

# Table of Contents

700P

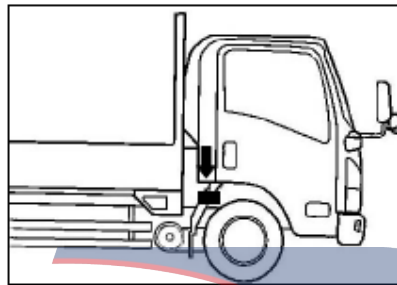
1.	<b>IMPORTANT INFORMATION</b>
2.	<b>CONTROLS AND INSTRUMENTS</b>
3.	<b>BEFORE DRIVING YOUR VEHICLE</b>
4.	<b>DRIVING</b>
5.	<b>SERVICES AND MAINTENANCE</b>
6.	<b>MAIN DATA AND SPECIFICATIONS</b>

**POWERSTAR**

## **1** IMPORTANT INFORMATION

- Location of vehicle identification number and engine number .....1-1
- Overloading.....1-2
- Operation of new vehicle.....1-3
- Operation and care of vehicle.....1-3
- Maintenance .....1-3
- Special precautions for modification.....1-4

The following matters are extremely important for proper manage and economic use of your QingLing vehicle. Therefore, please thoroughly understand before you service the vehicle.

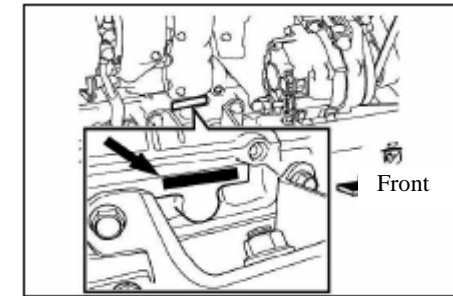


### **LOCATION OF VEHICLE IDENTIFICATION NUMBER AND ENGINE NUMBER**

Remember the vehicle identification number and the engine number. This is the information necessary when you contact the QingLing vehicle dealer (service station) for repairs.

#### **VIN:**

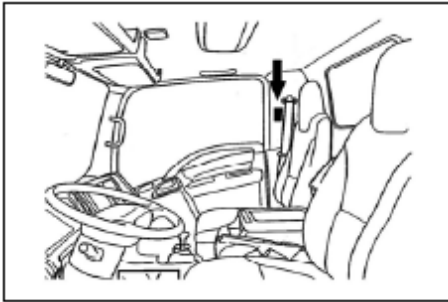
The VIN is stamped on the right-side front part of the frame.



#### **Engine number:**

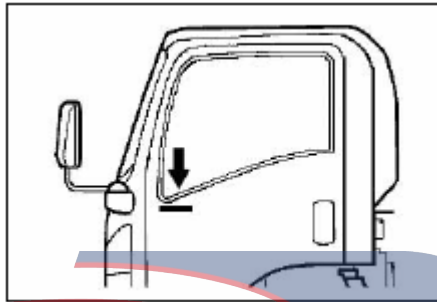
The engine number mark is engraved on the right side of the cylinder block.

# POWERSTAR



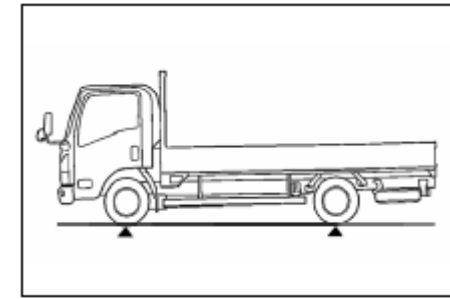
#### Vehicle nameplate

The vehicle nameplate mounted inside the side panel on the co-drive seat side.



#### Vehicle identification number (VIN):

The vehicle identification plate is on the left side of the instrument panel.



#### Overloading



Any overloading not only shortens the service life of the vehicle, but also causes a serious failure and even an accident.

The load must ensure that the total mass of the vehicle is within the rating. At the same time, the load should be evenly distributed between the front and rear axles

Refer to “Main Data and Specifications” for the gross mass rating of vehicle.

# POWERSTAR



### Operation of new vehicle

The good running-in and maintenance for a new vehicle have a great influence on its performances and service life. Therefore, the following precautions must be strictly observed during the initial run-in of 1000 kilometers:

1. During the running-in period of initial 1,000km, please control the engine speed and driving speed according to the following requirements.

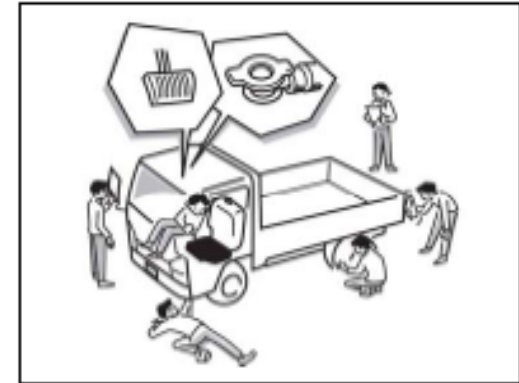
Limit engine speed:  $\leq 2300$  rpm

Speed:  $\leq 90$  km/h

2. Must avoid engine over speed, sudden start and unnecessary emergency parking.
3. The engine must be heated at idling speed to the normal operating temperature before driving.

### Operation and care of vehicle

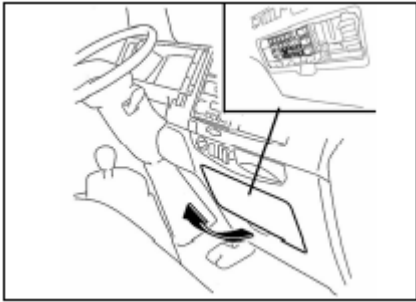
All components and devices of the vehicle shall be inspected in accordance with the requirements contained in the chapters "Control Devices and Instruments" and "Driving".



### Service and Maintenance

In order to ensure driving safety and maintain reliable vehicle operation performance, inspections and adjustments shall be made in accordance with the items required by the chapter "Service and Maintenance". Your authorized dealer is willing to perform regular maintenance checks on your vehicle.

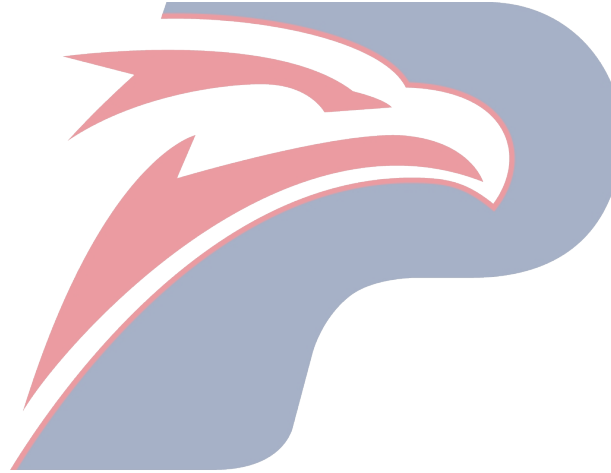
# POWERSTAR



There is a fuse box in the middle of the instrument panel of the driver's cab. It is forbidden to flush with water and bake at temperatures of above 50°C.

### **Special precautions for modification**

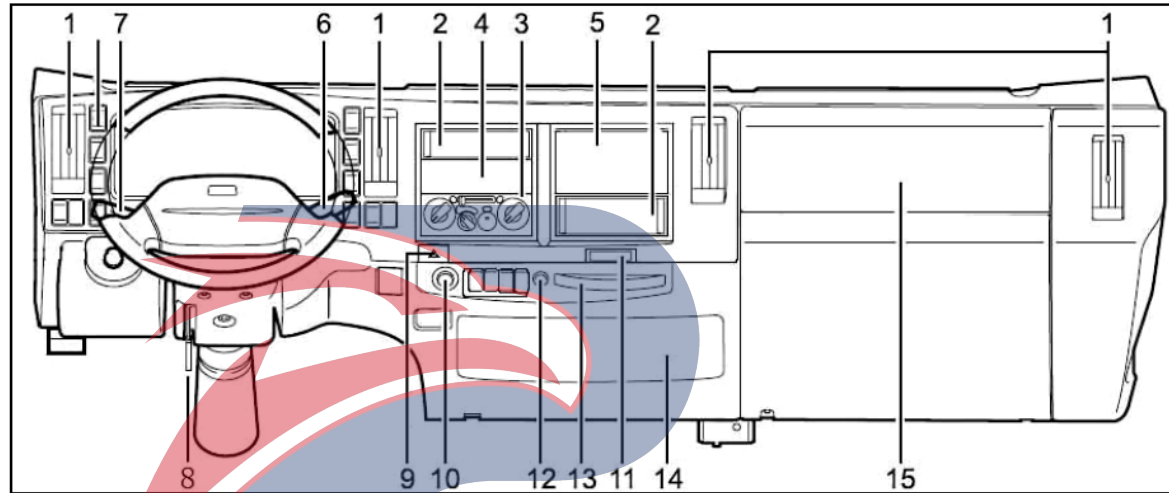
Without the permission of QingLing Motors Co., Ltd., no modification shall be made to the harness, frame, front and rear bridges, brake system and other parts that affect the driving or running safety of the vehicle, or the consequences shall be borne by the owner.



# **POWERSTAR**

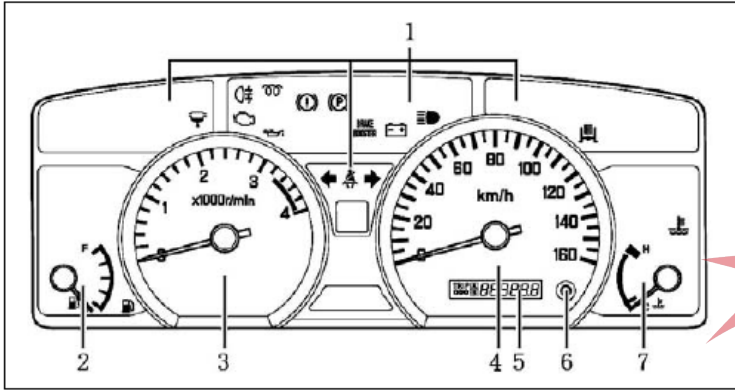
## 2 CONTROLS AND INSTRUMENTS

- Instruments and indicators.....2-1
- Steering column operating device.....2-9
- Instrument cluster.....2-11
- Floor controls.....2-19
- Others.....2-20



- |  |                         |
|--|-------------------------|
| 1. Ventilation grille  | 10. Cigarette lighter   |
| 2. Storage box (small)   | 11. Card box            |
| 3. Heating device, defroster control panel, air conditioning board               | 12. Hook                |
| 4. Recorder or CD player   | 13. Embedded cup holder |
| 5. Storage box (large)   | 14. Fuse box cover      |
| 6. Windshield wipers, washer switch handles, exhaust assist brake switch handles | 15. Toolbox             |
| 7. Combination switch handle   |                         |
| 8. Steering wheel adjustment locking handle                                      |                         |
| 9. Danger warning flash switch   |                         |

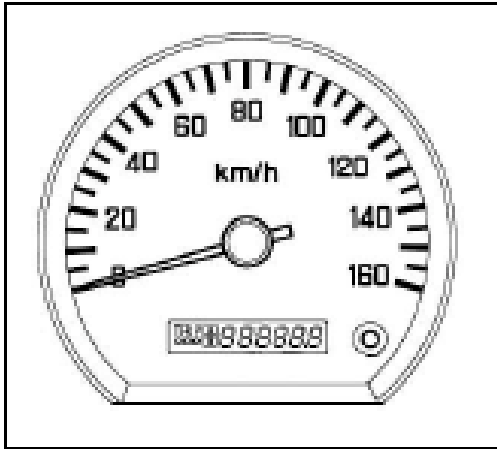
Instruments and indicators



- ① Indicators and warning lamps
- ② Fuel gauge
- ③ Engine tachometer
- ④ Speedometer
- ⑤ Odometer and mileage counter
- ⑥ Odometer reset button
- ⑦ Coolant temperature indicator

Indicator lamps	Name	Reference page
	.....Turn signal indicator	2-4
	.....High beam indicator	2-4
	.....Generator Indicator lamp	2-6
	.....Parking and brake fluid level indicator	2-5
	.....Indicator for preheating	2-6
	.....Oil pressure indicator lamp	2-5
	.....Exhaust brake indicator	2-5
	.....Water indicator in the fuel filter	2-6
	.....Rear fog lamp indicator	2-8
	.....Engine self-diagnosis indicator	2-8
	.....Vacuum pressure warning indicator	2-7
	.....Seatbelt indicator	2-8
	.....Parking brake Indicator lamps	2-9
	.....Coolant temperature warning indicator	2-3
	.....Fuel warning indicator	2-4

POWERSTAR



### Speedometer

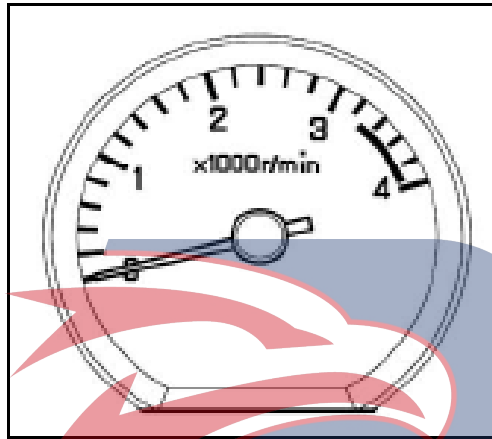
Speedometer is indicated in km/h.

### Tachograph

The odometer registers the accumulated distance in kilometers (or miles).

### Trip counter and reset knob

The odometer reset button is located at the lower right of the speedometer. To reset the odometer, press the button once.



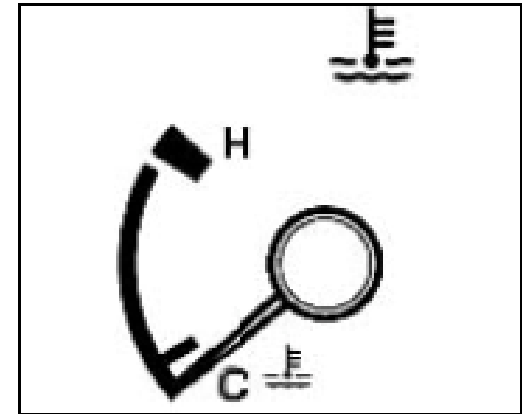
### Engine tachometer

The engine tachometer indicates the engine speed in revolutions per minute (rpm) and the red zone indicates the critical engine speed.



Caution

**Never operate the vehicle with the tachometer needle in the red zone. Continuous driving of the vehicle at such speeds can result in serious engine damage.**



### Temperature gauge

When the start switch is turned to “ON” position, the coolant temperature gauge will indicate the engine coolant temperature.

The letter marks “C” and “H” on the dial indicate “Low-temperature” and “High-temperature” respectively. If the pointer is in the red line area, the water temperature warning lamp above the gauge will lamp up, indicating that the engine is overheated.



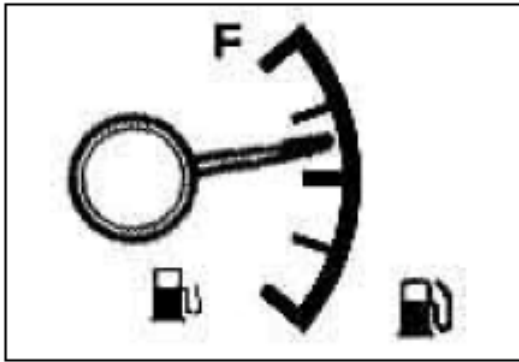
Caution

**If the pointer is in the red line area, the water temperature warning lamp above the gauge will lamp up, indicating that the engine is overheated.**

**Continuous overheating of the engine can cause severe engine damage.**

POWERSTAR



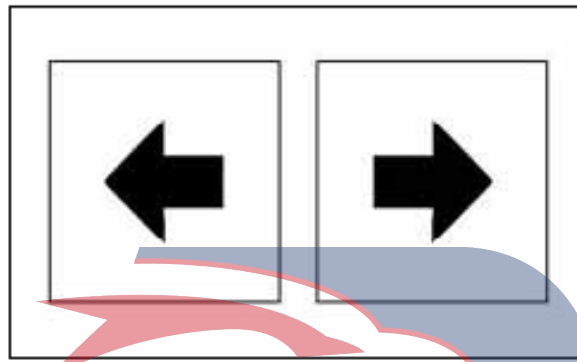


### Fuel gauge

The fuel gauge is used to indicate the level inside the fuel tank. When the start switch is turned to "ON" position, the pointer can indicate approximately the level in the fuel tank. Letters "F" and "E" indicate "full" and "empty" of the liquid level in the fuel tank, respectively. If the fuel level in the fuel tank is too low, the fuel warning indicator at the right bottom will be turned on, to remind the driver for filling the fuel.

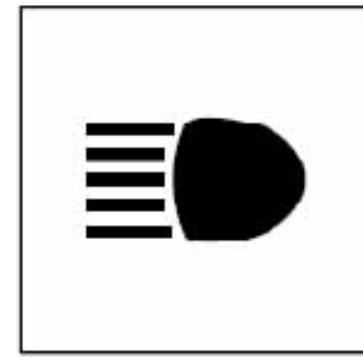


**The habit of timely refueling shall be developed, the vehicle must not be operated in the absence of fuel.**



### Turn signal indicator

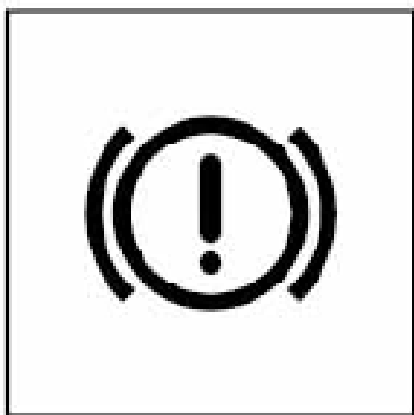
When the turn signal switch or the hazard warning flash switch is turned on, the turn signal indicator will flash, to indicate that the turn signals or hazard warning flashes are turned on.



### High beam indicator

When the headlamps are shifted to high beam or between high beam and low beam during overtaking, the high beam indicator will be turned on.

POWERSTAR



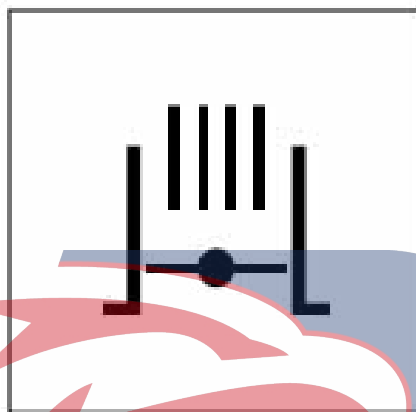
#### Brake system warning lamp

When the start switch is turned to “ON” position, the warning indicator will be turned on; when the engine is started, it will be turned off.

If the warning indicator is turned on during engine operation, it may indicate that the brake fluid level in the brake fluid tank is too low or the brake shoe is worn seriously.

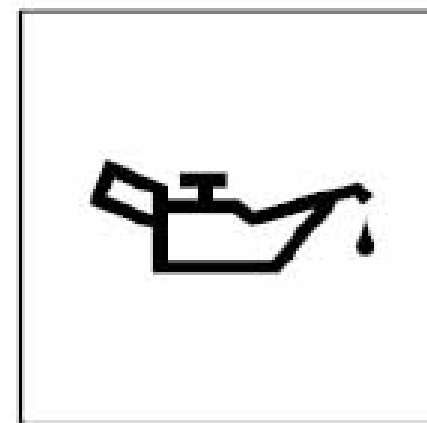


**In the case, immediately park the vehicle in a safe place and shut down the engine, add the brake fluid to the specified level, and then start the engine to check whether the indicator is turned off. If not extinguished, please contact your nearest QingLing special dealer shop (service station).**



#### Exhaust brake indicator

This indicator illuminates when the exhaust brake switch is in the “ON” position.



#### Oil pressure indicator lamp

When the start switch is turned to “ON” position, the indicator will be turned on; when the engine is started, it should be turned off.



**If the oil pressure indicator is illuminated when the vehicle is running, showing that the oil pressure is low and the engine must be shut down immediately and the engine oil level must be checked. If the oil level is normal, check the lubrication system of the vehicle at the nearest QingLing special dealership (service station). Do not continue to operate the engine while this indicator is lit.**

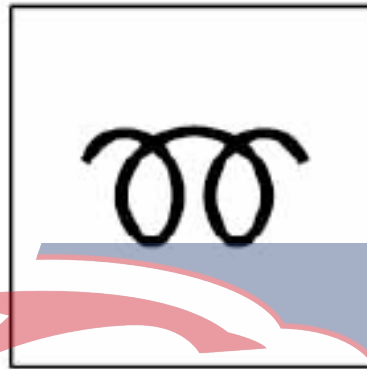


#### Indicator of water in the fuel filter

This indicator lamps up when the water level in the water separator is higher than the specified level.

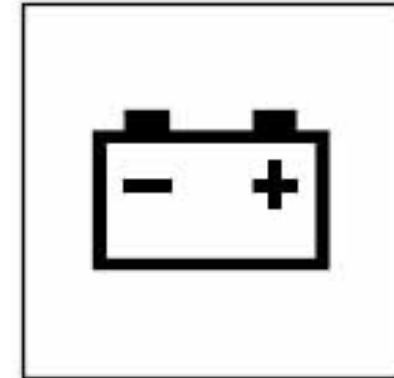


**The habit of draining water from the fuel filter in a timely manner should be developed, otherwise the nozzle may be clogged, the fuel supply may be poor, and the power performance may be insufficient.**



#### Indicator for preheating

When the start switch is turned to "ON" position, the preheating indicator will be turned on; when the glow plug is fully heated, the indicator will be turned off.



#### Generator Indicator lamp

When the start switch is turned to "ON" position, the generator indicator will be turned on; when the engine is started and the generator circuit is operated properly, the indicator will be turned off.



**When the vehicle is moving, if the generator indicator is turned on, must check the generator circuit at your nearest QingLing special dealer shop (service station).**

# POWERSTAR



### Brake booster warning lamp

When the start switch is turned to “ON” position, the brake booster warning indicator will be turned on; when the engine is started, the warning indicator will be turned off.

During the engine operation, if the pressure in the brake booster is insufficient or the fluid level in the brake booster tank is lower than the specified position, the warning indicator will be turned on and the buzzer will sound.

At this time, if the parking brake lever is pulled up, the buzzer will stop beeping.

If the brake boosting warning indicator is turned on, check the liquid level in the brake booster tank and refill the brake liquid to the specified level if necessary.



The brake booster reservoir should be filled with automatic transmission fluid (DEXRON IIE) instead of brake fluid.

When the brake booster warning indicator is turned on, if the exhaust brake is under application status, then:

**Park the vehicle in a safe place;**

**Keep the engine under operation status;**

**Shut down the exhaust brake device.**

**At the time:**

- That the brake booster warning indicator is turned off indicates that the exhaust brake system fails.

- That the brake booster warning indicator is not turned off indicates that the brake booster system fails.



If the brake booster warning lamp comes on while the vehicle is moving, select a safe place to stop immediately.

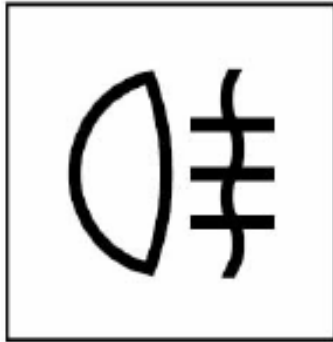
- Depress the brake pedal with appropriate force, and do not release it until the vehicle stops completely.

The force depressed on the pedal may be greater than that in common conditions, because the brake assist system may not be fully operated.

The parking distance may be longer than usual because the brake assisting system may not be fully operated.

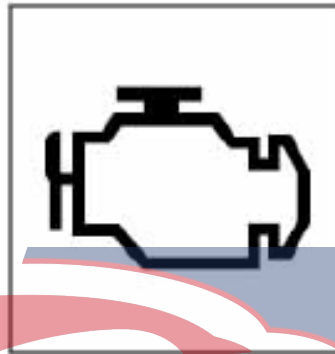
- Do not continue driving your vehicle until the problem is resolved. Please contact the nearest QingLing Motors special dealer shop (service station) for assistance.

# POWERSTAR



### Rear fog lamp indicator

When the rear fog lamp is in use, the lamp is on.



### Engine self-diagnosis indicator

The engine self diagnostic indicator illuminates when the start switch is turned to the “ON” position; this indicator turns off after a few seconds if the engine is ok after the engine is started. Otherwise, it indicates that the electronic control system of engine is abnormal.



**If the engine self-diagnosis indicator is always ON while the engine is operated, please to the nearest QingLing Motors special dealer shop (service station) for maintenance as soon as possible.**



### Safety belt warning lamp

When the start switch is turned to “ON” position, the warning indicator will be turned on if the driver seatbelt is not fastened;

After the driver fastens the seat belt, the warning lamp goes out.

POWER STAR



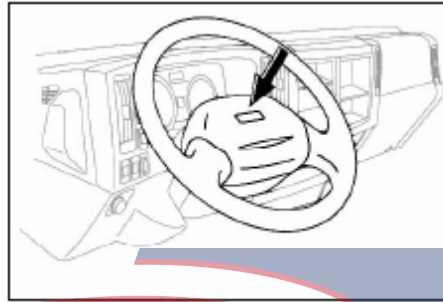
### **Parking brake indicator lamp**

The parking brake indicator lamps up when the parking brake lever is pulled up.



**That the parking brake indicator is turned on does not mean that the parking brake is fully applied.**

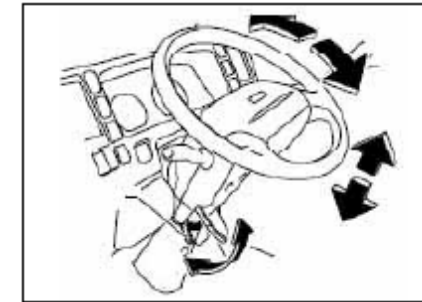
**When the parking brake is applied, do not drive the vehicle.**



### **Steering column operating device**

#### **Horn button**

If pressing the horn button on the steering wheel, the horn will sound.



### **Fully adjustable steering wheel**

The steering wheel can be adjusted to any position from front to back and up and down.

#### **Adjustment steps:**

Pull up the steering wheel lock lever to release the steering column lock.

After sitting upright on the seat, move the steering wheel up and down and place it in the most suitable position for operating while sitting on the driver's seat.

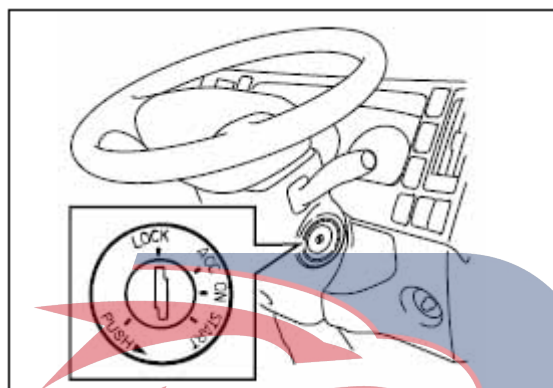
Press the locking handle down and lock the steering wheel in the desired position.

# POWERSTAR



After the steering wheel is adjusted, the steering wheel adjustment locking handle should be fastened securely. Pull the steering wheel up and down to make sure the steering wheel is locked.

The steering wheel must be adjusted when the vehicle is parked; it cannot be adjusted during driving.



### Start switch

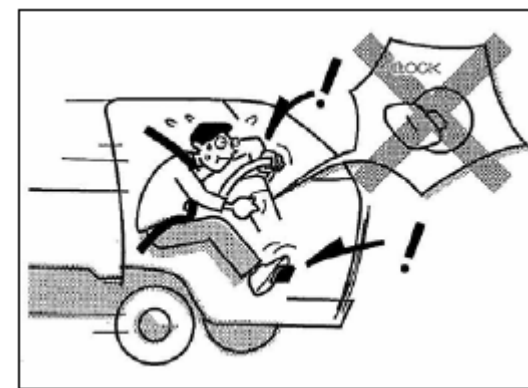
The switch has four changeover positions as shown in the Fig.:

“LOCK”: Only when the switch is in the position, the key can be inserted or removed. The steering wheel is locked when the key is removed.

“ACC” (accessory): When the key is placed in the position, the accessory circuit can be powered for use even if the engine is not operated.

“ON”: This position is used for warm-up and normal operation.

“START”: When the key is turned to the position, the engine will be start. Only release the key, it will be returned to “ON” position.



Never turn the key to a position other than “ON” while driving, otherwise -

- If the brake assist system is not operated, the brake system will not be able to fully function;
- If the power steering system is not operated, the steering wheel will be difficult to operate;
- All indicators, warning indicators and other electrical components will be not operated.
- The engine may be damaged.

Never turn the key to the " lock" position while driving, otherwise the control of the vehicle will be lost due to the locking of the steering wheel, causing great danger;

POWER START



Caution

Do not operate the starter for more than 10 seconds.



#### Combination switch handle:

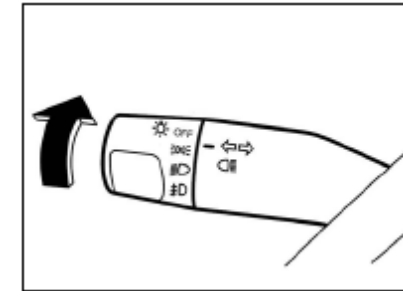
The combination switch handle controls the turn signal switch, lamp switch, dimmer switch, passing lamp switch and front fog lamp switch.



Caution

**This control switch can be used regardless of the position of the start switch.**

**When the engine stops, do not allow all lamps under “ON” status for a long period of time, to prevent the battery capacity depletion, resulting in difficult vehicle start.**



#### Lamp control switch

Turn the lamp control switch (on the top of the handle) into three gears to control the following lamps:

1st position: positioning lamps, tail lamp, license plate lamp and dashboard lamp

Second gear: Each of the above lamps plus the headlamp

Third gear: Each of the above lamps plus rear fog lamps

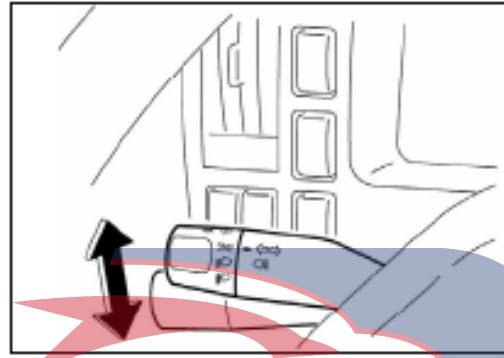
# POWERSTAR





### Turn signal switch

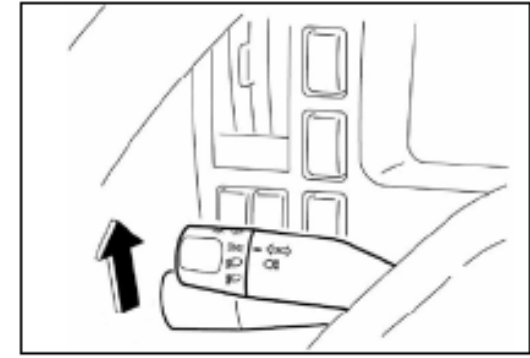
When you move the switch handle in the desired direction, the external turn signal lamps up and the turn signal lamp on the instrument panel flashes. When the steering wheel is turned back to the straight position, the switch handle will automatically return to the neutral position.



### Headlamp switch

If moving the switch handle upwards, the headlamp will be changed from high beam to low beam; if moving switch handle downwards, the headlamp will be changed from low beam to high beam.

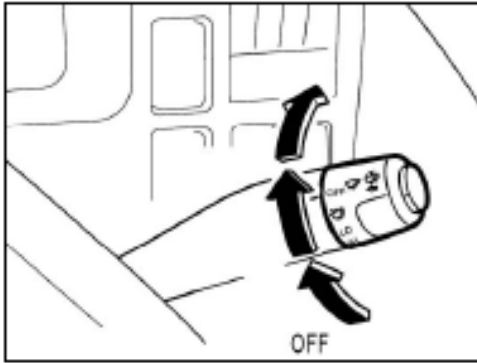
When the headlamps are shifted to the high beam, the high beam indicator on the dashboard will also be turned on.



### Overtaking lamp switch

In order to signal overtaking, the headlamps of the headlamps will be lit whenever the switch handle is lifted upwards. The switch handle should be operated repeatedly to make the headlamp flicker (daylamp) or alternately switch between high beam and low beam (at night).

# POWERSTAR



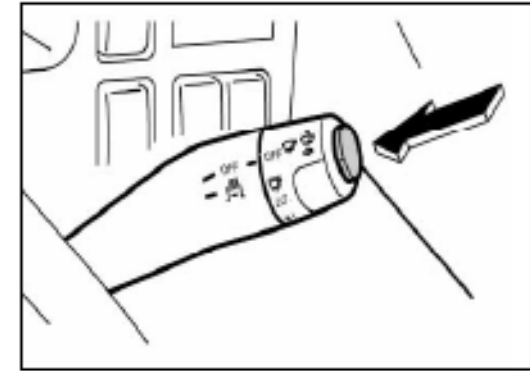
### Windshield wiper switch

There are 4 wiper control positions on the windshield wiper switch.

- ① OFF
- ② Intermittent
- ③ Low speed
- ④ High speed



**When the windshield is dry, do not operate the wiper to avoid scratching the glass. Before the wipers are operated, must remove the ice and snow from the wiper blades. If the ice and snow are frozen on the windshield, must carefully loosen and remove them.**



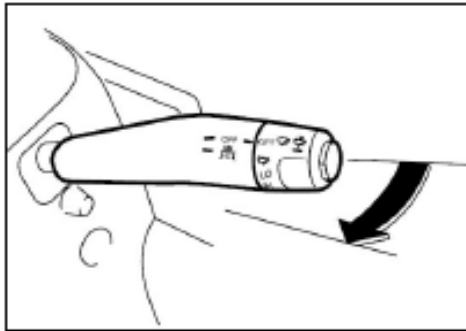
### Windshield washing switch

Press the button on the top of the switch so that it is secured in this position, so that the washing liquid can be sprayed on the windshield.



**In the cold season, use the defroster to heat the windshield before using the washer. This will be conducive to preventing freezing of the driver's vision.**

# POWERSTAR

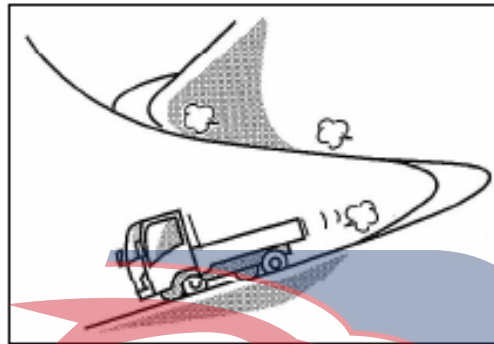


### Exhaust-assisted brake switch

When driving, pull the exhaust auxiliary brake switch backward, and the exhaust auxiliary brake Indicator lamp on the dashboard will lamp up, and at the same time, exhaust throttling will make powerful engine brake come into effect.

However, when the accelerator pedal or the clutch pedal is depressed, the speed is less than 5 km/h, or the shift lever is placed in the neutral position, although the brake indicator lamp is still on, the exhaust throttle assist brake is inoperative.

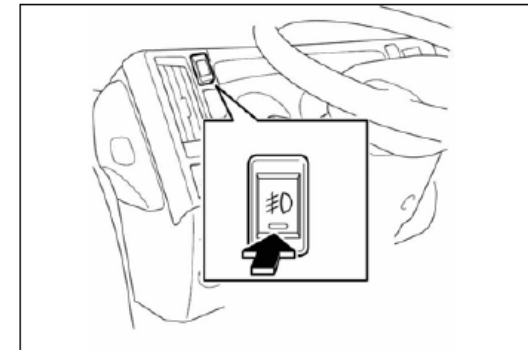
When the exhaust assisted brake is applied, the engine will not be provided with the fuel; once the exhaust assisted brake switch is closed, the engine will be provided with the fuel.



**The switch can be used to operate the auxiliary exhaust brake when traveling on a downhill or in urban areas where frequent stops and starts are required.**

**When the engine is operated at idling for engine temperature rise or other purposes, the exhaust throttle assist brake switch should be set to “OFF” position.**

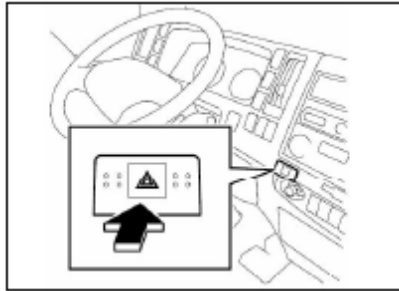
**If the warning buzzer sounds when the exhaust assist brake switch is turned to “ON” position, must park the vehicle in a safe place immediately and contact the nearest QingLing Motors service station (dealer).**



### Instrument cluster

#### Front anti-fog lamp switch

When the front view is affected by the fog, must press the switch to turn on the front anti-fog lamps. The front anti-fog lamp switch only works when the combination switch is in a position other than “OFF”. When the front anti-fog lamp is lit, the indicator of the switch lamps up; when it is pressed again, this switch is turned off.

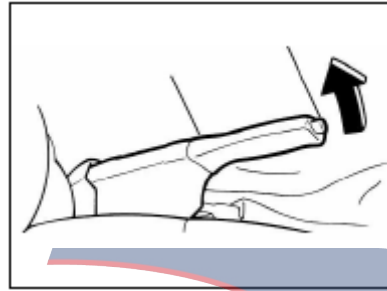


### Danger warning flash switch

When the switch is pressed, all turn signals will flash, regardless of the turn signal switch position. When this button is pressed again, this switch is turned off.



**In daylight or at night, when the vehicle is in a traffic risk, must use a warning flash to remind other drivers. Avoid parking the vehicle on the road as far as possible.**



### Parking brake lever

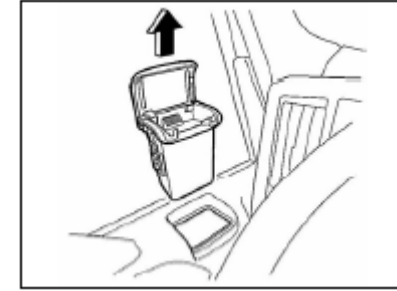
When using the parking brake, the parking brake lever located between the seats must be fully pulled up. To release the parking brake, must gently pull up the parking brake handle and then press down the button and push the handle to the end. When the start switch is turned to "ON" position, the parking brake indicator will be turned on if the parking brake is not completely released.



**The indicator is independent of the performance of the parking brake.**

**When parking brakes are applied, the parking brake lever should always be pulled up as far as possible.**

**If the parking brake does not work well, it will cause the vehicle to slide down the slope.**



### Ashtray

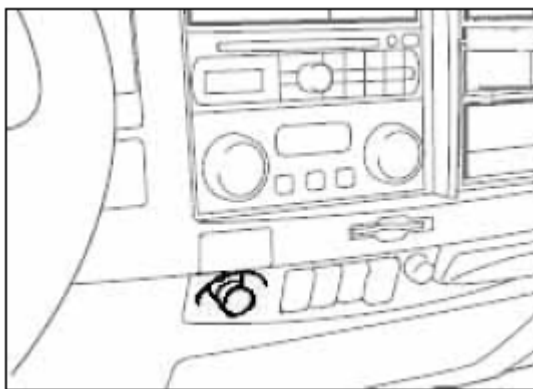
To use, lift the ashtray lid up to open it. To clean, open the ashtray lid and pull the ashtray up to remove it.



**After using the ashtray, be sure to close the ashtray lid in the original position; otherwise, the burning cigarette may ignite other cigarette butts and then cause a fire.**

**Do not place paper or other flammable items into the ashtray.**

POWERSTAR



### Cigarette lighter

When using the cigarette lighter, must place the start switch in “ACC” or “ON” position, press the cigarette lighter inward and then release it.

About 15 seconds after pushing in, the cigarette lighter heats up to the point where it can be used and automatically returns to its normal position. Pull the lighter out and use it.



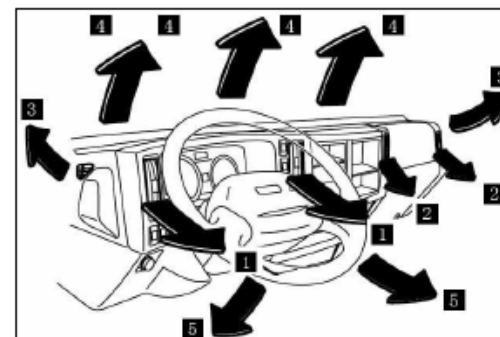
If the cigarette lighter does not automatically spring back after 20 seconds, it means that the cigarette lighter has failed and must be pulled back to its normal position by hand.

The deformed cigarette lighter cannot be accurately returned to its original position. If it is deformed, it should be promptly replaced with an Isuzu genuine cigarette lighter. When using a cigarette lighter hole to connect other external devices, please contact the QingLing service station (dealer).



**Do not hold the cigarette lighter inward; otherwise, it may be damaged due to overheating, or cause a fire.**

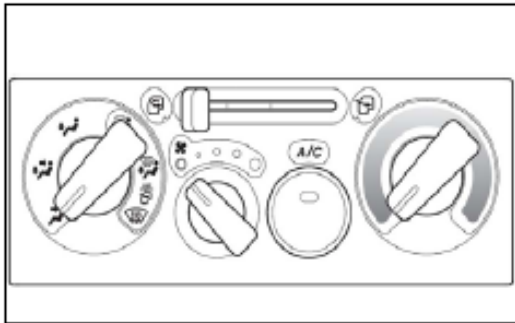
**Do not leave the cab with the cigarette lighter pushed inward, otherwise overheating of the cigarette lighter may result in an unexpected fire.**



### Heater, defroster and air conditioner

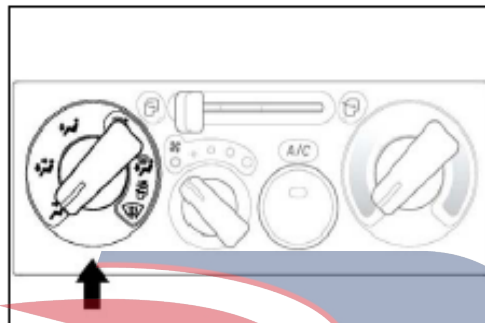
Air flows out from each outlet as shown in the figure.

# POWERSTAR



**Heater, defroster and air conditioner control panel**

Operate the buttons or knobs on the control panel, to control the wind direction, wind force, temperature, and air transitions in the entire HVAC system.



**Air outlet selection button**

The outlet selection knob is used to control the operation of each outlet.

“☰” : 1# and 2# outlets are used for air supply

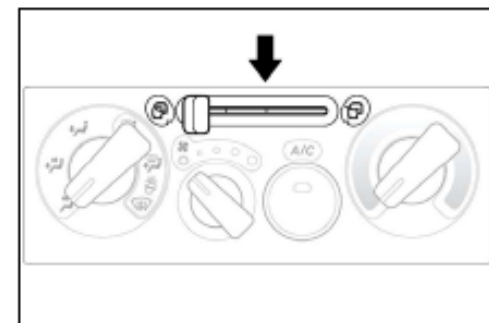
“☱☲” : 1#, 2# and 5# outlets are used for air supply

“☲☳” : 5# outlets are used for air supply

“☱☲☳” : 3#, 4# and 5# outlets are used for air supply

“☱☲☳☳” : 3# and 4# outlets are used for air supply, and 5# outlet is used for forced air supply;

“☱☲☳☳☳” : 3# and 4# outlets are used for air supply



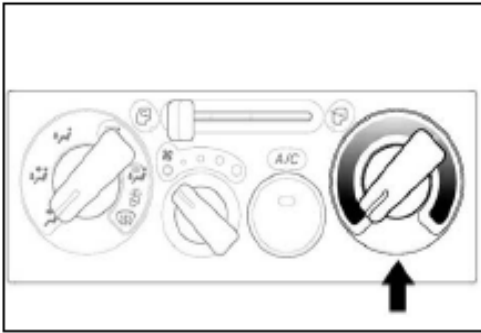
**Indoor and outdoor air change handle**

This handle is used to switch between two ventilation modes for introducing outside air or for circulating indoor air.

“☰☳” : Circulate the inside air;

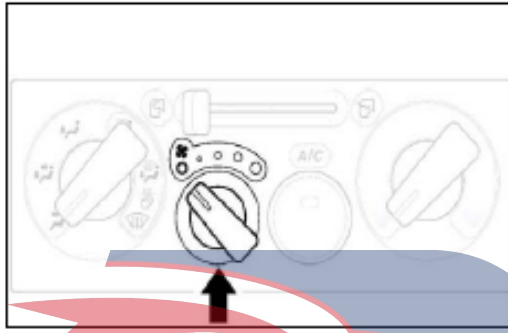
“☱☲☳☳” : Introduce the outside air into the cab.

**POWERSTAR**



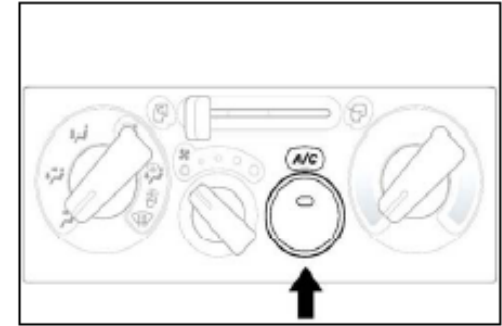
**Temperature control knob**

The temperature control knob is used to adjust the air temperature at the air outlet (control the indoor air temperature by adjusting the throttle opening).



**Blower adjustment knob**

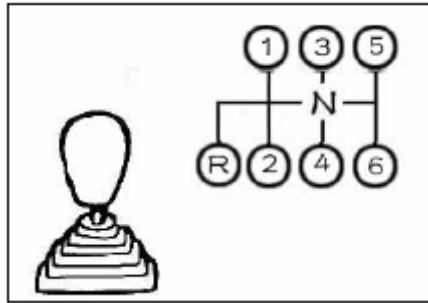
The blower adjustment knob can be used to adjust the air supply rate at the outlet in 4 levels.



**Air conditioner switch button**

To adjust the room temperature to the desired temperature, press the button once to turn on the air conditioning, and press the button again to turn it off.

**POWERSTAR**



### Floor controls

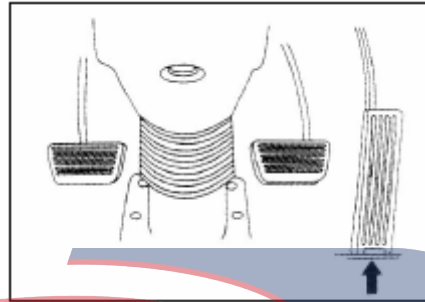
#### Shift lever

Whenever a shift operation is performed, the clutch pedal should be depressed beforehand. The shift position diagram is located on the top surface of the shift lever knob. The reverse lamp turns on when the shift lever is turned to reverse gear with the start switch key in the "ON" position.

When the shift lever changes to reverse, the buzzer will beep.

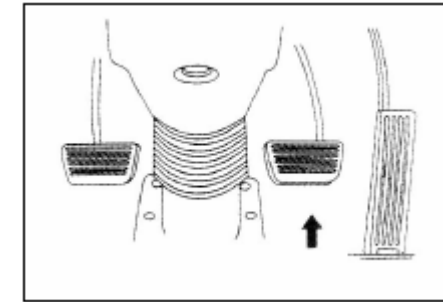


**Before switching to reverse gear, the vehicle must be completely stopped.**



#### Accelerator pedal

In order to avoid any unnecessary fuel consumption, the accelerator pedal should be operated appropriately if necessary.



#### Brake pedal

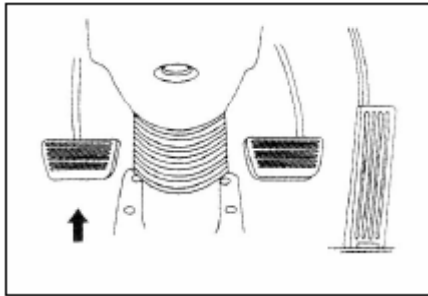
In order to avoid sharp braking, the brake pedal should be operated smoothly. When driving on a downhill, it is recommended to apply the engine brake on and the foot brake at the same time.



**If the brake booster fails during driving, it cannot fully exert its effect and the braking effect will be reduced. In this case, depress the brake pedal firmly in order to achieve the braking effect.**

# POWERSTAR





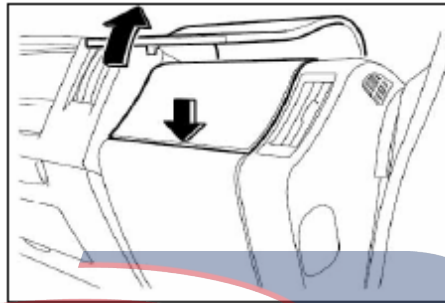
### Clutch pedal

To disengage the clutch, the clutch pedal must be depressed to the end, otherwise the transmission gear will produce a fricative sound, and worn out rapidly.



Caution

**Do not place your foot on the pedal when not using the clutch.**



### Others

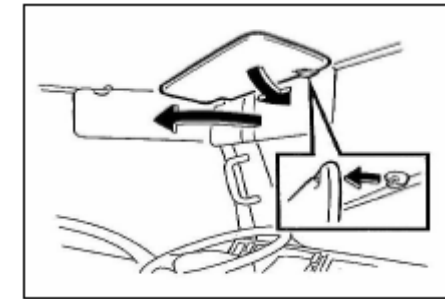
#### Toolbox

The tool box is mounted below the dashboard box on the co-driver side. Press the middle of the toolbox cover downwards to open the toolbox. Press again and the cover will close.



Warning

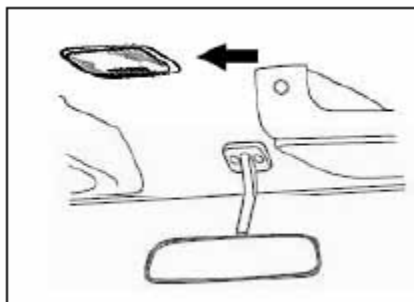
**Avoid opening the tool box while driving. Otherwise, items in the tool box may jump out and cause personal injury during emergency brake or an accident occurs. Do not place fragile or explosive objects such as glasses or lighters in the tool box. Because the collision between items is likely to occur during the driving of the vehicle, and the temperature inside the tool box will increase.**



### Sun visor

When exposing to direct sunlamp, the sun visor can be used to block them. The sun visors disconnected from the retainer and pivoted to the side window.

POWERSTAR



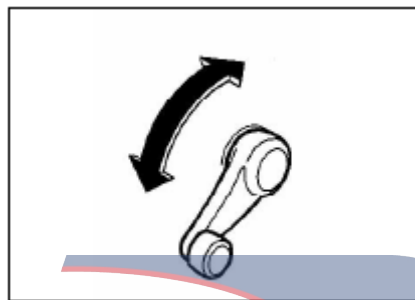
### Dome lamp

The dome lamp can be operated regardless of the position of the start switch key.

- ①“OFF” position: The lamp will be turned off.
- ②“DOOR” position: The lamp will be turned on when the driver door is opened.
- ③“ON” position: The lamp will be turned on regardless of the door status.



**When the dome lamp switch is set to “DOOR”, be sure to completely close the door so that the dome lamp stays on and consumes power from the battery.**



### Window regulator handle

To raise or lower the side window, turn the window regulator handle.



### Cup holder

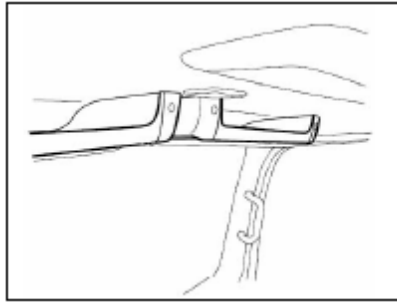
When using this device, simply pull the cup holder handle from the instrument panel.

After use, it should be pushed inwards to the locked position to prevent the vehicle from opening when it is jolted.



**The cup placed inside the cup holder should be covered to prevent liquid from flowing out, resulting in damage to electrical components. Moreover, the cup weight should not exceed 0.75 kg; otherwise it will cause damage to the device.**

# POWERSTAR



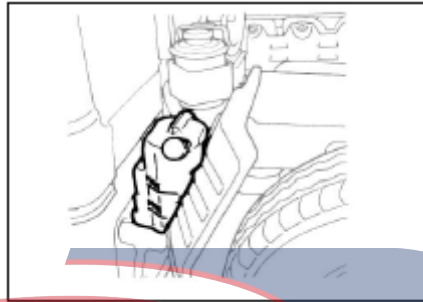
### Storage shelf

The shelf should be located at the top of the cab.



**Warning**

There should be no object that can cause any injury in the storage rack because it may fall off from the storage rack under certain conditions. The mass of item stored in the shelf should not exceed 2 kg.



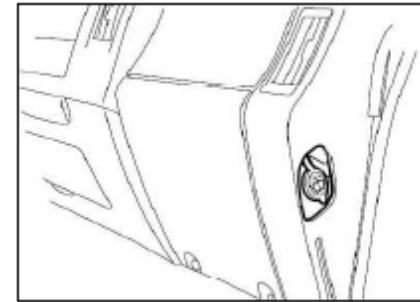
### Radiator backup water tank

The spare tank of the radiator is installed on the rear right side of the cab.



**Caution**

Checking the coolant level and refilling the coolant should be done at the reserve tank. If there is no special need, the radiator inlet cover does not have to be removed. For details, please refer to the chapter "Service and maintenance".



### Windshield washer tank

The windshield washer fluid tank is mounted under the auxiliary instrument panel.

Washer tanks can only be filled with fresh water or genuine "Isuzu" washing liquid.



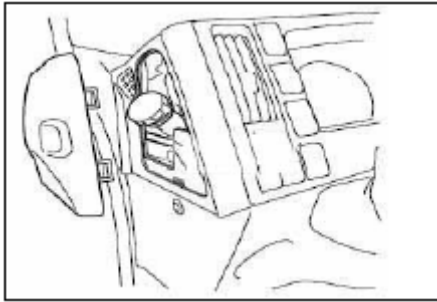
**Caution**

Do not fill the radiator antifreeze in the washing liquid tank; otherwise it may damage the paint surface.

Before the wipers are operated, must remove the ice and snow from the wiper blades.

In the cold season, use the defroster to heat the windshield before using the washer. This will be conducive to preventing freezing of the driver's vision.

# POWERSTAR



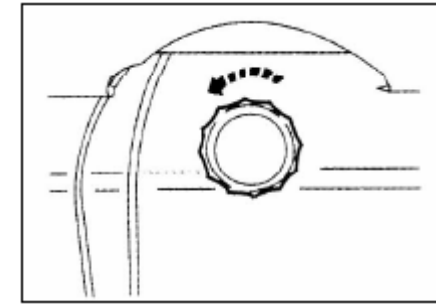
### Liquid storage tank for brake and clutch

This reservoir is mounted next to the dashboard on the driver's side.



### Power steering mechanism oil tank

The power steering tank is mounted on the rear right side of the cab.



### Fuel tank filler cap

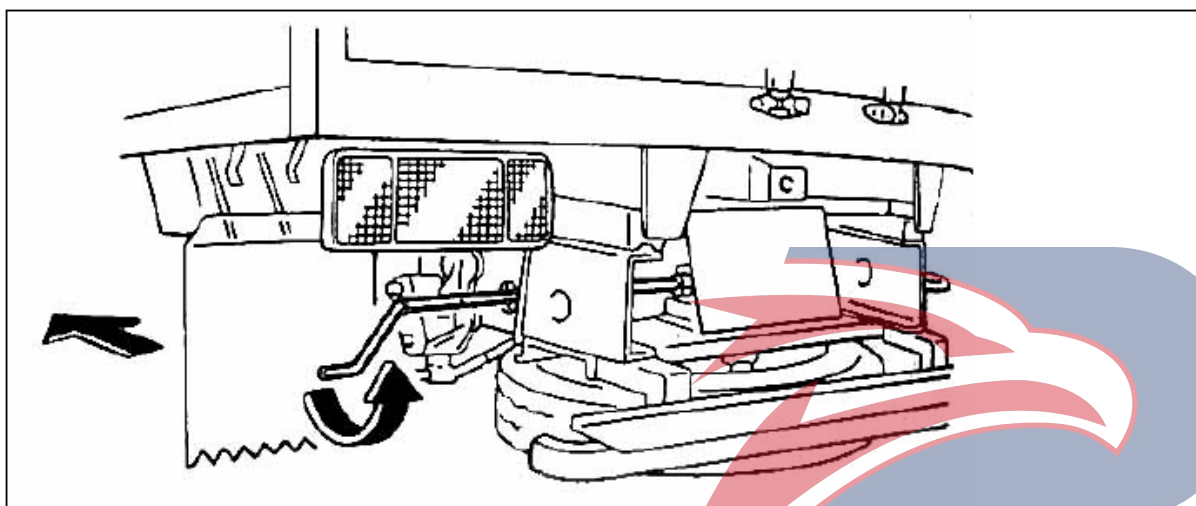
The fuel tank filler cap is located on the fuel tank. As long as turning counterclockwise, the filler cap can be unscrewed.



Caution

When it is necessary to replace the filler cap, only the genuine "Isuzu brand" filler cap can be used. Otherwise, in case of an accident, it will cause fuel leakage, which can affect the operations of the fuel system and the emission control system.

# POWERSTAR



### Tilting the cab

If the engine is overhauled, the cab can be flipped to access directly the engine compartment.

### Spare tire hanger

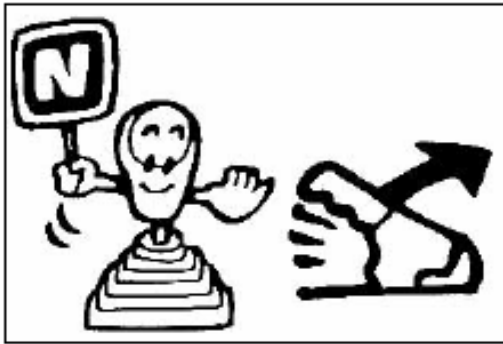
Spare tires are fixed to the rear of the frame with a chain. To make the spare tire go down, insert the handle into the hole on the side of the vehicle to connect it to the lock, then turn the handle counterclockwise.

When lifting the spare tire, turn the handle clockwise to the end, and then turn it another turn, to ensure that the spare tire is fastened firmly in the storage position.



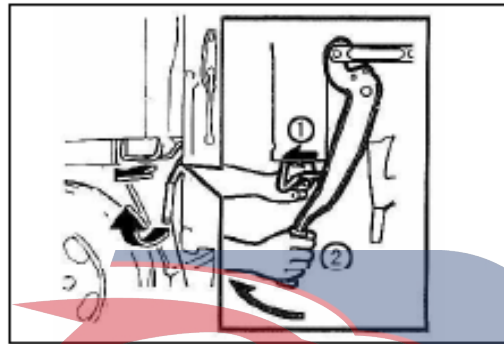
In order to prevent the backup tire from causing damage in the event of a sudden braking or an accident, it is important that the spare tire be securely fastened to the storage location.

# POWERSTAR

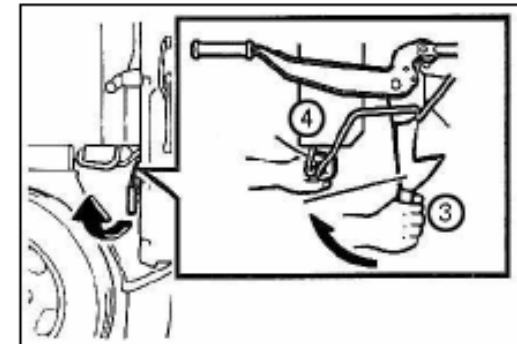


### 1. Preparation for tipping the cab

- ①Park the vehicle on a flat floor and check for enough space in front of and above the cab;
- ②Pull up the parking brake lever;
- ③Put the shift lever in the neutral position;
- ④Stop the engine;
- ⑤Remove all items that may fall from the cab;
- ⑥Close all doors securely.
- ⑦Make sure there are no people in the cab and that everyone else is away from the vehicle.

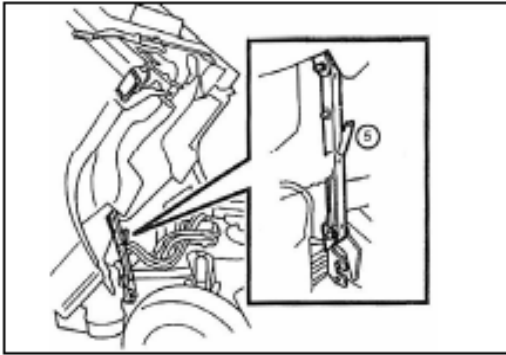


- ### 2. Pull the locking handle 1 and pull the cab tilting handle 2 to release the cab tilting handle lock.



- ### 3. Hold the auxiliary armrest ④ and pull the safety handle ③ to prevent the cab from bouncing up suddenly.

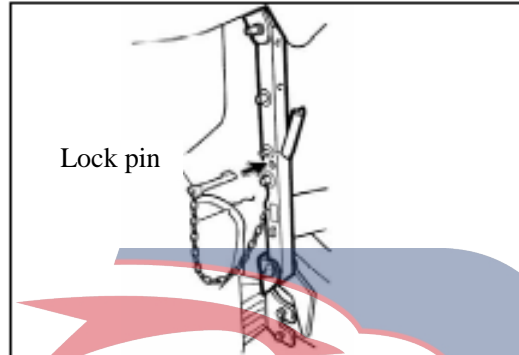
# POWERSTAR



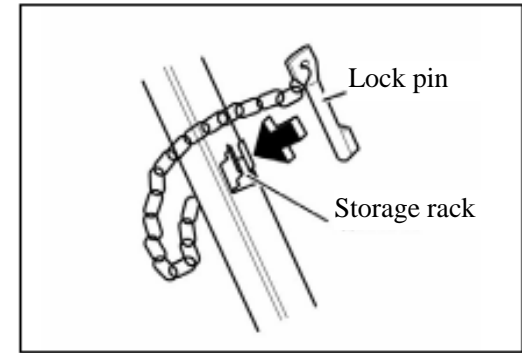
4. Raise the cab to the automatic stop position and check whether the cab struts are locked with the lock buckle 5.



**If the bucket ⑤ is not locked, the cab may fall, causing casualties.**



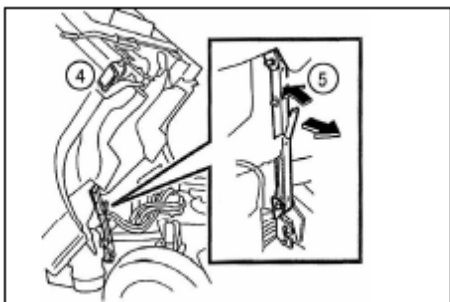
5. Insert the locking pin into the locking hole.



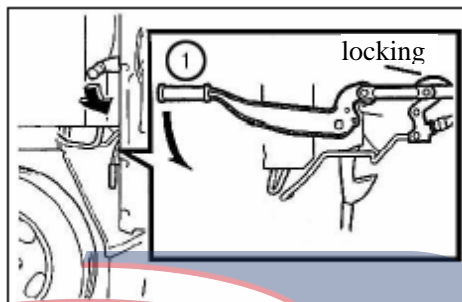
**Restore the cab**

1. Pull the locking pin out of the locking hole and place it in the storage rack.

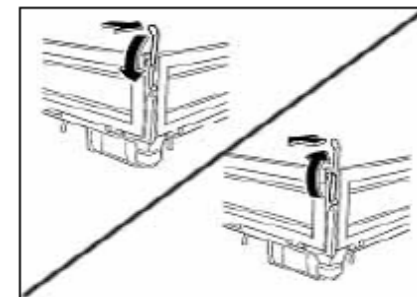
# POWERSTAR



2. Hold the auxiliary handrail 4 with left hand, and push the lock buckle 5 with right hand to release the driver strut under the locked status, and pull the driver strut backward to slowly lower the cab.



3. To lock the cab, fully pull down the locking handle 1 until it is locked with the locking hook. Visually check whether the cab was securely locked with the locking handle 1 and the safety handle.



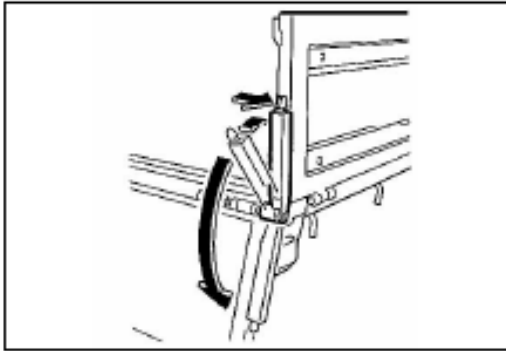
### Compartment

#### Opening and closing operations of rear fence

Rotate the handles on the left and right sides 180° upwards, then push the handles inwards to release the latches, and then the rear fence can be released. To close, close the rear panel, then pull outwards and turn the handle down to lock it.

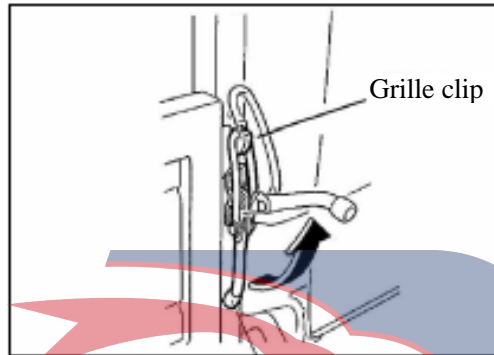
# POWERSTAR



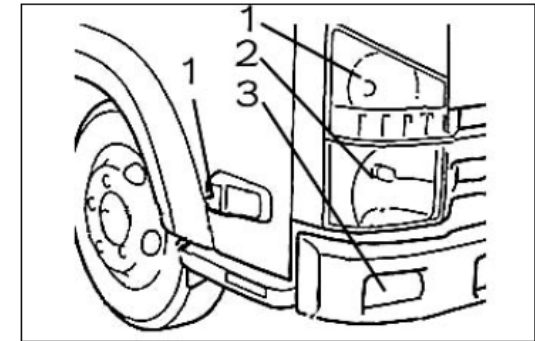


**Opening and closing of left and right side doors:**

1. Remove the rear fence.
2. Push the lock handle outward and push the lock downward to release the lock.



3. Lift the hook handle located on the front side of the side fence upward to release the front hook.
4. At the time, the front end of the side fence is temporarily fixed with the fence clamps. Firmly lift up the fence clamp to release the side fence.
5. To close the side fence, use the hook handle to securely lock the front side of the side fence, push in the lock on the rear door, and then use the handle to lock it.

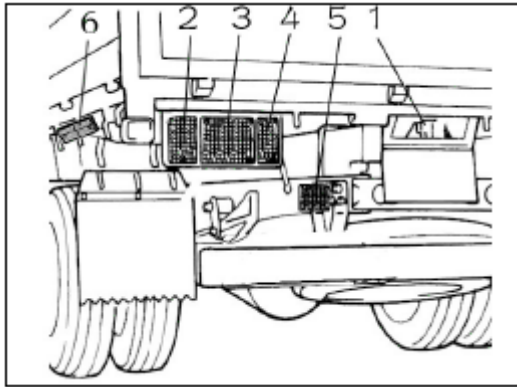


**External lamps**

**Front side:**

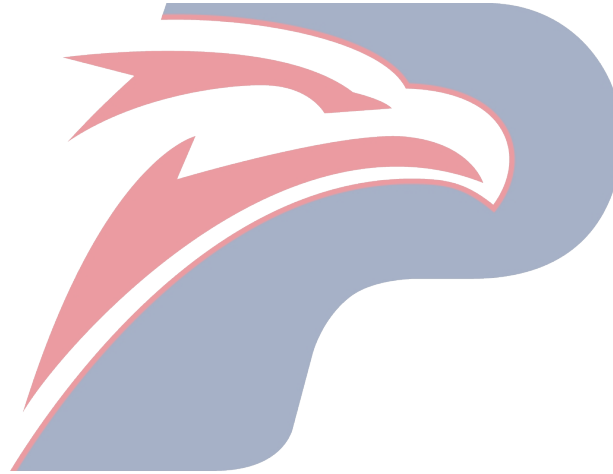
- ① Turn signal lamp
- ② Headlights, width lamps
- ③ Fog lamps

**POWERSTAR**



**Rear side:**

- ① License plate lamp
- ② Marker lamp and turn signal
- ③ Tail lamp, brake lamp
- ④ Reversing lamps
- ⑤ Rear fog lamp
- ⑥ **Side-marker lamp**



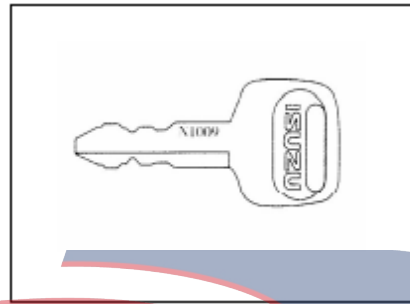
**POWERSTAR**

### **3** BEFORE DRIVING YOUR VEHICLE

- Operation of controls.....3-1
- List of daily inspection items.....3-7

#### **Before driving your vehicle**

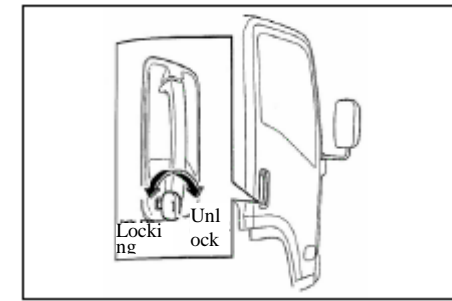
Proper maintenance and driving can not only prolong the service life of the vehicle, but also improve the fuel and oil economy. Please drive the vehicle carefully and cautiously.



#### **Operation of controls**

##### **Key**

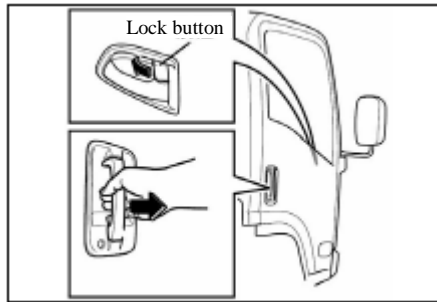
This key is used to operate the start switch and door lock.



#### **Outside door handle**

Pull out the outside door handle to open the door. Insert the start switch key into the door lock and rotate it. The door can be locked.

# POWERSTAR



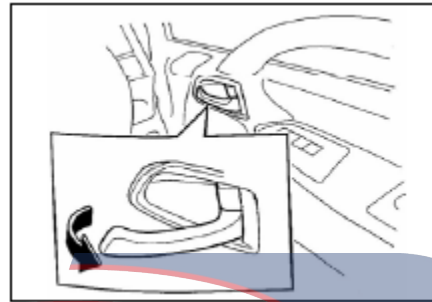
### Door lock

The door can be locked outside without the key. The method is to press the door lock button on the inside of the vehicle into the position of “LOCK” (locking), pull the outside handle of the door outward and close the door.



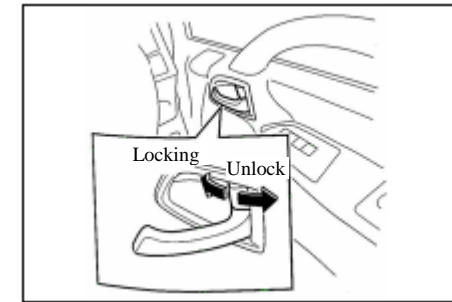
Caution

Be careful not to lock your keys in the vehicle.



### Inside door handle

The doors can be opened by pulling the inside door handle.



### Door lock (inside)

After closing the door, the door can be locked by simply pulling the door lock button.



Warning

Be sure to lock all doors when driving. After the doors are locked, the maximum protection for passengers and drivers will be provided. When all the doors are locked, no one will be thrown out from the vehicle in the event of an accident. When the vehicle is paused, the doors can also be locked to prevent any theft.

When leaving the vehicle, must shutdown the engine and lock all doors.

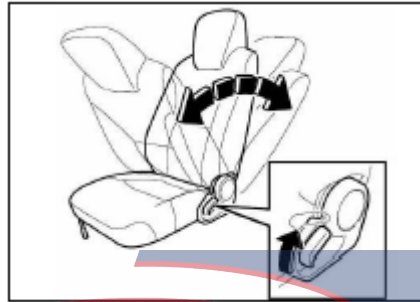
# POWERSTAR



### Driver's seat

The seat adjustment lever can adjust the position of the driver's seat back and forth. Pull up the adjustment lever at the lower of the seat, lean against the seat and move the seat into an appropriate position. Then release the seat adjustment lever and the seat will be automatically locked.

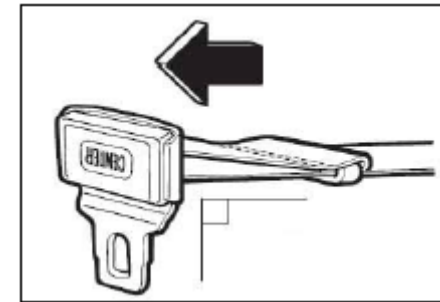
If necessary, the tilting angle of the seat back can be adjusted by pulling the seatback adjustment lever on the door side. Pull up the adjustment lever and use the body to stop the seat back in place and release the seat adjustment lever. The seat will be automatically locked.



**When adjusting the seat back, care should be taken to avoid interference of the seat with the seat belt and seat belt buckle to prevent damage to the seat belt mechanism.**

**If you find that your seat adjuster cannot be fastened, please take the vehicle to the QingLing dealer (service station) for maintenance.**

**Do not attempt to adjust the seat or seat back while the vehicle is in motion, as this may cause it to move suddenly, causing the driver to lose control of the vehicle.**



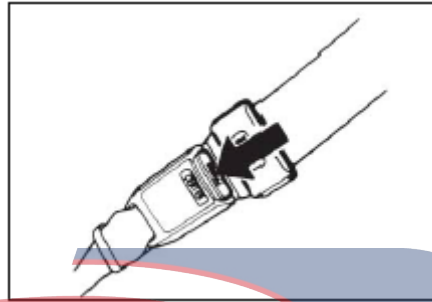
### Seatbelt (two-point type)

1. Maintain your body upright, and keep the upper body against the backrest.
2. Hold the buckle tab on the seatbelt so that it is pulled at a right angle along the seatbelt, and slowly pull the buckle tab to cross your body and insert it into the buckle opening until a "Click" sound is sent.

# POWERSTAR



3. As far as possible, place the seatbelt around the low position of the body, and then hold the free end of the seatbelt and pull it to adjust the seatbelt so that it is in close contact with the body. In the way, the risk of the body falling down from the seatbelt can be reduced in case of an accident.



Press the button on the buckle to release the seatbelt.



**Warning**

**A seatbelt can be used for more than one person at the same time. Because of the use of a safety belt for two people, adequate protection cannot be provided in the event of an accident.**

**In order to reduce the injury probability and extent of injury in case of an accident, the seatbelt should be placed and lowered as close to the body as possible. In the way, the force generated from the seatbelt will be distributed on the stronger pelvis, other than on the abdomen.**

**If the length of the seat belt is too loose, it will increase the probability of injury by not pulling your body effectively during an accident.**

**POWERSTAR**

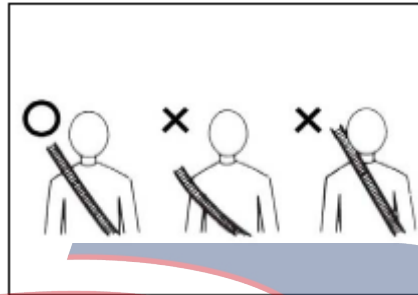


### Seatbelt (three-point type)

Maintain your body upright and keep your upper body against the backrest.

Grab the buckle tab on the seat belt slowly and pull it across your body and insert it into the open end of the buckle until it clicks.

Place the seat belt around the lower arm as low as possible, then grasp the free end of the seat belt and pull it to adjust the seat belt so that it fits snugly to the body. In the way, the risk of the body falling down from the seatbelt can be reduced in case of an accident.



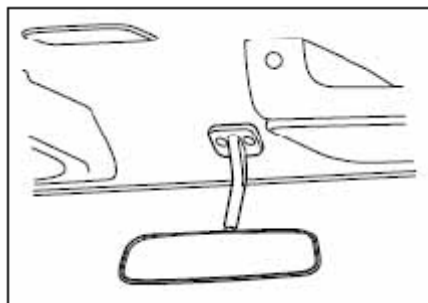
**In order to reduce the probability and the extent of injuries in case of an accident, if the shoulder strap is on or close to the child's face or neck, the child should be moved away from the middle of the shoulder strap.**

**It is important that you understand how to use the seat belt correctly. At the same time, whenever the vehicle is about to be used, you should also ensure that all passengers use the seat belt that has been properly adjusted.**

### Seat belt inspection and care

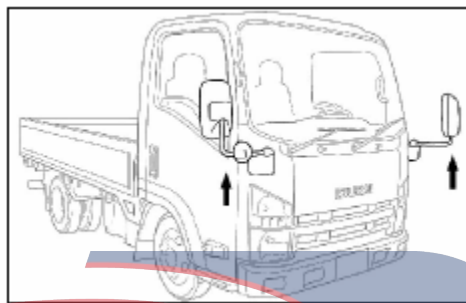
- Check the safety belts, buckles, buckle tabs, retraction devices, and seats regularly for damage, so as not to reduce the safety effect.
- Any item with sharp edges and that cause any damage should not be placed near the seatbelt.
- If the seat belt is found to have been cut, weakened, cracked, or subjected to a collision load, replace it.
- Check that the set bolts are tightly fastened to the floor.
- Any failed part must be replaced.
- Keep seat belts clean and dry.
- Only use mild alkaline soap and warm water.
- The seat belt must not be bleached or stained, as this will weaken the strength of belt.
- Must prevent that the seatbelt is stained with polishing oil, organic chemical solvent or battery electrolyte.
- The user should not modify the seat belt or attach anything to it, which will affect the function of the seat belt.

# POWERSTAR



### Inside rearview mirror

When adjusting, you can swing the mirror right and left and up and down.



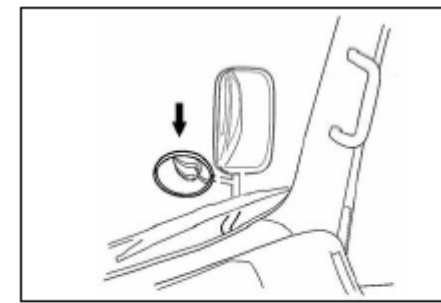
### Outside rearview mirrors

Adjust the left and right rear view mirrors, so that the scenes on both sides of the rear road and the conditions on both sides of the rear trunk can be seen. This helps you determine your relation to the objects behind.



Warning

**Do not adjust the exterior rear-view mirror during driving**



### Down mirror

Adjust the bottom mirror, you can see the lower front of the vehicle.

# POWERSTAR



### List of daily inspection items

Inspection items	Reference page	Inspection items	Reference page
Engine compartment		Outside the vehicle	
Tension and damage of fan belt	5-8	Each lamp function	
Engine oil level and cleanliness	5-8	Battery electrolyte level	5-10
Radiator coolant level	5-9	Level of power steering liquid	2-23
Cab interior		Loosening and damage of spring steel plate and U-bolt	
Brake fluid level	5-11	Oil, fuel, brake oil, coolant,	
Brake pedal stroke and free play	5-12	Leakage of brake fluid, power steering fluid	
Clutch pedal free play and pedal stroke	5-12	Water in the fuel filter (bottom)	
Function of Instrument and Indicator/Alarm	2-2	Tire pressure and damage	5-26
Stroke of parking brake lever	5-11	Wheel bolts and nuts are loose or not	4-20
Windshield wiper and scrubber features	2-13	Damage to the tires steel ring	
Windshield washer fluid level	5-11	Check the engine for abnormal noise or the exhaust for abnormal color	
Position and free play of steering wheel	5-10		
Function of horn and turn signal lamp	2-9/2-12		
Fuel tank level			
Door lock function	3-1/3-2		

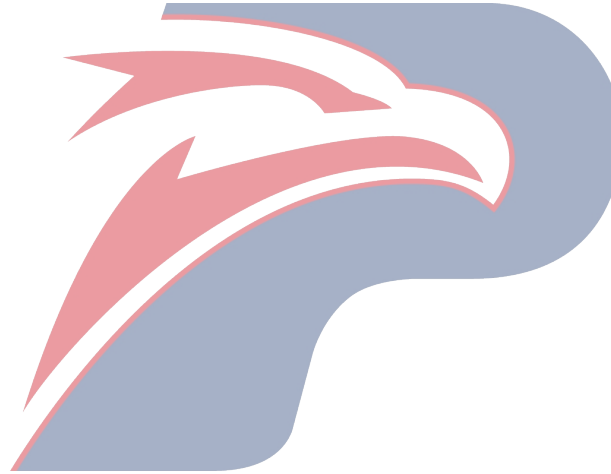
**POWERSTAR**

## **4** DRIVING

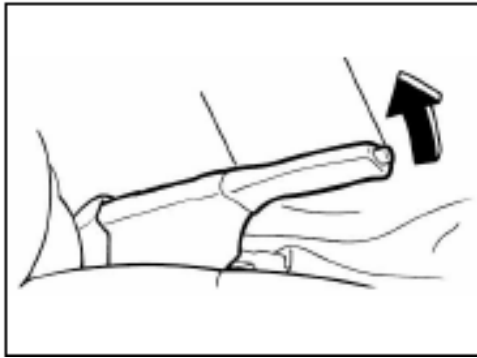
- Preparation for starting engine.....4-2
- Starting engine.....4-2
- Stopping engine.....4-3
- Before driving off.....4-3
- Precautions for turbocharged engine operation .....4-5
- Driving precautions.....4-5
- Driving for economy.....4-9
- Parking.....4-9
- Operation and care in winter.....4-11
- Driving on ice or snow.....4-12
- In case of emergency.....4-14

### **Driving**

Proper maintenance and driving can not only prolong the service life of the vehicle, but also improve the fuel and oil economy. Please drive the vehicle carefully and cautiously.

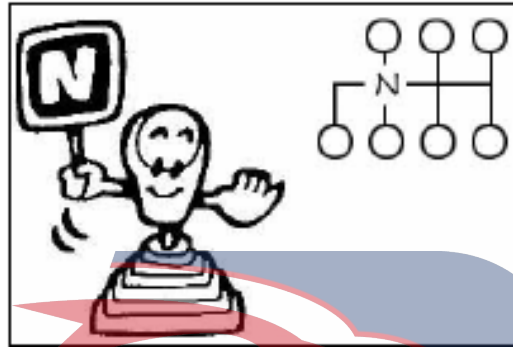


# **POWERSTAR**

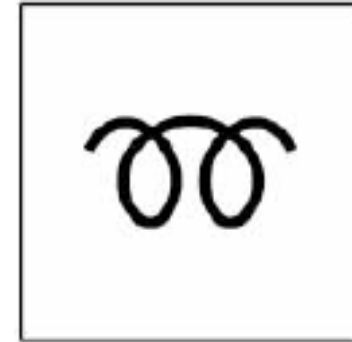


**Preparation for starting engine**

1. Tighten the parking brake lever.



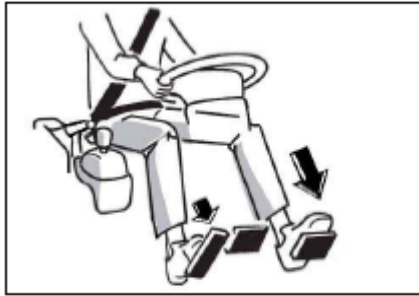
2. Place the transmission in neutral.



**Starting engine**

1. When the engine switch is turned to the “ON” position, the warm-up indicator lamp turns on, and goes out after approximately 0.5 seconds to 4.0 seconds.

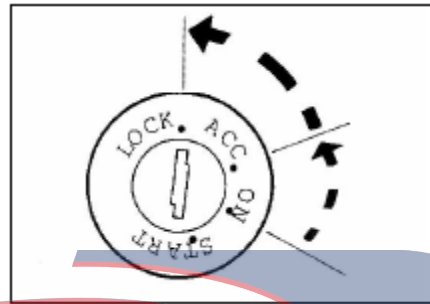
**POWERSTAR**



2. After the warm-up indicator lamp goes out, depress the accelerator pedal properly and depress the clutch pedal to the end. At the same time, turn the start switch to the "STAR" position to start the engine.



The starter cannot be operated continuously for more than 10s; otherwise the engine and the batteries may be damaged.  
Wait more than 1 minute before repeating the first step.

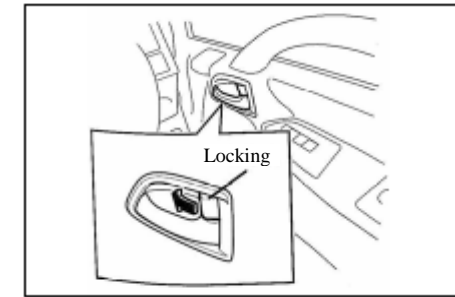


### Stopping engine

1. Turn the start switch to the "ACC" or "lock" position.



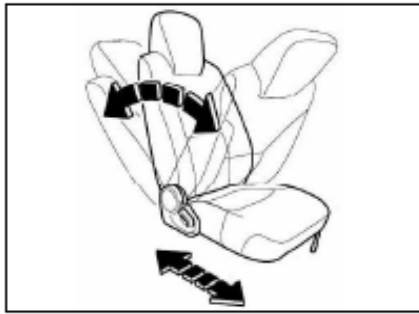
If the engine is overheated excessively, do not shutdown the engine immediately and operate it at idling speed for short time.



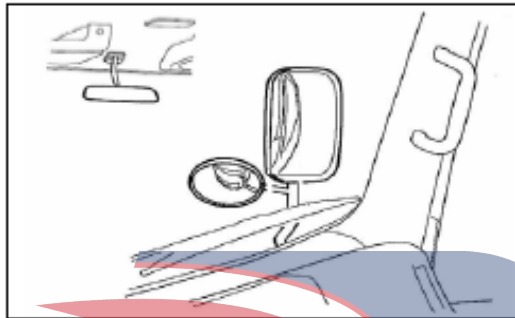
### Before driving off

1. Lock all doors.

# POWERSTAR



2. Adjust the seat position.



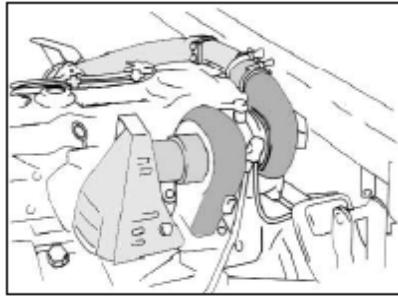
3. Adjust the inside and outside mirrors of the cab.



4. Fasten the safety belt.



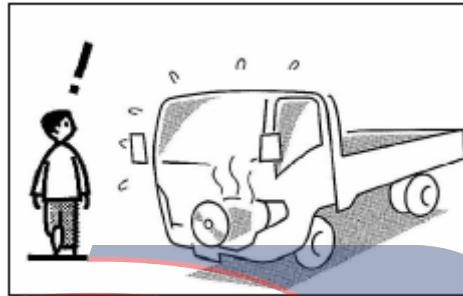
**POWERSTAR**



### Precautions for turbocharged engine operation

#### Engine starting

Do not accelerate the vehicle immediately after starting the engine. It should be operated at idling for 3-5min, to ensure that the rotating parts of the turbocharger bearing are well lubricated.

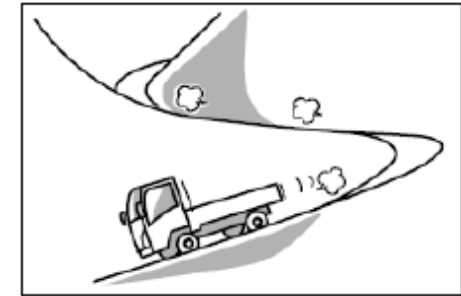


#### ⚠ Caution

After driving at a high speed, idle for at least 3 minutes to allow it to cool down, which allows the turbocharger to return to idle while still being lubricated with engine oil, which will extend the life of the turbocharger bearing unit.

#### ⚠ Warning

Do not stop the engine and the oil pump suddenly at a high temperature; otherwise, the turbocharger will be damaged due to overheating.



### Driving precautions

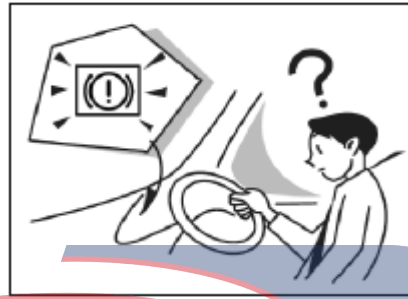
1. Avoid the engine over speed.

Special care should be taken when driving downhill to prevent the engine from overspeed, especially when shifting into a low gear, the engine is easy to overspeed.

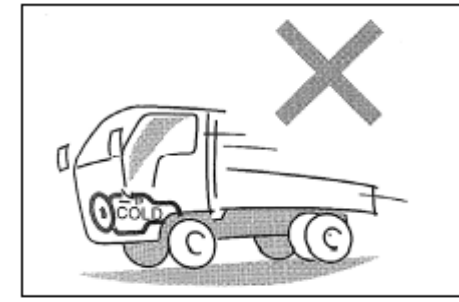
# POWERSTAR



2. If unusual sounds and odors are found during driving, stop and check and find out the cause of the malfunction.

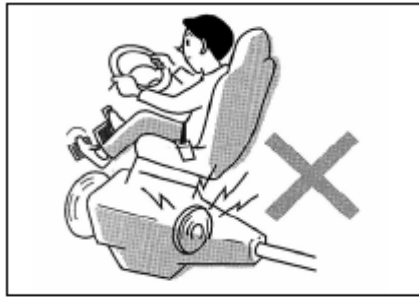


3. If the lamps or meter indicators are found to be abnormal during driving, stop the vehicle for inspection and find out the cause of the malfunction.



4. Sudden acceleration and emergency braking should be avoided as much as possible.

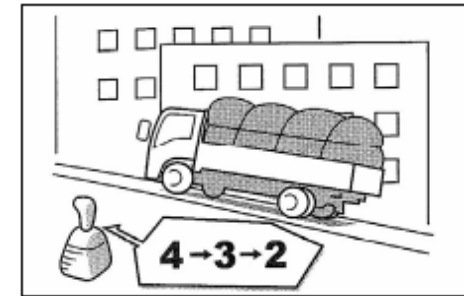
# POWERSTAR



5. Do not drive with your foot resting on the clutch pedal as it produces a partly disengaged condition, causing premature wear of clutch facing.



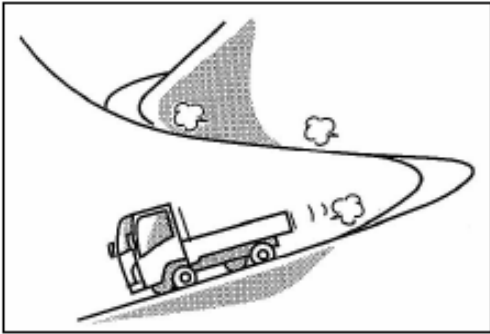
6. Must stop the vehicle completely before shifting the shifter from any forward gear to reverse gear or from reverse gear to any forward gear.



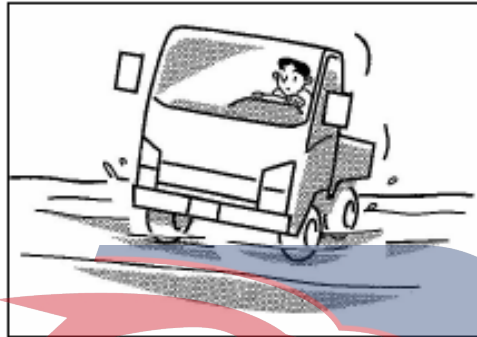
7. When driving uphill, change to a low level before the engine starts to be dragged to avoid overloading the engine.

# POWERSTAR

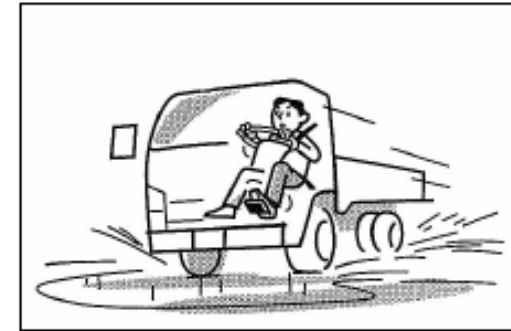




8. When driving downhill, switch to a low gear to get the deceleration effect of engine braking. For long downhill slopes, exhaust throttling auxiliary brakes should be used.

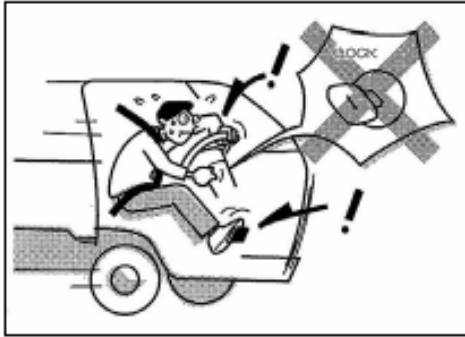


9. Be careful when driving over shallow rivers or deep water pits, otherwise water may enter the airway and cause serious engine damage. After driving across water, check if there is water in the rear axle and transmission oil. If there is water, it should be drained and refilled with the specified oil.

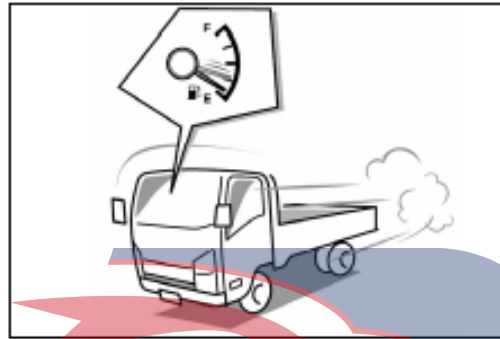


10. Be extremely careful when driving through shallow rivers or through shallow rivers, as dampened brakes would weaken the braking force temporarily.

# POWERSTAR

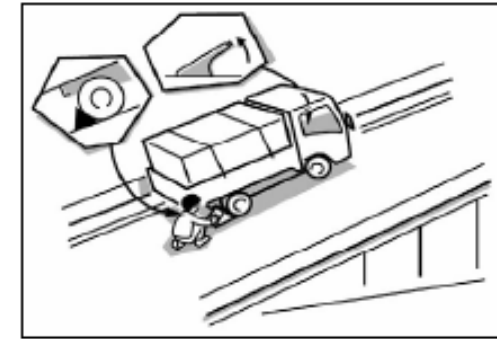


11. Never stop the engine during driving. Otherwise, the braking effect will be reduced because the brake booster stops operating. Turning the start switch to the "lock" position during driving poses a significant risk because the steering wheel will be locked out and thus lost control of the vehicle.



#### **Driving for economy**

1. Unnecessary high-speed driving and low-speed driving in high-gear positions will increase fuel consumption.
2. After acceleration, shift lever should be engaged in high gear and clutch pedal released slowly.
3. When the shift lever is engaged into the direct or overdrive, it should maintain a certain speed as much as possible.
4. When driving, the cooling water temperature should be kept within the normal range.
5. Inflated tires will reduce fuel economy.

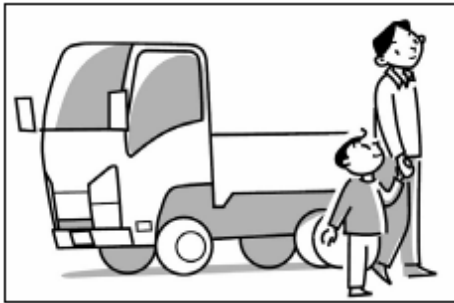


#### **Parking**

When leaving the unattended vehicles:

1. Tighten the parking brake lever.
2. When the vehicle is parked at an uphill position, place the shift lever in the first gear position; when parking at the downhill position, place the shift lever in the reverse gear position.
3. Close all windows.
4. Turn the start switch key to the "lock" position and remove the key.
5. Check and make sure that all the lamps have gone out.
6. Lock all doors.
7. If the vehicle is parked on a ramp and left unattended, the wheel stopper must be properly positioned and the steering wheel should be turned to a position where the vehicle movement will be blocked by obstacles to prevent slippage.

# POWERSTAR



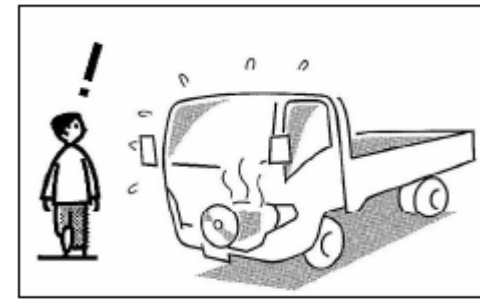
 **Warning**

Do not leave unattended children alone in the vehicle. Children may operate the controls on the vehicle and cause accidents.



 **Caution**

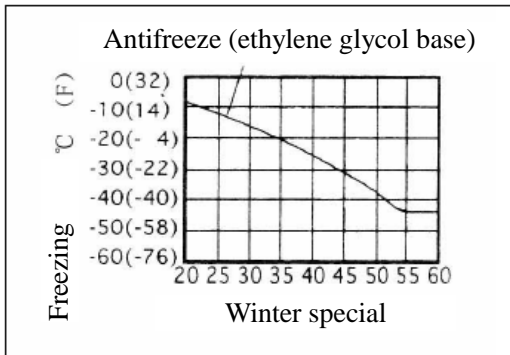
Do not drive or park your vehicle on flammable materials such as hay or dry leaves, or keep running at idle speed over them. They may be burned due to contact with hot exhaust systems.



 **Caution**

Do not leave unattended vehicle while the engine is operated. If you are not there, the engine will work until the temperature warning lamp is on or the water temperature gauge indicates that the it is overheated. This will cause damage to the vehicle and internal parts.

# POWERSTAR



### Operation and care in winter

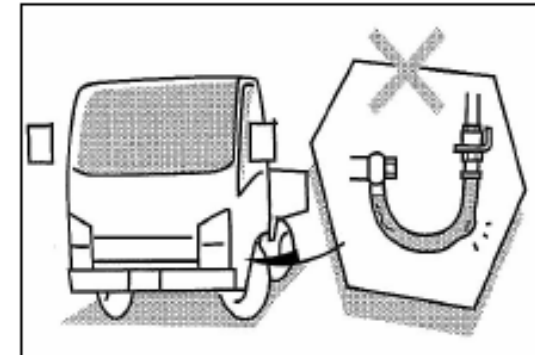
#### Use of Antifreeze (Ethylene Glycol)

In cold seasons or when the vehicle is parked in a cold place, must ensure that the engine coolant cannot be frozen.

1. The appropriate mixing ratio of antifreeze can be determined in accordance with the curves shown in the figure above. It is the responsibility of the user to use the corresponding concentration of antifreeze fluid according to the outside air temperature in the area where the vehicle is used.



2. Before using glycol-based antifreeze, it is best to flush the interior of the cooling system that includes the radiator.



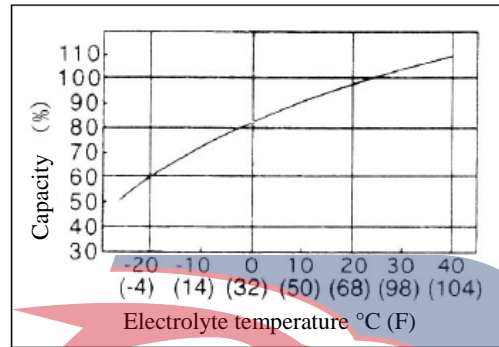
3. The damaged rubber hose should be replaced because, when antifreeze is used, the engine coolant leaks out even if the rubber hose has a small crack.

# POWERSTAR



### Engine oil

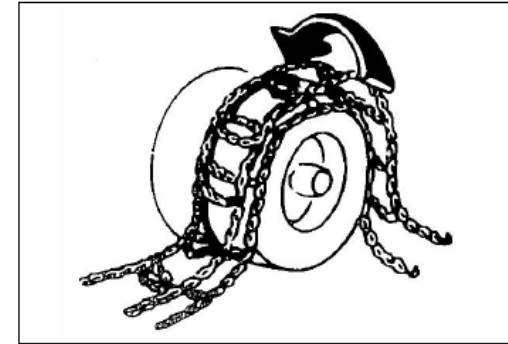
As the temperature decreases, the oil and coolant becomes thicken. Must select the engine oil and engine coolant with the viscosity suitable for the outside temperature.



### Battery

As the temperature decreases, the capacity of the battery will decrease, and the specific gravity of the electrolyte will decrease as the discharge rate decreases.

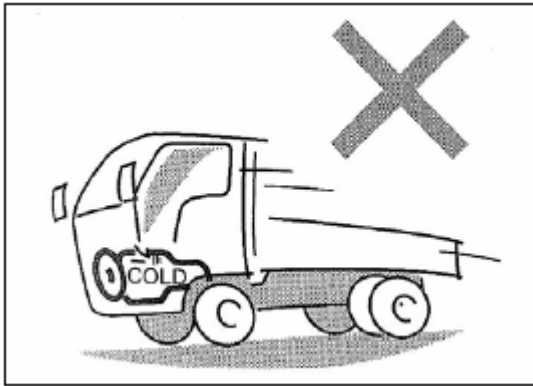
Therefore, batteries should be protected against freezing.



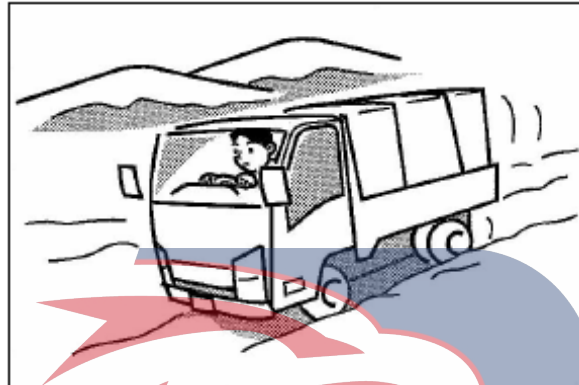
### Driving on road with ice and snow

1. The use of tire chains or snow tires is recommended.

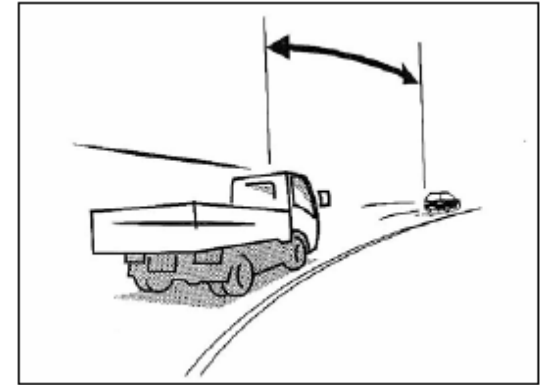
# POWERSTAR



2. Avoid high-speed driving, sudden acceleration, emergency braking, and sharp turns.

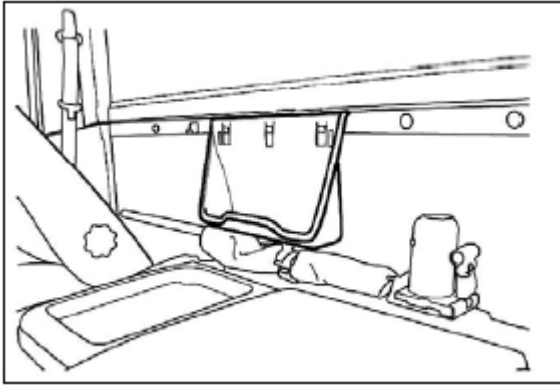


3. Use lower gear to gain retardation effect of the engine. Apply foot brake sparingly.



4. When driving, keep enough distance from the vehicle in front.

# POWERSTAR



#### **In case of emergency**

#### **Storage of jacks and other tools**

Common tools and jacks are stored behind the driver's seat. Must place them back in place after use so as to avoid any hitting noise during driving.

#### **Overheating of the engine**

If the engine overheats -----

- The pointer of water temperature gauge will point to the “H” position or higher than “H”. At the same time, the buzzer will sound.
- The sound of the engine is getting louder.
- The output power of the engine goes down.
- Steam or boiling water is squirted from the radiator.

This case means that the engine is overheated. At the point, park the vehicle for check; if any vapor or coolant from the engine compartment is seen and heard, do not flipped the cab immediately. After the above phenomenon disappears, the cab can be flipped to provide good ventilation.

- Keep the engine running at slamply higher speed than idling (about 1500 rpm) for 5–10 minutes. If there is leakage of coolant, stop the engine immediately. Cool down the engine and the radiator.
- Carefully remove the cover of the radiator
- When the engine cools, check the coolant level in the radiator. If necessary, fill the coolant into the radiator to the filler neck. Fill the coolant into the reserve tank to the level mark on the reserve tank.



To avoid burns, do not remove the radiator cap while the engine and radiator are still hot. Otherwise, high-temperature liquid and vapor may be ejected under the pressure, resulting in injuries.

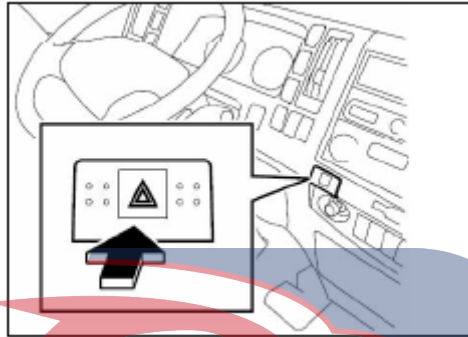
The glycol-based coolant in the engine is flammable under certain conditions. Therefore, when filling this type of coolant, do not spill it on the exhaust system or high temperature parts of the engine.

# POWERSTAR

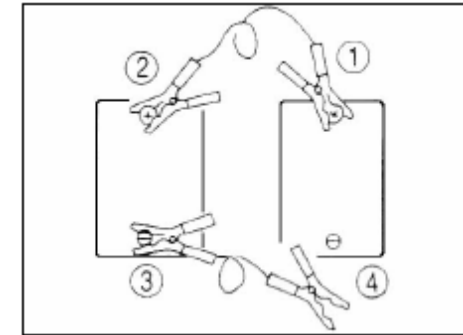


### Emergency stop

1. If you have to park the vehicle on the road for some reason, you should try to keep the vehicle close to the curb and never stop in the traffic lane.



2. Be sure to apply the parking brake lever and always use the hazard warning flash lamp at day or night.



### Emergency start

To start the vehicle when the batteries are fully discharged, the auxiliary battery with same voltage as the battery can be used.

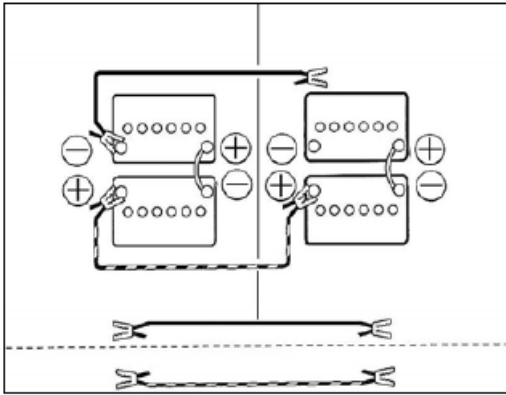


Warning

Care should be taken when handling the battery to avoid serious personal injury and damage to the vehicle or electrical components caused by battery explosions, electrolyte burns, and electrical sparks.

# POWERSTAR





**Connecting procedures:**

The engine can be started with another vehicle battery using the jumper cables.

1. The vehicle should be equipped with the batteries with the same rated voltage;
2. Connect jumper cables in the following order:
  - ① Positive terminal of the battery which is fully discharged;
  - ② Positive terminal of the booster battery
  - ③ Negative terminal of the booster battery
  - ④ Chassis ground wire equipped with discharged battery, and ground wire shall leave discharged battery as far as possible.
3. After connecting the jumper cable, start the engine of the vehicle with the auxiliary battery.

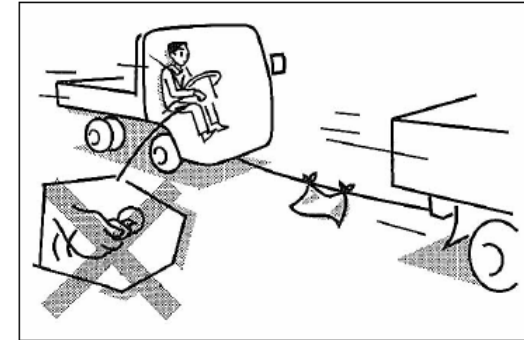
4. Slamply increase the engine speed of the vehicle equipped with the auxiliary battery, and then start the engine of the vehicle with fully discharged battery.

5. After starting the engine, remove the jumper cable in the reverse connection order.



**Caution**

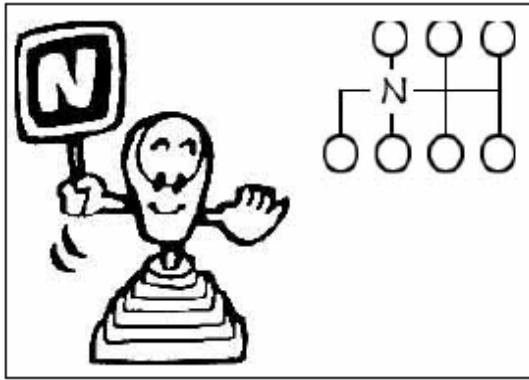
Never connect the cable between the positive and negative terminals. Do not remove the cables from the terminal posts while the engine is running, otherwise the fault in the electrical system may be caused.



**Warning**

Do not start the engine with traction method, because the vehicle may rash when the engine is started, which may cause a collision accident with the trailer.

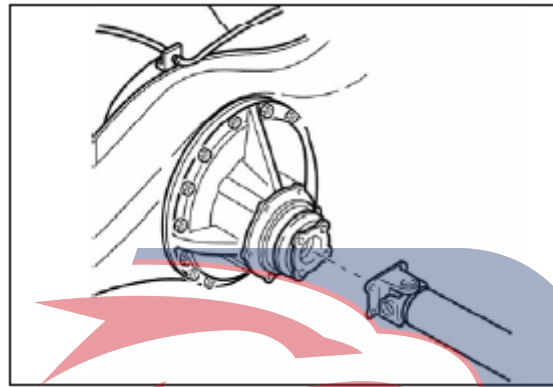
**POWERSTAR**



### Towing

When pulling a vehicle that cannot be driven, must pay attention to the followings:

1. If the transmission is in normal operation, put the shift lever in the neutral position.

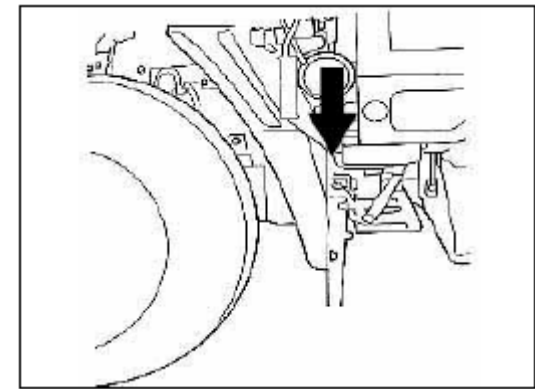


2. If the transmission fails. Must remove the drive shaft from the rear axle flange and fasten its ends onto the frame.



### Warning

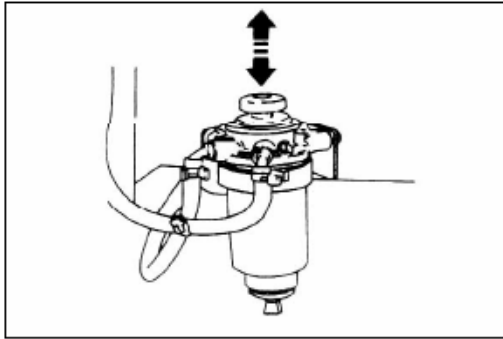
When towing the faulty vehicle with a vehicle, the traction speed should not exceed 40 km/h, and the traction distance should not exceed 80 km.



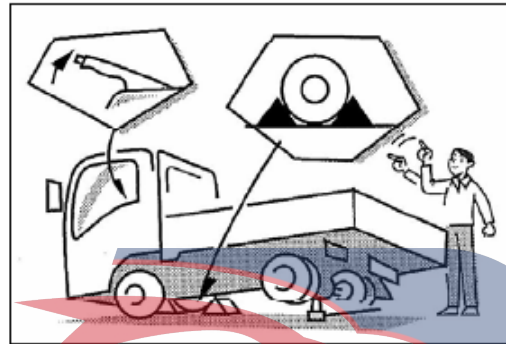
### Exhaust of the fuel system

If the fuel in the fuel tank is run out completely, the fuel system is likely to have inhaled air. If the fuel system sucks in air, the fuel is blocked and does not flow smoothly into the engine. In order to prevent the phenomenon, the fuel system must be exhausted.

# POWERSTAR



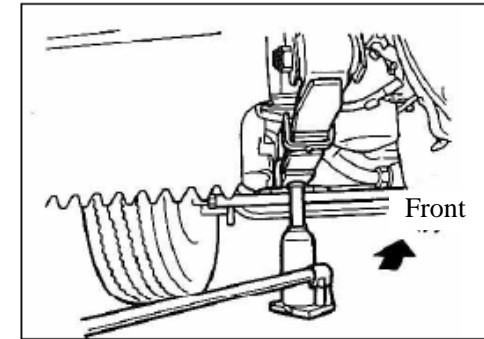
1. Operate a hand pump installed at the rear of the cab to pump fuel containing air in the fuel system into the fuel injection pump.
2. After the exhaust of the fuel system is completed, operate the start switch to start the engine.
3. If the engine fails to start within 10 seconds, repeat steps 1 and 2.



### Jacking instructions and changing a flat tire

To avoid personal injury

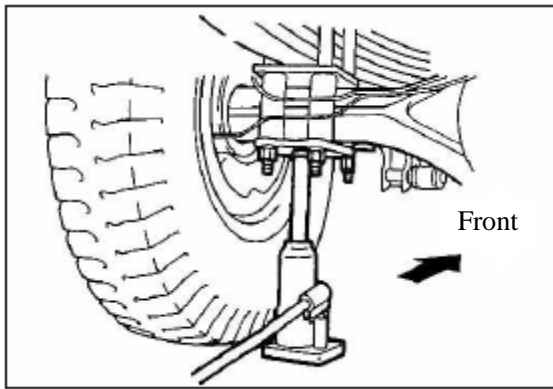
- Perform the operations according to the requirements in lifting device and equipment instructions.
- Use jacks only when jacking up a vehicle to change tires
- When using the jack to jack up the vehicle, people must not go under the vehicle
- The spare tire and all lifting devices should be properly stored at all times
- Do not start or run the engine while the vehicle is on the jack
- The jack must be placed on a solid ground



### Preparations:

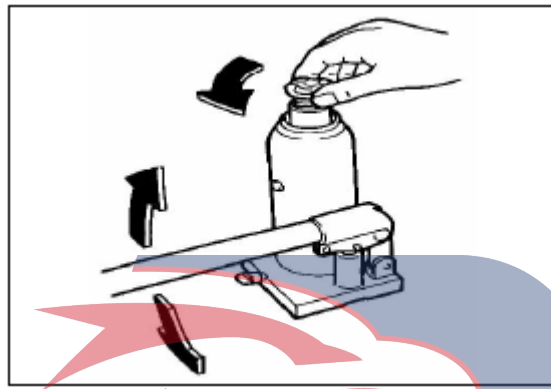
1. Park the vehicle on a flat surface and apply the parking brake lever.
2. Change the shift lever to the "R" (reverse) position.
3. Turn on the hazard warning flash lamp.
4. Block the wheels on the diagonal side of the jacking position with stops.
5. Loosen the wheel nuts but do not remove them.
6. Place the jack underneath the leaf spring (front wheel) or under the leaf spring seat of rear axle housing (rear wheel).

# POWERSTAR



**⚠ Caution**

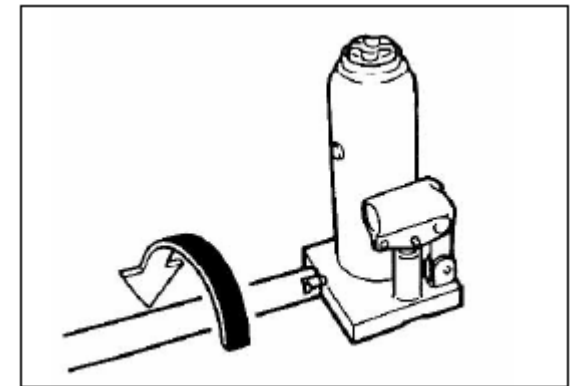
The wheel nut for the right wheel is the right hand thread and the wheel nut for the left wheel is left-hand thread.  
The jack cannot be supported on the positions other than the specified position.



**Usage of jack**

**To jack up:**

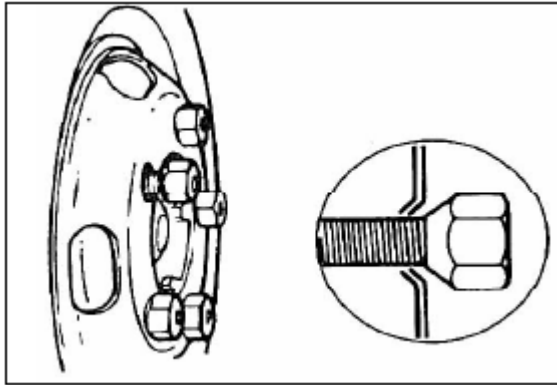
If the top fulcrum of the vehicle is higher than the head of the jack, the head of the jack should be turned counterclockwise to extend it.  
As shown in the figure, insert the jack handle and move it up and down.



**To lower:**

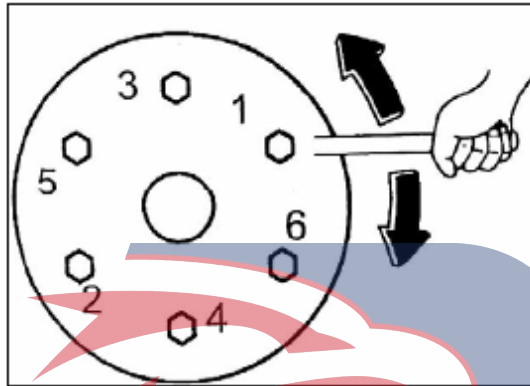
Slowly turn the bleeder screw counterclockwise with the jack bar as shown in the figure.

# POWERSTAR



**Wheel replacement:**

1. Lift the vehicle up until wheel of the tire for which the wheel needs to be replaced has just left the ground, unscrew the wheel nuts, remove the wheel and install the spare wheel.
2. Install the wheel nut with the tapered surface facing the wheel. Then use a wheel wrench to tighten each wheel nut to a half-locked state so that the wheel nut seats on the hub. Unscrew the return oil hole screw counterclockwise in order to lower the vehicle to the ground.



3. With the wheel wrench, tighten the wheel nuts in sequence as shown in the figure. Tighten all wheel nuts securely to the specified tightening torque as described below.

Front wheel nut locking torque: 490 N • m

Rear wheel nut locking torque: 490 N • m

# POWERSTAR

## **5 SERVICE AND MAINTENANCE**

- Maintenance schedule.....5-1
- Routine inspection.....5-8
- Lubrication guide.....5-36
- Lubrication.....5-40
- Lubricants and diesel recommended model..5-43
- Lubrication parts.....5-44
- Cargo loading method.....5-45

### **Service and Maintenance**

In order to maintain safety and economical efficiency of driving, routine inspections and repairs should be carried out in accordance with the recommendations presented in this chapter.

#### **Maintenance schedule**

In order to ensure the safety and economy of driving, it is necessary to go to the QingLing Motors Repair Station for routine inspections and repairs in accordance with the maintenance schedule.

For special repair tools, please contact QingLing Motors dealers.

#### **Maintenance operations**

I: Inspect, clean up and repair or replace as necessary

A: Adjust

B: Replace

T: Tighten to the specified torque.

L: Lubricate

**When checking the following items, check the regular items together.**

\* Mark: Under severe driving conditions, more frequent maintenance is required. Refer to "Maintenance schedule under severe driving conditions".

The logo for POWERSTAR is displayed in a large, bold, sans-serif font. The word "POWER" is in a light blue color, and "STAR" is in a red color. The letters are slightly shadowed, giving them a three-dimensional appearance. The logo is positioned in the lower right quadrant of the page, partially overlapping the bottom of the text area.

### Maintenance schedule

**I: Inspect, clean up and repair or replace as necessary. A: Adjust R: Replace T: Tighten to specified torque L: Lubricate**

**Use odometer reading or period, whichever comes first.**

Service interval: ×1,000km	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	Service interval	
<b>Engine</b>																							
Engine oil	-	-	R	-	-	R	-	R	-	-	-	R	-	R	-	-	-	R	-	-	R	Every 12 months	
Oil filter	-	-	R	-	-	R	-	R	-	-	-	R	-	R	-	-	-	R	-	-	R	Every 12 months	
Fuel filter	-	-	R	-	R	-	R	R	-	R	-	-	R	R	-	R	-	-	R	-	R	Every 6 months	
Air cleaner element	-	-	I	-	I	-	I	R	-	I	-	-	I	I	-	R	-	-	I	-	I	Every 24 months	
Idling speed and acceleration	-	-	-	-	I	-	-	I	-	-	-	-	I	-	-	I	-	-	-	-	-	I	Every 12 months
Valve clearance	-	-	-	-	-	-	-	A	-	-	-	-	-	-	-	A	-	-	-	-	-	Every 24 months	
The connection between fuel filler cap and fuel pipe is loosened or damaged	-	-	-	-	-	-	-	I	-	-	-	-	-	-	-	I	-	-	-	-	-	Every 24 months	
Tension and damage of fan belt	I	-	I	-	I	-	I	I	-	I	-	-	I	-	I	-	I	-	-	I	-	I	Every 6 months
Radiator coolant	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	R	-	-	-	-	-	Every 24 months	
The exhaust manifold and its mounting parts are damaged or loosened	-	-	-	-	I	-	-	I	-	-	-	-	I	-	-	I	-	-	-	-	-	I	Every 12 months
Cooling system	-	-	-	-	I	-	-	I	-	-	-	-	I	-	-	I	-	-	-	-	-	I	Every 12 months
Engine operating condition	-	-	I	-	I	-	I	I	-	I	-	-	I	-	I	-	I	-	-	I	-	I	Every 6 months

**POWERSTAR**

**Maintenance schedule**

**I: Inspect, clean up and repair or replace as necessary. A: Adjust R: Replace T: Tighten to specified torque L: Lubricate**

**Use odometer reading or period, whichever comes first.**

Service interval: ×1,000km	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	Service interval	
<b>Clutch</b>	-																						
<b>Brake fluid</b>	-	-	I	-	I	-	I	-	R	-	I	-	I	-	I	-	R	-	I	-	I		Every 24 months
Clutch pedal free play and pedal stroke	I	-	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	Every 3 months
<b>Transmission</b>	-																						
Transmission gear oil	-	-	-	-	I	-	I	-	I	-	R	-	I	-	-	I	-	-	R	-			-
Looseness in gear control mechanism	-	-	-	-	-	-	-	-	I	-	-	-	-	-	-	-	I	-	-	-	-		Every 24 months
Shift cable	-	-	-	-	A	-	-	-	A	-	-	-	A	-	-	-	A	-	-	-	A		Every 12 months
<b>Transmission shaft</b>	-																						
Universal joint and sliding sleeve	-	-	-	L	-	-	L	-	-	-	-	-	L	-	-	-	-	-	-	-	-		Every 12 months
Looseness in related parts	-	-	-	I	-	-	I	-	-	I	-	-	I	-	-	I	-	-	I	-	-		Every 6 months
Excessive spline wear	-	-	-	-	-	-	I	-	-	-	-	-	I	-	-	-	-	-	I	-	-		Every 24 months
Loose bearing and associated parts	-	-	-	-	-	-	I	-	-	-	-	-	I	-	-	-	-	-	I	-	-		Every 24 months
Intermediate bearing	-	-	-	L	-	-	L	-	-	-	-	-	L	-	-	-	-	L	-	-	-		Every 12 months
<b>Rear axle</b>	-																						
Differential oil	-	-	I	-	I	-	I	-	R	-	I	-	I	-	I	-	I	-	R	-	-		Every 24 months
<b>Front axle</b>	-																						
Steering kingpin	-	-	L	-	L	-	L	-	L	-	L	-	L	-	L	-	L	-	L	-	L		Every 6 months





**Maintenance schedule**

**I: Inspect, clean up and repair or replace as necessary. A: Adjust R: Replace T: Tighten to specified torque L: Lubricate**

**Use odometer reading or period, whichever comes first.**

Service interval: ×1,000 km	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	Service interval	
Steering system																							
The power steering system is leaked	-	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	Every 6 months
Power steering fluid	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	R	-	-	-	-	-	Every 24 months
Loose or damaged power steering system	-	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	Every 6 months
Gap between the knuckle and the front axle	-	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	Every 6 months
Loose or damaged steering mechanism	-	-	-	-	-	-	-	-	I	-	-	-	-	-	-	-	I	-	-	-	-	-	Every 24 months
Clearance of steering wheel	-	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	Every 3 months
Steering Function	-	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	Every 3 months
Wheel alignment	-	-	-	-	-	-	-	-	I	-	-	-	-	-	-	-	I	-	-	-	-	-	Every 24 months
Power steering oil hose	-	-	-	-	I	-	-	-	I	-	-	-	I	-	-	-	R	-	-	-	-	I	Every 12 months
Service brake																							
Brake fluid	-	-	I	-	I	-	I	-	R	-	I	-	I	-	I	-	R	-	I	-	I	-	Every 6 months
Brake system leaks brake fluid	-	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	Every 6 months
Brake booster	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	R	-	-	-	-	-	Every 6 months
Leakage of brake booster system	-	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	Every 24 months
Wear of brake shoe and brake drum	-	-	-	-	I	-	-	-	I	-	-	-	I	-	-	-	I	-	-	-	-	I	Every 12 months
Brake pedal stroke and free play	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	Every 3 months
Loosening and damage to the connections between pipe clamp and hose	-	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	Every 6 months

### Maintenance schedule

**I: Inspect, clean up and repair or replace as necessary. A: Adjust R: Replace T: Tighten to specified torque L: Lubricate**

**Use odometer reading or period, whichever comes first.**

Service interval: ×1,000 km	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	Service interval	
Parking brake					-																		
Parking brake cable	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	Every months 6
Function of the parking brake	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	Every months 6
Stroke of parking brake lever	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	Every months 6
Wear of friction disk	-	-	-	-	-	-	-	I	-	-	-	-	-	-	-	I	-	-	-	-	-	-	Every months 24
Brake drum for wear and damage	-	-	-	-	-	-	-	I	-	-	-	-	-	-	-	I	-	-	-	-	-	-	Every months 24
Wear or damage of ratchet mechanism	-	-	-	-	-	-	-	I	-	-	-	-	-	-	-	I	-	-	-	-	-	-	Every months 24
Suspension mechanism																							
Damage to the spring of the steel plate	-	-I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	Every months 6
Wheel																							
Wheel bolts and nuts	T	-	-	T	-	-	-	T	-	-	-	T	-	-	-	T	-	-	-	T	-	-	Every months 12
Damage to the tire steel ring	-	-	-	I	-	-	-	I	-	-	-	I	-	-	-	I	-	-	-	I	-	-	Every months 12
Hub bearing grease	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	R	-	-	-	-	-	-	Every months 24
Tire pressure and damage	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	Every months 6
Electrical device																							
Battery electrolyte specific gravity	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	Every months 6

**Maintenance schedule**

**I: Inspect, clean up and repair or replace as necessary. A: Adjust R: Replace T: Tighten to specified torque L: Lubricate**

**Use odometer reading or period, whichever comes first.**

Service interval: ×1,000km	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	Service interval		
Others																								
Lamp, Horn, Windshield, Wiper and Washer	-	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	Every 6 months
Bolts and nuts on frame and body	I	-	-	-	-	-	-	-	I	-	-	-	-	-	-	-	I	-	-	-	-	-	-	Every 24 months
Oil leakage of shock absorber	-	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	Every 6 months
Whether the shock absorber mounting bracket is loosened	-	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	Every 6 months



**POWERSTAR**

### Maintenance schedule under severe driving conditions

Severe driving conditions

A: Frequent short-distance round trip

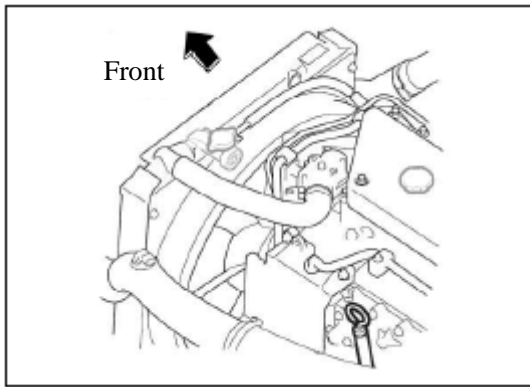
B: Driving on rough roads

C: Driving on dusty roads

D: Driving in the cold season or on the salty road

Item	Interval	Condition				
		A	B	C	D	A+D
Engine oil	Replace once every 7,500km			•		•
Engine oil filter	Replace once every 7,500km			•		•
Air cleaner element	Replace once every 10,000km			•		
Exhaust pipe and its mounting parts	Check once every 10,000km.	•	•		•	
Transmission gear oil and differential oil	Replace once every 20,000km		•			
Grease for Cardan joint and sliding sleeve	Replace once every 10,000km		•			
Loose or damaged steering system	Check once every 5,000km.			•	•	
Steering kingpin	Check once every 5,000km.		•	•	•	
Brake friction lining and brake drum is worn	Check once every 10,000km.	•	•	•		

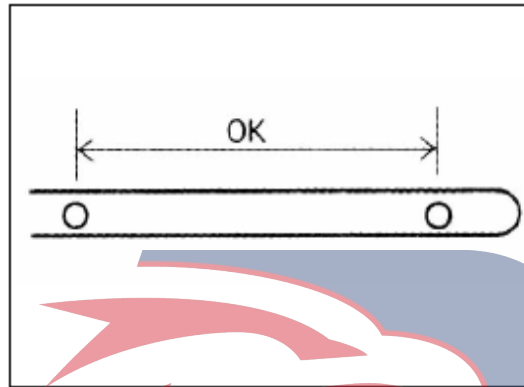
POWER STAR



Routine inspection

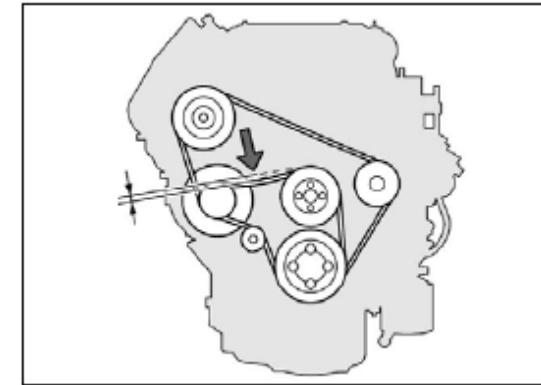
Oil level

Pull out the oil level gauge rod (oil dipstick), wipe and clean it, and reinsert it. Pull out again and check if the liquid level is between the high and low level markers. Also check the oil on the gauge rod for contamination.



 Caution

**When checking the oil level, the vehicle should be parked on a flat ground and the engine should be shutdown.**  
**If you just started the engine, wait 5 minutes before checking the fluid level to allow the oil level to be stabilized.**



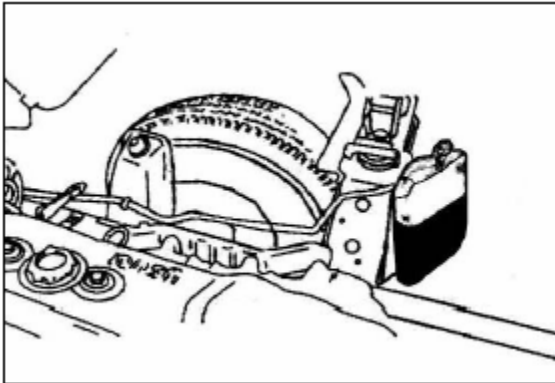
Fan belt

Press the middle of the fan belt with the finger (with a force of 100N) to check whether the deflection of the fan belt is within 8-12 mm. At the same time, must check the seatbelt for cracks and damage.

 Caution

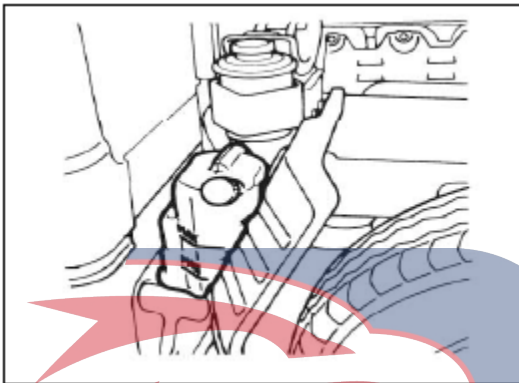
**If the tension of the belt is too small, the battery may be insufficiently charged or the engine may be overheated. If the tension is too large, the alternator or the V-belt may be damaged.**  
**The fan belt should be checked. If the fan belt is broken, the brake booster will not be operated.**

POWERSTAR



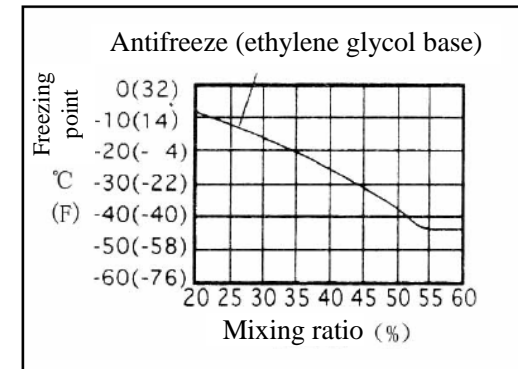
### Coolant level

Overheating of the engine may cause the engine to be faulty or damaged. In order to avoid the above case, the coolant level must be checked regularly. Check the coolant level while the engine is cold. If necessary, fill the reserve tank of radiator with coolant. If the reserve tank level falls below the "MIN" (lower limit) mark, check the cooling system for leaks and refill the coolant to the "MAX" (upper limit) mark.



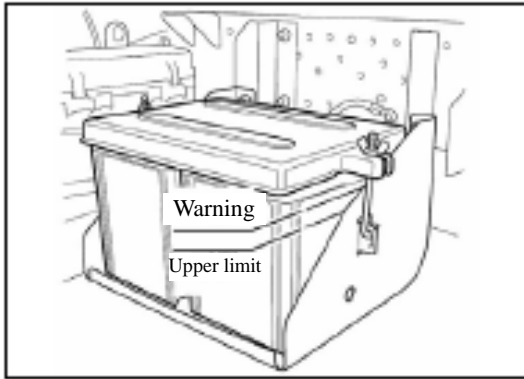
### ⚠ Caution

- **When refilling, care should be taken to avoid coolant overflowing from the reserve tank.**
- **Do not remove the radiator filler cap if it is not necessary.**
- **The coolant level should be checked after the engine has cooled down.**
- **Anticorrosives or additives used to increase the cooling effect that are not qualified by QingLing Motors shall not be used in the cooling system.**
- **Adding antifreeze fluid corresponding to the outside air temperature in the area where the vehicle is used to prevent freezing of the cooling water is a measure that should be taken by the user.**
- **Do not use well water or river water when refilling and replacing cooling water. If it is impossible to purchase the coolant of the specified brand, temporarily replace it with city tap water.**



### ⚠ Caution

- **When refilling and replacing the cooling water, genuine Isuzu engine coolant should be used. Other brands of coolants tend to be free of corrosion inhibitor and may cause corrosion to the engine and the radiator.**
- **If the concentration of genuine Isuzu engine coolant exceeds 60%, its specific heat characteristics will be reduced, which may cause the engine to overheat. In addition, if the concentration drops below 20%, corrosion resistance may decrease. Therefore, the coolant concentration should be adjusted within the range of 20% to 60% according to the specific operating conditions.**
- **Do not step on the radiator cap.**

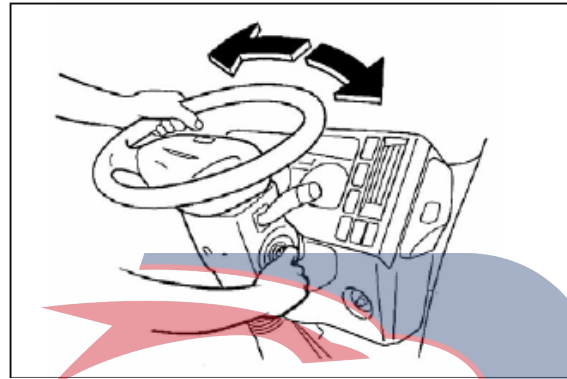


### Level of battery electrolyte

Control the electrolyte level in the battery between “MIN” (lower limit) and “MAX” (upper limit) marks. If the liquid level is too low, must add the distilled water. The batteries are installed in the battery chamber behind the cab on the left of vehicle.



The electrolyte in the battery is dilute sulfuric acid. The electrolyte is a liquid that is hazardous to the body. Must take care to avoid skin or clothing burns, especially to prevent splashing into the eyes. If get into your eyes, rinse immediately with plenty of water and then ask a doctor for treatment.



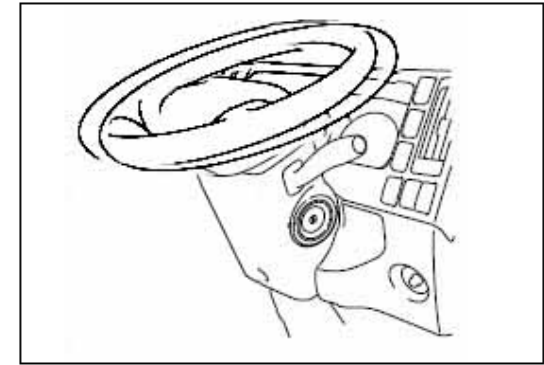
### Steering wheel

The steering wheel should be turned to the left and right to move the tire to check the free play of steering wheel.

The standard clearance should be within the range of 10-50 mm.



The above measurements should be made while the engine is running and the front wheels are facing straight forward.

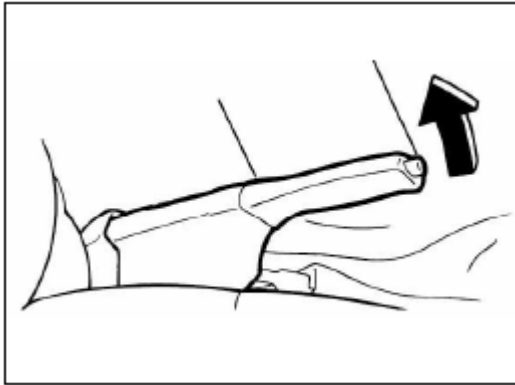


In addition, move the steering wheel back and forth or left and right, to check the steering wheel for mounting gap and loosening.

While driving check for hard-steering, steering shimmy and tendency of steering to pull to one side.

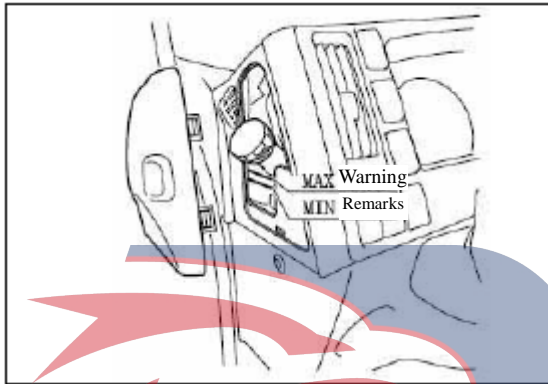


If excessive play, looseness, or other abnormal phenomenon is found at the steering mechanism components, go to QingLing Motors special dealership (service station) immediately to inspect the steering mechanism.



### Parking brake lever

When the parking brake lever is pulled with a force of 150N, its normal stroke should be 5-8 teeth. If its stroke exceeds 16 teeth, the braking effect may be insufficient and the brake should be adjusted.

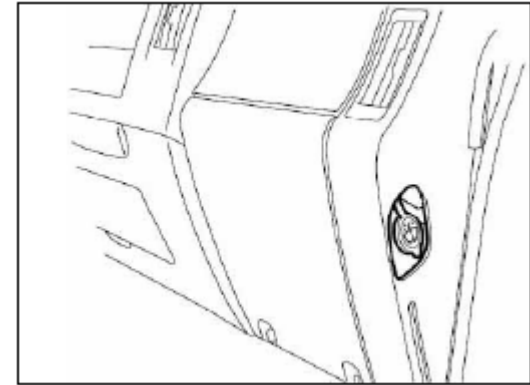


### Brake fluid level

Check if the brake fluid level is between the “MAX” (upper limit) and “MIN” (refill) level marks on the tank. If the level is below the “MIN” mark, the recommended brake fluid should be refilled.



When the brake indicator is turned on, it does not indicate whether the parking brake is applied. Therefore, when apply the parking brake, pull up the lever as far as possible. When the brake Indicator lamps up, do not continue to drive the vehicle because the brake system may have experienced a serious malfunction. Driving the vehicle in this state is dangerous and may even cause an accident.

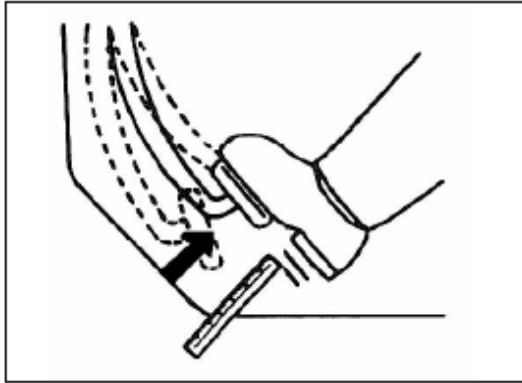


### Windshield washer solution level

Check that the washer tank is filled sufficiently with solution. Also check that the windshield washer is working properly.

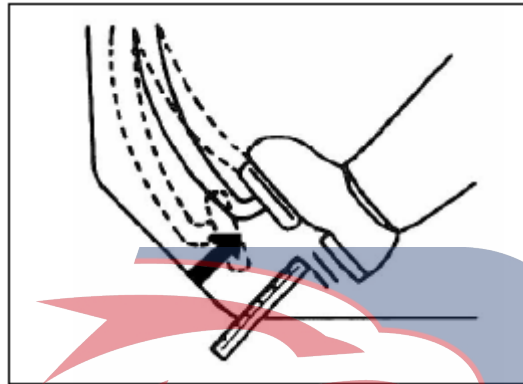
POWER STAR





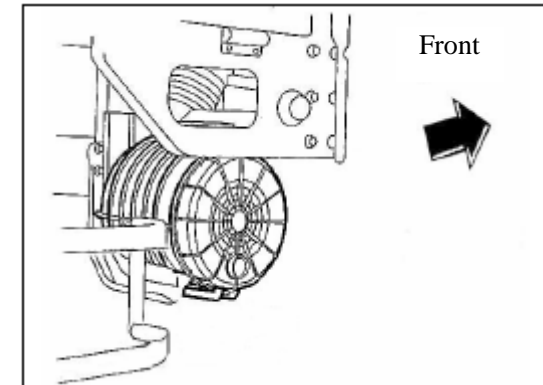
**Clutch pedal free play and stroke**  
**Standard value**

1. Free play: 15-25 mm



**Brake pedal free play and margin**  
**Standard value**

1. Free play: 4-7 mm
2. Headroom: 40 mm



**Periodic maintenance**

**Air filter**

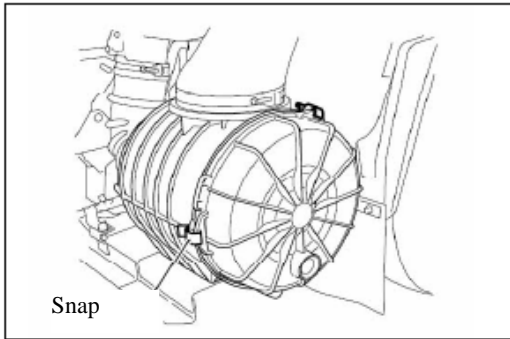
Use of an air filter with a clogged filter cartridge will not only reduce the engine output power, but also increase the fuel consumption and the black smoke, and even cause the turbocharger leakage. Therefore, the air filter should be maintained as follows.



**Caution**

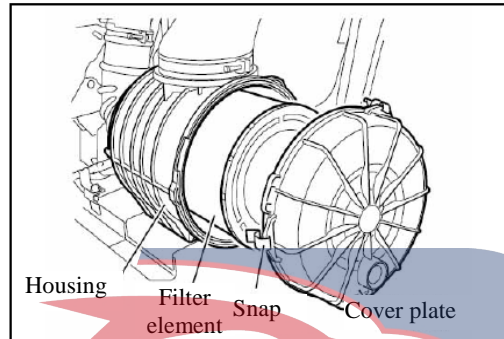
**When replacing the filter, be sure to use genuine Isuzu parts.  
Handle the element carefully so as not to damage it.**

**POWERSTAR**



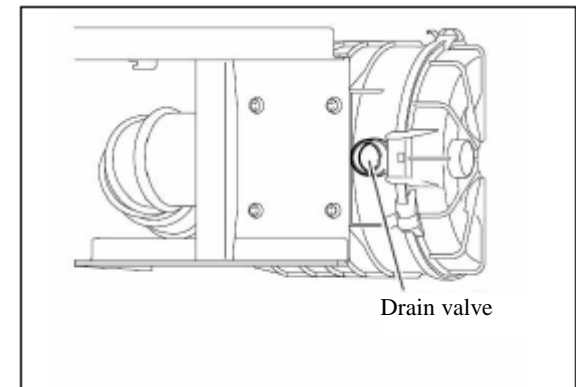
### Replacement of filter element

1. Loosen the three clips and remove the air filter cover.



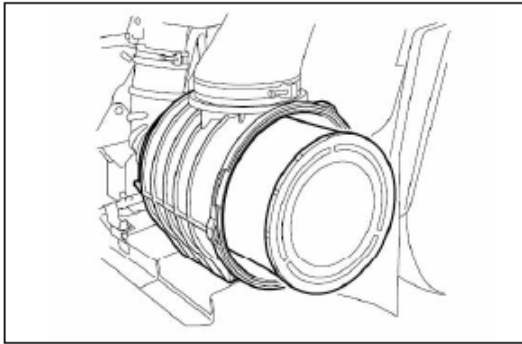
2. Pull out the filter element.

3. Wipe the dust off inside the air cleaner housing, the cover, and the gasket surface.

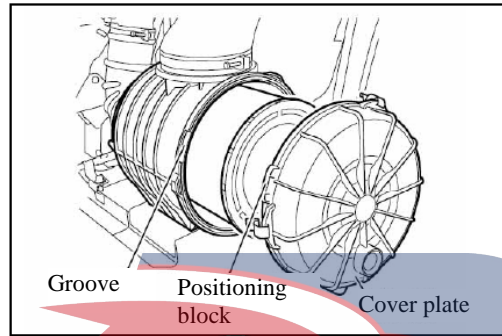


4. Wipe the dust off the drain valve at the bottom of the air filter.

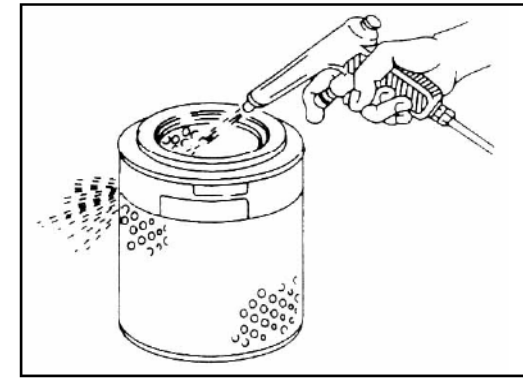
# POWERSTAR



5. Carefully install the filter cartridge in the original position.



6. Align the positioning block with the groove, close the cover, and secure it with 3 securing clamps.



### 3. Cleaning of filter element

When cleaning the filter element, one of the following methods should be selected depending on the contamination of the filter element.

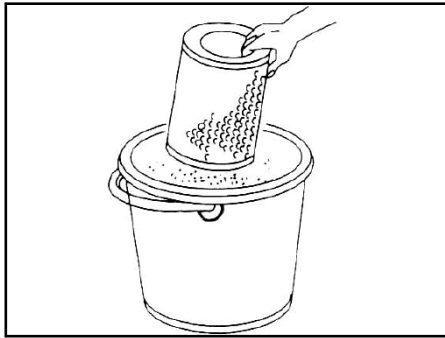
When the element is fouled but dry:

Turn the filter cartridge and blow the dust from the inside of the filter cartridge with compressed air. The pressure of compressed air shall be less than 700 kPa.



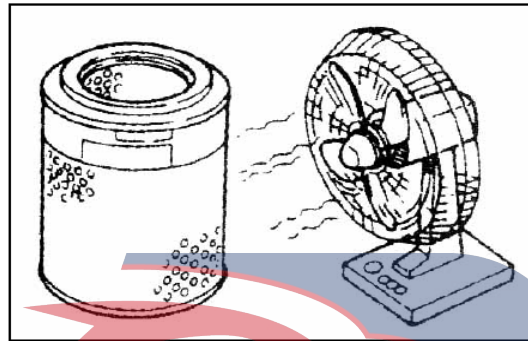
**Do not clean the filter cartridge from the outside with compressed air; otherwise it will cause the dust to enter the inside of the filter cartridge (cleaning surface).**

# POWERSTAR

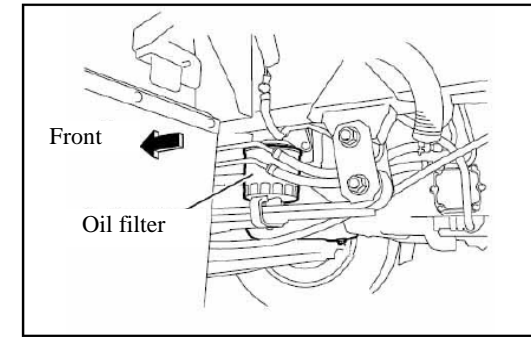


**When the element is fouled with carbon and oil:**

1. Dilute the filter cleaner (Isuzu genuine filter cleaner: Donaldson ND1500 or D1500) with water to prepare the cleaning solution. Immerse the filter element for approximately 20 minutes.
2. Remove the filter element and rinse thoroughly with running water. The coolant pressure should not exceed 280 Pa.



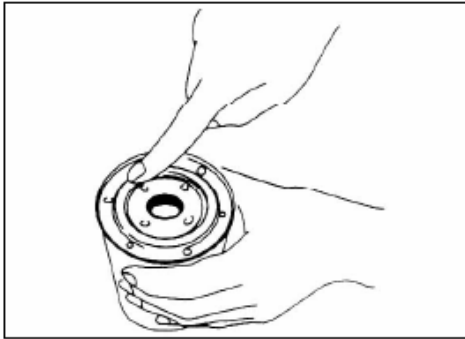
3. Place the cleaned filter element in a well-ventilated place and allow it to dry. When you need to quickly dry the filter element, use a fan. However, do not shorten the drying time by using compressed air or fire. It usually takes two or three days for the filter element to dry naturally. Therefore, it is best to use a spare filter element.



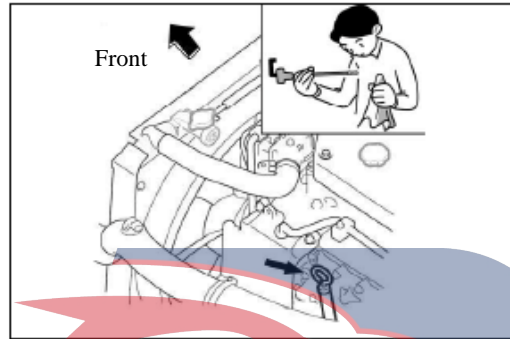
**Oil filter replacement**

1. Remove the oil filter by turning it counterclockwise with a special wrench for oil filter.
2. Wipe the mating surface of the top cover of the oil filter with a cloth to make the new oil filter fit well on the mating surface.

# POWERSTAR



3. Apply a thin layer of engine oil to the upper and lower surfaces of the new O-ring and fit it to the filter top cover and slowly rotate it until the O-ring fits snugly against the sealing surface. Then, use a filter wrench to rotate the filter element 5/4 turns further.

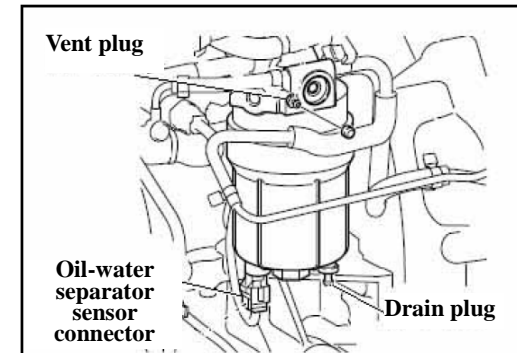


4. Start the engine and run at idle speed for 5 minutes to check for oil leakage around the oil filter.  
5. Stop the engine and check the oil level again after 30 minutes. If necessary, refill to the specified level.



**Caution**

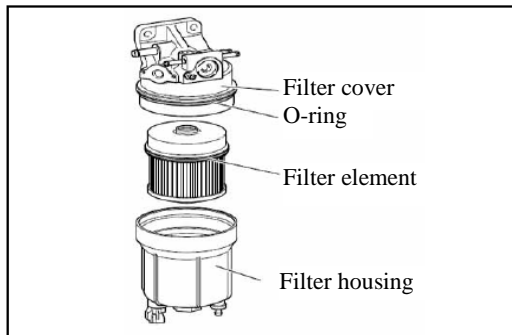
**Regularly check the level of the engine oil and the cleanness of the oil. If necessary, refill to the specified level or replace it. When replacing, be sure to use genuine Isuzu filter cartridges.**



### **Replacement of fuel filter**

1. Loosen the drain plug at the bottom of the filter. Remove the rubber cover on the vent plug, loosen it, and slowly drain the water and fuel deposited in the filter;
2. Disconnect the oil-water separator sensor connector;
3. Turn the filter counterclockwise with a special wrench for the fuel filter to remove the housing.

# POWERSTAR

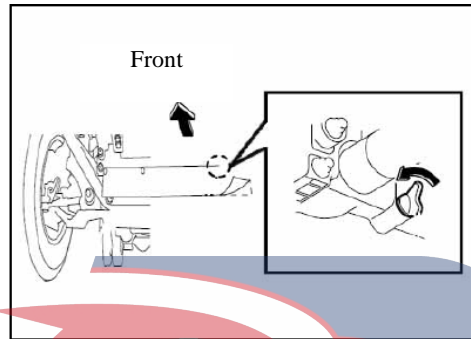


4. Remove the O-ring and clean the mating surface of the filter top cover with the filter element with a cloth;

5. Apply a thin layer of fuel onto the surface of the new O-ring. Install the housing, the new filter cartridge, and O-ring onto the filter top cover. Slowly turn clockwise them until O-ring is in tight contact with the sealing surface. Then, use a filter wrench to turn the filter further for 2/3 turns.



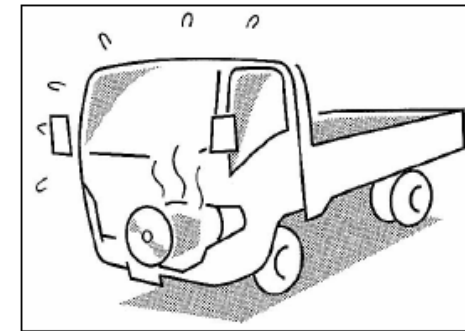
**When the fuel filter is replaced, the fuel system should be vented.**



#### **Engine coolant**

To replace the engine coolant, must remove the drain valve on the radiator and on the cylinder block to drain the liquid from the cooling system.

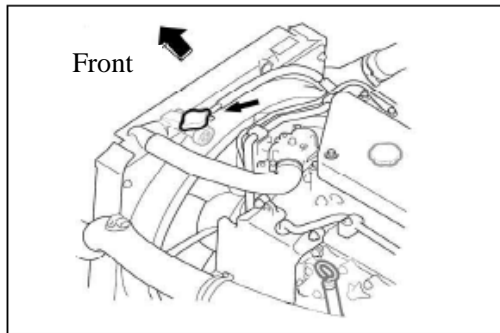
The engine cooling system should be flushed at least once overnight to ensure the optimal cooling effect. It is recommended to use a long-life coolant (ethylene glycol) that does not contain any rust inhibitors and other additives.



**When replacing or refilling the coolant in the engine cooling system, incorrect filling may sometimes cause the coolant to overflow from the neck of the injection nozzle without the engine radiator being fully filled.**

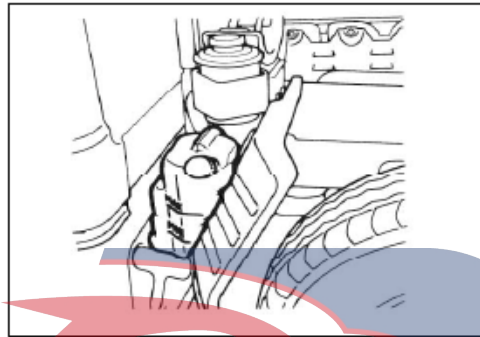
**If the engine is operated under the status, the lack of coolant may cause the engine overheat. In order to avoid such failures, be sure to follow the precautions listed below when filling the coolant.**

# POWERSTAR

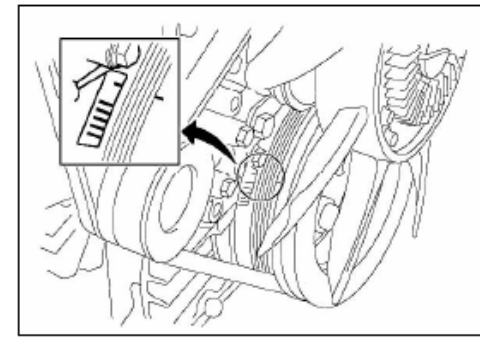


### Coolant filling

1. Use a filling hose with a smaller outside diameter than the water inlet hose. Otherwise, the air circulation space between the neck of the pour spout and the filling hose will be blocked and hinder the full filling of the coolant tank.
2. Keep the filling rate less than 9 liters/minute. If the filling rate is too high, the air in the engine radiator may be completely discharged. Moreover, even if the coolant is overflowed, it is difficult to confirm whether the system has been fully filled.
3. After the system is full, remove the filling hose and check to see if any air bubbles are trapped in the system and whether the coolant level drops. If the coolant level drops, the coolant should be filled continuously until it does not drop.



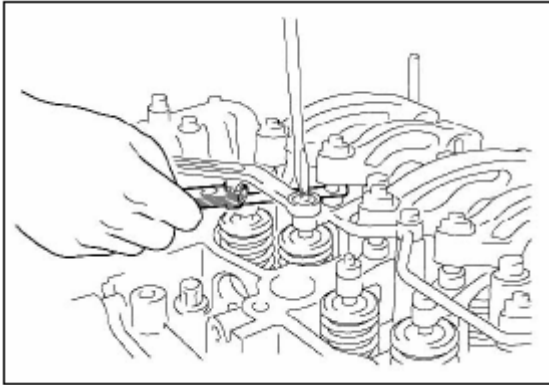
4. After the cooling system is fully filled, fill the coolant in the reserve tank to the maximum level.
5. Close the water inlet with cover and tighten it. Then start the engine so that the water temperature rises until the thermostat valve can be opened (the pointer of the water temperature gauge is above the middle scale of the dial). After the engine is shut down and the coolant temperature drops, open the filler cap and check the coolant level in the coolant tank and reserve tank again. If the fluid level is too low, immediately refill the fuel to the required fluid level.



### Valve clearance adjustment

1. Turn the crankshaft until the dead center mark on the crankshaft pulley aligns with the timing mark, and move the piston in the 1st or 4th cylinder to the top dead center of the compression stroke.

# POWERSTAR

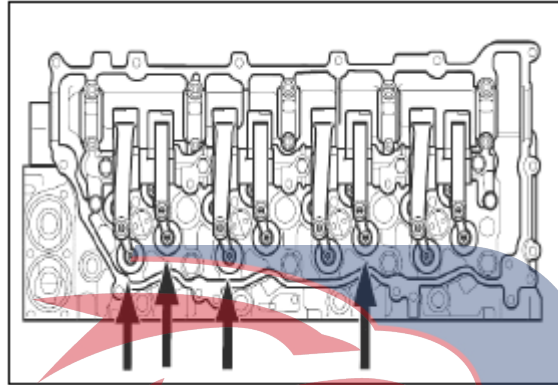


2. Adjust the valve clearance with a thick gauge as follows:

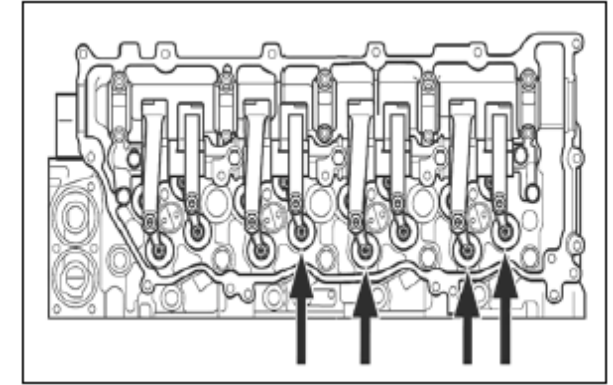
Valve gap (when the engine is cold)

Intake: 0.4mm

Exhaust: 0.4mm



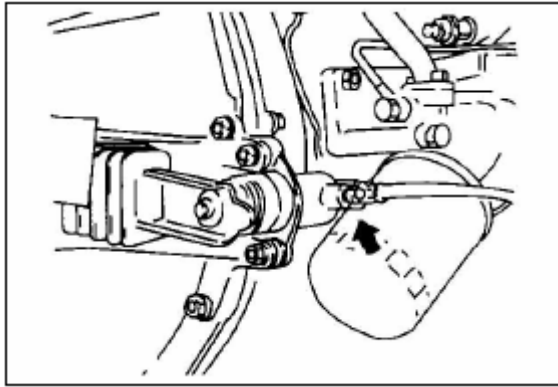
3. First adjust the clearance of the valve shown on the shoulder in the figure.



4. Rotate the crankshaft one revolution (360 degrees) and continue to adjust the valve clearance indicated by the arrow in the figure.

# POWERSTAR

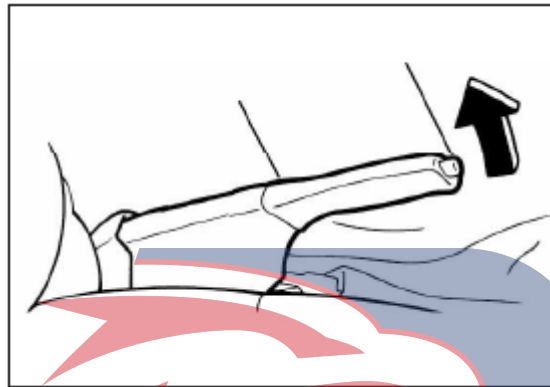




### **Bleeding of clutch hydraulic circuit**

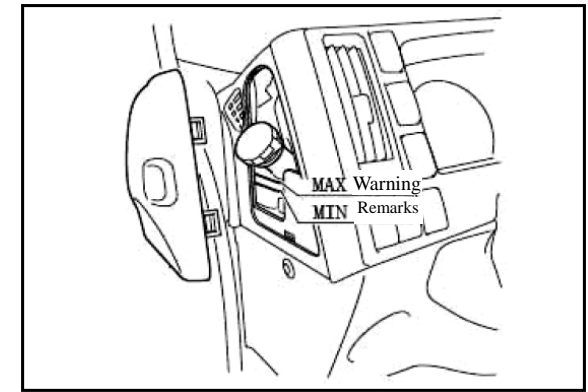
If air is mixed into the clutch hydraulic circuit, clutch slip may occur due to incomplete clutch separation. Therefore, if the clutch fluid is used up due to insufficient fluid volume in the clutch fluid reservoir not found in time, or if the hydraulic circuit is removed, the exhaust of the hydraulic circuit must be carried out.

The exhaust operation must be coordinated by two people.



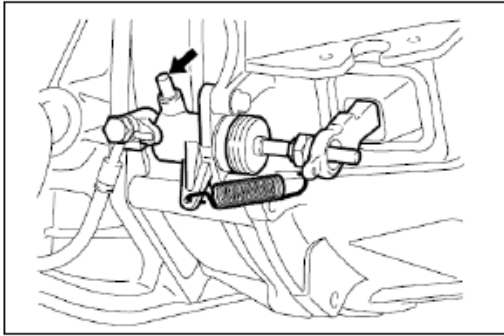
### **Follow these steps to bleed:**

1. Tighten the parking brake.

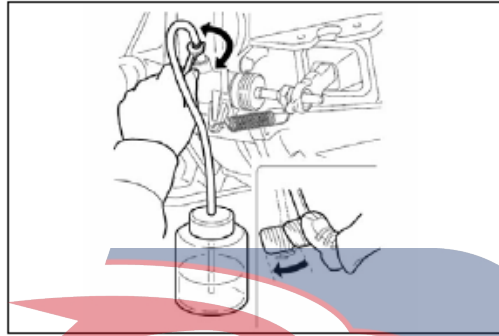


2. Check the brake fluid level in the brake fluid reservoir and refill if necessary.

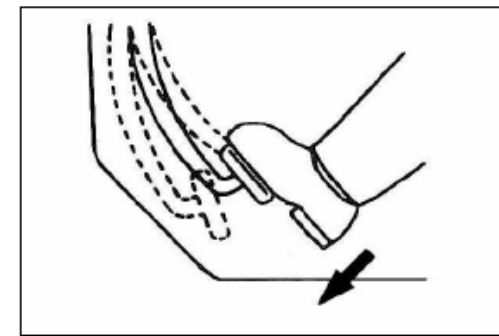
# POWERSTAR



3. Remove the rubber cap from the bleeder screw and wipe clean the bleeder screw. Connect a vinyl tube to the bleeder screw and insert the other end of the vinyl tube into a transparent container.



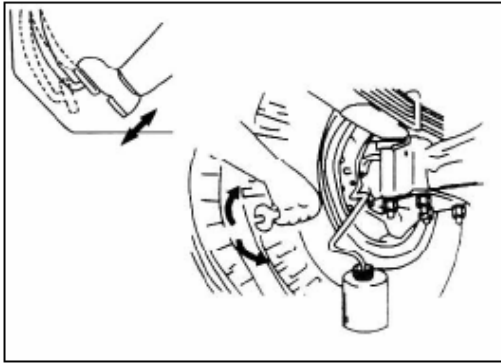
4. Depress the clutch pedal repeatedly and keep it depressed.  
5. Loosen the vent plug screw on the clutch slave cylinder, drain the brake fluid with air bubbles into the container, and immediately tighten the vent plug screw.  
6. Release the brake pedal carefully. The above operation is repeated until no more air bubbles are in the brake fluid pumped into the container.  
During the exhaust process, keep the brake fluid in the brake fluid reservoir at the specified fluid level.  
After exhausting, reinstall the rubber cover.



#### **Main brake adjustment**

When the engine is operated, depress the brake pedal as far as possible to automatically adjust the gap of the brake lining. Repeat the above steps several times to ensure good adjustments.

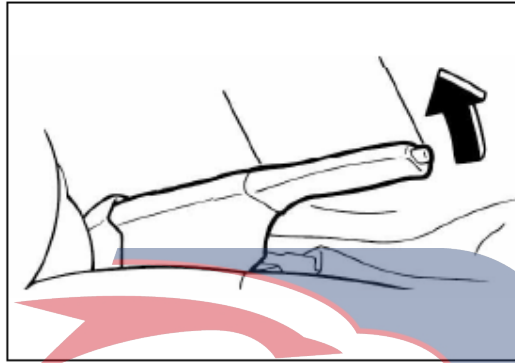
# POWERSTAR



### Bleeding of brake hydraulic circuit

If air is mixed into the brake hydraulic circuit, the braking effect will be reduced. If the fluid level in the brake fluid tank is too low, or if the hydraulic circuit is disassembled during brake maintenance, the hydraulic circuit should be vented.

The exhaust operation must be coordinated by two people.

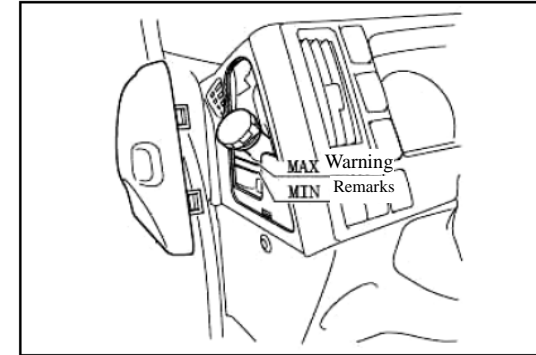


### Follow these steps to bleed:

1. Tighten the parking brake.
2. Keep the engine running at idle speed, otherwise the brake system may be damaged.

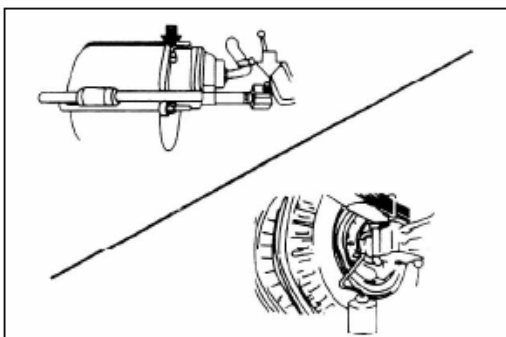


**If exhausted while the engine is not running, the brake booster system will be adversely affected.**

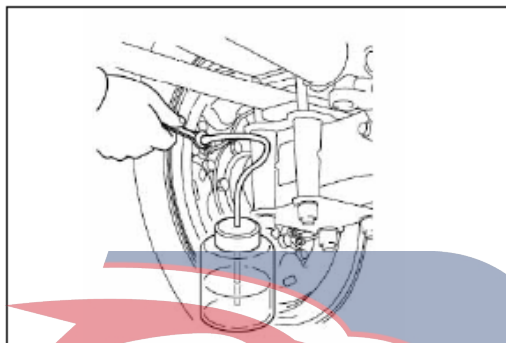


2. Check the brake fluid level in the brake fluid reservoir and refill if necessary.

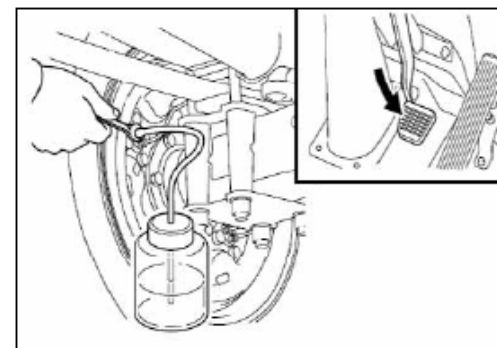
# POWERSTAR



4. Exhaust the brake hydraulic circuit according to the following procedure.  
Right rear wheel → Left rear wheel → Right front wheel → Left front wheel

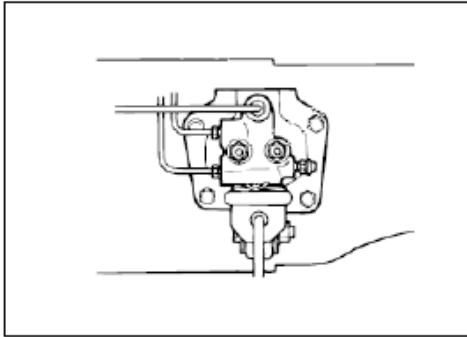


5. Remove the rubber cap from the bleeder screw and wipe clean the bleeder screw. Connect a vinyl tube to the bleeder screw and insert the other end of the vinyl tube into a transparent container.



6. Depress the brake pedal repeatedly and keep it depressed.  
Loosen the vent plug screw, drain the brake fluid with air bubbles into the container, and immediately tighten the vent plug screw.

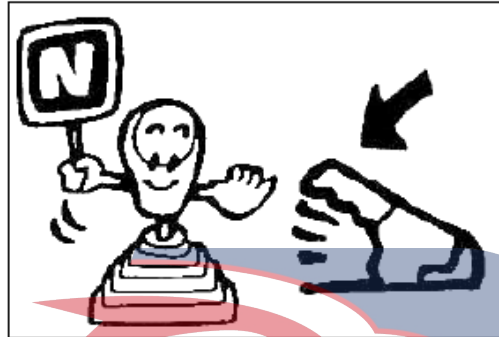
# POWERSTAR



7. Release the brake pedal carefully. The above operation is repeated until no more air bubbles are in the brake fluid pumped into the container. At the end of the exhaust process, it should be reconfirmed that the brake fluid in the brake fluid reservoir remains at the specified fluid level. After exhausting, reinstall the rubber cover.



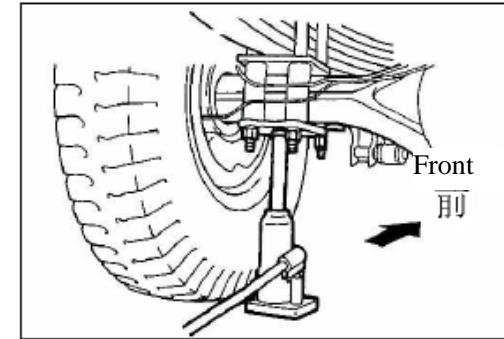
**LSPV (load sensing proportional valve) has been accurately calibrated at the factory. If it is required for adjustment, please contact your local dealer/service station.**



#### **Adjustment of parking brake**

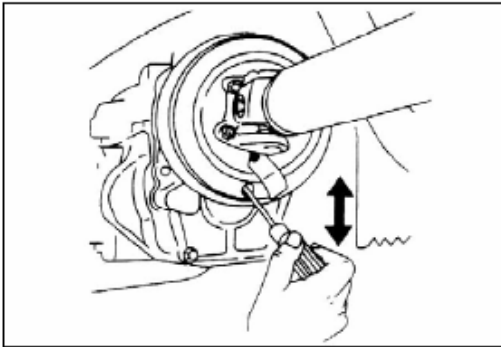
When the parking brake lever is pulled with a force of 150 N, the parking brake lever moves in the range of 5 to 8 teeth, then its stroke is normal. Otherwise, must carry out the adjustments as follows:

1. Block the front wheel with triangle pad, then release the parking brake and move the shift lever to the neutral position.

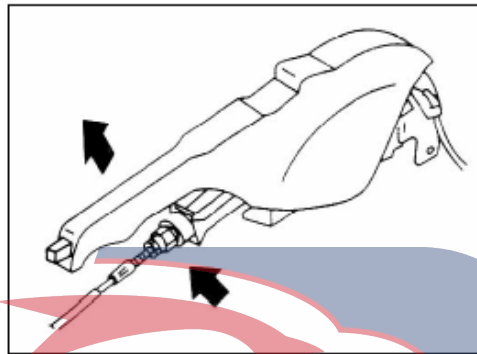


2. Use the jack to lift the rear wheel completely away from the ground and insert the safety support.

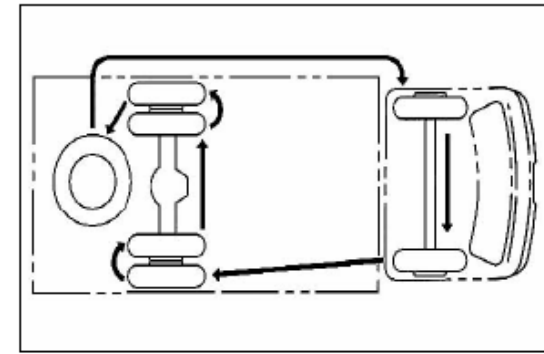
# POWERSTAR



3. Turn the drive shaft so that the adjuster hole in the brake drum aligns with the adjuster. The adjusting device is located below the center of the drive shaft.
4. Insert a screwdriver into the adjusting hole in the brake drum and twist the adjuster upwards until it can no longer be turned.
5. Return the adjuster 30 teeth and check the stroke of the parking brake lever.



6. If the parking brake lever is beyond the normal range, the length of the parking brake cable must be adjusted by operating the adjusting nut located under the parking brake lever.
  - ① Loosen the locknut;
  - ② Adjust the length of the parking brake cable with the adjusting nut;
  - ③ Secure the adjusting nut by tightening the locknut.

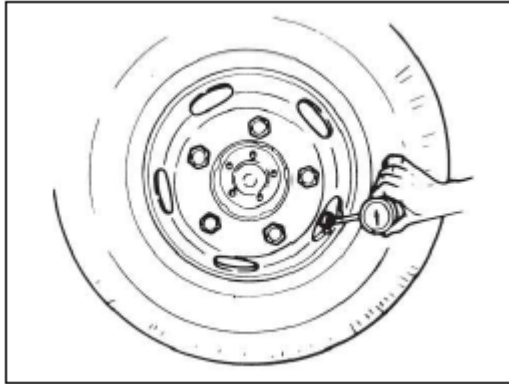


### Tire replacement

In order to maintain uniform wear of the tires and to increase their lifespan, the positions of the tires should be changed periodically as shown in the figure above.

1. Exchange every 5,000 kilometers;
2. After exchanging and replacing tires, perform dynamic balance checks for the tires;
3. Replace the tire in strict accordance with the provisions of the specification, choose the right size of the tire;
4. When choosing tires, tires on the same axle should be “eight-unified”, that is, the same specifications, the same structure, the same material, the same level, the same air pressure, the same load, the same pattern, and the same brand.

# POWERSTAR



Tire inflation pressure gauge

Tire size	Factory inflation pressure (kPa)			Maximum inflation pressure (kPa)
	Front tire	Rear tire	Spare tire	
8.25-16	575	575	575	630
8.25R16	625	625	625	670
9.5R17.5	675	675	675	750

**Tire inflation pressure**

The standard inflation pressure of the tire is shown in the table.



Caution

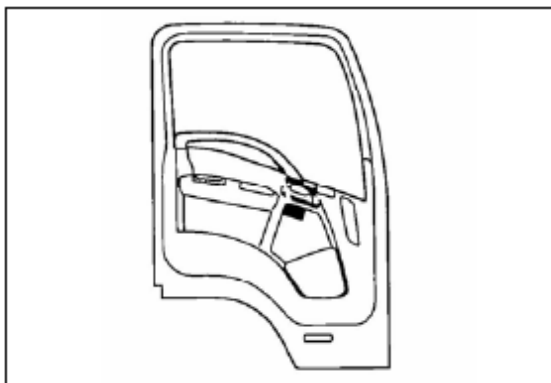
When inspecting the tire pressure or performing maintenance on the tire, it should be performed at a low temperature of the tire (the vehicle is parked for more than 3 hours or driving for no more than 1.6 kilometers).



Caution

The factory inflation pressure is a no-load state. The user should consider increasing or decreasing the air pressure according to the actual loading mass and driving speed. Insufficient or excessive air pressure can cause abnormal wear on the tires, affecting comfort and wasting fuel. However, the maximum pressure cannot be exceeded.

**POWERSTAR**



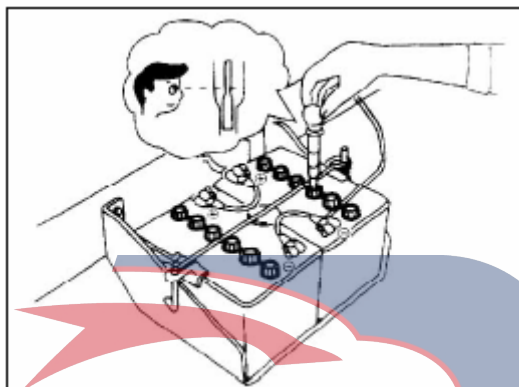
#### **Tire inflation pressure plate**

The factory values of the tire inflation pressure are recorded on the tire inflation pressure plate located inside the driver's side door.



Warning

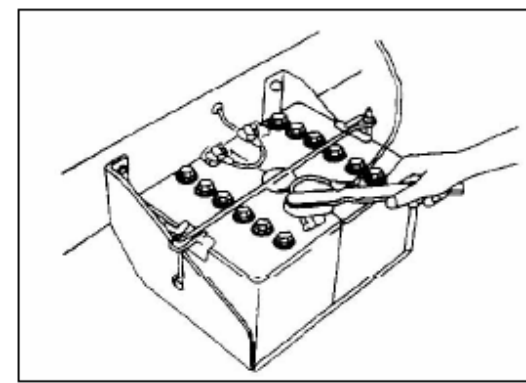
Do not drive the vehicle unless the tire is inflated and in a safe state. Excessive or insufficient tire pressure can affect the operation of the vehicle, causing premature wear and damage to the tire and even causing the vehicle to lose control.



#### **Battery electrolyte specific gravity**

At 20°C, if the reading of electrolyte pycnometer is 1.27 to 1.28, the battery is considered fully charged.

If the specific gravity is lower than 1.23, the battery needs to be recharged.



#### **Cleaning of battery**

If the external parts of the battery are dirty, they should be cleaned with warm water. To prevent corrosion, a thin layer of Vaseline or grease should be applied onto the battery terminals.

# POWERSTAR



### Replacing lamp bulbs

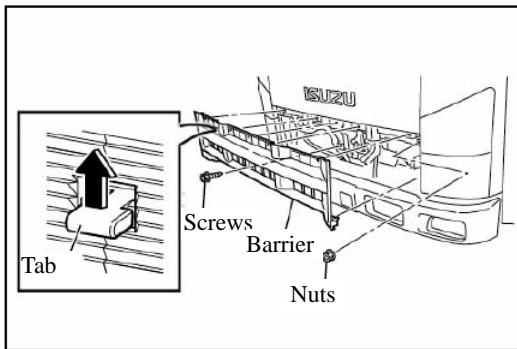
The disassembled parts of each lamp are shown in illustrations for reference.



When replacing the bulb, must ensure that its switch is turned off. Only use the bulbs with the same capacity. The standard bulb wattage ratings are given below:

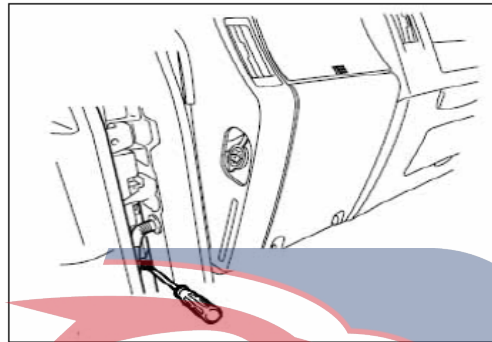
	Name	Power	Quantity
Front side	Headlights	24v 75w/70w	2/2
	Front fog lamps	24V 70W	2
	Front turn signal indicator	24V 21W	2
	Side Marker Lamp	24V 5W	2
	Side-marker lamp	24V 5W	6 ~ 8
	Side turn signal indicator	24V 21W	2
Rear side	Brake lamp/tail lamp	24V 21/5W	2/2
	Rear turn signal	24V 21W	2
	Reversing lamps	24V 21W	2
	License plate lamp	24V 10W	1
	Rear fog lamp	24V 21W	1
Indoor	Indoor lamps	24V 10W	1

# POWERSTAR

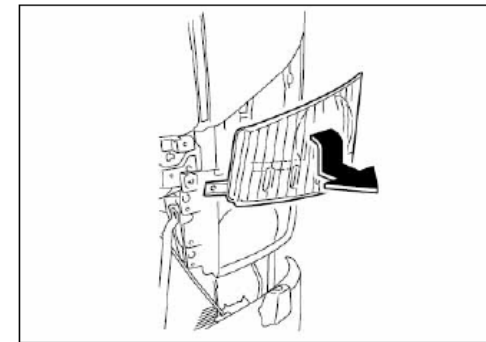


### Headlights

1. Remove the screws on the grille and lift the retaining tabs upwards and pull the grille outwards. Remove the screws that secure the turn signal lamp.

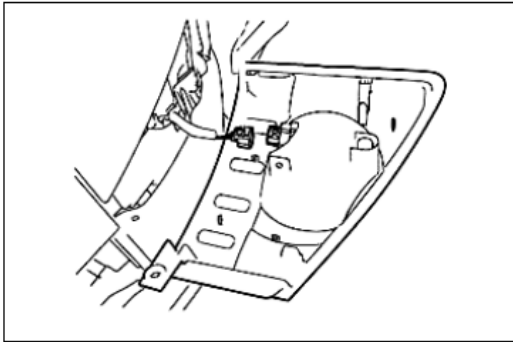


2. Use a screwdriver to remove the two screws located between the door and the cab.

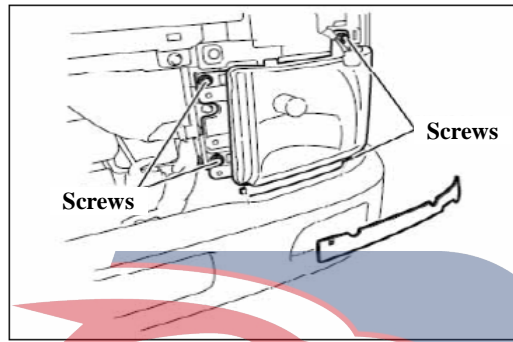


3. First downward and then forward, remove the turn signal lamp.

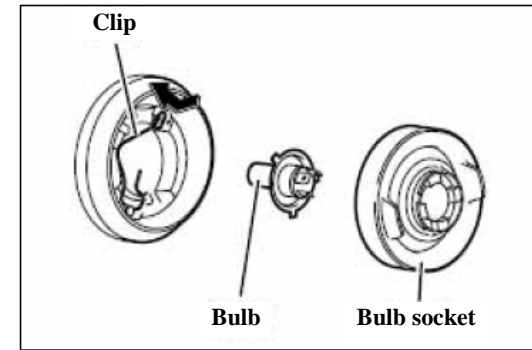
# POWERSTAR



4. Disconnect the circuit cable.

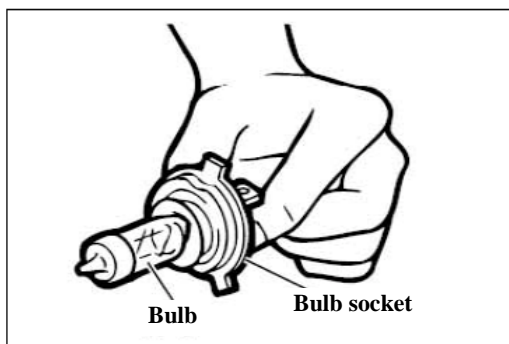


5. Remove the rubber baffle under the headlamp and the four screws that secure the headlamp, disconnect the circuit cable, and then remove the headlamp.

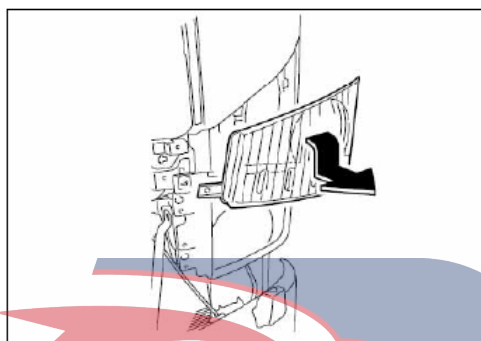


6. Remove the rubber bulb socket, release the clip holding the bulb, and remove the bulb.

# POWERSTAR

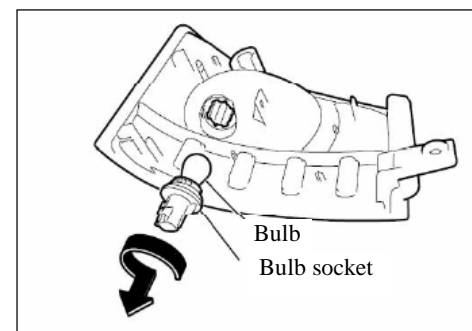


7. Replace with a new bulb mounted on the bulb socket and restore the above operation in reverse order.



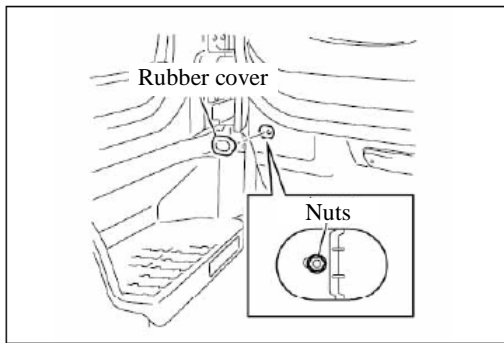
#### Turn signal lamp

1. Follow steps 1-4 to replace the headlights, remove the turn signal lamp, and disconnect its circuit wiring.



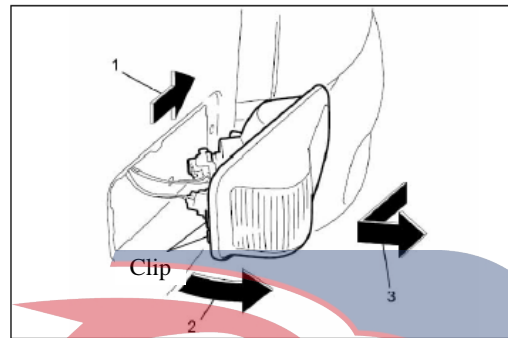
2. Unscrew the bulb socket as shown in the figure, remove the lamp and replace it with a new one.  
3. Restore the above operations in the reverse order.

# POWERSTAR

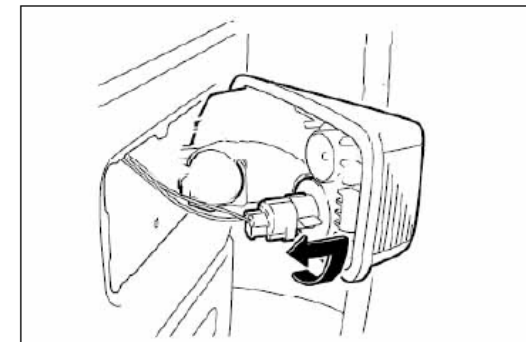


### Side turn signal lamp

1. Open the door, remove the rubber cap, and remove the retaining nut.

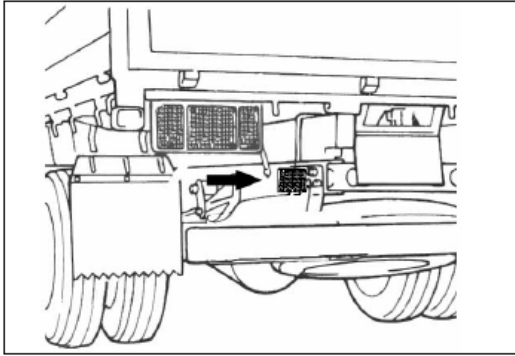


2. First push the lamp cover forward, then pull out the rear part and pull it backwards, and then take out the side turn signal lamp.



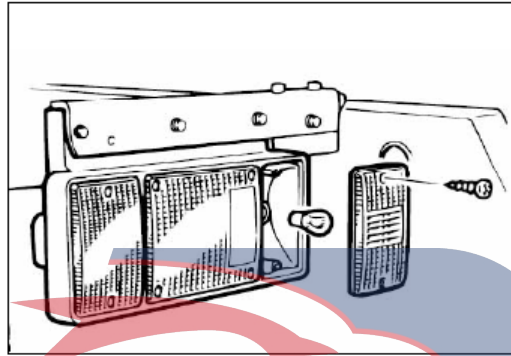
3. Disconnect the cable, remove the lamp and replace it with a new one.  
4. Restore the above operations in the reverse order.

# POWERSTAR



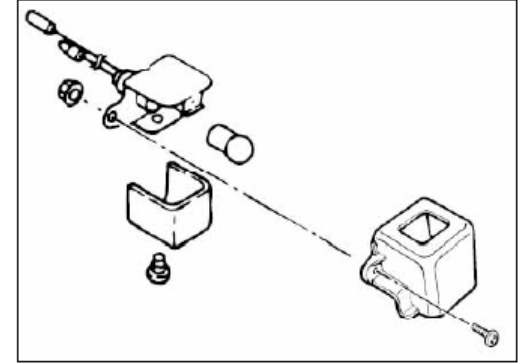
**Rear fog lamp**

Unscrew the retaining screws and remove them.



**Rear composite lamp**

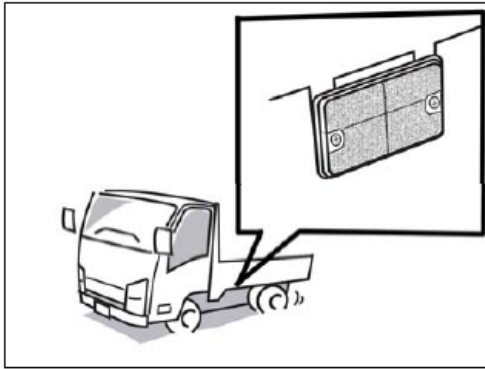
Unscrew the retaining screws and remove them.



**License plate lamp**

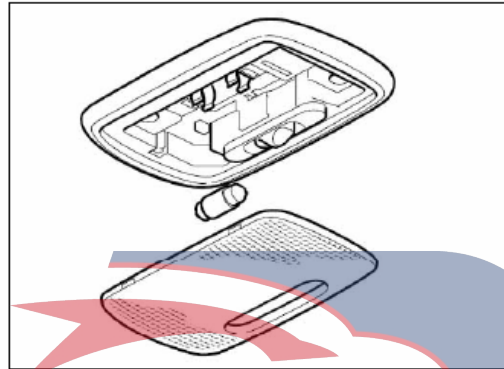
Unscrew the retaining screws and remove them.

**POWERSTAR**



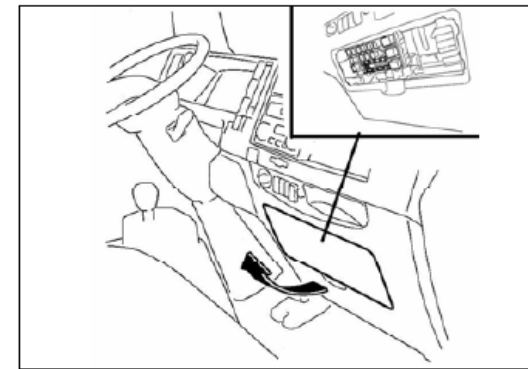
**Side-marker lamp**

Unscrew the retaining screws and remove them.



**Interior dome lamp**

The lamp cover can be easily removed by using a slotted screwdriver.



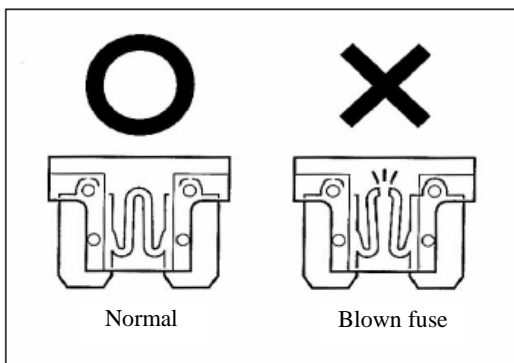
**Fuse box**

The fuse box is located below the instrument panel and the fuse box cover can be easily pulled open by hand.

The rated current and the applicable circuit of the fuse are described on the label on the inside of the cover.

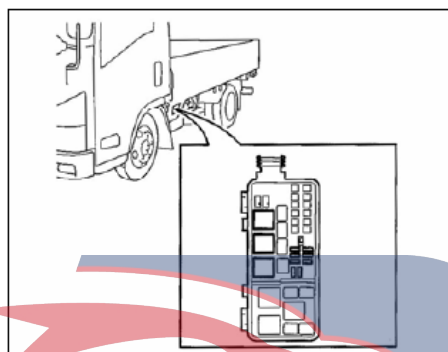
When replacing the fuse, use the supplied fuse remover and use a spare fuse.

**POWERSTAR**



 Caution

**If the fuse is blown, must first check and identify the blown causes and take the necessary repairs before replacing the fuse. When replacing the fuse, the start switch should be turned to the “LOCK” position and the fuse with the same current value must be used.**



#### Fusible link

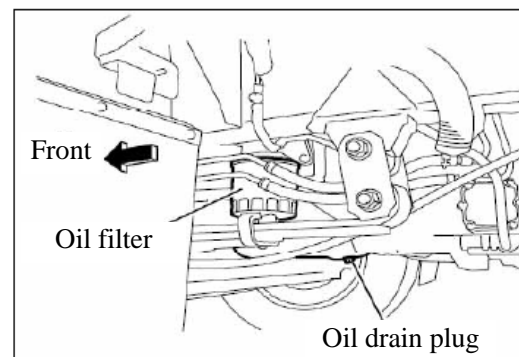
If the electrical component does not work and the fuse is OK, check the fusible connecting line. If the fusible link is blown, replace it with a fusible link of the same current value.

 Warning

Before replacement, be sure to identify the causes of the circuit overload.

When replacing, be sure to use genuine QingLing Motor's fusible cable.

The copper wire shall not be installed even as temporary measures. It may cause more damage and even cause a fire.



#### Lubrication guide

##### Replace the engine oil

Remove the oil drain plug located at the bottom of the oil pan and under the oil filter and completely drain the oil in the crankcase of the engine.

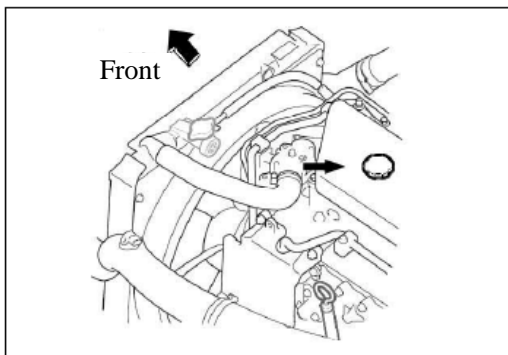
After draining completely the oil in the engine crankcase and the oil filter, the drain plug should be retightened.

 Warning

Hot engine oil can seriously burn your skin. Therefore, the engine should be cooled before draining the engine oil.

# POWERSTAR



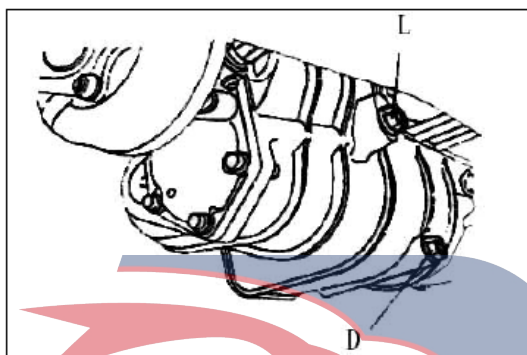


Pull out the oil dipstick and fill the engine crankcase with new engine oil of the specified level through the oil filler.



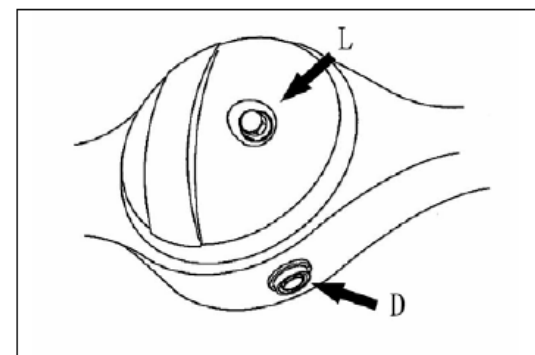
**Please use CF grade engine oil (refer to “Recommended lubricants and diesel fuels” section).**

**When filling the engine crankcase with the oil to the upper limit mark of the dipstick, start the engine and run at idle speed for a few minutes. Stop the engine, recheck the fluid level, and refill if necessary.**



### Replace the transmission gear oil

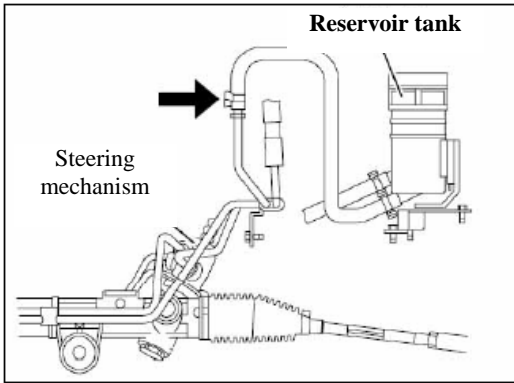
Remove the drain cock (D) in the lower part of the transmission case and drain the oil in the transmission case. Inject the specified gear oil into the transmission housing from the level check hole (L) until the level reaches the level check hole plug.



### Changing differential oil

Unscrew the drain plug (D) at the lower part of the rear axle housing and drain the gear oil in the rear axle housing. Then, fill the specified gear oil into the rear axle housing via the level inspection hole (L) until the liquid level is up to the level check hole.

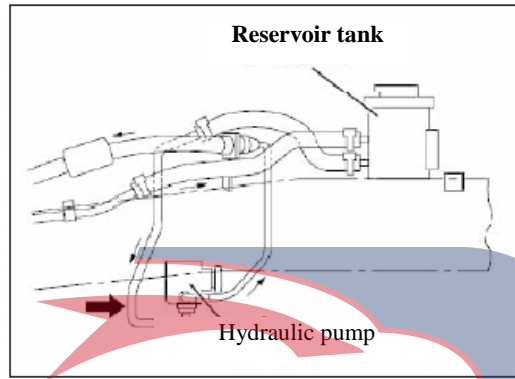
# POWERSTAR



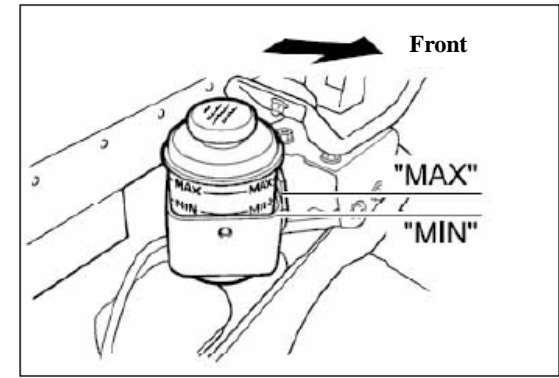
### Changing power steering fluid

#### Draining:

1. Lift up the front wheel to be completely away from the ground;
2. Remove the piping between the steering gear and the reservoir and the hose between the hydraulic pump and the reservoir.



3. After the transmission fluid has been drained, turn the steering wheel to the left and right, and stop it several times in the left and right directions to completely discharge the remaining transmission fluid in the hydraulic circuit.



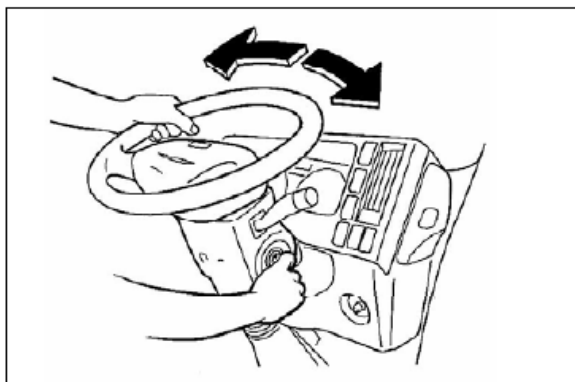
#### Refilling:

1. After firmly installing the removed piping and hose, slowly pour the prescribed transmission fluid into the reservoir.
2. Start the engine and run it for two or three minutes. Observe the fluid level and refill it to the specified position.

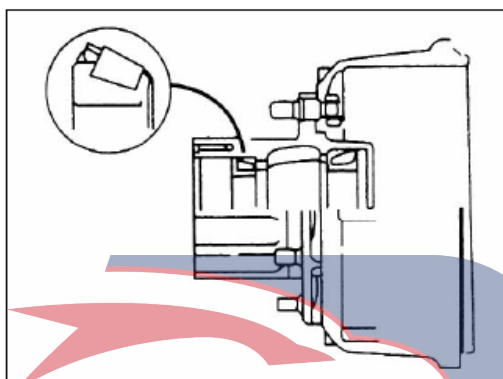


**While refilling, keep the fluid reservoir replenished as necessary to prevent air from entering the hydraulic system.**

# POWERSTAR

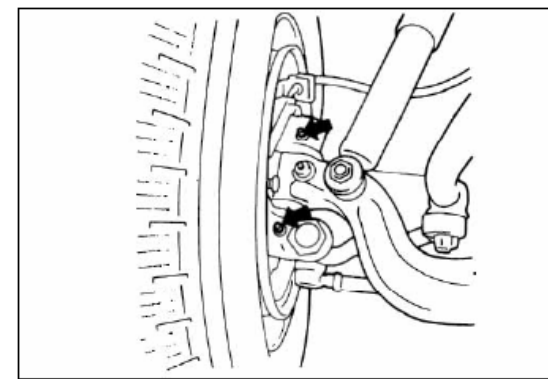


3. Lower the front wheels to the ground. Start the engine, turn the steering wheel fully to left and right several times, and let it run for several minutes at idle speed.  
Recheck the fluid level and refill if necessary.



**Replace the grease for the front and rear wheel hub bearings**

Because the replacement of the grease in the hub bearing needs to remove and reinstall the bearing, please contact QingLing Motors dealer (service station).

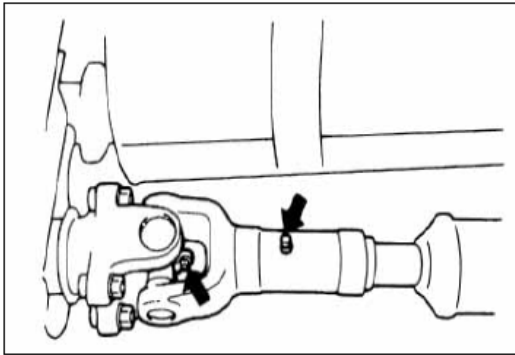


**Greasing points**

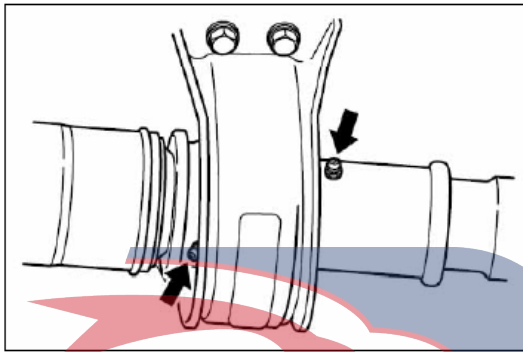
Please use multi-purpose grease to lubricate the following areas:

Steering kingpin (4 positions)

# POWERSTAR



Lubricate the following parts with grease containing molybdenum disulfide:  
Universal joint and sliding sleeve

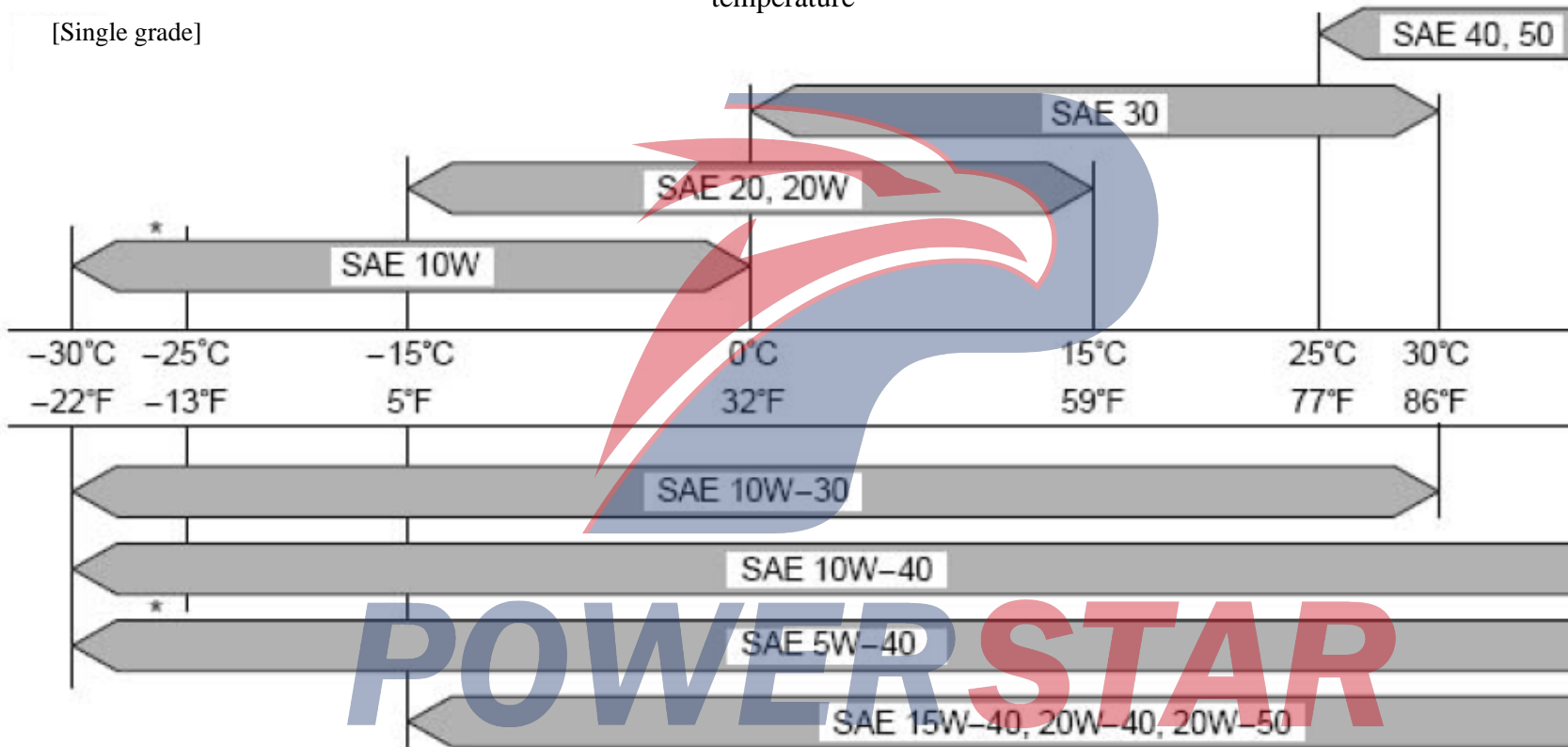


Must apply the wheel bearing grease on the following positions:  
Intermediate bearing

# POWERSTAR

## Oil viscosity diagram for diesel engines

Relationship between oil viscosity grade and outside air temperature



Do not mix any oil or fuel with any other one.

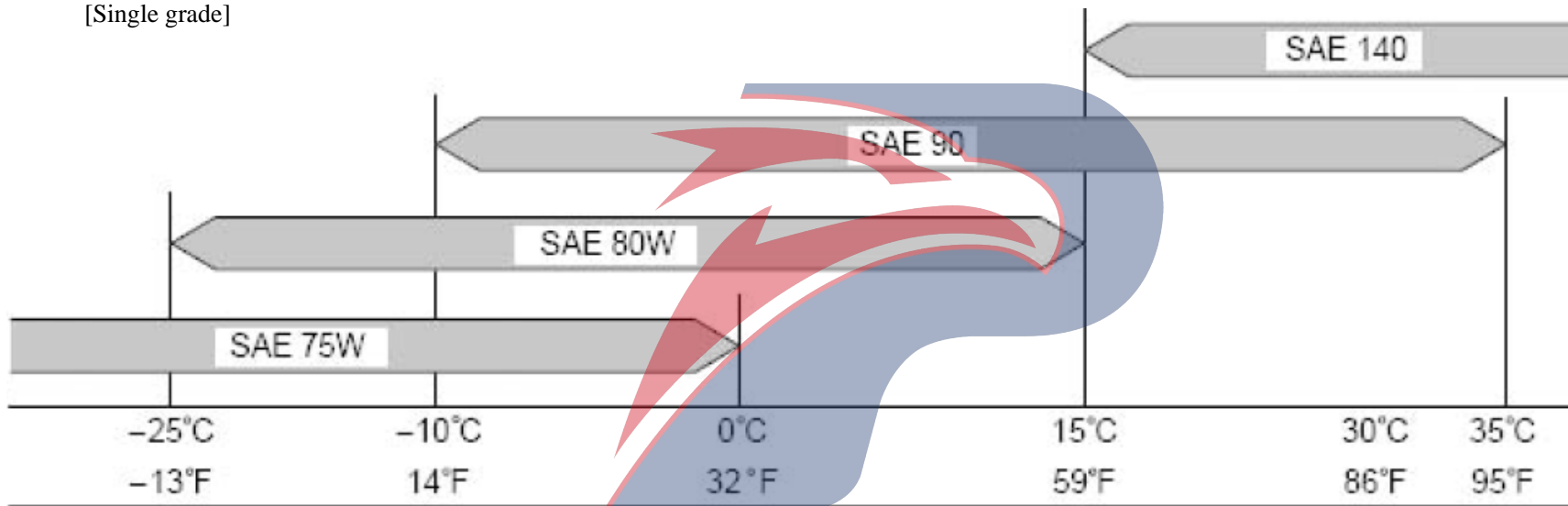
\* When the ambient temperature is lower than  $-25^{\circ}\text{C}$ , the engine startup difficulties should be solved by heating the engine or other means.

[Multi grade]

### Gear oil viscosity map

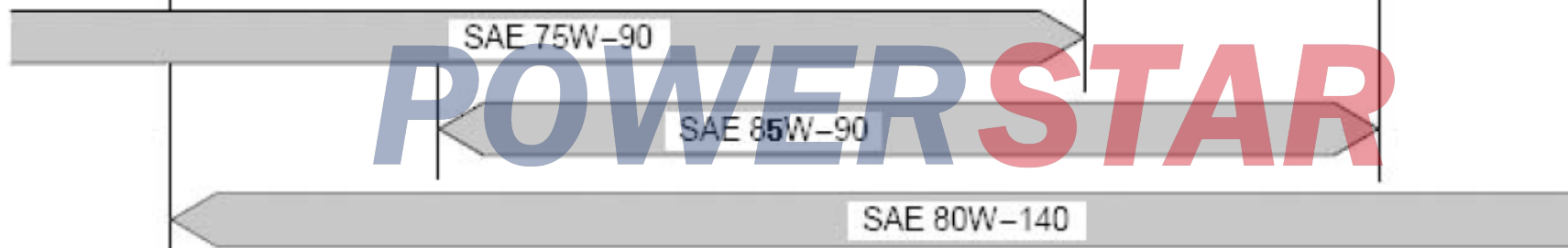
The relationship between the viscosity grade of gear oil and the outside air temperature

[Single grade]



**POWERSTAR**

[Multi grade]



## Recommended lubricants and diesel fuels

Part	Recommended grease		
Diesel engine crankcase	Grade CF-4 or above diesel engine oil		SAE10W-30
Rear axle and drive gear box	API GL-5 grade	SAE 80W-90	
Transmission gear oil	API GL-4 grade	SAE 85W-90	
Power steering	Automatic transmission fluid Dexron-IIIE		
Hydraulic brake system and clutch system	SAEJ1703, FMVSS 116 DOT.3		
Engine cooling system	Antifreeze (ethylene glycol base)		
Wheel bearing	Wheel bearing grease or multi-purpose grease NLGI No.2 or 3No.3		
Front axle	Multi-purpose grease NLGI NO.2 or 3 or 3		
Grease nozzle	Multi-purpose grease NLGI NO.1 or NO.2		
Brake assist system	Automatic transmission fluid Dexron-IIIE		
Universal joint	Grease with molybdenum disulfide		
Fuel			
Light oil	Fuel oil that meets national emission standards		

API: American Petroleum Institute

FMVSS: Federal Motor Vehicle Safety Standards

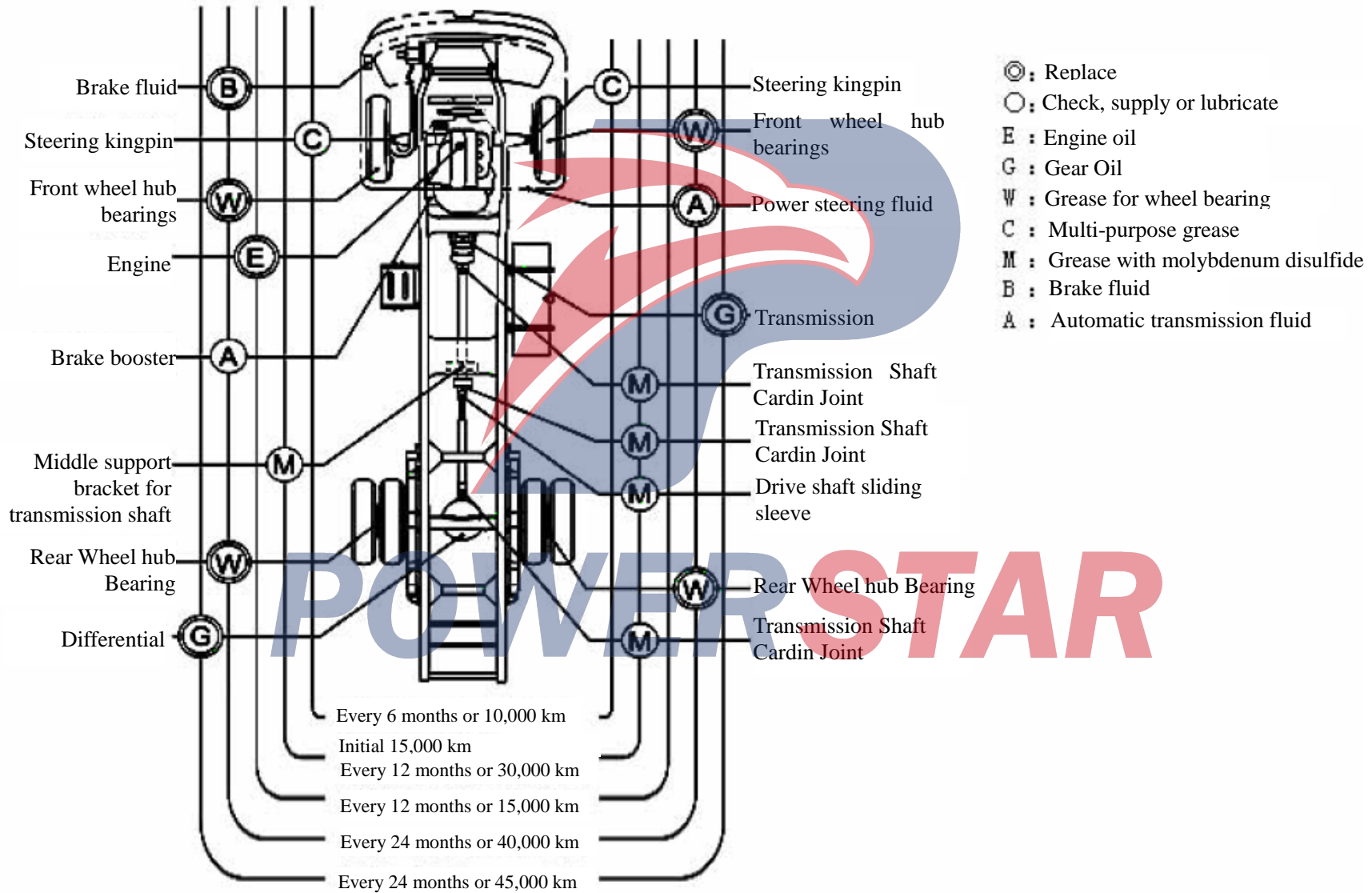
SAE: American Society of Automotive Engineers

NLGI: National Association of Lubricating Grease Institute

JIS: Japanese Industrial Specifications

POWER STAR

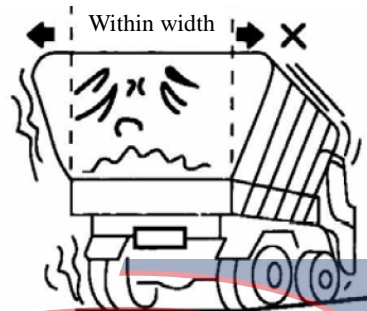
## Lubrication Chart



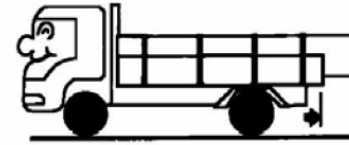




1 The width of the cargo cannot exceed the width of the compartment.

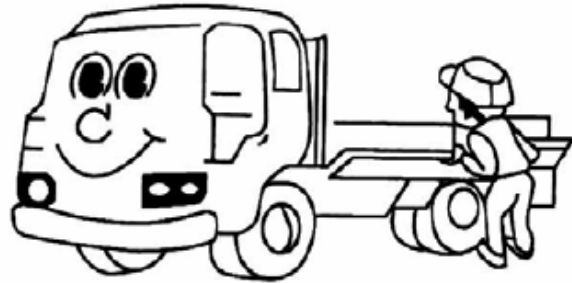


2 Do not let the goods stick out of the truck bed as much as possible.



Not more than 1/20 of the full length.

# POWERSTAR



1 Gently open and close the vehicle



2 Carefully loading and unloading



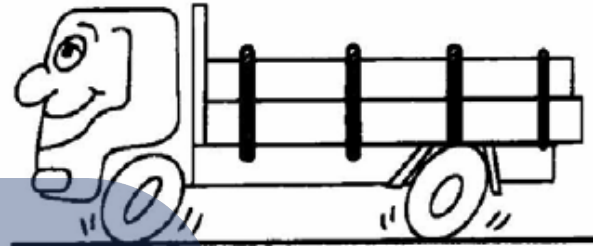
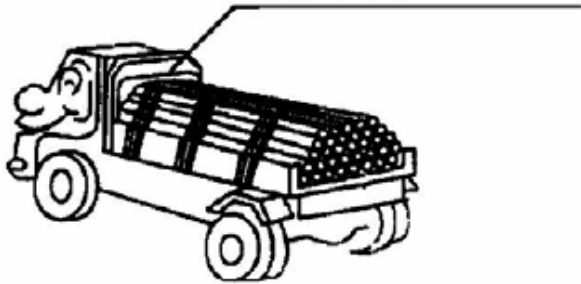
Rough operation will shorten the life of the carriage



Throwing cargo will hurt the cargo and the carriage.

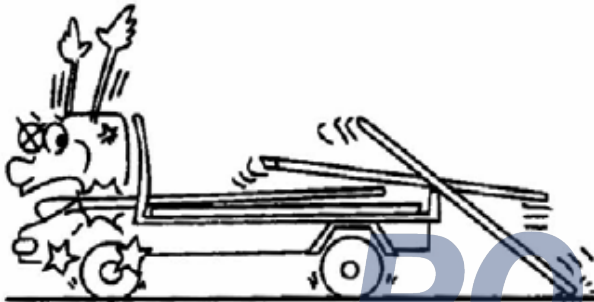
POWER STAR

Use protective sails when transporting

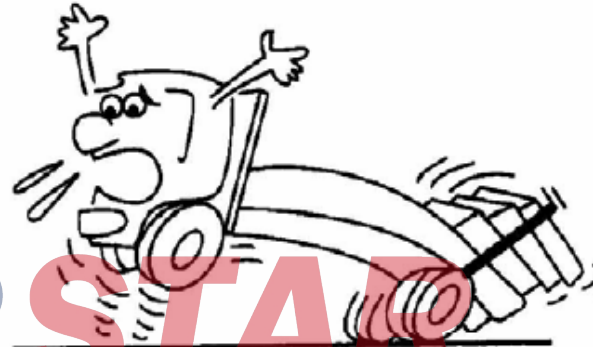


3 The goods should be bound tightly with a rope etc.

4 The goods should be loaded and unloaded low and evenly.

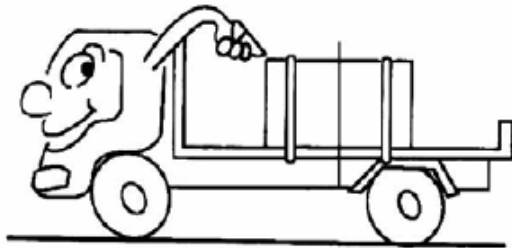


If it is not fixed, the materials will be scattered during the journey.

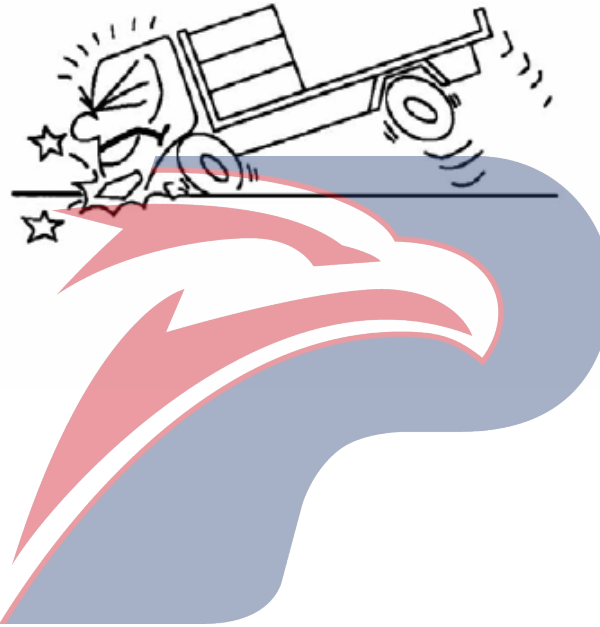


Unbalanced loading can not only make driving unstable, but also damage the cargo and the vehicle.

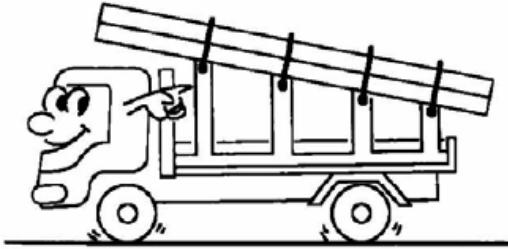
POWER STAR



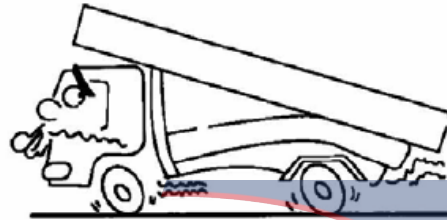
The relatively tall cargo should be fixed in the center of the compartment.



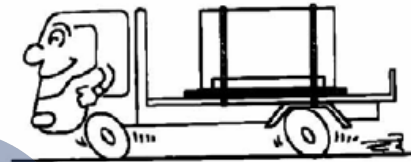
# POWERSTAR



5 Any long cargo must be fastened on a shelf.

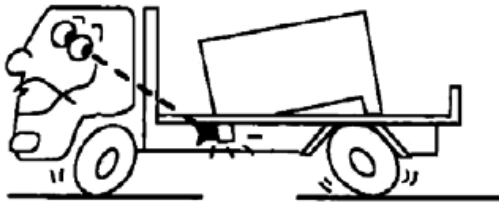


Only the front frame and the rear door are used to support the trunk.  
※The rack should be counted as part of the goods.

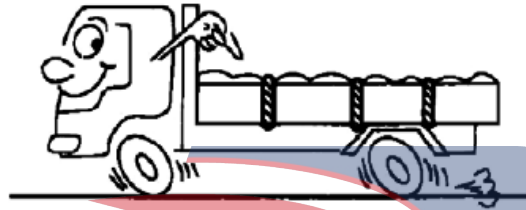


6 Measures should be taken to disperse the goods with concentrated weight.

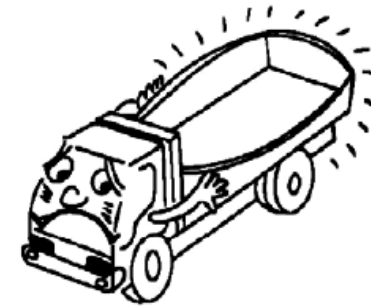
# POWERSTAR



If no measures are taken, the bottom of the compartment may be damaged. Steel or sleepers should be counted as part of the cargo.

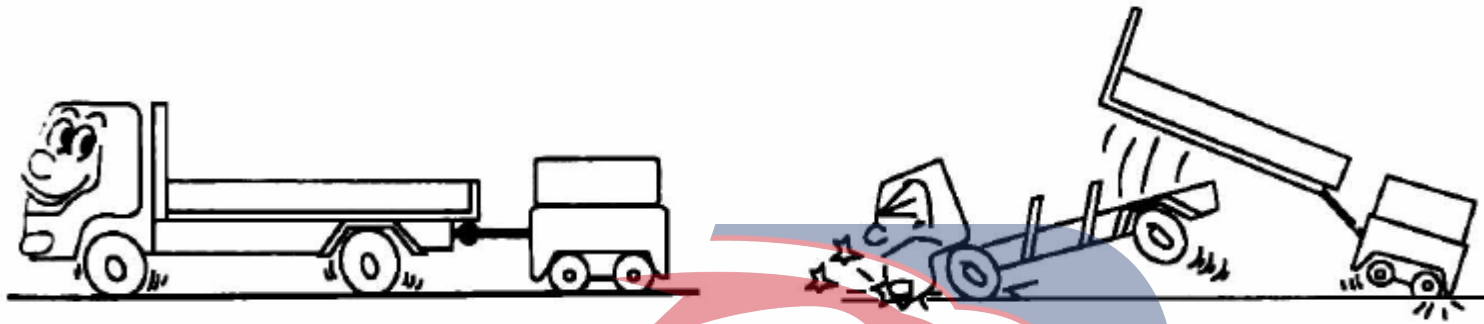


When transporting bulk cargo, secure the side panels from both sides.



Otherwise, it may cause deformation of the side panels of the compartment.

# POWERSTAR



8 Use the hook on the truck frame when towing.

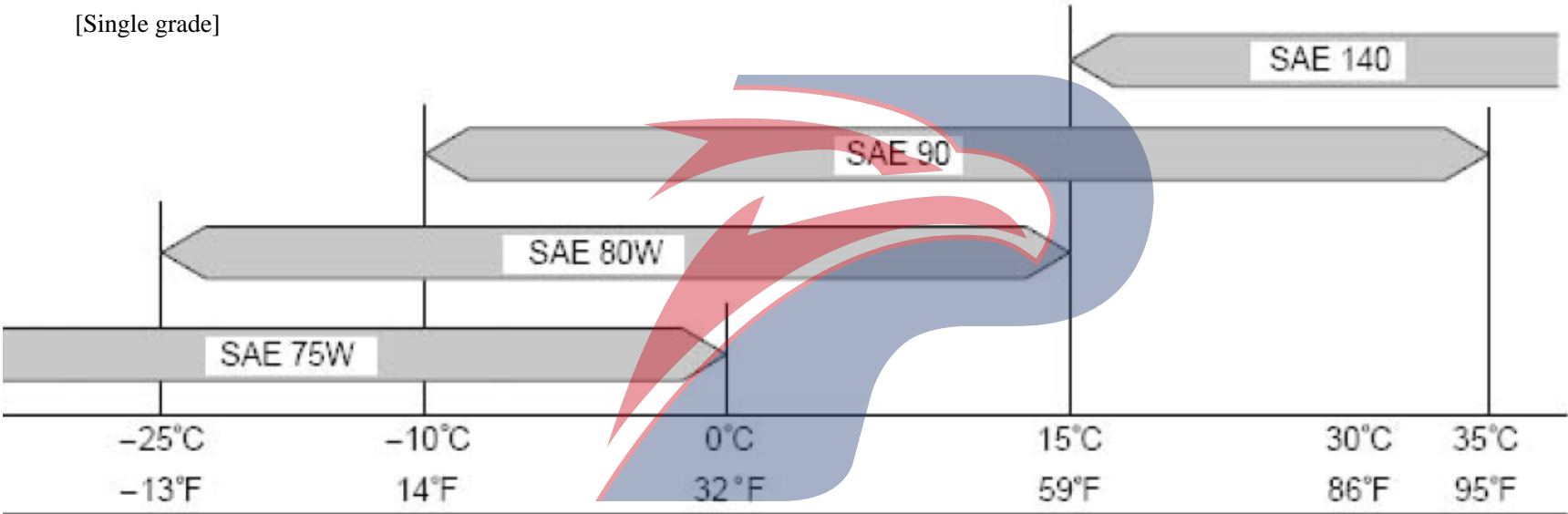
Never use the carriage for towing.

**POWERSTAR**

### Gear oil viscosity chart

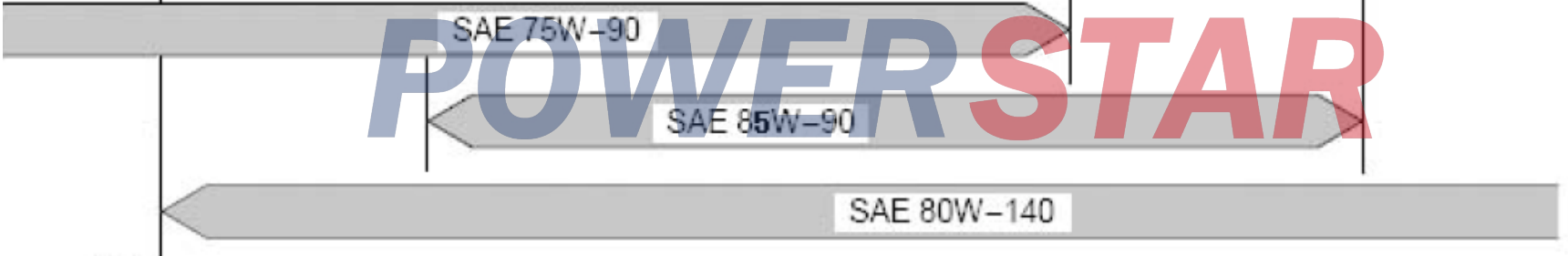
The relationship between the viscosity grade of gear oil and the outside air temperature

[Single grade]



**POWERSTAR**

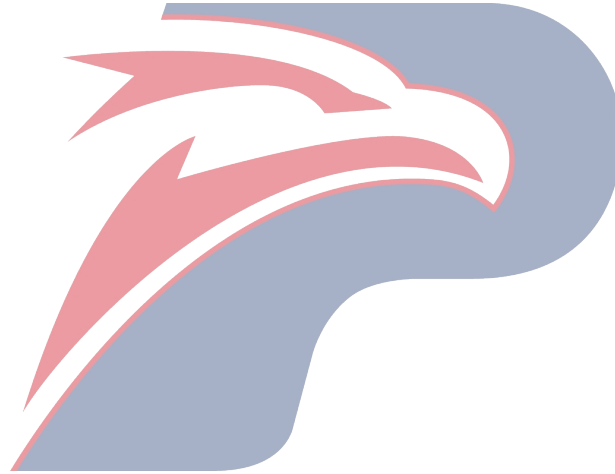
[Multi grade]





## **6** MAIN DATA AND SPECIFICATIONS

- Vehicle.....6-1
- Engine.....6-10
- Transmission .....6-11
- Chassis.....6-12
- Tools with vehicle.....6-14



**POWERSTAR**

### Main data and specifications

Vehicle model	QL1090TKAR	QL1100TKAR	QL1090TLAR	QL1100TLAR	QL1090TMAR	QL1100TMAR
Size						
Vehicle length (mm)	7020		7450		7950	
Vehicle width (mm)	2260		2260		2307	
Vehicle Height (mm)	2500		2500		2500	
Wheelbase (mm)	3815		4175		4475	
Wheel base: Front Wheel: (mm)			1680			
Rear wheel: (mm)			1650			
Minimum ground clearance (mm)			200			
Compartment area (m2)	10.9		11.8		12.9	
Drive type	4*2					
Number of axes	2					
Weight						
Kerb mass (kg)	3800	3800	3860	3860	3980	3980
Loading mass (kg)	4950	6000	4950	6000	4950	5800
Gross vehicle mass (kg)	8945	9995	9005	10055	9125	9975
Number of passengers allowed in the cab (person)	3					

# POWERSTAR

### Main data and specifications

Vehicle model	QL1090TKAR	QL1100TKAR	QL1090TLAR	QL1100TLAR	QL1090TMAR	QL1100TMAR
Engine						
Model	4HK1-TC					
Power (kw/rev/min)	129 / 2600					
Torque (Newton meters/r/min)	500 / 1500 ~ 2000					
Fuel type	Diesel					
Fuel tank volume (liter)	100					
Clutch						
Type	Hydraulic control, disc spring, single dry-type					
Diameter (mm)	φ 325					
Pedal free play (mm)	15 ~ 25					
Transmission						
Model	MLD-6Q					
Rear axle						
Type	Full floating, spiral bevel gear and hypoid gear drive					
Hypoid gear diameter (mm)	φ320					
Gear ratio (ratio 1)	4.1					
Lubricant capacity (liter)	3.4					

# POWERSTAR

### Main data and specifications

Vehicle model	QL1090TKAR	QL1100TKAR	QL1090TLAR	QL1100TLAR	QL1090TMAR	QL1100TMAR
Steering mechanism						
Steering Position	Left					
Type	Recirculating ball hydraulic booster					
Steering wheel free play (mm)	10 ~ 50					
Capacity (liter)	1.5					
Front wheel alignment						
Toe-in (mm)	-2 ~ 2					
Camber (degree)	0°15'± 30'					
Caster (degree)	2°45'± 60'					
King pin angle (degree)	12°± 40'					
Service brake						
Type	Double circuit hydraulic brake system with hydraulic booster					
Pedal free play (mm)	4 ~ 7					
Parking brake						
Type	Internal inflatable mechanical brake located at the rear of the transmission					
Brake lever travel (number of teeth)	5 to 8 (when pulling up with 392 Newtons)					

# POWERSTAR

### Main data and specifications

Vehicle model	QL1090TKAR	QL1100TKAR	QL1090TLAR	QL1100TLAR	QL1090TMAR	QL1100TMAR
Suspensions						
Type: Front / Rear	Semi-elliptical alloy steel leaf springs with hydraulic double acting telescopic shock absorbers					
Wheel						
Tire size: Front wheel	8.25R16 or 8.25-16	9.5R17.5	8.25R16 or 8.25-16	9.5R17.5	8.25R16 or 8.25-16	9.5R17.5
Rear wheel	8.25R16 or 8.25-16	9.5R17.5	8.25R16 or 8.25-16	9.5R17.5	8.25R16 or 8.25-16	9.5R17.5
Electrical						
Type	24 Volt Electrical System for Negative pole Grounding					
Battery (Volts/Amps•Hours)	12v 70Ah (2)					
Starter (V/kW)	24v 4.5kw					
Alternator (VAh)	24v 50A					



**POWERSTAR**

### Main data and specifications

Vehicle model	QL5090XTKAR	QL5090XTLAR	QL5100XTMAR	QL5100XTPAR
Size				
Vehicle length (mm)	7005	7455	8155	8955
Vehicle width (mm)	2346/2396 (open door on selected side)	2346/2396 (open door on selected side)	2346/2396 (open door on selected side)	2346/2396 (open door on selected side)
Vehicle Height (mm)	3220	3345	3350	3355
Wheelbase (mm)	3815	4175	4475	5200
Wheel base : Front Wheel: (mm)			1680	
Rear wheel: (mm)			1650	
Minimum ground clearance (mm)			200	
Compartment area (m2)	11.5	12.4	14	15.8
Drive type			4*2	
Number of axes			2	
Weight				
Kerb mass (kg)	4320	4330	4560	4650
Loading mass (kg)	4800	4500	4800	4800
Gross vehicle mass (kg)	9315	9025	9555	9645
Number of passengers allowed in the cab (person)			3	

# POWERSTAR

### Main data and specifications

Vehicle model	QL5090XTKAR	QL5090XTLAR	QL5100XTMAR	QL5100XTPAR
Engine				
Model	4HK1-TC			
Power (kw/rev/min)	129 / 2600			
Torque (Newton meters/r/min)	500 / 1500 ~ 2000			
Fuel type	Diesel			
Fuel tank volume (liter)	100			
Clutch				
Type	Hydraulic control, disc spring, single dry-type			
Diameter (mm)	φ325			
Pedal free play (mm)	15 ~ 25			
Transmission				
Model	MLD-6Q			
Rear axle				
Type	Full floating, spiral bevel gear and hypoid gear drive			
Hypoid gear diameter (mm)	φ320			
Gear ratio (ratio 1)	4.1			
Lubricant capacity (liter)	3.4			

# POWERSTAR

### Main data and specifications

Vehicle model	QL5090XTKAR	QL5090XTLAR	QL5100XTMAR	QL5100XTPAR
Steering mechanism				
Steering Position	Left			
Type	Recirculating ball hydraulic booster			
Steering wheel free play (mm)	10 ~ 50			
Capacity (liter)	1.5			
Front wheel alignment				
Toe-in (mm)	-2 ~ 2			
Camber (degree)	0°15'± 30'			
Caster (degree)	2°45'± 60'			
King pin angle (degree)	12°± 40'			
Service brake				
Type	Dual-circuit hydraulic brake system with vacuum booster			
Pedal free play (mm)	4 ~ 7			
Parking brake				
Type	Internal inflatable mechanical brake located at the rear of the transmission			
Brake lever travel (mm)	5 to 8 (when pulling up with 392 Newtons)			

# POWERSTAR



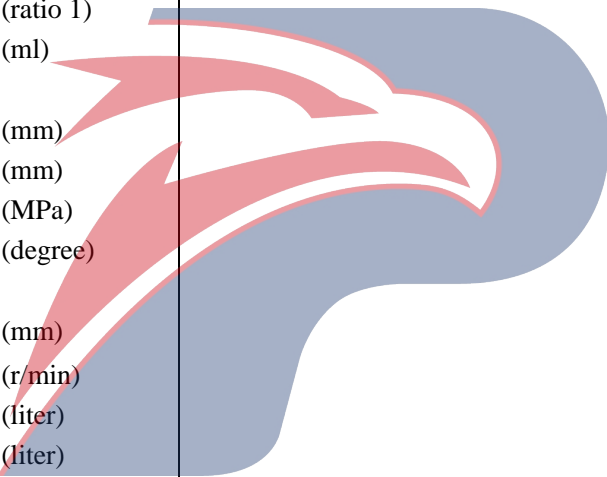
### Main data and specifications

Vehicle model		QL5090XTKAR	QL5090XTLAR	QL5100XTMAR	QL5100XTPAR
Suspensions					
Type:	Front / Rear	Semi-elliptical alloy steel leaf springs with hydraulic double acting telescopic shock absorbers			
Wheel					
Tire size:	Front wheel	8.25-16LT	8.25-16LT	8.25-16LT	8.25-16LT
	Rear wheel	8.25-16LT	8.25-16LT	8.25-16LT	8.25-16LT
Electrical					
Type		24 Volt Electrical System for Negative pole Grounding			
Battery	(Volt/Amp.h.)	12v 70Ah (2)			
Starter	(V/kW)	24v 4.5kw			
AC generator	(Volt/Amp.h.)	24v 50A			



**POWERSTAR**

## Main data and specifications

Engine			4HK1-TC
Model			4HK1-TC
Type		In-line four-cylinder, water-cooled, direct injection pressurized intercooled, electronically controlled high pressure common-rail diesel engine	
Compression ratio	(ratio 1)		17.5±0.6
Piston displacement	(ml)		5193
Valve clearance			
Intake valve	(mm)		0.4
Exhaust	(mm)		0.4
Injection pressure	(MPa)		200 ± 10
Fuel injection timing (static)	(degree)		BTDC 0°
Firing order			1-3-4-2
Fan belt tension/force	(mm)		8 ~ 12
Idle	(r/min)		575±25
Engine oil capacity	(liter)		13
Coolant capacity	(liter)		17.1
Oil pan drain plug tightening torque	(N·n)		45

# POWERSTAR

## Main data and specifications

Transmission		MLD-6Q						
Model		MLD-6Q						
Type		On 6-speed transmission with overdrive, the forward gears are all synchronized (except for 1st gear)						
Gear ratio		1st gear	2nd gear	3rd gear	4th gear	5th gear	6th gear	Reverse gear
		6.72	4.244	2.58	1.54	1	0.763	6.823
Lubricant capacity	(liter)	2.7						



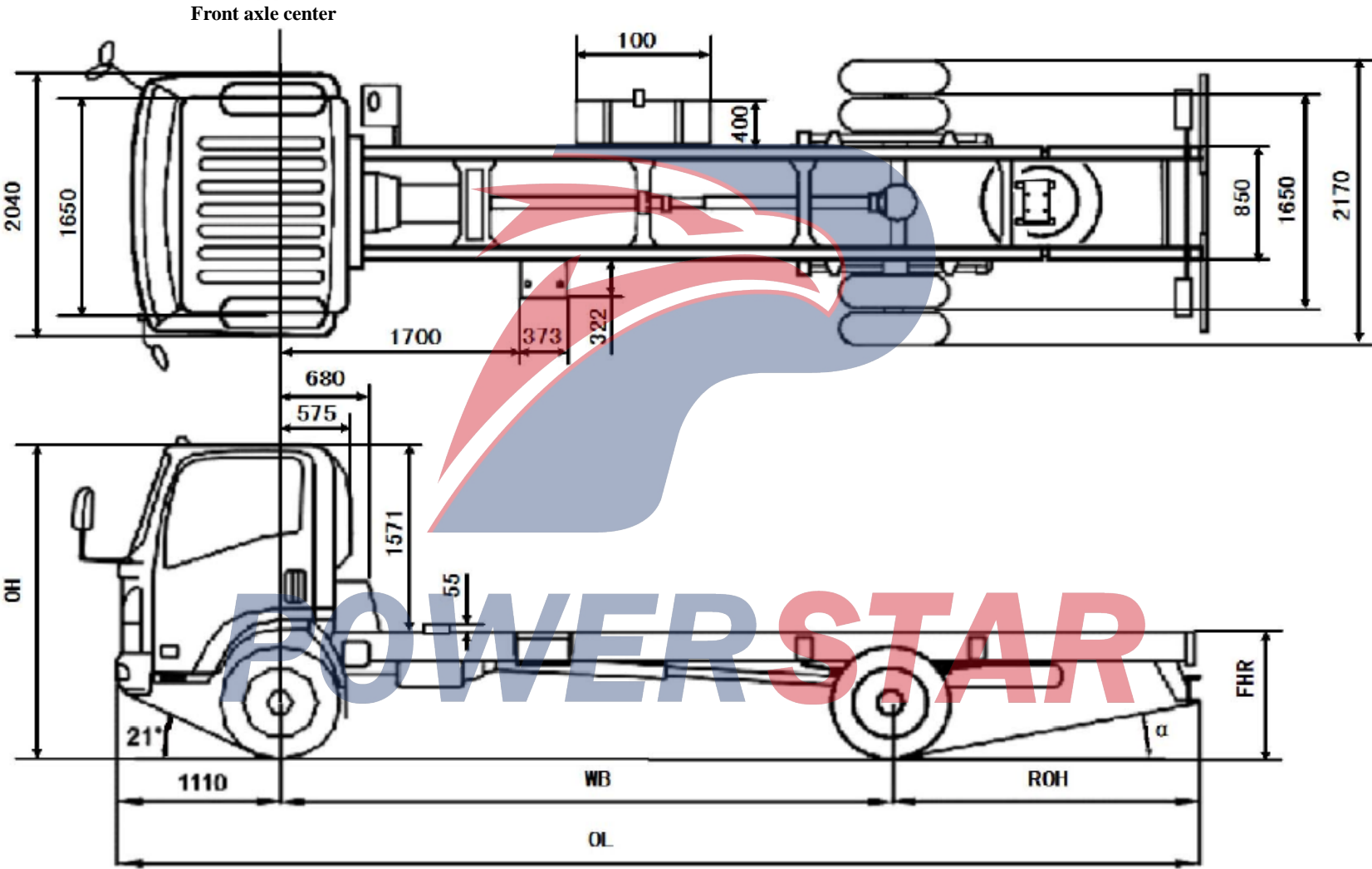
# POWERSTAR

**Parameter table of class II chassis for N series vehicle models**

Item	Unit	Chassis model							
		QL1090TKAR Y	QL1100TKARY	QL1090TLARY	QL1100TLARY	QL1090TMARY	QL1100TMARY	QL1100XTPAR Y	
Number of passengers allowed in the cab	Person	3	3	3	3	3	3	3	
	kg	2970	2970	2980	2980	3040	3040	3100	
	kg	9390	10000	9410	10055	9410	10000	10000	
Outline dimensions	Length	mm(OL)	6980	6980	7430	7430	7930	7930	8912
	Width	mm	2170						
	Height	mm(OH)	2350						
Wheelbase	mm(WB)	3815		4175		4475		5200	
Rear suspension	mm(ROH)	2055		2145		2345		2602	
Ground clearance of rear frame	mm(FHR)	950							

**POWERSTAR**

Chassis parameter diagram



### Tools with vehicle

SN	Tool name	Specifications	Quantity
1	Tool bag	-	1
2	Double-ended wrench	17×24	1
3	Double-ended wrench	12×14	1
4	Double-ended wrench	8×10	1
5	Pliers	150	1
6	Adjustable wrench	200×24	1
7	“+” “-” combination screw driver	-	1
8	Wheel nut wrench	41×19	1
9	Oil pressure Jack	QYH6	1
10	Jack rocker	-	1
11	Wheel wrench	-	1
12	Lifter rocker for spare tire	-	1



**POWERSTAR**