

CHAPTER III FOUR-WHEEL ALIGNMENT CHECK & ADJUSTMENT

SECTION I BASIC CHECK

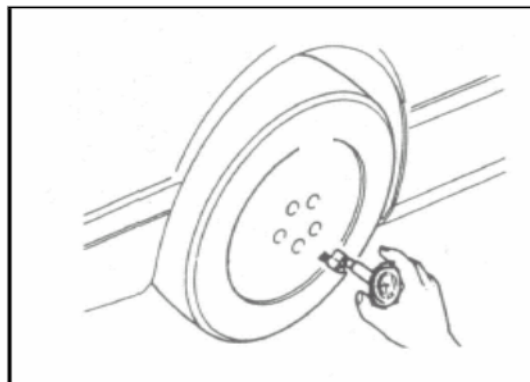
ADJUSTMENT WORK PRIOR TO CHECK

I. PREPARATION WORK PRIOR TO ADJUSTMENT

1. Check tire pressure and adjust it to specified pressure

Standard inflation pressure of cold tire (Kpa)

Item	195/55R15	Spare tire
Front wheel	230	250
Rear wheel	210	

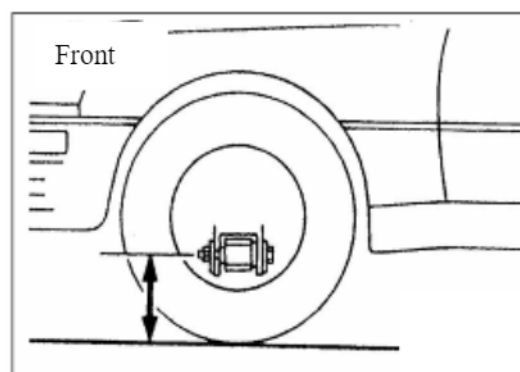


2. Check the height of vehicle body

First of all, you should inflate the tire pressure to standard specified value before measuring the height of vehicle body (the pressures of the left and right tires should be consistent with each other.)

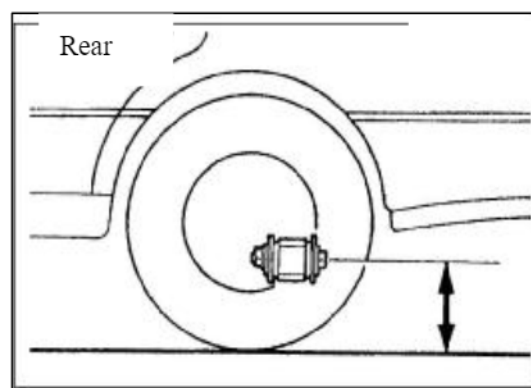
① Front measuring point

Measure the height from the ground to the central point of the bolt connecting the lower control arm assembly and the front steering knuckle. The height of the vehicle body at the left wheel side should be as basically same as that of the vehicle body at the right wheel side.



② Rear measuring point

Check the height from the ground to the central point of the bolt connecting the rear axle and the vibration damper. The height of the vehicle body at the left wheel side should be as basically same as that of the vehicle body at the right wheel side.



Note: Before checking the wheel alignment, you should regulate the car to specified height.

If the car height cannot meet the standard, you should check whether there is damage or deformation on the front and rear suspensions.

3. **Check the wheel bearing clearance, and replace front wheel bearings when necessary.**
4. **Check the status of rims and tires.**
5. **Check the tightness degree of the steering linkage and ball joint.**
6. **Park the car on the flat ground, and carry no luggage or person.**
7. **Shake wheels to check the tightness of front suspensions.**
8. **Check whether the vibration damper can operate normally.**
 - 1) Check whether there is oil leakage;
 - 2) Check whether there is wearing in the assembly bushings;
 - 3) Check the damping force of vibration damper, and replace the vibration damper if it disqualifies.

Note: The oil tank is semi-filled; the cooling water in the water tank and the engine oil reach up to the specified height, and the tire jack and other tools are in specified positions.

II. RIM AND TIRE

1. Visual inspection

Inspect tire and rim.

During the inspection, if you find any crack, damage, deformation and other problems on the rim or tire, you should replace them instantly. As the right figure illustrated:

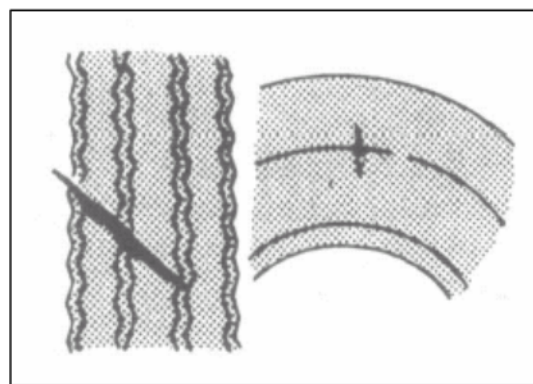


Fig. Tire Wearing

2. Tire wearing

- (1) Check the depth of left tire tread. As the right figure illustrated:

Standard tire: not less than 1.6mm.

Snow tire: 50% tire tread.

- (2) If the pointed wearing phenomena occur, the tire should be replaced.

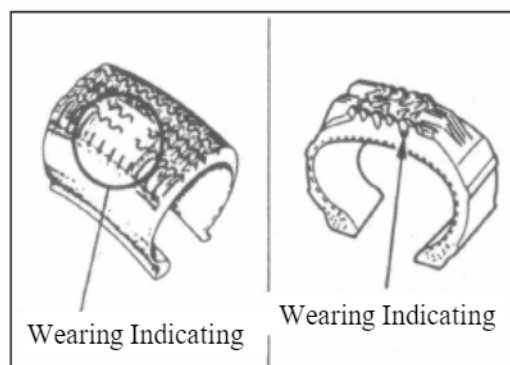


Fig. Tire Wearing

3. Abnormal tire wearing

Abnormal wearing examples are illustrated in the right figure.

The possible reasons and resolving methods are shown in the following table.

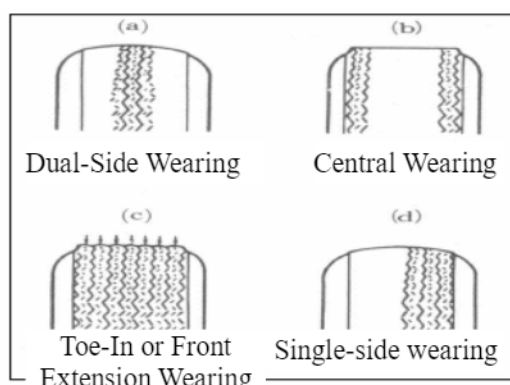


Fig. Tire Wearing

	Possible Reason	Resolving Method
(a)	* Deficient tire pressure (dual-side wearing) * High-speed turn * No tire alignment	* Measure & adjust tire pressure * Lower down vehicle speed * Tire alignment
(b)	* Too high tire pressure * No tire alignment	* Measure & adjust tire pressure * Tire alignment
(c)	* Improper toe-in	* Regulate toe-in
(d)	* Improper camber angle or caster angle * Suspension system failure * Imbalanced tire * Out-of-round brake drum or butterfly disk * Other mechanical problems * No tire alignment	* Regulate, repair or replace axle and suspension system components * Repair or replace * Ensure tire dynamic balance or replace * Rectify or replace * Rectify or replace * Tire alignment

4. Precautions on tire and rim

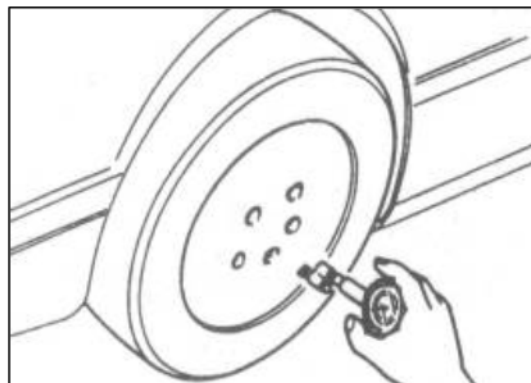
- (1) Disqualified tire and rim should not be used.
- (2) Aluminum alloy rim is easily scored, therefore, soft cloth shall be used to clean up the rim, and steel brush shall be prohibited. If vapor is adopted to clean up the car, the boiling water shall be separated from the rim.

5. Tire replacement

- (1) Before assembling tire valve, you should firstly check whether the valve port of the wheel is smooth or burry. And then paste glycerin to the rubber surface of tire valve or put the tire valve into the glycerin for a while. Finally, you shall use special tools to generate 200N-400N air pressure so as to make the alignment ring pass the aperture of the wheel. In this way, the tire valve is installed (soapy water can be allowed to replace glycerin.).
- (2) Before assembling tire, you should apply glycerin or soapy water to the rim edge. At the same time, you should pay attention to that: when there is dub marks on rim, you should put the homogeneity test mark in alignment with the dub mark. When there is no dub mark on rim, you should put the dynamic balance test mark in alignment with the position of tire valve. When there is no dub mark and dynamic balance test mark, but there is static balance test mark, you should put the tire valve in alignment with the static balance test mark.

6. Tire pressure

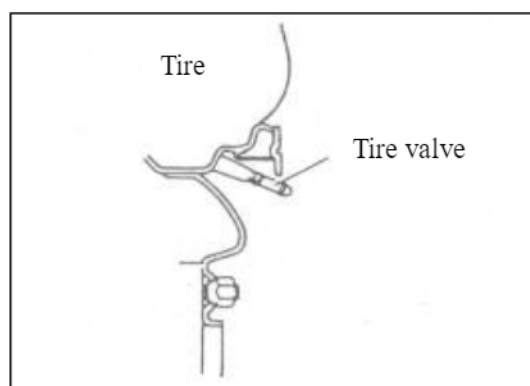
Use barometer to check the pressure of all tires (including spare tires), and regulate the pressure if necessary. Inflate the tire strictly in accordance with the specified pressure standard, and ensure the tire pressure not more than 10% rated air pressure during the process of inflation. The spare tires should have a rated inflation pressure of 2.5bar and shall be stored in other areas separate from the car's four wheels. Prior to the four-wheel alignment, you should check the tire pressure of the four wheels, and regulate the pressure: front wheel is 230Kpa, while rear wheel is 210Kpa. It is shown in the right figure:



Tire Pressure Inspection

7. Air leakage

Check whether there is air leakage on the tire valve. It is shown in the right figure:



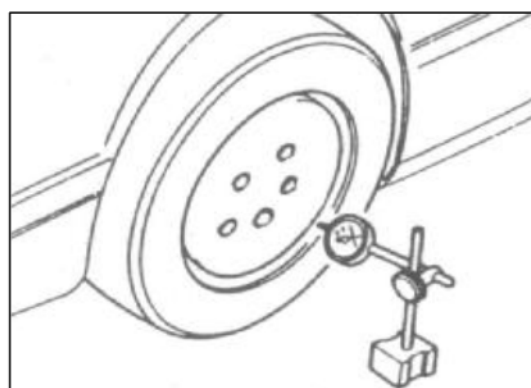
8. Check the unevenness of rim

- (1) Uplift the car and securely support it.
- (2) Fix a micrometer guage($\Phi 10$) furnished with cylindrical contact fingers on the edge of rim and measure its unevenness. It is shown on the right figure.
- (3) Replace the rim if necessary.

Note: Allowed rim deformation:

On the both edges of rim, the allowed maximum average value of the unevenness depth should not exceed:

Steel rim: 5mm



Check the Unevenness of Rim

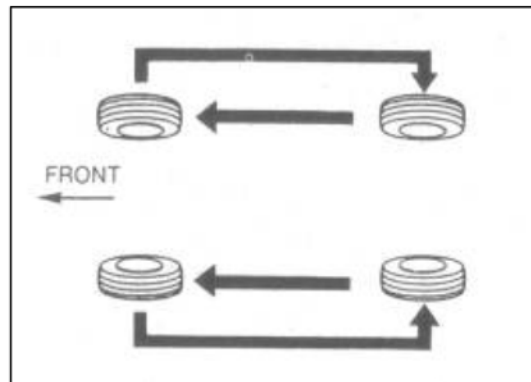
Aluminum-alloy rim: 3mm

9. Tire rotation

In order to prolong the operating life of tire and determine the tire wearing, tire rotation should be carried out when every 6000km is reached.

Note:

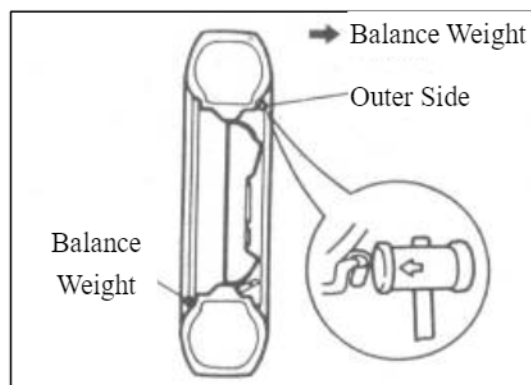
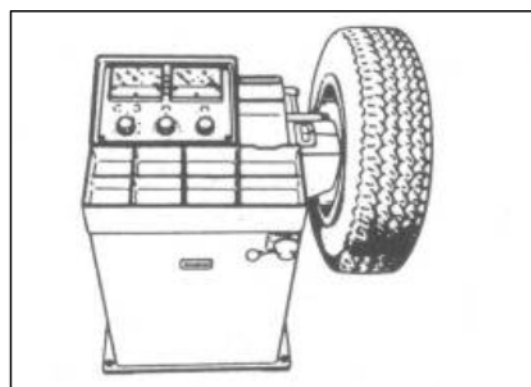
- * The best tire must be selected for front wheel.
- * After tire alignment, the tire pressure should be regulated to specified value.



Tire Rotation

10. Wheel balance adjustment

After inflating the tire, you should screw up the hood of tire valve to carry out dynamic balance test, and install appropriate balance weights on the inner and outer edges of rim as per the requirement. The final total unevenness degree should be less than 100g.cm, that is, each balance weight on the inner and outer edges of rim is about 5g. Note: Not more than one balance weight can be furnished on each side of each wheel, with its maximum weight not exceeding 40g. During the process of assembly, you should prevent the balance weight from being heavily hit. If it is heavily hit, you should replace the balance weight timely. The replaced balance weight cannot be reused.



11. Wheel disassembly

Disassembly sequence:

- (1) Dismount the fastening bolt of wheel;



- (2) Unbolt the wheel.



Assembly process

- (1) When installing the wheel and tire assembly, you should fasten the wheel bolts onto the wheel hub by using your hands, and then take special tools to fasten it tightly according to the diagonal process, with the tightening torque of 110 ± 10 Nm. Impact wrench is prohibited to use in order to prevent the wheel from being damaged or screwed up too loose or too tight. Lubricant grease cannot be applied onto the wheel bolts. (After the initial driving of 100km, the bolts of the installed wheels and tire assembly should be fastened once to ensure the fastening torque. The inspection on the fastening torque of wheel bolts is one of the daily maintenance works).
- (2) When fastening fixing nuts, you should adopt cross method. The fasten degrees of all fixing nuts should be similar, and wheels can rotate freely. Finally, when tightly fastened, the wheels should be on the ground.
- (3) Furnish with decoration cover or deployed the decoration cover as per requirement. When installing card-typed decoration cover, you should slap by hand or use rubber tools to knock it in.



SECTION II FRONT WHEEL ALIGNMENT

Kingpin caster angle	$2^{\circ}50' \pm 30'$
Front wheel camber angle	$0^{\circ} \pm 10'$
Front wheel toe-in	$5' 47'' \pm 5' \text{ (or 1mm)}$
Kingpin inclination angle	$12^{\circ}35' \pm 30'$

I. CHECK AND REGULATE THE FRONT-WHEEL KINGPIN CASTER ANGLE, FRONT-WHEEL CAMBER ANGLE, FRONT-WHEEL TOE-IN ANGLE AND STEERING ANGLE:

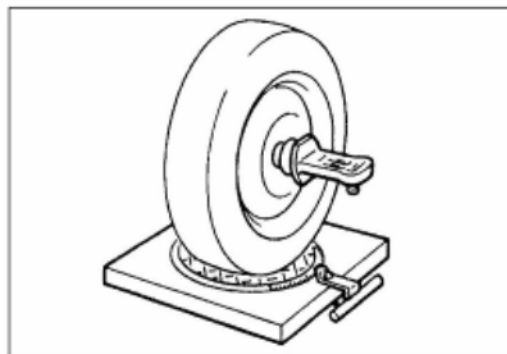
Criteria: Front wheel alignment should meet the requirements as follows:

II. FRONT WHEEL TOE-IN AND STEERING ANGLE ADJUSTMENTS

1. Front wheel toe-in

Toe-in adjustment can be done by use of optical test instrument or mechanical toe-in regulator. Wheel aligner or alignment tester should be installed on the wheels.

Installation should be carried out according to the concrete instructions of the equipment manufacturers.



- (1) To meet the requirement of test instruments, you should make preparations for the wheel alignment, and use the steering wheel limiter purchased on the market to fix the steering wheel in the right ahead position. (The steering wheel must be at the central position $\pm 5^{\circ}$, and the lower clamping flange bolts of steering shaft must be horizontal.)

- (2) Loosen the locknut of right steering tie rod and rubber sleeve clamp, and screw down the toe-in adjusting lever to regulate the length as per requirements until it reaches the specified numerical value.



- (3) Fasten the locknuts, reinstall the rubber sleeve clamp, and check whether the locknut is fastened and the sheath is at the proper position.
- (4) After the front wheel toe-in is well adjusted, you should check whether the steering wheel is horizontal or not. Otherwise, you should loosen the locknuts of steering wheel to regulate it to the horizontal position and fasten the locknuts to meet the torque requirement ($30\pm 3\text{Nm}$).

2. Check the front wheel steering angle

After replacing tie rod joints or regulate toe-in, you should check the steering angle. If the front wheel steering angle doesn't comply with relevant standards, you should check and regulate the length of left and right tie rods.

Maximum rotating angle of outer wheel	33°
Maximum rotating angle of inner wheel	41°

3. Kingpin caster angle

Kingpin caster angle is determined in design structure; therefore, it need not be regulated.

Influence of caster angle

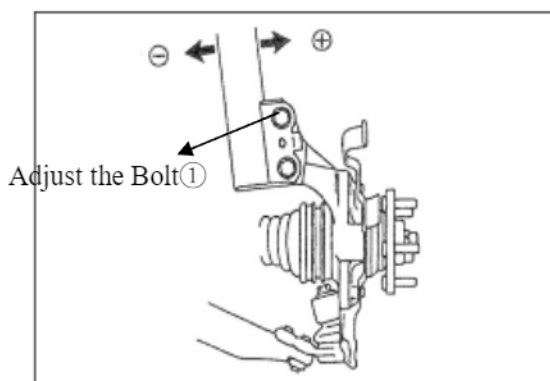
The main functions of caster angle are to keep the car driving towards the right ahead. If the caster angle is of positive value, in the case of front wheel steering, the inner side of the car shall descend and the chassis shall ascend, which shall add loads to the steering knuckle. If the caster angles of front wheel and rear wheel are the same, the car shall return to the right ahead position after steering. The increasing of positive caster angle shall improve the stability of steering wheel, but the force shall become stronger in the case of steering; while the decreasing of positive caster angle shall lower down the stability of steering wheel, but the force shall become weaker in the case of steering. The degree of caster angle shall not impose influence on the tire wearing, which is used to stabilize the driving direction of car and make the car return to alignment automatically in the case of steering. If the car is quipped with traditional mechanical steering device, the degree of caster angle is very small and even inclines to negative caster angle, which can make it easy for steering. If the car is furnished with dynamic steering device, the caster angle is often designed as bigger positive angle, which can make the driver sensitive to steering. The increasing of positive caster angle shall

enhance the steering force, but can improve the stability of straight driving.

4. Camber angle

Under normal circumstances, there is no need to regulate the camber angle of the installed independent suspensions and wheel steering knuckle. If the wheel camber angle deviates from the tolerance range due to other reasons, the connecting bolt of independent suspension and steering knuckle can be used to rectify the camber angle.

- (1) Prior to rectification, you should firstly inspect (visual inspection) whether the driving components are damaged, and replace the damaged components;
- (2) If the front-wheel camber angle is found to exceed the deviation, you should loosen the connecting bolt① of front vibration damper and steering knuckle, and move the wheel to rectify the camber angle.



SECTION III REAR WHEEL ALIGNMENT

I. CHECK THE ADJUSTED REAR-WHEEL CAMBER ANGLE, AND REAR-WHEEL TOE-IN VALUES:

Criteria: Rear wheel alignment should meet the requirements as follows:

Rear wheel toe-in	17'20 " $\pm$ 5'(or 3mm)
Rear wheel camber angle	-0°40' $\pm$ 10'

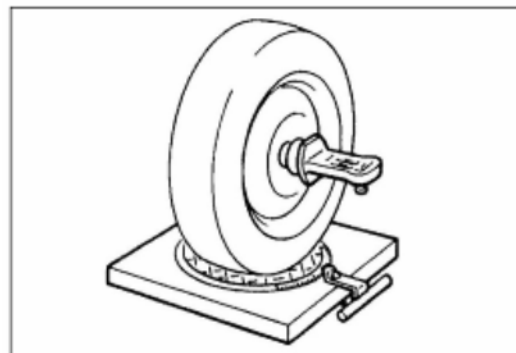
II. REAR WHEEL TOE-IN AND REAR WHEEL CAMBER ANGLE ADJUSTMENT

1. Rear wheel toe-in adjustment

Toe-in adjustment can be done by use of optical test instrument or mechanical toe-in regulator. Wheel aligner or alignment tester should be installed on the wheels.

Installation should be carried out according to the concrete instructions of the equipment manufacturers.

- (1) If the rear wheel toe-in is found not to meet relevant requirements, you can loosen the adjusting bolt 14 and adjusting nut 12 of the lower control arm as the figure illustrated. Note: prevent the nut from shedding out of the slot.



Adjusting Nut 12

- (2) Screw the eccentric adjusting bolt 14 to alter the value of rear wheel toe-in until it complies with the requirements, and fasten the nut to specified torque (100 ~ 120N.m).(The left and right sides are the same)



Adjusting Bolt 14



2. Rear-wheel camber angle adjustment

- (1) As the figure illustrated, loosen the adjusting bolt 16 and adjusting nut 4 of the upper control arm, and prevent the nut from shedding out of the slot.



- (2) Loosen to alter the value of rear-wheel camber angle until it complies with relevant requirements, and then fasten the nut 4 to specified torque (100 ~ 120N.m). (The left and right sides are the same.)



SECTION IV TROUBLESHOOTING MANUAL

Problem	Possible Reason	Countermeasures
Excessive tire wearing or asymmetric wearing	Shown in the following items.	
Early tire wearing	Improper tire pressure Improper wheel alignment parameters	Adjust Adjust
Tire noise	Improper tire pressure Tire wearing	Adjust Check, adjust and replace
Road noise or vehicle body vibration	Deficient tire pressure Unbalanced tire Deformation of rim or tire Asymmetric tire wearing	Adjust Adjust Repair or replace Check, adjust and replace
Up-down vibration of the steering wheel	Excessive deflexion of tire and rim Loose wheel nut or axle head Unbalanced tire Crack or wearing of engine mounting rubber Crack or wearing of transmission bracket rubber	Replace Fasten Adjust Replace Replace
Circular vibration of the steering wheel	Excessive deflexion of tire and rim Loose wheel nut or axle head Unbalanced tire Asymmetric tire wearing Deficient tire pressure Damage or wearing of front wheel bearing Failure of Steering system Failure of suspension system	Replace Fasten Adjust Check Adjust Replace Check Check
Steering wheel deflecting to single side	Improper tire pressure Excessive tire wearing or asymmetric wearing Failure of steering system Failure of braking system Failure of suspension system	Adjust Check Check Check Check
Unstable driving	Inconsistent pressure on both sides of tire Deformation of rim or tire Loose wheel nut Failure of steering system Failure of suspension system	Adjust Repair or replace Fasten Check Check
Brake deflecting to single side	Asymmetric pressure on both sides of the tire Failure of braking system	Adjust Check

Heavy steering wheel	Deficient tire pressure Failure of steering system Failure of suspension system Improper wheel alignment parameters	Adjust Check Check Check
Bad alignment return of steering wheel	Deficient tire pressure Failure of steering system Failure of suspension system Improper front-wheel kingpin caster angle	Adjust Check Check Adjust

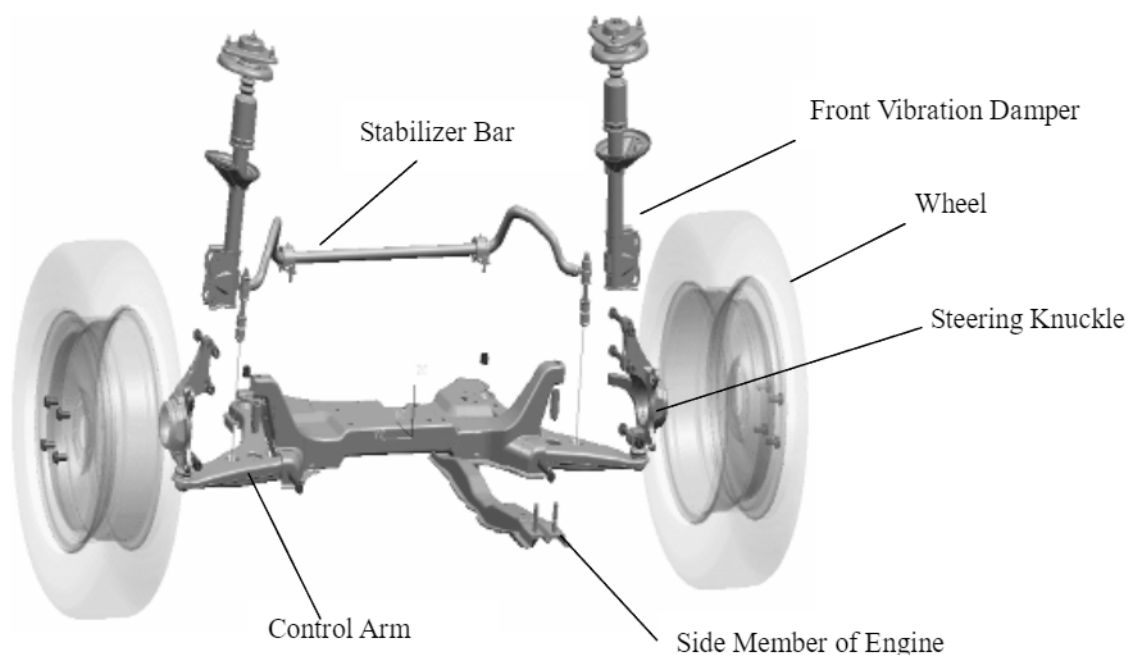
CHAPTER IV SUSPENSION DRIVE AND AXLE

SECTION I FRONT SUSPENSION

STRUCTURE FEATURE

Adopt McPherson independent suspension, accompanying with stabilizer bar, coil spring, double acting telescopic shock absorber.

McPherson suspension structure: In McPherson suspension, the coil spring combines with vibration damper, and the lower part of front strut tightly connects with the steering knuckle, so that the strut and the steering knuckle shall rotate simultaneously when the wheels are rotating. On the top, the rubber cushion directly connects with vehicle body. The rubber cushion can insulate some noise, and can damp the vibration passed from the road. Accordingly, the upper part of strut is fixed on the vehicle body, and moves slightly. However, the lower part of strut shall rotate simultaneously with the wheels and bounces up and down, thus the strut shall be influenced by the side force in the process of operation. The middle part of strut connects with coil spring as well as damping block and bearing parts. This structure features low cost, simple and compact structure, so that it can provide a large room to engine deployment.



I. DISASSEMBLY AND ASSEMBLY OF FRONT VIBRATION DAMPER

Disassembly sequence: (Take the right vibration damper for example)

1. Use jack to uplift the car, dismount the two bolts connecting the vibration damper and steering knuckle.

Bolt mounting torque: $110 \pm 5 \text{ Nm}$.

2. Put down the car, open the hood, dismount the three bolts connecting the vibration damper with vehicle body, and dismount the vibration damper and spring. Bolt mounting torque: $50 \pm 10 \text{ Nm}$



Assembly sequence:

1. Assemble the front vibration damper according to the disassembly sequence.
2. Precautions:
 - ① After assembly, all bolts must be fastened to reach up to specified torque.
 - ② Please check four wheel alignment after assembly.

II. DISASSEMBLY AND ASSEMBLY OF CONTROL ARM

Disassembly sequence: (Take the right control arm for example).

1. Dismount tires, uplift the car, and remove the bolts and nuts connecting the control arm and steering knuckle.

Mounting torque: $110 \pm 5 \text{ Nm}$ (the left and right sides are the same.)



2. Dismount the bolts connecting the control arm and stabilizer bar.

Mounting torque: $50 \pm 3 \text{ Nm}$ (The left and right sides are the same.)



3. Dismount the bolts connecting the control arm and vehicle body.

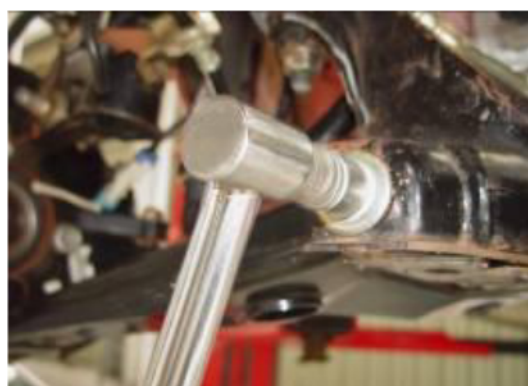
Bolt mounting torque: $180 \pm 15 \text{ Nm}$ (The left and right sides are the same).



4. Dismount the bolts connecting the control arm and under-frame, and remove the control arm.

Mounting torque: $180 \pm 15 \text{ N.m}$ (The left and right sides are the same).

Prevent the control arm from dropping when loosening the bolts.



Assembly sequence:

1. Assemble the control arm according to the disassembly sequence.
2. After assembly, the bolts must be fastened to reach up to specified torque.

III. DISASSEMBLY AND ASSEMBLY OF STEERING KNUCKLE

Disassembly sequence: (Take the right steering knuckle for example. The left and right steering knuckles have the same disassembly process.)

1. Dismount tire

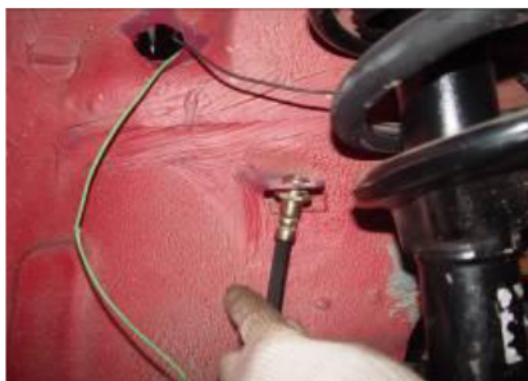
Mounting torque: $110 \pm 10 \text{ Nm}$

2. Dismount the plug of wheel speed sensor and plug of the brake-disk thickness alarm.

3. Dismount the brake oil pipe and avoid the loss of brake oil.

4. Dismount the bolts connecting the steering tie rod and the steering knuckle.

Mounting torque: $35 \pm 3 \text{ N.m}$



5. Dismount the bolts connecting the steering knuckle and the lower control arm.

Mounting torque: $110 \pm 5 \text{ Nm}$



6. Dismount the two bolts connecting the steering knuckle and vibration damper.

Mounting torque: $110 \pm 5 \text{ Nm}$



Assembly sequence:

Assemble the steering knuckle in the reverse sequence of disassembly.

Precautions:

- ① Supplement the brake oil in the braking system and carry out air-release adjustment.
- ② Check and regulate toe-in value.
- ③ Fasten the torque.

IV. DISASSEMBLY AND ASSEMBLY OF THE ENGINE SIDE MEMBER

Disassembly sequence:

1. Dismount the two bolts connecting the side member and vehicle body.

Mounting torque: 100-120 Nm



2. Dismount the bolts connecting the side member and vehicle body.

Mounting torque: 100-120 Nm



3. Dismount the bolts connecting the side member and engine, and can remove the engine suspension bolts shown in the figure for easy disassembly.

Mounting torque: 65 ± 5 Nm

Prevent the side member from dropping when loosening the bolts.



4. Dismount the side member.

Assembly sequence:

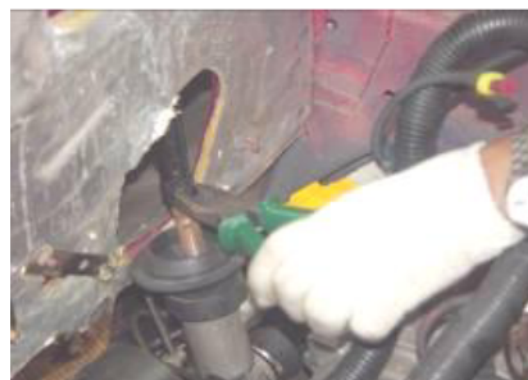
1. Assemble the side member according to the reverse sequence of disassembly.
2. After assembly, the side member must be fastened to reach up to specified torque.

V. DISASSEMBLY AND ASSEMBLY OF UNDERFRAME AND STABILIZER BAR

Disassembly sequence:

1. Dismount the clip connecting the steering column and steering device as well as the fastening bolt of steering column.

Mounting torque: 25 ± 3 Nm.



2. Uplift the car, and dismount the fastening nuts of under-frame and vehicle body.(the left and right sides are the same)

Mounting torque: $180 \pm 15 \text{ Nm}$.



3. Dismount the bolts connecting the under-frame and control arm (the left and right sides are the same).

Mounting torque: $180 \pm 15 \text{ Nm}$



4. Dismount the bolts connecting the stabilizer bar and control arm (the left and right sides are the same).

Mounting torque: $50 \pm 3 \text{ Nm}$



5. Dismount the bolts connecting the under-frame, control arm and vehicle body. (the left and right sides are the same)

Mounting torque: $180 \pm 15 \text{ Nm}$



6. Dismount the bolts connecting the under-frame and vehicle body (the left and right sides are the same).

Mounting torque: 80--90 Nm



7. Dismount the four bolts connecting the suspensions and under-frame. But for easy disassembly and assembly, we suggest you dismount the rear suspension bolts shown in the right figure.

Mounting torque of the four assembling bolts: $70 \pm 5 \text{ N.m}$

Mounting torque of rear suspensions: $60 \pm 5 \text{ N.m}$

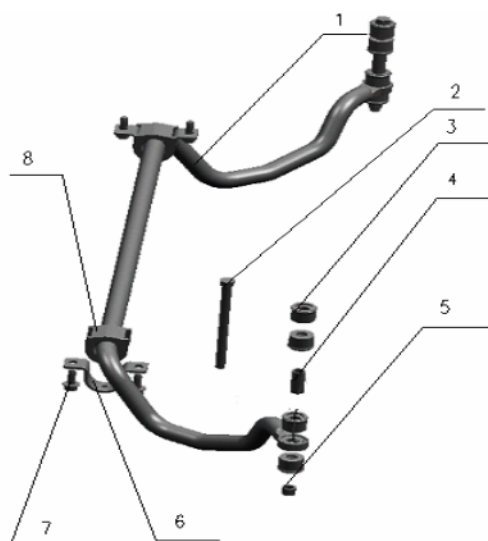


8. Dismount the under-frame, stabilizer bar and the assembly of steering device and tie rod.

Note: If the under-frame is not dismounted, the stabilizer bar cannot be removed from the car.

VI. MOUNTING OF THE FRONT STABILIZER BAR ASSEMBLY

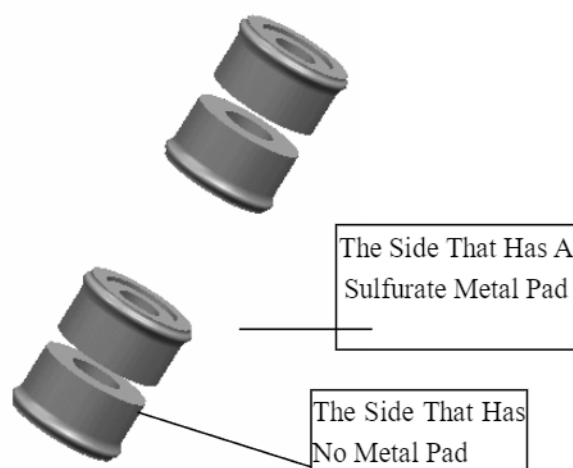
Serial No.	Name of Spare Parts	Quantity
1	Stabilizer bar	1 × 1
2	Extension bolt	1 × 2
3	Rubber pad	1 × 8
4	Metal sleeve	1 × 2
5	Nut	1 × 2
6	Clamp	1 × 2
7	Bolt	1 × 4
8	Rubber support	1 × 2



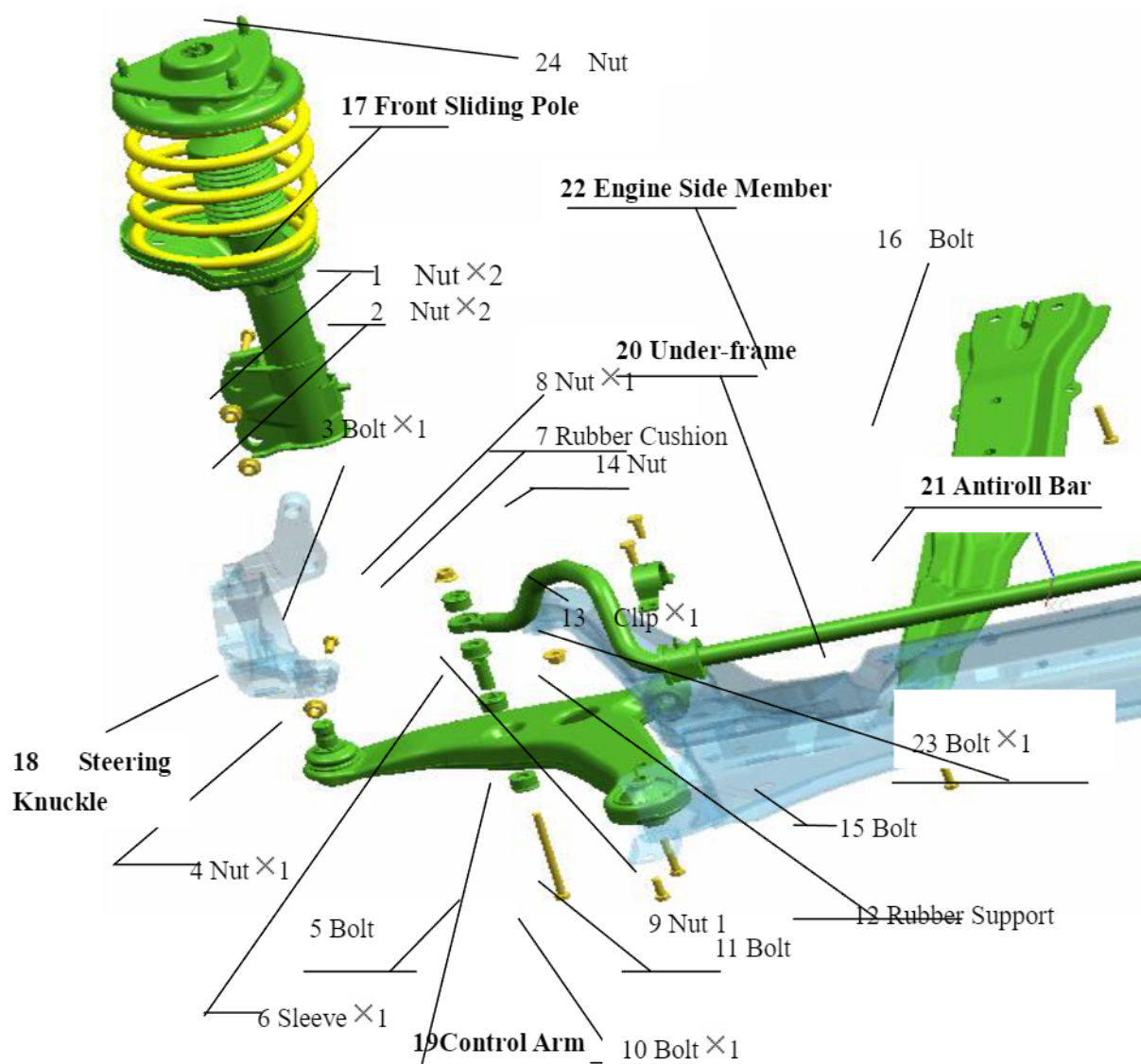
Put the rubber support sheath 8 onto the stabilizer bar 1, install the clip 6 onto the rubber support sheath 8, and fix the central part of the entire stabilizer bar assembly onto the under-frame by use of bolt 7 with a specified torque of $25 \pm 2 \text{ m}$. The both ends of stabilizer bar connect to the lower control arm through an extension bolt with a specified torque of $50 \pm 3 \text{ m}$. The top and bottom surfaces of the connection joint of stabilizer bar end and lower control arm have a rubber pad 3 respectively, and there is a metal sleeve 4 between the second and third rubber pads of either end of stabilizer bar.

It is to be noted that all the rubber pads 3 are the same, but the top and bottom sides of each rubber pad are different, of which one side has a sulfurate metal pad, while the other has no such a metal pad. Thus, the each end of four rubber pads has obverse and reverse surfaces in the case of assembly.

Note: The four rubber pads of each end of the stabilizer bar must be mounted according to the sequence illustrated in the figure.



VII. ASSEMBLY OF FRONT AXLE AND FRONT SUSPENSION



—Use bolt 23 to connect the control arm assembly19 and under-frame 20 up to the specified fastening torque (bolt 23:180±15Nm). The left and right sides are the same.

—Use bolt 14 and installation clamp of stabilizer bar 13 to fix the stabilizer bar assembly 21 onto the rubber sleeve 12 up to specified fastening torque of 25±2 Nm. The left and right sides are the same

—Use bolt 5, stabilizer bar rubber pad7, metal sleeve 6 and nut 8 to fix the end of stabilizer bar assembly 21 onto the control arm19 up to specified fastening torque of 50±3Nm. The left and right sides are the same.

—Use nut 24 to connect the strut assembly 17 with the vehicle body to specified torque of 50±10 Nm. The left and right sides are the same.

—Use bolt 1, nut 2 to connect the strut assembly 17 with the steering knuckle 18 up to the specified fastening torque of 110±5Nm. The left and right sides are the same.

—Use nut9, bolt 10 and bolt 11 to connect the under-frame assembly 20 and vehicle body up to specified fastening torque (nut 9: 180±15 Nm, bolt 10: 80 —90 Nm, bolt 11: 180±15 Nm). The left and right sides are the same.

—Use bolt3 and nut 4 to connect the control arm19, steering knuckle18 and front strut up to specified fastening torque of 110±5Nm. The left and right sides are the same.

SECTION II REAR SUSPENSION

STRUCTURE FEATURE

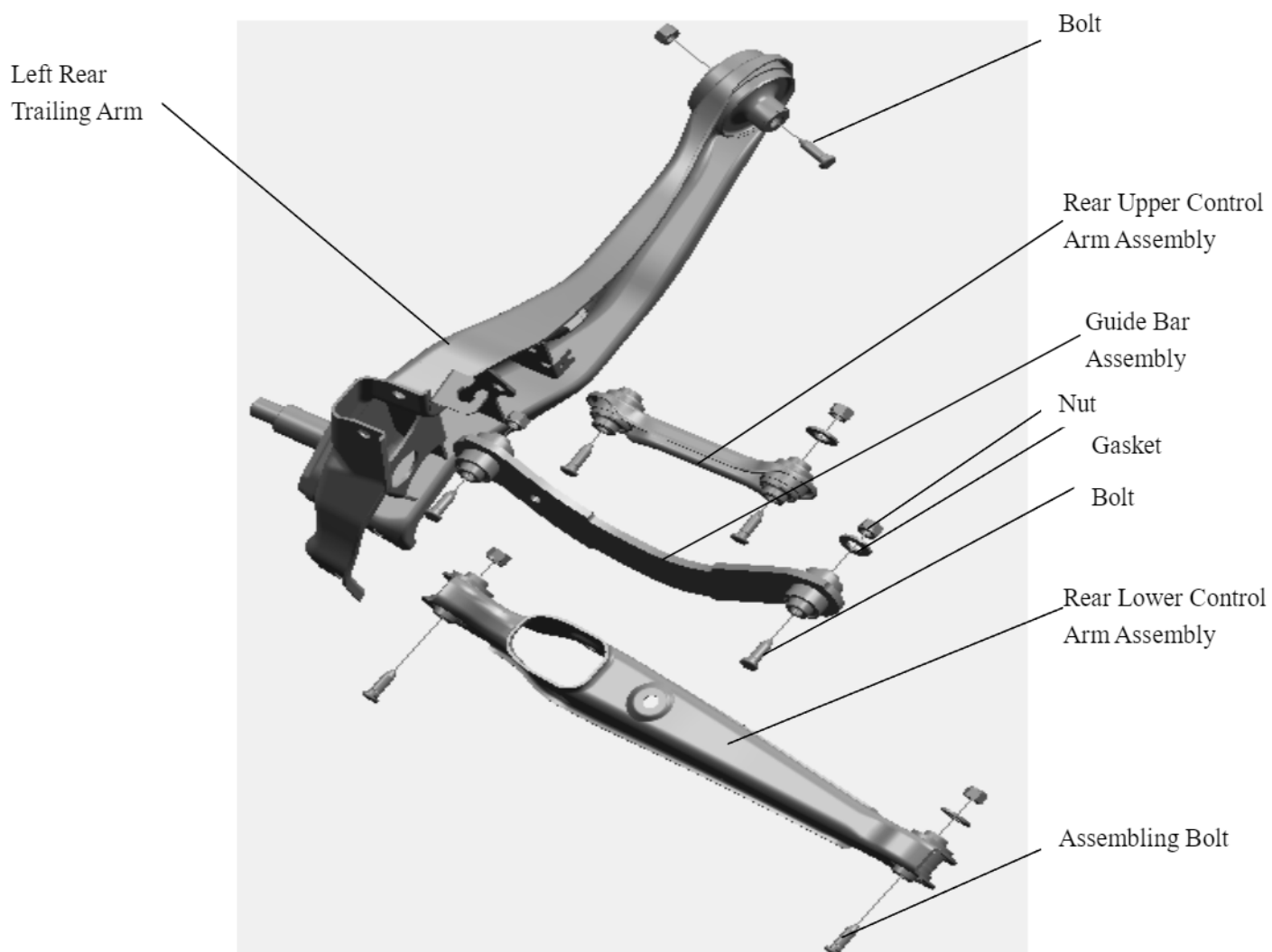
Adopt longitudinal trailing arm suspension, three-linkage rod, cylindrical coil spring, double-acting telescopic vibration damper.

One end of longitudinal rear trailing arm connects with vehicle body through rubber hinge. This rubber hinge has different longitudinal rigidity. One end of the three horizontal oscillating arms connects with rear trailing arm by use of rubber bushing, while the other end connects with vehicle body through rubber bushing. The guide bar, rear lower oscillating arms connects with vehicle body through eccentric adjusting bolts. By adjusting the two eccentric adjusting bolts, we can regulate the rear wheel toe-in and camber angle. The three-linkage mechanism can facilitate the rear-wheel alignment parameters to generate smaller change and to have better operating stability.

The lower part of strut connects with rear lower control arm by use of rubber hinge, while the upper part directly connects with vehicle body through rubber cushion. The rubber cushion can not only isolate a portion of noise, but can also damp the vibration passing from the road. As a result, the upper part of strut is fixed onto the vehicle body and moves slightly. However, the lower part of strut shall bounces up and down simultaneously with the rear lower control arm. Compared with non-independent suspension, this vibration damper shall bear a minor side force. The middle part of strut connects with coil spring as well as damping block and bearing parts.

A minor unsprung mass; the suspension occupies a small space; elastic components only bear vertical force, thus spring with smaller rigidity can be used to reduce the vibration frequency of car and improve the smoothness of car driving; the left and right wheels move independently without influence on each other, which can not only reduce inclination and vibration of vehicle body, but can also boast a good surface adhesion on the bumpy road.

Exploded View of Rear Trailing Arm Assembly



I. DISASSEMBLY AND ASSEMBLY OF REAR VIBRATION DAMPER

Disassembly sequence:

1. Open the trunk lid; dismount the side enclosure to expose the bolts connecting rear strut assembly and vehicle body. Dismount the two connecting bolts. Mounting torque: 50 ± 10 Nm.
2. Uplift the car. Dismount the bolts connecting the lower control arm and car body. Note: Since the helical damping spring has a very strong elasticity, it is very difficult to dismount the fixed bolts of the lower part of strut assembly due to the influence of the spring force. Therefore, you should firstly dismount the bolts connecting the rear lower control arm and vehicle body in order to reduce the bearing force of coil spring. Mounting torque: 100—120Nm.
3. Dismount the bolts connecting rear strut and lower oscillating arm. Mounting torque: 80 ± 5 Nm
4. Remove the rear strut assembly.

Assembly sequence:

1. Assemble the rear vibration damper according to the reverse sequence of disassembly.
2. Precautions:
 - ① After assembly, all bolts must be fastened up to specified torques.
 - ② Please check the four wheel alignment parameters after assembly.



II. CHECK VIBRATION DAMPER:

1. Check Vibration Damper

- ① Check the vibration damper to see whether there is oil leakage. If oil leakage exists, you should replace the vibration damper. Check the damping force of vibration damper to see if it qualifies. If it disqualifies, you should replace it.
- ② Check whether there is crack or deformation in the spring seat; Check whether the limit gear block is damaged; Check whether the limit gasket of suspending spring is worn, cracked or deformed. Replace defective spare parts.

Note: When laying aside vibration damper, you should abide by the following procedure:

2. Disposal

- (1) Stretch the vibration damper lever as long as possible.
- (2) Drill a hole to discharge the gas from vibration damper cylinder.

Note: The discharged gas is harmless, but you should prevent the splashing iron chips from hurting yourself when drilling.

II. DISASSEMBLY AND ASSEMBLY OF REAR UPPER CONTROL ARM

Disassembly sequence:

1. Dismount the bolts connecting the upper control arm and vehicle body.

Mounting torque: 100~120Nm.



2. Dismount the bolts connecting the upper control arm and rear trailing arm.

Mounting torque: 90~100Nm



3. Take down the upper control arm.

Assembly sequence:

1. Assemble the rear upper control arm according to the disassembly sequence.
2. Precautions:

After assembly, all bolts must be fastened up to specified torques.

III. DISASSEMBLY AND ASSEMBLY OF REAR LOWER CONTROL ARM

Disassembly sequence:

1. Dismount the bolts connecting the control arm and vehicle body.

Mounting torque: 100~120Nm



2. Dismount the bolts connecting the control arm and rear vibration damper.

Mounting torque: 80 ± 5 Nm



3. Dismount the bolts connecting the control arm and rear trailing arm.

Mounting torque: 90~100Nm

4. Dismount the lower control arm assembly.



Assembly sequence:

1. Assemble the rear lower control arm according to the disassembly sequence.
2. Precautions:

After assembly, all bolts must be fastened up to specified torques.

IV. DISASSEMBLY AND ASSEMBLY GUIDE BAR

Disassembly sequence:

1. Dismount the four fastening bolts of wheel.

Mounting torque: $110 \pm 10 \text{ Nm}$



2. Take down the tire.



3. Dismount the bolts connecting guide bar and rear trailing arm assembly.

Mounting torque: $90 \sim 100 \text{ Nm}$.



4. Dismount the bolts connecting guide bar and vehicle body.

Mounting torque: $100 \sim 120 \text{ Nm}$

Assembly sequence:

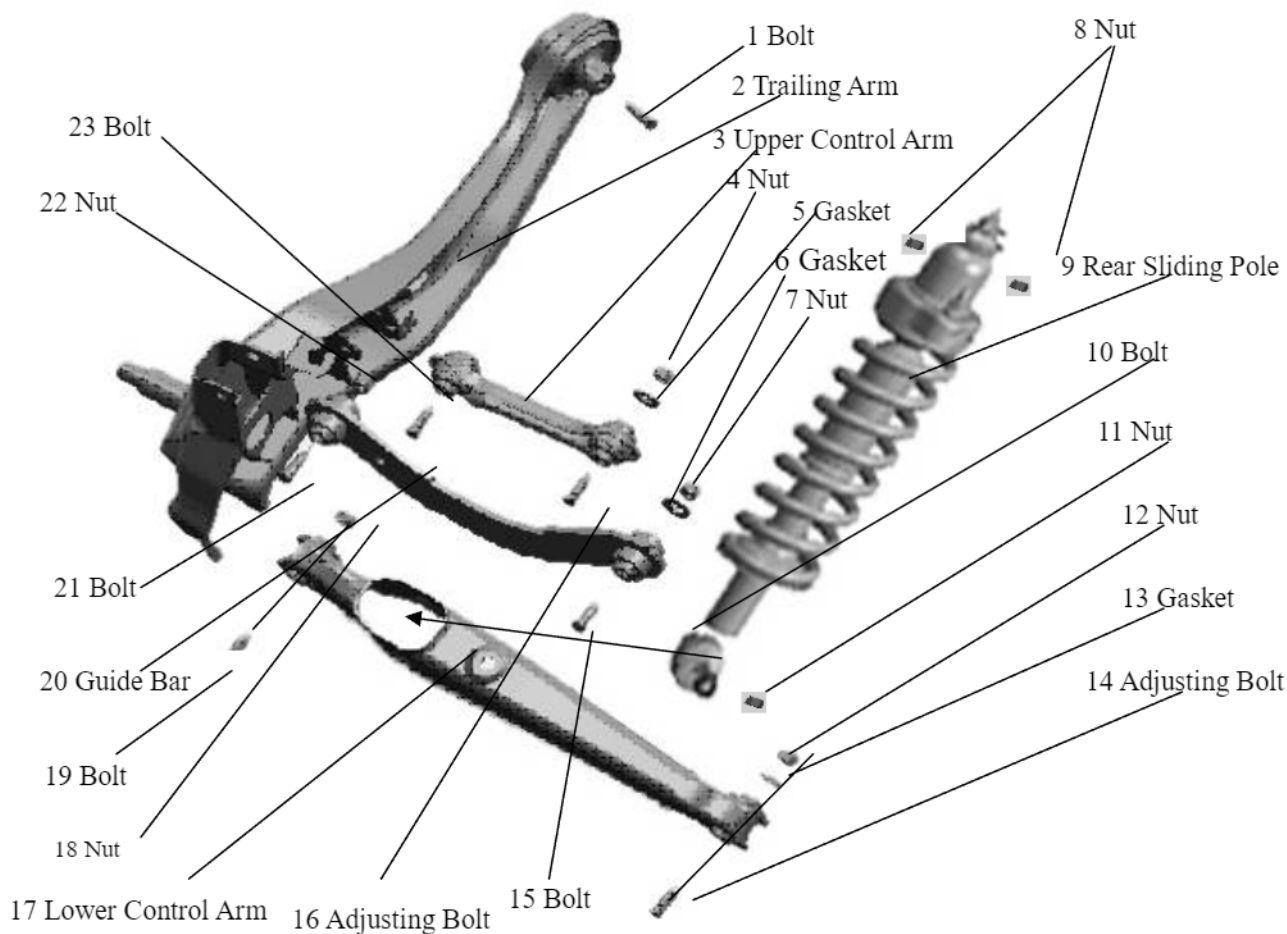
1. Assemble the guide bar according to the disassembly sequence.

2. Precautions:

After mounting, all bolts must be fastened up to specified torques.



V. ASSEMBLY OF REAR AXLE AND SUSPENSION SYSTEM



ASSEMBLY SEQUENCE:

- Use bolt 23 to connect the upper control arm 3 and trailing arm 2(one weld nut installed on the rear trailing arm); The left and right sides are the same, and the fastening torque is $90 \sim 100 \text{ N} \cdot \text{m}$. Do not fasten the bolt at this time.
- Use bolt 21 and nut 22 to connect the guide bar 20 and trailing arm 2. The left and right sides are the same, and the fastening torque is $90 \sim 100 \text{ N} \cdot \text{m}$. Don not fasten the bolt and nut at this time.
- Use bolt 19 and nut 18 to connect the rear lower control arm 17 and trailing arm2. The left and right sides are the same, and the fastening torque is $90 \sim 100 \text{ N} \cdot \text{m}$. Do not fasten the bolt and nut at this time.
- Use nut 8(2 pieces) to connect the rear strut 9 and vehicle body. The left and right sides are the same and the fastening torque is $50 \pm 10 \text{ N} \cdot \text{m}$.
- Use bolt 1 to connect the trailing arm and vehicle body (the vehicle body has one weld nut and include the well-connected upper and lower control arms and guide bar). The

- left and right sides are the same, and the fastening torque is $100 \sim 120 \text{ N} \cdot \text{m}$. Do not fasten the bolt at this time.
- Use bolt 10 and nut 11 to fix the rear strut 9 and rear lower control arm 17 (fix them at the position as the arrow illustrated). The left and right sides are the same, and the fastening torque is $80 \pm 5 \text{ N} \cdot \text{m}$. Do not fasten the bolt and nut at this time.
 - Use adjusting bolt 16, gasket 5 and nut 4 to connect the rear upper control arm and vehicle body. The left and right sides are the same, and the fastening torque is $100 \sim 120 \text{ N} \cdot \text{m}$. Do not fasten the bolt and nut at this time.
 - Use bolt 15, gasket 6 and nut 7 to connect the guide bar and vehicle body. The left and right sides are the same, and the fastening torque is $100 \sim 120 \text{ N} \cdot \text{m}$. Do not fasten the bolt and nut at this time.
 - Use adjusting bolt 14, gasket 13 and nut 12 to connect the rear lower control arm and vehicle body. The left and right sides are the same, and the fastening torque is $100 \sim 120 \text{ N} \cdot \text{m}$. Do not fasten the bolt and nut at this time.
 - Fasten the above-mentioned bolts and nuts to specified torques in turn.