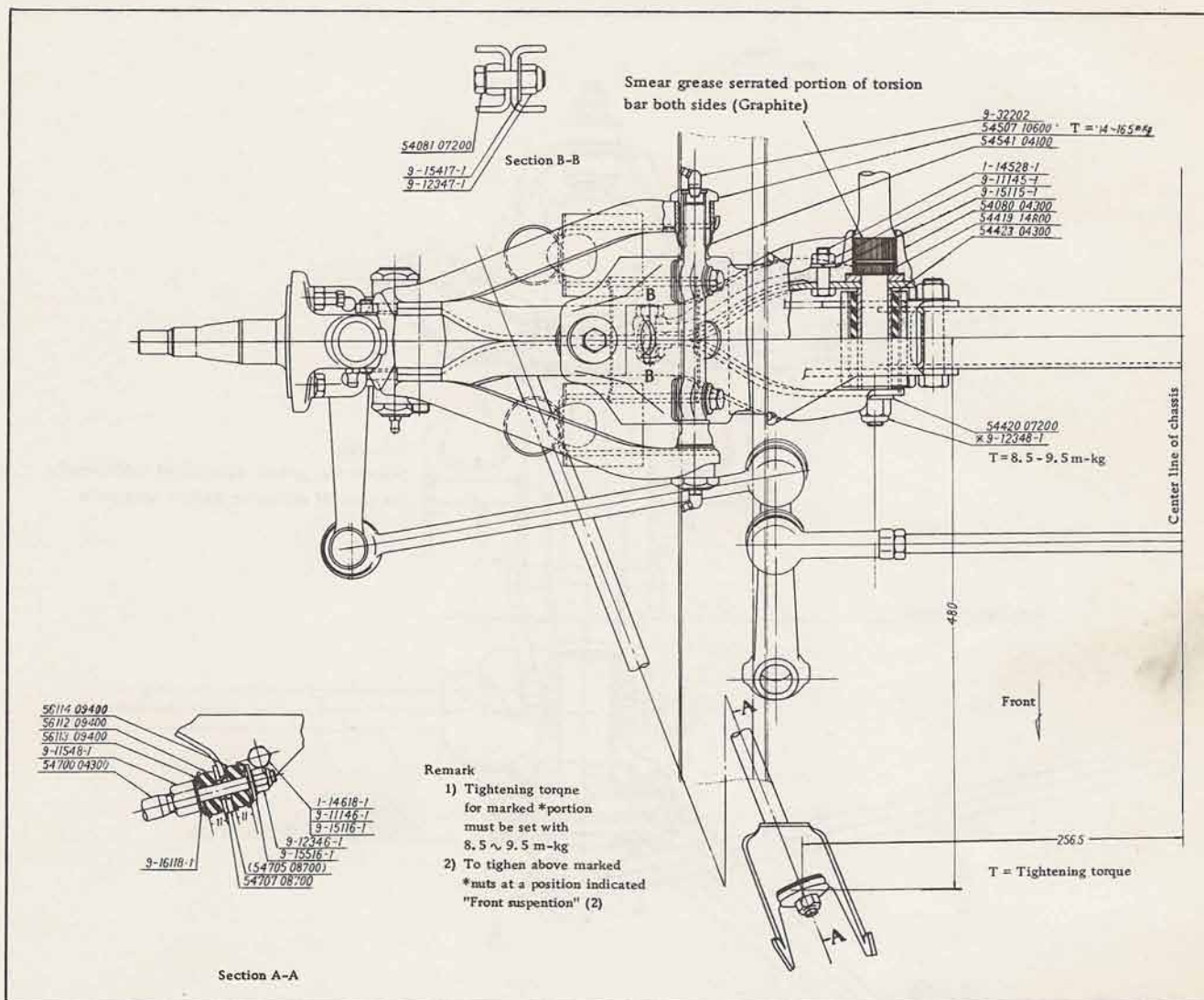


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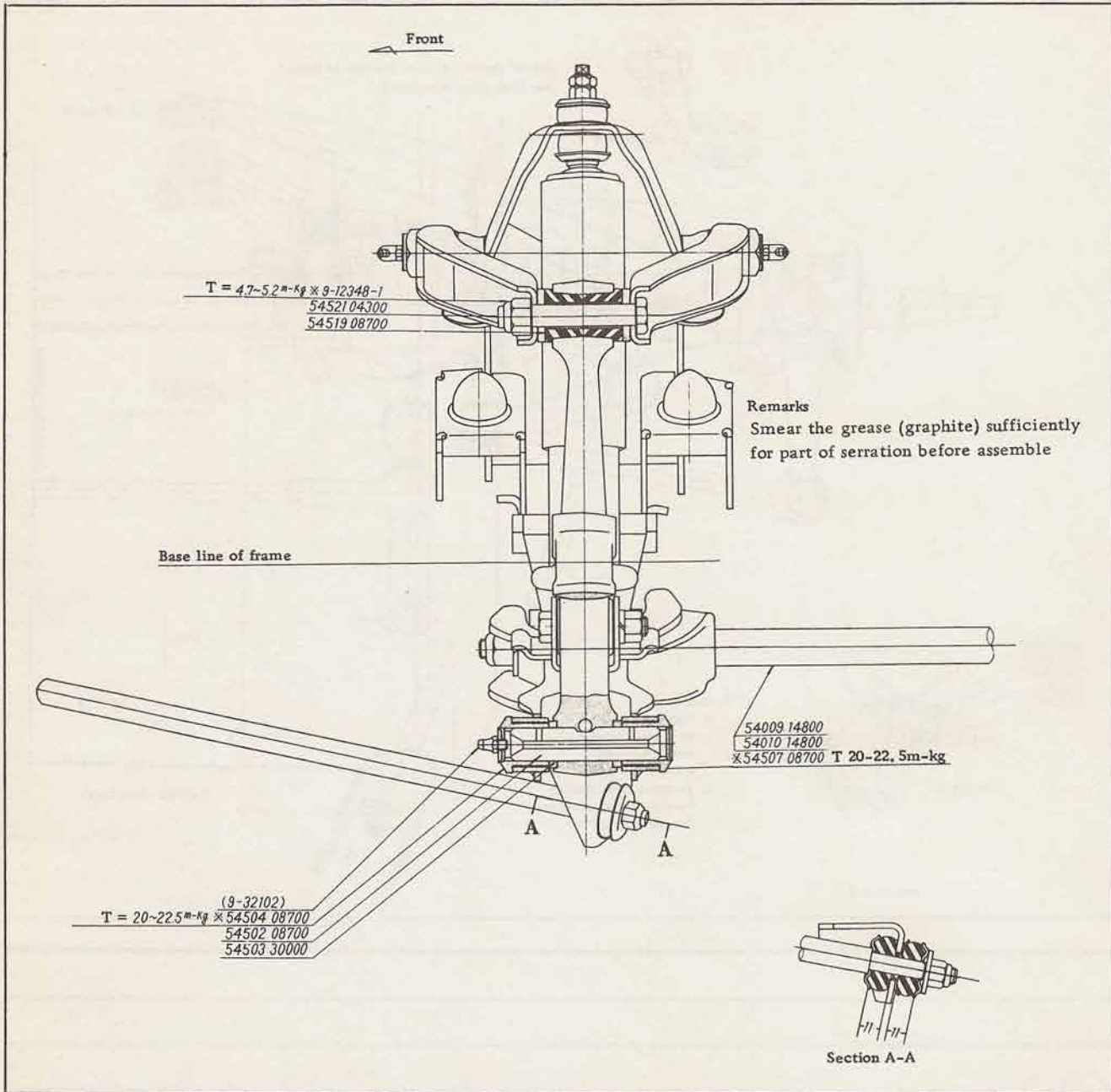
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## FRONT SUSPENSION (NO. 2)



# DATSUN PICK-UP

## FRONT SUSPENSION (NO. 3)



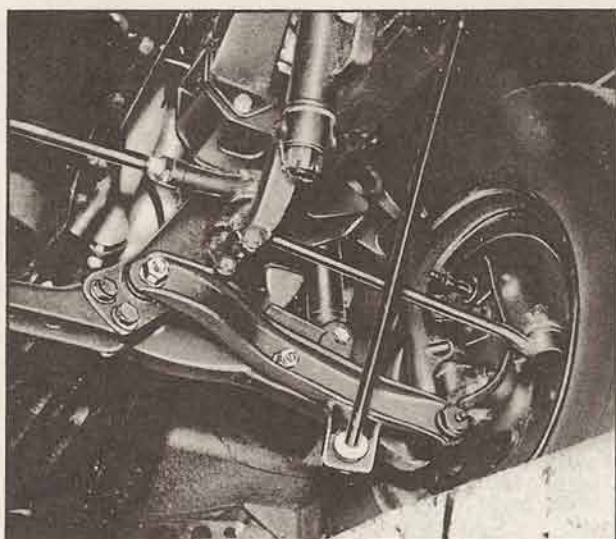


Fig. 6

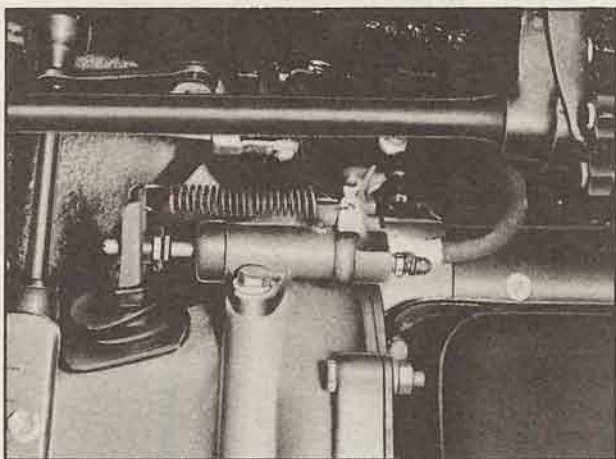


Fig. 7

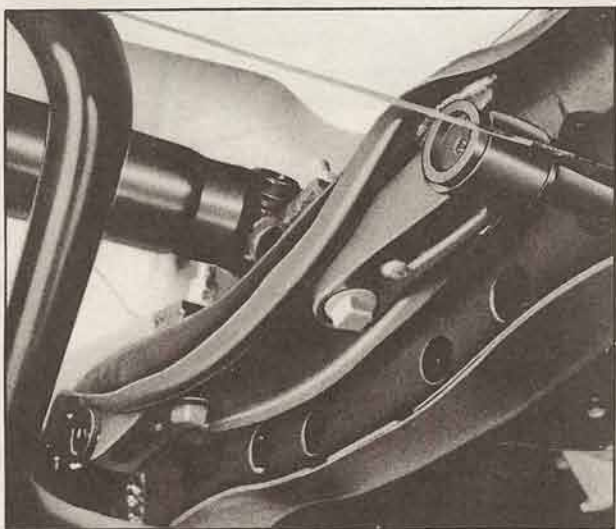


Fig. 8

## TIGHTENING TORQUE

Part Name	Tightening torque (kgm.)
Nut-fulcrum upper link bolt	4.7 - 5.2
Nut-lower link spindle bolt	8.5 - 9.5
Nut-upper spindle fixing bolt	5.5 - 6.2
Nut-cross member front susp. fixing bolt	8 - 9
Threading bush-lower link	20 - 22.5
Threading bush-upper link spindle	14 - 16.5

## Fitting Upper Link

Apply the rubber bush to joint of the upper link and the knuckle support and tighten with the bolt.

Fit the torque arm on the side of lower link.

Temporarily insert and tighten the tension rod. Fit the lower link to the frame with the lower link spindle, but tighten temporarily the lower link spindle nut.

Insert one end of the torsion bar to the torque arm.

In this case, be attentive to the symbols "R" and "L" marked on the right and left sides of the bar.

Insert the anchor to the other end of the torsion bar and fit it to the second cross member.

After adjusting the vehicle carriage.

Tighten the lower link spindle nut under the torque of 8.5-9.5 kgm.

The torsion bar spring is a serration fit at both ends, but it is easy to set in or remove.

Apply ample chassis grease before hand to the serrated position.

Apply a few drops of motor oil to the anchor adjust bolt.

# DATSUN PICK-UP

## To Assemble the Anchor Arm of Front Suspension

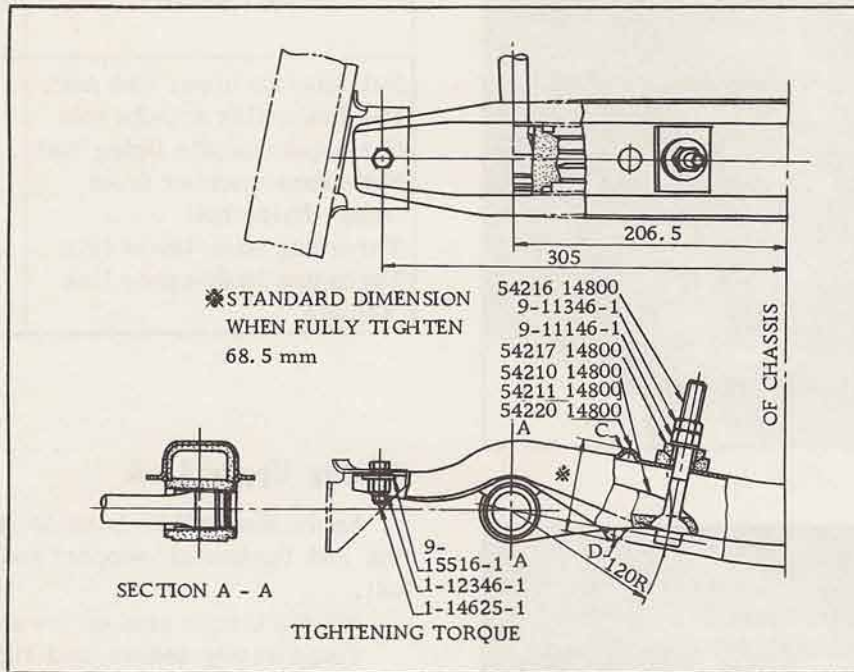


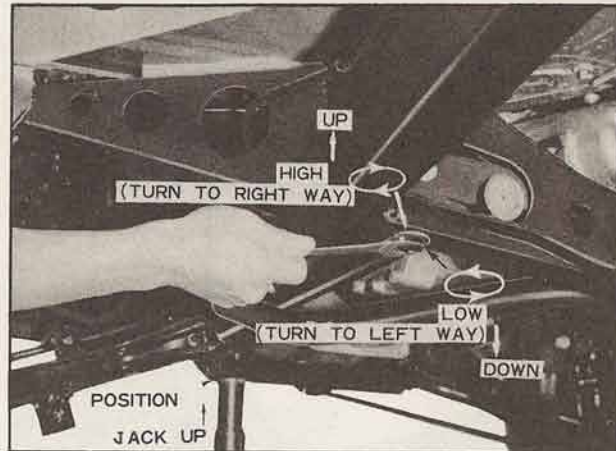
Fig. 9 Position to Fit the Anchor Arm

Place the lower link to a position buffer clearance becomes zero at the rebound side and assemble the anchor arm with marked \* dimension of anchor arm and member.

Smear sufficiently chassis grease to the torsion bar spring before assembling.

Load up with about 725 kg for the anchor arm "D" portion and the anchor member "C" portion or jack up the anchor arm "D" portion.

Insert and tighten firmly the anchor bolt with lock nut.



### Adjusting Car Position After Assembling

After the torsion bar has been assembled tighten it so as the compressed dimension, the lower link side is tightened first and the frame side next.

A tightening nut is provided on the lower side and two on the frame side, front and rear.

Tighten these nuts alternately and gradually until the dimension of rubber become 11 mm.

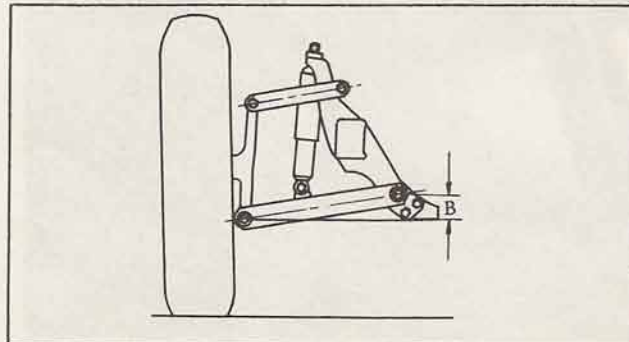


Fig. 10

Jack up the vehicle at the position as shown and after reducing the twisting torque loading, upon the torsion bar to the minimum turn the anchor adjust bolt to right or left so as the dimension (as shown) is to be the following value. Turning the bolt to right makes the carriage higher and to left makes it lower.

Dimension B	$78 + \begin{matrix} 5 \\ 0 \end{matrix}$ mm
(when unloaded)	$56 + \begin{matrix} 5 \\ 0 \end{matrix}$ mm

### How to Attach the Anchor Member

At first, place the anchor member "a" on the bracket of frame, next, insert the bolt "b" into the bracket through "c" and tighten the nut with tightening torque 2~3 kg-m.

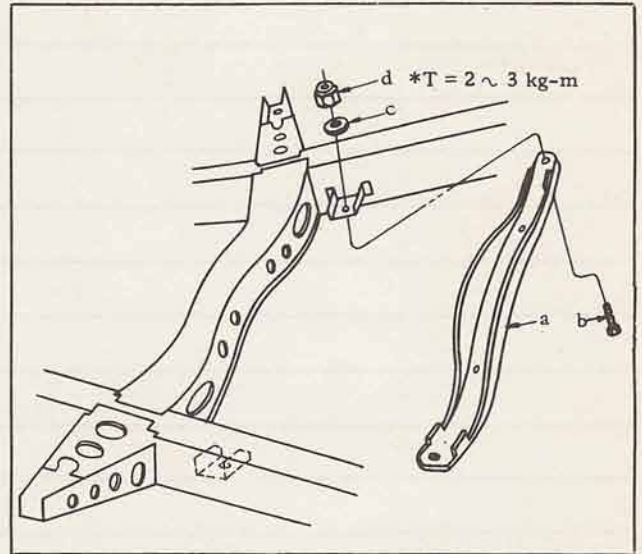


Fig. 11

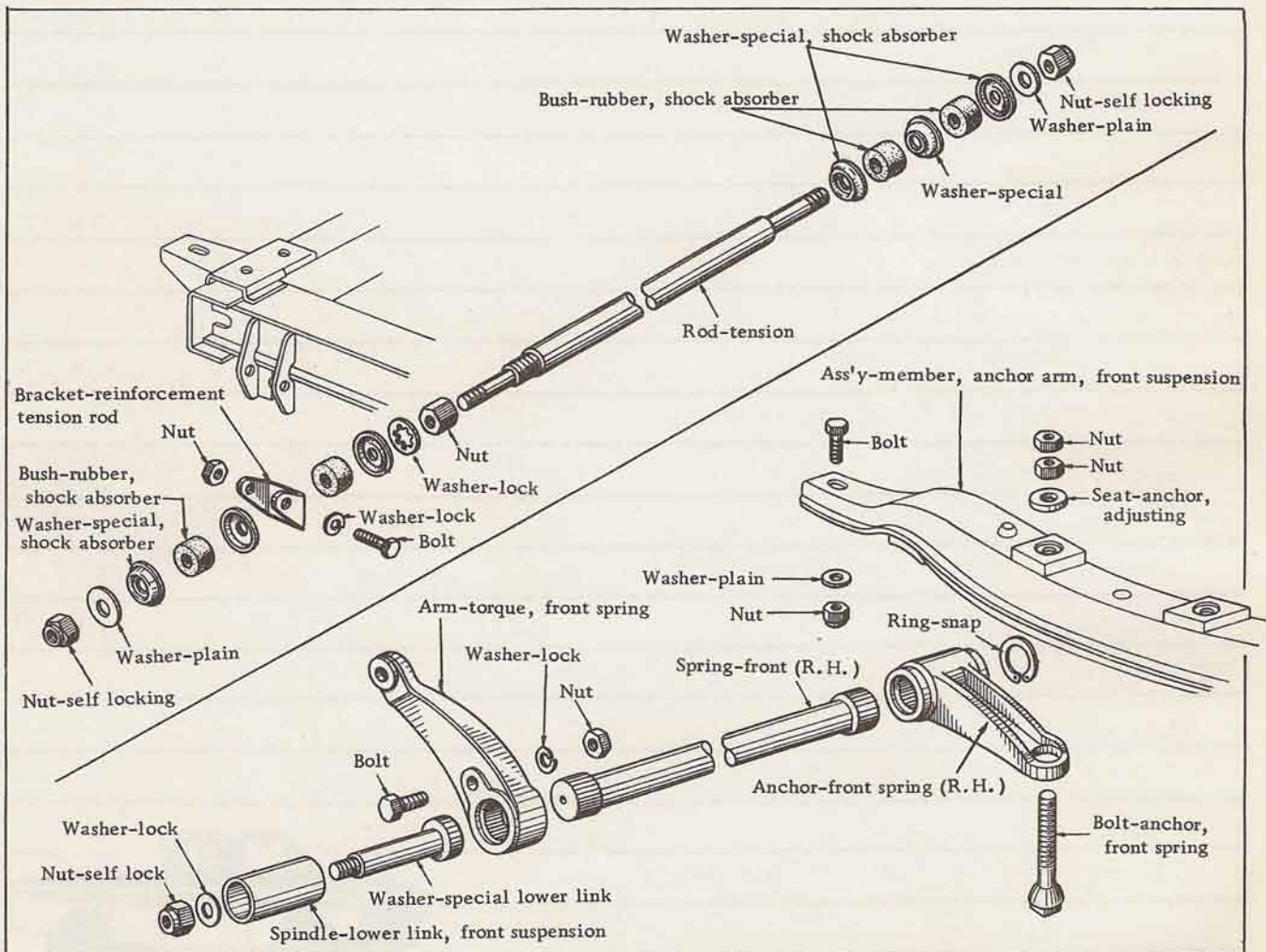


Fig. 12



