

Chapter 1 Use and Maintenance

Unit 1 Main technical Parameter

1.1 Basic Parameter

1.1.1 Basic dimension & Weight Parameter (Form 1-1)

Form 1-1 Basic dimension & Weight Parameter

Items	Parameters			
1. Dimension (mm)				
Total Length	K01	K01 (long version)	K01L	K01H
	3910	4150	4390	4280
Total Width	1560			
Total Height (empty)	K01	K01 (long version)	K01L	K01H
	1810	1810	1810	1850
Wheelbase (mm)	K01	K01 (long version)	K01L	K01H
	2515	2515	2760	2760
Fr.Tread (mm)	1310			
Rr.Tread (mm)	1310			
2. Weight				
Mass of the vehicle with bodywork in running order	K01	K01 (long version)	K01L	K01H
	948 ~ 980	948 ~ 980	948 ~ 980	948 ~ 980

2、Performance Parameter (Form 1-2)

Form 1-2 Performance Parameters

Items	Parameters	
Optional Model of Engine	BG13-20	AF10-06
(km/h) Max speed	135	105
Max Climbing Capacity	32	30
Time-Needed from Start and then with continuous gear-swift to accelerate 90km/h	40	48
Economical Fuel Consumption Under Limited Condition like 50Km/h, etc	≤6.5	≤6
(50km/h) Brake Distance	≤20	
Outside Noise While Speeding up (dB)	≤74	

1.2 Structure parameter

1、Main Technical Parameter of Engines (Form 1-3)

Form 1-3 Main Technical Parameters of Engines

(4) When running into a traffic jam, we should switch off the engine.

(5) Check the tyre's inflating pressure terminally, when the pressure of the tyre is too low, it will increase the rolling resistance, speed up tyre wear and distort steel ring.

(6) Clean up the unnecessary things in the luggage on time.

(7) The accessorial electronic apparatus such as warming, air condition, heating device in rear window, front lamp and so on should only be used when it is necessary.

(8) Do not switch off engine immediately after a long time driving; we should let the engine running two more minutes at a speed higher than idle speed to cool it.

(9) Check the car and follow the rules of safe driving notice before a long journey.

If we know that the oil change and some other maintenance items are at term beforehand during this long journey, we should move them up; especially the change of brake liquid is significant to security of driving.

(10) If the car often drives under the conditions such as with full weight, the outside temperature is too high or too low, full of dust and the poor quality of the fuel; we should adopt some special technical measures accordingly, for example: we should adopt the lube whose viscosity is tally with the outside temperature (we can choose the viscosity grade of the lube according to the outside temperature), install air cleaner with specific function, and the maintenance cycle should be changed accordingly, for example, if the burthen of the engine is heavy, the cycle of changing the lube should be shorten.

(11) Pay attention to the instrument and pilot lamp when we are driving. In order to make drivers more convenient, the car adds various alarm units and fault diagnosis pilot lamp of engine which can reflect the working condition accurately. If there has some hidden trouble, they will warn us as soon as possible and require the driver to pay attention to it immediately to avoid accident with mechanical failure, there are some important alarm units we should especial pay attention to:

1) The pilot lamp alarms when the temperature of the cooling liquid is too high.

2) The pilot lamp alarms when the pressure of the oil is too low.

3) The pilot lamp alarms when the oil liquid level is too low.

4) The pilot lamp alarms when the level of fuel box is too low.

5) The pilot lamp of brake system.

6) The pilot lamp of generator.

(12) When driving through water, we have to move at a crawl and be conscious in case that the water flood into the engine or soak some electrical system, and consequently lead to some malfunction, so we should resume the brake system immediately. When the surface gathers water, we cannot go through it by force.

(13) Do not refit the car without permission, or it will affect the car's normal technical status and the guarantee.

(14) Strictly follow the rules of the manufacturer to maintain and repair the car.

4. Accurate use of draw gear

There is a towing hook in both the front and rear bumpers, which can tow the other cars and be towed by the other cars.

(1) When the car tows the other cars or be towed by the other cars, the dragrope and towing handle can only be put in this towing hook. we should especially avoid forced towing or fierce pulling, or it will be dangerous because of heavy burden.

(2) Follow the traffic rules about tow, the car is towing and the car is towed both have to light the pilot lamp.

(3) The driver of the towed car should pay attention to the dragrope to keep it taut.

(4) The towed car must open the switch to make the redirector turning freely, and the turning lamp, horn, windscreen wiper working normally.

(5) The towed car should get into 3 gear or 2 gear before starting.

The level should be between the max and min mark of the tank.

There is a friction facing in the brake system of the car. So when we drive the car, the brake liquid level may decrease a bit, this phenomenon is natural, do not worry about it. However, if the level of the liquid is apparently decreased a lot or below the lowest mark, which means that the brake system is in trouble, at this time we should drive to the service station of the company to repair the brake system immediately.

(2) Change the brake liquid. The brake liquid has the performance of accessibility, which can absorb moisture in the air when it is used. If the water content of the brake liquid is too heavy, it will rust the brake system. Moreover, the boiling point of the brake liquid will decrease obviously, which will affect the impact of brake and safety. Because of these reasons, the brake system must be changed every year.

Notice: if the brake liquid has been used for a long time or it is often been braked, the brake system will produce steam bubbles, which influence the brake impact and safe driving.

In order to ensure the brake impact and safe driving, please choose the original brake liquid of our company, and do not use the new brake liquid which have never been used before.

Notice: the brake liquid is poisonous! So do not put it in the original sealed container, and do not let the children to touch it! The brake liquid is also mordant to the paint of the car!

Dealing with the used brake liquid is a professional job; we have to equip special tools, so we had better go to the service station of the company to change the brake liquid.

5. Check the power steering liquid heights

Whether the power steering liquid heights is right or not, influence the power steering accommodate directly, so, do check the liquid height regulate. After the engine working 2min, put the front wheel right ahead, stop the engine, check the liquid level.

Open the cover of the oil ruler, check the liquid level, keep it between the maximum and minimum mark. If under the minimum mark, add power steering hydraulic oil according the regulations.

Remark:

(1) Do not mix braking liquid and power steering hydraulic oil. Otherwise, the braking system would not work.

(2) Power steering hydraulic oil is a kind of lube lubricant, if there is no power steering hydraulic oil in the system, oil pump will break. So, in the situation, add it immediately, or unload the V belt of the power steering, drive the vehicle to the maintenance station to add hydraulic oil.

(3) If the power steering component does not work, the vehicle can still turn, but need put more power on the steering wheel, and examine the power steering system as soon as possible.

6. Right use the shift gear oil

In order to keep the shift working normally, do pay attention to add gear oil properly according to the stipulation.

(1) The two types of gear oil of the manual shift are GL-4, SAE80W-90 AND GL-4, SAE75W-90. and the type of GL-4, SAE75W-90 applicable for south and north areas, and for winter & summer. In order to maintenance the transmission better, change the gear oil annually or drove 50000km.

Notice: after a high speed driving or long time bearing, check the level of oil after a 30 minutes packing at least. If the level of oil is not enough, add oil or escape oil (the oil bolt is at the lower part of the oil sump of transmission). The color of the shift oil should be bright red. If it changes to brown or black, which means that there is quantity of friction material or other impurity in the oil. If it changes to pink or white, which means that the cooler of the engine radiator leaks the cooling liquid. If this happens, change the shift oil at once.

Under normal situation, we should change the shift gear oil every 50000km. if the condition of the road is not well, we should shorten the interval of changing the driving miles of shift gear oil to ensure the security and reliability of the car.

Attention:

The tensility regulation is, when replacing a new strap: press at the middle, a 7-10mm sink

Water pump strap replacing

- 1) Cutting off the cathode of the battery.
- 2) Remove the compressor transmission strap, if air conditioner is available(details please as per driving strap of air conditioner compressor)
- 3) Replacing water pump strap with a new one.
- 4) Regulating the strap tensility according to instruction.
- 5) Turning on the battery cathode.

Check air conditioner compressing transmission strap.

Check wearing, scathe and tensility of the strap. Replacing or adjusting when needed.

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The tensility of air conditioner’s transmission strap:

Pressing at the middle with a 10kg force, there will be a 8-11mm sink.

Replacing air conditioner’s compressing transmission strap

- 1) Cut the cathode of the battery.
- 2) Release the strain of the old belt, and change the new one instead.
- 3) Change the pump belt by the new belt.
- 4) Adjust the strain of the belt according to the demand of technology.
- 5) Connect the cathode of the accumulator.

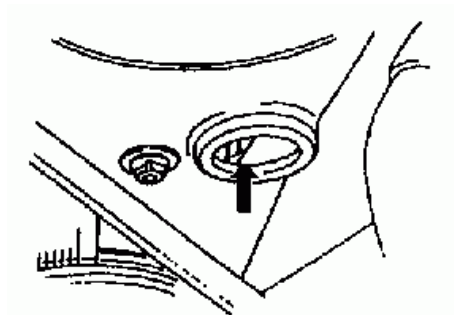
Notice:

When we change the new belt, the strain should be adjusted to: press the middle heavily, there will be a 8-9mm sink.

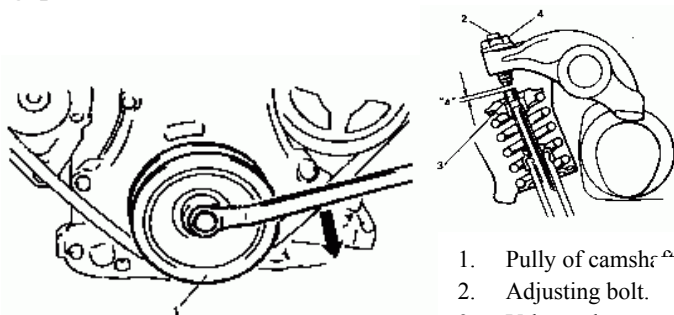
The timing belt of camshaft

Check

- 1) Put off the inspection port plug from the timing belt.
- 2) Examine the abrasion, crack, hurt, oil stain of the timing belt with lamp and appropriative mirror according stipulation.
- 3) Install the inspection port plug.



The gap of valve



1. Pully of camshaft
2. Adjusting bolt.
3. Valve rod
4. Locking nut for

Check

- 1) Unload the crankcase soft pipe on the cover of the cylinder, and the warmer soft pipe
- 2) Unload the cover of the cylinder head.
- 3) Check the gap of the intake and exhaust valve, and if need, adjust it.

See the second chapter to check it.

In 1950, the gasoline jet type engine was installed on the racing car by Benz Company German.

In 1952, Germany Benz company pushed out the 300BL gasoline jet type engine, which adopts direct injection system inside the combustion chamber produced by 'Bosch Company' that is similar to diesel injection system.

In 1958, Germany Benz Company developed 220SE gasoline jet type engine, which changed the injection inside the combustion chamber into spray in the air tube, greatly extended the air mixing time of gasoline and air.

In 1961, American BENDIX company have firstly invented the gasoline injection system controlled by computer (change the machinery control of gasoline injection into electronic control to make it be more precise and energy conservation, less pollution), this patent has been bought by the German Bosch company once it was invented and to be improved and developed by Bosch gradually. .

Year 1967, pushed out D type fuel injection system, namely intake manifold pressure measure type fuel injection system, it sends absolute pressure of intake manifold and rotate speed of engine signals into computer, computer calculate inflation capacity, produce corresponding fuel injection pulse width, control the fuel injector injecting precise quantity of fuel. Continue improving and developing ,pushed out L type fuel injection system, directly calculate out air capacity which entered intake manifold based on air fule capacity, and transfer the air capacity into electrical signal ,sending to computer, computer get the relevant fuel injection capacity , in order to control air-fuel delivery ratio in a best value.

When entering the period of 1,980 -1990, the European countries, American, Japan and other countries started to fully develop the single-point injection technology, multiple-point injection technology and digital injection technology, and the intelligentization and the electric control of the autos have become the inevitable trend for the development of the autos. There will be ae significant technological breakthrough and leap in this aspect.

Section II Fuel Injection Electronic System of Engine

Makeup

The electric injection system of engine for 'Dongfeng Star' series mini vans adopts the digital electric computer control system of BOSCH Company & DELPH Company from Germany, which can control the ignition system and injection system at the same time.

The injection system for this engine is a system of multiple-point injection system, and every cylinder has its separate nozzle to supply oil, the ignition and oil supply are matched precisely which are influenced by each other but work together to guarantee the engine to well operate under any situation and also the exhaust has been strictly controlled not to exceed the regulated standard.

The injection and the ignition share one computer, every sensor signal collected by the computer is used by injection and ignition simultaneously which can help to lessen the complexity of the structure while making the date precise.

This computer is equipped with the breakdown insurance function, namely in lacks certain sensor information time, this system may use in advance in the procedure reserve value to replace, causes the engine not to send in the engine off.

The layout of the fuel injection electric control system is shown as the chart below:

General Instruction for the Performance of BOSCH electric Injection System

The control functions of BOSCH electric injection system include: starting control, heat control of warm-up & three-way catalyze, idle speed control, evaporation exhaust control, knock control and λ closed loop control etc.

Section III Structure, Working Principle and Failure Analysis of Spare Parts

Note:

1. Intake Pressure & Temperature Sensor

proportional.

3) Technical Specification

4) Fault Symptom & Judgment

Fault Symptom: the exhaust is beyond the standard and the fuel consumption increases etc.

Reason: man-made malfunction

Easy Measure Method: (Connect the tie-in) Start the ignition switch but not the engine, put the digital multi meter to the direct voltage gear, two tips connect with stitch 3#,1# of sensor, insure it has reference voltage 12V. Start the engine, the signal of stitch 2# can be tested by vehicle oscilloscope, whether it work in normal.

7. Electron control unit

1) outline picture and disposal position

2) ·multiple points injection

- Control Ignition
- Idle speed control
- Knock control
- 5V / 100mA supply power for sensor : 5v/100mA
- closed-loop control, with self-adapting.
- Control the control valve of canister
- A/C switch

Scope	Value			Unit
	Min	typical	Max	
Setting Clearance	0.5		1.8	mm
Voltage Supplied	4.5		24	V

- Engine fault indicator lamp
- fuel fixed amount correction
- Output of the engine rotating speed signal
- Input of the speed signal
- Fault self-Diagnosis
- Receive the engine load signal

3)

Stitch	Connecting Point	Type	Stitch	Connecting Point	Type
1 (J1-D5)	Oxygen Sensor Heating	output	42(J1-D6)	AC temperature sensor	input
2(J1-D14)	Ignition Coil 2	output	43		
3(J1-C7)	Power earth 2	earth	44	not continuing power	input
4			45		input
5(J1-C14)	Ignition Coil 1	output	46(J2-A13)	canister solenoid valve	out put
6(J1-C6)	Oil Nozzle 4 (2 nd cylinder)	output	47(J1-C4)	oil injection nozzle 3(the forth cylinder)	output
7(J1-C6)	Oil Nozzle 4	output	48		

check the carbon jar state.

3. Avoid the water ,fuel and other liquid enter into valve during the maintenance.
4. For avoiding the solid-borne sound, suggest hanging the carbon jar in the air, installing on the soft tube.

Simple measure method:

(Take down the stitches) put the DMM gear to ohm, two instrument pens connect with the carbon jar control valve stitches separately, at the 20°C ,the rating resistance is $26\pm 4\Omega$.

Section VI ignition system

This type engine electric ignition system adopts two ignition coils, not distributor ignition system. The high tension electricity ignition coil produced is sent to every spark plug, ignition coil exterior like the left picture showing, its circuit like the right picture showing.

Ignition system is made up of ignition coil , spark plug and its circuit.

Ignition working principle

Two ignition coils were controlled by computer, produce high tension by turns, each ignition coil connect with two cylinder spark plug (1. 3. cylinder connect one ignition coil, 2.3. cylinder connect with the other one). So, every time both two cylinder spark plug flashover at the same time, the cylinder which at the end of pressure stroke can ignite the mixing air and break out for working, it's a "effective ignition"; conjugated cylinder is at the instroke, belongs to "inefficacy ignition". This high tension power distribution , though lost a little power because of inefficacy ignition, however this let the ignition system cancelled the distributor block, improved the ignition reliability ,decreased fault.

Spark plug

AF10-06 electroject engine spark plug type: F6RTC(4C7T) screw thread M14×1.25

Useful time: run 30,000km ,change

BG13-20 electroject engine spark plug type: K7RTC

Useful time: run 10,000 km change

Electrode clearance: 0.7—0.8mm

Check

- Electrode abrasion state
- Carbon deposition
- Insulant damage state

Attention: hold rubber tube tightly , pull out high voltage damper, then take down spark plug.

- a. If find abnormal , adjust air clearance, use spark plug cleaner cleaning or change new spark plug accord with the regulation.
- b. install spark plug and screw down torsional moment accord with the regulation.

Spark plug prescribe screw down torsional moment: 25N·m

- c. Hold the rubber tube, install and fasten the high voltage damper.

Section VII fuel injection and electric control system notice

Normal tools and special tester

Some tools and meters are needed when diagnosis and checking the malfunction. Before using these tools and meters, we must know its structure, performance, and notice to decide which electric system metering can be suitable. The electric control system of engine is very sensitive about the voltage, so when check and fix it should be very careful, don't test and fix optionally. Now we introduce several normal tools and special tester.

unit code after 1s.

For example, the flicker way of the No.27 failure code is:

Flicker twice continuously (showing 20), then flicker seven times in a successive way after holding a second, which refers to No.27.

The flicker way of the No.55 self-diagnose code for failure is:

Flicker five times continuously (showing 50), then flicker five times in a successive way after holding a second, which refers to No.55.

Every ground strap of the 783 diagnose joint---retaining a flickering process of the diagnose lamps once it is disconnected, which means to read a failure code. Ground strap connection repeatedly, if the number of the stored 15 failure codes is to be checked---cutting for 15 times. After reading the number of the failure code, the parts which have failures can be found out according to the failure code book.

Reading the self-diagnose code of failure, finding out the failure parts, then delete the failure code after removing the failure in order to guarantee the stored failure truly ones.

2. read through the special diagnose tester

Insert the diagnose interface of the tester into the ECU failure diagnose interface to read the failure code.

Ways of deleting failure code:

Normally, disconnecting the power cord or the fuse linking to the engine microcomputer control system can delete or clear out the stored failure code in the microcomputer control system. Disconnecting the battery's negative electrode or the microcomputer control system's fuse of the automobile for 30 seconds also works.

Press one key of the special tester to clear out the failure code.

Attention: clearing out the failure code in the way of dismantling the battery's negative electrode will remove the EMS memory of the equipments such as quartz pin and the sound. Therefore, the battery's negative electrode can't be discharged casually. It's better to clear the failure code as the ways introduced in the maintaining manual.

Start engine after clearing out the failure code to check whether the indicate light of the failure code is flickering or not. If it is, there must be some failures in the system which needs further diagnoses.

Denotative meaning of the failure code shown in the list (AF10-06):

Index	PCODE	DFP_Bosch	Description of PCODE
1	P0030	HSVE_SI_CDC	O2 Sensor Heater Contr. Circ.(Bank1(1)Sensor 1)
2	P0031	HSVE_MN_CDC	O2 Sensor Heater Contr. Circ.(Bank1(1)Sensor 1) Low
3	P0032	HSVE_MX_CDC	O2 Sensor Heater Contr. Circ.(Bank1(1)Sensor 1) High
4	P0036	HSHE_SI_CDC	O2 Sensor Heater Contr. Circ.(Bank1(1)Sensor 2)
5	P0037	HSHE_MN_CDC	O2 Sensor Heater Contr. Circ.(Bank1(1)Sensor 2) Low
6	P0038	HSHE_MX_CDC	O2 Sensor Heater Contr. Circ.(Bank1(1)Sensor 2) High
7	P0053	HSV_NP_CDC	O2 Sensor Heater Resistance(Bank1(1)Sensor 1)
8	P0054	HSH_NP_CDC	O2 Sensor Heater Resistance(Bank1(1)Sensor 2)
9	P0105	LM_SI_CDC	Manifolt Absolut Pressure/Barometric Pressure Circuit
10	P0106	LM_NP_CDC	Manifold Abs.Pressure or Bar.Pressure Range/Performance
11	P0107	LM_MN_CDC	Manifold Abs.Pressure or Bar.Pressure Low Input
12	P0108	LM_MX_CDC	Manifold Abs.Pressure or Bar.Pressure High Input
13	P0112	TA_MX_CDC	Intake Air Temp.Circ. Low

Diagnosis help:

- 1、 Confirm engine no any failure record.
- 2、 Confirm reported failure exist.
- 3、 Already do the check following above steps, and no abnormal situation.
- 3、 Replacing ECU, do the test.

If the failure code can be cleared, the failure part is in the ECU, if it can not be cleared, replace it with the original ECU, repeat this procedure, and test again.

- 4、 4、 Don't ignore the influence of car maintenance , cylinder pressure, air cleaner and so on to the system during the checking process.

Engine not running or running slow when starting.**General failure position:**

- 1、 Battery cell;
- 2、 Start electric machine;
- 3、 Switch of wiring harness or ignition;
- 4、 Machine part of engine.

General diagnosis process:

No.	Operation Step	Test Result	Follow-up step
1	Using multimeter check the voltage between the two pillars of battery cell, whether get 8-12V when the engine start.	Yes	Next step
		No	Replace battery cell
2	Keeping the ignition switch in the start position, check if the voltage of anode in the pillar is more than 8v with multimeter.	Yes	Next step
		No	Repair or replace wire harness
3	Dismantle starting engine, check the starting engine working condition.the focus is on breaking or blocking due to bad lubrication.	Yes	Repair or replace start electric machine
		No	Next step
4	if the failure only occurred in winter, then check whether the engine machine resistance is caused by the improper use of engine lubrication and the gear box oil.	Yes	Proper lubrication
		no	Next step
5	Check whether the unworking and the slow running of engine machine is caused by the great inner engine resistance.	Yes	Test and repair the inner resistance of engine
		no	Repeat above steps

1. When starting, the engine can run but not work.**General failure parts:**

- 1、 No oil in the oil tank;
- 2、 Fuel pump;
- 3、 Revolution speed transducer;
- 4、 Ignition loop;
- 5、 Machine part of engine.

(a); 55 N·m

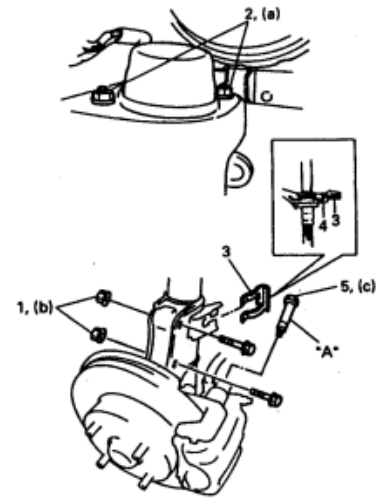
(b): 65 N·m

(c): 95N·m

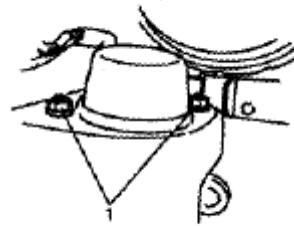
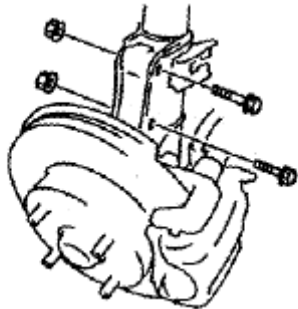
3. Front Strut Assy

Disassemble it as follows :

- 1). Remove the negative from the battery.
- 2) Jack the vehicle.
- 3) Remove the tyres.
- 4) Remove the E-ring which is used to fix the brake pipe, loose down the pipe from the bracket as shown from the illustration.
- 5) Loose the bolt of caliper and slant the caliper as shown the illustration.
- 6) Remove the bolt of wiring harness for the speed sensor.
- 7) Loose the bolt of bracket.
- 8) Loose the bolt of support unit, and hold it with care in case of damage.
- 9) Remove the strut assy.



in



1. 螺母

Fixing

- 1) It is reverse order of disassembly 1)-9). Fix a screw in the position shown from the illustration.
- 2) Tighten all the bolts and screws according to the described torque.

Torque

(a); 73 N·m

(b): 95 N·m

(c): 35 N·m

4. Hub And Spiaral Pole

Disassembly

- 1) Lift the vehicle and remove the wheels.
- 2) Remove the axis cover as shown from the illustration (Knock the cover properly for three times. Don' t spoil or distort the seat of the cover).
- 3) Loose the nuts of the axis.
- 4) Remove them.
- 5) Loose down the nuts of caliper bracker.
- 6) Remove the caliper together with the bracket.

Attention:

Hang the removed caliper with metal hook to avoid damage against the brake pipe.

Don' t match the brake pedal when the brake pads are removed.

- 7) Remove the brake disk with two bolts of 8mm.
- 8) Remove the wheel-hub with special tools.

butts of the sway bar according to the described torque under the condition of non-loading.

Torque:

(c): 73N • m

7) Check and adjust the toe-in according to the manul.

6. Knuckle

Disassembly

- 1) Lift the vehiecle and remove the tyres.
- 2) Remove the wheel-hub. Refer to “Disassembly” of “Hub/ tyre bolt” order 2)-8) from this section.
- 3) Remove the knuckle from the tie-rod.
- 4) remove the sppd-sensor from the knuckle (If there is).
- 5) Remove the ball joint from knuckle. And then loose down the bolts of the bracket.
- 6) Remove the knuckle.

Fixing:

- 1) Fix the knuckle to the sway-ar and the stut. Match the slots and the bolts well, and fix the bolts of ball joint. Tighten the bolts and the nuts according to the described torque below.

Torque

(a); 95N-m

(b): 55N-m

- 2) Fix the speed-sensor (If there is).
- 3) Cnnect the tie rod with the knuckle, and tighten the nuts of the tie rod to the described torque below. 3)

Torque

(c): 45 N-m

Attention

When tighening the nuts of tie-rod. Boost up the end of tie rod with jack to stop the rotation of the knuckle.

- 4) Follow the fixing order above. Take reference from “wheel hub/wheel bolts” 1)-7)

7. Bracket Of Strut

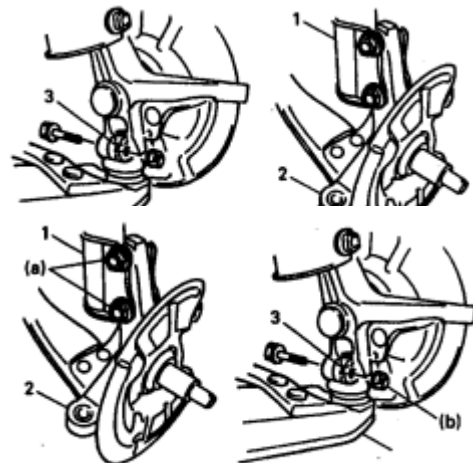
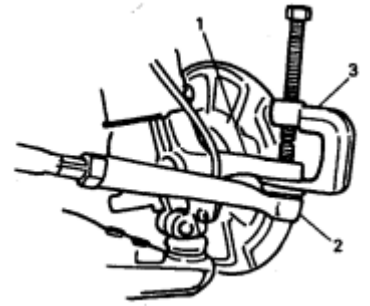
Disassembly

- 1) Jack up the vehiecle and remove the tyres.
- 2) Remove the swar-bar (L&R). Refer to “Disassembly Of Sway Bar” of this section
- 3) Remove the fixing-bolts of turning-gear box.
- 4) Remove the wire-harness of speed-sensor. (If there is)
- 5) Remove the bracket of the strut.

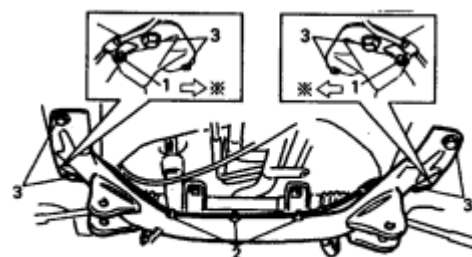
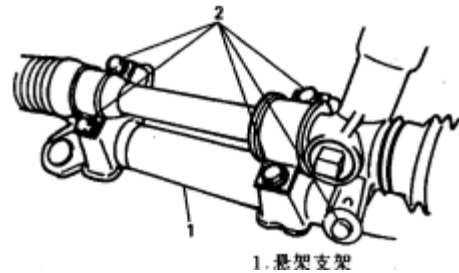
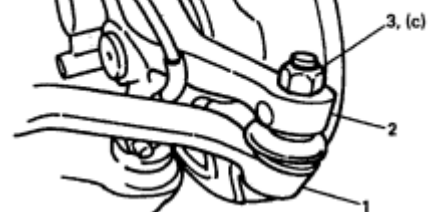
- 1) Fix the bracket of the strut and tighten the bolts to the described torque.

Torque

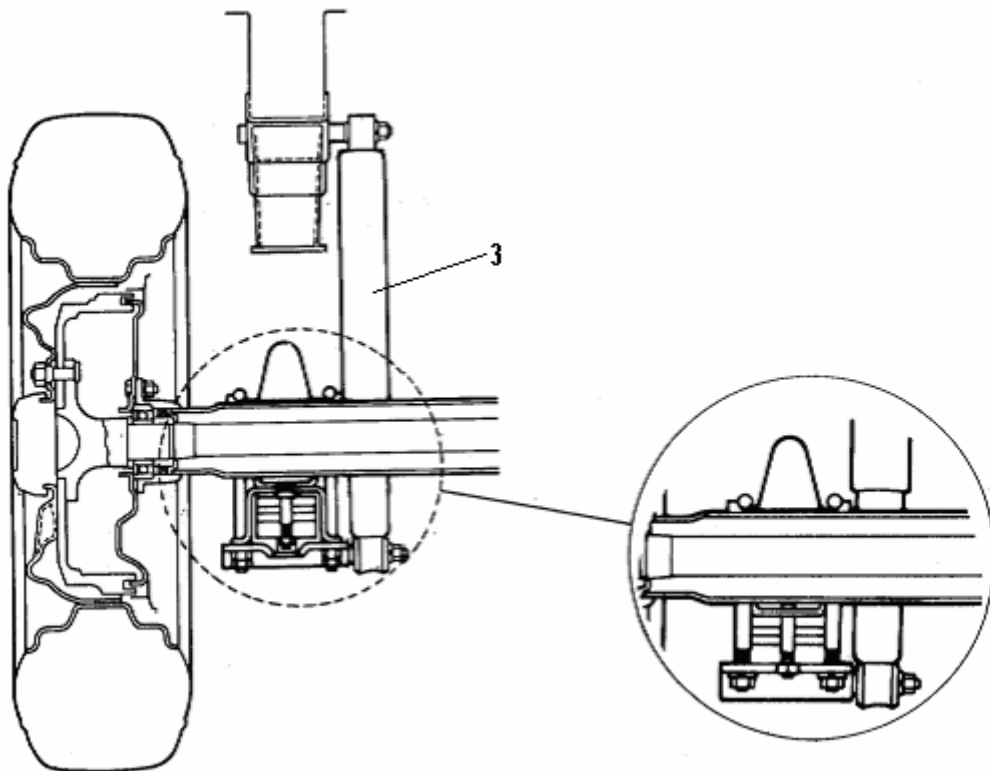
(a): 95 N-m



1. 支柱
1. 横拉杆端
2. 转向节
3. 螺母

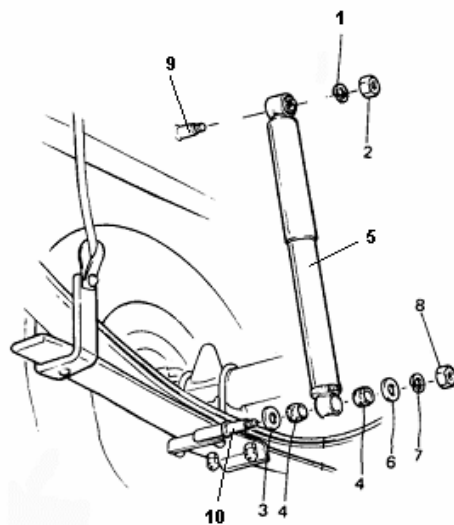


1. 车轮转速传感器线束夹
2. 车轮转速传感器线束夹子
3. 悬架支架螺栓
※: 车轮侧



1. Leaf Spring 2. Limit Stop 3. Telescopic Shock Absorber 4. Bumper

II. Disassembly And Fixing



1. Lock Washer 2. Bolt (Top Mounting) 3. Washer 4. Bushing, Shock absorber 5. Shock Absorber
6. Washer 7. Lock Washer 8. Bolt (Bottom Mounting) 9. Bolt, Top Mounting 10. Bolt, Bottom Mounting

2. 1. Shock absorber

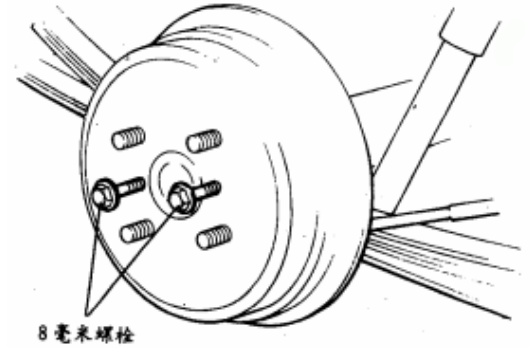
Disassembly.

- 1) Jack up the vehicle.
- 2) Remove the bolts of bottom bracket.
- 3) Remove the shock absorber.

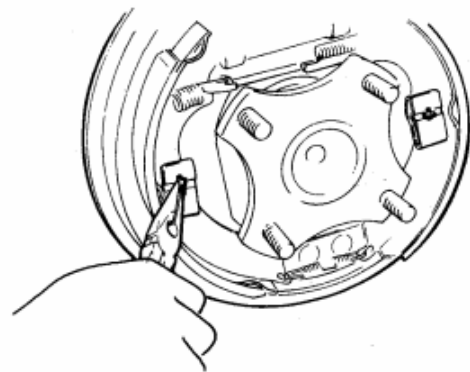
Fixing.

- 1) Refer to the illustration below and fix the shock absorber.
- 2) Tighten the bolts.
- 3) Lay down the jack

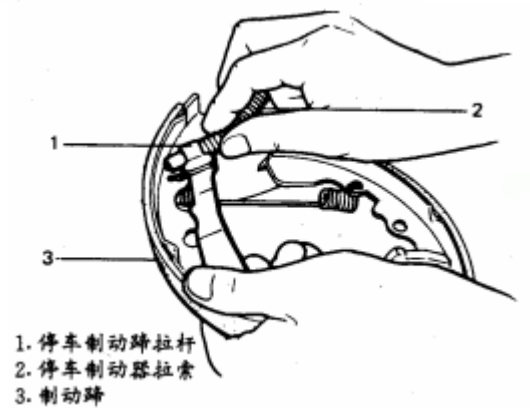
- 4) Loosen the hand brake.
- 5) Draw out the brake drum with 8mm bolt.



- 6) Rotate the lock pin of brake disk and remove the lock spring as shown from the illustration.



- 7) Release the hand brake and remove brake shoe.



- 8) Remove the hand brake cable from the chassis.

Rear Shock-Absorber

- 1) Distortion and spoilage.
- 2) Check the bushing.
- 3) Check whether there is leakage.

Change the parts which are abnormal.

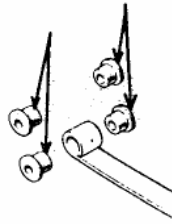
Leaf spring and cushioned stop

Check whether there are cracks or spoilages. Change the abnormal ones. Meanwhile, the cushioned stop should be fixed in the proper position. Otherwise, it should be replaced.

Bushing of leaf spring.

Check whether it is worn or spoiled. Change the abnormal ones.

If the bushing is normal while it is making noise when running. Detach the bushing and wipe grease at the position shown below.



Disc, nuts and bearing.

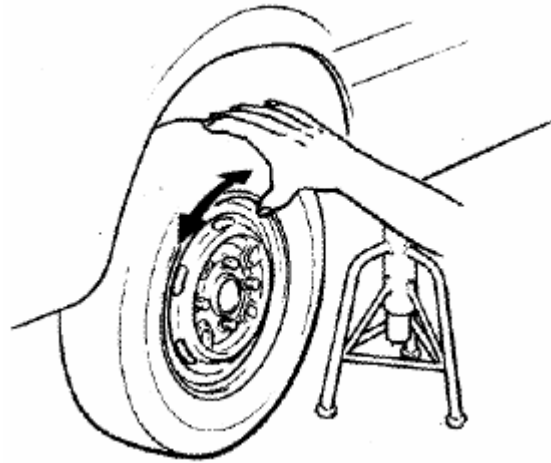
- 1) Check whether it is concave, distorted or cracked. Change the seriously spoiled disc.
- 2) Check the nuts and tighten them if necessary.
- 3) Check the wear degree of the bearing. When checking the axial clearance, remove the central cover of the disc and set an indicating-gauge on the hub.

Torque of wheel nuts: 50–80 N · m

Max axial clearance: rear wheel 0.8mm.

Change the bearing if the measured value exceeds the max value.

- 4) Rotate the wheel to check whether it is making noise or working smoothly. Change the abnormal bearings.



IV、Torques of fastening elements

Fastening Elements	Torque (N · m)
1. Bolts of shock absorber.	10—16
2. Top bolts of shock-absorber (Mini-van and Npv only.)	22—35
3. Nuts of u-shaped bolt.	30—45
4. Bolts of lifting eye.	30—55
5. Front nuts of leaf spring.	45—70
6. Nuts of rear brake.	18—28

1. Wheel and Tyre.

Don't use weld, heating or blast to repair any wheels. All the spoiled wheels should be replaced.

Bolts.

Any spoiled bolts should be replaced.

Build-up Wheel and Tyre

Tyres and wheels are built-up from factory. Tyre and wheel are fixed as a unit when doing balance examination. The tyre and the wheel are marked with paint to avoid the spoilage of the dynamic balance. Align the tyre well with paint mark when fixing the tyre.

Before removing the tyre, draw a line on the tyre and the wheel in case of uncertainty about the paint mark. And it is necessary for insuring the right position.

Tyre-Pressure.

For all types of tyres, their advised pressures are fixed through accurate calculation in order to obtain satisfied operation, stability, steering, tread wear, life span and cracks.

Tyre pressure, when the tyre is cool (three hours after parking or less than 1.6km driving). They are supposed to be checked once in a month or before any long journey. Adjust the tyre pressure according to the tag in the vehicle-door 8kpa when the tyre is hot.

After parking, don't deflate the tyre or reduce the tyre.

Higher pressure than advised may cause:

1. Hard-driving and reduced comfort.
2. Tyre crack, spoilage of tyre case or even burst of the tyre.
3. Accelerate the wear of the central tread of the tyre.

Different tyre pressure in the same axle can cause:

1. Odds in brake.
2. Steering deviation.
3. Reduction in operation.
4. Deviation when accelerating.

Cover the valve to avoid dust and water.

Lower pressure than the advised pressure can cause:

1. Tyres make noise as turning.
2. Hard to turn.
3. Accelerate the wear degree of the tread unequally.
4. It may crack to rim.
5. Spoilage of the tyre cord.
6. High temperature of the tyre.
7. Reduction in operation.
8. Increase in petrol consumption.

Tyre Introduction.

Refer to the instructions which is in the right door of the vehicle.

It listed the maximum loading, size and pressure of the tyre.

Transposition of the tyres.

In order to make the tyres similar wear degree, transpose the tyres following the right illustration. Transposition the tyres after the first mileage of 10.000kms. Then transpose the tyres for every

