

Front axle assembly

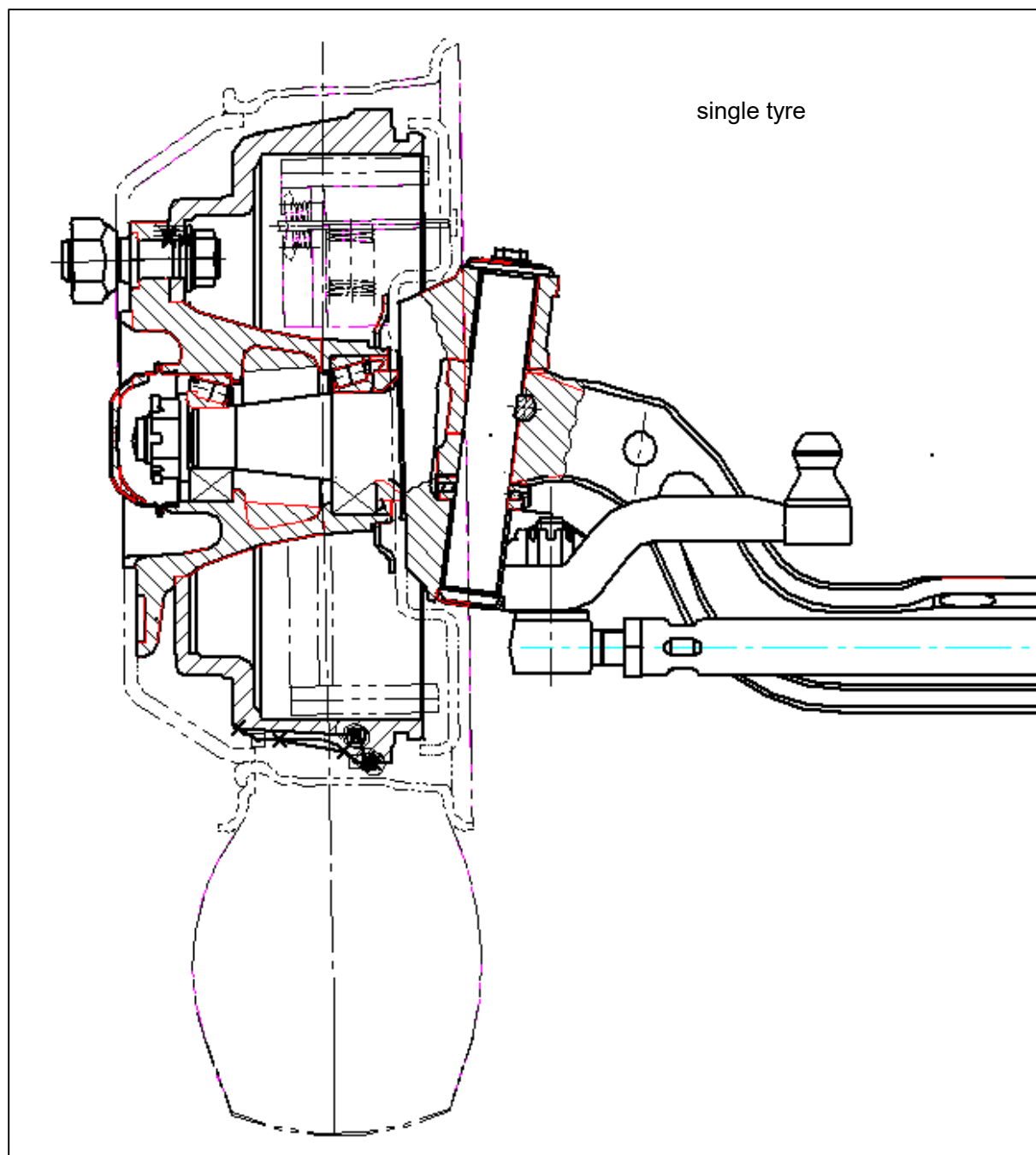
General

Technical parameter

Tightening torque of main bolts and nuts on front axle

Inspection and repair

General



The front axle of this model is integrally supported by I beam.

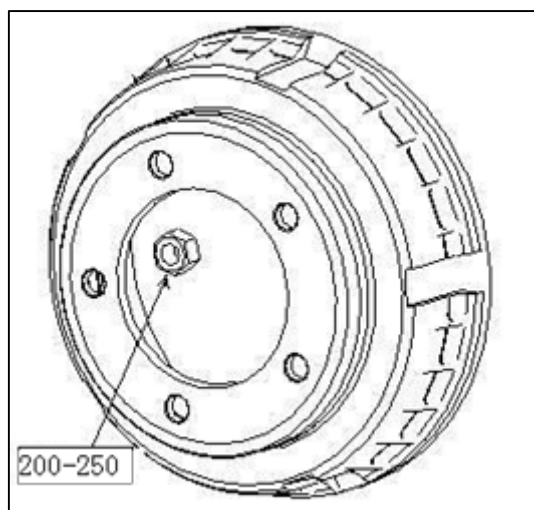
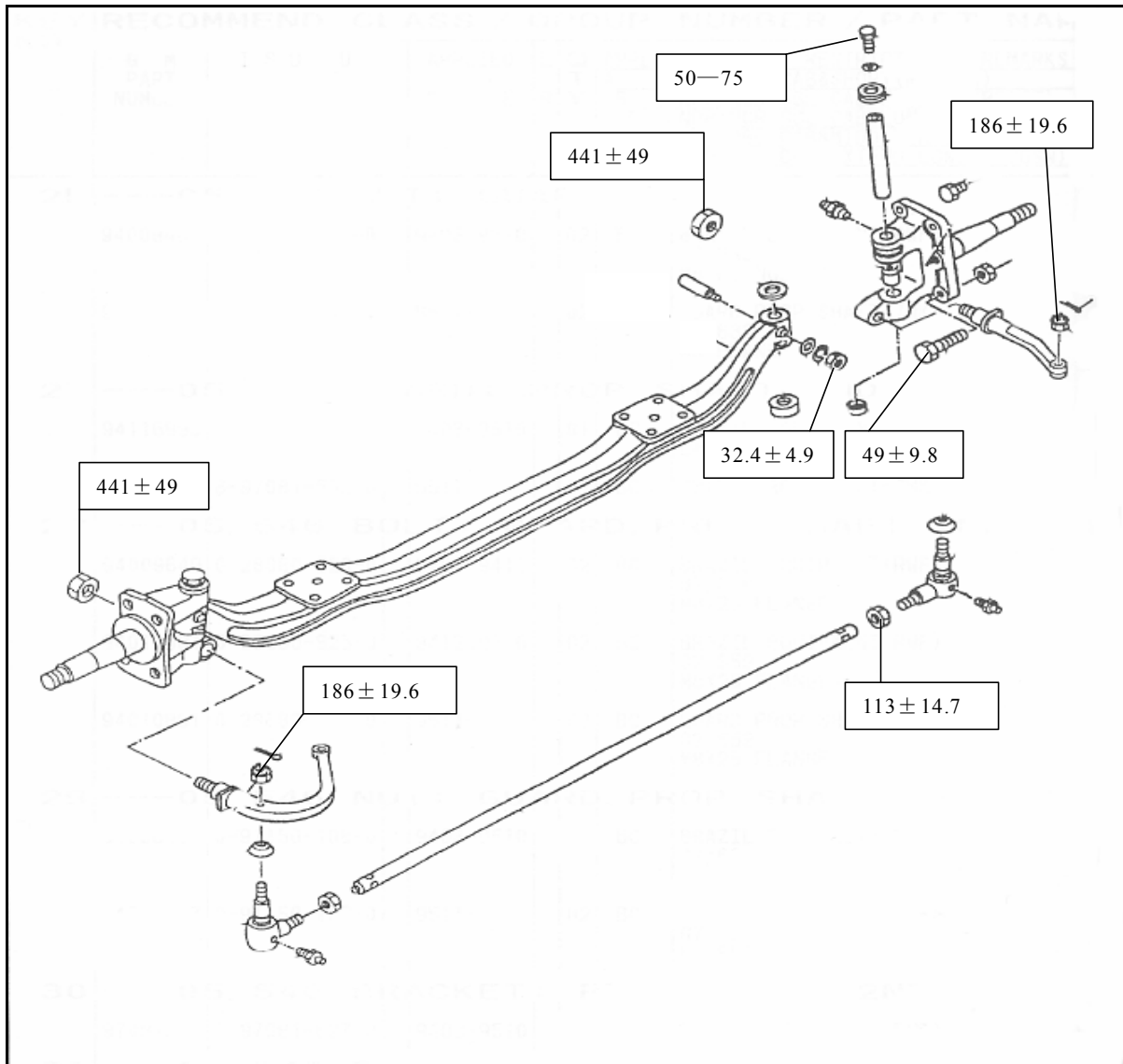
Main data and specifications of front axle

Transmission system form	4X2
Tread (mm)	1440
Front wheel alignment	
Front wheel toe-in	Diagonal tyre 3—7 (mm)
	Radialply tyre 1—3 (mm)
Front wheel camber	1° (degree)
Positive caster	2°40' (degree)
Kingpin inclination	7.5° (degree)
Steering angle	Inner turn 37° (degree)
	Outer turn 30° (degree)
Amount of grease used for bearing on the side of wheel hub	320 (g)

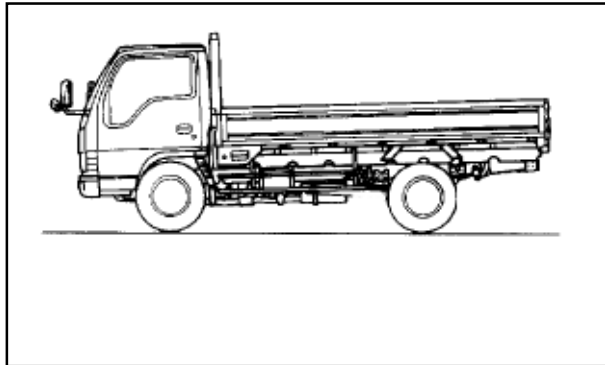


Tightening torque of main bolts and nuts of the front axle

Unit N·m



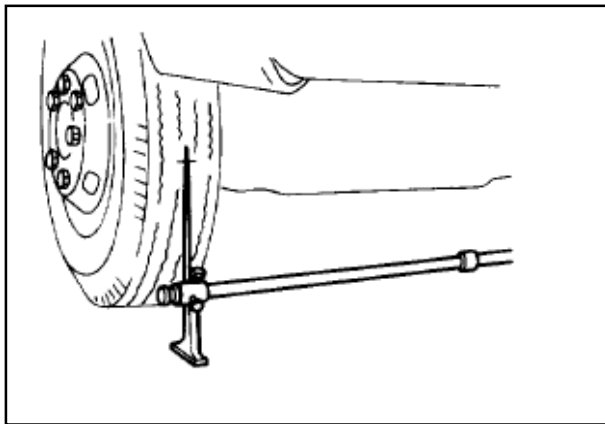
Inspection and repair



Adjustment of front wheel alignment

1. Measurement and adjustment of toe-in

- (1) Place front wheel on a flat place.
- (2) Mark the centre of tyre wheel track with chalk.
- (3) Place toe-in measuring device on the central position of wheel.

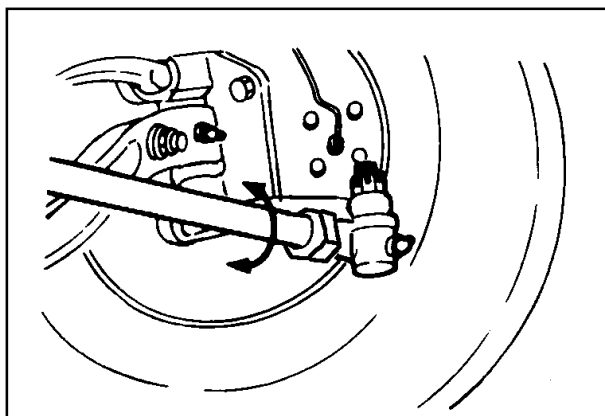
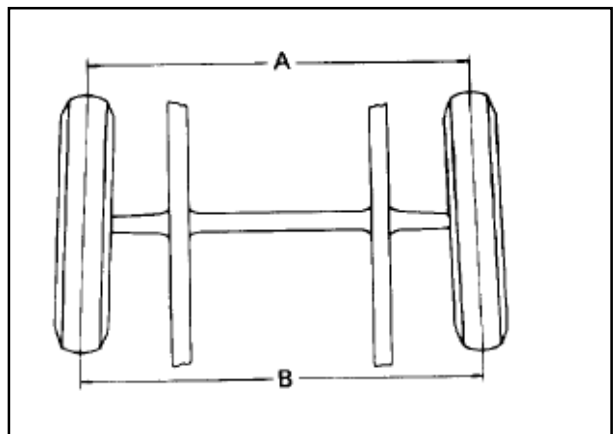


- (4) Measure the distance (A) between tyre centrelines in front of vehicle.

- (5) Push the vehicle back and forth to turn every wheel of 180°.

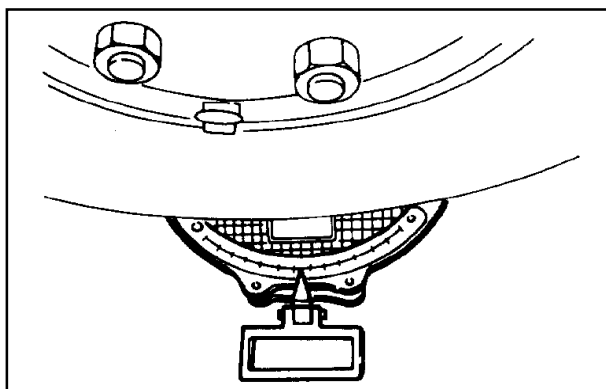
- (6) Measure the distance (B) of tyre centreline on the backside of front wheel according to the original mark.

Toe-in equals to B less A



In case of misalignment of the toe-in

- (7) Unscrew the clamping screw on the end of connection rod.
- (8) Turn the connection rod with a pipe wrench to adjust toe-in.



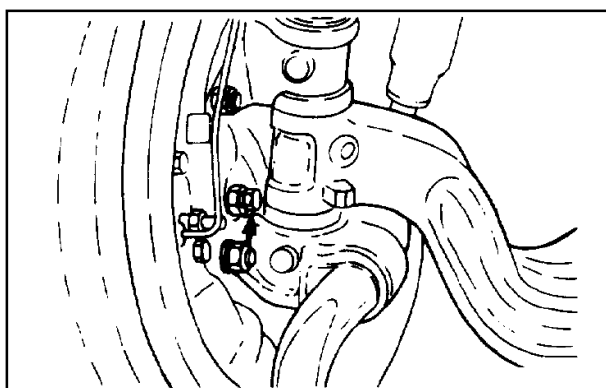
2. Turning radius

(1). Put a wood block beneath back wheel, the thickness of which is the same as that of measuring device.

(2). Put front wheel on the device and ensure it is located at the centre of the device

(3). Turn front wheel to maximum position in clockwise and counter clock-wise direction respectively.

Note: step on brake pedal when turning the front wheel.



Inner turning angle

Outer turning angle

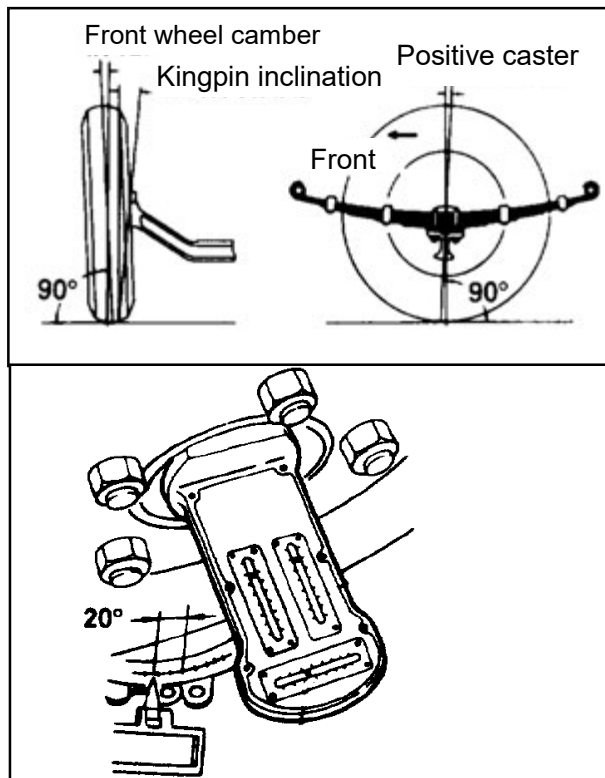
If turning angle is incorrect, make adjustment.

Adjustment steps:

(1). Unscrew the lock nut of adjusting bolt on steering knuckle

(2). Adjust the height of bolt until steering angle meets requirement.

(3). Tighten the lock nut.



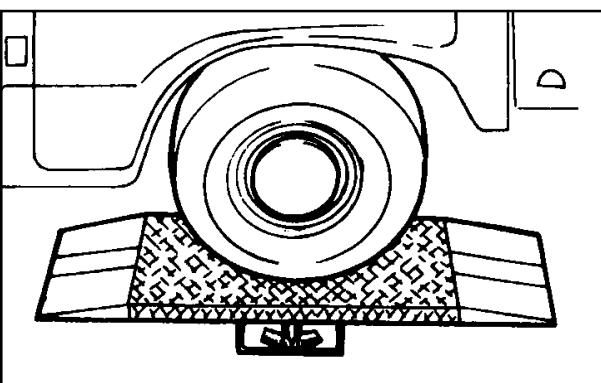
- If the front steel spring is fatigue
- If the front I beam is deformed
- If main pin, main pin bushing and bearing are worn excessively

3. Other parameters of front wheel alignment.

- (1). Remove front wheel hub cover.
- (2). Mount a measuring device of front wheel alignment parameter on the end of steering knuckle. Calibrate front wheel turning angle to zero.
- (3). Measure the front wheel alignment parameters in the fig.

4. In case of incorrectness of parameter measurement

Repair relevant parts in the left column.



alignment.



Measurement of side slip

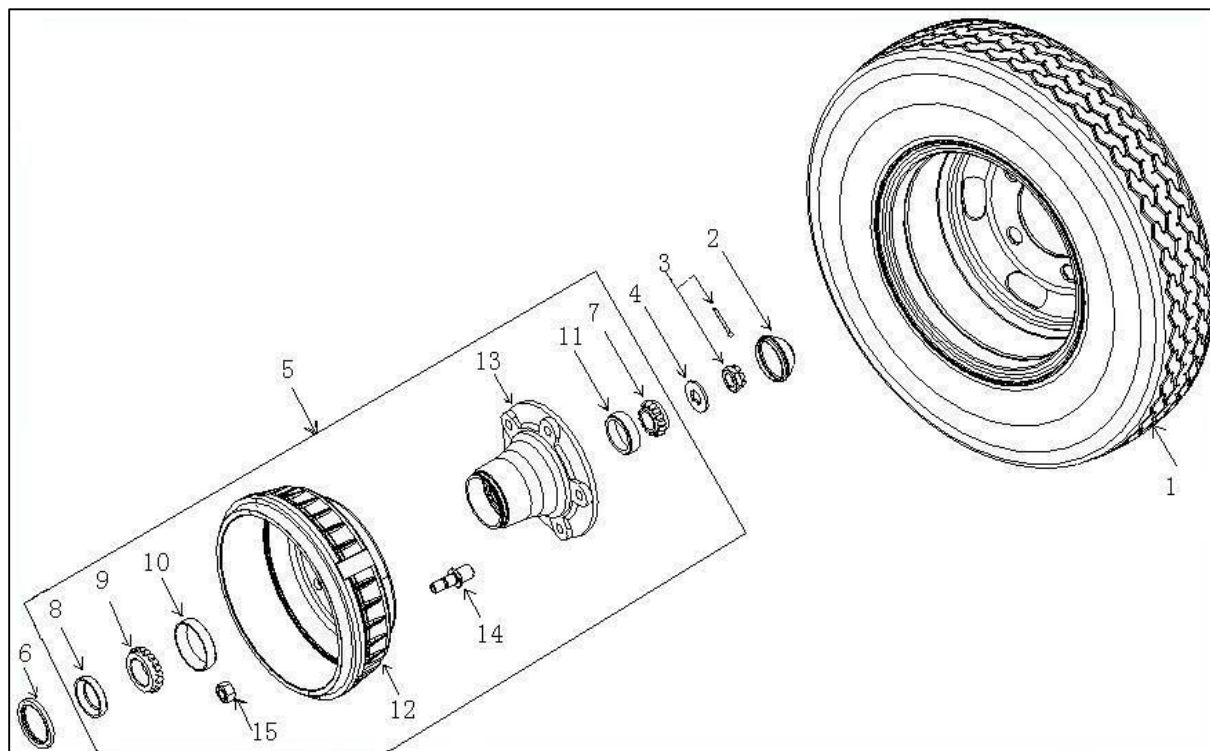
Measurement of side slip should be done after measurement and adjustment of toe-in and positive caster.

- (1) Slow the rolling wheel as possible to pass over the side slip measuring instrument. Read the side slip measuring instrument.
- (2) If side slip value exceeds 5 mm/m, readjust front wheel

Front wheel hub and brake drum



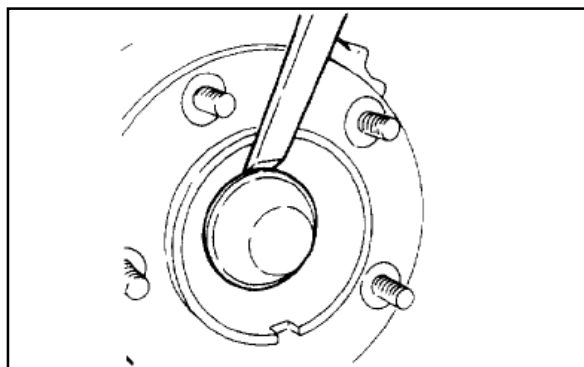
Disassembling



Disassembling sequence:

1.wheel 2. wheel hub cover 3. split pin slotted nut 4. washer 5.wheel hub and brake drum assembly 6. wheel hub oil seal seat 7. wheel hub outer bearing 8. wheel hub inner bearing oil seal 9. wheel hub inner bearing nut 10.wheel hub inner bearing outer race 11. wheel hub outer bearing outer race 12. brake drum 13. wheel hub 14. tyre bolt 15. inner nut

Installation sequence is just opposite to the disassembling sequence.



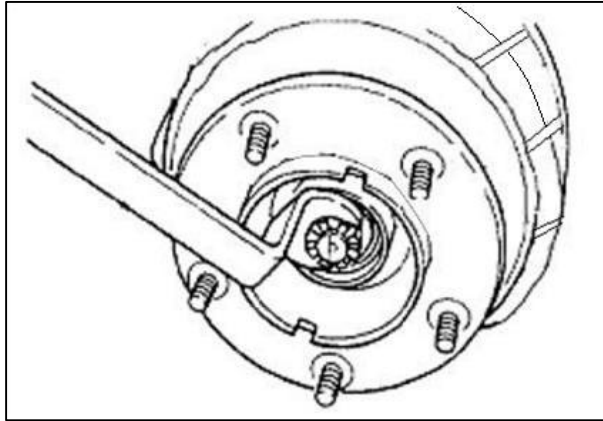
Main operating steps for disassembling

Pull the parking brake and jack up front axle.

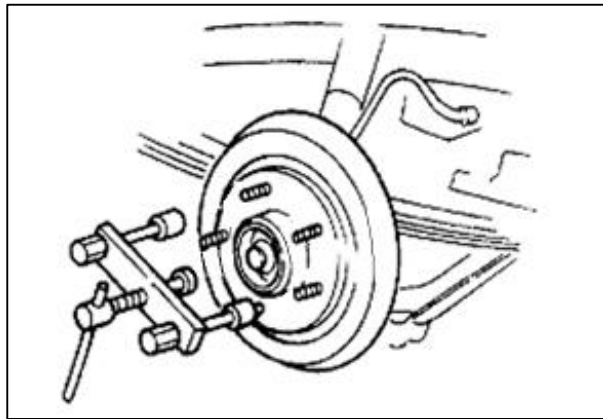
1. Remove wheel.
2. Remove wheel hub cover.



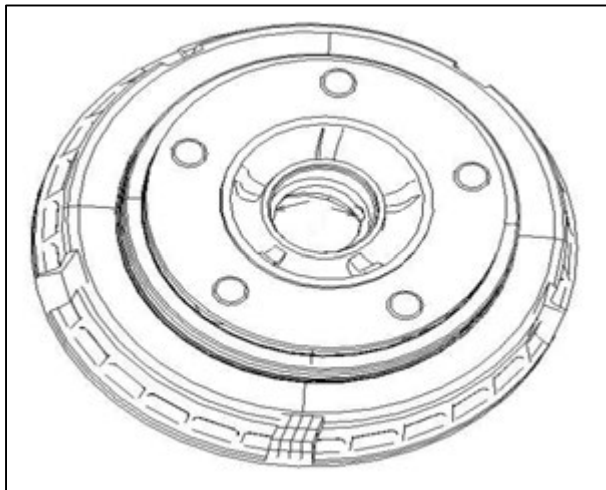
Take care not to damage the contacting surface of wheel hub cover.



3. Remove split pin slotted nut.



4. Remove wheel hub and brake drum assembly with an extractor.



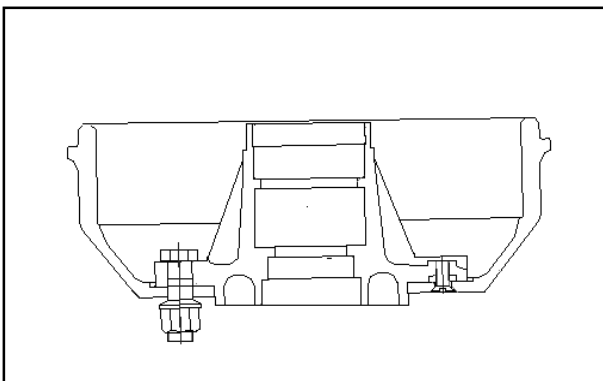
5. Remove bearing bushing outer race.

1. **Wheel hub**
2. **Wheel hub bearing, oil seal**
3. **Knuckle groove**
4. **Brake drum**
5. **Brake shoe, gasket, etc.**

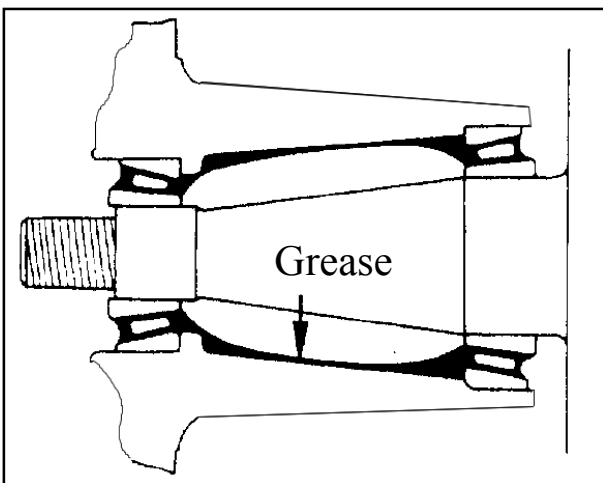


Inspection and repair

Visual inspection of the parts listed in the left for damage or failure.



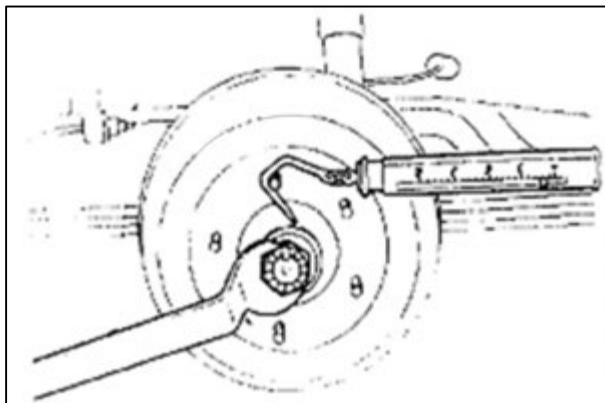
Main operating steps of installation.



Add grease according to the fig.

Inside wheel hub 280 g

Inside wheel hub cover 40g



Adjustment of preload of wheel hub bearing.

Adjust the clearance of brake gasket in the first place.

Adjust bearing preload with wheel hub nut.

It proves to be ok if the pulling force at the wheel bolt is measured as follows:

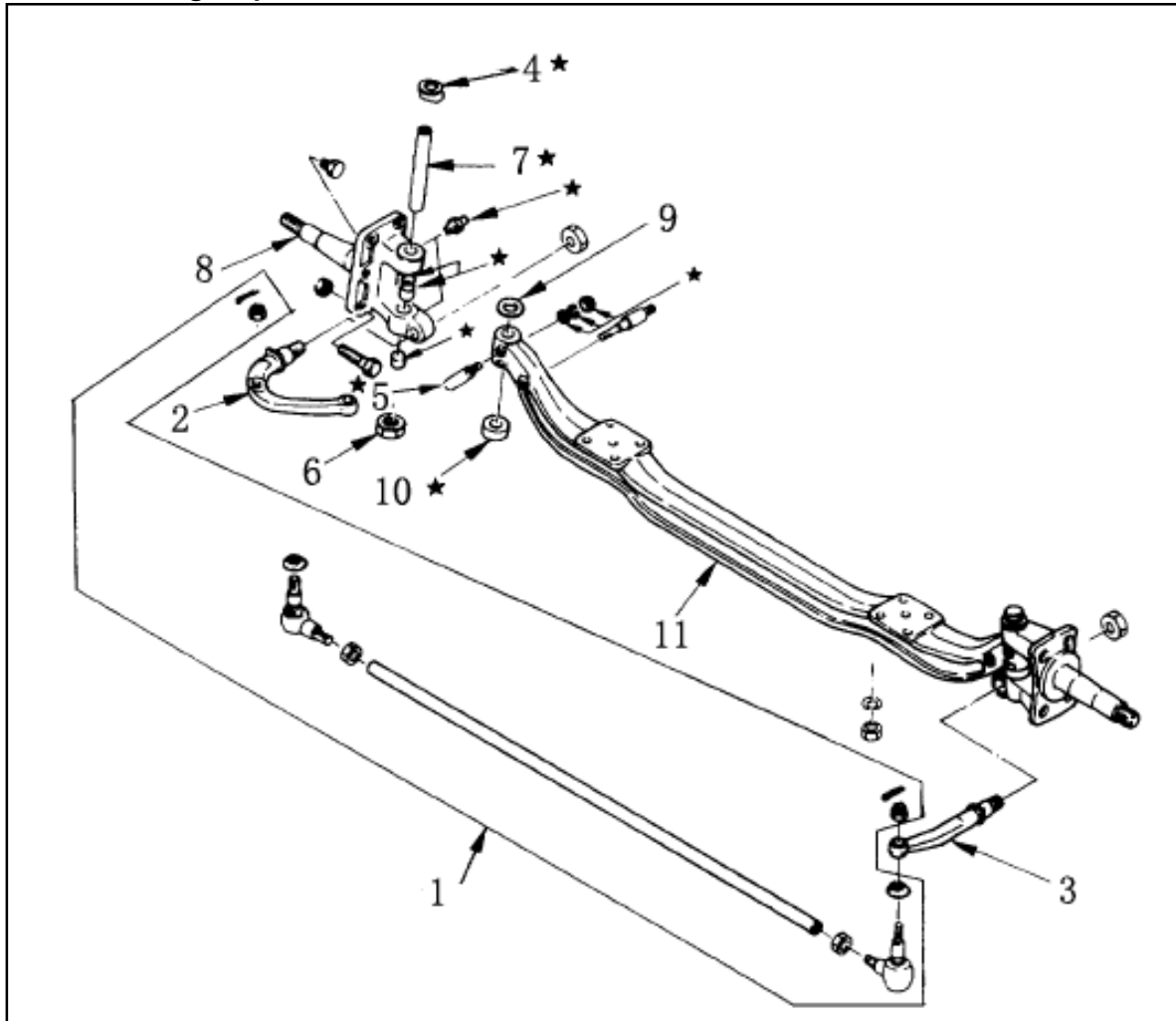
11.7—26.4N

Front axis and steering knuckle

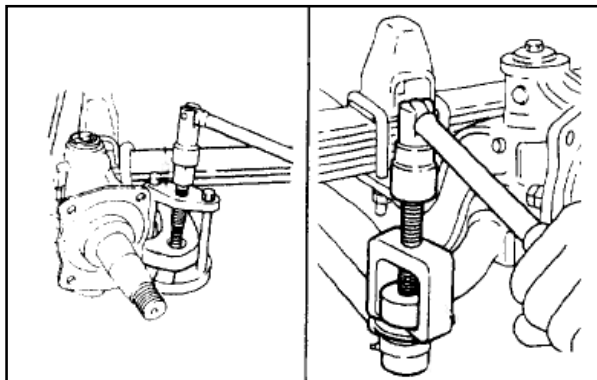


Disassembling

Disassembling sequence



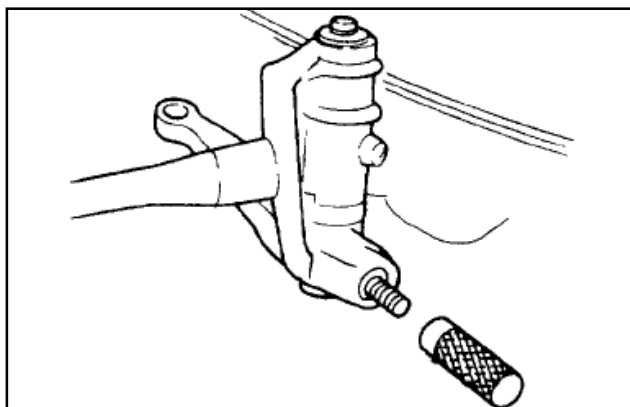
1. String rod assembly 2. Steering bend arm 3. Steering straight arm 4. Main pin upper cover
5. Lock bolt 6. Main pin lower cover 7. Main pin
8. Steering knuckle assembly 9. Adjusting washer 10. Thrust bearing 11. I beam



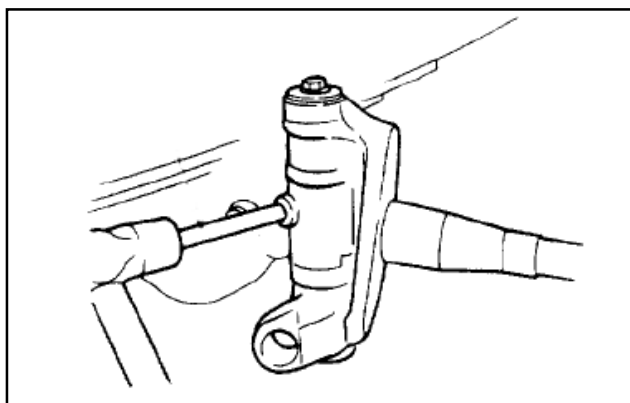
Main operating steps of disassembling

Pull parking brake and jack up front axle.

Remove string rod assembly with an expeller.



Put a brass stick on the steering straight arm and punch with a hammer when removing the steering straight arm.



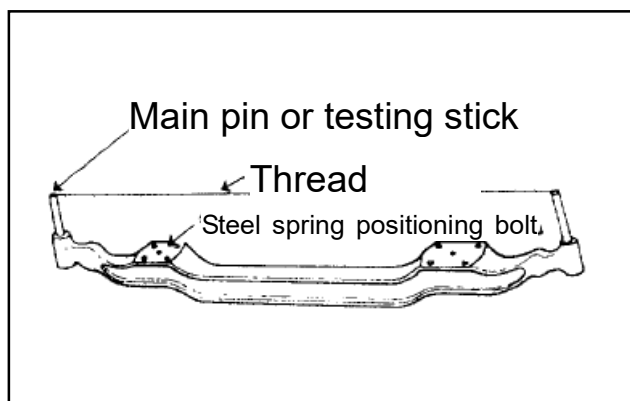
Remove lock bolt.

I beam
Steering knuckle
Steering straight arm
String rod Main pin
Thrust bearing
Adjusting gasket and bushing
String rod ball



Inspection and repair

Visual inspection of the parts listed in the left for damage or failure.

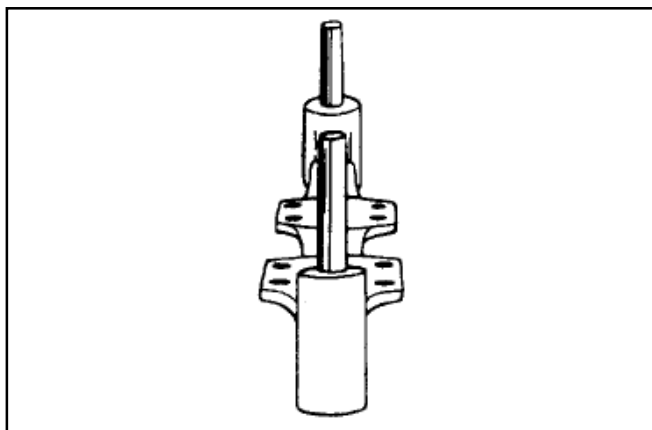


Repair I beam

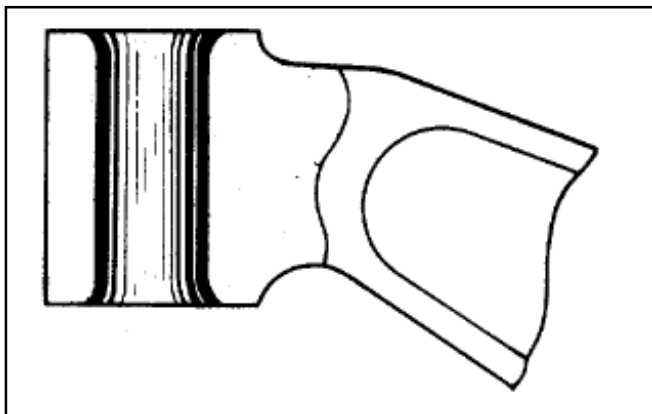
Insert main pin or testing stick into I beam hole.

Pull straight a thread between the centres of the sticks

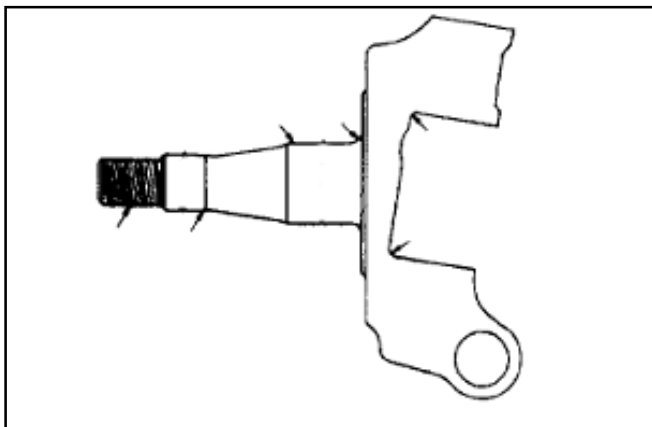
Observe if the thread aligns with two steel spring positioning bolt holes.



Observe if the two main pins or testing sticks align with each other from side view.

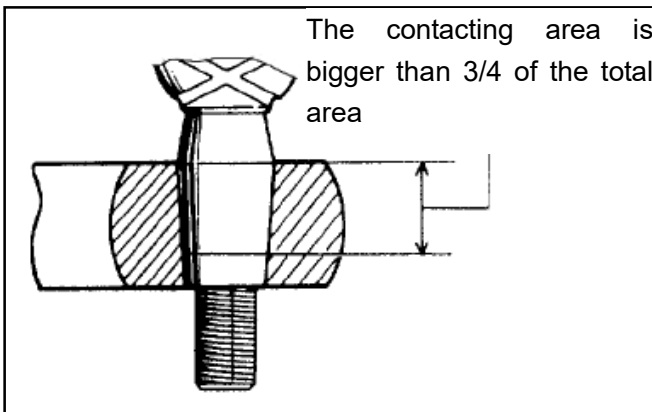


Inspect the main pin hole surface for any deformation and wear.



Observe the damage situation of the steering knuckle surface, especially of the parts pointed by arrows in the fig.

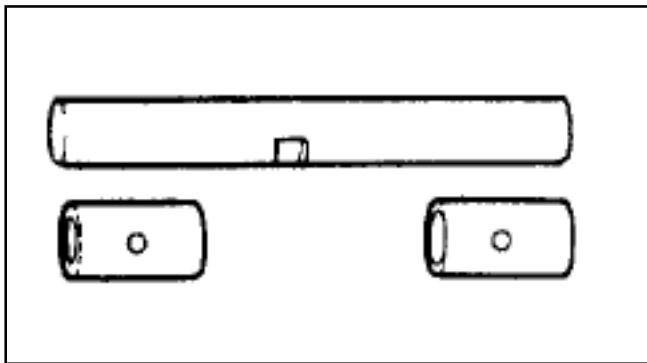
Inspect with magnetic inspection equipment.



Check contacting situation of steering straight arm, Steering bend arm and ball cone by colouring the contacting area.

The contacting area should be bigger than 3/4 of the total area.

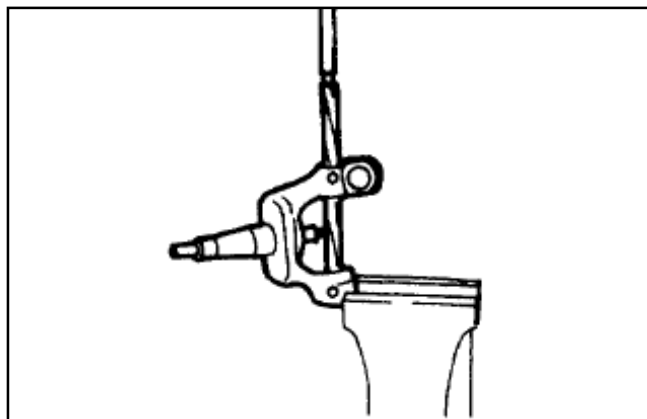
Otherwise, change relevant parts.



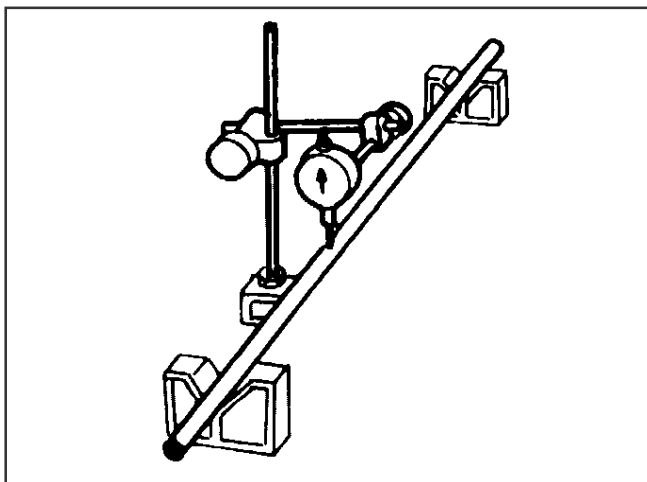
Measure the clearance between main pin and kingpin bush.

The clearance should be less than 0.15mm.

Otherwise, change bush.



If the new bush is too tight after put in, carefully machine the inside surface of the bush with a reamer.



Concentricity of connection rod is 1mm.

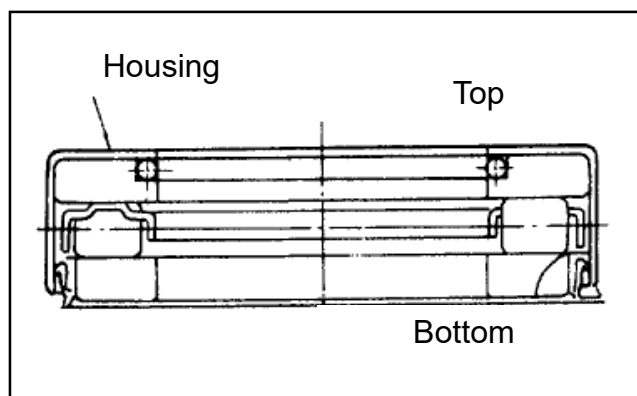
Main operating steps of installation

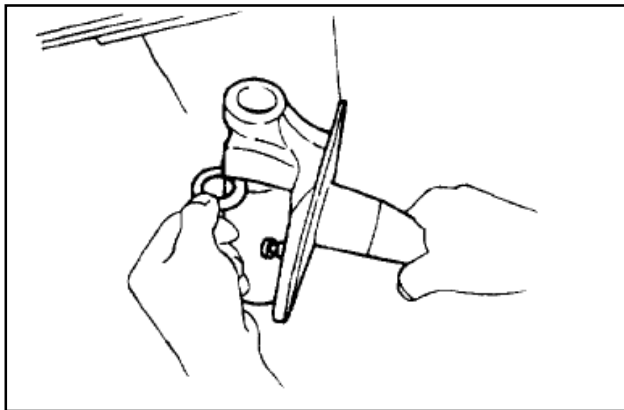


Add proper amount of grease before installation Thrust bearing



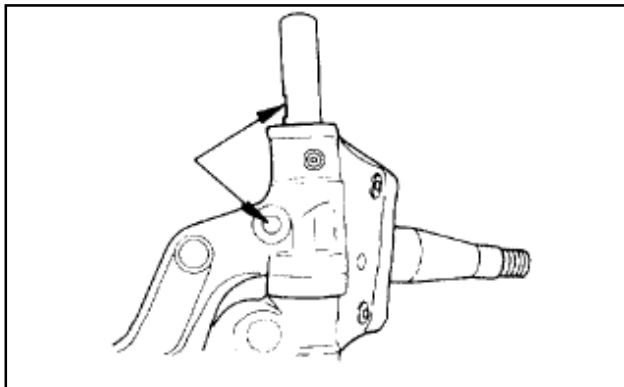
Take care not to make wrong direction.





Measure the clearance between steering knuckle and I beam flange so as to choose gasket with appropriate thickness.

Standard clearance after installation of gasket is 0 to 0.1mm.



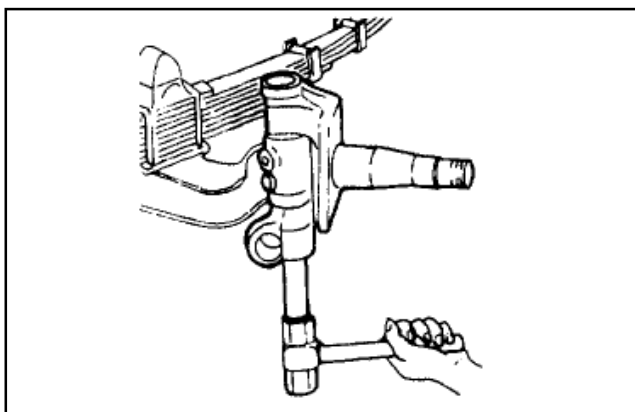
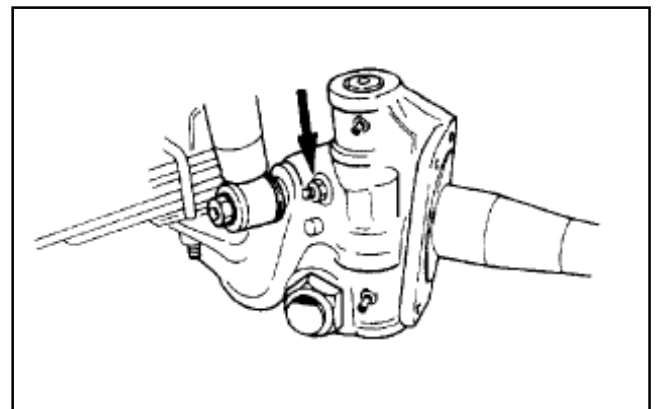
Ensure notch on the main pin align with lock bolt hole when installing main pin.

Steering knuckle should turn freely after filling grease.

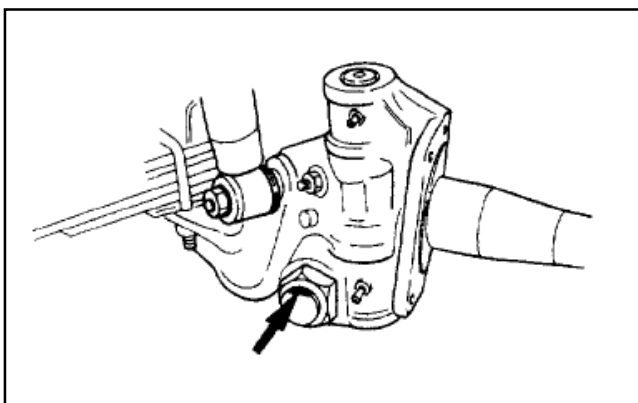


Install lock bolt

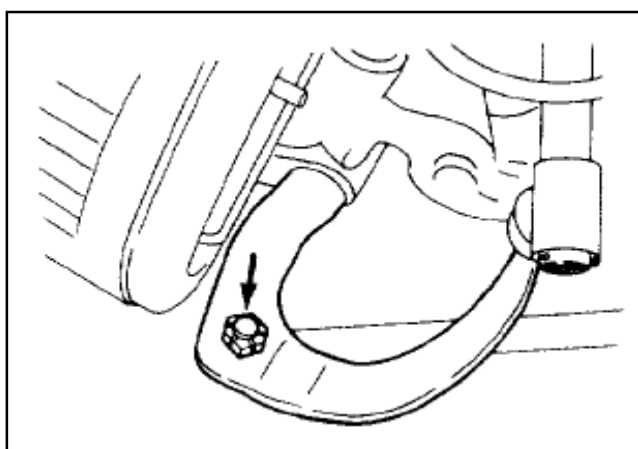
Tighten it to specified torque.



Install main pin cover with an appropriate round bar.



Tighten steering straight arm and steering bend arm to specified torque.



Screw string rod ball to specified torque.