

OWNER AND VEHICLE INFORMATION

OWNER NAME: _____

USER/COMPANY NAME: _____

MAILING ADDRESS: _____

CITY, STATE: _____ ZIP: _____

VEHICLE IDENTIFICATION NUMBER: _____

DATE OF DELIVERY (WARRANTY START DATE): _____ / _____ / _____
MO. DAY YR.

SELLING DEALER IMPRINT HERE

Foreword

Thank you for purchasing a Sterling 360™ vehicle.

This manual provides information needed to operate and understand the vehicle and its components. Not all of the information contained in this manual applies to every vehicle.

For your reference, keep this manual in the vehicle at all times.

Lubrication

When performed on a regular basis, lubricating the parts of your vehicle is the least costly way of obtaining safe and reliable vehicle operation. Added benefits and savings occur when you check that the engine, undercarriage, and noise emission control parts are in good working order during lubrication.

This manual explains when you should lubricate parts and what to look for when checking for wear or damage.

Environmental Concerns and Recommendations

Whenever you see instructions in this manual to discard materials, you should attempt to reclaim and recycle them. To preserve our environment, follow appropriate environmental rules and regulations when disposing of materials.

NOTICE: Parts Replacement Considerations

Do not replace suspension, axle, or steering parts (such as springs, wheels, hubs, and steering gears) with used parts. Used parts may have been subjected to collisions or improper use and have undetected structural damage.

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Symbols and alert messages

- Descriptions and specifications in this manual were in effect at the time of printing. Sterling Truck Corporation reserves the right to discontinue models and to change specifications or design at any time without notice and without incurring obligation. Descriptions and specifications contained in this publication provide no warranty, expressed or implied, and are subject to revisions and editions without notice.
- The following symbols are used throughout this handbook:
 -  : optional equipment
 -  : cross-reference to another page that contains relevant information about the subject.
- This manual contains important hazard messages under the following four headings that identify the nature and importance of the information:

DANGER 

Imminent hazards that will result in severe personal injury or death.

WARNING 

Hazards or unsafe practices that could result in severe personal injury or death.

CAUTION 

Hazards or unsafe practices that could result in minor personal injury and/or damage to products or property.

NOTE:

Relevant information that is helpful or informative but not associated with any risk or hazard.

- California Proposition 65 Warning

DANGER 

THIS PRODUCT CONTAINS OR EMITS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

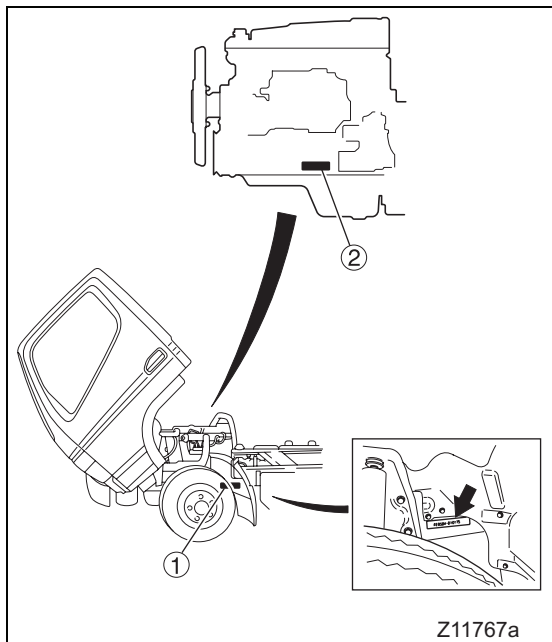
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Each chapter has a table of contents on its first page.

1. About your vehicle

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Chassis and engine numbers

When ordering replacement parts or requesting repairs, provide the chassis number ① and engine number ②.

1 Chassis number

The chassis number is located on the left frame rail, behind the front wheel.

Example: FE84DD - □□□□□□

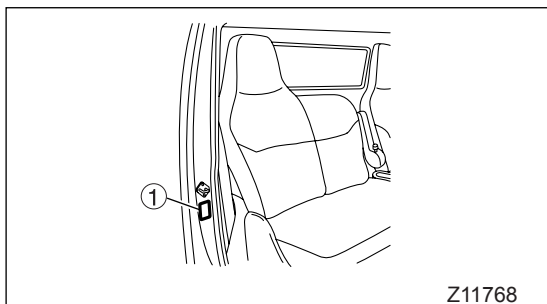
Chassis number
Vehicle model

2 Engine number

The engine number is located on the left-hand side of the crankcase.

Example: 4M50 - □□□□□□

Engine number
Engine model



Power line label

The power line label ① is located on the passenger's B-pillar door post. It gives the vehicle model, chassis number, and information about the components of the powertrain: engine, transmission, and axle.



The VIN includes 17 coded numbers and letters.
The coding is given below.

	J	L	S	A	A	E	1	S	■	7	K	■■■■■■■	
	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	
① Country							J:	Japan					
② Make							L:	Mitsubishi Fuso					
③ Vehicle type							S:	Sterling incomplete vehicle					
④ Gross vehicle weight / Brake system							A:	10,001 to 14,000 lb / Hydraulic					
							B:	14,001 to 16,000 lb / Hydraulic					
							C:	16,001 to 19,500 lb / Hydraulic					
							D:	19,501 to 26,000 lb / Air over hydraulic					
							E:	26,001 to 33,000 lb / Air over hydraulic					
							F:	26,001 to 33,000 lb / Full air					
⑤ Line							A:	Sterling 360 COE 30					
							B:	Sterling 360 COE 40/45					
							C:	Sterling 360 COE 50					
⑥ Series (wheel base)							C:	2.60 to 2.89 m					
							D:	2.90 to 3.19 m					
							E:	3.20 to 3.49 m					
							F:	3.50 to 3.79 m					
							G:	3.80 to 4.09 m					
							H:	4.10 to 4.39 m					
							J:	4.40 to 4.69 m					
							K:	4.70 to 4.99 m					
							L:	5.00 to 5.29 m					
							M:	5.30 to 5.59 m					
							N:	5.60 to 5.89 m					
							P:	5.90 to 6.19 m					
⑦ Cab chassis type							1:	COE 4X2 chassis cab					
⑧ Engine							E:	Proprietary 6M60 7.5 L inline 6 Diesel					
							S:	Proprietary 4M50 4.9 L inline 4 Diesel					
⑨ Check digit													
⑩ Model year							7:	2007					
⑪ Plant							K:	Kawasaki					
⑫ Plant sequential serial number													

Maintenance

Regular maintenance will improve the performance of your vehicle and extend its service life. It is recommended that you make a habit of performing the following inspections.

In this manual, you will find simple maintenance checks and procedures that can be carried out by the owner. If you have difficulty, or your vehicle needs work that is not described in this manual, please contact an authorized Sterling service facility.

1 Engine run-in period

To avoid overburdening a new engine, limit engine speed to 1800 revolutions per minute (rpm) for the first 600 miles (1000 km).

After this initial run-in period, gradually increase engine speed, starting with the lower gears.

2 Pretrip inspection

Inspect your vehicle at the start of each working day. This will ensure continued safe and comfortable operation.

⇒ P. 11-7

3 Initial maintenance

After you have traveled the first 2500 miles (4000 km), your vehicle needs a free initial maintenance procedure. When this mileage has been reached, bring your vehicle to an authorized Sterling dealer and show them this manual.

At 2500 miles (4000 km), have the dealer do the following:

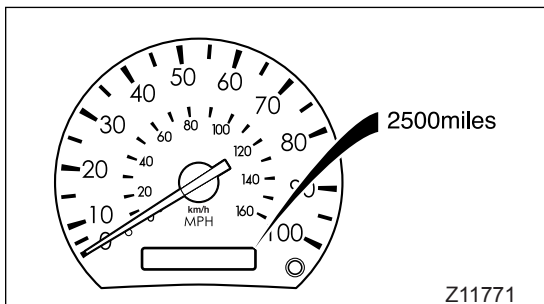
- Replace the engine oil, manual transmission oil, and rear axle oil. ⇒ P. 11-17
- Check and adjust valve lash. ⇒ P. 13-4
- Tighten the wheel nuts. ⇒ P. 11-53
- Tighten the suspension U-bolts. ⇒ P. 13-4

4 Maintenance program

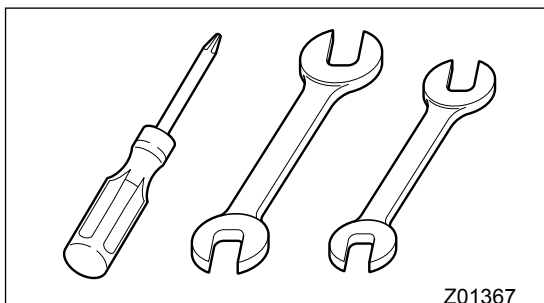
Recurring maintenance lengthens the vehicle's service life and can help prevent accidents. Recurring maintenance can be based on either distance traveled (odometer reading), or length of service (hour-meter reading).

Maintenance intervals for each recurring item are shown in the maintenance schedule. Please follow the maintenance schedule.

⇒ P. 14-2



Z11771



Z01367

Fuel

Use only diesel fuel conforming to the following recommendations, without any additives, for diesel engines installed in the Sterling 360.

1 Diesel fuel properties

The following recommendations concerning diesel fuel used with Mitsubishi Fuso diesel engines are given for optimum fuel economy and performance.

Use condition	Recommendation
Normal operation at temperatures above 10°F (–12°C)	ASTM D-975 Grade Low Sulfur Grade 2-D*
Operation at temperatures below 10°F (–12°C), or long-hour no-load operation.	ASTM D-975 Grade Low Sulfur Grade 1-D*

NOTE:

* ASTM is an acronym for the American Society for Testing and Materials. ASTM recommends fuel containing 0.05% or less sulfur content.

Sulfur content that exceeds 0.05% causes the performance of the emission control device to deteriorate.

To meet precise fuel requirements, obtain cooperation from a reputable supplier of diesel fuel. The fuel supplier and the vehicle operator are both responsible for keeping the fuel clean.

2 Danger of fire and explosion resulting from fuel mixtures

Fuel containing 5% gasoline has a flash point as low as 32°F (0°C), which can lead to a fire or explosion while the engine is running.

DANGER

NEVER MIX DIESEL FUEL WITH GASOLINE, GASOHOL OR ALCOHOL.

USE OF FUEL MIXED WITH ONE OR MORE OF THESE COULD LEAD TO A FIRE OR EXPLOSION INVOLVING SERIOUS INJURY, DEATH OR PROPERTY DAMAGE. IF YOU ACCIDENTALLY USE GASOLINE OR ALCOHOL WHEN REFUELING THE VEHICLE, REMOVE ALL OF IT FROM THE FUEL SYSTEM.

3 Adverse effects of fuel mixtures

Using diesel fuel mixed with gasoline, alcohol, or both, has the following adverse effects on the engine:

- Excessive wear, damage, and failure of fuel system parts, as a result of lower fuel viscosity.
- Difficulty in starting the engine, as a result of reduced cetane number.

CAUTION

- The lower the cetane number, the more likely internal engine damage will occur.
- Do not add antifreeze agents or other substances to the fuel. They could damage the engine's fuel injection system.
- Be sure to clean the fuel tank cap and breather regularly. If they become so dirty that the breather gets blocked, the fuel tank may suffer damage and the fuel injection system may fail.

4 Refueling

WARNING

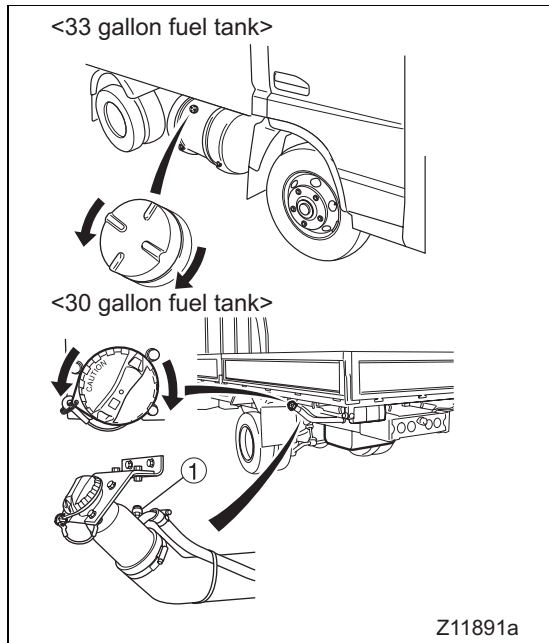
- Do not refuel with the engine running. Shut down the engine before fueling.
- Diesel fuel is combustible. Wipe up any spilled fuel. Do not smoke while refueling.
- If you inadvertently put gasoline in the fuel tank, pump it all out. Do not run the engine with gasoline in the tank.

Any of these practices can cause a fire or explosion, which could result in burn injuries or loss of life.

NOTE:

If the vehicle runs out of fuel and air enters the fuel lines, bleed the fuel system before starting the engine.

⇒  P. 12-23



- **33-gallon fuel tank**

This fuel tank is on the left-hand side of the vehicle. To open the filler cap, slowly turn it counterclockwise. To close the cap, turn it clockwise. Be sure the cap is fully closed.

Fuel tank capacity
33.0 gallons (125 liters)

- **30-gallon fuel tank **

This optional fuel tank is at the rear of the vehicle. To open the filler cap, slowly turn it counterclockwise. To close the cap, turn it clockwise until you hear a click.

Fuel tank capacity
29.8 gallons (113 liters)

WARNING

- When filling the fuel tank using a gun-type fuel pump, do not continue pumping after the pump automatically stops. (The tank is full at this point.)
- When filling the fuel tank using any other method, stop as soon as the fuel level becomes visible through the fill opening. If the fuel level reaches the bottom of the opening, fuel may leak through the check valve ① when the vehicle starts and stops. If fuel leaks, carefully wipe it all up.
- If the pointer of the fuel level gauge is above the "F" mark, do not add any more fuel.

Overfilling the fuel tank can cause a fire, which could result in burn injuries and loss of life.

Reporting safety defects

If you believe that your vehicle has a defect that could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Sterling Truck Corporation.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Sterling Truck Corporation.

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153); go to <http://www.safercar.gov>; or write to: Administrator, NHTSA, 400 Seventh St., SW, Washington, DC 20590.

You can also obtain other information about motor vehicle safety from <http://www.safercar.gov>.

Canadian customers who wish to report a safety-related defect to Transport Canada, Defect Investigations and Recalls, may telephone the toll-free hotline 1-800-333-0510, or contact Transport Canada by mail at: Transport Canada, ASFAD, Place de Ville Tower C, 330 Sparks Street, Ottawa, Ontario, Canada K1A 0N5.

For additional road safety information, please visit the Road Safety website at: <http://www.tc.gc.ca/roadsafety/menu.htm>.

Obtaining service

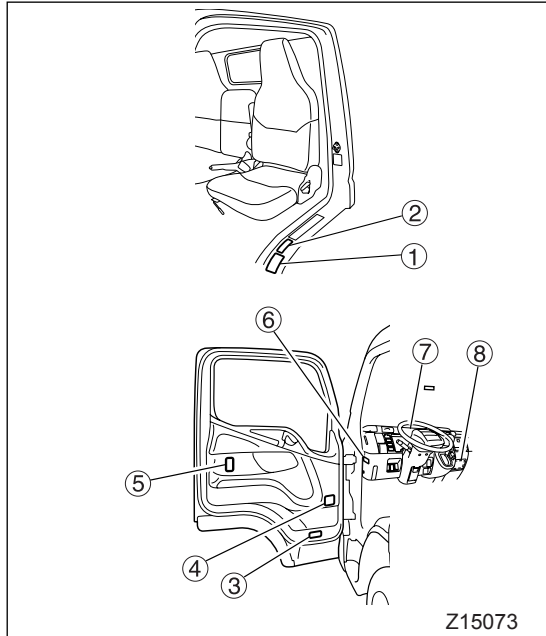
Customer Assistance Center

Having trouble finding service? Call the Customer Assistance Center at **1-800-785-4357** or **1-800-STL-HELP**. Call night or day, weekdays or weekends, for dealer referral, vehicle information, or breakdown coordination. Our people are knowledgeable, professional, and committed to following through to help you keep your truck moving.

2. Warning labels

Locations in cab	2-2
Locations outside cab	2-4

Locations in cab



Z15073

- The caution and warning labels give important information. Be sure to read them before using the vehicle.
- If any label has become so damaged or dirty that it is difficult to read, please inform an authorized Sterling dealer. The warning and caution labels apply only to the vehicle itself. For vendor equipment mounted on the vehicle, please refer to the equipment manufacturer's manual.
- The locations of the caution and warning labels are shown in the illustration below. Samples of each label are supplied on this and the following pages.

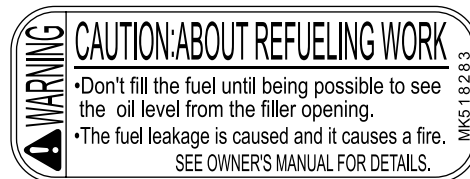
① Limited-slip differential OPT.

CAUTION FOR VEHICLE WITH LIMITED SLIP DIFFERENTIAL

1. NEVER ROTATE THE WHEEL WITH ONLY ONE REAR WHEEL JACKED UP.
2. USE ONLY SPECIFIED L.S.D. OIL.

Z10690

② 30-gallon (113-liter) fuel tank OPT.



Z12494

③ Voltage



Z11770

④ Hydraulic brake booster
<Sterling 360 COE 50>**CAUTION**

(Hydraulic Brake Booster)

- The brake system has a power assisting device that utilizes the hydraulic pressure generated by the power steering pump to boost the brake control pressure.
- With the engine stopped, depress the brake pedal and listen to a sound to make sure that the auxiliary electric pump for brake system power assistance is activated.

See owner's manual for details.

Z11693

⑤ Towing <Automatic transmission>

WARNING

TOWING;
BEFORE TOWING
A DISABLED
VEHICLE,
DISCONNECT
DRIVELINE OR
PULL AXLE SHAFTS
OR TOW WITH
REAR WHEELS
SUSPENDED.

Z11666

⑥ Hydraulic brake system bleeding
<Sterling 360 COE 50>**CAUTION**

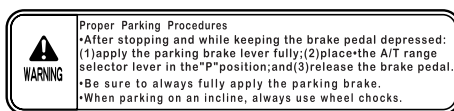
(Brake system air bleeding)

Stop the engine until you
have completed the brake
fluid replacement.

See shop manual for details.

Z11694

⑦ Parking <Automatic transmission>



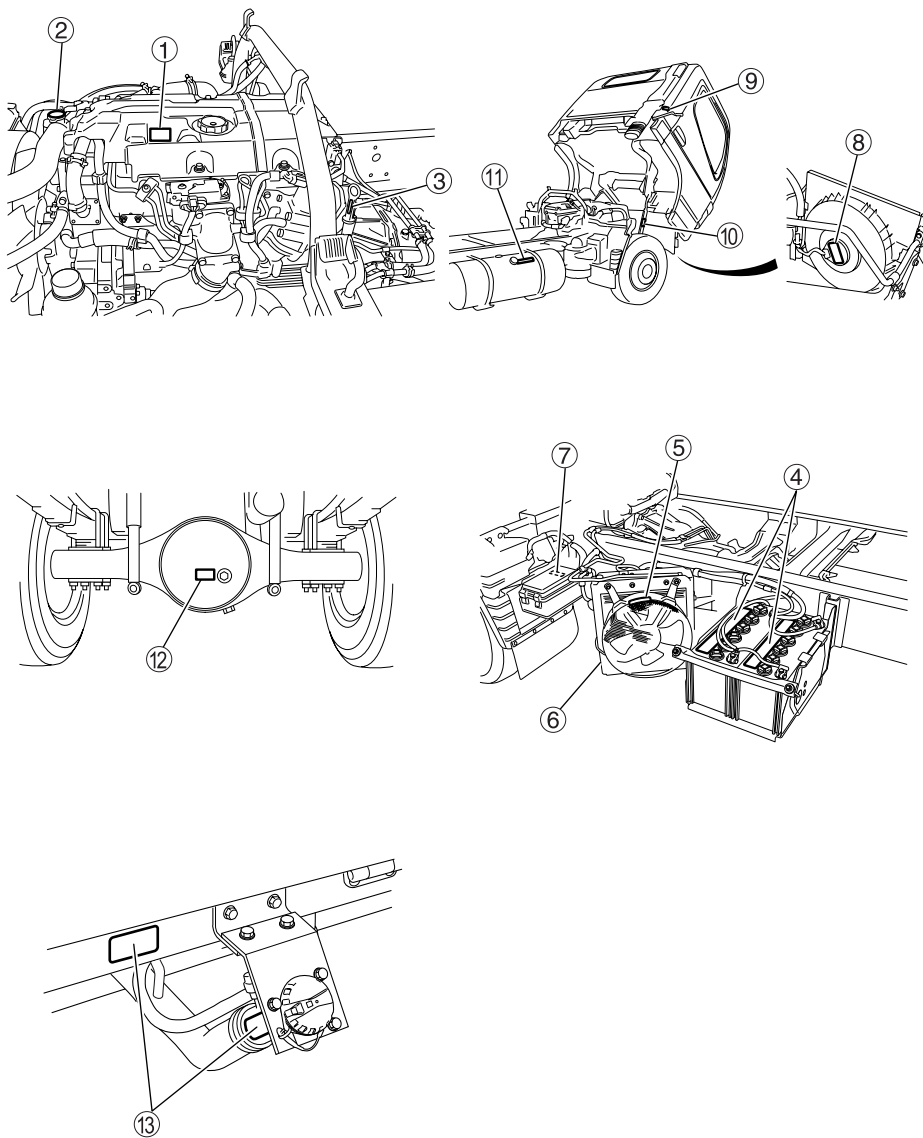
Z14889

⑧ Main fuse box

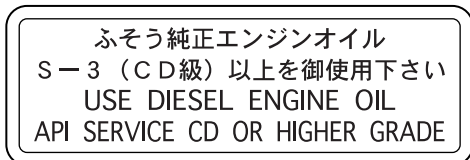
												DIAGNOSIS											
STARTER	OBS/LIGHTER	AUDIO	OPT(ACC)				TESTER	HEAD LAMP (H/L)	TAIL LAMP (T/L)	HEAD LAMP (H/L)	TAIL LAMP (T/L)	DIAG	DIAG	DIAG	DIAG	DIAG	DIAG	DIAG	DIAG	DIAG	DIAG		
10A	15A	10A	10A	10A	10A	10A	15A	20A	20A	10A	10A	5A	10A	10A	10A	10A	10A	10A	10A	10A	10A		
B1	A1	A2	A3	A4	A5	A6	B10	B11	B14	B15	B16	A/T	ABS					ENGINE ECU					
BACK LAMP	METER	WIPER	OPT (M)	RELAY CONTROL	A/T		EXH BRAKE	ENGINE ECU	ABS	STOP LAMP	TURN LAMP	OPT (B)	AUDIO	ROOM LAMP	POWER WINDOW	POWER WINDOW	POWER WINDOW	ENGINE ECU	HEATER	MIRROR	A/T		
10A	10A	15A	10A	10A	10A	10A	10A	5A	10A	10A	10A	10A	10A	10A	10A	10A	10A	10A	10A	10A	10A		
M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10		
USE THE DESIGNATED FUSES ONLY.												12V(NAS) MK421715											

Z12564

Locations outside cab



① Engine oil



Z10084

② Radiator pressure cap



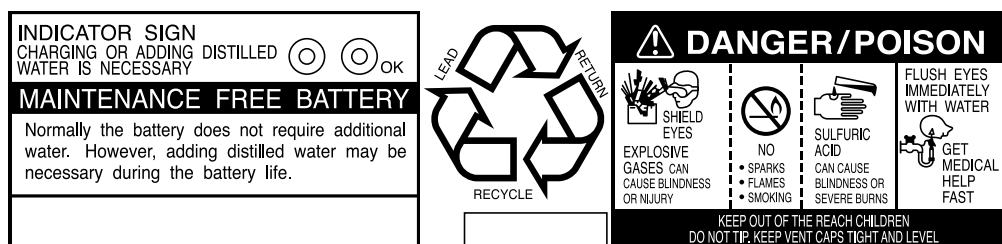
Z08670

③ Automatic transmission fluid (ATF)



Z12549

④ Battery



Z11680

⑤ ATF cooling fan <Automatic transmission>



Z11844

⑥ ATF cooler <Automatic transmission>



Z11773

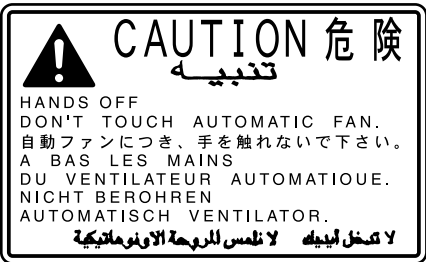
2-6 *Warning labels*

⑦ High-amp fuse box



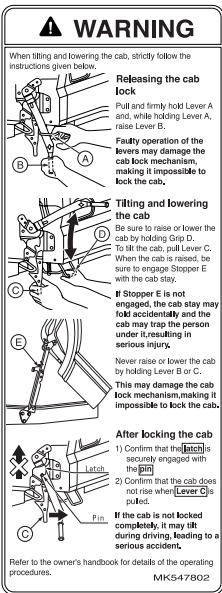
Z11803

⑧ Air conditioner



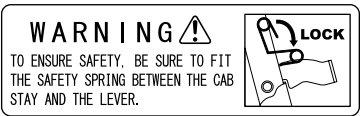
Z13208

⑨ Cab tilt reference



Z14891

⑩ Cab tilt safety



Z11804

⑪ 33-gallon (125-liter) fuel tank



Z11678

⑫ Limited-slip differential

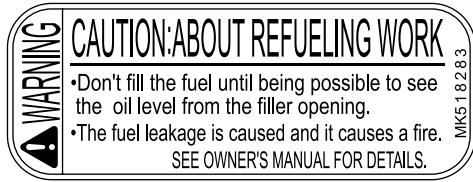


Z10707

2-7

Warning labels

- ⑬ 30-gallon (113-liter) fuel tank 



Z12494

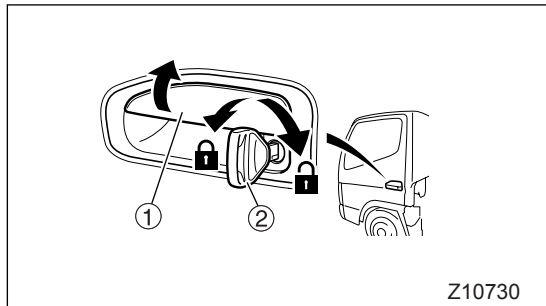
3. Vehicle access

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Doors

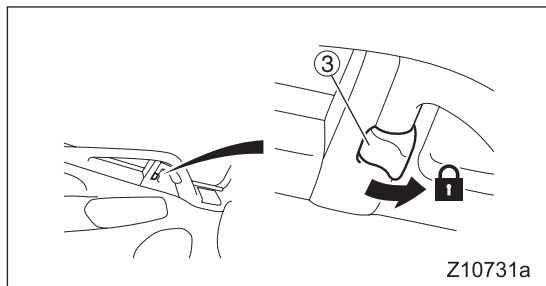
WARNING

- To prevent injuries, before opening either door, check for vehicles and pedestrians approaching from behind.
- Driving with a door ajar can cause an injury. Make sure the doors are completely closed before starting the vehicle.
- Exercise caution when opening a door in strong wind. Otherwise, the wind could catch the door and suddenly blow it open, causing a personal injury.
- Exercise caution when opening a door on a downward slope. Otherwise, the inclination of the vehicle could cause the door to suddenly fall open, causing a personal injury.
- Never leave a child alone in the cab. A child left in the cab could inadvertently operate the controls, causing an accident or injury. Be particularly careful in hot weather, because a child left in the cab could suffer heatstroke.



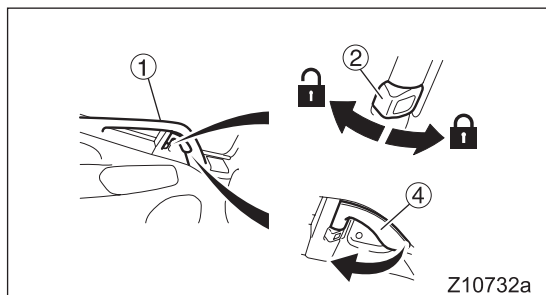
1 From the outside

- To open, pull the outer handle ① toward you.
- Use the ignition key ② to lock or unlock the door.
- It is possible to lock each door without using the ignition key. On the driver's door or passenger's door, push the lock button ③ forward, then close the door as you pull out on the exterior door handle.



NOTE:

- If you lock the driver's door using the ignition key or lock button, the passenger's door locks automatically. However, if you unlock the driver's door using the ignition key or lock button, the passenger's door remains locked. Only the driver's door is unlocked.
- When you leave your vehicle, be sure to remove the ignition key from the ignition switch to prevent theft.
- Be careful not to lock the doors with the ignition key inside the vehicle.

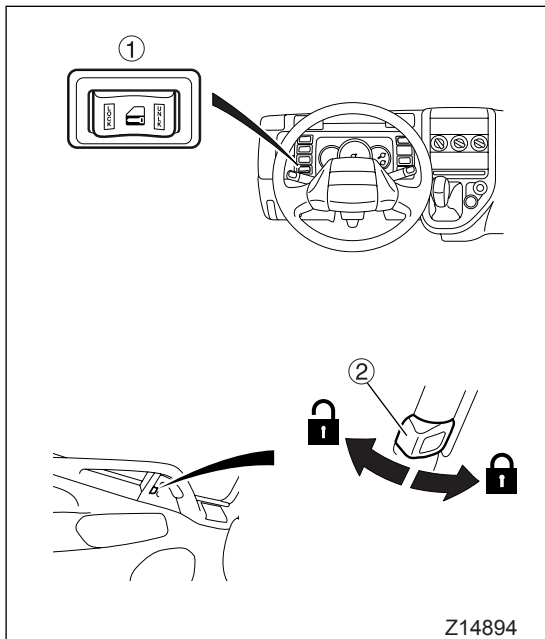


2 From the inside

- To close, use the door grab handle ①. Close the door completely.
- To lock the driver's door or passenger's door, push the lock button ② forward.
- To unlock and open the driver's door or passenger's door, push the lock button toward the rear of the vehicle, and then pull the interior door handle ④.

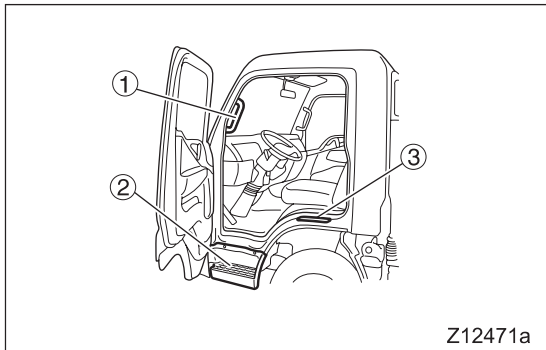
CAUTION

Use the grab handle to close the door. Closing the door in any other way could damage the door mechanism.



Master door locks

- When the “LOCK” side of the switch ① is pressed, both doors are locked. When the “UNLK” side of the switch is pressed, both doors are unlocked.
- When the lock button ② on the driver’s door is pushed forward, the passenger’s door is also automatically locked. If the lock button on either door is subsequently pushed rearward, only that door is unlocked.
- When the driver’s door is locked from the outside using the ignition key, the passenger’s door is automatically locked at the same time. If the ignition key is subsequently used to unlock either door, the other door remains locked.



Entering and exiting the vehicle

WARNING ⚠

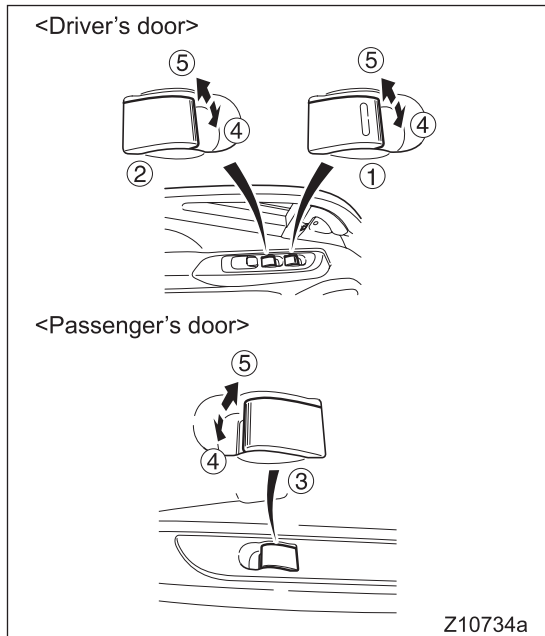
- Always face in when exiting the cab. Do not attempt to exit with your back to the cab, as you would when going down a flight of stairs. Never put your foot on the wheel or tire. It is easy to slip and lose your balance.
- The step can become slippery in rain or snow. To prevent injury, firmly hold the A-pillar grab handle while climbing into or down from the vehicle. Holding the A-pillar grab handle is particularly important when snow has settled and frozen on the step.
- Wet or dirty shoe soles greatly increase the chance of slipping or falling. If your soles are wet or dirty, be especially careful when entering or exiting the vehicle. If you slip when exiting this way, there is a greater likelihood of personal injury.
- Always maintain three-point contact with the vehicle while entering and exiting the cab. Three-point contact means both feet and one hand, or both hands and one foot.
- Do not hold luggage or other items in your hands when entering or leaving the vehicle. This could cause an injury.
- Do not jump down from the vehicle. Jumping down from the vehicle could cause a fall or injury.
- Take care when entering or leaving the vehicle on a slope, or in a strong wind. The door could open or close suddenly and cause an injury.

CAUTION ⚠

- Use the cab access system (grab handles, access step, and steering wheel) to enter or exit the cab. Do not use any other part of the vehicle as a handhold, since it could break.

Hold the A-pillar grab handle ① tightly and put your foot fully on the step ② when entering or exiting the vehicle. If you place your hand on the fender, put it on the non-skid surface ③.

Door window



WARNING

Do not allow anyone to put their hands or head out of a window. The head or hands could hit an object outside the vehicle, and cause a serious injury.

1 Power window switches

WARNING

- When closing the window, always make sure that there is nothing in the way of the window glass as it rises. A closing window could cause a personal injury. Never allow a child to open or close the window.
- When a child is in the cab, be sure to press the power window lock switch to prevent the child from opening and closing the passenger's window. Otherwise, the child may accidentally operate the power window switch and get hands or head trapped.

The power window switches function only when the ignition switch is in the "ON" position.

On the driver's door, there are two switches: switch ① for controlling the driver's window and switch ② for controlling the passenger's window.

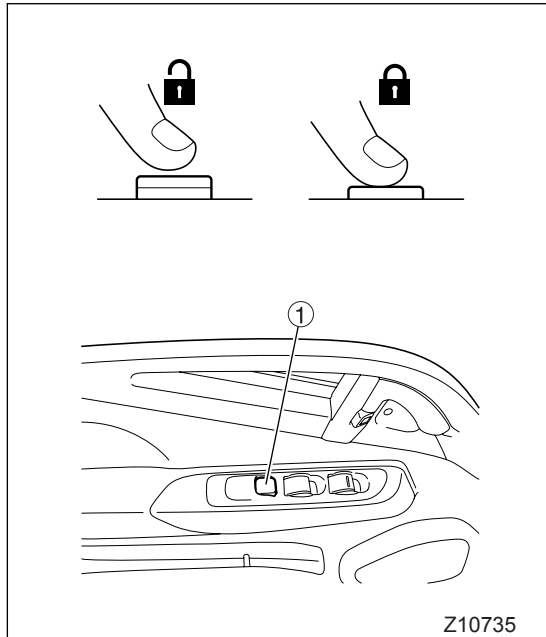
③ Switch for passenger's window.

④ To open the window, press the switch in.

⑤ To close the window, raise the switch up.

CAUTION

Do not keep any door or window open in rainy weather, and be careful not to spill liquid on any of the window switches. If water or any other liquid gets on a window switch, it can cause a malfunction.



2 Power window lock switch

WARNING ⚠

When a child is in the cab, be sure to press the power window lock switch to prevent the child from opening and closing the passenger's window. Otherwise, the child may accidentally operate the power window switch and get hands or head trapped.

Press the power window lock switch ① to prevent the passenger's window from being opened or closed.

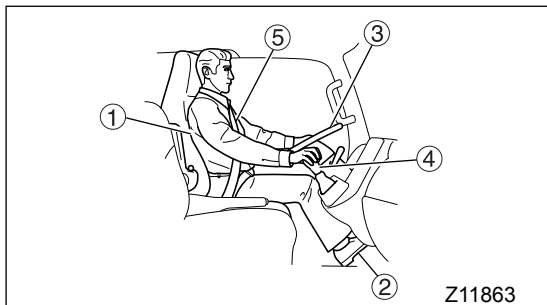
Press the switch a second time to release the lock.

CAUTION ⚠

Do not keep any door or window open in rainy weather, and be careful not to spill liquid on any of the window switches. If water or any other liquid gets on a window switch, it can cause a malfunction.

4. Seat and steering wheel adjustments

Seats	4-2
Seat belts	4-4
Steering wheel	4-7



Seats

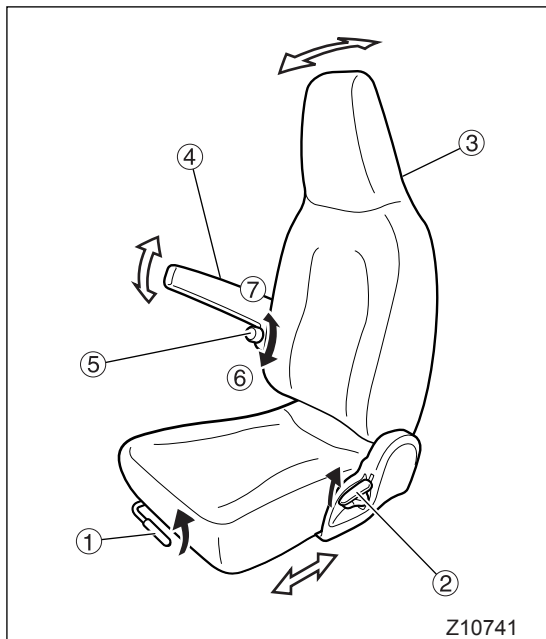
WARNING

- To prevent injury, do not adjust the seat while the vehicle is in motion. The seat may move more than you intend. Stop the vehicle and set the parking brake before performing any adjustment to the seat.
- After you have adjusted the seat, gently move or rock the seat to ensure that it is locked in the desired position. If the seat moves while driving, it could result in an injury.
- When adjusting the seat, keep your hands away from the bottom of the seat and from moving parts of the seat. If your hands and fingers become trapped in the seat mechanism, you could suffer an injury.
- When adjusting the angle of the backrest, keep your back or hand pressed against it. If the backrest suddenly returned to its original position, it could cause an injury.

1 Driver's seat

1.1 Correct driving position

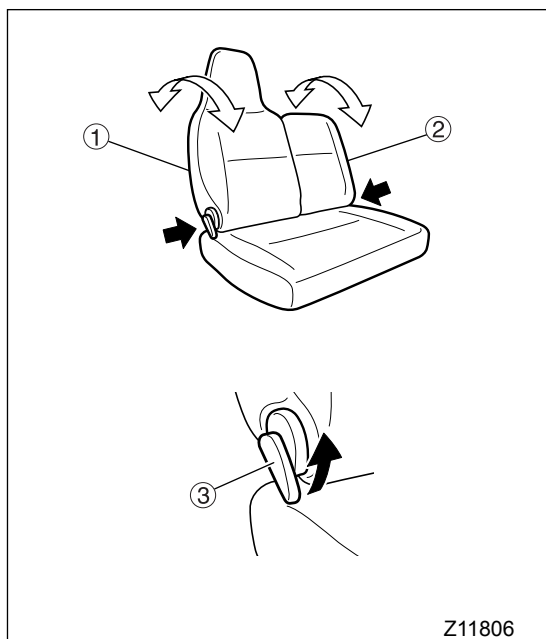
- Before driving the vehicle, adjust the seat. Please take note of the following:
 - ① Your back must touch the backrest, and you must be able to see the warning lamps and gauges.
 - ② You must be able to reach and firmly press the pedals.
 - ③ You must be able to operate the steering wheel and switches with ease.
 - ④ You must be able to operate the shift lever with ease.
 - ⑤ You must be able to fasten the seat belt correctly.
- Adjust the steering wheel to a position that allows you to operate comfortably with your arms slightly bent.



1.2 Making adjustments

- Slide the seat forward or backward while raising the seat slide lever ①. After making the adjustment, release the lever and move the seat back and forth slightly to lock it in position.
- To adjust the angle of the backrest ③, raise the backrest tilt lever ②.
- Lower the armrest ④ to use it. Turn the armrest knob ⑤ to adjust the height of the armrest in its lowered position.

- ⑥ Up
- ⑦ Down



2 Passenger's seat

- ① Passenger's seat
- ② Middle seat

- Pull the backrest tilt lever ③ to adjust the backrest angle. While holding the lever, grasp the top of the backrest and move it forward or backward to adjust the backrest angle as desired.
- After adjusting the backrest angle or returning the backrest to its original position after tilting it forward, gently rock the backrest to make sure it is locked in place.
- On the passenger's seat, it is possible to bring the backrest fully forward. While holding the lever, grasp the backrest at the top and pull it forward.



Seat belts

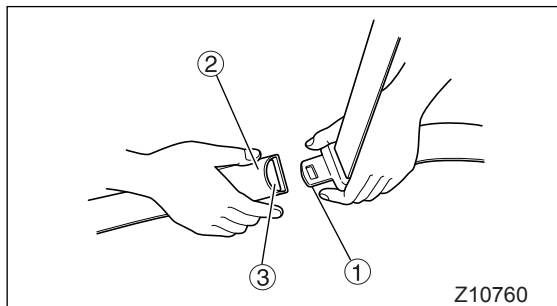
- To help prevent injury in the event of a sudden stop or accident, the driver and all passengers must wear their seat belts properly fastened.
- Before fastening your seat belt, sit back in your seat with your back straight. If a seat belt is used correctly, it can prevent or lessen the seriousness of an injury.
- For details of seat belt usage for children and pregnant women, see "Seat belt safety."

⇒  P. 4-6

WARNING

- To prevent injury, passengers must never be in the cargo area while the vehicle is in motion. Do not move the vehicle unless all passengers are seated, with their seat belts properly fastened.
- Seat belts should be worn as low as possible over the hips. Wearing a seat belt across the abdomen could cause an injury since undue pressure would be placed on internal organs in the event of a collision.
- Make sure that the seat belt is not twisted when fastening it. A twisted seat belt could cause an injury. Its reduced width would apply a larger force to a smaller part of your body in the event of impact.
- Always stop the vehicle before attempting to adjust your seat belt. To fasten or unfasten your seat belt while driving could lead to a serious accident.

- Never use a single seat belt for more than one person. A seat belt is not designed to protect two persons at once.
- Replace any seat belt if it is cut or frayed, or if its buckle does not work properly. A damaged or malfunctioning seat belt might not provide adequate protection in an emergency.
- The left and right seats are equipped with 3-point lap and shoulder belts with Emergency Locking Retractor (ELR), while the middle seat has a 2-point lap belt.



1 Shoulder belt fastening and unfastening

NOTE:

It is not necessary to adjust the length of these seat belts.

A seat belt with ELR extends and retracts automatically as its wearer moves. In the event of a sudden stop or shock, it locks automatically to protect its user.

The belt's tightness should be adjusted automatically. If there is any looseness, lift the shoulder belt gently and the mechanism will take up the slack. With the belt properly tightened, the risk of it slipping off in a collision is reduced.

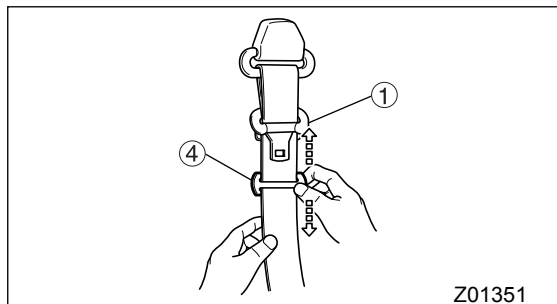


1.1 Fastening

1. Hold the belt link ① and gently extend the belt. If the belt locks or is difficult to extend, let it retract and pull it gently again.
2. Take care that the belt does not become twisted. Insert the link into the buckle ② until you hear a click.
3. Pull on the link to confirm that it is firmly fastened.
4. Adjust the belt so it is across your hips and shoulder.

1.2 Unfastening

1. Press the release button ③ to unlock the buckle.
2. The belt automatically retracts when unlocked. To prevent the link causing damage or injury, hold it while the belt retracts.
3. Adjust the slide ④ to put the link in an easy-to-reach position and prevent it from slipping.



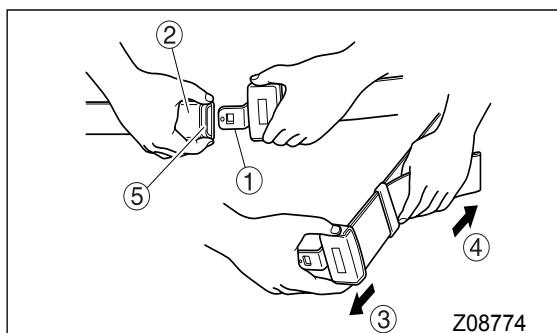
2 Lap belt

2.1 Fastening

1. Take care that the belt does not become twisted. Insert the link ① into the buckle ② until you hear a click.
2. Pull on the link to confirm that it is firmly fastened.
3. Adjust the belt so it is low across your hips.
4. To adjust the belt's length, hold the link at 90° to the belt.
5. Pull the belt end to shorten the belt or the link end to lengthen it.

③ To lengthen

④ To shorten



2.2 Unfastening

1. Press the release button ⑤ to unlock the buckle.
2. When the belt is not in use, insert the link into the buckle.

WARNING !

For maximum protection in the event of an accident, the belt must not be loose. A properly tightened belt can prevent injuries.

3 Seat belt safety

3.1 Children and infants

- When carrying children or infants, restrain them properly. This will minimize the risk of injury in the event of a sudden stop or accident. Never allow children to stand or kneel on the seats. For maximum safety, we recommend fitting and using a restraint system that complies with Federal Motor Vehicle Safety Standards.
- The use of child and/or infant restraint systems is mandatory in some states. Please abide by your state's regulations.
- Older children may sit on the regular seats and use the regular seat belts. However, make sure that the shoulder belts do not go across their necks or faces.

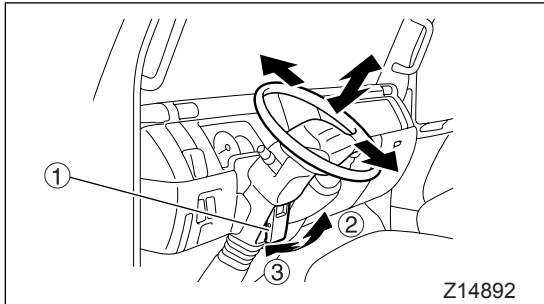
3.2 Pregnant women

- Since a seat belt could exert undue pressure on the abdomen in the event of an accident, pregnant women should consult a doctor about the use of seat belts before riding in the vehicle.
- A pregnant woman should wear her seat belt as low as possible across the hips, not across her abdomen.

4 Seat belt care

- Periodically, check the action of the mechanical parts, such as the buckles, links, and emergency locking retractor (ELR) units. Check also for any damage that could stop the seat belts from functioning properly.
- Replace the seat belt unit if there is any malfunction or damage.
- Replace any webbing that is cut, frayed, or otherwise damaged.
- After a collision, replace any seat belts that were in use during the collision.
- Keep sharp or other potentially damaging objects away from the seat belts, especially the webbing.
- Keep the seat belts clean and dry. Use a mild soap and lukewarm water to clean seat belts. Solvents, such as gasoline or thinner, may seriously affect the strength of the webbing. ⇒  P. 11-66
- Never attempt to bleach or dye the seat belts, as this could weaken them a great deal.
- Do not attempt to remove the seat belts or disassemble the ELR units.

Steering wheel



WARNING

- After every adjustment, try to move the steering wheel back and forth to make sure that it is securely locked. Unless the adjusting lever returns to its original locked position, the steering wheel may move while the vehicle is in motion. This could cause an accident.
- Make adjustments to the steering wheel with the vehicle stationary. Adjusting the steering wheel while driving could cause an accident.

The steering wheel can be adjusted to the preferred height and tilted forward/backward.

- Pull the adjusting lever ① to release the steering column. Adjust the steering wheel until it is in the most comfortable position.
- Push the adjusting lever in to lock the steering column.

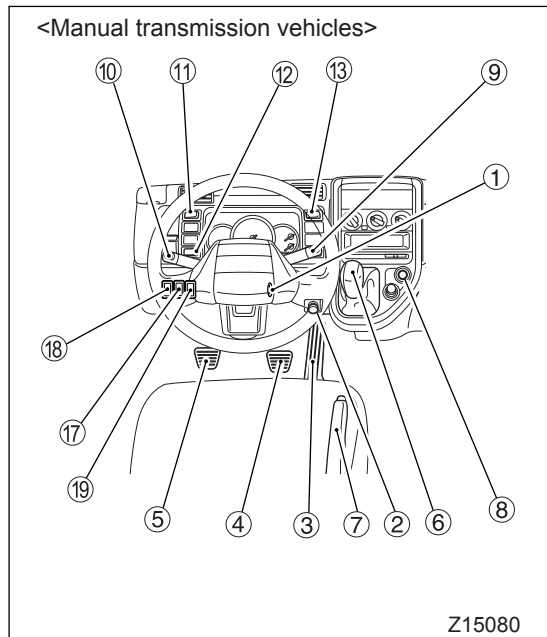
- ② Release
- ③ Lock

5. Switches and controls

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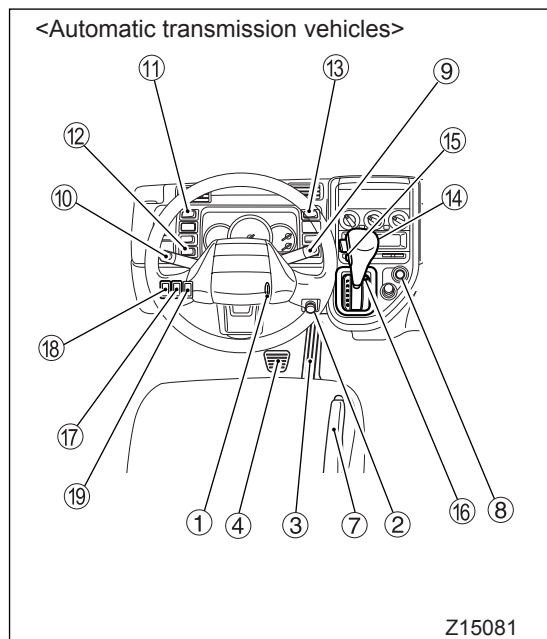
5-2

Switches and controls



Arrangement of switches and controls

- ① Ignition switch
- ② Engine idle control
- ③ Accelerator pedal
- ④ Brake pedal
- ⑤ Clutch pedal
- ⑥ Shift lever <manual transmission>
- ⑦ Parking brake
- ⑧ Hazard flashers
- ⑨ Multifunction switch, R/H side
(wiper/washer switch, exhaust brake switch <manual transmission>)
- ⑩ Multifunction switch, L/H side
(headlight switch, headlight high beam dimmer, turn signal switch)
- ⑪ Low oil level switch ⇒ P. 11-18
- ⑫ Master door lock switch ⇒ P. 3-4
- ⑬ Engine warm-up switch
- ⑭ Shift selector <automatic transmission>
- ⑮ Overdrive lockout switch
- ⑯ Shift lock release knob
- ⑰ Panel light switch
- ⑱ Dome light switch
- ⑲ Mirror heat switch, optional



Ignition switch

WARNING

Never turn the ignition switch to any position other than “ON” while driving the vehicle. Turning the ignition switch to the “ACC” position would create the following problems:

- The engine would shut down.
- Braking force would be greatly reduced.
- The vehicle would become extremely hard to steer.
- The electric circuits for the telltale lights and gauges would stop working. Electrical parts could fail.

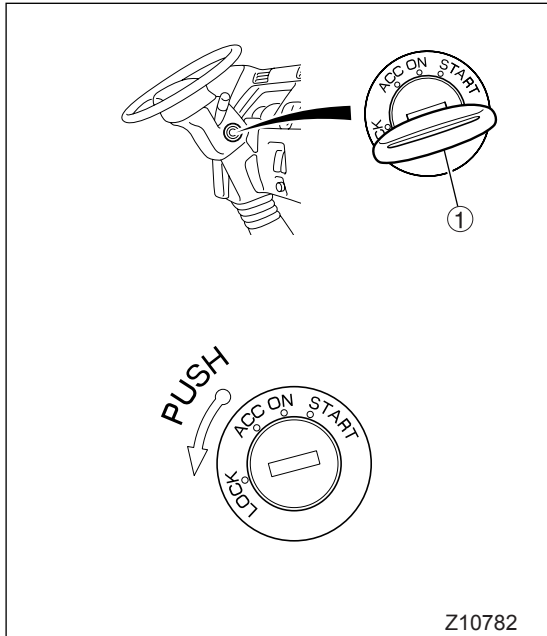
When the ignition key is removed from the switch, the steering wheel locks, making steering impossible. Doing any of these things could cause an injury accident or loss of life.

CAUTION

- Do not turn the ignition switch to the “START” position while the engine is running. This could damage the starter.
- The ignition key cannot be turned from the “ACC” position to the “LOCK” position unless it is pressed in. Do not attempt to turn it by force, since this could damage the switch. Keep the key pressed in while turning it from the “ACC” position to the “LOCK” position.
- If you park the vehicle over an extended period of time, always place the key in the “LOCK” position and remove it from the ignition switch. Leaving the key in the “ON” or “ACC” position could run down the battery.
- Avoid using the “ACC” position for long periods, since this could completely discharge the battery. *Example:* listening to the radio with the engine shut down.

5-4

Switches and controls



- **LOCK**

The ignition key ① can be inserted and removed only in the "LOCK" position. To place the key in "LOCK," turn it to the "ACC" position, then press it in, and keep it pressed in while turning it to "LOCK." When the key is removed, the steering wheel locks.

In "LOCK," the headlight switch, panel light switch, hazard flashers, interior lights, horn, master door locks, and turn signals operate.

- **ACC**

Use the "ACC" position only when the engine is shut down.

In "ACC," the cigarette lighter operates. Audio equipment (radio, etc.) installed and connected in the approved manner also operates.

- **ON**

Use the "ON" position when the engine is running.

All electrical circuits operate.

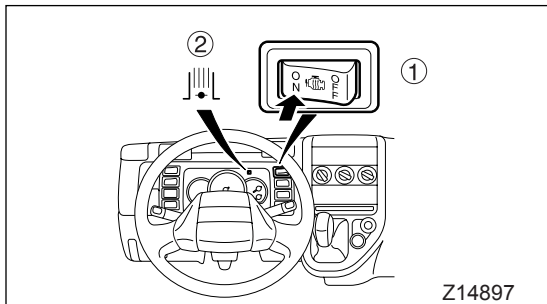
- **START**

Use the "START" position for cranking and starting the engine.

Once the engine is running, release the key and the switch will automatically return to "ON."

NOTE:

- Do not turn the key until it is fully inserted into the ignition switch.
- If you are unable to turn the key, gently turn the steering wheel back and forth as you turn the key.



Engine warm-up switch

- To warm up the engine quickly, or to make the heater work more effectively when the vehicle is not moving, turn ON the engine warm-up switch ①. The exhaust brake begins to operate and the exhaust brake indicator ② illuminates.

⇒ P. 5-10

- When the exhaust brake operates, the idle speed of the engine increases and the engine warms up more quickly.
- When the engine has finished warming up, the exhaust brake stops operating. The exhaust brake indicator turns off.
- Once the engine has warmed up and/or the heater is working satisfactorily, turn OFF the engine warm-up switch.

NOTE:

- Before driving, turn OFF the engine warm-up switch. This deactivates the exhaust brake.
- The exhaust brake is used when the vehicle is not moving to make the engine warm up more quickly and to make the heater work more effectively on cold days.
- When the exhaust brake is turned ON, the engine's idle speed increases automatically. As a result, the coolant warms up more quickly.

Engine idle control

WARNING

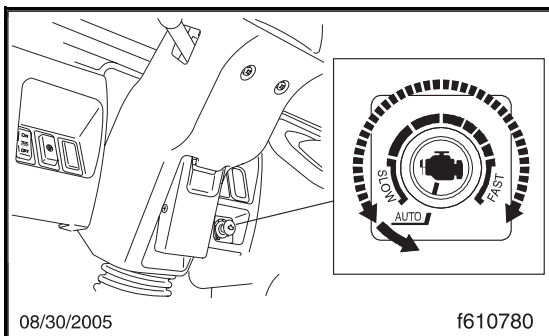
Do not attempt to use the engine idle control to increase engine speed while the vehicle is in motion. It will be impossible to control the vehicle's speed using the accelerator pedal. This could cause an injury accident or loss of life.

CAUTION

- Be sure to set the engine idle control to the AUTO position while driving. Driving with the engine idle control in any other position can cause abrupt startups or premature clutch wear.
- Turn the engine idle control gently. Forcing it could damage the internal mechanism.
- If the idle speed is set too low, the engine may become extremely noisy. Make sure the idle speed is correct.

NOTE:

If the engine idle control is used to increase engine speed while the engine warm-up switch is ON, the engine may produce black smoke. Before turning ON the engine warm-up switch, be sure to set the engine idle control to AUTO.



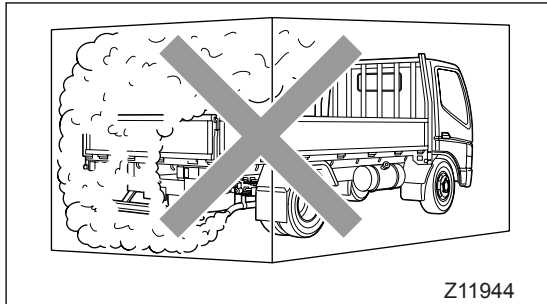
- **Automatic control**

Engine speed is automatically controlled by monitoring the engine coolant temperature. The engine speed automatically decreases as the coolant temperature rises.

- **Manual control**

Turn the dial on the engine idle control clockwise to increase engine speed. Turn it counterclockwise to decrease engine speed. While driving, keep the engine idle control in the AUTO position.

Engine idle speed
625 to 675 rpm



Starting the engine

WARNING

- Diesel exhaust will replace the air in an enclosed area, possibly resulting in unconsciousness or death.
- Make sure that there are no flammable materials under or behind the parked vehicle, or, in particular, close to the exhaust pipe. A fire could be started by the heat from the engine or exhaust pipe.
- When you start the engine, be sure to sit in the correct position on the driver's seat to wait for the engine to warm up. If you are leaning out of the door window or otherwise incorrectly seated and the vehicle suddenly moves, an injury accident could occur.

CAUTION

- Only push-start the engine when it is unavoidable. It is impossible to push-start an automatic transmission vehicle. Push-starting any vehicle can damage the transmission.
- Do not use ether or other vapor compound starting aids. Use of any such fluids could result in serious engine damage.

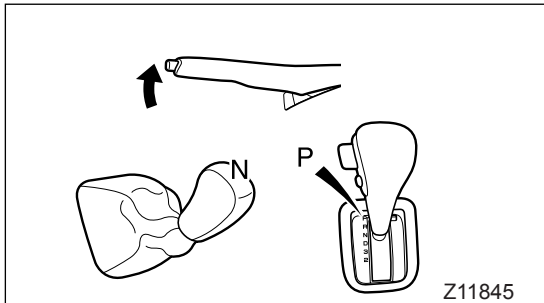
Do not allow the engine to warm up in a garage or other closed area. When starting the engine or entering or leaving a garage, do not run the engine for longer than is necessary.

If you smell exhaust gases inside the cab, inspect the exhaust pipe and check whether exhaust gases are leaking through holes or cracks caused by corrosion or damage. If exhaust gases are leaking, have the exhaust pipe inspected by an authorized Sterling service facility.

If exhaust gases come into the cab, ventilate the cab with fresh air by opening the doors and windows. Be sure to bring the vehicle to an authorized Sterling service agency for inspection and repairs.

NOTE:

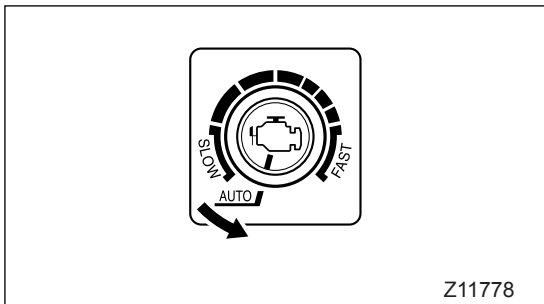
- When the engine has started, allow it to warm up until the needle in the coolant temperature gauge starts to move.
- Do not operate the starter continuously for more than 15 seconds. This could damage the starter or discharge the battery.
- If you operate the starter continuously for 10 seconds and the engine still does not start, turn the ignition switch to the "ACC" position and wait about 30 seconds for the battery to recover before performing the starting procedure again.
- Immediately after starting the engine, use the engine idle control to adjust the engine speed. This can prevent needless racing of the engine.
- On a vehicle that has not been operated for a week or more, or after replacement of the engine oil or the engine oil filter, be sure to crank the engine before starting it.
- If the engine pre-heat  indicator does not illuminate in cold weather, the fuse for the preheating circuit may have blown and should be inspected. ⇒  P. 12-13
- If the engine pre-heat  indicator flashes, the preheating circuit is malfunctioning. Have it inspected by an authorized Sterling service facility.
- In a cold-weather area, use a high-capacity battery to improve engine startability.



1 Pre-starting steps

Do the following steps before starting the engine to make sure the vehicle does not move inadvertently.

1. Set the parking brake. Make sure the parking brake is fully applied.
2. Manual transmission vehicles:
Place the shift lever in neutral.
Automatic transmission vehicles:
Move the shift selector to "P" (park).
3. If not already done, set the engine idle control to the AUTO position.



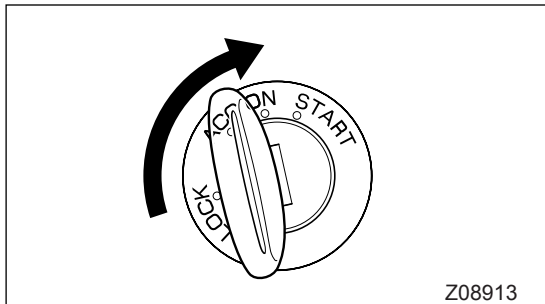
NOTE:

For safety, the engine in a manual transmission vehicle cannot be started unless the shift lever is in the neutral position.

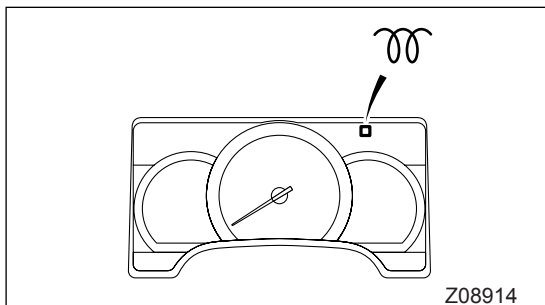
In an automatic transmission vehicle, the engine cannot be started unless the shift selector is in "P" (park) or "N" (neutral). It is safer to start the engine with the shift selector in "P" (park). Start the engine with the shift selector in "N" (neutral) only when absolutely necessary; for example, if the engine stops while the vehicle is on a railroad crossing.

2 Starting procedure

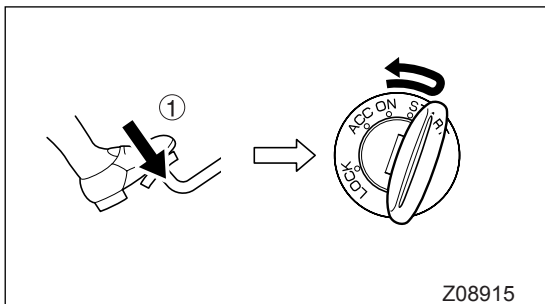
1. Turn the ignition switch to the "ON" position.



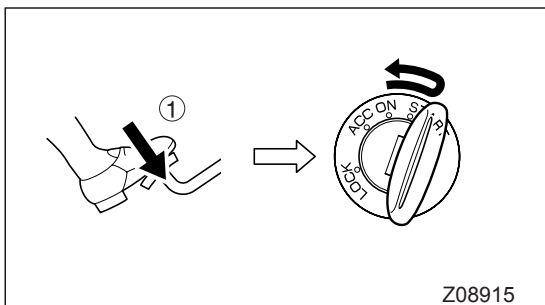
2. Check whether or not the engine pre-heat  indicator illuminates.

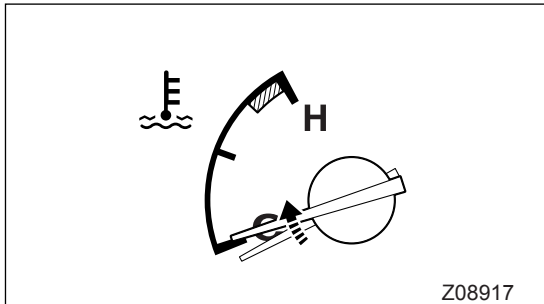


- If the engine pre-heat  indicator does not illuminate, hold down the clutch pedal ① and turn the ignition switch to the "START" position to start the engine. Do not depress the accelerator pedal.



- If the engine pre-heat  indicator illuminates, wait until it goes off. After the light goes off, hold down the clutch pedal and turn the ignition switch to the "START" position to start the engine.





3. After the engine has started, let it warm up until the needle on the coolant temperature gauge begins to move. →  P. 5-10

3 Starting the engine when the vehicle has been parked for an extended period

When the vehicle is not used for a week or more, or the engine oil and oil filter are replaced, the engine becomes starved for oil. Before starting the engine, pre-crank the engine according to the following procedure. The pre-cranking procedure distributes oil throughout the engine.

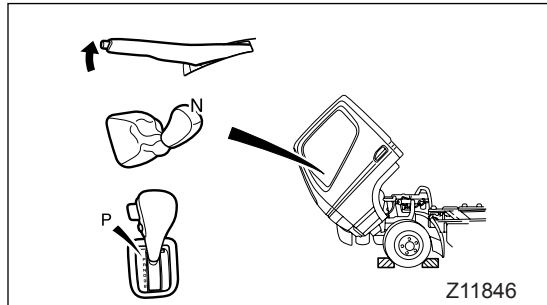
WARNING

To ensure maximum safety, be sure to set the parking brake. Chock the wheels to prevent the vehicle from moving accidentally. This could cause an injury accident.

CAUTION

Pre-cranking the engine is essential to protect the turbocharger.

1. Make sure the parking brake is fully applied.
2. Manual transmission vehicles:
Place the shift lever in neutral.
Automatic transmission vehicles:
Move the shift selector to "P" (park).
3. Without depressing the accelerator pedal, place the ignition switch in the "START" position and pre-crank the engine for about 15 seconds.
If the engine starts, release the ignition key and do not depress the accelerator pedal for about 15 seconds.

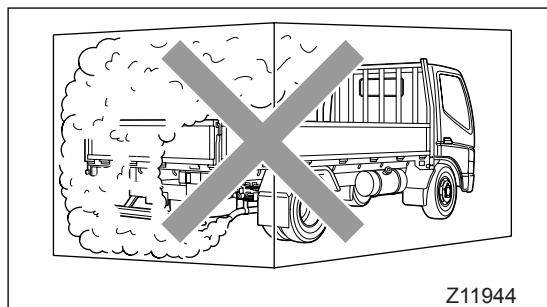


4 Starting the engine with the cab tilted

When you need to start the engine with the cab tilted for inspection or servicing purposes, be sure to observe the following safety precautions:

- Set the parking brake firmly and chock the wheels.
- With a manual transmission vehicle, make sure that the gearshift lever is in the neutral position. With an automatic transmission vehicle, make sure that the shift selector is in "P" (park).
- Make sure nobody is near the engine compartment, then place the ignition switch in the "START" position to start the engine.

Warming up the engine



WARNING

- Do not warm up the engine in a garage or other closed area. When starting the engine or entering or leaving a garage, do not run the engine for longer than is necessary. Diesel exhaust will replace the air in an enclosed area, possibly resulting in unconsciousness or death.
- Make sure that there is no flammable material under or behind the parked vehicle; in particular, close to the exhaust pipe. A fire could be started by the heat from the engine or exhaust pipe.

CAUTION

Racing the engine immediately after it has started causes excessive wear of cylinders and pistons and leads to engine malfunction. Using the following procedures, warm up the engine to normal operating temperature before attempting full-load operation.

If you smell exhaust gases inside the cab, inspect the exhaust pipe and check whether exhaust gases are leaking through holes or cracks caused by corrosion or damage. If exhaust gases are leaking, have the exhaust pipe inspected by an authorized Sterling service facility.

If exhaust gases that have leaked from the exhaust pipe come into the cab, ventilate the cab with fresh air by opening the windows fully or by opening the doors. Be sure to bring the vehicle to an authorized Sterling service agency for inspection and repairs.

NOTE:

Idling the engine for a long time wastes fuel. It wastes natural resources and causes air pollution. Shut down the engine whenever you leave the vehicle, even for a short period.

If the engine has been idling for a relatively long time, the muffler may give off white smoke during acceleration. This is a normal effect of the catalytic converter. If you start to drive immediately after starting the engine (while the engine is still cold), you will encounter the following problems:

- In a cold-weather area, the cold engine will cause the fuel to ignite poorly, and the engine may knock.
- If the idle speed is too low, the engine will be abnormally noisy. Be sure to return the idle speed to the appropriate value.

With the engine idle control turned to the automatic control position, the engine's idle speed is adjusted automatically. To make the engine warm up more quickly, take the following steps:

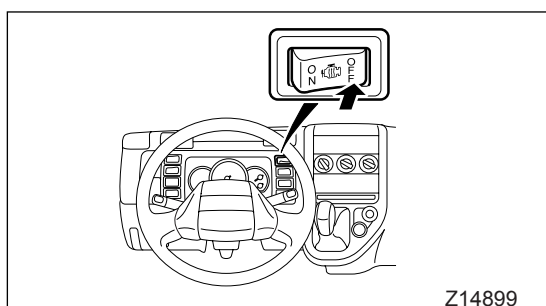
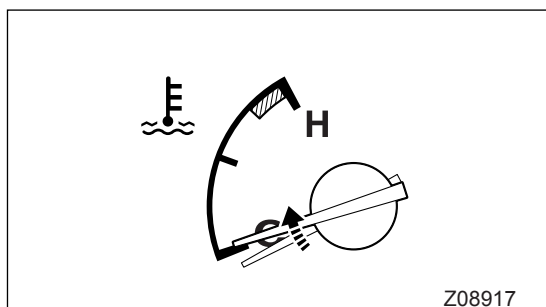
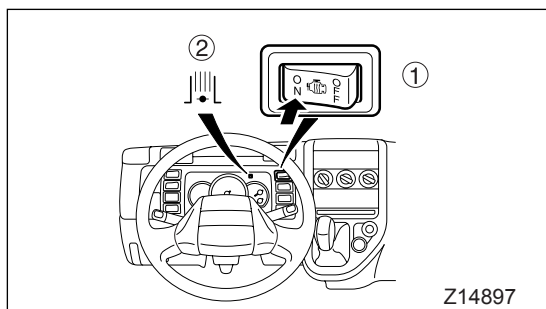
1. After the engine starts, turn ON the engine warm-up switch ①. The exhaust brake indicator ② will illuminate, the engine speed will start to increase, and the exhaust brake will operate.

NOTE:

Before turning ON the engine warm-up switch, be sure to set the engine idle control to the AUTO position. Black smoke may be produced if the engine warm-up switch is turned ON with the engine idle speed raised.

2. Continue to let the engine warm up until the needle on the coolant temperature gauge starts to move. When the coolant temperature rises sufficiently, the engine warm-up process stops automatically and the exhaust brake indicator goes out.

3. Turn OFF the engine warm-up switch.



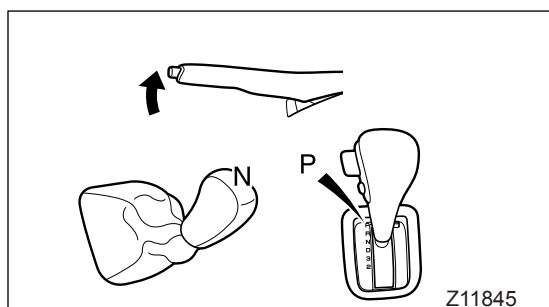
Shutting down the engine

WARNING

- Never allow the vehicle to coast with the engine shut down. This could cause damage to the fuel injection system, diminish braking efficiency, and make steering extremely difficult. This could cause an injury accident or loss of life.
- The engine and exhaust pipe are extremely hot just after stopping the vehicle. Avoid parking the vehicle where the exhaust pipe could set fire to flammable materials such as dry grass. A fire could cause personal injury, property damage, or loss of life.

CAUTION

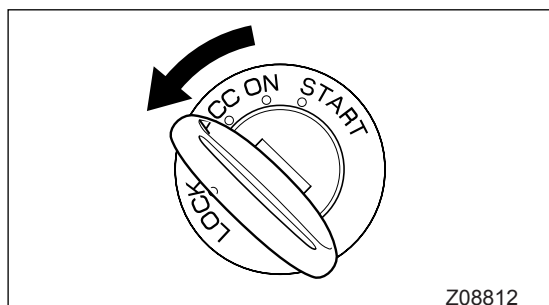
Allow the engine to idle for at least 3 minutes before shutting it down. Engine shutdown at high RPM could cause an engine malfunction.



1. Hold down the brake pedal and set the parking brake.
2. Manual transmission vehicles:
Place the shift lever in neutral.
Automatic transmission vehicles:
Move the shift selector to "P" (park).
3. Allow the engine to idle for more than 3 minutes before shutting it down, especially after prolonged driving under heavy load.

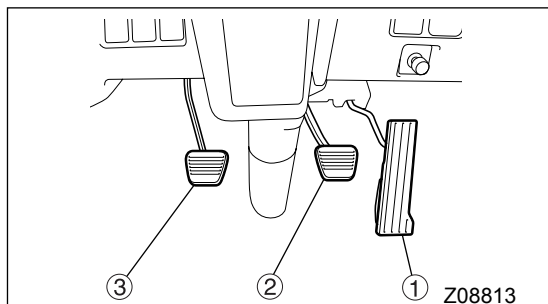
NOTE:

When the vehicle is operating, engine parts become extremely hot, especially during uphill or high-speed driving. Therefore, allow some time for the engine to idle before shutting it down.



4. To shut down the engine, turn the ignition switch to the "ACC" position. To remove the key, turn the ignition switch to the "LOCK" position.

Pedals



① Accelerator pedal

WARNING ⚠

If you use a floor mat, lay it correctly and make sure it is suitable for the size of the vehicle. The floor mat must not cover the accelerator pedal or block the return of the accelerator pedal when it is released. Improperly placed floor mats could cause an injury accident.

Racing the engine increases fuel consumption.

② Brake pedal

WARNING ⚠

Do not allow empty beverage cans or other objects to get under the brake pedal and interfere with brake pedal movement. Keep the floor free of any objects that could obstruct the operation of the pedal and cause an injury accident.

- If the DISC BRAKE warning light illuminates while the vehicle is being driven, the disc brake pads may need replacement. Have the disc brake pads inspected at an authorized Sterling service facility.
- As a bulb check, the DISC BRAKE warning light illuminates when the ignition switch is turned on and goes off approximately three seconds later. This is normal.
- Use the brake pedal correctly. Do not over-brake or brake suddenly. ⇨ P. 7-7

③ Clutch pedal

NOTE:

The clutch pedal is installed only on vehicles with manual transmission.

- Do not ride the clutch pedal (drive with your foot on the pedal). This can shorten the service life of the clutch. Riding the clutch pedal could prevent the engine brake and exhaust brake from taking effect.
- Depress the clutch pedal fully when changing gears. If you do not depress the clutch pedal far enough, the clutch will slip, possibly damaging the clutch discs.

Shift lever

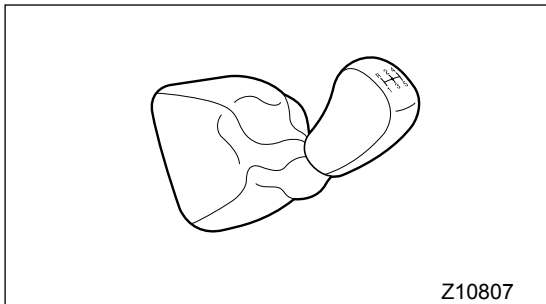
<Manual transmission vehicles>

WARNING

When backing up, always double check to make sure that there is nothing in your path. If there are pedestrians in the area, or hazards are present, use a backing guide. This could prevent an injury accident and loss of life.

CAUTION

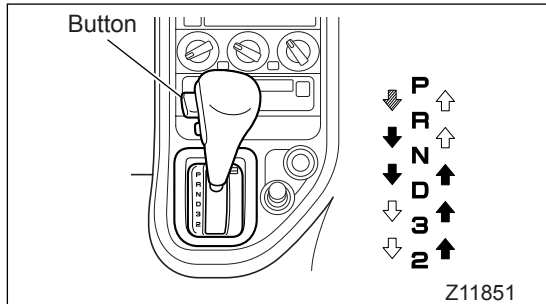
- To prevent transmission damage, come to a complete stop before shifting from any forward gear into reverse, or vice versa.
- When the shift lever is in neutral, do not keep your hand on the lever. Hand pressure is transmitted to the gears and can damage the transmission.
- When shifting, depress the clutch pedal fully before operating the shift lever. Shifting with the clutch partly engaged can damage the transmission.
- The gear pattern is inscribed on the top surface of the shift lever.
- When the shift lever is placed in reverse (R), the backup lights illuminate. At the same time, the backup buzzer sounds.



Shift selector

<Automatic transmission vehicles>

Use the shift selector to select gear ranges. Select lever positions carefully to ensure proper engagement of each gear.



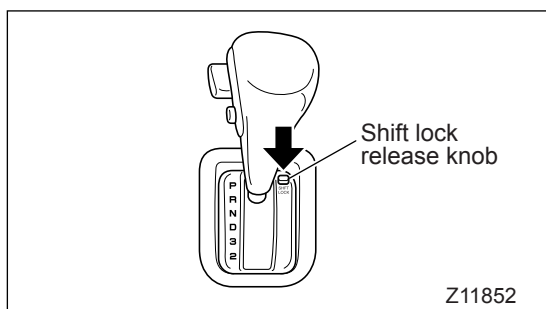
1 Using the shift selector

- ✎ : While depressing the brake pedal, push the button and move the shift selector out of "P" (park). The lever cannot be moved unless the ignition switch is in the "ON" position.
- ⇒ : Push the button and move the shift selector to the desired position.
- ➡ : Move the shift selector to the desired position without pushing the button.

NOTE:

- Use the button when shifting down from "D" (drive) to "3" or "2", or when shifting up from "N" (neutral) into "R" (reverse) or "P" (park), as indicated by the white arrows (⇒) in the illustration.
- Never push the button on the shift selector when shifting up from "3" or "2" or down from "N" (neutral) into drive, as indicated by the black arrows (➡) in the illustration. With the button pressed, the lever could unexpectedly slip into the "P", "R", "3" or "2" position.
- For safety, the shift selector cannot be moved out of "P" (park) unless the brake pedal is depressed.
- Even with the brake pedal depressed, the shift selector cannot be moved if the ignition switch is in the "LOCK" position or "ACC" position.

If the shift selector cannot be moved out of "P" (park) even with the ignition switch in the "ON" position and the brake pedal depressed, move the shift selector while pushing the shift lock release knob. This problem can be caused by an electrical fault. Bring the vehicle to an authorized Sterling service facility for inspection.



2 Ranges

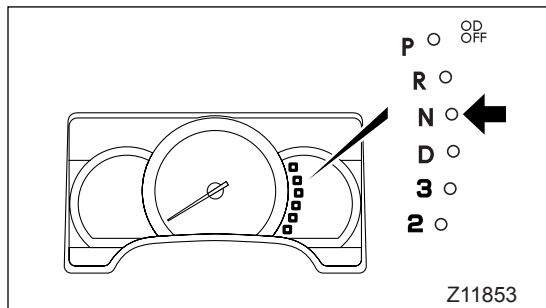
- P: Use "P" when not moving. *Example:* to start or warm up the engine. Insert or remove the ignition key with the shift selector in "P."
- R: Use "R" for backing up. The backup lights illuminate, and a warning buzzer sounds.
- N: The engine can be started with the shift selector in "N", but it is safer to use "P."
- D: Use "D" for normal driving. With the overdrive lockout switch in the "ON" position (overdrive on), the transmission shifts automatically from 1st through 6th gears. With the overdrive lockout switch in the "OFF" position (overdrive locked out), the transmission shifts automatically from 1st through 4th gears.

- 3: Use "3" to drive at low speed or when engine braking is needed on a downhill grade. The transmission shifts automatically from 1st through 3rd gears.
- 2: Use "2" for driving on steep hills and through mud and snow. This position provides the most powerful engine braking effect. The transmission shifts automatically from 1st through 2nd gears.

CAUTION

When driving downhill with the shift selector in the "3" or "2" position, use the service brakes as necessary to prevent engine overspeed (keep the tachometer needle out of the red zone).

For convenience, a gear indicator in the instrument cluster shows the position of the shift selector.



WARNING

When backing up, always double check to make sure that there is nothing in your path. This could prevent an injury accident.

CAUTION

- To prevent transmission damage, come to a complete stop before shifting from any forward gear into reverse, or vice versa.
- Do not place the shift selector in "P" (park) or "N" (neutral) while the vehicle is moving. This could cause transmission damage.

NOTE:

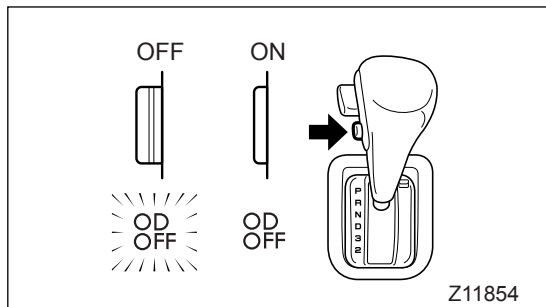
When the weather is cold and the temperature of the transmission fluid is low, a cold weather program is implemented to accelerate transmission warm-up. Note that this program will be terminated when the fluid reaches a suitable temperature.

As a result of this program:

- It may become difficult to make automatic gear shifts.
- When the fluid temperature is extremely low, the transmission may remain locked in 3rd gear when the gearshift level is in the "D", "3", or "2" position. Reverse will however be possible in the "R" position.

If the fluid temperature is high, an overheat program is implemented to protect the transmission. This may make it impossible to shift to 5th or 6th gear. Once the temperature has dropped to a suitable level, full function of the 6-speed automatic transmission will be restored.

When travelling downhill, the grade and load conditions will be evaluated automatically. Where necessary, the transmission will automatically shift into the correct gear. This will make it easier to downshift on steep grades and under heavy load.



Overdrive lockout switch

<Automatic transmission vehicles>

Overdrive can be switched on and off with the switch located on the shift selector.

When the switch is in the "OFF" position, an ^{OD} OFF indicator illuminates.

• Overdrive ON

Overdrive should be switched on as desired for normal driving and always for high-speed driving. With the transmission in "D" (drive), shifts are made automatically from 1st through 6th gears, and fuel consumption is minimized.

In cold weather, the transmission may not initially make automatic shifts into 5th and 6th gears due to low fluid temperature. This condition is normal and will be resolved as the fluid temperature rises.

• Overdrive OFF

Overdrive should be switched off when engine braking is needed on a downhill grade or on long uphill grades. In "D" (drive), the transmission shifts automatically from 1st through 4th gears.

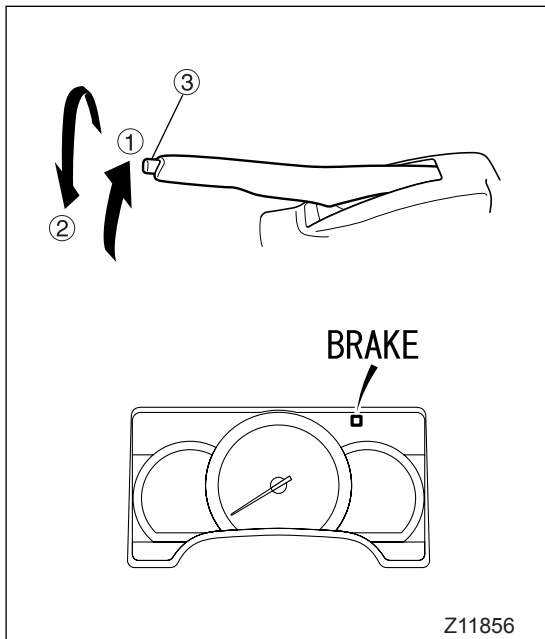
NOTE:

Even with the overdrive lockout switch in the "OFF" position, the transmission will select 5th and 6th gears if there is any risk of engine overspeed.

Parking brake lever

WARNING ⚠

- Do not use the parking brake when the vehicle is in motion except in an emergency. **Example:** The service brakes have failed. Such use of the parking brake may make the vehicle spin or roll over, causing a personal injury or loss of life. It may also cause damage to vehicle components.
- Illumination of the ^{BRAKE} warning does not necessarily indicate that the parking brake has been fully activated. Be sure to pull the lever all the way. The vehicle could roll, causing an injury or loss of life.



① Parking

To set the parking brake, pull the lever all the way out. The **BRAKE** warning illuminates at the same time.

② Releasing

Raise the lever slightly, press and hold the release button ③, and lower the lever with the release button still pressed. Make sure that the **BRAKE** warning goes out.

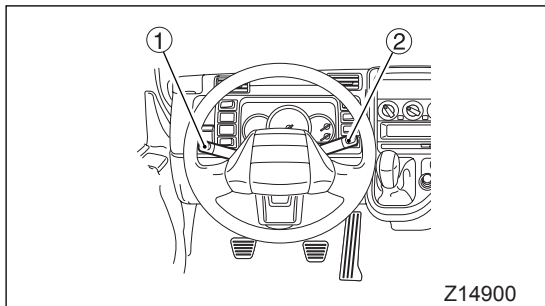
- When parking, please bear in mind the cautions in "Parking", chapter 7. ➔ P. 7-12

WARNING ⚠

When parking your vehicle on a hill, chock the wheels for safety. This could prevent an injury accident.

CAUTION ⚠

- Before putting the vehicle in motion, completely release the parking brake lever and check that the **BRAKE** warning light is not illuminated. If you accidentally drive the vehicle with the parking brake set, the parking brake will wear prematurely and overheat, leading to reduced effectiveness and the risk of a fire.



Multifunction switches

1 Arrangement of switches

- ① Headlight switch
Headlight high-beam dimmer
Turn signal switch
- ② Exhaust brake switch <manual transmission>
Wiper/washer switch

2 Headlight switch

CAUTION ⚠

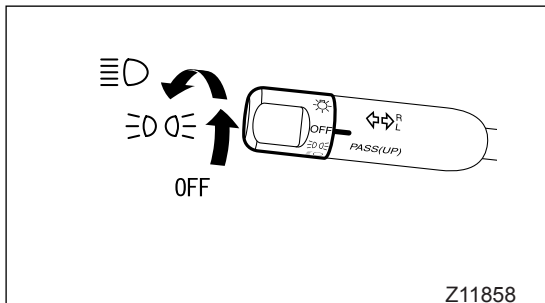
Keeping the headlights on for a long period without the engine running can drain the battery, making the engine difficult to start.

The headlight switch operates at any position of the ignition switch.

There are three positions for the headlight switch: OFF, (auxiliary lights), and (full).

NOTE:

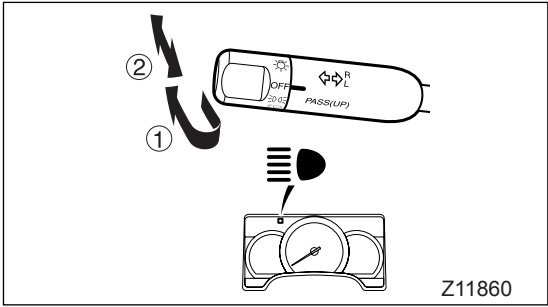
The auxiliary lights include the identification, clearance, and side marker lights, the parking lights, tail-lights, and license plate light, and the gauge lights on the instrument cluster.



Position	Auxiliary lights	Headlights
OFF	Off	DRLs*
☞☝	On	DRLs*
☞☝☞	On	On

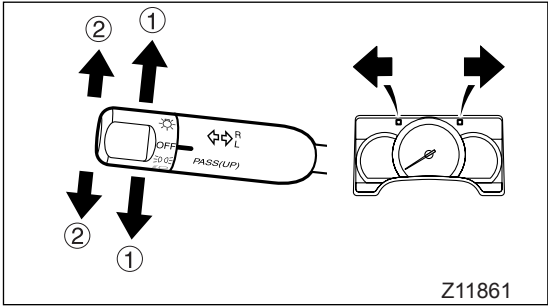
* DRLs are illuminated by the daytime running light system.

NOTE:
This vehicle is equipped with daytime running lights. (DRLs). The headlights remain on (although at diminished brightness), even when the vehicle is operated with the headlight switch in the “OFF” or auxiliary light ☞☝ position. The DRL ☞☝☞ indicator on the instrument cluster also illuminates. When the parking brake is applied or the engine is shut down, the headlights and the DRL ☞☝☞ indicator turn off.



3 Headlight high beam dimmer

- ① **Flashing**
Pulling the lever up activates the high beams until the lever is released. Use this to flash the high beams (turn them on momentarily).
- ② **Steady**
With the headlights illuminated, push the lever down to activate the headlight high beams and pull it back to the original position to return to the low beams. When the high beams are on, the high beam ☞☝☞ indicator illuminates.



4 Turn signal switch

- ① **Turn signal**
Move the lever downward to activate the left turn signal. Move the lever upward to activate the right turn signal. At the same time, the corresponding turn signal indicator ◀ or ▶ flashes. When the steering wheel is returned to the neutral position after a left or right turn, the switch automatically moves back to its neutral position and the signal stops flashing. After making a moderate turn, however, the switch will sometimes not return automatically. In this case, return the switch to its neutral position by hand.
- ② **Lane changer**
Lightly moving the lever upward or downward causes the corresponding turn signal to flash while the lever is held in this position.

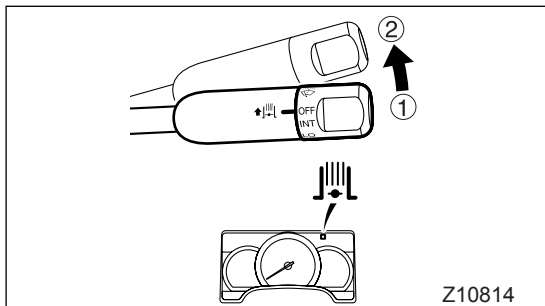
5 Exhaust brake

WARNING

Do not use the exhaust brake on slippery road surfaces. The vehicle may skid, causing an injury accident or loss of life.

The exhaust brake enhances engine braking. Use it as an auxiliary braking device on downhill stretches or during high-speed driving.

Exhaust brake operation is different on manual and automatic transmission vehicles. See the instructions below.



• Manual transmission vehicles

Push the lever away from you to turn ON the exhaust brake. While the exhaust brake is ON, the exhaust brake  indicator illuminates.

- ① Exhaust brake OFF
- ② Exhaust brake ON

NOTE:

In a manual transmission vehicle, do not leave the exhaust brake switch ON all the time. Too much use of the exhaust brake reduces fuel economy. Use the exhaust brake as necessary depending on road and traffic conditions.

The exhaust brake will be temporarily disabled under the following conditions:

- The accelerator pedal is depressed.
- The shift lever remains in neutral for 10 seconds or longer.
- The antilock brake system (ABS) is operating.

Full exhaust brake function will return as soon as the original conditions have been restored.

• Automatic transmission vehicles

CAUTION

Do not place the shift selector in “P” (park) or “N” (neutral) while the vehicle is moving. This would disable the exhaust brake but could cause transmission damage.

To turn ON the exhaust brake, release the accelerator pedal while the vehicle is in motion. The exhaust brake  indicator illuminates as long as the exhaust brake is ON.

The exhaust brake will be temporarily disabled under the following conditions:

- The accelerator pedal is depressed.
- The shift selector is moved to “P” or “N”.
- The temperature of the transmission fluid is too high.
- The vehicle speed has dropped to 6 mph (10 km/h) or lower.
- The transmission is shifting gears.
- The antilock brake system (ABS) is operating.

Full exhaust brake function will return as soon as the original conditions have been restored.

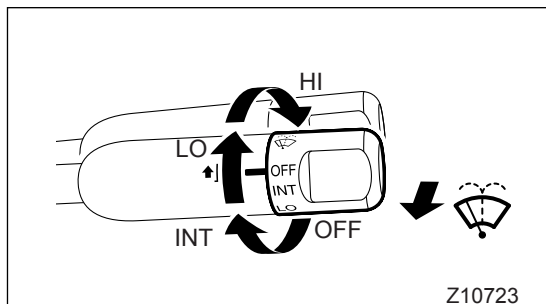
6 Wiper/ washer switch

WARNING

In cold weather, use the heater to warm the windshield before operating the washers. Washer fluid could freeze on the windshield, obstruct your vision, and cause an accident.

CAUTION

- Operating the wipers when the windshield is dry damages the windshield glass. If the windshield is dry, squirt it with washer fluid before operating the wipers.
- Do not operate the wipers when the rubber parts of the wiper blades are frozen onto the windshield, or otherwise stuck to the windshield. This could damage the wiper blades, and cause the wiper motor to fail.
- When the wipers are not used for a long time, substances such as dust or sand can collect between the wiper blades and the windshield. Clean the wipers before using them, to protect the windshield from scratching.
- Operating the washers continuously for more than 20 seconds, or with no fluid in the reservoir, could damage the washer motor.



1. Rotating the knob at the end of the lever activates the windshield wipers in one of the following three modes:

INT: Wipers operate intermittently at 3 to 5 second intervals.
 LO: Wipers operate at slow speed.
 HI: Wipers operate at fast speed.

2. If the wipers do not clean the windshield effectively, replace the wiper blades. ⇒  P. 11-55

CAUTION

Wiper blade rubber can deteriorate over time and cause the wipers to work ineffectively. If the blades are badly worn or torn, the windshield can be scratched.

3. To activate the windshield washer, pull the lever towards you.

NOTE:

Be careful when operating the washer switch. Washer fluid may splash on objects nearby.

4. Check the level of the washer fluid reservoir and refill it when low. ⇒  P. 11-56

Hazard flashers

CAUTION

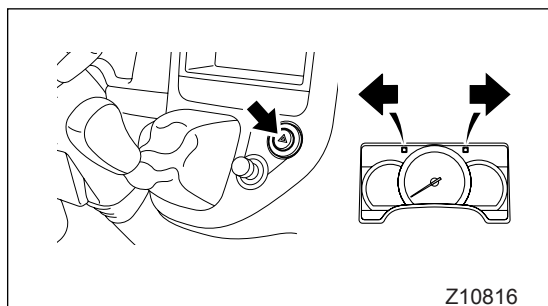
If the hazard flashers are operated for an extended period of time, this can discharge the battery and make the engine impossible to start.

The hazard flashers are used to warn other traffic if you find it necessary to stop your vehicle in an emergency.

The flashers operate with the ignition switch at any position.

Press in the flasher button to cause all the turn signals to flash at the same time. On the dash, the turn signal indicators  also flash.

With the turn signals flashing, press the flasher button again to make the turn signals go out.



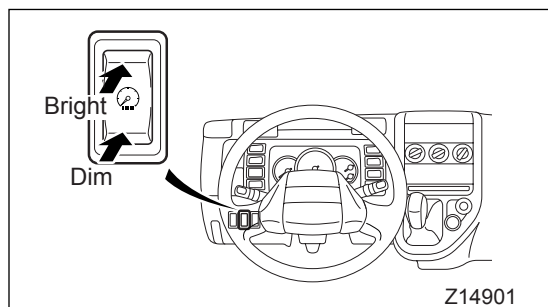
Panel light switch

Use the panel light switch to adjust the brightness of the dash illumination.

With the instrument cluster illuminated, press and hold the rocker switch to make the lights brighter or dimmer as shown in the illustration. When the lights have reached the desired brightness, release the switch.

NOTE:

The panel lights can be brightened and dimmed only within a fixed range. Once the lights have been brightened or dimmed to their full extent, further pressing of the panel light switch has no effect.

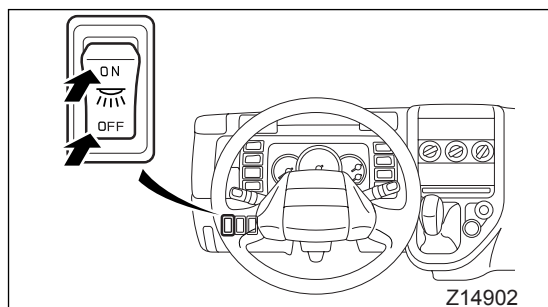


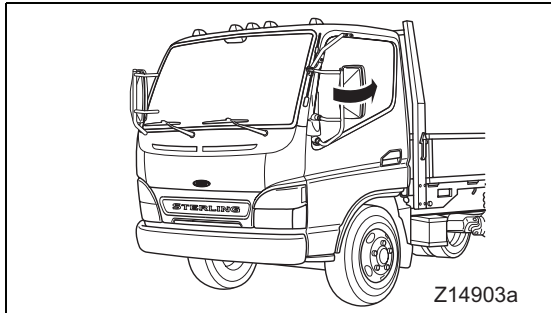
Dome light switch

The dome light switch operates the lighting inside the cab. With the ignition switch in the "ON" position, operate the dome light switch to turn the interior lighting on or off. An indicator light comes on inside the switch when it is in the "ON" position.

CAUTION

Do not leave the interior lighting on for an extended period when the engine is not running. This can drain the battery.



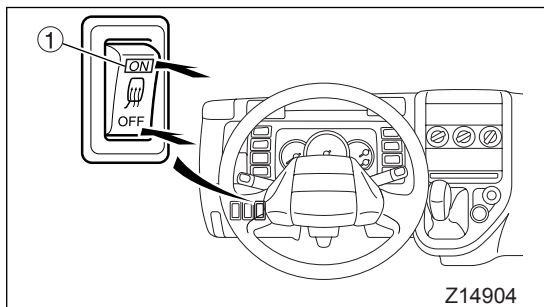


Rear view mirrors

The side rear view mirrors can be moved by hand in the direction of the arrow. Swing the mirror inward if the mirror is obstructing vehicle movement, for example, when turning a tight corner, passing an oncoming vehicle, or parking in a narrow place.

WARNING

- During normal driving, adjust the mirrors so that a clear view to the rear is available.
 - When turning right or left, use the rear view mirrors to ensure a safe clearance behind you.
 - Pay attention to the side rear view mirrors when driving on narrow roads. Take particular care to ensure that they do not hit pedestrians.
 - In rainy weather, water on the mirrors can reduce visibility to the rear. If necessary, stop the vehicle and wipe off the water.
- If visibility is obstructed for any of these reasons, it could cause an injury accident or loss of life.



Mirror heat switch

When the mirrors are covered with frost or mist, turn ON the switch to heat the mirrors. The mirror heat ① indicator light inside the switch will illuminate when the switch is in the ON position. Turn OFF the switch when the mirrors are clear.

CAUTION

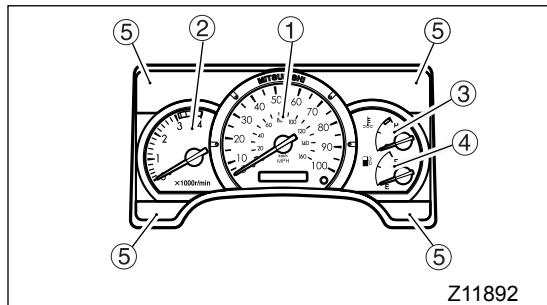
Do not use mirror heat when the engine is not running. This can drain the battery and make it impossible to start the engine.

6. Instrument cluster gauges and lights

Instrument cluster layout	6-2
Speedometer	6-2
Tachometer	6-2
Coolant temperature gauge	6-3
Fuel level gauge	6-4
Warning and indicator lights	6-5

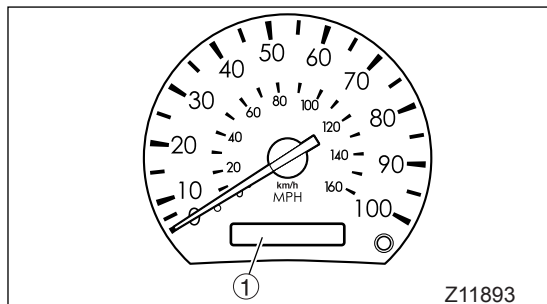
6-2

Instrument cluster gauges and lights



Instrument cluster layout

- ① Speedometer
- ② Tachometer
- ③ Coolant temperature gauge
- ④ Fuel level gauge
- ⑤ Warning and indicator lights

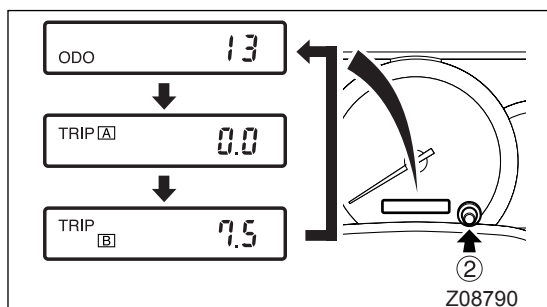


Speedometer

1 Speedometer

The speedometer indicates vehicle speed in miles and kilometers per hour.

- ① Odometer/Tripmeter



2 Odometer/tripmeter

With the ignition switch in the "ON" position, either "ODO" (for "odometer") or "TRIP" (for "tripmeter") is displayed. The display toggles between "ODO" and "TRIP" each time the trip knob ② is pressed.

• ODO (odometer)

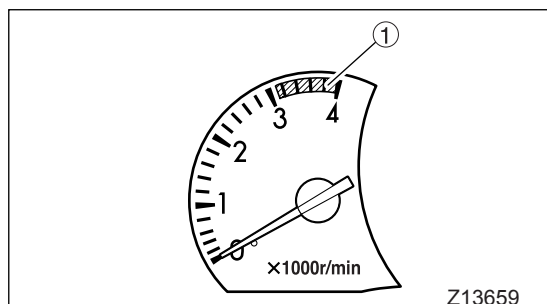
The total distance covered by the vehicle is shown to the nearest mile.

• TRIP (tripmeter)

The distance covered by the vehicle from a selected point to its present location is shown to the nearest 0.1 mile.

The tripmeter has two indications: TRIP "A" and TRIP "B", which can be set and displayed independently of each other.

To return the current indication to zero, press the trip knob for approximately 1 second or longer. The indication will return to "0.0".



Tachometer

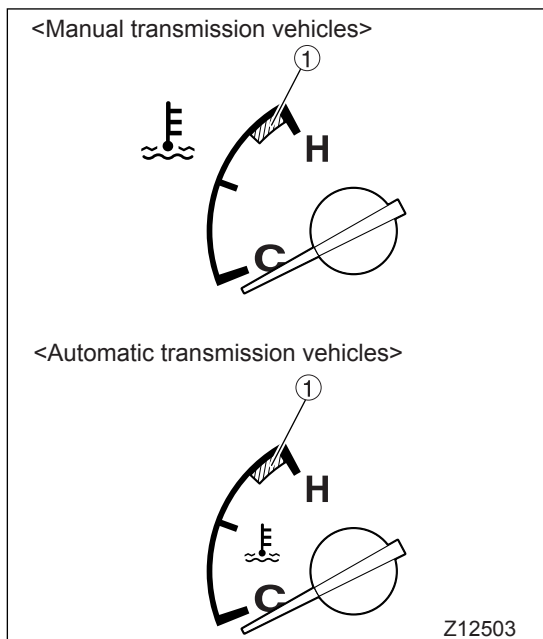
- The tachometer indicates engine speed in revolutions per minute.
- If the needle enters the red zone ①, the engine speed is too high. Reduce the vehicle speed sufficiently during downhill driving or downshifting to keep the needle from entering this zone and causing an overspeed condition.

⇒ P. 7-9

CAUTION

The term “overspeed condition” is used when engine speed (RPM) exceeds the maximum safe limit. This can occur when the engine is driven by the wheels during downhill driving or downshifting.

Persistent engine overspeed can cause an engine breakdown.

**Coolant temperature gauge**

This gauge indicates the temperature of the engine coolant.

With the engine operating normally, the needle should be in the center of the scale.

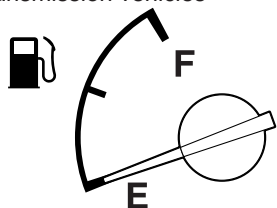
If the needle enters the red zone ①, the engine is overheated. The coolant temperature  warning illuminates at this time. Pull off the road as soon as it is safe to do so. Use the engine idle control to run the engine at a speed slightly higher than normal idle. If the vehicle has air conditioning, turn it off.

When the gauge needle comes down to near the center of the scale, shut down the engine and perform the checks and corrective actions described under “If the engine overheats” on this reference page:  P. 12-7

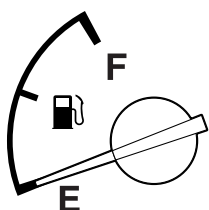
CAUTION

If the engine overheats, do not shut down the engine right away. Let it run at a speed slightly above normal idle and allow the engine to cool. If the engine is shut down immediately after stopping, the coolant temperature will rise quickly and may cause the engine to seize.

<Manual transmission vehicles>



<Automatic transmission vehicles>



Z12504

Fuel level gauge

The fuel level gauge indicates the amount of fuel still remaining in the fuel tank.

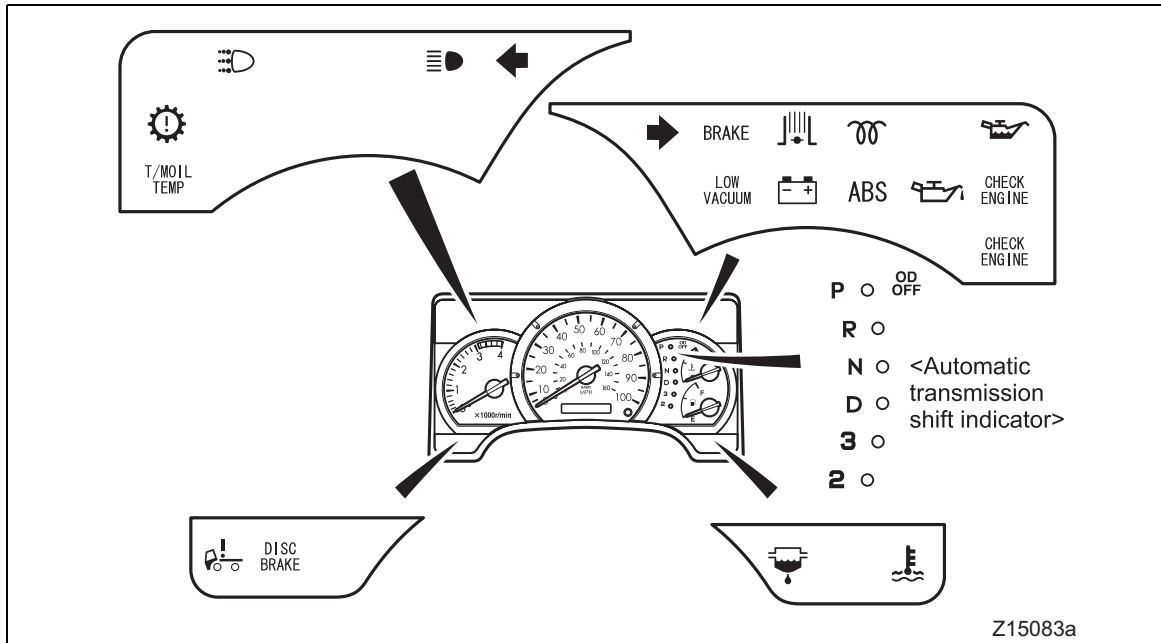
F: Full

E: Empty

When the needle approaches the "E" mark, refuel as soon as possible.

If the vehicle runs completely out of fuel, air must be bled from the fuel system. ⇒ P. 12-23

Warning and indicator lights



This illustration shows the standard arrangement of the warning and indicator lights. Some lights shown here may not be installed on your vehicle.

WARNING

A red warning light, if illuminated, warns you of a serious problem with the vehicle, and possible accident danger. Do not continue to drive the vehicle if a red warning light illuminates. Bring the vehicle to a complete stop and investigate the cause of the problem. If necessary, have your vehicle repaired by an authorized Sterling service facility.

NOTE:

Red warning lights may also come on if the engine is started when the battery is not sufficiently charged. Charge or replace the battery.

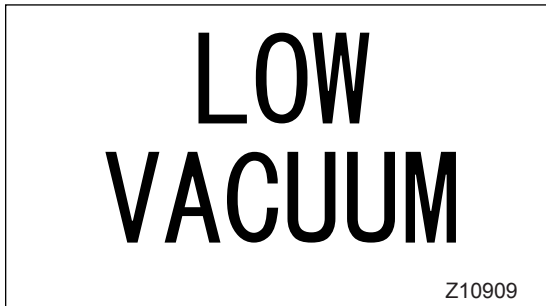
6-6

Instrument cluster gauges and lights

Symbol	Warning/indicator light	Indication	Ref. page
	Turn signal	The turn signals flash	5-19
	Headlight high beam indicator	Headlight high beams illuminate	5-19
	Exhaust brake indicator	The engine brake operates, or the engine warm-up system operates	5-4, 5-11, 5-20
	Engine preheat indicator	Engine preheat is on	5-8
LOW VACUUM	Vacuum pressure warning	Brakes do not have enough vacuum pressure	6-8
BRAKE	Brake warning	Brake fluid level is too low, or the parking brake is set (on COE 50, accompanied by a buzzer, when hydraulic fluid pressure is too low)	6-8
	Alternator no charge warning	There is a problem in the charging system	6-9
	Low engine-oil pressure/level warning	The engine oil pressure is too low, or the engine oil level is too low	6-9
	Cab tilt warning	The cab is tilted or not locked down	11-4
T/M OIL TEMP	Transmission temperature warning <Automatic transmission vehicles>	The automatic transmission fluid (ATF) is too warm	6-10
	Water in fuel warning	There is too much water in the fuel	6-10
DISC BRAKE	Disc brake wear warning <Vehicles with disc brakes>	The disc brake pads are worn	6-10
	(Green) Engine oil level indicator	Engine oil level is normal	11-17
	(Amber) Engine oil level warning	Engine oil level is too low	
CHECK ENGINE	(Amber) Check engine indicator	The fuel injection system is not functioning normally	6-11
	(Red) Check engine warning	There is a fault in the fuel injection system	
ABS	ABS warning	There is a fault in the antilock brake system (ABS)	6-11
	Automatic transmission warning <Automatic transmission vehicles>	There is a fault in the automatic transmission	6-12
	DRL indicator	The daytime running lights (DRLs) are operating (headlights at lower brightness)	5-19
	Coolant temperature warning	The engine is overheating	6-12

As a bulb check, these warning/indicator lights come on, and quickly go off, when the ignition switch is turned from "ACC" to "ON," or when the engine is started.

Symbol	Light	Operation
BRAKE	Brake warning	Goes off when the engine is started and the parking brake is released.
LOW VACUUM	Vacuum pressure warning	Goes off when the engine is started.
	Alternator no charge warning	Goes off when the engine is started.
	Low engine-oil pressure/level warning	Goes off when the engine is started.
CHECK ENGINE	(Amber) Check engine indicator	Goes off when the engine is started.
	(Red) Check engine warning	
	Automatic transmission warning <Automatic transmission vehicles>	Goes off a few seconds after the ignition switch is turned to "ON."
T/M OIL TEMP	Transmission temperature warning <Automatic transmission vehicles>	Goes off a few seconds after the ignition switch is turned to "ON."
DISC BRAKE	Disc brake wear warning	Goes off a few seconds after the ignition switch is turned to "ON."
ABS	ABS warning	Goes off a few seconds after the ignition switch is turned to "ON."



1 Vacuum pressure warning

WARNING

Do not operate the vehicle if the vacuum pressure warning illuminates. Low vacuum pressure reduces braking efficiency and could cause an injury accident or loss of life.

NOTE:

The vacuum boost system is only installed on COE 40 and COE 45.

The vacuum pressure warning illuminates as a bulb check when the ignition switch is turned to "ON." It goes out when the engine is started.

If illuminated while the engine is running, this light warns that vacuum pressure has dropped below the safe limit.

Braking efficiency is reduced in this situation. Depress the brake pedal with full force to slow down the vehicle as quickly as possible. Pull off the road as soon as it is safe to do so, and perform the following checks:

1. Let the engine run at intermediate RPM until the vacuum pressure warning goes out.
2. Check all air lines, hoses, and connections for vacuum leaks.
3. If the light does not go out, or comes on again soon after it has gone out, the vacuum system is defective. Bring the vehicle to an authorized Sterling service facility for repairs.

2 Brake warning

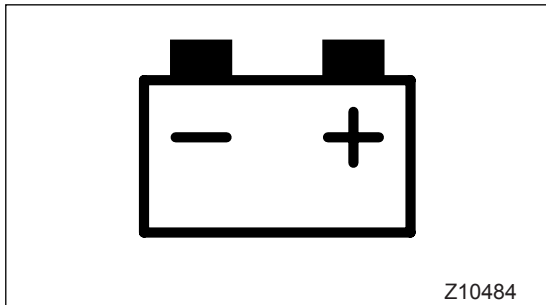
WARNING

Do not continue to operate the vehicle if the brake warning illuminates while driving. Low brake fluid level and/or hydraulic pressure reduces braking efficiency and could cause an injury accident or loss of life.

The brake warning illuminates as a bulb check when the parking brake is set. With the ignition switch "ON" and the engine not running, the brake warning stays on even when the parking brake is released. The light will go out when the engine is started.

If this light illuminates while driving, the brake fluid level has dropped below the safe limit. On COE 50, the warning also illuminates, accompanied by a buzzer, when the hydraulic fluid pressure is too low. If the engine is running with the parking brake released and the light does not go out, do not operate the vehicle. Pull off the road as soon as it is safe to do so, and perform the following checks:

1. Check the brake fluid level.
Add more fluid if the level is too low.



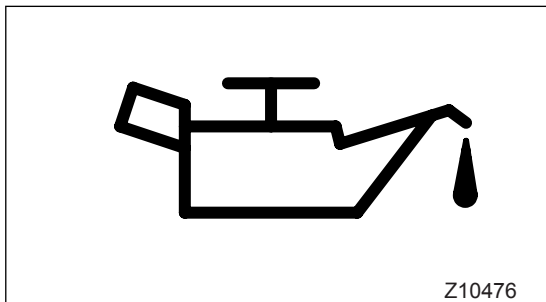
2. Pump the brake pedal several times. Check to make sure that the brake fluid level does not drop.
3. If the fluid level drops, it indicates fluid leakage. Bring the vehicle to an authorized Sterling service facility for repairs.

3 Alternator no charge warning

The alternator no charge warning illuminates as a bulb check when the ignition switch is turned to "ON." It goes out when the engine is started and the alternator begins to charge the battery.

This light also illuminates if a problem occurs in the vehicle charging system while the engine is running. In that case, pull off the road as soon as it is safe to do so, and perform the following checks.

1. Check for a broken alternator belt, and replace it if necessary. Also check the belt tension, and tighten the belt if necessary. ⇨ P. 11-39
2. Check for a blown high-amp fuse in the vehicle charging circuit. If blown, replace it with a new one. ⇨ P. 12-12
3. If both the above checks have turned out OK, the problem is probably in the vehicle charging system. Bring the vehicle to an authorized Sterling service facility for repairs.



4 Low engine-oil pressure/level warning

The low engine-oil pressure/level warning illuminates as a bulb check when the ignition switch is turned to "ON." Normally, it goes out soon after the engine has started.

If the warning illuminates while the engine is running, the cause may be either low engine-oil level or low engine-oil pressure. Pull off the road as soon as it is safe to do so, and perform the following checks.

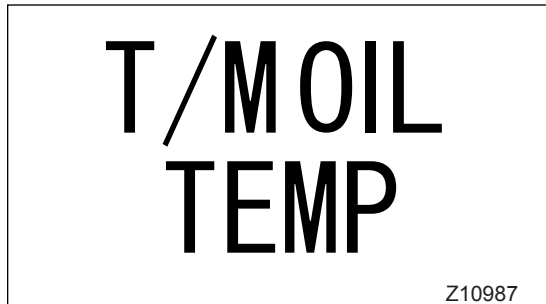
1. Check the engine oil level. Add oil if low. ⇨ P. 11-17
2. Check the engine for signs of oil leaks.
3. If the oil level is normal and there are no oil leaks, the problem is in the lubrication system. Contact an authorized Sterling service facility.

NOTE:

When it is cold, engine oil viscosity increases. This may cause the warning light to stay on for a while even after the engine has started. Wait until the light goes out before moving the vehicle.

CAUTION

Never continue driving with the low engine-oil pressure/level warning illuminated. The engine could seize.



5 Transmission temperature warning

<Automatic transmission vehicles>

The transmission temperature warning illuminates as a bulb check when the ignition key is turned to "ON." It should go out in a few seconds.

- This light illuminates if the automatic transmission fluid (ATF) becomes too warm.
If the light illuminates while the vehicle is in motion, pull off the road as soon as it is safe to do so, move the shift selector lever to "P" (park), and use the engine idle control to run the engine at a speed slightly higher than normal idle.
- If the light goes out, it is safe to continue normal operation. If the light stays on, or comes on intermittently, there may be a fluid leak, or a malfunction in the transmission cooling fan (located on the left-hand side of the vehicle). Bring the vehicle to an authorized Sterling service facility for repairs.



6 Water in fuel warning

If the water in fuel warning is illuminated, there is an excessive amount of water in the fuel filter. Pull off the road as soon as it is safe to do so and drain the water from the fuel filter. ⇒ P. 11-32

If the light does not go out or lights up frequently, have the vehicle checked by an authorized Sterling service facility.

CAUTION

Never continue driving with the water in fuel warning illuminated. This could cause an engine malfunction or failure of the fuel injection system.



7 Disc brake wear warning

<Vehicles with disc brakes>

The disc brake wear warning illuminates as a bulb check when the ignition key is turned to "ON." It should go out in a few seconds.

This light illuminates if the disc brake pads become worn beyond the safe limit. Have the pads replaced by an authorized Sterling service facility.

WARNING

When the disc brake wear warning illuminates, the brakes are no longer reliable and could cause an injury accident or loss of life.

A rectangular box containing the words "CHECK" and "ENGINE" in large, bold, black, sans-serif capital letters, stacked vertically. The box is white with a thin black border.

Z11795

8 Check engine indicator/warning

There are two check engine lights: an amber indicator light and a red warning light.

Both check engine lights illuminate as bulb checks when the ignition key is turned to "ON." They should go out when the engine starts.

8.1 Check engine indicator (amber)

The amber check engine indicator illuminates when there is a malfunction in the electronic control circuitry of the fuel injection system. If the light illuminates, shut down the engine, and keep the ignition switch in "ACC" or "LOCK" for 5 seconds or longer, if necessary, to reset the computer. Then restart the engine.

If the light stays off, there is no problem. If the light illuminates again, bring the vehicle to an authorized Sterling service facility as soon as possible.

8.2 Check engine warning (red)

The red check engine warning illuminates when there is a serious malfunction in the electronic control circuitry of the fuel injection system. There may be a noticeable reduction in engine output. If the light illuminates, shut down the engine, and keep the ignition switch in "ACC" or "LOCK" for 5 seconds or longer, if necessary, to reset the computer. Then restart the engine.

If the light stays off, there is no problem. If the light illuminates again, shut down the engine and contact an authorized Sterling service facility.

9 ABS warning

The ABS warning illuminates as a bulb check when the ignition key is turned to "ON." It should go out a few seconds later. If the light comes on again, there is a malfunction in the antilock braking system (ABS). Should this light illuminate during driving, stop the vehicle in a safe place and perform the following inspection procedure.

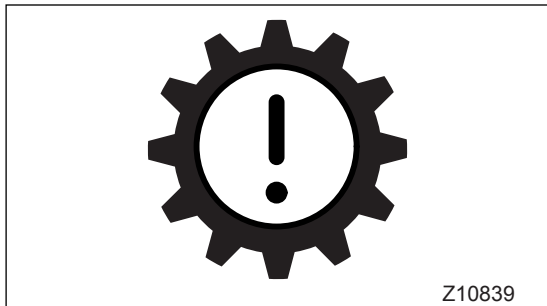
1. Turn the ignition key to "OFF" and then back to "ON" again.
2. Determine the state of the system as follows:
 - If the light goes out a few seconds later, the system is normal. If the light stays on for more than a few seconds but goes off when the engine is started, this is also normal.
 - If the light stays on for longer than a few seconds, or if it goes off but comes on again, or it remains on after the engine is started, there is a fault in the system.
3. If a fault is found, have the ABS repaired without delay by an authorized Sterling service facility.

NOTE:

If there is a fault that causes the ABS warning to illuminate, the service brakes can still stop the vehicle. However, under certain conditions, brake performance can be reduced. The vehicle can be driven to a repair facility, provided great care is taken on slippery surfaces.

A rectangular box containing the letters "ABS" in large, bold, black, sans-serif capital letters. The box is white with a thin black border.

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10 Automatic transmission warning

<Automatic transmission vehicles>

The automatic transmission warning illuminates as a bulb check when the ignition key is turned to "ON." It should go out in a few seconds.

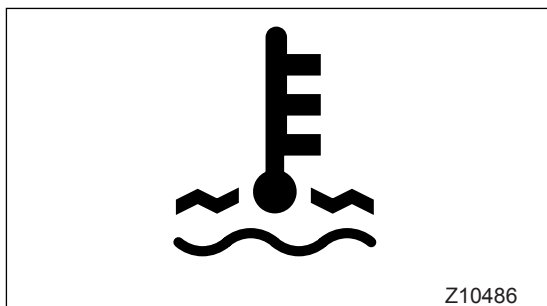
If the light illuminates while driving, there is a fault in the electronic control system of the automatic transmission. Stop the vehicle in a safe place, shut down the engine, and keep the ignition switch in "ACC" or "LOCK" for 5 seconds or longer, if necessary to reset the computer. Then restart the engine.

If the fault does not clear, or the light soon comes back on, have the vehicle checked by an authorized Sterling service facility.

Even with a fault in the electronic control system, the vehicle can still be driven in a "derate" mode.

In the "derate" mode, not all gears will be available. See the table below for more information.

Shift selector position	Derate mode gear	Normal gear(s)
P	Park	Park
R	Reverse	Reverse
N	Neutral	Neutral
D	At high speeds limited to 5th. At low speeds, or after one stop, limited to 3rd.	1st through 6th
3		1st through 3rd only
2		1st through 2nd only



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11 Coolant temperature warning

The coolant temperature warning illuminates if the engine overheats. With the engine overheated, the needle in the coolant temperature gauge is in the red zone.

Stop the vehicle promptly. Use the engine idle control to run the engine at a speed slightly higher than normal idle. This allows the engine to cool. When the gauge needle comes down to near the center of the scale, shut down the engine and perform the checks and corrective actions described under "If the engine overheats" on this reference page:

⇒ P. 12-7

WARNING ⚠

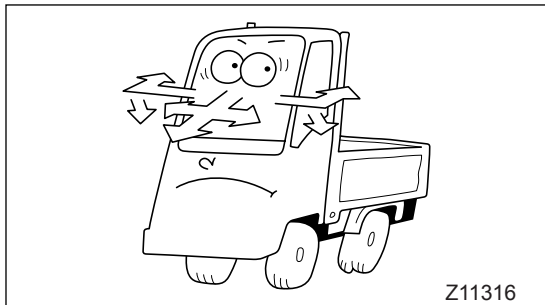
Driving with an overheated engine could cause a fire, leading to burn injuries or loss of life.

CAUTION ⚠

Do not shut down the engine right away. Let it run at a speed slightly above normal idle. If the engine is shut down immediately after stopping, the coolant temperature will rise quickly and may cause the engine to seize.

7. Starting and driving

Vehicle start-up	7-2
Vehicle operation	7-3
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Vehicle start-up

- Do not carry containers of fuel or spray cans in the cab.

WARNING ⚠

Do not carry fuel in the cab. An increase in cab temperature could cause the fuel vapor to catch fire, with risk of personal injury or loss of life.

- Do not attach any decorative panels or similar items to the windshield.

WARNING ⚠

Attaching a decorative panel or similar item to the windshield could impede visibility and result in an accident, causing death or serious personal injury. In addition, any suction cup on such an item could cause a fire by acting as a lens.

- Check the immediate area around the vehicle. Use mirrors when necessary. There should be no persons or obstacles under, in front of, on either side, or behind the vehicle.
- With the parking brake set, start the engine and allow it to idle. ➡ P. 5-6
- With the engine idling, release the parking brake. Be sure it is fully released.
- Check that none of the red warning lights are illuminated. The BRAKE warning should go out when the parking brake is released.
- <manual transmission> Disengage the clutch and put the vehicle in gear. Engage the clutch slowly, to start the vehicle moving.

CAUTION ⚠

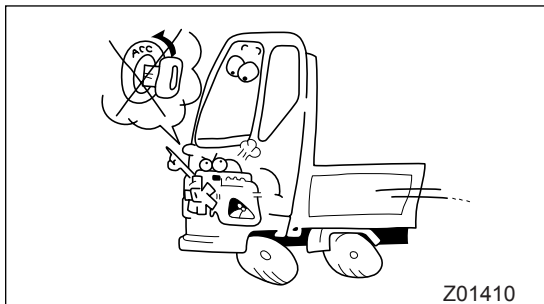
Avoid sudden starts. They place undue strain on the vehicle. When pulling away, do not race the engine and suddenly engage the clutch. Do not ride the clutch for extended periods. This can cause clutch damage.

- <automatic transmission> Depress the brake pedal and move the shift selector out of "P" (park). If the engine's idle speed is too high, the vehicle may lurch when selecting "D" (drive) or "R" (reverse). Make sure the engine is idling at normal speed before pulling away.
- Be particularly careful when backing up. If you cannot see clearly using the mirrors, get out of the vehicle and check.

Vehicle operation

Should you notice anything unusual about vehicle operation, stop the vehicle immediately. Check to find the cause of the problem before continuing. If you are unable to identify the cause of the problem or lack the means to do the repairs yourself, contact an authorized Sterling service facility.

- Do not shut down the engine while the vehicle is moving.



WARNING ⚠

While operating the vehicle, never place the ignition switch in any position other than "ON."

If you turn the ignition switch to "ACC," the engine will shut down.

If the engine shuts down during driving:

- **Braking efficiency is greatly reduced.**
- **The power steering system ceases to operate.**
- **The electrical circuits connected to the ignition (warning and indicator lights, gauges, etc.) no longer operate, causing electric components to malfunction.**

Removing the ignition key locks the steering wheel, making it impossible to steer the vehicle.

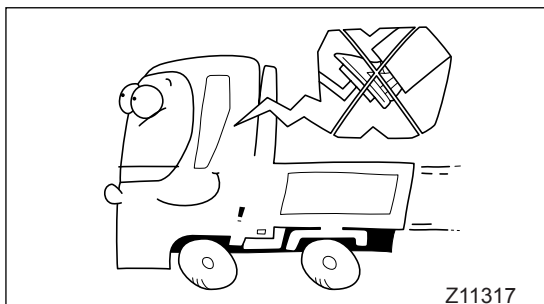
Doing any of these things could increase the possibility of an injury accident or loss of life.

- If the engine should stall while the vehicle is in motion, depress the brake pedal to slow the vehicle. Pull off the road as soon as it is safe to do so.
- If a red warning light comes on, if the buzzer sounds, if you notice a strange noise, vibration, or smell, if steering or braking feels unusual, or the vehicle behaves abnormally in any way, pull off the road as soon as it is safe to do so and identify the cause of the problem. ➡ P. 6-5
- If you are unable to identify the cause of the problem, contact an authorized Sterling service facility.
- Be especially careful during high-speed driving. Avoid sharp turns and hard braking except in emergencies.
- When driving on narrow streets or when making a turn, keep in mind that the tracking of the front and rear inner wheels is different. Use the rear view mirrors to gain a clear view to the rear.
- Remember that the mirrors protrude from the vehicle body. Be careful not to hit pedestrians and obstructions with the mirrors when driving on narrow roads.

- While driving, keep your eyes moving. Keep a clear view ahead, behind, and to both sides of the vehicle.
- Do not keep the steering wheel turned all the way to either side for more than 10 seconds. This could cause the power steering system to malfunction.
- Do not try to forcibly turn the steering wheel when the front wheels are stuck against a curb-stone or other object. This could cause the steering gear to fail.
- Continuous high-speed driving burdens the engine and other vehicle components. Allow yourself enough time. Do not push the vehicle too hard.
- Perform your pretrip checks with particular care when you expect to drive at high speeds.
- When continuously driving at high speeds, your sensitivity to speed may be dulled. Be constantly aware of your speed, and maintain an adequate distance from the vehicle in front of you.
- If a tire blows out at high speed, keep a firm grip on the steering wheel and gradually reduce your speed. Stop the vehicle in the nearest safe place. Do not brake sharply. Avoid sharp braking because this pulls the steering wheel to one side with great force.
- When driving at high speeds in the rain, it sometimes happens that the tires ride on a film of water and lose contact with the road surface. This is known as "hydroplaning." If this should happen, you will lose control of both steering and braking. Slow down on rainy days.
- Hydroplaning is more likely if tire tread is worn to the point where the tread pattern is very shallow.
- Do not use the exhaust brake on slippery road surfaces. The vehicle may skid. On a wet, frozen, snow-covered, or otherwise slippery road, when the vehicle is unloaded or lightly loaded, using the exhaust brake can cause the tires to slip on the road surface.
- Do not use a mobile telephone while driving. If you wish to use a mobile telephone, first stop the vehicle in a safe place. Using a mobile telephone while driving could distract your attention from the vehicle and from the road ahead, and cause an accident.
- Operate radios and other electronic equipment in the cab while the vehicle is stationary.
- Do not allow a child to touch the driver's controls and other cab equipment. A child's interference could cause a malfunction or accident.

1 When driving a vehicle equipped with a manual transmission

- Avoid riding the clutch. Partially depressing the clutch pedal while the vehicle is in motion causes the clutch to slip and shortens the service life of the clutch.



Z11317

- Do not release the clutch pedal suddenly. This places undue stress on the vehicle and shortens the service life of the clutch.
- Do not operate the vehicle with the clutch disengaged or the gearshift lever in neutral. This makes the exhaust brake ineffective.
- Use the exhaust brake to slow the vehicle. Do not rely on the service brakes alone. This will cause excessive brake wear.
- Before shifting down, wait for the tachometer needle to drop below 2,000 rpm. Downshifting at high rpm could cause engine overspeed.

CAUTION

“Engine overspeed” is used to describe a condition where the engine speed (rpm) exceeds the maximum safe limit. Persistent engine overspeed can cause an engine breakdown.

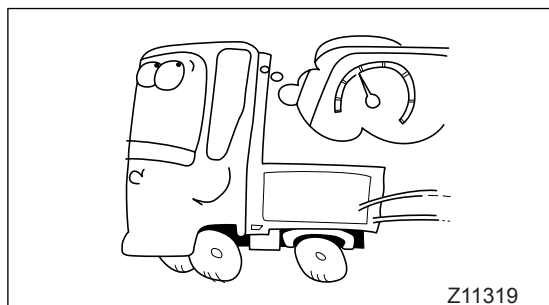
2 When driving a vehicle equipped with an automatic transmission

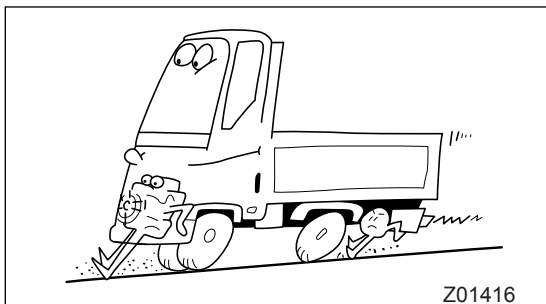
- For normal driving, select the “D” range and use the overdrive lockout switch as road conditions permit.  P. 5-17
It is possible to shift up using the shift selector, the same as with a manual gearshift lever, starting in “2”, then upshifting through “3” to “D”.
- Do not place the shift selector in “P” (park) or “N” (neutral) while the vehicle is moving. This would disable the engine brake and exhaust brake, and lead to overuse of the service brakes. It could also damage the transmission.
- When driving at high speeds, downshifts that would cause engine overspeed are prohibited by a safety device. In such cases, depress the brake pedal and reduce the vehicle speed before downshifting.
- If you make a temporary stop, at a red light, for example, keep the brake pedal firmly depressed. If you must wait longer than expected, select “N” or “P” and set the parking brake.
- If you make a temporary stop on an uphill grade, depress the brake pedal and set the parking brake. Do not use the accelerator pedal to stop the vehicle from rolling backwards.

Improving fuel economy

Observe the following precautions to achieve maximum fuel economy and to extend tire life.

- When the needle on the coolant temperature gauge begins to move upward, the engine is warm enough. Further warming wastes fuel.
- Do not race the engine. This not only wastes fuel, but also harms the engine.
- Avoid sudden starts, sudden acceleration, and sudden braking.
- Change gears before engine speed gets too high (tachometer needle in the red zone).
- To minimize fuel consumption, keep the tachometer needle in the 1,500 to 2,000 rpm range.
- In a vehicle with an automatic transmission, use overdrive as road conditions permit. This will increase fuel economy.
- Try to drive at moderate and constant speeds. Unnecessary acceleration and deceleration wastes fuel.
- In a vehicle with a manual transmission, do not leave the exhaust brake switch ON all the time. Too much use of the exhaust brake reduces fuel economy. Use the exhaust brake as necessary depending on road and traffic conditions.
- Always keep the air pressure in tires correctly adjusted according to the manufacturer's recommendations.
- Try to load cargo in a way that minimizes wind resistance. ➡  P. 7-15
- Be sure to perform the daily pretrip inspection and do periodic checks to make sure the vehicle is running properly.





Braking

On downhill grades, use the engine brake and the exhaust brake to slow the vehicle, before using the service brakes to stop the vehicle. Do not rely exclusively on the service brakes. ⇨ P. 7-9

WARNING

- If any of the brake warning lights illuminate, there is a possibility of brake failure. Brake failure could cause an injury accident or loss of life.
- Do not use the exhaust brake on slippery road surfaces. The vehicle may skid, causing an injury accident or loss of life.
- Avoid sudden braking except in emergencies. Sudden braking causes tire wear and could cause other vehicle malfunctions. Worn tires can cause an injury accident or loss of life. The shock of sudden braking could also result in an injury.

1. When the LOW VACUUM, BRAKE, and/or DISC BRAKE warning lights illuminate, stop the vehicle immediately and perform the necessary checks. ⇨ P. 6-6
2. Brake the vehicle slowly. For smoother, more stable braking, lift up on the brake pedal two or three times as you gradually bring the vehicle to a complete stop.
Remember that the braking distance can vary according to vehicle speed, load weight, and road conditions.

NOTE:

The engine brake takes effect whenever the accelerator pedal is released. The lower the transmission gear, the more powerful the engine braking.

Antilock braking system (ABS)

ABS is an electronic braking control system that operates automatically without the need for driver intervention.

WARNING

Although ABS improves vehicle control during emergency braking situations, the driver still has the responsibility to judge driving conditions, respond to them alertly, and drive safely in unfavorable situations. For example, ABS cannot prevent an injury accident or loss of life if the driver is speeding or following too close.

NOTE:

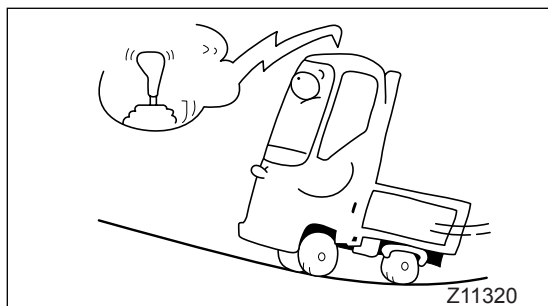
On slippery surfaces, the wheels could lock when the brakes are applied. This could cause a skid. ABS controls the braking force applied to each wheel in order to minimize skids.

- If the ABS warning light illuminates during driving, it indicates an ABS fault. ABS will no longer function, but the service brakes can still stop the vehicle, although brake performance may be reduced under certain conditions. ⇨  P. 6-11
- On slippery surfaces, the braking distance for vehicles with ABS is generally shorter than that for vehicles without it. This difference varies according to road conditions. It is always important to maintain sufficient distance from the vehicle ahead of you, regardless of whether your vehicle is equipped with ABS. On gravel roads, or roads covered with heavy snow, the braking distance of an ABS-equipped vehicle may be longer than that for a vehicle without ABS. On these roads, be sure to drive at reduced speed. To prevent collisions, avoid quick maneuvers or sudden braking on these roads.
- When ABS is in operation, there will be a slight vibration noticeable in the vehicle body and also in the brake pedal. The sound of the solenoid in operation may be heard. These sounds indicate ABS is operating normally. Continue to apply the brakes.
- When ABS starts to function after sudden braking, the steering wheel may be pulled slightly to one side because of braking power distribution control made by the system. Especially in a situation where there is less traction on one side of the vehicle, you may need to correct direction with the steering wheel. *Example:* A road that is covered with ice on one side but not on the other side.
- ABS cannot prevent the vehicle from overturning on a slippery surface. Avoid high-speed driving and quick steering maneuvers. On long downgrades when conditions are slippery, use the engine brake or exhaust brake. Minimize use of the service brakes.
- An unloaded or lightly loaded vehicle is more likely to skid on slippery surfaces. In this situation, depress the clutch pedal first, before the brake pedal (on vehicles with manual transmission).
- If cargo is loaded only on the back half of the cargo bed, the front wheels may lock. when braking on long downgrades. Equalize your load for better braking.
- The exhaust brake, if in use, is released temporarily when the ABS starts to function.

WARNING

If the tires slip with the exhaust brake working, the ABS will start to function and the exhaust brake will be temporarily deactivated. To prevent injury accidents or loss of life, always slow down before entering a curve.

- Before you install radio transmitter/receiver equipment or tires of a size different from the original ones, be sure to consult an authorized Sterling service facility.
- Even if the ABS system fails and the ABS warning light illuminates, the service brakes can still stop the vehicle, although brake performance may be reduced under certain conditions. You must, however, drive very carefully on slippery roads.  P. 6-11



On uphill and downhill grades

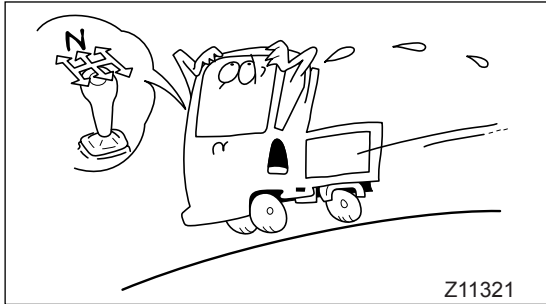
1 Uphill grades

- Downshift early, before your speed begins to drop. This will minimize the load on the engine.
- On vehicles with automatic transmission, there are two ways to downshift:
 1. Use the shift selector as usual.
 2. Press down hard on the accelerator pedal.

If you depress the accelerator pedal to maintain a constant speed when driving uphill, the transmission may shift down, increasing the engine speed.

2 Downhill grades

- Before driving down a long or steep downhill grade, test the service brakes and exhaust brake to make sure that they are OK.
- Downshift into the same gear used on the uphill grade. Use the engine brake and exhaust brake to help slow the vehicle. Never drive downhill at high speeds.
- On vehicles with automatic transmission, do not leave the shift selector in "D" (drive). This will not provide enough engine braking, and will cause the vehicle to speed up too much. Lock out the overdrive (turn the overdrive lockout switch OFF) and shift down to "3" or "2" depending on grade. Use the service brakes to control vehicle speed.
- On slippery roads, avoid sudden engine braking since this could cause a skid.



- Never coast downhill with the shift lever in neutral <manual transmission vehicles> or the shift selector in “N” (neutral) <automatic transmission vehicles>. This eliminates the effect of both the engine brake and the exhaust brake. This causes the service brakes to overheat and the brake linings to wear prematurely. In a vehicle with automatic transmission, this can also cause transmission damage.
- Do not overuse the service brakes. Overheated brakes could cause vapor lock and fading, both of which contribute to poor braking.

NOTE:

- “Vapor lock” is a condition in which the brake system becomes so hot that the brake fluid boils, forming bubbles that reduce hydraulic pressure and result in poor braking.
- “Fading” is a condition in which the brake pads overheat. This reduces friction significantly and results in poor braking.

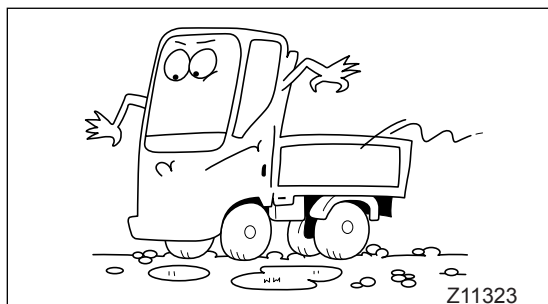
WARNING ⚠

Except in an emergency, do not apply the parking brake while the vehicle is moving since the vehicle could spin and/or overturn, causing an injury accident or loss of life.

- Reduce engine speed before downshifting. Do not downshift more than two gears at a time. This could cause engine overspeed (tachometer needle in the red zone). As a rule, reduce engine speed to roughly 2,000 rpm before downshifting. Make sure the tachometer needle does not enter the red zone. In an automatic transmission vehicle, a safety device prevents downshifts when the vehicle is driving at high speed. To downshift in this situation, first depress the brake pedal and reduce the vehicle speed.

CAUTION ⚠

“Engine overspeed” is used to describe a condition where the engine speed (rpm) exceeds the maximum safe limit. Persistent engine overspeed can cause an engine breakdown.



On rough roads and in bad weather

- Use low gear and drive at a constant speed on gravel surfaces or muddy roads.
- If stuck in the mud, do not race the engine. The wheels will spin and make the ruts deeper. Instead, place traction material under the tires (such as wood, gravel, or heavy cloth), and rock the vehicle back and forth (shift at low speed between 1st and reverse until the wheels gain traction).

CAUTION

Do not rock an automatic transmission for more than 5 minutes. This will damage the transmission.

- Drive very slowly on bumpy roads. Take care not to allow the undercarriage to bottom out on the road surface.
If the muffler strikes a rock or other obstacle, the catalytic converter or other internal components may be damaged. Have the vehicle checked at an authorized Sterling service facility.
- Avoid sudden braking and sharp turns on wet roads. Conditions are especially dangerous just after it begins to rain. Use the engine brake, the exhaust brake, and the service brakes together to slow the vehicle. Sudden use of the engine brake by itself can cause a skid. Drive at a comfortable speed and stay in control of the vehicle.
- If the brakes become wet, either from driving into water or after a washing, braking performance can be reduced. With wet brakes, drive slowly and put light pressure on the brake pedal. This will dry out the brakes.
- If you cannot avoid driving the vehicle into water (for example, when the road is covered with water because of torrential rain), first check the depth of the water. If water gets into the engine, it can cause engine damage. After driving through water, check the high-amp fuse box. If water has entered the high-amp fuse box, remove the water and have the vehicle inspected by an authorized Sterling service facility. Water in the high-amp fuse box could cause a short circuit that results in a fire.
- In fog, drive carefully at low speeds, paying attention to the center line and the vehicle ahead of you.
- When driving in snow or on frozen roads, use tire chains or snow tires. Drive at moderate speed and avoid sudden braking and sharp turns.

Parking

WARNING

- Park the vehicle on a level surface, if available. Avoid parking on slopes. The vehicle could roll and cause an injury accident.
- The engine and exhaust pipe are extremely hot immediately after the vehicle has been driven. Do not park the vehicle in any place where there is dry grass, waste paper, or other flammable material. This could cause a fire, resulting in burn injuries or loss of life.
- Always shut down the engine before sleeping in the cab. You could cause an injury accident by unintentionally moving the accelerator pedal or shift lever while sleeping. Diesel exhaust will replace the breathable air within an enclosed space, possibly resulting in unconsciousness or death.
- Before opening either door, check the mirrors to be sure it is safe. Suddenly opening a door may cause an injury to drivers, motorcyclists, bicyclists, and pedestrians.

CAUTION

Never leave lighters, cans of carbonated drink, and eyeglasses in the cab when parking the vehicle in hot sunshine. The cab will become extremely hot, so lighters and other flammable items may catch fire and unopened drink cans may rupture. The heat may also damage plastic eyeglass lenses and other plastic parts.

NOTE:

- When you cannot avoid parking on a slope, set the parking brake and chock all the wheels. Turn the wheels into the curb in the direction of roll.
 - Always set the parking brake whenever you park the vehicle. Do not assume that putting the shift selector in "P" (park) will hold the vehicle. Be sure the parking brake is applied fully.
1. <manual transmission> Put the shift lever in neutral with the vehicle not moving. Set the parking brake.
<automatic transmission> Set the parking brake with the brake pedal depressed. Then move the shift selector to "P" (park).

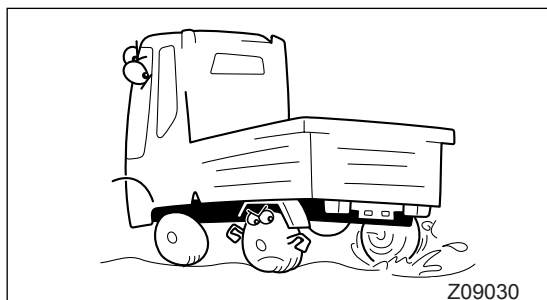
WARNING

Brake faults that would cause the ^{BRAKE} warning light to illuminate have no effect on the parking brake. If the ^{BRAKE} warning light illuminates, the parking brake will stop the vehicle if necessary and prevent an injury accident.

2. Shut down the engine by turning the ignition switch to the "ACC" position. ⇒  P. 5-12
3. To protect against battery discharge, remove the ignition key before you exit.
4. To help prevent theft, be sure the doors are locked before leaving the vehicle.

CAUTION

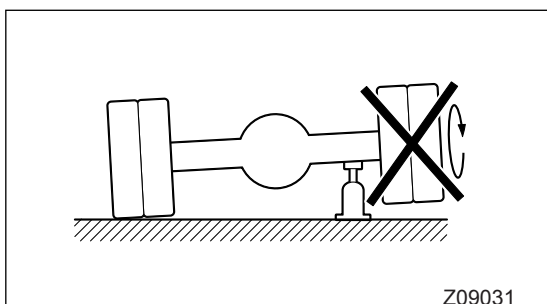
- Do not leave the vehicle sitting for a long time with the ignition switch in the "ON" or "ACC" position. This could discharge the battery.
 - Be sure to turn off all lights after parking to prevent discharging the battery.
5. If parking on a slope is unavoidable, chock all the tires securely and turn the wheels in the direction of roll. Take any other necessary measures to prevent the vehicle from moving.



Limited-slip differential

A limited-slip differential performs a special function. When one wheel begins to spin on a slippery surface, a limited-slip differential diverts torque to the wheel which is not spinning, providing more traction to the vehicle.

This function is effective when driving on bumpy or snow-laden roads, and useful when moving the vehicle out of mud.



WARNING

When you raise the vehicle on one side for replacing a tire or any other purpose, never rotate the raised wheel. This transmits power to the wheel that is on the ground. The vehicle could move and cause an injury.

CAUTION

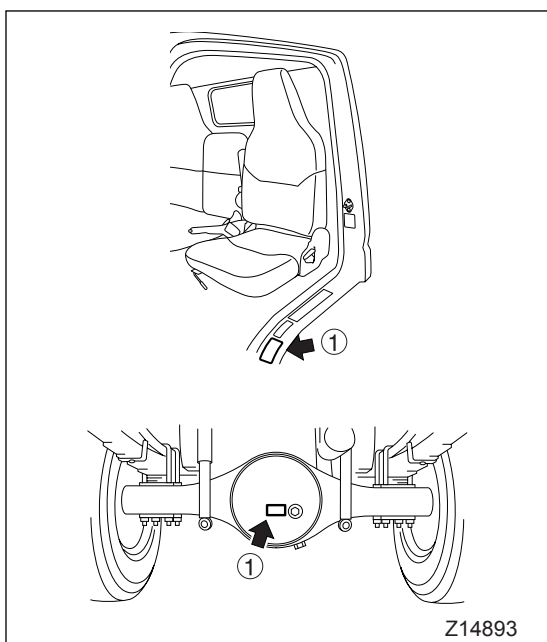
Use only the special oil designed for limited-slip differentials (on vehicles so equipped).

NOTE:

To determine if a vehicle is equipped with a limited-slip differential, look for safety stickers ① near the driver's seat and on the rear axle housing.

The limited-slip differential is an automatic function. It requires no driver intervention. However, it cannot prevent all skids. Follow safe driving practices to minimize opportunities for skidding:

- On slippery road surfaces, do not accelerate through turns. This could cause the vehicle to skid.
- Keep your tires inflated to the same air pressure. Unevenly inflated tires may cause the vehicle to pull to one side during acceleration. They will also eventually cause uneven tire wear.
- Do not use tires of different outside diameter.
- Distribute the load evenly. If the load is heavier at the rear, the vehicle's tendency to move in a straight line will increase slightly.



Loading cargo

WARNING

- Overloading the vehicle can cause an injury accident or loss of life.
- Do not carry passengers in the cargo area while the vehicle is in motion. This can cause an injury.

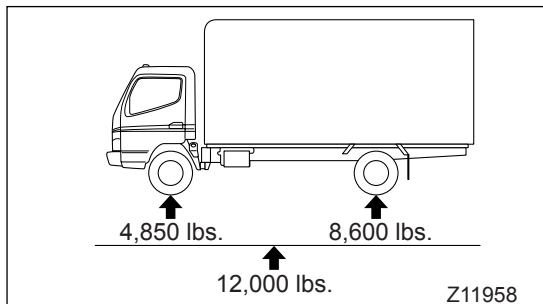
1 Do not overload the vehicle.

- Do not exceed the vehicle weight limits. They represent the maximum physical load the vehicle can safely carry.
- In addition to these rules, be aware of and abide by all state, local, and provincial loading requirements.
- The service brakes are not designed to stop an overloaded vehicle.
- Overloading the vehicle places excessive stress on vehicle components and shortens their service life.
- The vehicle is designed to perform best when loaded within its Gross Vehicle Weight Rating (GVWR) and within its front and rear Gross Axle Weight Ratings (GAWR).
- To find the vehicle's GVWR, front GAWR, and rear GAWR, look on the vehicle identification plate located inside the driver's door, as shown.

NOTE:

If the vehicle is loaded to a weight almost equal to a total of the front and rear GAWRs, it may exceed the GVWR. If either weight limit is exceeded, the vehicle is overloaded.

Example: a vehicle has a GVWR of 12,000 lb (5,445 kg), and also has a front GAWR of 4,850 lb (2,200 kg), and a rear GAWR of 8,600 lb (3,900 kg). Added together, the two GAWRs total 13,450 lbs. (6,100 kg), which exceeds the GVWR.

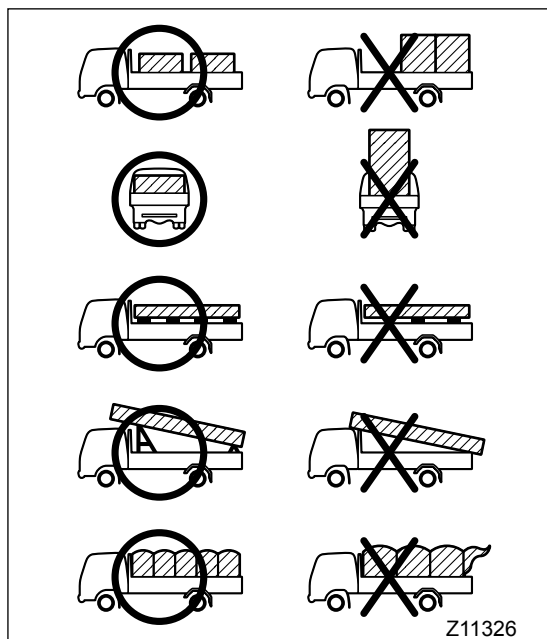


2 Load the cargo correctly.

- Improperly loaded cargo is unstable. If the weight distribution is uneven, this could damage the cargo deck and frame.
- When spreading a tarpaulin, take care not to let it cover, or be drawn into, the engine air intake.

WARNING

- When securing a load with rope, or covering it with a tarpaulin, make sure that neither the rope nor the end of the tarpaulin hang down between the cab and the cargo deck. A rope or tarpaulin that hangs down below the frame could catch fire and cause a burn injury or property damage.
- When loading heavy cargo, take adequate measures to prevent it from sliding. A cargo that changes position while the vehicle is in motion can cause an injury accident or loss of life.
- Do not place wooden boards or other items between the cargo bed and frame. The heat from the exhaust pipe could set fire to them, causing a burn injury.

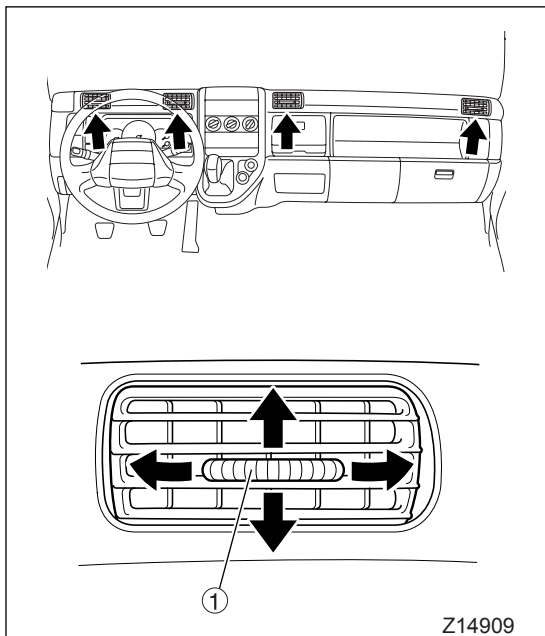
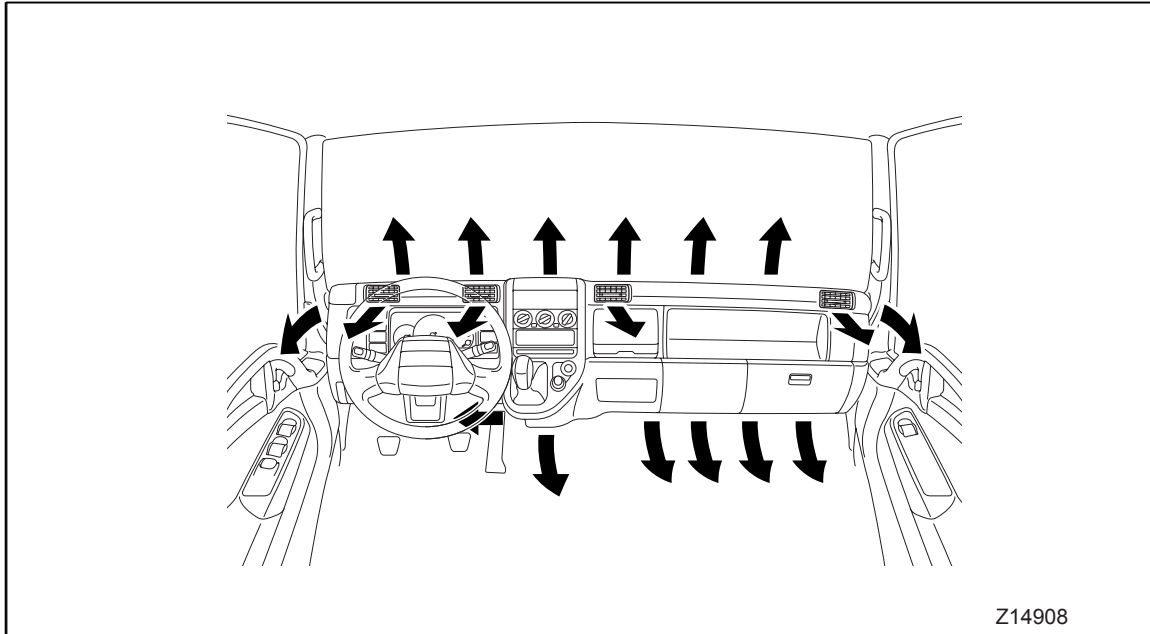


- Place the cargo evenly on deck.
- If cargo is piled too high, the vehicle is at risk of rolling in a side wind or when making a turn.
- If you place supports under the cargo, position them at equal intervals.
- Use suitable supports when loading long objects. Avoid supporting long objects only with the gate and the rear edge of the cargo deck.
- To prevent cargo from falling, strap it down securely and cover it with a tarpaulin. Secure the tarpaulin ends neatly so they do not flap.

8. Heating and air conditioning

Front air outlets	8-2
Heater	8-3
Air conditioner	8-7
Outside air inlets	8-11

Front air outlets



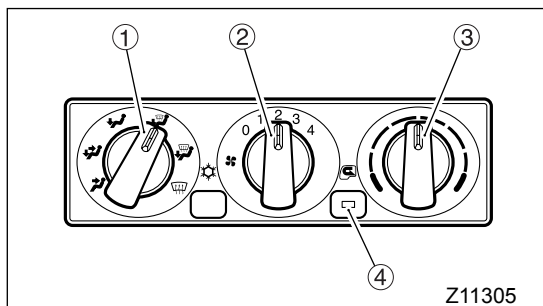
1 Adjusting the airflow direction

- Adjust the left/right airflow direction from each outlet as desired by moving the knob ① to the left or right.
- Adjust the up/down airflow direction from each louvered outlet as desired by pressing the top or bottom of the louver.

Heater

NOTE:

- The heater uses the heat produced by the engine. Therefore, warm air is not available until the engine is warm.
- As the engine warms up with the vehicle parked, use the engine warm-up switch to heat the cab faster. The engine warm-up switch is on the instrument cluster bezel.

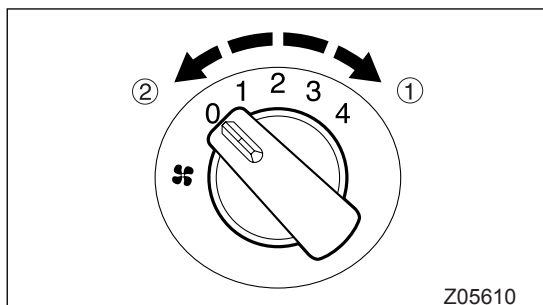


1 Using the climate control panel

- ① Air selection switch
- ② Fan switch
- ③ Temperature control switch
- ④ Recirculation button

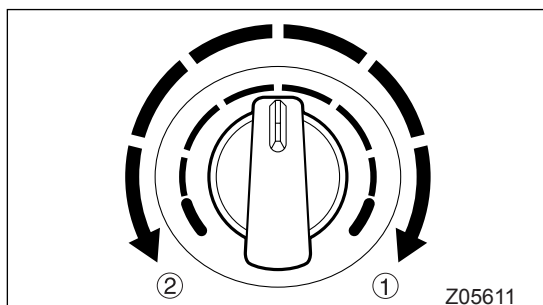
1.1 Fan switch

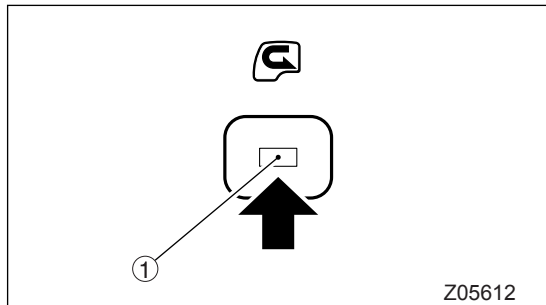
The fan switch allows you to adjust the fan speed. To increase fan speed, turn the dial clockwise (in the direction of arrow ①). To reduce fan speed, turn the dial counterclockwise (in the direction of arrow ②).



1.2 Temperature control switch

The temperature control switch allows you to adjust the cab temperature. To make the cab warmer, turn the dial clockwise (in the direction of arrow ①). To make the cab cooler, turn the dial counterclockwise (in the direction of arrow ②).





1.3 Recirculation button

The recirculation button allows you to choose between fresh outside air or recirculated inside air. Press the button to select recirculated air. When recirculated air is selected, the recirculation indicator ① in the switch illuminates.

With recirculated air selected, press the button again to toggle back to fresh air. The recirculation indicator goes out.

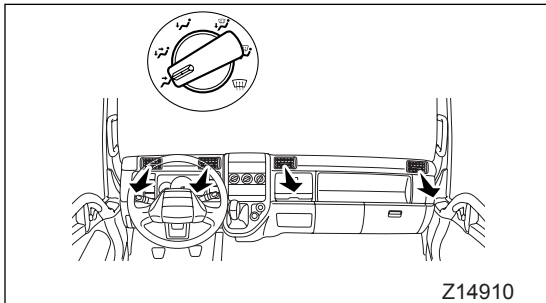
- **Outside air**
Use this setting when driving in normal conditions.
- **Recirculated air**
Use this setting when the outside air is dirty or smoky. This setting can be used when parking to prevent dust from entering the cab.

CAUTION

Do not use the recirculated air setting for a long period of time (20 minutes or more). This will cause the air in the cab to become stale. If this happens, toggle to the fresh air setting.

NOTE:

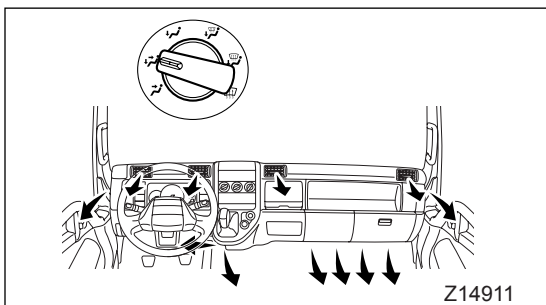
- *Select fresh air during normal driving.*
- *Do not select recirculated air when the humidity is high. This makes the windows prone to fogging.*

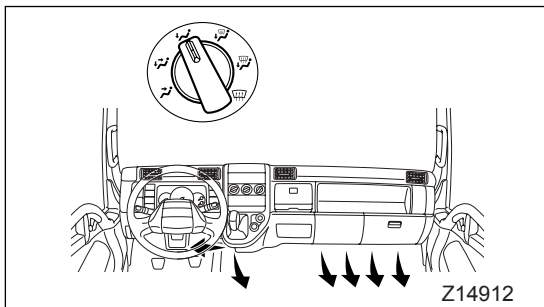


1.4 Air selection switch

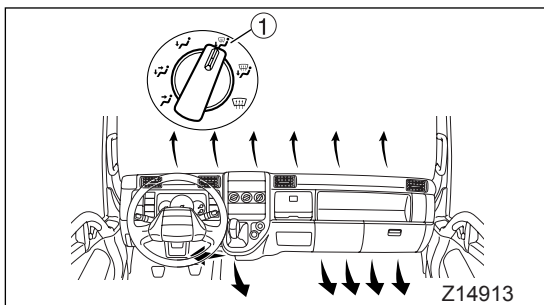
Use the air selection switch to direct air to the selected outlet as desired.

-  For airflow toward the upper body:
Place the air selection switch in the face  position.
-  For airflow toward the upper body and toward the feet:
Place the air selection switch in the bi-level  position.



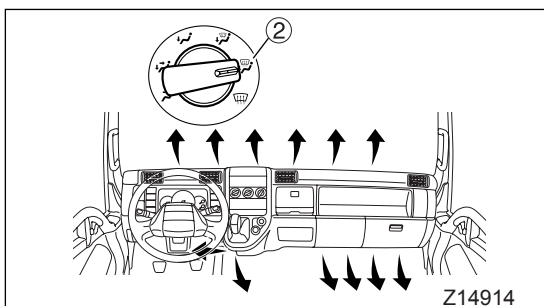


-  For airflow toward the feet:
Place the air selection switch in the foot  position.

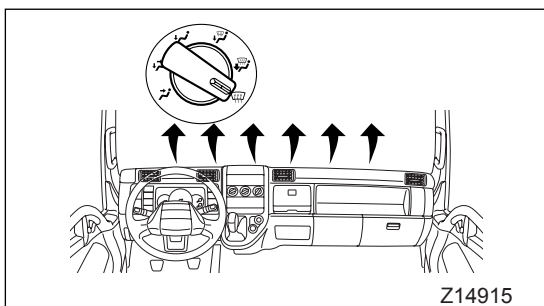


-  For airflow toward the feet and toward the windshield:
Place the air selection switch in one of the two floor/defrost positions.

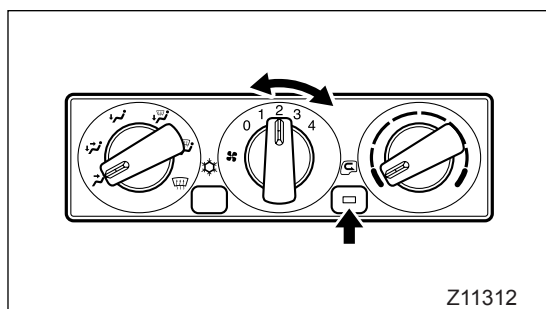
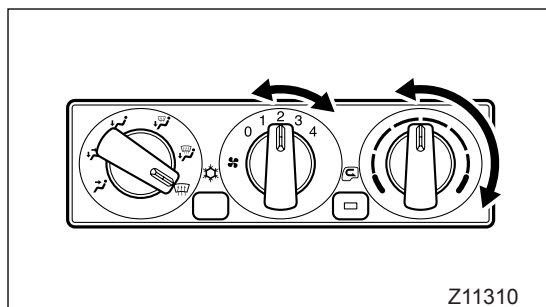
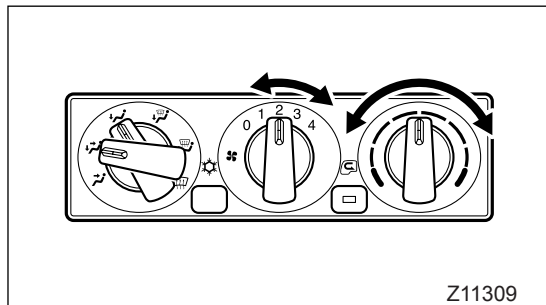
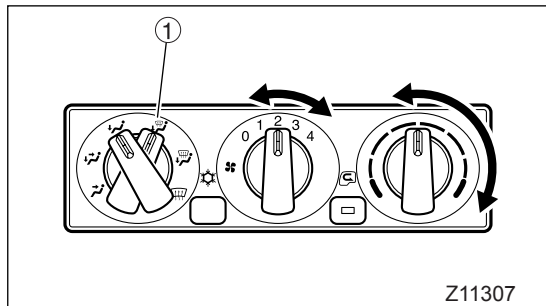
1. With the switch in the floor/defrost 75-25  position ①, most of the air is directed toward the feet and the rest of the air is directed toward the windshield.



2. With the switch in the floor/defrost 50-50  position ②, air is directed equally toward the feet and windshield.



-  For airflow toward the windshield:
Place the air selection switch in the defrost  position.



2 Using the heater controls

2.1 To heat the cab

Place the air selection switch in the foot/defrost 75-25 position ① or in the foot position.

2.2 For cool airflow toward the head and warm airflow toward the feet

Place the air selection switch in the bi-level position or in the foot position.

2.3 To defrost or defog the windshield

Place the air selection switch in the defrost position.

If you wish to defog the windshield quickly, turn the dial on the fan switch clockwise to maximum fan speed.

To defrost the windshield faster, also turn the dial on the temperature control switch clockwise to maximum temperature.

2.4 To ventilate the cab

Press the recirculation button to select fresh air, and turn the dial on the air selection switch to the face position.

3 Cleaning the HVAC air filters

Clean the air filters in the heating, ventilation, and air conditioning (HVAC) system every 6 months.

A dust-loaded HVAC filter can cause malfunction of the blower motor. P. 11-60

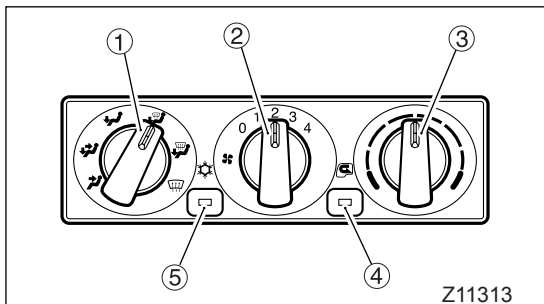
Air conditioner

WARNING

Do not leave children alone in the cab, even with the air-conditioner (A/C) on. If the air conditioning should accidentally stop, the temperature inside the cab could climb high enough to produce heat-related injuries.

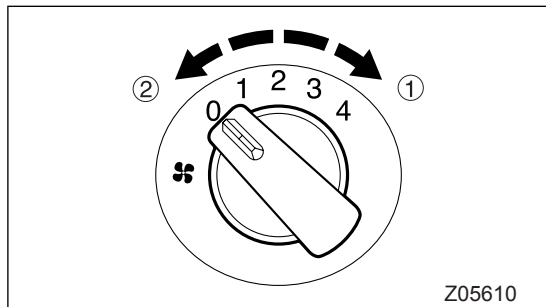
NOTE:

- In some vehicles, a fast idling device increases the engine's idle speed slightly when the air conditioner is on. This is done in order to prevent excessive engine vibration. If the engine's idle speed does not increase automatically when the air conditioner is used, the vehicle is not equipped with a fast idling device. Use the engine idle control to raise the engine's idle speed when the air conditioner is operating. A fast idling device can be installed by any authorized Sterling service facility.



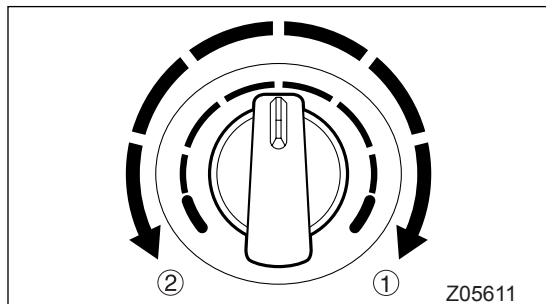
1 Using the climate control panel (A/C)

- ① air selection switch
- ② Fan switch
- ③ Temperature control switch
- ④ Recirculation button
- ⑤ Air conditioner button



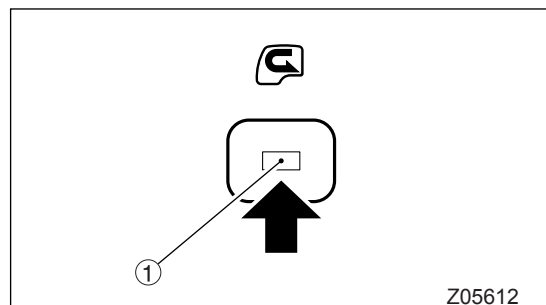
1.1 Fan switch

The fan switch allows you to adjust the fan speed. To increase fan speed, turn the dial clockwise (in the direction of arrow ①). To reduce fan speed, turn the dial counterclockwise (in the direction of arrow ②).



1.2 Temperature control switch

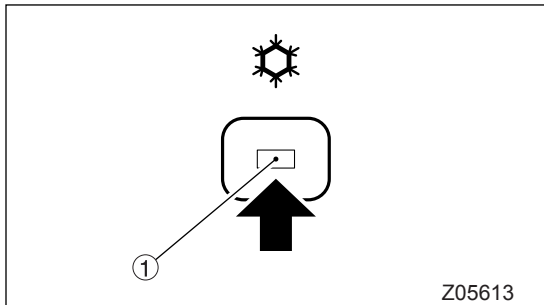
The temperature control switch allows you to adjust the cab temperature. To make the cab warmer, turn the dial clockwise (in the direction of arrow ①). To make the cab cooler, turn the dial counterclockwise (in the direction of arrow ②).



1.3 Recirculation button

The recirculation button allows you to choose between fresh outside air or recirculated inside air. Recirculated air is automatically selected when the air conditioner is on. When recirculated air is selected, the recirculation indicator ① in the switch illuminates.

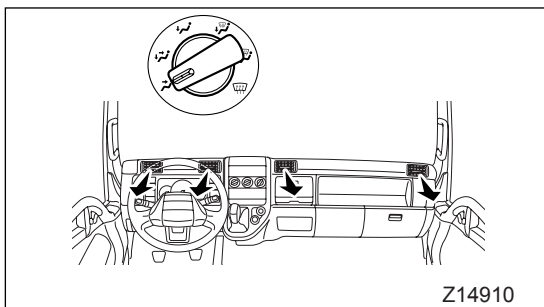
With recirculated air selected, press the button again to toggle back to fresh air. The recirculation indicator goes out.



1.4 A/C (air conditioner) button

The A/C button provides cool, dry air to the cab. Press the button to turn on the air conditioning. When air conditioning is selected, the A/C indicator ① in the center of the switch illuminates.

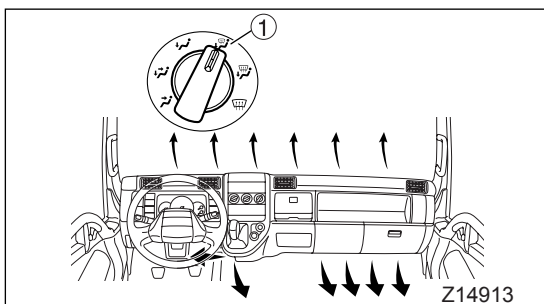
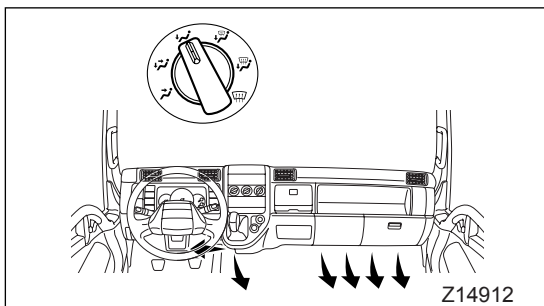
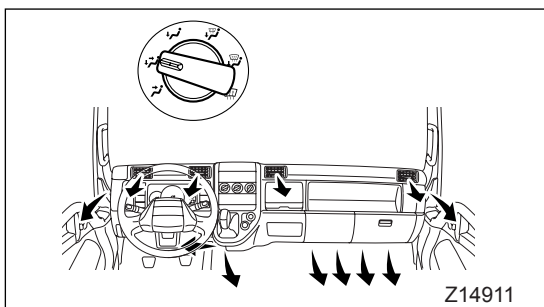
With the A/C indicator on, press the button again to turn off the air conditioning. The A/C indicator goes out.



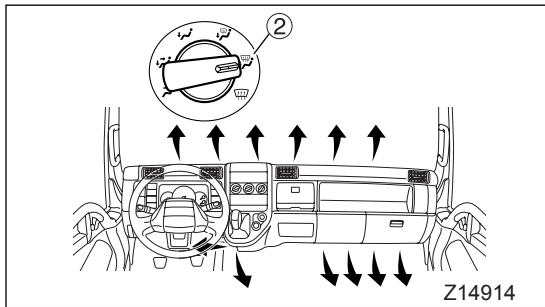
1.5 Air selection switch

Use the air selection switch to direct cool air to the selected outlet as desired.

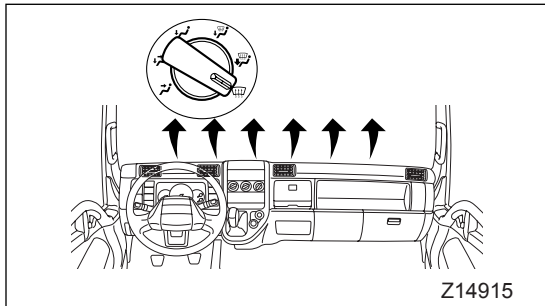
- For cool airflow toward the upper body:
Place the air selection switch in the face position.
- For cool airflow toward the upper body and toward the feet:
Place the air selection switch in the bi-level position.
- For cool airflow toward the feet:
Place the air selection switch in the foot position.
- For cool airflow toward the feet and toward the windshield:
Place the air selection switch in one of the two floor/defrost positions.



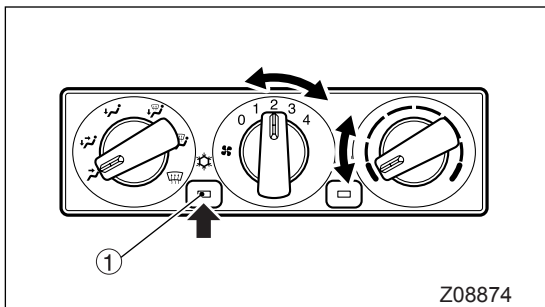
1. With the switch in the floor/defrost 75-25 position ①, most of the air is directed toward the feet and the rest of the air is directed toward the windshield.



2. With the switch in the floor/defrost 50-50 position ②, air is directed equally toward the feet and windshield.



- For cool airflow toward the windshield: Place the air selection switch in the defrost position.

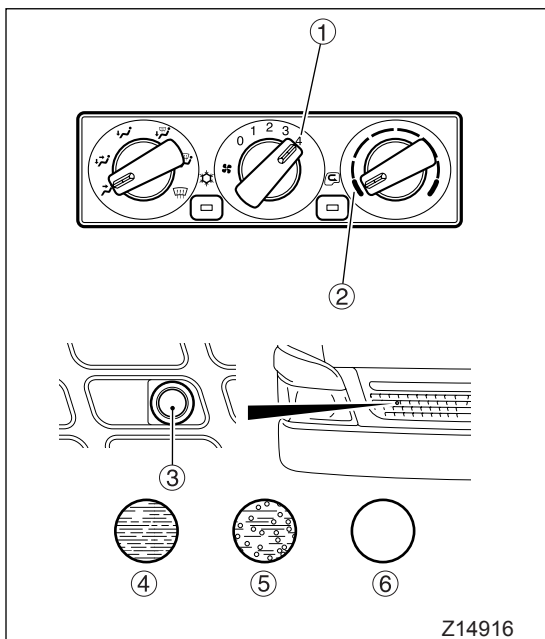


2 Using the controls

2.1 To cool the cab

Press the air conditioner switch to turn on the air conditioner. The A/C indicator ① illuminates while the air conditioner is operating.

Set the dial on the temperature control switch to a comfortable temperature. To cool the cab faster, turn the dial on the temperature control switch counterclockwise to maximum cooling and the dial on the fan switch clockwise to maximum speed.



3 Checking the refrigerant level

If the level of the refrigerant is too low, the A/C will not work as well. Check the refrigerant level whenever a problem appears. Set the air conditioner to maximum--turn the dial of the fan switch to maximum speed (position ①) and the dial of the temperature control switch to maximum cooling (position ②). Observe the sight glass ③ through the grille. Check for the presence of bubbles. The refrigerant level is normal if no bubbles are visible through the glass with the A/C on. If bubbles are visible, the refrigerant level is too low. Have your system charged at any authorized Sterling service facility.

- ④ Refrigerant level low
 - ⑤ Refrigerant level normal
 - ⑥ Refrigerant level too high, or no refrigerant
- If you observe condition ⑥ and the A/C does not work well, have the air conditioner inspected by an authorized Sterling service facility.

CAUTION

- Do not run the air conditioner without refrigerant. This will damage the air conditioner compressor. Check the refrigerant level if the air conditioner does not work efficiently.
- Never use any refrigerant other than HFC-134a. Other refrigerants will cause a malfunction of the air conditioning system.

NOTE:

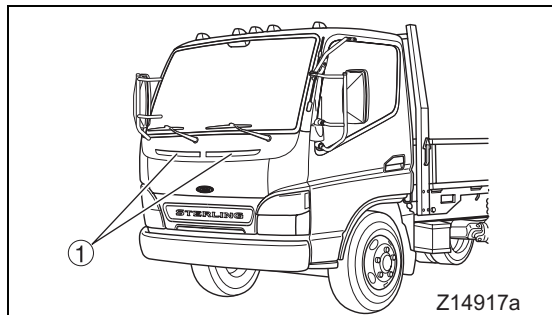
Do not release refrigerant into the atmosphere. If it becomes necessary to discharge the refrigerant, consult the nearest authorized Sterling service facility to have the refrigerant removed properly.

To protect the environment, your vehicle's air conditioning system uses refrigerant HFC-134a which does not harm the ozone layer.

Since charging the system with this refrigerant requires a method different from the conventional method, be sure to contact an authorized Sterling service facility to service your A/C.

4 Cleaning the HVAC air filters

Clean the air filters in the heating, ventilation, and air conditioning (HVAC) system every 6 months. A dust-loaded HVAC filter can cause malfunction of the blower motor.  P. 11-60



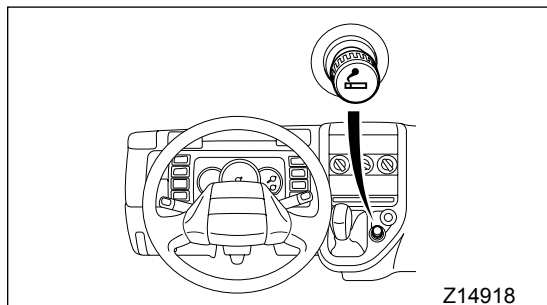
Outside air inlets

The outside air inlets allow fresh outside air to flow through the front air outlets when fresh air is selected. They must not be obstructed.

- Make sure the outside air inlets ① are not covered or otherwise obstructed. Remove any object that covers or obstructs an air inlet.
- Do not directly apply steam from a cleaner to the outside air inlets. Water could enter the cab, and cause the wiper motor to malfunction.

9. Interior equipment and accessories

Cigarette lighter	9-2
Ashtrays	9-3
Coat hooks	9-4
Sun visors	9-4
Dome light	9-4
Storage compartments	9-5
Radio	9-7
Accessories	9-8



Cigarette lighter

The cigarette lighter can be used when the ignition switch is in the "ON" or "ACC" position.

Push the cigarette lighter all the way in. Within 30 seconds, it will pop back to its original position with its core red hot. Pull it out of its socket to use it.

If the lighter remains in its socket for more than 30 seconds, pull it out by hand. Have the lighter inspected by an authorized Sterling service facility. Do not use a cigarette lighter if the case is deformed or misshapen. A deformed lighter will not pop out properly. Be sure to use genuine lighters or equivalents as replacements.

Do not plug a cigarette lighter from another vehicle into your vehicle's socket. Your vehicle's cigarette lighter is designed for a 12 V power supply. Do not use a 24 V cigarette lighter.

WARNING

- Do not allow a child to touch the cigarette lighter. This could cause a burn injury.
- Do not touch the metallic parts of the cigarette lighter. This could cause a burn injury.
- Do not hold the cigarette lighter in the pushed-in position, or allow it to remain pushed in, since the wiring could burn out and start a fire.
- Do not exit your vehicle with the cigarette lighter pushed in. Doing so could result in a fire.
- Do not use electrical devices designed to be plugged into the cigarette lighter socket. This could overload the circuitry, overheat the wiring, and cause a fire.

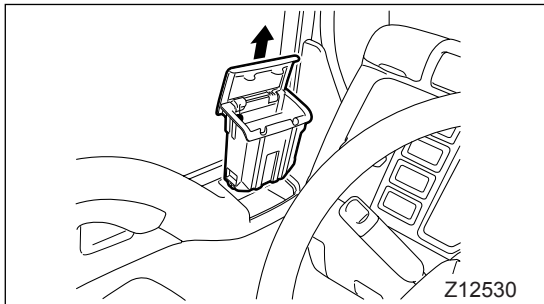
A fire can cause burn injuries and loss of life.

Ashtrays

Remove and empty the ashtrays when they become full. Be sure to extinguish any flammable materials before putting them in ashtrays.

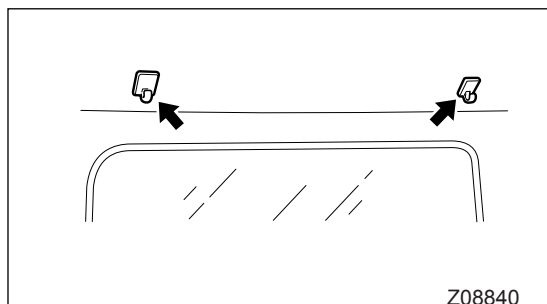
WARNING

- To prevent fires, close the lids on the ashtrays completely.
- Use the ashtray only for smoking materials. Empty the ashtray regularly. An overcrowded ashtray could cause a fire.
- Do not throw smoking materials out of the windows. This endangers the environment and could start a fire.
- Using a broken ashtray could cause a fire. A fire can cause burn injuries and loss of life.



Driver's door ashtray and passenger's door ashtray

- Raise the lid to use the ashtray.
- To remove the ashtray, hold the lid and pull the entire ashtray upward.
- When cleaning the ashtray, be careful not to strike it too hard, since it could break. Replace a broken ashtray with a new one.

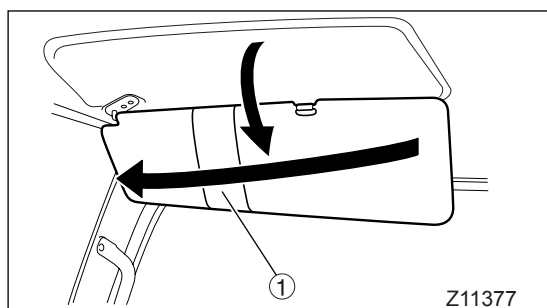


Coat hooks

Use the coat hooks to hang clothing or similar items.

CAUTION

Do not pull the coat hooks with excessive force or hang heavy items on them. This could cause them to break.



Sun visors

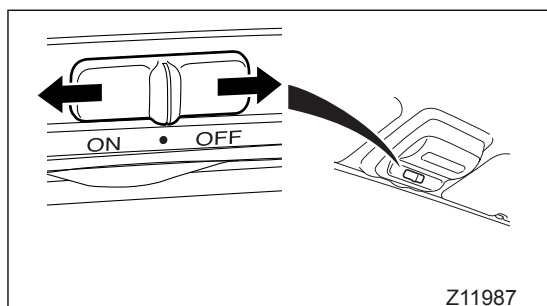
The sun visor screens your eyes from sunlight. Change its angle as needed. Unhook the inside edge of the sun visor and swing it sideways to reduce glare from the side. There is a ticket holder ① on the back of the driver's sun visor.

Dome light

The dome light can be used with the ignition switch in any position.

CAUTION

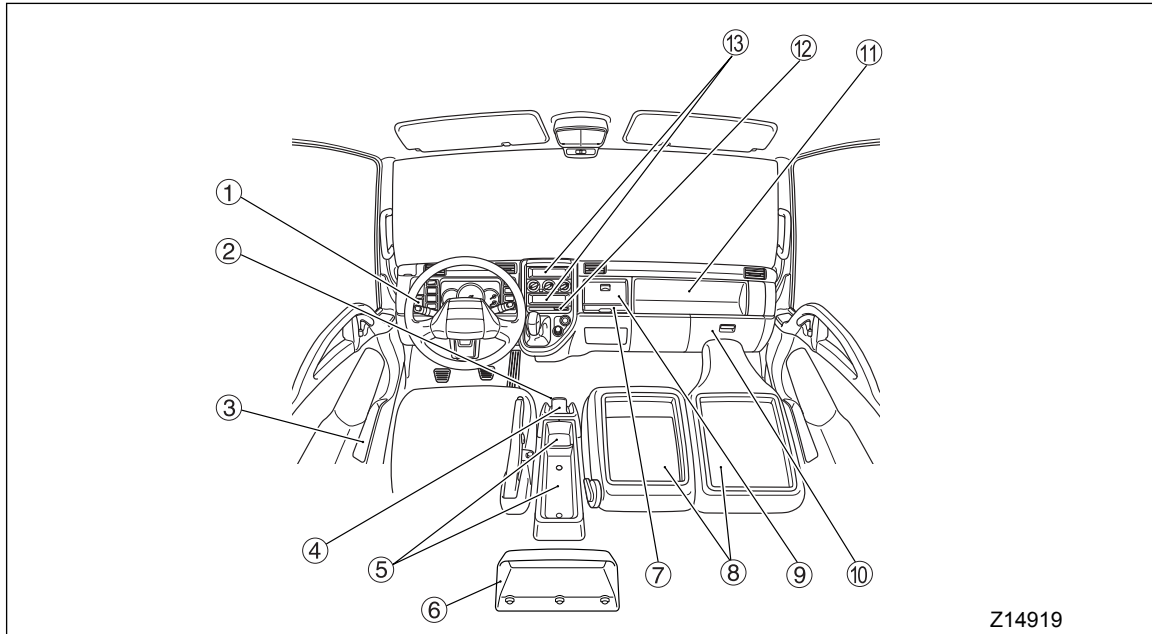
Always turn off the lights before you leave the vehicle. Do not leave the dome light illuminated for a long period of time when the engine is not running. This can discharge the battery and prevent the engine from starting.



1 Dome light

- **"ON" position**
The light illuminates with the door open or closed.
- **"•" position**
The light illuminates when either door is opened and goes off when the door is closed.
- **"OFF" position**
The light is off with the door open or closed.

Storage compartments



Z14919

1. Accessory box
2. Hook
3. Door pocket
4. Bottle holder
5. Center console

6. Rear panel box
7. Cup holder
8. Seatback trays
9. Glove compartment

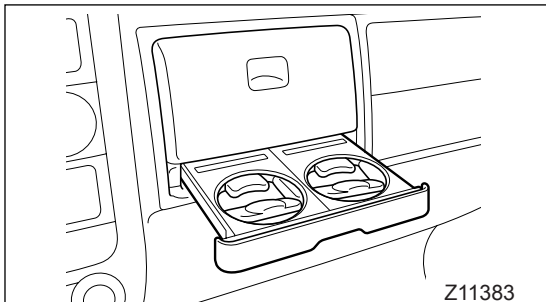
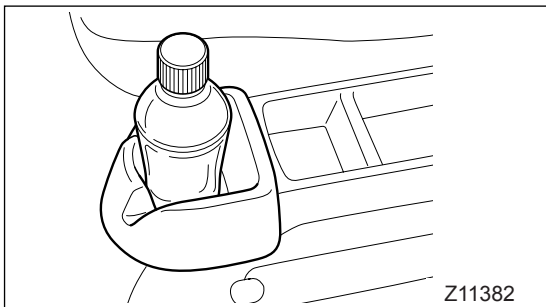
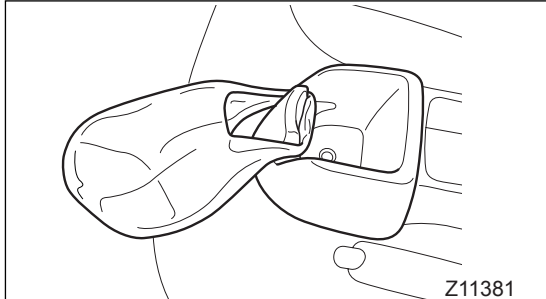
10. Map compartment
11. Parcel tray
12. Card holder
13. Appliance cases

WARNING ⚠

Always close the storage compartments before operating the vehicle. Open storage compartment covers could cause an injury in the event of a collision or sudden stop.

CAUTION ⚠

- Fuses, relays, and other electrical items are located below the glove compartment ⑨ and parcel tray ⑪. Do not splash liquid on the glove compartment and parcel tray, and do not put wet objects in them.
- Do not use the center console and parcel tray to hold items that might roll while the vehicle is moving. Rolling items could damage the cab interior.



① **Accessory box**

Use the accessory box to keep small articles.

② **Hook**

There is a hook on the front of the bottle holder in the center console. Use this hook to hang a trash bag or other small container.

③ **Door pocket**

There is a pocket in the driver's door. Use this pocket for a cloth, a map, or other handy items.

④ **Bottle holder**

There is a bottle holder at the front of the center console. Use this bottle holder to hold beverage bottles or similar items.

⑤ **Center console**

Use the center console to hold small items.

⑥ **Rear panel box**

Use the box in the rear panel to hold larger items.

⑦ **Cup holder**

Slide out the cup holder tray below the glove compartment. There are two cup holders in the tray. When not in use, keep the cup holders retracted inside the dash.

A fuse box is located below the cup holder. Be careful not to splash liquids on the fuse box cover.

WARNING ⚠

- When the vehicle is moving, the contents of containers inserted in the cup holders may spill. A hot beverage could cause a burn injury.
- If you accidentally splash liquid on the fuse-box cover, check that the liquid has not seeped into the fuse box and caused electrical damage. Electrical damage could cause a fire, resulting in burn injuries and loss of life.

⑧ **Seatback trays**

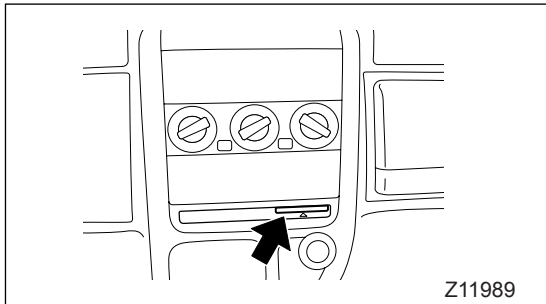
The passenger's seat and the middle seat each have a tray in the back of the seat. To use the tray, tilt the backrest forward.

⑨ **Glove compartment**

⑩ **Map compartment**

⑪ **Parcel tray**

Use the glove compartment, map compartment, and parcel tray to hold vehicle documents, insurance papers, maps, and other items that need to be easily available.



⑫ **Card holder**

Use the card holder to hold tollway tickets and other similar items.

⑬ **Appliance cases**

The appliance cases provide space to mount a radio or other audio equipment.

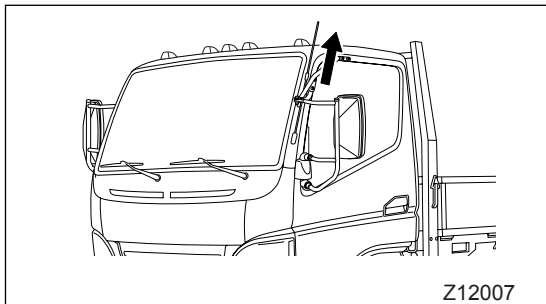
Radio

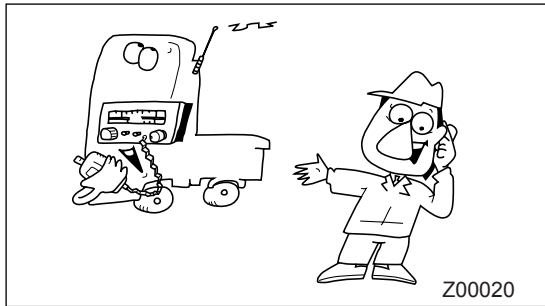
The radio can be used with the ignition switch in the "ON" position or "ACC" position.

CAUTION

Using the radio for an extended period of time without the engine running could discharge the battery.

- Extend the antenna before using the radio. Retract the antenna when it is likely to cause an obstruction. *Example:* when tilting the cab.





Accessories

- See an authorized Sterling dealer if you are considering adding accessories to your vehicle.
- Your vehicle contains electronic devices. Even though these are protected against interference from electromagnetic emissions, you should consult an authorized Sterling dealer before adding equipment that emits electronic signals, such as mobile telephones.

WARNING ⚠

To avoid the risk of personal injuries caused by overheating, fire, or electrical damage, have accessories connected by an authorized Sterling service facility.

10. In cold weather

Coolant	10-2
Engine oil	10-2
Fuels	10-2
Cold weather operation	10-3
Installing tire chains	10-4

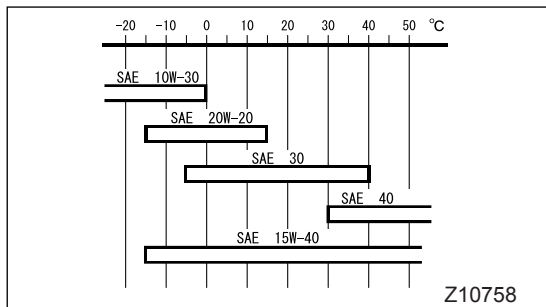
10-2 *In cold weather*

Coolant

- When vehicles are shipped from the factory, long-life diesel coolant is added to the vehicle cooling system.
- This coolant contains corrosion-inhibiting anti-freeze to protect the cooling system. For added safety, have an authorized Sterling service facility check that the coolant mixing ratio is correct before the onset of winter.
- Be sure to use fully-formulated antifreeze with corrosion inhibitors and add it in the correct mixing ratio. ⇒ P. 11-33

CAUTION

Never mix brands of antifreeze or anti-corrosion additives. This can cause the coolant to perform poorly. If a different coolant additive has been used, be sure to thoroughly flush the cooling system before adding a new brand of coolant.



Engine oil

At low temperatures, the viscosity of engine oil increases. This can make it hard to start the engine, especially early in the morning. Therefore, choose engine oil with a viscosity that is appropriate for the weather conditions. ⇒ P. 11-17

Fuels

Ordinary summer-grade (2-D) diesel fuel reaches its cloud point in freezing weather, making it impossible to start the engine. If you are heading to a cold-weather area, fuel your vehicle with 1-D or winterized 2-D diesel fuel as soon as possible. ⇒ P. 1-5

NOTE:

Fuel cloud point is the temperature at which wax crystals become visible, which is generally above the pour point of the fuel. To keep the fuel filter elements from plugging with wax crystals, the cloud point must be lower than the lowest starting temperature the engine will face.

Cold weather operation

- If the engine fails to start, return the ignition switch to the "ACC" or "LOCK" position. Wait for the battery to recover before trying to start the engine again.
- As the temperature falls, battery performance decreases. Check the battery electrolyte level and its specific gravity. ⇒  P. 11-58
- In cold weather, use a windshield washer fluid additive in the concentration indicated by the manufacturer's instructions.

CAUTION

Do not put engine coolant or antifreeze into the washer fluid. This could cause paint damage.

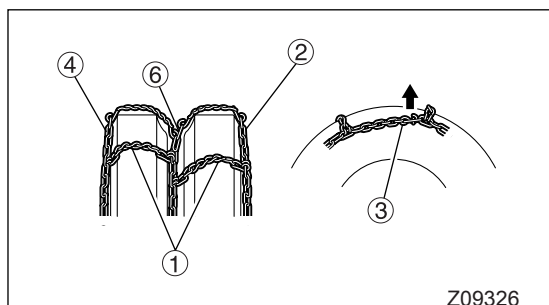
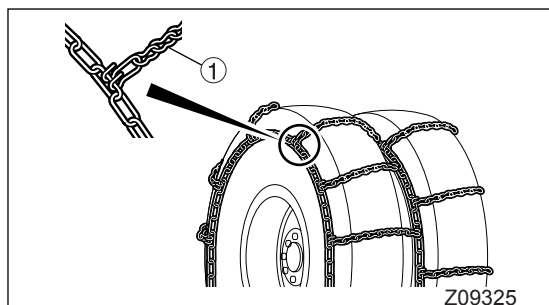
- Check the undercarriage and fender wells in snowy weather. If necessary, remove snow and ice, taking care not to damage the vehicle.
- If the brakes freeze, either from driving on snow-covered roads, or while parked in cold weather, braking performance can be reduced. Drive carefully and be alert to other traffic. With frozen brakes, drive slowly and put light pressure on the brake pedal. This will warm the brakes.
- When parking your vehicle, select a site not directly exposed to wind or snow. Face it away from the wind.
- Do not apply the parking brake in extremely cold conditions. This could cause it to freeze and become impossible to release. In cold conditions, do the following steps to park the vehicle:
 1. Stop the vehicle and set the parking brake. Never park on a slope.
 2. Chock all the wheels securely.
 3. <manual transmission> Shift into first gear or reverse.
<automatic transmission> Move the shift selector to "P" (park).
 4. Release the parking brake.

Installing tire chains

- Make sure that tire chains are installed properly so that they do not become loose and interfere with other vehicle parts while the vehicle is in motion.
- Use triple chains corresponding to tire size.

CAUTION

- Do not use chains on the front wheels; snow tires are recommended instead.
- When fitting tire chains, see the manufacturer's instructions.
- With chains installed, drive at low speed, less than 20 mph (32 km/h).
- Driving on a dry road with chains installed may damage the chains and the road surface. Remove your chains as soon as possible after you come back on dry road.
- Make sure that the chains and their spring bands are not excessively worn or otherwise damaged.
- If you hear an abnormal noise while driving, stop the vehicle in the nearest safe place and check the tire chains.

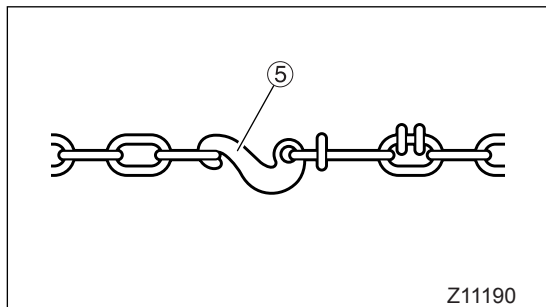


1. Place the chains over the tires with the hook ends of the cross chains ① facing outward.

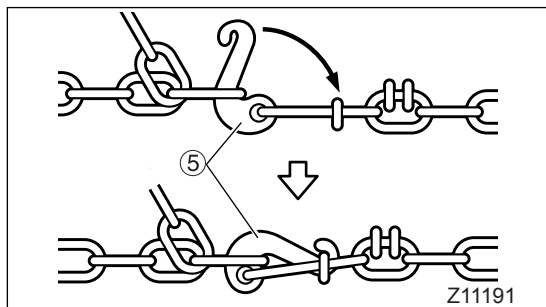
2. Connect each hook ③ to the inside chain ②, leaving no excess links. Then, to take up the slack in the inside chains, pull the cross chains ① for the inside tire outward until tight.

NOTE:

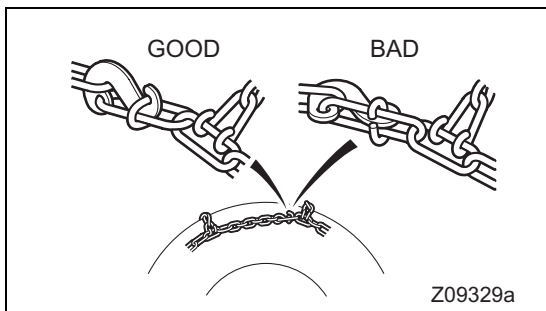
Pull the hook section outward to the maximum extent possible.



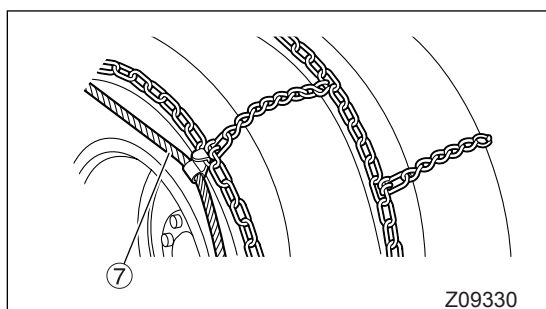
3. Temporarily connect the hook ⑤ on the outside chain ④ as shown.



4. Pull the middle chain ⑥ as tight as possible and connect it to the hook.
5. Pull both ends of the outside chain ④ as tight as possible and close the hook ⑤.



6. Ensure that each hook lies flat on the tire sidewalls. Also, make sure that the chains are not twisted.
7. Fasten extra chain links with a metal wire to prevent them from hitting against other vehicle components.

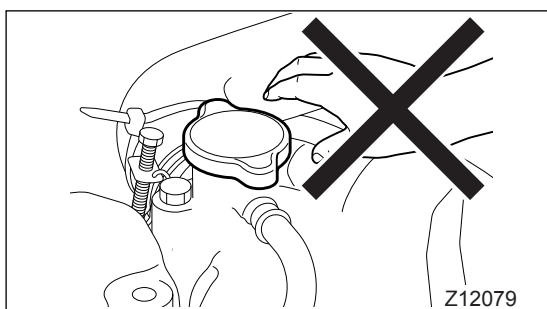
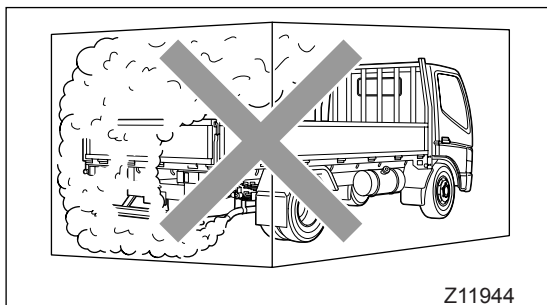


8. Fit the spring band ⑦. Attach the hooks of the spring band to the chain at regular intervals, with the hook ends facing outward.
9. After driving the vehicle for 5 to 10 minutes, check the chains. Tighten any loose chains and connect any loosened hooks.

11. Pretrip inspection and maintenance

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General service precautions



WARNING

- Never run the engine in a poorly ventilated area. Diesel exhaust will replace the breathable air within an enclosed space, possibly resulting in unconsciousness or death.
- Batteries release a gas mixture that is explosive. Do not smoke when working around batteries. Put out all flames and remove any source of sparks or intense heat.
- Battery acid is extremely harmful if splashed in the eyes or on the skin. To prevent personal injury, always wear a face shield and protective clothing when working around batteries.
- Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. To prevent possible personal injury, always wash your hands after handling battery parts and related accessories.
- Use extreme care when tilting the cab with the engine running. Chock all the tires fore and aft, set the parking brake, and place the transmission in park. If the engine is running, the vehicle could move, causing an accident that could result in personal injury or property damage.
After lowering the cab, check that it is locked securely in position. ➡  P. 11-5
- To avoid burns, do not touch the engine, exhaust manifold, radiator, exhaust pipe, or other parts in the engine compartment until they are cool.
- To prevent scalding, do not remove or loosen the radiator cap until the coolant temperature is below 122°F (50°C).
- Never work around or under a vehicle that is supported only by a jack. Always support the vehicle with safety stands. Jacks can slip, causing the vehicle to fall, which could result in serious injury or death.
- If a metal object connects an ungrounded battery terminal to a nearby metal part of the vehicle which is grounded, it could short out the batteries, causing sparks and possible personal injury or property damage.

Please take the following precautions when servicing your vehicle:

- Park the vehicle on a level surface.
- To prevent the vehicle from moving, set the parking brake and chock all the tires.
- Remove the ignition key from the switch except when needed to start and run the engine.
- Remove wrist watches, rings, and neckties. Wear clothing that will not obstruct movement or snag on parts of the vehicle.
- Wear all safety gear necessary for your task, for example, hard hat or goggles.
- Before tilting the cab, make sure there is adequate clearance in front of the vehicle, and that the area is free of people and all objects.
- Use the correct tools.
- Do not make adjustments or repairs unless you have been instructed in the specific skills necessary for the type of work being performed. For servicing that is difficult or not shown in this manual, bring your vehicle to an authorized Sterling service facility.
- When servicing electrical equipment, disconnect the negative terminal (–) of the battery.
- When replacing the oil or coolant, be sure to have a suitable container ready to catch the drained fluid.
- Water emitted by the exhaust pipe is slightly acidic and could cause your hands to be chapped. If you touch this water, rinse it off under a faucet.
- Take great care when working near the fan and fan belt. Never touch them when they are moving.
- The transmission cooling fan in an automatic transmission vehicle switches on automatically when the fluid temperature becomes high. Keep your hands and tools clear of it.
- Keep oily rags and other flammable items in a safe place.
- Put away all tools and rags after use. Items left in the engine bay could get hot and catch fire.
- Be careful not to hurt yourself on the vehicle body when performing inspections.

CAUTION

- **Replace filters and filter elements regularly. Blocked or damaged filters can reduce the engine's power and impair its operation. Always use genuine Sterling parts for replacements. Use the service products recommended in this manual. Use of any other parts or service products may lead to component failure.** ⇒  P. 13-3
- **Dispose of drained oil and coolant in a responsible manner. Improper disposal could cause environmental damage.**
- **The muffler contains a catalytic converter. Do not kick or knock the muffler since this could damage the catalytic converter.**

Tilting the cab

1 Preparation

WARNING

- Never tilt the cab when the vehicle is on any kind of slope. The cab will move too quickly under the effect of inertia if it is tilted on a slope, possibly causing component damage and personal injury. In addition, the hook may not engage completely when the cab is lowered.
- To prevent injuries, never tilt the cab with persons inside.
- The cab can drop suddenly, causing a personal injury, if there are heavy objects inside, or it is equipped with a roof deck.

- Park the vehicle on a level surface and shut down the engine.
- To prevent the vehicle from moving, set the parking brake and chock all the tires.
- <manual transmission> Put the shift lever in neutral.
<automatic transmission> Put the shift selector in "P" (park).
- Remove any containers of water or other liquids from inside the cab before tilting.
- Loose items left in the cab could fall and break the windshield or other equipment. Before tilting the cab, remove or secure all loose items. Remove any objects from the roof.
- Make sure both doors are tightly closed.
- Do not touch the steering wheel, shift lever, parking brake lever, or any other control in the cab while the cab is tilted.
- Before tilting the cab, make sure there is adequate clearance in front of the cab and above it (see table), and that the area is free of people and all objects.

Clearance in front	3.3 ft. (1 m) or more
Clearance above	3.3 ft. (1 m) or more

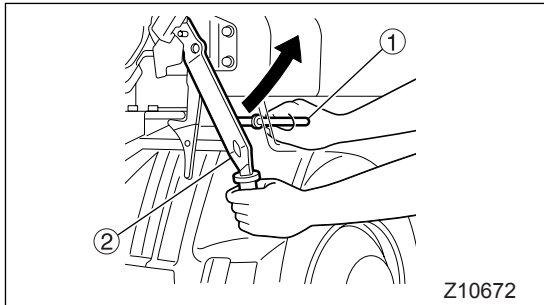
- If there are any obstructions within the clearance areas shown above, remove them.
- Retract the radio antenna.

2 Raising the cab

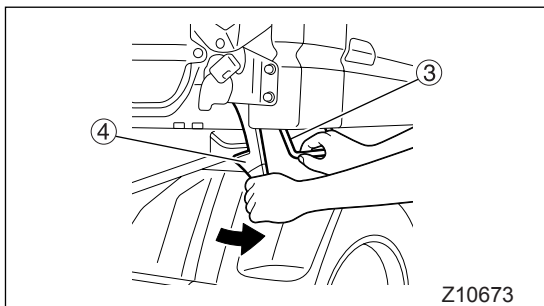
CAUTION

Raise the cab slowly and gradually. Raising it quickly and using too much force could damage the cab tilt mechanism.

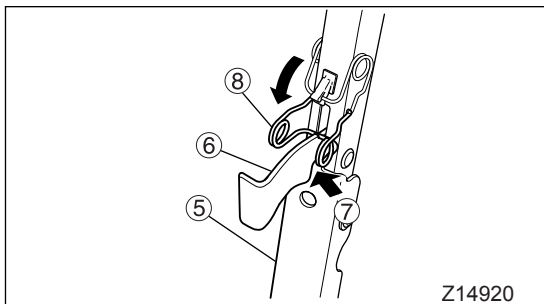
1. Pull out the primary release (lever A) ①. While holding lever A, lift the secondary release (lever B) ②.



2. Grasp the tilt grip ③ and pull the safety release (lever C) ④. The cab will rise slightly.



3. Use the tilt grip to raise the cab. After confirming that the lock lever ⑥ is hooked onto the cab stay ⑤ and the stay is secured, fit the hold-down ⑧ into the notch ⑦ in the lock lever. The cab stay must be completely straight for the hold-down to engage in the notch.



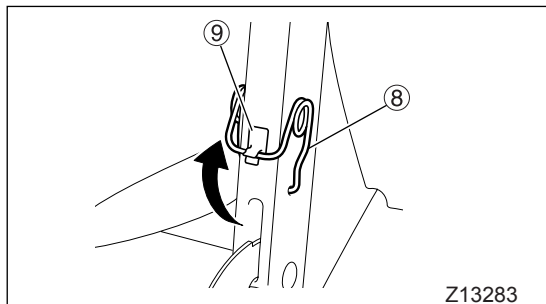
WARNING

Be sure to fit the hold-down into the notch in the lock lever to prevent the cab from dropping, which could cause a personal injury.

3 Lowering the cab

WARNING

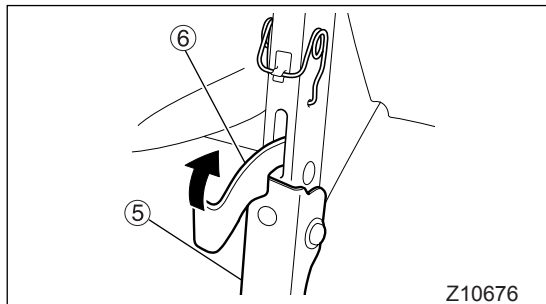
- Before lowering the cab, make sure that you have not left flammable objects inside the engine compartment. This could cause a fire and result in burn injuries.
- The cab could drop suddenly, causing a personal injury, if there are heavy objects inside, or on the roof deck. Always lower the cab slowly and provide adequate support.
- When you have unlocked the cab stay, remove your hands from the lock lever. As the cab stay releases, it tips toward the rear of the vehicle. A hand, or other body part could get pinched, and cause an injury.



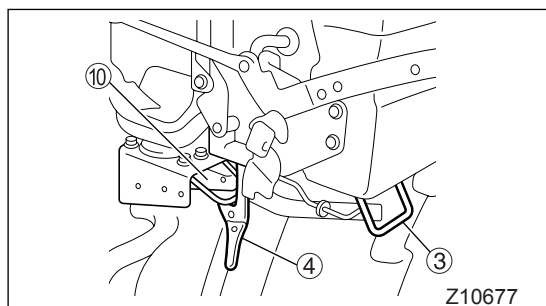
1. Release the lock lever hold-down ⑧ and secure it under the clip ⑨.

CAUTION

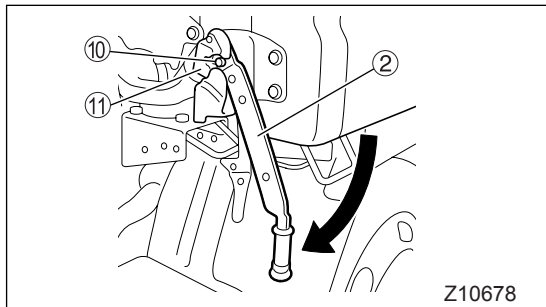
Hold the cab tilt grip when lowering the cab. Holding lever B or any other part when lowering the cab could result in damage to the tilt mechanism.



2. Hold the tilt grip to support the cab. Lift the lock lever ⑥ and release the cab stay ⑤.



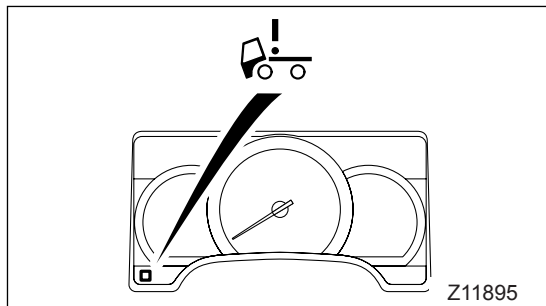
3. Still holding the tilt grip ③, lower the cab until the hook on the safety release (lever C) ④ engages with the cab mount ⑩.



4. Lower the secondary release (lever B) ② until the pin ⑩ engages with the latch ⑪. Make sure that lever B is locked in place and cannot be lifted.

NOTE:

If lever B cannot be lowered until the pin engages, tilt the cab again and repeat the lowering procedure from the beginning.



5. Turn ON the ignition switch, and make sure that the cab tilt  warning does not illuminate. If the warning illuminates and the buzzer sounds, the cab is not locked completely. If this happens, tilt the cab again, repeat the lowering procedure from the beginning, and lock it again.

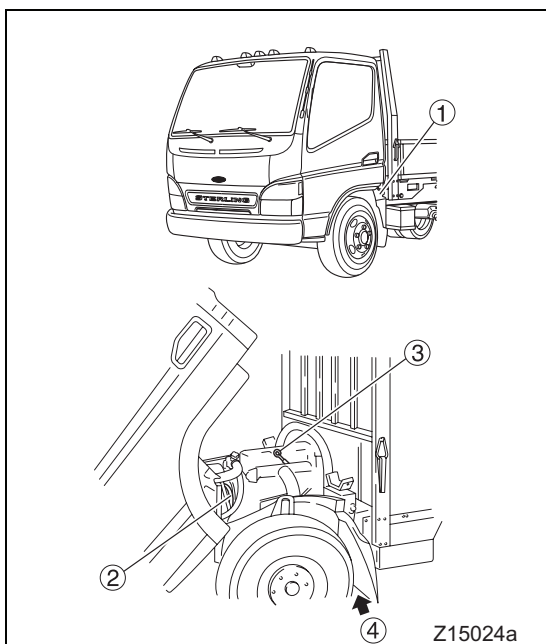
NOTE:

Sometimes the switch that activates the cab tilt warning does not pop out when lever B is locked in place. If you continue to get a warning light with lever B locked, move the switch manually if necessary. If this does not work, replace the switch.

Pretrip inspection

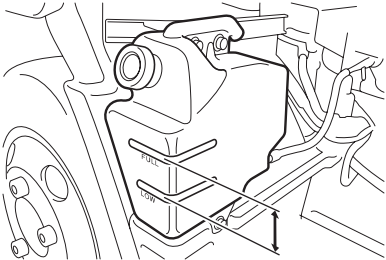
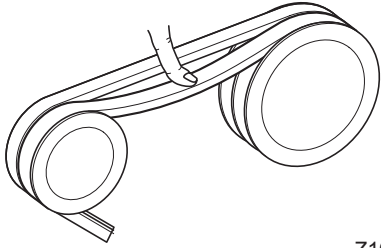
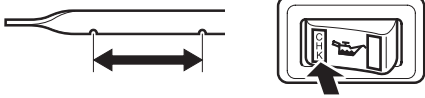
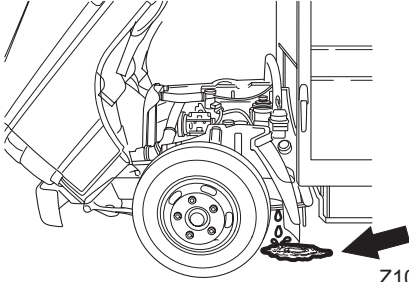
Use the following pretrip inspection checklist to help ensure that the vehicle components are in good working condition before each trip. If you find any problem which you are unable to correct yourself, bring the vehicle to an authorized Sterling service facility.

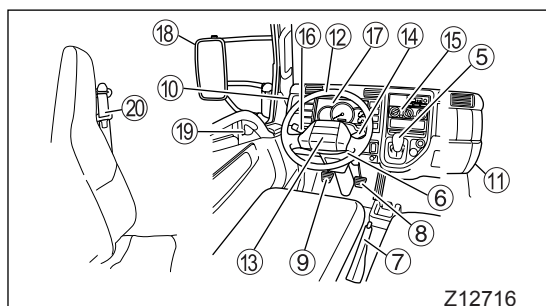
1 Before starting the engine



11-8

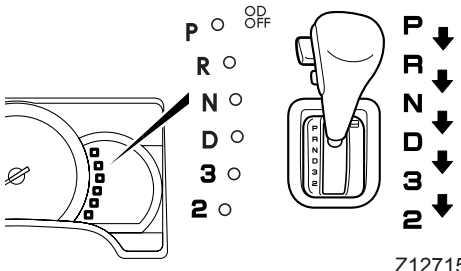
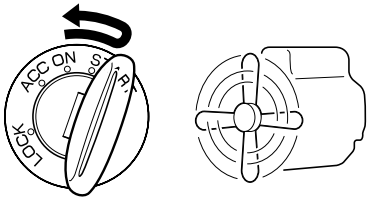
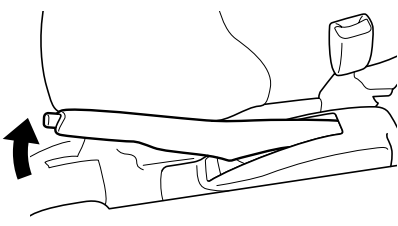
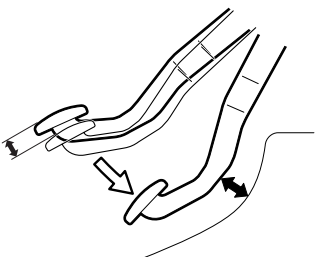
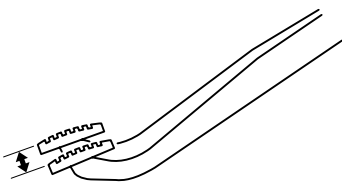
Pretrip inspection and maintenance

①	 Z11188a	Coolant level Check that the coolant level is between the "FULL" and "LOW" marks on the surge tank. ⇒ P. 11-35
②	 Z10749a	Drive belt Check the belt for proper deflection when a force of 22 lb (98 N) is applied to the point midway between the pulleys. Tighten it if necessary. Check the belt for nicks or other damage. Replace it if necessary. ⇒ P. 11-39
③	 Z10750a	Engine oil level Check the engine oil level using either the dipstick or the low oil level switch. ⇒ P. 11-18
④	 Z10751a	Coolant, fuel, and oil leaks Check beneath the vehicle for any sign of leakage.

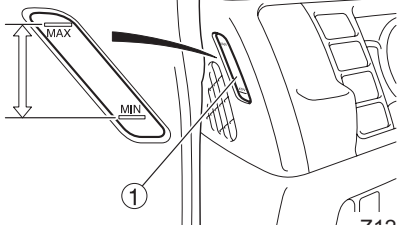
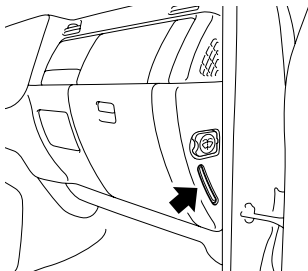
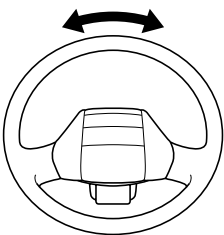
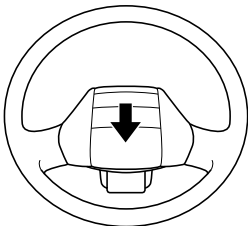
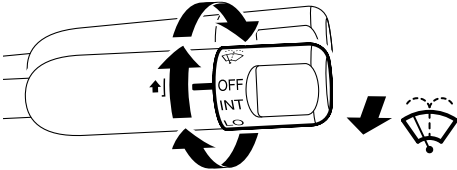


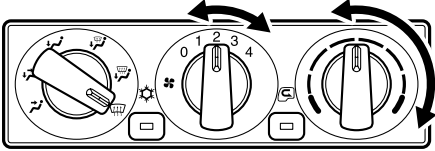
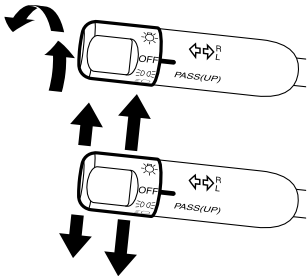
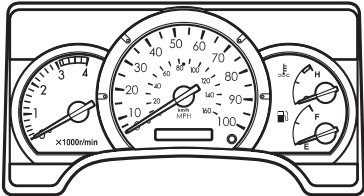
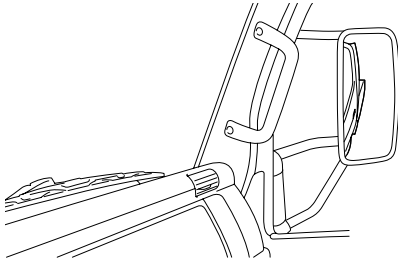
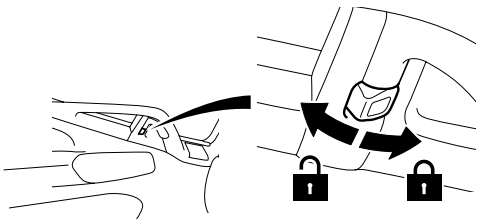
2 In the driver's seat

First, check the shift selector ⑤ with the engine shut down. Then start the engine and perform the following checks ⑥ after allowing the engine to warm up.

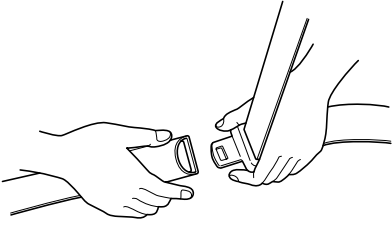
⑤		Shift selector <Automatic transmission> Turn ON the ignition switch but do not start the engine. • Check that the shift selector operates smoothly and clicks into range at each position ("P" through "2"). • Check if the shift indicator in the instrument cluster indicates the correct range. • Return the shift selector to "P" (park). Turn the ignition key to LOCK and make sure the key can be removed from the switch. ⇒ P. 11-40
⑥		Engine condition Check the engine for smooth starting and quiet running.
⑦		Parking brake lever stroke Check that the parking brake lever stroke is between 7 and 9 notches. ⇒ P. 11-44
⑧		Service brake pedal With your hand, depress the brake pedal and make sure it has 0.004 to 0.118 in (0.1 to 3.0 mm) of free play. Check also that when the brake pedal is fully depressed, there is a gap of 0.79 in (20 mm) or more between the pedal and the floor. ⇒ P. 11-42
⑨		Clutch pedal <Manual transmission> With your hand, depress the clutch pedal and make sure that it has 0.008 to 0.157 in (0.2 to 4.0 mm) of free play. ⇒ P. 11-45

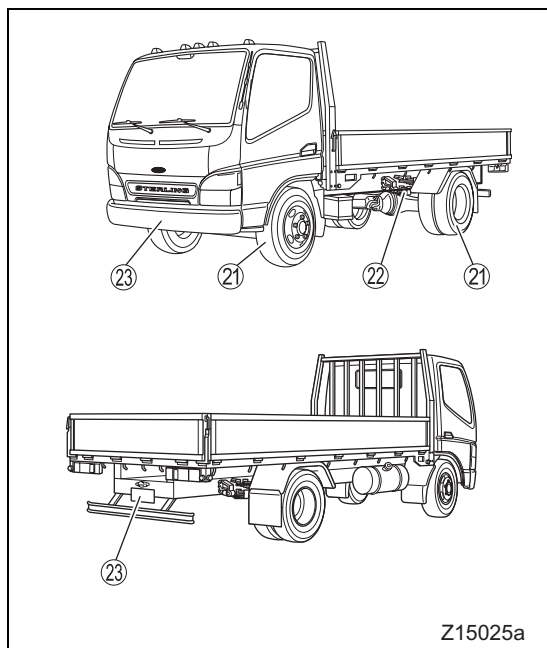
11-10 *Pretrip inspection and maintenance*

⑩	 Z12050a	Brake fluid level Check that the brake fluid level is between the “MAX” and “MIN” marks on the reservoir. ⇒  P. 11-25
⑪	 Z11946	Windshield washer fluid level Check that the windshield washer fluid level is above the bottom of the inspection window. ⇒  P. 11-56
⑫	 Z11947	Steering wheel Gently turn the steering wheel from side to side. Make sure that it has free play of more than 0.2 in (5 mm) and less than 2.0 in (50 mm). ⇒  P. 11-41
⑬	 Z11948	Horn operation Press the horn button to check that the horn is working properly.
⑭	 Z11614	Windshield wiper and washer Check the washer for proper fluid spray direction and the wipers for normal operation. ⇒  P. 5-21

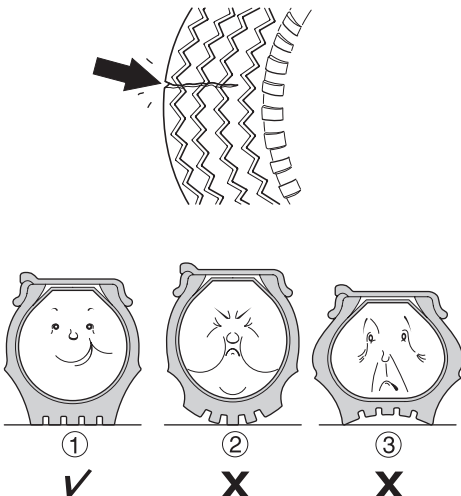
15	 Z11696	Defroster operation Make sure that warm air blows properly onto the windshield. ⇒ P. 8-3, 8-7
16	 Z12505	Lighting system Make sure that each lamp illuminates or flashes properly. Check each lens for dirt and damage. ⇒ P. 5-18
17	 Z11949a	Instrument cluster Check that all gauges and telltale (warning and indicator) lights are working properly. ⇒ P. 6-2
18	 Z11950	Rear view mirrors Seated in the driver's seat, adjust the mirrors for clear views to the sides and rear. Make sure the mirrors are clean.
19	 Z11951	Door lock operation Push the lock button and verify that the door does not open even when the inner handle is operated. ⇒ P. 3-3

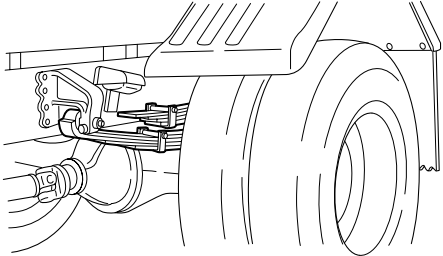
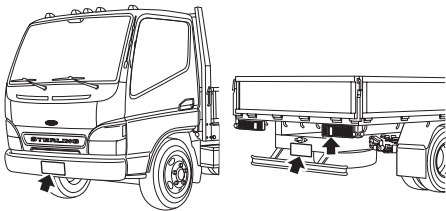
11-12 Pretrip inspection and maintenance

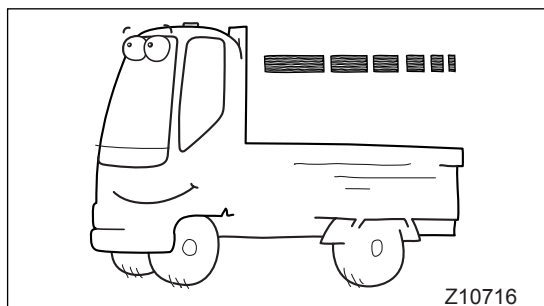
②	 Z11943	Seat belts Confirm that the seat belt fastens correctly. ⇒ P. 4-4
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3 While walking around the vehicle

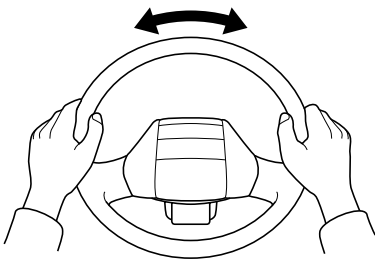
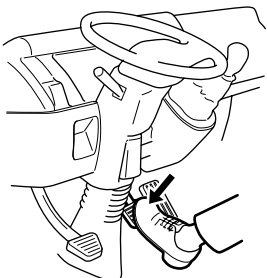
②	 Z10752b	Wheel and tire Check the disc wheels for cracks and other damage. Check the tire inflation pressure and tread groove depth. Check the tires for foreign objects in the tread grooves, cracks in the tread, and signs of uneven wear. ⇒ P. 11-45 ➡ Crack in tread ① Properly inflated ② Overinflated ③ Underinflated
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22	 Z10753	Suspension Look for broken springs. Check the vehicle body for tilt to either side.
23	 Z15026a	License plate and reflector Check the license plate and reflectors for loose installation, damage, and dirt.



4 While driving at slow speeds

Perform the following checks while driving in a safe place at speeds lower than 12 mph (20 km/h).

24	 Z11954	Steering wheel operation While driving slowly, check that the steering wheel does not vibrate or pull to one side and that it is not hard to turn. Also make sure that the steering wheel returns to its neutral position smoothly. ⇒ P. 11-41
25	 Z10756	Brake function Depress the brake pedal and check that the brakes work effectively and evenly on all four wheels. ⇒ P. 11-43

Use of lubricants

Apply lubricating grease, change the oil, and change the coolant at regular intervals. This will improve the vehicle's performance, service lifetime, and safety. For best results, follow the maintenance schedule in this manual. ⇨  P. 13-2

- When checking levels, applying grease, or changing fluids, park the vehicle on a level surface.
- If the vehicle is often used in severe service, for example, on unpaved roads, near coastlines, or in cold-weather regions, lubricants should be applied and changed more often than specified in the maintenance schedule.

Consult an authorized Sterling service facility for the maintenance schedule appropriate to your vehicle operating conditions.

- Be sure to use the lubricants specified. ⇨  P. 13-3
- Special low-temperature lubricants must be used if the vehicle is operated at temperatures below -10°F (-23°C). For details, consult an authorized Sterling service facility.

CAUTION

- **Apply and replace lubricants regularly. Use of lubricants beyond their designed service life could cause bearings or other components to seize and cause an accident.**
- **Wipe all lubricant inspection windows and filling ports carefully to prevent the entry of mud, trash, water, or other contaminants which could damage vehicle systems.**
- **Never flush waste oil into the sewers or onto the ground. This could damage the environment. Instead, take it to a gas station or authorized Sterling service facility.**

Lubrication

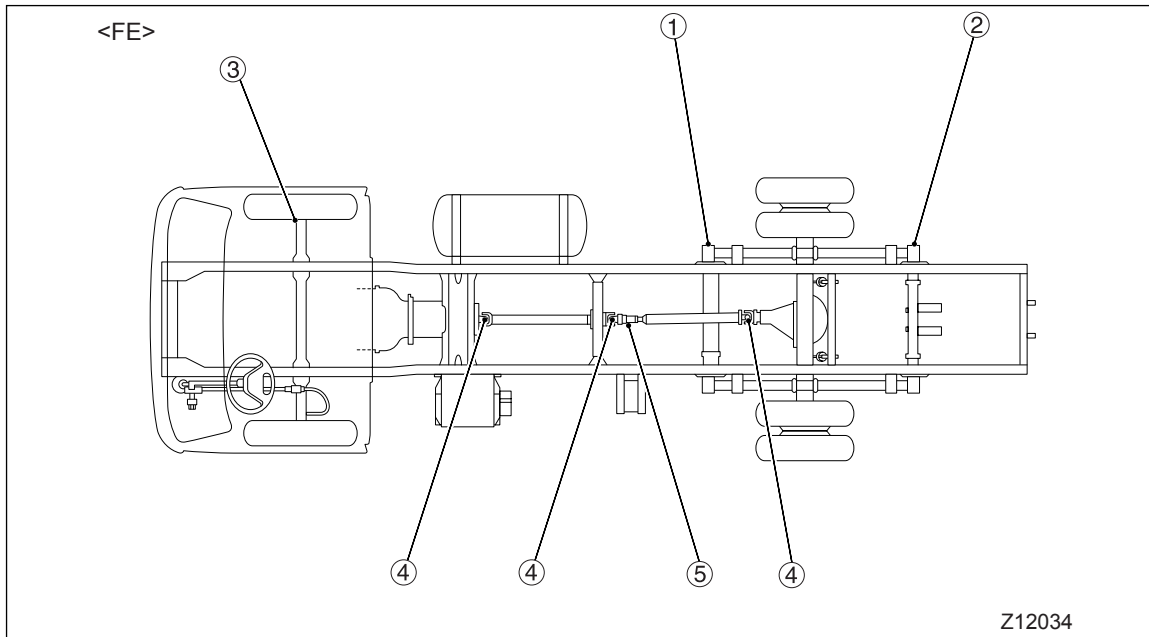
1 Grease fittings

Remove all dust and dirt from grease fittings before using them. Always use the recommended grease.

NOTE:

Wipe away any grease that sticks to wires or rubber hoses and any grease that overflows from the grease fittings.

Lubrication interval	Every 6000 miles (10 000 km)
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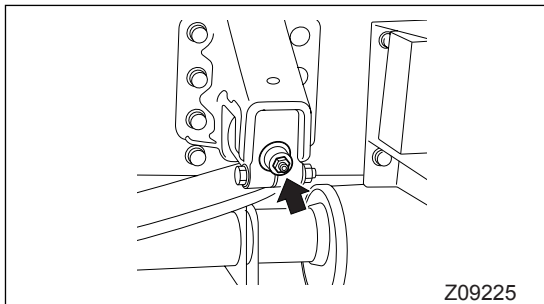
1. Rear spring pin, forward
2. Rear spring pin, aft

3. King pin bearing
4. Propeller shaft universal joint

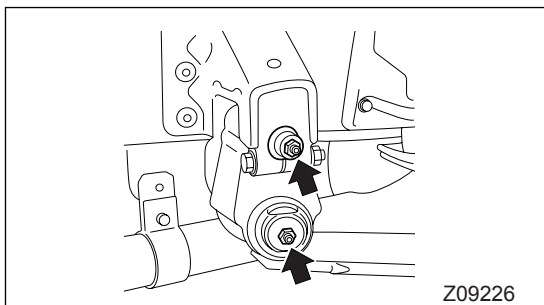
5. Propeller shaft slip joint

Recommended lubricant:
Chassis grease
NLGI No. 1 (Li soap)

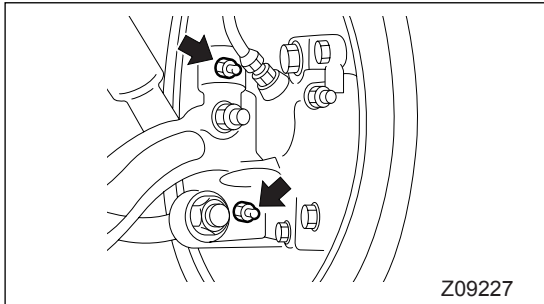
- ① Rear spring pin, forward (2 points total, one on each side)



- ② Rear spring pin, aft (4 points total, 2 on each side)

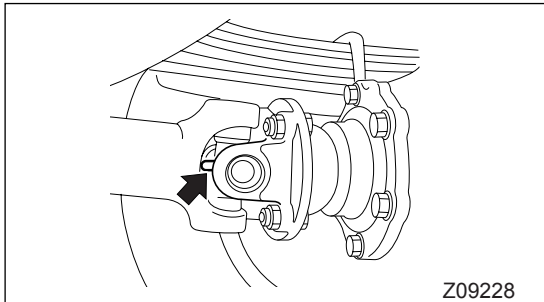


11-16 *Pretrip inspection and maintenance*

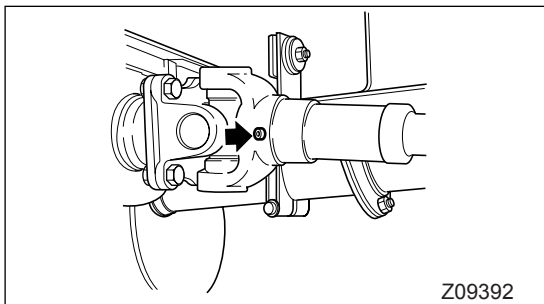


- ③ King pin bearing (4 points total, 2 on each side)

Recommended lubricant:
Wheel bearing grease
NLGI No. 2 (Li soap)

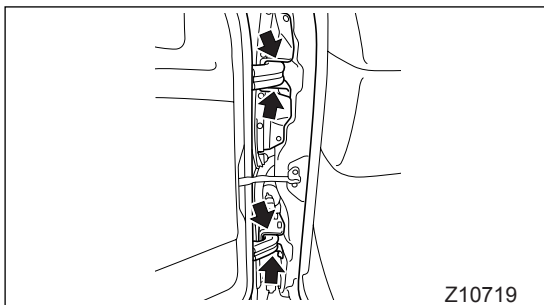


- ④ Propeller shaft (driveshaft) universal joint



- ⑤ Propeller shaft (driveshaft) slip joint

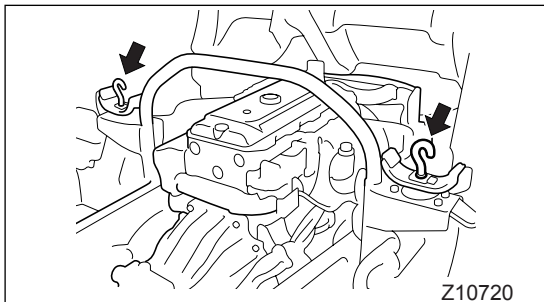
NOTE:
The number of grease fittings on the propeller shaft differs from model to model.



- 2 Door hinge (8 places total, 4 on each side)**

Lubrication interval	Every 6000 miles (10 000 km)
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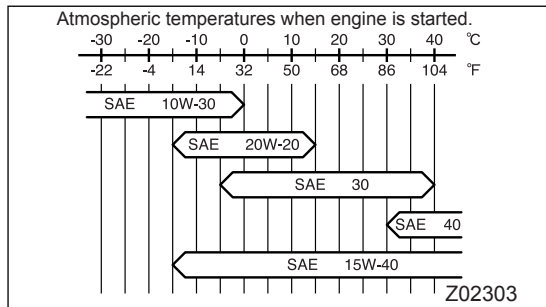
Recommended lubricant:
Chassis grease
NLGI No. 1 (Li soap)



- 3 Anchor hooks (two places)**

Lubrication interval	Every 6000 miles (10 000 km)
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Recommended lubricant:
Chassis grease
NLGI No. 1 (Li soap)



Oils and fluids

1 Engine oil

The performance, service lifetime, and startability of the engine depend to a large degree on the quality of the engine oil. Always use oil of the correct grade and viscosity.

The proper engine oil viscosity numbers for various atmospheric temperature ranges are shown in the diagram.

Inspection interval	Daily pretrip inspection
Replacement interval	Every 6000 miles (10 000 km)

Change the engine oil for the first time at the initial maintenance period of 2500 miles (4000 km).

CAUTION

To prevent engine damage, replace the engine oil more often if the engine is frequently used at high speed or under heavy load.

Recommended lubricant:

Engine oil

API classification CD, CD/SF, CE, CE/SF, CF-4 or JASO classification DH-1

SAE40, 30, 20W-20, 10W-30, 15W-40

CAUTION

Engine oil with an API classification of CC will damage the engine. Be sure to use engine oil with a classification of CD or higher.

Quantity required (approximate):

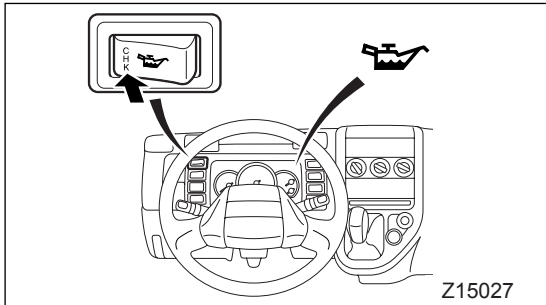
Oil pan	9.5 quarts (9.0 L)
Oil filter	1.1 quarts (1.0 L)

The engine oil level can be checked by using either the dipstick or the low oil level switch on the instrument panel. The low oil level switch is for a quick check. Use the dipstick for a more accurate check.

NOTE:

To check the engine oil level, park the vehicle on a level surface and shut down the engine. If the vehicle is tilted, the correct engine oil level cannot be determined. While the engine is running, oil circulates out of the oil pan and drips slowly back down after the engine is shut down. For an accurate level check, let the engine stand at least 30 minutes after shutdown.

11-18 Pretrip inspection and maintenance

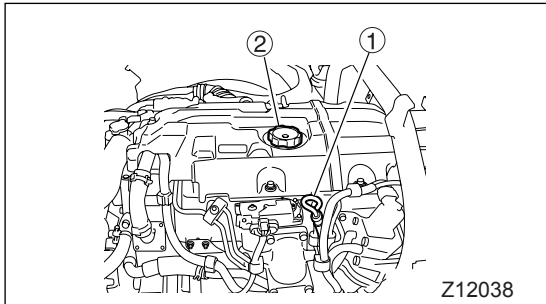


1.1 Level checking using the low oil level switch (simplified method)

1. Press the switch before starting the engine. Estimate the oil level from the color of the engine oil level  light that comes on when the engine is started.
Green: Oil level is within normal limits.
Amber: Oil level is too low.
2. If the amber light comes on, add the recommended engine oil.

NOTE:

If you check the oil level with the ignition switch in the "ON" position and the oil level is too low, the low engine oil level warning  (amber) will illuminate and stay on. If the oil level is normal, the low engine oil level warning  (amber) will come on and go off and then the normal engine oil level indicator  (green) will illuminate.

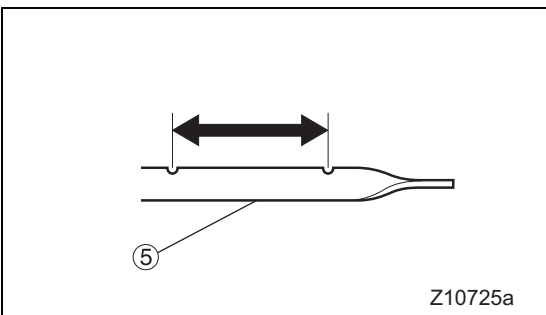


1.2 Level checking using the dipstick

1. Tilt the cab. ⇒ P. 11-4
2. Remove the dipstick ① and wipe off any oil with a shop towel.
3. Fully insert the dipstick into the crankcase, and slowly draw it out.
4. The oil level that appears on the dipstick ⑤ should be in between the two notches (as shown in the illustration).
If necessary, add the recommended engine oil.
If the engine oil is extremely dirty, change it.
5. After the check, insert the dipstick into the guide tube and secure it properly.

WARNING

Take care not to spill engine oil. Engine oil spilled onto a hot engine could catch fire and cause burns. Wipe off any spilled oil.



1.3 Adding oil

1. Clean the area around oil filler cap ② to prevent dust and dirt from entering the engine.
2. Remove the oil filler cap and add oil as necessary.
3. Make sure that the oil level is accurate. For an accurate level check, wait at least 5 minutes after adding oil. If you add too much oil, remove oil through the drain plug on the oil pan to achieve the correct level.

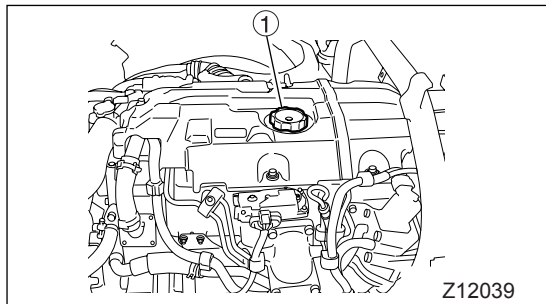
NOTE:

If the oil level is checked immediately after adding, the reading may be lower than the actual level because all of the added oil may have not yet reached the oil pan.

4. Install the oil filler cap.

CAUTION

- Add oil of the same grade and viscosity as the original engine oil fill. Mixing oil can damage the engine.
- Do not add more than the necessary quantity of oil. The engine can be severely damaged if the correct oil level is not maintained.



1.4 Changing oil

1. Clean the surface around the oil filler cap ①. When clean, remove the oil filler cap.
2. Remove the drain plug ② from the oil pan and allow the oil to drain while it is still warm. Replace the oil filter at the same time.

⇒  P. 11-28

WARNING

Engine oil is extremely hot immediately after vehicle operation. Hot engine oil can cause burns.

NOTE:

After operation, let the engine cool for about 30 minutes before draining the oil. The oil will drain more quickly while it is still warm.

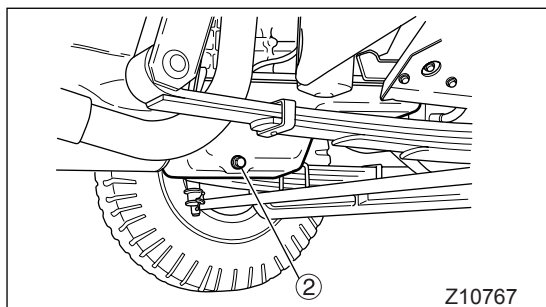
3. After oil has been drained, clean the area around the drain plug hole.
4. Install the drain plug.

Oil drain plug torque	29 lbf·ft (39 N·m)
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5. Carefully add fresh engine oil through the oil filler hole.
6. Wait for more than 5 minutes and check the oil level using the dipstick.
7. Crank the engine with the ignition switch, then start the engine. ⇒  P. 5-8
8. Let the engine idle, allowing oil to circulate throughout the engine. Then, shut down the engine and wait for more than 30 minutes before checking the oil level again. At the same time, check for possible oil leaks.
9. Once you are sure the oil level is correct, check that the drain plug, oil filler cap, and dipstick are all tight and securely in place.

WARNING

Take care not to spill engine oil. Engine oil spilled onto a hot engine could catch fire and cause burns. Wipe off any spilled oil.



CAUTION

- Do not add more than the necessary quantity of oil. The engine can be severely damaged if the correct oil level is not maintained.
- If the engine is frequently run at high speed or under heavy load, the engine oil will suffer viscosity breakdown and must be replaced sooner than scheduled.

2 Manual transmission oil

Inspection interval	Every 6000 miles (10 000 km)
Replacement interval	Every 18,000 miles (30 000 km)

Change the transmission oil for the first time at the initial maintenance period of 2500 miles (4000 km).

Recommended oil:

Gear oil

API classification GL-3

SAE80 (general)

GL-3 SAE90 (warm weather region)

GL-4 SAE90 (tropical region)

Engine oil

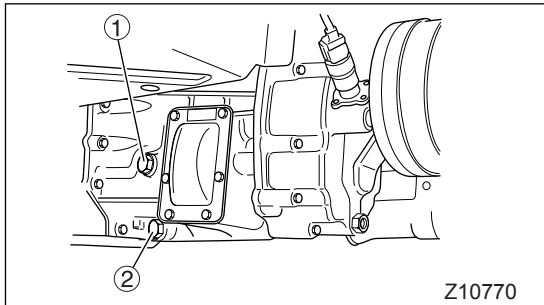
API Classification CC

SAE30 or 40

(for long periods of high-speed driving)

WARNING

Transmission oil is extremely hot immediately after vehicle operation. Hot transmission oil can cause burns.



Z10770

Quantity required (approximate):

Model	Quantity
5-speed transmission	3.8 quarts (3.6 L)
6-speed transmission	4.6 quarts (4.4 L)

2.1 Checking transmission oil level

1. Remove the fill plug ① and make sure that the oil is level with the lower edge of the fill opening.
2. If the level is too low, add oil through the fill hole until it is level with the lower edge of the fill opening.

CAUTION

Add oil of the same grade and viscosity as the original transmission oil fill. Mixing oil can damage the transmission.

3. Install the fill plug.

Fill plug torque	40-62 lbf·ft (54-84 N·m)
------------------	--------------------------

2.2 Changing transmission oil

1. Remove the fill plug ① and magnetic drain plug ②. Drain the oil while it is still warm. Catch the used transmission oil in a suitable container and dispose of it properly.

WARNING

Transmission oil is extremely hot immediately after vehicle operation. Hot transmission oil can cause burns.

NOTE:

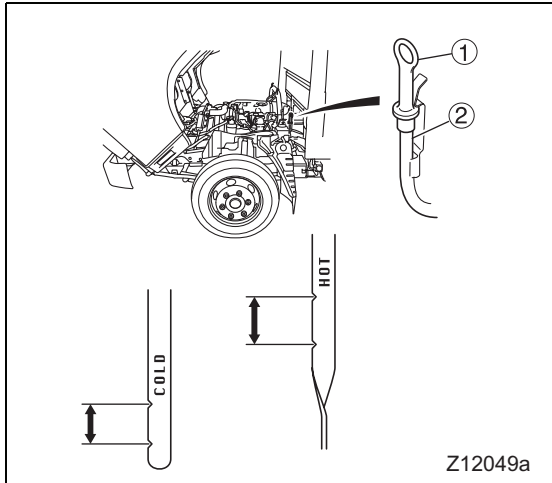
After operation, let the transmission cool for about 30 minutes before draining the oil. The oil will drain more quickly while it is still warm.

2. Clean the magnetic drain plug before installing it. Use a piece of key stock, or any other convenient steel slug, to short the two magnetic poles and divert the magnetic field.

Drain plug torque	40-62 lbf·ft (54-84 N·m)
-------------------	--------------------------

3. Add oil through the fill plug hole until it is level with the lower edge of the fill opening.
4. Install the fill plug.

Fill plug torque	40-62 lbf·ft (54-84 N·m)
------------------	--------------------------



3 Automatic transmission fluid

Inspection interval	Every 6000 miles (10 000 km)
Replacement interval	Every 24,000 miles (40 000 km)

Recommended fluid:
Automatic transmission fluid
(Exxon Mobil: Mobil ATF3309 or equivalent)

Have automatic transmission fluid (ATF) changed by an authorized Sterling service facility.

Check the fluid level when the fluid is at operating temperature. Use the "HOT" range on the ATF dipstick ①.

NOTE:

The "COLD" range is for reference purposes when the oil temperature is low. Accurate measurement is not possible at low temperatures.

1. Park the vehicle on a level surface. Set the parking brake and chock all the tires, fore and aft.
2. Start the engine. With the engine at idle and the brake pedal depressed, select each gear range in turn. When finished, leave the shift selector in "P" (park).

Remove the ATF dipstick ① and wipe it clean with a shop towel.

WARNING ⚠

Use extreme care when tilting the cab with the engine running. If the engine is running, the vehicle could move, causing an accident that could result in personal injury or property damage.

After lowering the cab, check that it is locked securely in position. ➞ P. 11-5

NOTE:

The ATF dipstick is located behind the cab. If it is difficult to remove, tilt the cab.

3. Fully insert the dipstick into the gear case, and slowly draw it out.
4. The fluid level that appears on the dipstick should be between the two notches in the "HOT" range.
5. If the fluid level is too low, add fluid through the dipstick guide tube ②.

NOTE:

- Always check fluid level with the engine at idle.
- The fluid level rises as the fluid heats up.

CAUTION

- Operating the vehicle with the ATF level higher or lower than recommended can result in transmission damage. Do not over-fill the transmission.
- To prevent damage to the automatic transmission, add ATF from a clean container.

4 Axle oil

Inspection interval	Every 6000 miles (10 000 km)
Replacement interval	Every 18,000 miles (30 000 km)

Change the axle oil for the first time at the initial maintenance period of 2500 miles (4000 km).

Recommended oil:

Gear oil

API classification GL-5

Below 40×C (104×F) SAE90

40×C (104×F) or higher SAE140 or 85W-140

CAUTION

- Use oil conforming to GL-5, SAE140 or SAE85W-140 if the vehicle is to be driven under heavy load. *Example:* when driving long uphill grades. This oil is to be used only when the temperature is higher than 50×F (10×C).
- On vehicles with a limited-slip differential, fill the differential with Genuine Gear Oil, Part No. 8149630EX (GL-5, SAE90).

Quantity required (approximate):

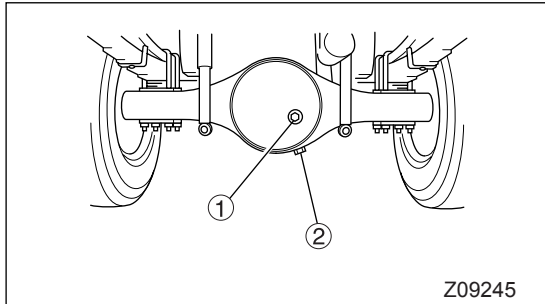
Model	Quantity
COE 40, 45, 50	4.8 quarts (4.5 L)

These oil quantities are given only as guidelines. Be sure to check the correct oil level by removing the fill plug as indicated below.

WARNING

Axle oil is **extremely** hot immediately after vehicle operation. Hot axle oil can cause burns.

11-24 *Pretrip inspection and maintenance*



4.1 Checking axle oil level

1. Remove the fill plug ① and make sure that the oil is level with the bottom of the fill opening.
2. If the level is too low, add oil through the fill hole until it is at the level of the fill opening.

CAUTION

Add oil of the same grade and viscosity as the original axle oil fill. Mixing oil can damage the differential gears.

3. Install the fill plug.

Fill plug torque	72 to 87 lbf-ft (98 to 115 N·m)
------------------	---------------------------------

4.2 Changing axle oil

1. Remove the fill plug ① and magnetic drain plug ②. Drain the oil while the axle is still warm. Catch the used axle oil in a suitable container and dispose of it properly.

WARNING

Axle oil is extremely hot immediately after vehicle operation. Hot axle oil can cause burns.

NOTE:

After operation, let the transmission cool for about 30 minutes before draining the oil. The oil will drain more quickly while it is still warm.

2. Clean the magnetic drain plug before installing it. Use a piece of key stock, or any other convenient steel slug, to short the two magnetic poles and divert the magnetic field.

Drain plug torque	72 to 87 lbf-ft (98 to 115 N·m)
-------------------	---------------------------------

3. Add oil through the fill hole until it is at the level of the fill opening.
4. Install the fill plug.

Fill plug torque	72 to 87 lbf-ft (98 to 115 N·m)
------------------	---------------------------------

5 Brake fluid

Inspection interval	Daily pretrip inspection
Replacement intervals	Every 30,000 miles (50 000 km) or every two years

Recommended fluid:
Brake fluid SAE J1703
FMVSS No. 116, DOT3

NOTE:

On vehicles with manual transmission, the brake fluid serves also as clutch fluid.

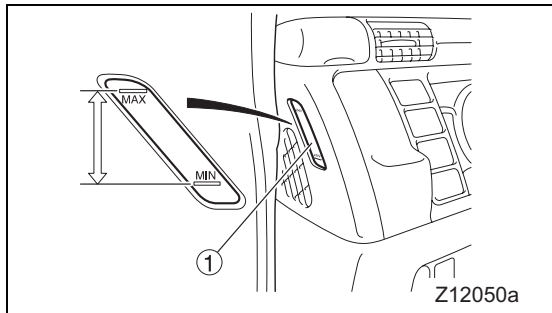
WARNING

- Hydraulic brake fluid is hazardous, and can cause blindness if it gets into your eyes. Always wear safety glasses when handling brake fluid or bleeding brake components. Brake fluid may also be a skin irritant. If you get it on your skin, wash it off as soon as possible.
- The hydraulic brake and power steering systems must be bled whenever any fitting has been loosened or disconnected. Failure to bleed the system will allow air to remain in it. That will decrease the vehicle's braking ability and can result in an accident, property damage, and serious personal injury.
- Be sure to use the recommended brake fluid. Do not mix different brands or types of fluid. This will damage the rubber parts of the brake system and can cause property damage, loss of braking and serious personal injury.

CAUTION

- When adding brake fluid, be careful not to allow dirt and other contaminants to enter the brake fluid reservoir. Any contaminants entering the reservoir could damage the brake system and cause it to malfunction.
- If the fluid level drops abnormally, there may be a brake fluid leak. Have the brake system inspected by an authorized Sterling service facility.
- If brake fluid is not changed regularly, components of the brake system can be damaged. Be sure to replace the brake fluid every 30,000 miles (50 000 km), or every two years, whichever is sooner.

11-26 Pretrip inspection and maintenance



5.1 Brake fluid level checking

The fluid level should be between the “MAX” and “MIN” lines on the brake fluid reservoir ①. If you see contamination of any kind in the reservoir, have it inspected and cleaned by an authorized Sterling service facility.

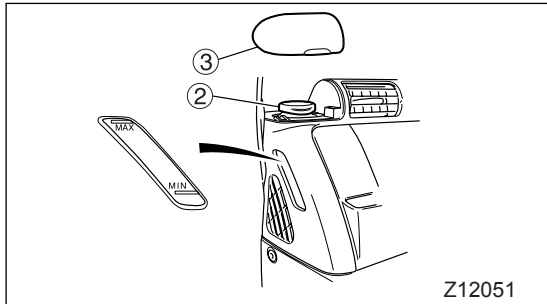
If the fluid level is unusually low, there may be a fluid leak in the brake line. Have your vehicle inspected at an authorized Sterling service facility.

NOTE:

The **Brake** warning illuminates when the brake fluid level drops below the “MIN” line.

CAUTION

Do not open the reservoir cap ② for inspection purposes. Brake fluid can damage the dash panels and cab finish.



5.2 Adding brake fluid

1. When adding brake fluid, use a clean container free of moisture, mineral oil, and dust.
2. If the fluid level is lower than the “MIN” line, remove the reservoir cover ③ and clean the surfaces around the reservoir cap. Remove the cap ②, and add recommended brake fluid up to the “MAX” line.
3. Close the cap and tighten it until firm. Install the reservoir cover.

WARNING

- Be extremely careful not to let dust and other contaminants enter the brake fluid reservoir. This could cause the brake system to fail, resulting in property damage and personal injury.
- Properly dispose of used hydraulic brake fluid. Used hydraulic brake fluid is often contaminated. Reusing it can cause brake system damage, loss of braking, property damage and serious personal injury.

6 Power steering fluid

Inspection interval	Every 6000 miles (10 000 km)
Replacement interval	Every 30,000 miles (50 000 km)

Have power steering fluid changed by an authorized Sterling service facility.

Recommended fluid:

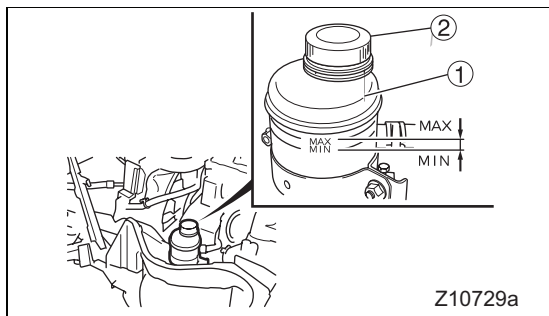
Automatic transmission fluid DEXRON,
DEXRON II or DEXRON III type

CAUTION

When adding power steering fluid, be sure to use fluid of the same type as the original fill. Mixing fluids can damage the steering system.

NOTE:

Before checking the power steering fluid level, shut down the engine and allow the power steering fluid to cool. An accurate level check is not possible unless the fluid is cold.



6.1 Checking and adding power steering fluid

1. Park the vehicle on a level surface and set the parking brake.
2. <manual transmission> Put the shift lever in neutral.
<automatic transmission> Move the shift selector to "P" (park).
3. Move the front wheels to the straight-ahead position and shut down the engine.
4. Chock the front tires.
5. Tilt the cab.  P. 11-4
6. Check the level in the power steering reservoir (1).
7. The fluid level should be between the "MAX" and "MIN" lines. If the fluid level is below the "MIN" line, clean the area around the power steering reservoir cap (2). Remove the cap and add power steering fluid until it reaches the "MAX" line.
8. Install the cap and tighten it until firm. Wipe up any spilled fluid.
9. Lower the cab and remove the chocks from the tires.

CAUTION

- Operating the power steering with the fluid level higher or lower than recommended can result in steering system damage. Do not overfill the power steering reservoir.
- To prevent contaminants from damaging the steering system, add fluid from a clean container.

WARNING

- Close the reservoir cap tightly and wipe up any fluid spills. If power steering fluid leaks out, it could cause a fire, resulting in burn injuries.
- If the power steering fluid level drops abnormally, there may be a fluid leak. Have the steering system inspected by an authorized Sterling service facility.

Filter element replacing

1 Engine oil filter replacing

WARNING

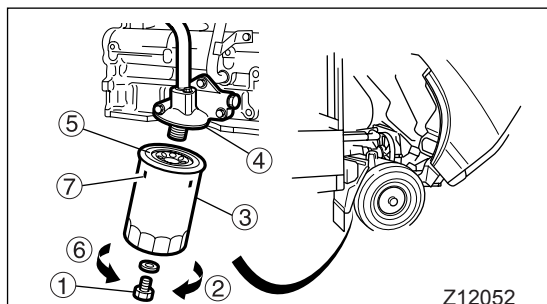
- Wipe up spilled engine oil. Oil remaining on the engine surface could catch fire and cause a burn injury.
- Engine components are extremely hot immediately after vehicle operation. Hot engine oil can cause burns.

Replace the oil filter for the first time at the initial maintenance period of 2500 miles (4000 km).

Replacement intervals	Every 6000 miles (10 000 km) or every 12 months
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NOTE:

Do not clean or reuse the oil filter element. Always replace the filter element with a new one. Replace the oil filter element each time the engine oil is changed.



Z12052

1. Tilt the cab.  P. 11-4
2. Clean the filter and the surrounding area to prevent dirt from entering the new element.
3. Place a container under the oil filter. Remove the drain plug ① from the bottom of the oil filter, and allow the oil in the filter to drain out.
4. Turn the filter element assembly ③ clockwise (in the direction of arrow ②) to remove it. If the assembly is hard to turn, use a strap wrench.
5. Check the surface of the filter head ④ for dirt and contamination. If necessary, clean it.
6. Replace the filter element assembly with a new one. Use only genuine replacement parts.
7. Install the filter element assembly:
Apply a thin coat of engine oil to the gasket ⑤ on the mounting surface of the filter element assembly. Turn the assembly counterclockwise (in the direction of arrow ⑥) until the gasket touches the sealing surface of the filter head. From this point, tighten the filter element assembly an additional three-quarter turn.
To determine how much to tighten, use the four equally spaced reference marks ⑦ around the outside of the filter assembly.
8. Add engine oil.

NOTE:

Change the engine oil when replacing the oil filter. If, for any reason, the engine oil is not replaced, add the amount of oil shown below to replace the amount held in the filter.

Oil filter capacity	About 1.1 quart (1.0 L)
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9. Start the engine and check for oil leaks.
10. Shut down the engine. After 30 minutes or more, check the oil level. Add oil if necessary.

2 Fuel filter replacing

Replacement intervals	Every 12,000 miles (20 000 km) or every 12 months
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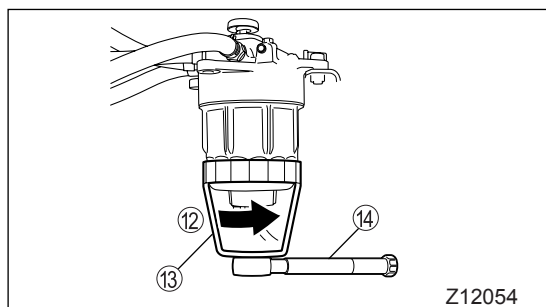
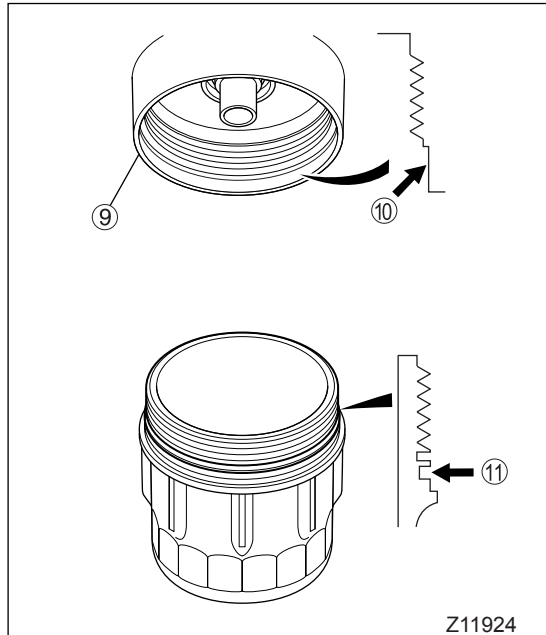
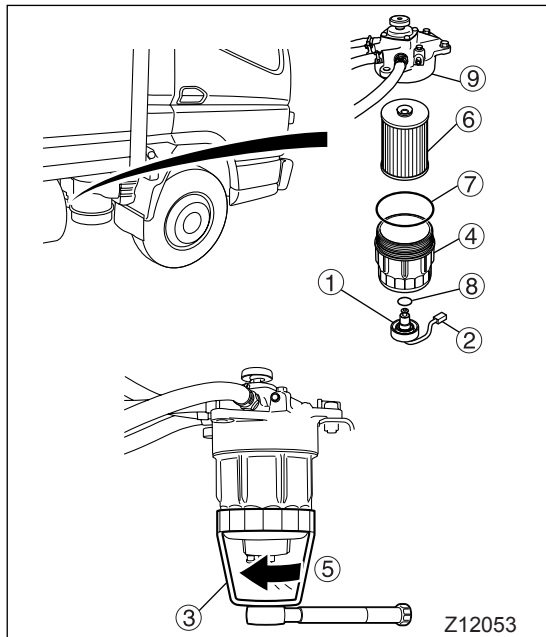
WARNING

- Diesel fuel is combustible and can ignite if exposed to open flame, intense heat, or other source of ignition. A fire could result in burn injuries or loss of life.
- After installing the fuel filter, confirm that no fuel is leaking out. Leaking fuel could cause a fire or explosion, resulting in serious personal injury or loss of life.
- Use only the approved fuel filter. Other filters could cause a fuel leak, resulting in a fire or explosion.
- Be careful when gaining access to the fuel filter. Clearances are tight in this area. Contact with sharp or rough surfaces could cause personal injury.

CAUTION

- Do not clean the fuel filter element and reuse it. Replace the filter element at the recommended maintenance interval. Reusing the filter element may damage the fuel injection system.
- When replacing the fuel filter element, be sure to use the special tool to remove and reinstall the fuel filter. If the fuel filter is tightened to an inappropriate torque when reinstalled, fuel could leak and the filter itself could become damaged. If you do not have the special tool, please contact an authorized Sterling service facility.
- Be careful not to damage the filter case, as this could cause a fuel leak.

11-30 Pretrip inspection and maintenance



1. Set the parking brake and chock the front tires.
2. Clean the area around the filter to prevent dirt from entering the new element.
3. Place a suitable container under the fuel filter to catch any fuel.
4. Disconnect the connector ② on the sensor ①.
5. Turn the sensor counterclockwise to loosen it, and then drain all of the fuel from the filter case ④. After the fuel has been drained, turn the sensor clockwise to tighten it.
6. Place the sensor and its harness inside the special fuel filter wrench ③.
7. Remove the filter case using the special fuel filter wrench. Turn the case clockwise (in the direction of arrow ⑤). Drain the fuel from the filter case.
8. Remove the element ⑥ and the sensor from the filter case.
9. Replace the filter case O-ring ⑦ and the sensor O-ring ⑧. Apply a thin coat of engine oil to each of the new O-rings and install one O-ring ⑦ on the filter case and one O-ring ⑧ on the sensor.

10. Clean the surfaces ⑩ of the filter head ⑨ and filter case where they come in contact with the filter case O-ring ⑦. Make sure that the O-ring slot ⑪ in the filter case is clean.
11. Install the element with the open end facing upward. Use a genuine replacement element.

CAUTION ⚠

- Use the O-rings that are supplied with the new replacement element.
 - When installing the filter case, be careful not to kink the O-ring.
 - Do not reuse the filter element.
- Reusing the fuel filter element and the fuel filter O-rings can damage the fuel injection system.

12. Install the filter case using the special fuel filter wrench ⑬. Turn the case counterclockwise (in the direction of arrow ⑫). Then use a torque wrench ⑭ to tighten it to the following range of values.

Filter case torque	21 to 24 lbf·ft (28 to 32 N·m)
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CAUTION

Do not tighten the filter case too much. Over-tightening could damage the filter case.

13. Install the sensor on the filter case and attach the connector.

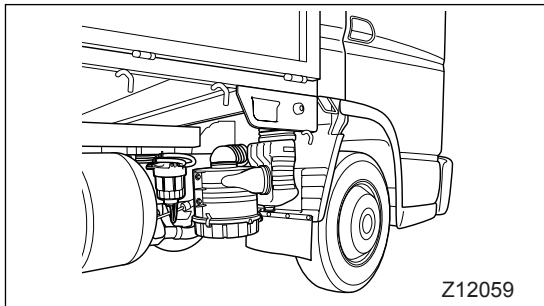
Sensor torque	40 to 60 lbf·in (400 to 600 N·cm)
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14. Bleed the fuel system.  P. 12-23
15. Start the engine and test for fuel leaks. Repair as necessary.

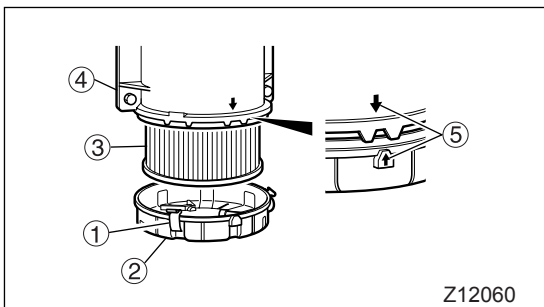
3 Air cleaner element inspection and replacing

Inspection interval	Every 3000 miles (5000 km)
Replacement interval	Every 24,000 miles (40 000 km)

The air cleaner is located behind the front wheel on the passenger's side (as shown in the illustration).

**CAUTION**

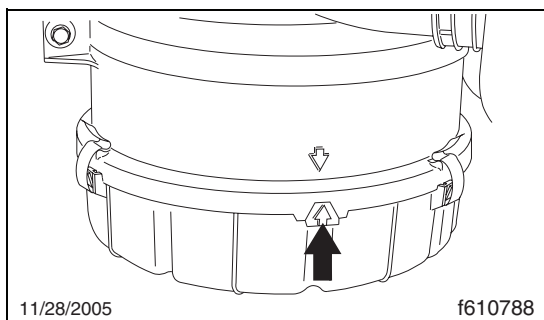
Inspect the air filter element at the required intervals, especially if there is a noticeable decrease in engine output. If the packing or the filter is damaged, the engine will ingest dust and dirt. This could result in premature wear of the pistons and cylinder liners.



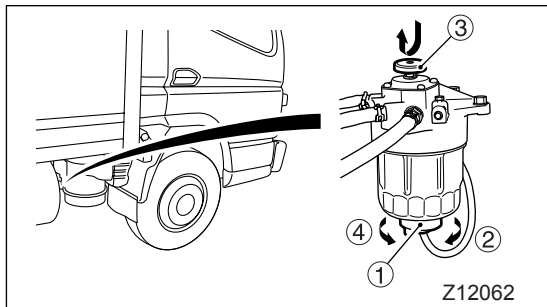
1. Check the air cleaner hoses and lines for damage and leaks. Check all clamps and make sure they are tight.
2. Undo the three clamps ① and remove the air cleaner cover ②.
3. Pull the element ③ straight down and remove it from the air cleaner.
4. Inspect the element and packing for dirt and damage. If the packing is damaged, or the filter paper is torn, worn through, or heavily contaminated with oily soot or dust, replace it.

NOTE:

A moderate amount of dirt or dust is acceptable.



5. Clean the inside of the air cleaner cover and body ④ with a shop towel.
6. Install the new filter element and packing in the air cleaner. Be sure to align the match mark on the cover (see arrow) with the one on the air cleaner body.



Fuel filter draining

If the water in fuel  warning illuminates, there is too much water in the fuel filter. Drain the fuel filter as follows:

WARNING

- Diesel fuel is combustible and can ignite if exposed to open flame, intense heat, or other source of ignition. A fire could result in burn injuries or loss of life.
- Be careful when gaining access to the fuel filter. Clearances are tight in this area. Contact with sharp or rough surfaces could cause personal injury.

1. Provide a container to collect the water.
2. Disconnect the electrical connector on the sensor .
3. Turn the sensor clockwise (in the direction of arrow ) to loosen it. The water will flow from the tube at the end of the sensor. To make the water drain faster, operate the priming pump   (press the pump handle about 7 times).
4. When fuel begins to flow, close the drain port by tightening the drain plug counterclockwise (in the direction of arrow )
5. Attach the electrical connector and tighten the sensor.

Sensor torque	60-80 lbf-in (400-600 N-cm)
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6. Bleed the fuel system.   P. 12-23
7. Start the engine and check for fuel leaks. Check the fuel tank, cap and lines for leakage. Correct any leaks found.

WARNING

- The drained fluid contains a mixture of water and fuel. Be sure to wipe clean all surfaces around the fuel filter.
- Make sure fuel does not leak from the filter or from other parts of the fuel system. Any spilled or leaked fuel could cause a fire that could result in burn injuries and loss of life.

Coolant checking and replacing

Inspection interval	Daily pretrip inspection
Replacement interval	Every 24 months

If the coolant becomes very dirty, replace it immediately regardless of the specified replacement intervals.

1 Recommended coolant

Use a coolant containing fully-formulated antifreeze and soft water in the correct mixing ratio.

This solution provides corrosion inhibitors to protect the cooling system.

Replace the coolant, and top it off when necessary, only with water containing fully-formulated antifreeze with corrosion inhibitors.

2 Water used with coolant

Use soft water with the properties shown in the following table. Do not use hard water from wells and rivers as it is liable to form scale and cause corrosion.

Total hardness	300 ppm or less
Sulfate SO_4^-	100 ppm or less
Chloride Cl^-	100 ppm or less
Total dissolved solids	500 ppm or less
pH	6 to 8

3 Using coolant additive

To prevent the cooling system from freezing and to minimize corrosion, use a fully-formulated antifreeze with an ethylene glycol base (SAE J814-C), an antifreeze with corrosion-inhibiting properties. Dilute it with soft water to the specified concentration.

DANGER

- COOLANT IS TOXIC. IF A PERSON HAS ACCIDENTALLY SWALLOWED IT, FORCE HIM/HER TO VOMIT AND CONSULT A DOCTOR IMMEDIATELY. IF IT SPLASHES IN THE EYES, IMMEDIATELY FLUSH THE EYES WITH WATER FOR MORE THAN 15 MINUTES, AND SEEK MEDICAL ATTENTION.
- SHOULD COOLANT COME IN CONTACT WITH YOUR SKIN, IMMEDIATELY WIPE IT OFF, AND THEN THOROUGHLY WASH YOUR SKIN WITH LOTS OF CLEAN WATER AND SOAP. IF YOU FEEL UNWELL OR PAIN ON YOUR SKIN, IMMEDIATELY SEEK MEDICAL ATTENTION. IN THE EVENT OF CONTACT WITH YOUR CLOTHES, IMMEDIATELY FLUSH THE COOLANT WITH WATER AND SOAP.
- DO NOT USE COOLANT IN A CLOSED OR POORLY VENTILATED SPACE. SHOULD YOU INHALE A LARGE AMOUNT OF COOLANT VAPOR, MOVE TO A PLACE WITH FRESH AIR AND KEEP YOURSELF WARM AND AT REST. IF YOU FEEL NAUSEOUS OR OTHERWISE ABNORMAL, IMMEDIATELY SEEK MEDICAL ATTENTION.
- CLOSE THE CAP OF THE COOLANT CONTAINER IMMEDIATELY AFTER USING THE PRODUCT.
- DO NOT STORE COOLANT WHERE CHILDREN COULD REACH AND ACCIDENTALLY DRINK IT.
- COOLANT IS FLAMMABLE; AVOID EXPOSING IT TO OPEN FLAME.
- WHEN HANDLING COOLANT, WEAR AN ORGANIC GAS MASK, PROTECTION GOGGLES, OIL-RESISTANT GLOVES, AND/OR A PROTECTIVE APRON AS NECESSARY.

CAUTION

Do not use methanol-based or methoxypropanol-based antifreeze products since these can severely damage the engine. If one of these additives has been used, drain it. Be sure to thoroughly flush the cooling system and switch to a fully-formulated antifreeze with an ethylene glycol base.

Use the following table to determine the correct mixing ratio for the coolant, depending on temperature.

Coolant mixing ratio (as percentage of volume)

Lowest temperature °F (°C)	14 (-10) or higher	5 (-15)	-4 (-20)	-13 (-25)	-22 (-30)	-31 (-35)	-40 (-40)
Mixing ratio (%)	30	35	40	45	50	55	60

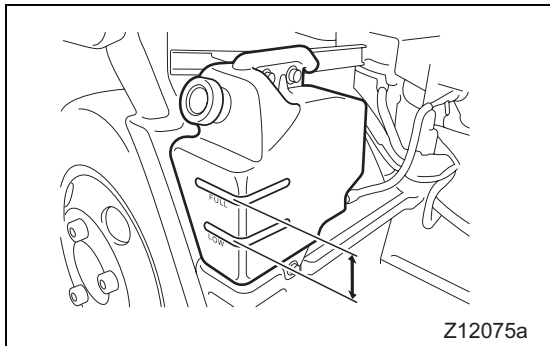
Coolant quantity	17 quarts (16 L)
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NOTE:

Vehicles are shipped with a 50% concentration of coolant and can therefore be used at temperatures down to -22°F (-30°C).

CAUTION

Use coolant mixing ratios between 30% and 60%. The proper mixing ratio under normal temperatures is 30%. Below 30%, this solution performs poorly as a corrosion inhibitor; above 60%, it performs poorly as an antifreeze.



4 Coolant level checking

NOTE:

- Always check the coolant level before starting the engine. When the coolant gets hot, it expands, making the level appear higher than it actually is.
- Deposition may occur in the surge tank. This will not cause any problem.
- Check that the coolant level is between the "FULL" and "LOW" marks on the surge tank.
- If the coolant level is below the "LOW" mark, add coolant until the level reaches the "FULL" mark.
- Check for coolant leakage from the radiator and radiator hoses.
If you find water on the ground underneath your vehicle, there could be a coolant leak.
- If the coolant level is abnormally low and quickly drops again when coolant has been added, there may be a coolant leak. Bring the vehicle to an authorized Sterling service facility.

5 Adding coolant

CAUTION

- Under normal conditions, add coolant to the surge tank without opening the pressure cap on the radiator.
- When adding coolant, use new coolant of the same kind. Do not mix different types of coolant.
- Adding plain water to the surge tank reduces the coolant mixing ratio. This means less protection against freezing and corrosion. Always maintain the original mixing ratio.

5.1 Adding coolant at the pretrip inspection

1. If the coolant level is below the "LOW" mark, remove the cap from the surge tank.
2. Add a mixture of fully-formulated antifreeze and soft water until the level reaches the "FULL" mark.
3. Install the surge tank cap and make sure it is tight.

5.2 Adding coolant after the engine overheats

If the engine overheats, the coolant level may be low not only in the surge tank but also in the radiator core.

1. Allow the engine to cool down. Run it at a speed slightly higher than normal idle. ⇒  P. 5-5
2. When the needle in the coolant temperature gauge has come down to the center of the scale, shut down the engine and do the following steps:
 - Check the cooling system for leaks.
 - Inspect the drive belt. Replace it if damaged. ⇒  P. 11-39
 - Check the belt tension. Correct the belt tension if necessary ⇒  P. 11-39
 -
3. Tilt the cab. ⇒  P. 11-4
4. Release the spring fastener ① and turn the pressure cap ② counterclockwise to remove it. If the coolant level is too low, add coolant until it reaches the brim.

WARNING

After operating the vehicle under load, do not remove or loosen the radiator pressure cap until the engine and cooling system have completely cooled. Use extreme care when removing the cap. A sudden release of pressure can result in a surge of scalding coolant that could cause serious personal injury.

5. Turn the pressure cap clockwise to install it. Install the spring fastener.
6. Remove the surge tank cap and add coolant until the level reaches the "FULL" mark. Install the cap and make sure it is tight.

6 Cooling system inspection

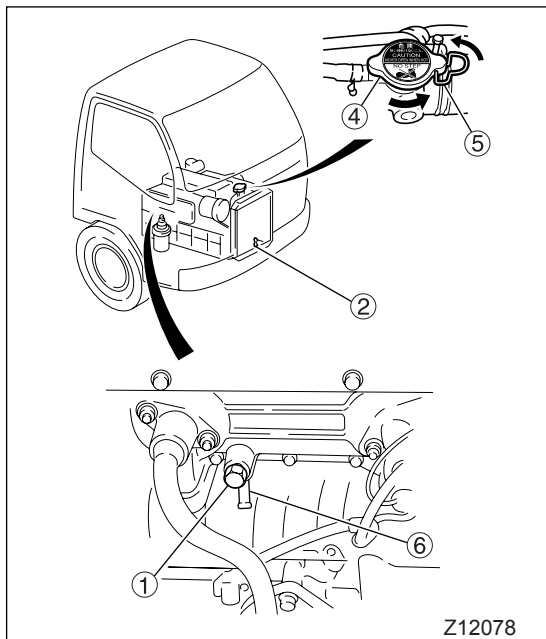
1. Inspect the radiator and radiator mounts for condition.
2. Visually check that the radiator pressure cap seals properly on the cap seat.
3. Visually inspect the coolant hoses for leaks.

7 Charge air cooler and radiator cleaning

Remove dust and deposits from the radiator and charge air cooler.

8 Coolant changing

Be sure to flush the cooling system when replacing the coolant.



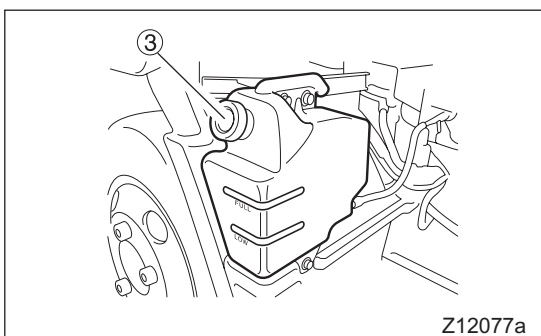
WARNING

After operating the vehicle under load, do not remove or loosen the radiator pressure cap until the engine and cooling system have completely cooled. Use extreme care when removing the cap. A sudden release of pressure can result in a surge of scalding coolant that could cause serious personal injury.

1. Place a suitable container under the engine drain plug ① and another under the radiator petcock ② to collect the coolant.
2. Tilt the cab. P. 11-4
3. Unlock the pressure cap ④ by releasing the spring fastener ⑤. Remove the pressure cap by turning it counterclockwise.
4. Open the engine drain plug and radiator petcock to drain the coolant. Also drain the coolant in the surge tank.
5. Remove the cap from the surge tank ③.

NOTE:

To drain coolant without splashing, connect a hose to the nozzle ⑥ below the engine drain plug.



6. After the coolant has been completely drained, close both the engine drain plug and the radiator petcock.

Cooling system torque values

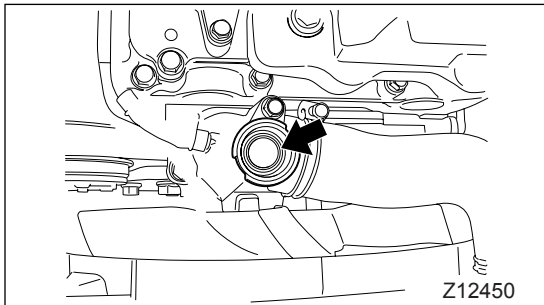
Cooling system torque values	
Engine drain plug	14 to 22 lbf·ft (20 to 29 N·m)
Radiator petcock	10 to 16 lbf·in (120 to 180 N·cm)

7. Flush the cooling system.
Pour warm water through the pressure cap opening. Refit the pressure cap tightly by turning it clockwise. Lower the cab.
Start the engine. Run the engine at a moderate speed until normal operating temperature is reached. Continue to run the engine for about 10 minutes longer. Shut down the engine and discharge the hot water.

Repeat this procedure until the water is free of dirt, scale, and debris.

CAUTION

If the radiator lines are clogged or the coolant is badly contaminated, bring your vehicle to an authorized Sterling service facility.



8. Make sure the radiator petcock and engine drain plug are securely fitted.
9. Tilt the cab.
10. Add coolant in the correct mixing ratio up to the brim of the pressure cap opening. Pour the coolant slowly to prevent air from mixing with it.
11. Check that the coolant level at the pressure cap opening does not go down. Install the pressure cap and lock it into place (turn it clockwise until it is tight and insert the spring fastener).

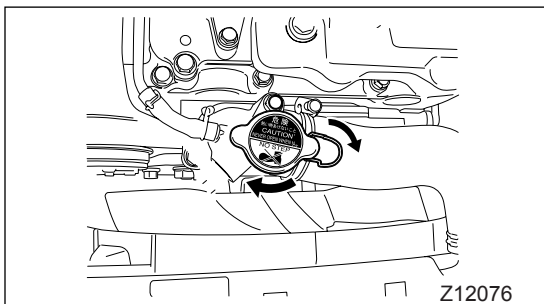
CAUTION

If air is not completely removed from the cooling system, this may lead to reduced cooling efficiency and engine parts failure. After replacing the coolant, drive the vehicle and then check the coolant level.

12. Lower the cab.
13. Fill the surge tank with coolant in the correct mixing ratio to the "FULL" mark. Install the surge tank cap and make sure it is tight.
14. Start the engine and keep it running at a speed slightly higher than normal idle. This will remove air from the cooling system. When the engine reaches normal operating temperature, allow the engine to idle for 10 minutes longer before shutting it down.
15. When the engine has cooled, open the pressure cap and, if the coolant level is too low, add coolant until it reaches the top of the pressure cap opening.

CAUTION

Tighten the pressure cap before operating the engine. If the cap is loose, coolant will overflow as the engine temperature rises.



16. Screw the pressure cap down tightly. Turn it clockwise.
Press in the spring fastener to lock the pressure cap.
17. Run the engine a few more minutes to make sure that there are no coolant leaks.
18. Make sure that the coolant level in the reservoir tank is in the specified range. Add coolant if necessary.

Drive belt checking and adjusting

An excessively loose or tight belt could cause the engine to overheat, the battery to be inadequately charged, or the alternator or water pump to malfunction. Always keep the belt adjusted to the proper tension.

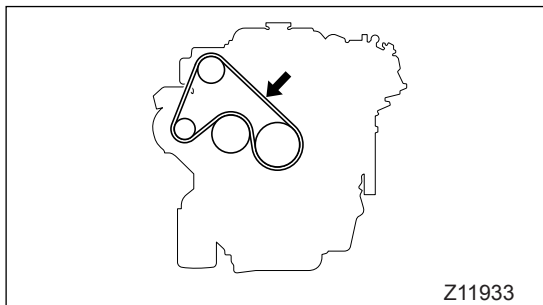
Inspection intervals	Daily pretrip inspection and every 6000 miles (10 000 km) or every 12 months
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WARNING

Always shut down the engine before inspecting or adjusting belts. A moving drive belt can cause a serious injury or loss of life. Ensure that the engine cannot be started while you are performing checks or adjustments.

CAUTION

Do not allow the drive belt to come in contact with oil or grease during this procedure. If soiled with oil or grease, the belt will slip, shortening its service life.



1 Check

- Set the parking brake and chock the front tires. Tilt the cab.  P. 11-4
- Press the belt with a force of around 22 lb (98 N) at the point midway between the pulleys, and measure the amount of deflection.
- If necessary, adjust the belt tension until the belt deflection is within the limits given in the table below.

Belt tension [Amount of deflection when the belt is pressed with a force of 22 lb (98 N) at the point midway between the pulleys]		
Drive belt	Vehicles without air conditioner	New belt (when installed): 0.35 to 0.43 in (9 to 11 mm)
		Used belt (when inspected or reinstalled): 0.43 to 0.51 in (11 to 13 mm)
	Vehicles with air conditioner	New belt (when installed): 0.28 to 0.35 in (7 to 9 mm)
		Used belt (when inspected or reinstalled): 0.39 to 0.43 in (10 to 11 mm)

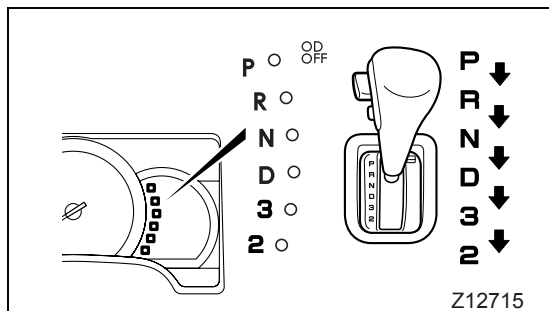
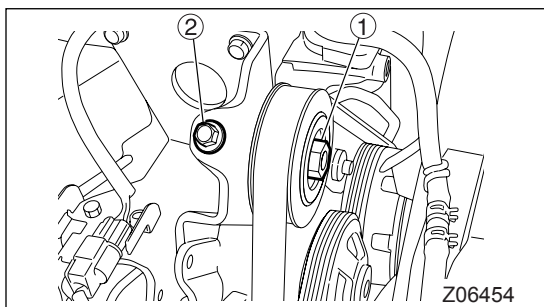
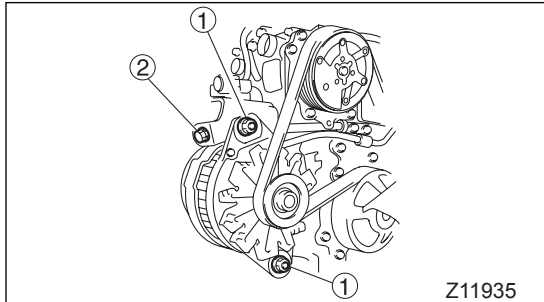
- Check the belt for damage. Replace the belt if damage is found.

11-40 *Pretrip inspection and maintenance*

2 Adjustment

WARNING

To prevent personal injury, never perform belt tension adjustments with the engine running.



2.1 Vehicles with air conditioning

1. Tilt the cab. ⇒  P. 11-4
2. Slightly loosen the upper and lower alternator mounting nuts ①.
3. Turn the adjusting bolt ② to obtain proper belt tension. Turn the bolt clockwise to increase the tension.
4. After adjustment, firmly tighten the alternator mounting nuts.

2.2 Vehicles without air conditioning

1. Tilt the cab. ⇒  P. 11-4
2. Using a 22 mm offset wrench, loosen the tensioner pulley mounting nut ① approximately half a turn.
3. Turn the adjusting bolt ② to obtain proper belt tension. Turn the bolt clockwise to increase the tension.
4. After adjustment, firmly tighten the tensioner pulley mounting nuts.

Shift selector checking

<Automatic transmission>

Do the following checks with the engine shut down.

Inspection intervals	Daily pretrip inspection and every 18,000 miles (30 000 km) or every 6 months
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1. Set the parking brake. Make sure it is fully applied.
2. Turn ON the ignition switch but do not start the engine.
3. Move the shift selector through each position, and check the following:
 - Check that the shift selector operates smoothly and clicks into range at each position ("P" through "2").
 - Check if the shift indicator in the instrument cluster indicates the correct range.
4. Return the shift selector to "P" (park). Turn the ignition key to LOCK and make sure the key can be removed from the switch.
5. If any problem is found, do not drive the vehicle. Contact an authorized Sterling service facility.

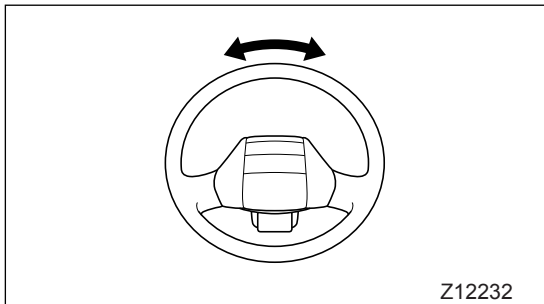
Steering wheel checking

The steering wheel is critical to vehicle safety. If an inspection reveals any problem, contact an authorized Sterling service facility to solve the problem before operating the vehicle. Conduct these checks on a level surface with good visibility to all sides.

Inspection intervals	Daily pretrip inspection and every 6000 miles (10 000 km)
----------------------	---

WARNING

Driving a vehicle with a steering problem could cause an injury accident or loss of life.



1 Steering wheel free play

1. Set the parking brake and chock the rear tires.
2. On vehicles with a manual transmission, make sure that the shift lever is in neutral. On vehicles with an automatic transmission, make sure that the shift selector is in "P" (park).
3. Start the engine.
4. Starting with the steering wheel in the straight-ahead (neutral) position, turn the steering wheel clockwise to the point where resistance is first felt. Then do the same thing in the counterclockwise direction.
5. Measure the amount of steering wheel movement between these two points. This is the steering wheel free play. If the free play is not within these limits, contact an authorized Sterling service facility.

Steering wheel free play	0.2 to 2.0 in (5 to 50 mm)
--------------------------	----------------------------

2 Steering wheel looseness

NOTE:

Before doing this check, make sure that the adjusting lever is in the locked position.

1. Move the steering wheel back and forth on the steering column, first in an up and down direction, and after that to the right and left.
2. If any problem is found, contact an authorized Sterling service facility.

3 Steering wheel operation

NOTE:

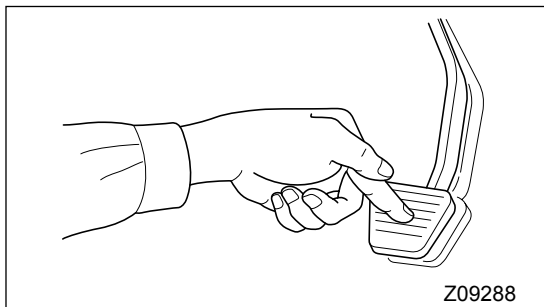
During the driving tests, be attentive to road conditions.

1. While driving slowly, make sure that the steering wheel does not shake and the vehicle does not pull to one side. The wheel should turn easily, without excessive operating resistance, and return smoothly to the neutral position.
2. If any problem is found, call an authorized Sterling service facility for inspection.

Service brake checking

The service brakes are critical to vehicle safety. If an inspection reveals any problem, contact an authorized Sterling service facility to solve the problem.

Inspection interval	Daily pretrip inspection
---------------------	--------------------------



1 Brake pedal free play

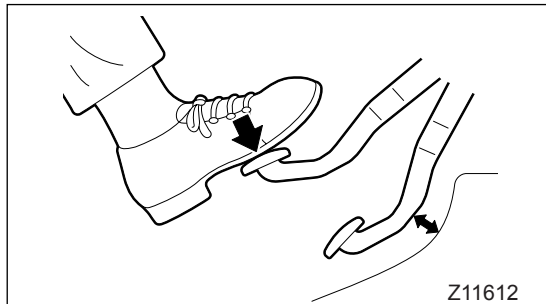
1.1 <COE 40, 45: vacuum pressure booster>

1. Shut down the engine.
2. Set the parking brake and chock the rear tires.
3. On vehicles with a manual transmission, make sure that the shift lever is in neutral.
On vehicles with an automatic transmission, make sure that the shift selector is in "P" (park).
4. Pump the brake pedal several times to release all the vacuum from the brake system (zero vacuum).
5. Press down with one finger on the center of the pedal pad to the point where resistance is felt.
6. Measure the amount of brake pedal movement between these two points. This is the brake pedal free play. If the free play is not within these limits, contact an authorized Sterling service facility.

Brake pedal free play (at center of pedal pad)	0.004 to 0.118 in (0.1 to 3.0 mm)
---	--------------------------------------

1.2 <COE 50: hydraulic brake booster>

1. Shut down the engine.
2. Set the parking brake and chock the rear tires.
3. On vehicles with a manual transmission, make sure that the shift lever is in neutral.
On vehicles with an automatic transmission, make sure that the shift selector is in "P" (park).
4. Press down with one finger on the center of the pedal pad to the point where resistance is felt (the electric motor will come on).
5. Measure the amount of brake pedal movement between these two points. This is the brake pedal free play. If the free play is not within the limits given in the table above, contact an authorized Sterling service facility.

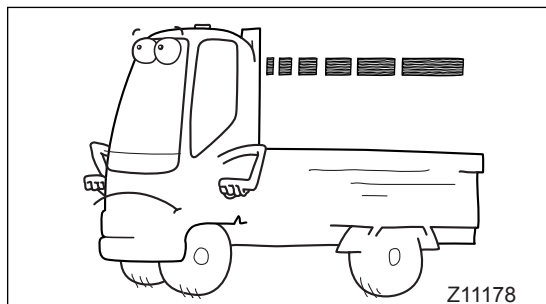


2 Brake pedal stroke

- Start the engine and run it at normal idle.
- Press the brake pedal down as far as it will go. Check that the distance between the fully depressed pedal and the floor is within these limits.

Brake pedal stroke (pedal fully depressed)	0.79 in (20 mm) or more
---	----------------------------

- If the pedal-to-floor clearance is too small, or the pedal has a spongy feel when depressed, there may be air in the brake system or brake fluid leakage. If necessary, have the brake system inspected by an authorized Sterling service facility.



3 Service brake performance

WARNING

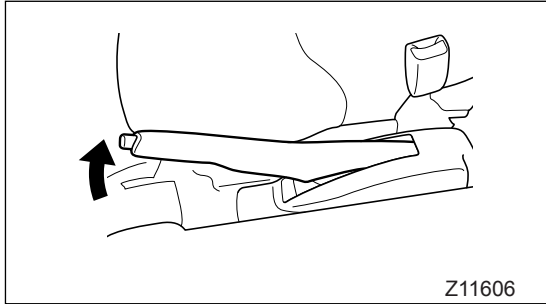
During a braking test, be attentive to road conditions. Driving a vehicle with a braking problem could cause an injury accident or loss of life.

Perform braking tests in a safe place with good visibility all around. Check the BRAKE, ^{LOW}VACUUM or ^{DISC} BRAKE warnings. If they do not illuminate, drive the vehicle at low speed to make sure that the brakes work effectively and evenly on all four wheels. If there is any problem, do not continue to operate the vehicle. Contact an authorized Sterling service facility for a more thorough inspection.

4 Hydraulic brake booster performance

<COE 50 only>

1. With the engine shut down, depress the brake pedal.
2. Check that the brake system auxiliary electric pump operates.
3. If the pump does not operate, have an authorized Sterling service facility perform the necessary inspection.



Parking brake checking and adjusting

Inspection interval	Daily pretrip inspection
---------------------	--------------------------

1 Parking brake lever stroke check

1. Depress the brake pedal firmly to prevent the vehicle from moving.
2. Starting with the parking brake lever fully released, pull the lever upward with a force of 66 lb (295 N) until it stops moving.
3. Check that the distance moved by the lever (parking brake lever stroke) is within these limits. For each notch moved, an audible click should be heard. If necessary, bring the vehicle to an authorized Sterling service facility.

Parking brake stroke	7 to 9 notches
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4. Make sure the parking brake lever locks securely in the set (fully raised) position.

2 Parking brake performance

WARNING

During a braking test, be attentive to road conditions. Driving a vehicle with a braking problem could cause an injury accident or loss of life.

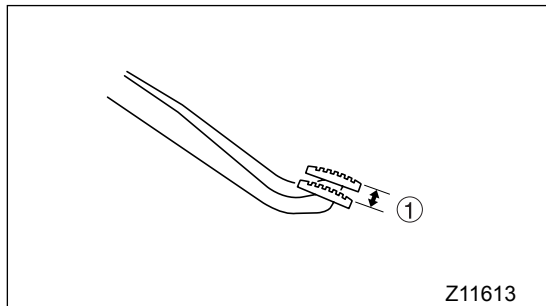
1. Park the vehicle on a downgrade with a dry road surface.
2. Set the parking brake and check that the parking brake can hold the vehicle. If an appropriate downgrade is not available, drive the vehicle at low speed, activate the parking brake, and check that it can stop the vehicle at speeds under 10 mph (16 km/h).
3. If there is any problem, contact an authorized Sterling service facility.

Clutch checking

<Manual transmission vehicles>

Inspection intervals	Daily pretrip inspection and every 6000 miles (10 000 km)
----------------------	---

Check the clutch for condition. If there is any problem, contact an authorized Sterling service facility.



1 Clutch pedal free play

1. Shut down the engine.
2. Set the parking brake and make sure the shift lever is in neutral.
3. Press down with one finger on the center of the pedal pad to the point where resistance is felt.
4. Measure the amount of clutch pedal movement between these two points. This is the clutch pedal free play ①. If the free play is not within these limits, contact an authorized Sterling service facility.

Clutch pedal free play (at center of pedal pad)	0.008 to 0.157 in (0.2 to 4.0 mm)
--	--------------------------------------

2 Clutch wear

1. Make sure that the clutch pedal operates without unusual noise or excessive resistance.
2. Depress the clutch pedal. There should be no vibration or shudder in the clutch pedal.
3. Move the shift lever. The shift lever should move easily from gear to gear.
4. Release the clutch pedal slowly. The clutch should engage smoothly without slipping.
5. If the clutch shows signs of wear, replace it at an authorized Sterling service facility.

Tire checking

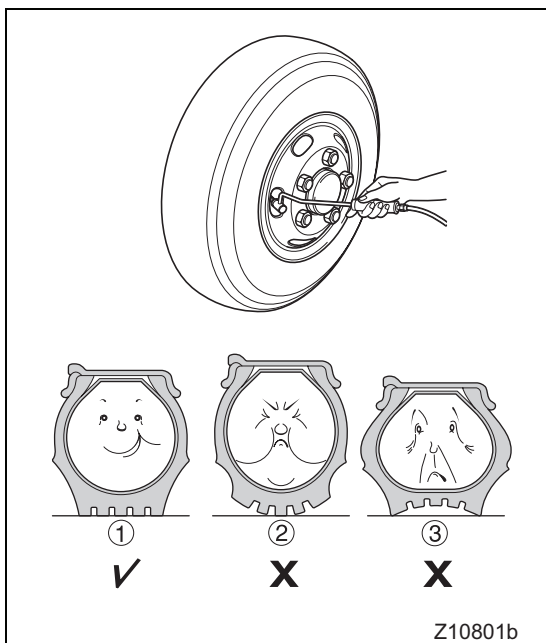
Inspection intervals	Daily pretrip inspection and every 6000 miles (10 000 km)
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1 Inflation pressure check

- Always check tire pressure before driving, when the tires are still cool. Make sure that the valve caps are securely fitted on each tire.
- The tire tread profile can give a rough estimate of the tire pressure. If the tires appear incorrectly inflated, check and adjust the air pressure before operating the vehicle.

- ① Properly inflated
- ② Overinflated
- ③ Underinflated

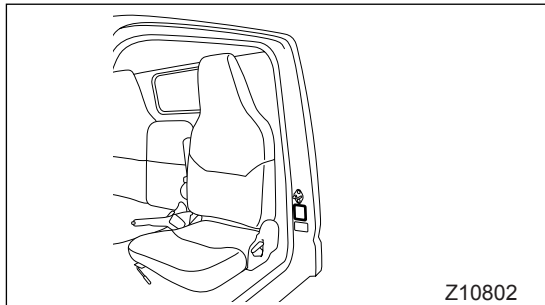
- Use an air gauge for precise measurement. If your vehicle uses low-profile tires, the air pressure must be checked using an air gauge.



11-46 *Pretrip inspection and maintenance*

Standard inflation pressure

Model	Tire size	Inflation pressure psi (kPa)
COE 40, 45	LT215/85R16-10PR (Load Range E)	80 (550)
COE 50	215/75R17.5 124/ 123L (Load Range F)	100 (690)



- A sign affixed to the driver's door B-pillar indicates standard inflation pressure.

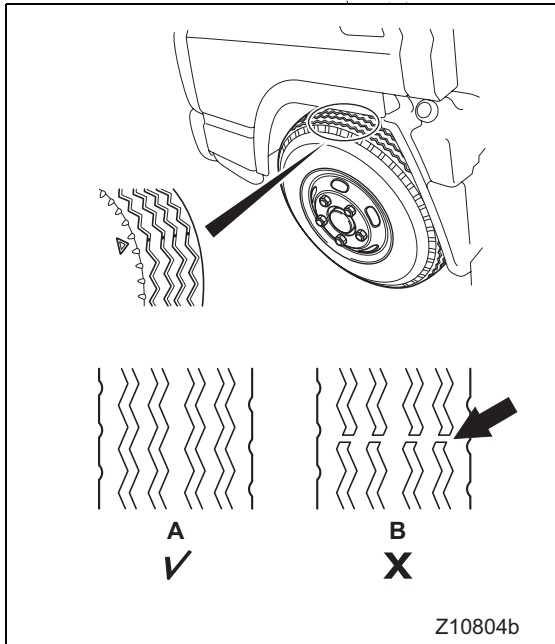
WARNING ⚠

- **Inflate tires to the standard inflation pressure. Tire underinflation or overinflation will damage wheels and tires, and could result in a blowout, causing possible personal injury and property damage.**
- **Handle tires with care. During the initial tire inflation, there is the possibility of an explosion, causing serious personal injury and loss of life.**

CAUTION ⚠

Always install the valve caps after checking or adjusting air pressure. Unless the valve caps are in place, dirt and dust may stick in the valves and cause a flat tire.

- Tire temperatures rise during use, increasing the tire pressure. This is normal; do not release air from the tires when they are hot.
- Tire pressure drops naturally over time. Check the tire pressure at least once a month, using an air gauge.
- Pay particularly close attention to the air pressure in new tires. New tires tend to expand slightly, with a corresponding decrease in air pressure.
- On dual wheels, inflate both inner and outer tires to the same pressure.
- It is not necessary to increase tire pressure before high-speed driving.



2 Checking tread depth

Check the entire circumference of each tire to make sure that the remaining tread is deep enough.

Tread groove depth limit	0.063 in (1.6 mm)
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When the tread wears down, interruptions in the groove pattern, or wear bars ➡ (see illustration) appear across the tire at the locations corresponding to the ▲ marks.

- A. Tread pattern OK
- B. Worn tread (down to wear bars)

Replace the tire as soon as the wear bars appear.

⇒ P. 11-48

WARNING !

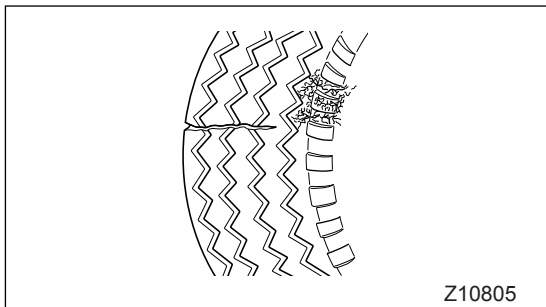
To prevent an injury accident or loss of life, replace worn tires as soon as possible. Worn tires are more susceptible to punctures. They are also more likely to skid and/or hydroplane.

NOTE:

Hydroplaning can occur when driving on wet roads at high speeds. When a vehicle hydroplanes, tires ride up on and slide over a film of water, causing the driver to lose control of both steering and braking.

3 Checking for cracks, damage, and objects embedded in tread

Check the tread surface and sidewalls of each tire for cracks, damage, and excessive or unusual wear. Check for metal pieces, nails, and stones embedded in the tread or caught between the tires (on dual-wheel axles).



Tire replacing**1 Prepare for tire replacement****NOTE:**

If you get a flat tire while on the road and need to change it right away, pull the vehicle to the side of the road as soon as it is safe to do so. Turn on the hazard flashers and set up a reflective triangle or flare behind the vehicle.

1. Park the vehicle on a level surface. Set the parking brake.
2. On vehicles with manual transmission, place the shift lever in neutral.
On vehicles with automatic transmission, place the shift selector in "P" (park).
3. Shut down the engine.
4. Have all passengers get out of the vehicle.
5. Chock the tire diagonally opposite to the tire to be replaced. Set chocks fore and aft.

Example:

If the right rear tire is to be replaced, chock the left front tire fore and aft.

6. Obtain a replacement tire.

NOTE:

- Your vehicle is not provided with a replacement tire as standard equipment.
- See the table for a list of approved tires:

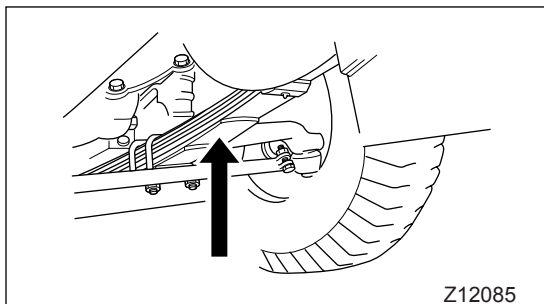
Model	Tire size
COE 40, 45	LT215/85R16-10PR (Load Range E)
COE 50	215/75R17.5 124/123L (Load Range F)

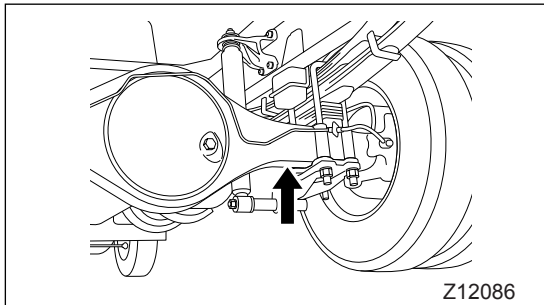
2 Vehicle jacking points**2.1 Front axle**

- Bottom surface of the leaf spring behind the tie rod.

CAUTION

Apply the jack only to the designated jacking points. Applying the jack elsewhere could damage the vehicle and cause the jack to slip out of position.





2.2 Rear axle

- Bottom surface of the axle housing

3 Removing the wheel

WARNING ⚠

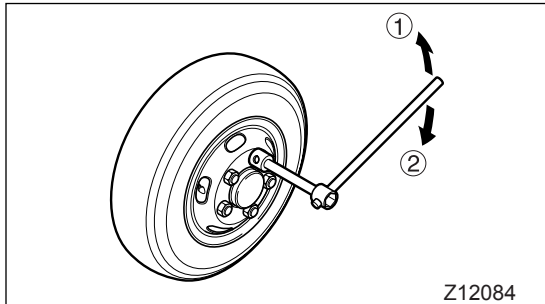
- After raising the vehicle slightly, confirm that the jack is firmly seated at the jacking point and will not move when the vehicle is raised.
If the jack were to slip out of position with the vehicle fully raised, the vehicle could fall and cause a serious injury.
- Never start the engine with the vehicle raised on a jack. Likewise, do not rock the vehicle or crawl underneath it. Movement of the jack could result in a serious personal injury.
- If the vehicle must be raised for a long time, support the vehicle with safety stands. Jacks can slip, allowing the vehicle to fall, which could result in serious injury or death.

1. Make sure the parking brake is set and the wheels are chocked.
2. Position a jack under the front or rear axle jacking point of the vehicle, as applicable. Raise the vehicle high enough to take weight off the wheel, but low enough that the tire still touches the ground.

NOTE:

Socket wrenches are not included in the onboard tools.

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3. Slightly loosen the wheel nuts by turning them in the illustrated direction. Do not remove the nuts yet.

- ① For right-hand threaded wheel nuts, turn counterclockwise
- ② For left-hand threaded wheel nuts, turn clockwise

NOTE:

The wheel nuts on the right-hand side are marked with "R" and are right-hand threaded. Those on the left-hand side are marked with "L" and are left-hand threaded.

WARNING ⚠

Make sure the socket is firmly seated on the wheel nut. If not, the wrench could slip off the nut, and cause a personal injury.

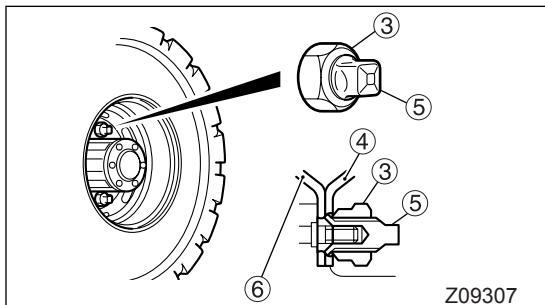
CAUTION ⚠

At this time, do not loosen the wheel nuts too much. You could damage the threads.

- 4. Raise the vehicle until the tire is just clear of the ground.
- 5. Remove the wheel nuts and then the wheel and tire assembly.

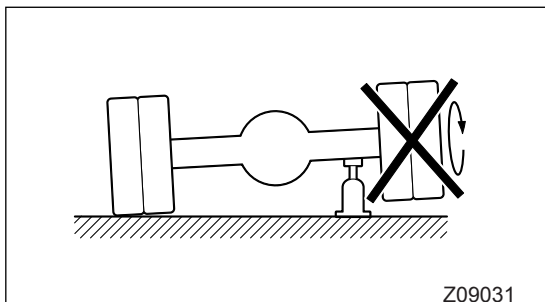
NOTE:

To remove the tires on a dual rear wheel, first loosen the outer wheel nuts ③ and remove the outer wheel ④. Lower the jack, loosen the inner wheel nuts ⑤ and raise the vehicle again to remove the inner wheel ⑥.



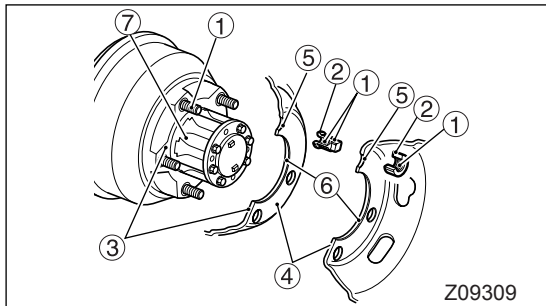
WARNING ⚠

On vehicles with limited-slip differential, do not rotate the raised wheel. Power would be transmitted to the wheel in contact with the ground. The vehicle could move and cause a serious personal injury.



CAUTION ⚠

When removing wheels, be careful not to damage the wheel studs and the threads of the inner wheel nuts.



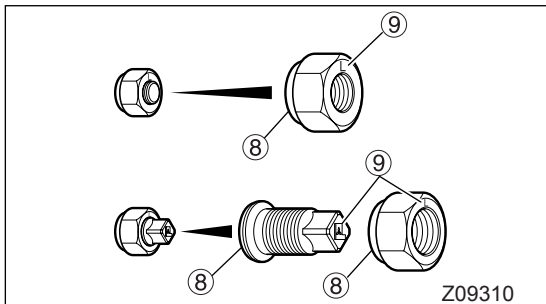
4 Mounting the wheel

1. Clean the following areas before mounting the wheel. Dirt or debris in these areas could cause the wheel nuts to become loose during operation.

- ① Threads of the wheel studs and nuts
- ② The spherical surface of the wheel nuts
- ③ Inner wheel and hub mounting surfaces
- ④ Dual wheel mating surfaces
- ⑤ Wheel nut seating surfaces
- ⑥ Dual wheel inside rim surfaces
- ⑦ Hub pilots

WARNING

- Dirt or debris in the wheel mounting area could cause the wheel nuts to loosen, resulting in an injury accident.
- If wheel stud or nut threads are damaged, or the disc wheel is cracked or otherwise damaged, replace the wheel. A damaged wheel could work loose and cause an injury accident.



2. Mount the wheel on the hub. Install the wheel nuts tight enough to hold the wheel in position. If the wheel nut has a spherical end ⑧, direct the spherical end toward the wheel.

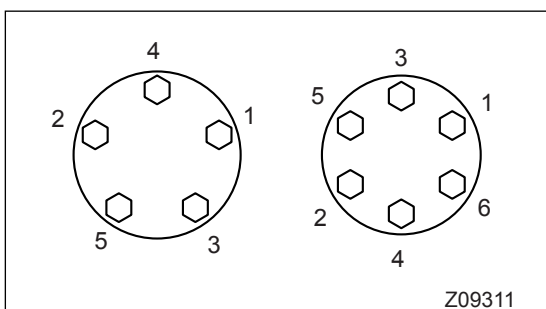
NOTE:

The studs and nuts have stamped marks ⑨ for easy identification; an "R" mark for right-hand threads and an "L" mark for left-hand threads.

3. Lower the vehicle slowly until the tire makes contact with the ground.

4. Tighten the wheel nuts in three stages, ending with the final torque shown in the table. Use the tightening sequence shown in the illustration.

Wheel nut torque	325 to 398 lbf-ft (440 to 540 N·m)
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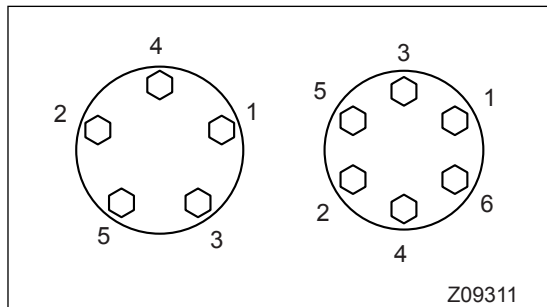
WARNING

- Make sure the socket is firmly seated on the wheel nut. If not, the wrench could slip off the nut, and cause a personal injury.
- Tighten all wheel nuts to the required torque value. When replacing the outer wheel in a dual wheel set, be sure to tighten the inner wheel nuts before tightening the outer wheel nuts. If the nuts are not tight, the wheel may work loose and cause an injury accident.

NOTE:

When installing dual wheels, make sure that the air valve of the inner wheel is not lined up with the air valve of the outer wheel.

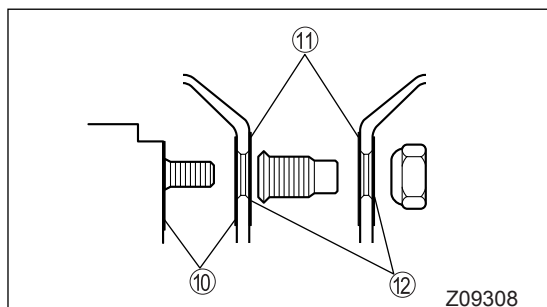
Do not overtighten the wheel nuts. This could weaken the studs or deform the surface of the disc wheel.



5. On dual rear wheels, mount the outer wheel as described below.
 1. When finished mounting the inner wheel, raise the vehicle on the jack again.
 2. Mount the outer wheel on the wheel hub. Then, tighten the wheel nuts to hold the wheel in position.
 3. Tighten the wheel nuts in three stages, ending with the final torque shown in the table. Use the tightening sequence shown in the illustration.

NOTE:

When replacing only the outer wheel of a dual wheel set, tighten the inner wheel nuts to the required torque before mounting the outer wheel.



WARNING

- Do not paint the inner wheel and hub mounting surfaces ⑩, dual wheel mating surfaces ⑪, and wheel nut seating surfaces ⑫. A thicker layer of paint could cause the wheel nuts to loosen, resulting in an injury accident.
- Be sure to use tires of the approved type. Mixing bias and radial tires results in impaired steering and could cause an injury accident or loss of life.

Wheel nut tightening

Inspection interval	Every 6000 miles (10 000 km)
---------------------	---------------------------------

With a new vehicle, perform the first inspection at the initial maintenance period of 2500 miles (4000 km).

WARNING

After changing a tire, the wheel nuts will loosen somewhat as they wear in, creating a potential for an injury accident. Tighten the wheel nuts again after you have driven 30 to 60 miles (50 to 100 km).

Using a torque wrench, check each wheel nut and tighten it if necessary.

Wheel nut torque	325 to 398 lbf-ft (440 to 540 N·m)
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WARNING

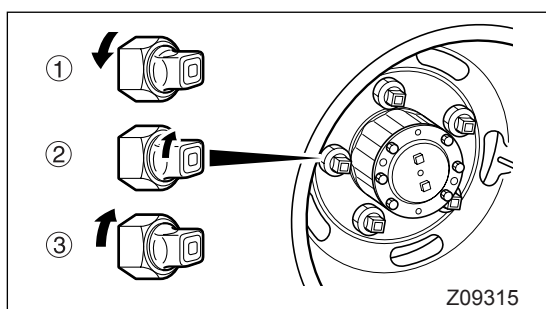
- Be sure to check the wheel nuts regularly. A loose wheel nut could cause an injury accident.
- Make sure the socket is firmly seated on the wheel nut. If not, the wrench could slip off the nut, and cause a personal injury.

• **Tightening wheel nuts on dual rear wheels**
Use the following sequence to tighten the wheel nuts on dual wheels:

- ① Loosen the outer wheel nuts.
- ② Tighten the inner wheel nuts to specification.
- ③ Tighten the outer wheel nuts to specification.

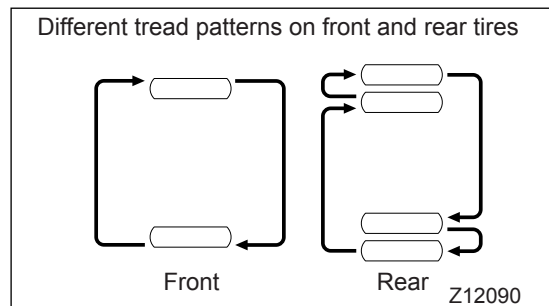
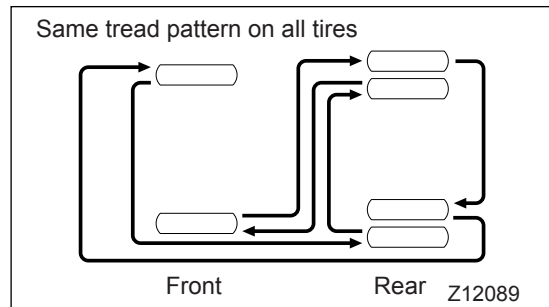
WARNING

On vehicles with dual wheels, do not forget to tighten the inner wheel nuts. A loose wheel nut could cause an injury accident.

**NOTE:**

The wheel nuts on the right-hand side are right-hand threaded. Those on the left-hand side are left-hand threaded.

Both studs and nuts have stamped marks for easy identification; an "R" mark for right-hand threads and an "L" mark for left-hand threads.



Tire rotation

The amount of wear on a tire depends on its position on the vehicle. To equalize wear and extend life as much as possible, rotate the tires at regular intervals.

Tire rotation intervals	Every 6000 miles (10 000 km)
-------------------------	---------------------------------

- On a single axle, use tires of the same type on both wheels. If different types of tires are mounted on the same axle, the vehicle tends to pull to one side during braking, which could cause you to lose directional control of the vehicle.
- See this table for approved tires:

Model	Tire size
COE 40, 45	LT215/85R16-10PR (Load Range E)
COE 50	215/75R17.5 124/123L (Load Range F)

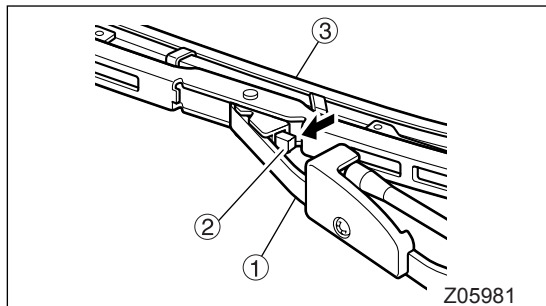
WARNING

- Be sure to use tires of the approved type. Mixing bias and radial tires results in impaired steering and could cause an injury accident or loss of life.
- After a wheel has been replaced, the wheel nuts will loosen somewhat as they wear in, creating a potential for an injury accident. Tighten the wheel nuts again after you have driven 30 to 60 miles (50 to 100 km).

NOTE:

To break in new tires, drive the first 125 miles (200 km) at 37 mph (60 km/h) or less. After this period, check the tire pressure.

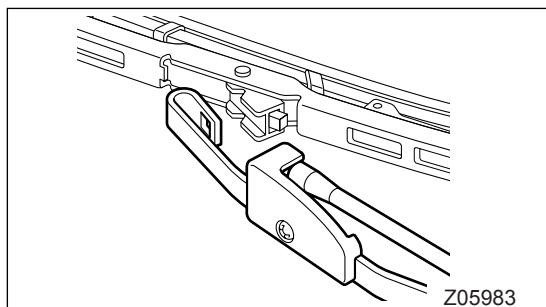
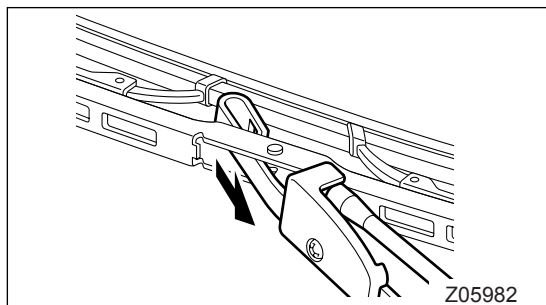
If using different tread patterns on the front and rear wheels, select tires with a ribbed tread for the front wheels and tires with a traction-type tread for the rear wheels.



Wiper blade replacing

1 Replacing the wiper blade

1. Raise the wiper arm ①, and push the locking clip ② in the direction of the arrow (see illustration).
2. With the locking clip held in, press the wiper ③ toward the wiper arm.



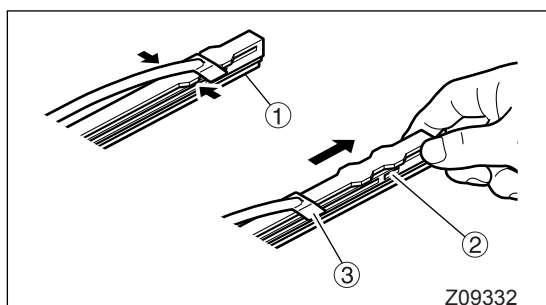
3. As the wiper blade comes free, pull it away from the wiper arm hook.
4. Install a new wiper blade on the wiper arm. Hold in the locking clip until the new blade snaps into place.
5. Tug gently on the blade to make sure it is securely installed and pivots freely on the wiper arm.

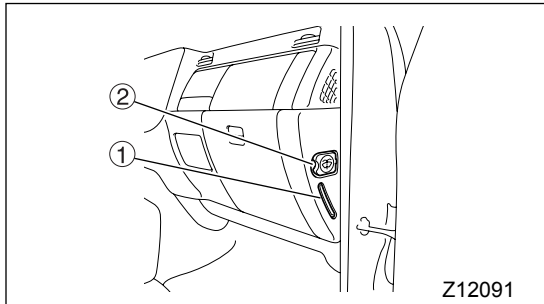
CAUTION !

Do not bring the wiper arms back into position or operate the wipers without wiper blades. This could scratch the windshield.

2 Replacing the rubber element

1. Raise the wiper arm and turn it over.
2. Pinch both sides of the rubber element ① with your fingers. Pull the element so that the jaws ③ of the blade carrier release from the notches ② in the tension strip.
3. Slide the rubber element out of the blade carrier.
4. Replace the old rubber element with a new one.
5. To install, insert the grooves in the rubber element into the jaws of the carrier.
6. Slide the rubber element into the carrier until it locks into place. Make sure the jaws fit snugly into the notches in the tension strip.





Windshield washer fluid level checking and filling

1 Washer fluid level checking

Check the washer fluid level through the level check window ①.

When the level has dropped to the lower part of the window or is no longer visible, refill the tank with washer fluid.

2 Washer fluid filling

1. Open the passenger's door.
2. Open the washer fluid reservoir cap ② and pour in a mixture of windshield washer fluid and tap water until the level reaches the top of the check window.
3. Close the cap tightly after refilling.

Windshield washer fluid quantity	About 3.2 quarts (3.0 L)
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CAUTION

- Do not substitute soapy water for washer fluid. This could result in clogged washer nozzles or spots on the painted surfaces of the cab.
- Operating the washers continuously for more than 20 seconds or when there is no fluid in the reservoir could burn out the washer motor.

NOTE:

When it is very cold, increase the ratio of washer fluid to water. This will keep the mixture from freezing.

Battery inspection

DANGER

PROTECT SKIN AND EYES FROM BATTERY ELECTROLYTE. ELECTROLYTE IS CORROSIVE AND COULD RESULT IN SERIOUS PERSONAL INJURY.

If electrolyte is splashed on your skin or in your eye, force the eye open, rinse it with cool, clean water for about five minutes, and call a doctor immediately. Do not add eye drops or other medication unless advised by the doctor.

If electrolyte is swallowed, drink several large glasses of milk or water. Follow with milk of magnesia, a beaten raw egg, or vegetable oil. Call a doctor immediately.

Use extreme care to avoid spilling or splashing electrolyte. Electrolyte spilled or splashed on your body or clothing should be neutralized with baking soda or household ammonia and then rinsed with clean water.

Electrolyte can also damage painted or unpainted metal vehicle parts. If electrolyte is spilled or splashed on any metal surface, neutralize and rinse it with clean water.

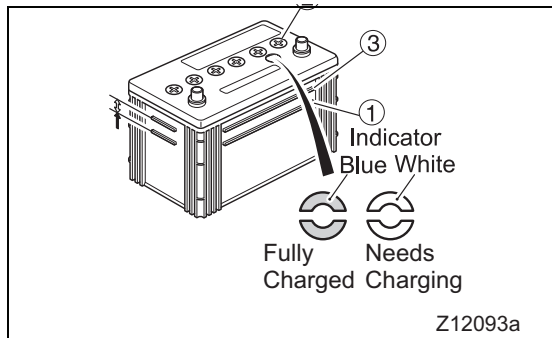
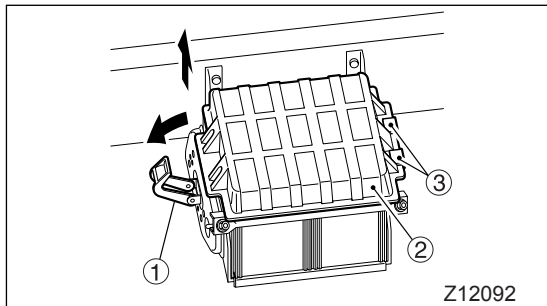
WARNING

- The batteries generate explosive gases. Keep them away from open flames and sparks. When handling batteries, always wear eye protection. Exploding gas can cause blindness or other bodily injury.
- If a metal object connects an ungrounded battery terminal to a nearby metal part of the vehicle which is grounded, it could short out the batteries, causing sparks and possible property damage.

WARNING

To prevent the risk of serious personal injury, observe the following instructions when storing a battery.

- Select a storage place where the battery fluid will not freeze.
- The storage place must be free of any heat source and well ventilated.
- The battery must be kept out of reach of children.
- The battery must be placed with the terminals facing upward. Do not place the battery on its side. Doing so could cause battery fluid leakage and a fire.



1 Removal and installation of the battery cover

1. Pull the latch ① on the left side of the battery to unhook it from the cover ②, and raise the left end of the cover by about 2 in (50 mm).
2. Slide the cover to the left. This will release it from the catches on the right-hand side ③.
3. To install the battery cover, slide the cover onto the catches on the right-hand side and fasten the latch. Tug gently on the cover to make sure it is secure.

2 Inspecting the battery

WARNING

If the battery fluid level is too low, do not use the battery. The battery would deteriorate rapidly, and it could overheat or explode, causing serious personal injuries.

CAUTION

If the battery fluid level is too high, electrolyte could leak out and corrode the battery terminals.

NOTE:

Perform all battery checks with the engine turned off.

The battery's charge status is shown by the color of the charge indicator on top of the battery.

- When the indicator is blue, the battery is fully charged. If the indicator is white, the battery is not fully charged. Check the battery fluid level as follows:
1. If the battery fluid level is below the "LOWER LEVEL" line ①, remove the 6 vent plugs ② and add distilled water via the vent plug holes until the battery fluid level is between the "UPPER LEVEL" ③ and "LOWER LEVEL" lines. Replace the vent plugs and charge the battery.
 2. If the battery fluid level is correct, or between the "UPPER LEVEL" and "LOWER LEVEL" lines, charge the battery.
If the indicator does not turn blue after charging, replace the battery.

CAUTION

If you do not use the vehicle for an extended period, remove the battery to prevent electrical system damage.

3 Cleaning the terminals

1. Remove any corrosion with a wire brush, and wash with a weak solution of baking soda and water. Rinse with clean water and dry.
2. To provide corrosion protection, apply pumpable dielectric grease to the battery terminals.

4 Charging a battery

NOTE:

If the battery is cold, let it warm up. This will allow a normal charging rate.

1. Remove the battery from the vehicle and remove the vent plugs from the battery.
2. Make sure the charger is turned off.
3. Connect the charger, following the charger manufacturer's instructions. Rock the charger lead clamps to make sure there is a good connection.
4. Turn on the charger and slowly increase the charging rate until the recommended value (in amps) is reached.

CAUTION

If the battery feels hotter than 125°F (52°C), or if rapid gassing or spewing of electrolyte occurs, lower the charging rate or stop charging the battery and allow it to cool.

5. After the battery has charged for the recommended period of time, turn the charger off.
6. Disconnect the charger from the battery.
7. Install the vent plugs in the battery and install the battery on the vehicle.
8. Attempt to start the vehicle. If the engine does not crank, replace the battery with a new one.

NOTE:

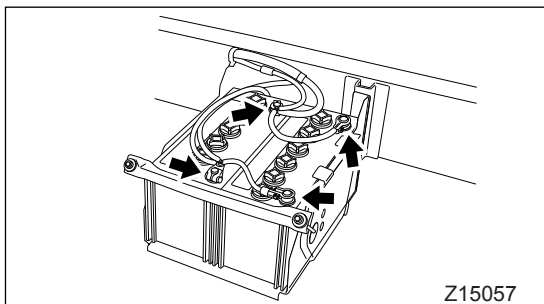
Follow the correct procedure when jump starting a vehicle with a dead battery. ⇒  P. 12-22

5 Removing the batteries

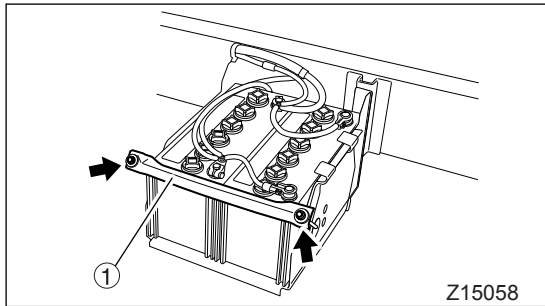
WARNING

If a metal object connects an ungrounded battery terminal to a nearby metal part of the vehicle which is grounded, it could short out the batteries, causing sparks and possible property damage.

1. Disconnect the battery cables (each indicated by an arrow  in the illustration) from the battery terminals. On each battery, disconnect the negative (–) terminal first.



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2. Remove the battery support mounting nuts (each indicated by an arrow ➡ in the illustration).
3. Remove the battery support ①, then remove the batteries.

6 Installing the batteries

1. Install the battery support and tighten the battery support mounting nuts.
2. Connect the battery cables. On each battery, connect the negative (–) terminal last.
3. Make sure the batteries are securely in place before installing the battery cover or moving the vehicle.

CAUTION

Make sure the battery is securely installed. If it is left loose, shocks and vibrations from the road could damage the battery case and battery plates, shortening battery life.

HVAC filter cleaning

To reduce dust and dirt, remove and clean the air filters in the heating, ventilation, and air conditioning system (HVAC filters) at regular intervals (every 6 months or so).

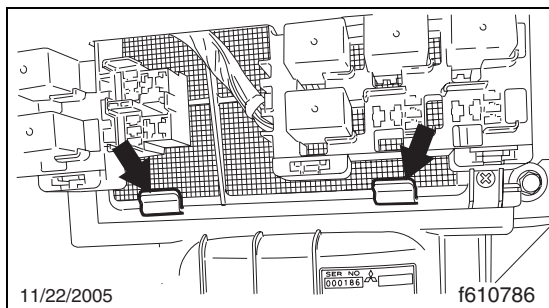
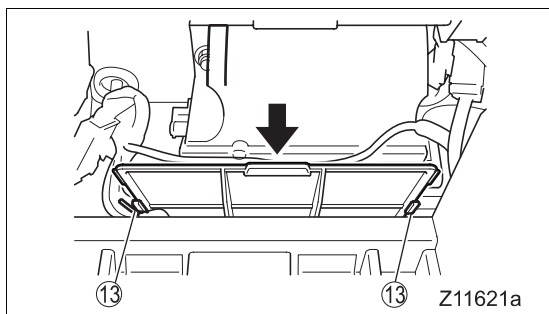
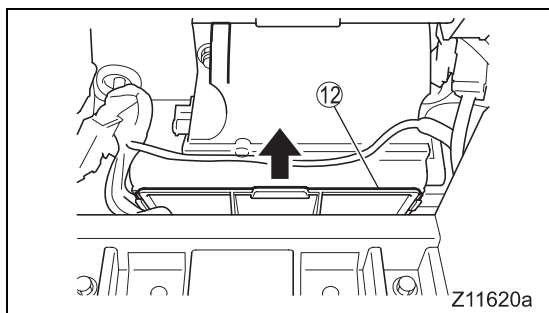
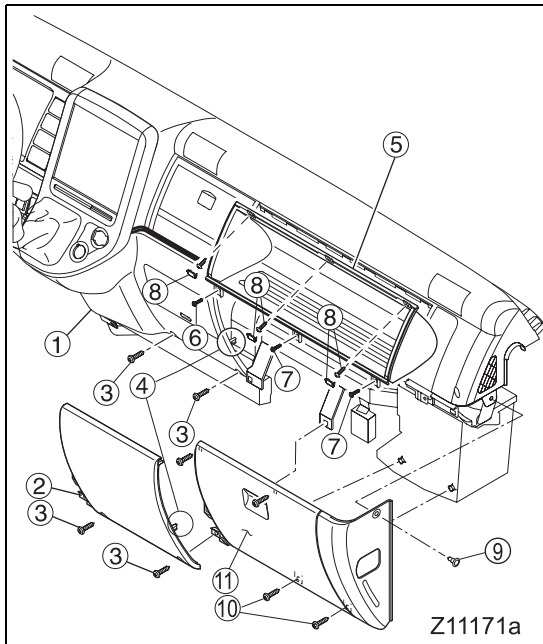
Clean the HVAC filters at shorter intervals if your vehicle is used frequently in dusty areas.

CAUTION

Clogged filters may result in inefficient heating and/or air conditioning, and cause damage to the blower motor.

1 Outside air filter

Disassembly is required to clean the outside air filter. Do not attempt to remove this filter yourself. Bring the vehicle to an authorized Sterling service facility.



2 Screen filter (inside cab)

• Removal

1. Remove the four screws ③ on the bottom of the lower center panel ① and the bottom of the passenger's kick panel ②.
2. Release the spring clips ④ on the passenger's kick panel and lower center panel, and remove the passenger's kick panel from the dash.
3. Remove the exposed screw ⑥ on the bottom of the parcel tray ⑤ that attaches the parcel tray to the dash.
4. Open the map compartment and remove the two screws ⑦ that attach the parcel tray to the inside of the map compartment.
5. Remove the three sets of plugs and screws ⑧ at the top of the parcel tray, and remove the tray from the dash.
6. Remove the quick-release fastener ⑨ from the side panel of the map compartment (above the washer fluid level check window).
7. Remove the two screws ⑩ from the brackets at the bottom of the map compartment and remove the map compartment ⑪ from the dash.
8. Slide the screen filter ⑫ up, removing it from the guide clips in its holder.

WARNING

When cleaning the HVAC filters, wear a dust mask to avoid inhaling dust. Dust inhalation can have adverse health effects.

9. Clean the screen filter with compressed air.

• Installation

1. Insert the screen filter in its holder with its front facing you. Press the screen filter securely into the guide clips ⑬ (one on each side near the top and two at the bottom).
2. Position the map compartment on the dash. Fasten the quick-release fastener on the side panel and the two screws that attach to the brackets at the bottom of the front panel, as removed.
3. Position the parcel tray, as removed. Open the map compartment and fasten the two screws that attach the top of the map compartment to the dash.
4. Install the three sets of plugs and screws that attach the top of the parcel tray to the dash, as removed.
5. Install the remaining screw that attaches the bottom of the parcel tray to the dash.
6. Insert the spring clips on the back of the passenger's kick panel into the slots, as removed.
7. Install the two screws that attach the bottom of the passenger's kick panel to the dash.
8. Install the fasteners removed from the lower center panel once the passenger's kick panel is firmly in place.

Exhaust system inspection

The exhaust system is inspected to control noise and emissions. In addition to inspection at the regular maintenance interval, inspect the exhaust system if the noise level of the vehicle has increased.

1. Inspect the muffler body, muffler inlet, and muffler outlet for signs of leakage, damage, dents, holes, and corrosion.
2. Inspect the exhaust pipe for signs of leakage, damage, and wear.
3. Check for leakage at the clamp that attaches the exhaust pipe to the turbocharger exhaust outlet. Check for leakage at each exhaust seal clamp. In each case, if leakage is found, tighten the clamp. If leakage persists, replace the clamp.

Replace parts as necessary. Do not reuse seal clamps. Once a seal clamp is loosened or removed, it must be replaced.

Vehicle cleaning

WARNING

- Some cleaning fluids are poisonous or flammable. To prevent illness or injury, carefully follow the safety precautions shown on the container and open the windows when using solvent-based cleaning materials in the cab.
- The following materials could cause a personal injury or damage the vehicle, and should not be used:
Acetone, lacquer thinner, enamel thinner, nail enamel remover, and other volatile solvents; laundry soap, bleach, deoxidant, and other detergents; carbon tetrachloride, gasoline, benzene, naphtha, and other petrochemicals.

1 Exterior cleaning

1.1 Cleaning glass surfaces

Keep the vehicle's windows and screens clean at all times. Use glass cleaner and wipe it off with a sponge or soft cloth.

CAUTION

Never apply rubbing compound to glass since it leaves scratches that damage the glass.

1.2 Washing

- Using a hose, wash the mud and dirt off the body surfaces. Wash not only the surfaces around the cab, but also the wheel wells and the underside of the chassis.
- After driving in a coastal area or on a salted road in the winter, give your vehicle a thorough washing.
- Rinse the detergent off with water. Take care that no detergent remains on the paint work since it could discolor the paint.

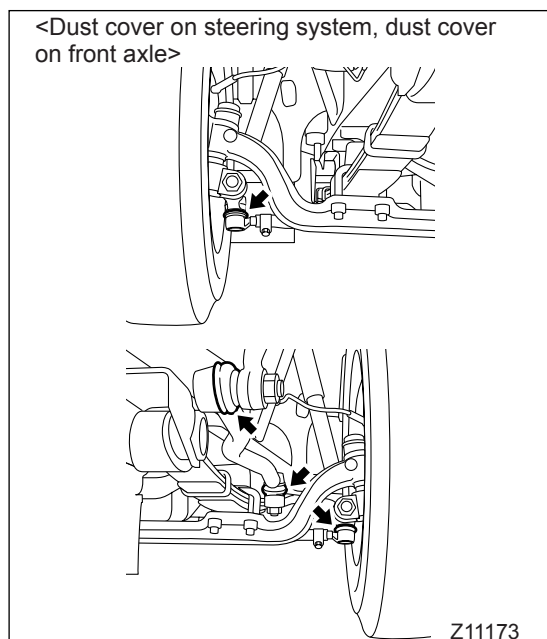
WARNING

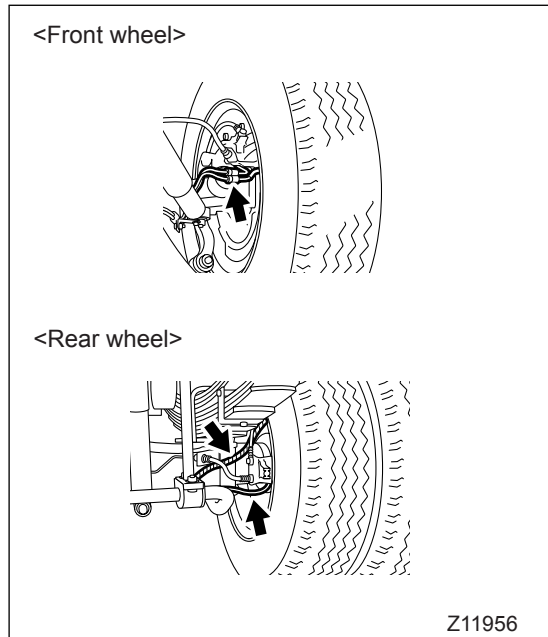
Be careful when washing the underside of the vehicle. Clearances are tight in this area. Contact with sharp or rough surfaces could cause personal injury.

CAUTION

To prevent engine damage, do not splash water on the air intake port or the area where it connects to the engine.

- Especially when the vehicle is washed with the cab tilted, do not allow water to enter the engine through the air intake port.
- When washing the engine compartment and underside of the chassis, be careful not to expose the starter, alternator, connectors, and other electrical parts directly to steam or high-pressure water.
- In cold weather, the key holes and rubber parts of the door sometimes freeze, making it hard to open the door. After washing, remove moisture on and around the doors. Apply silicone with antifreeze capabilities to prevent freezing.
- To avoid damaging the vehicle's finish, wash it with luke-warm or cold water. Do not use concentrated soap or synthetic detergents. Do not use very hot water, and do not allow the vehicle to dry in direct sunlight.
- When washing the underside of the vehicle, be careful not to direct water or steam from a high-pressure cleaner at close range for any length of time toward the steering shaft, the dust covers on the steering system, or the dust covers on the front axle.
- Wash the plastic lenses with water, and wipe them with a soft cloth. Do not use a vehicle-cleaning brush. This could scratch the lenses.
- Do not direct steam from a high-pressure cleaner into the outside air inlets. Water would get into the cab, and the wiper motor could malfunction.





- When the vehicle is washed, braking performance can be reduced if water enters the brake drums or splashes over the brake discs. If this happens, drive slowly and put light pressure on the brake pedal. This will dry out the brakes.

CAUTION

ABS electric wiring is located behind the wheels. When removing snow or ice that has adhered to the wheel areas, be careful not to damage the ABS components and wiring. Also, avoid exposing the ABS components and wiring to high-pressure water or steam cleaners. This could cause the ABS system to malfunction.

1.3 Waxing

Wax the vehicle whenever the wax on the vehicle ceases to repel water.

Before applying wax, move the vehicle out of direct sunlight. Do not apply wax when the paint work is warm to the touch.

1.4 Dirt caked on paint work

Wash off the following contaminants: calcium chloride and other salts, road chemicals, oil, tar, tree sap, bird droppings, and industrial soot. They can corrode, discolor, or stain the vehicle finish.

If you find them hard to remove, use a synthetic cleaner that does not scratch or otherwise damage painted surfaces.

1.5 Small chips and scratches

Fix small chips, cracks, and scratches in the finish as soon as possible, particularly when body metal is exposed. Do not wait for corrosion to set in. Your Sterling dealer can supply touch-up paint for small chips and scratches.

2 Interior cleaning

CAUTION

Do not clean the interior by splashing water on it. This could damage the electrical system.

- Remove dirt as soon as possible, before it leaves a permanent mark or stain.
- Clean the interior of the vehicle with a sponge or soft cloth. Remove stubborn dirt with a soft brush.
- Do not clean plastic parts with thinner or gasoline. This could result in cracking or discoloration.
- Remove the floor mat before washing the floor. Otherwise, the floor could rust and components of the electrical system could be damaged.
- If water collects in the cab, either remove the drain plug from the floor and allow the water to drain out or wipe up all the water using a cloth.

2.1 Cleaning interior trim

Keep the vehicle's interior trim clean at all times.

1. Remove dust from the trim with a vacuum cleaner or soft brush.
2. Wipe vinyl trim areas carefully with a cloth dampened with water.
3. Wipe dirt and scuff marks from the trim with a commercially available cleaner.

2.2 General cleaning

A multi-purpose powder-type cleaner is recommended for general cleaning. Soapy water can also be used.

1. Remove loose dirt and dust with a vacuum cleaner or soft brush.
2. Dilute the cleaner in water to the concentration recommended by the manufacturer. Best results can often be obtained with a less concentrated solution.
Apply soapy water with a sponge or soft cloth.
3. Wipe up any remaining cleaner with a towel or other absorbent cloth.
4. Finish cleaning by gently wiping the surface with a dry soft cloth.

2.3 Grease and oil

Use this method to remove stains made by grease, oil, butter, margarine, shoe polish, coffee (with cream), chewing gum, beauty cream, vegetable oil, wax, crayon, tar, and asphalt.

- Wipe off the staining agent and apply a fabric cleaning solution.
- Shoe polish, wax, crayon, tar, and asphalt can leave stains if not wiped off quickly.
Use the cleaner carefully because it dissolves the staining agents and can leave behind a smudge.

2.4 Organic contaminants

Use this method to remove stains made by tomato ketchup, black coffee, egg, fruit, fruit juice, milk, cold drinks, wine, vomit, urine, and blood.

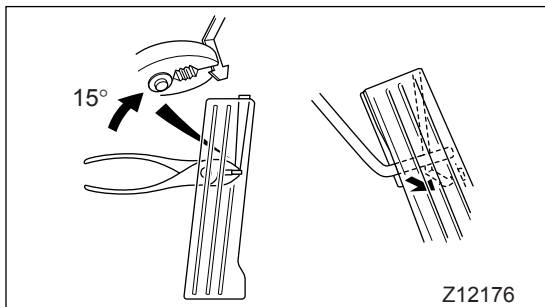
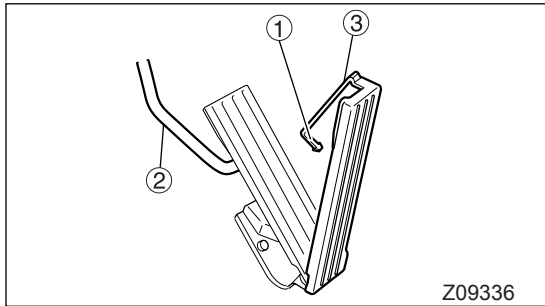
1. Wipe off the stained area, then clean the area again with a damp sponge.
2. If the area is still stained, apply a multi-purpose foam-type cleaner.
3. If the smell of vomit or urine lingers, clean the affected area with a weak solution of baking soda and water.
4. If necessary, lightly wipe the area with a fabric cleaning solvent.

2.5 Other contaminants

Use this method to remove stains made by candy, ice cream, mayonnaise, and chili sauce.

1. Carefully wipe off the stained area, then wash the area with water and dry it.
2. If any spot remains, clean it with a fabric cleaning solvent.

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2.6 Removing the floor mat for cleaning

When removing the floor mat for cleaning, you must raise the accelerator pedal by using the following method.

1. Hold the hooked end ① of the pedal stop ③ with pliers. As you pull the pedal stop toward the front of the vehicle, twist the hooked end through approximately 15 degrees from vertical. This will disengage the hooked end from the pedal.
2. To return the pedal to its original state, fit the accelerator arm ② inside the pedal stop, and press the hooked end of the pedal stop into the hole in the pedal.
3. Check to ensure that the pedal stop is firmly attached and does not disengage.

CAUTION

Do not use force to disengage the pedal stop from the pedal. Use the pliers to twist it while pulling it forward.

After cleaning the floor mat, dry the felt backing before putting the mat back on the floor. When fitting the floor mat back in the vehicle, make sure it does not interfere with the accelerator pedal and other moving parts.

2.7 Cleaning seat belts

- Keep your vehicle's seat belts clean and dry at all times. Clean them with mild soap and luke-warm water. Never use gasoline, thinner, or other flammable liquids, since these will weaken the webbing.
- Do not bleach or dye the webbing. This would seriously weaken it.

2.8 Cleaning vinyl surfaces

- To clean vinyl, use warm water and a mild soap, such as saddle soap.
- Apply a little soapy water and leave it for several minutes. Then, rub the area hard with a damp cloth. Repeat this process until the area is completely clean.
- Using a clean cloth impregnated with vinyl cleaner, wipe the area clean.

12. In an emergency

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Troubleshooting

Performing the pretrip inspection and regular maintenance on your Sterling 360 vehicle will help ensure that it delivers safe, reliable service and optimum performance for years to come. Be sure to check and service your vehicle regularly.

If your vehicle experiences a problem, see the tables below for help.

If you are unable to correct the problem yourself, or the problem persists after you have attempted to repair it, contact an authorized Sterling service facility.

The engine won't start. The starter does not turn over or turns over too slowly

Possible cause	Remedy	Ref. page
One of the ignition switch fuses is blown.	Check the main and high-amp fuse boxes and replace the blown fuse.	12-8
The battery has run down.	Charge or replace the battery.	11-59
The battery cable is disconnected, loose, or corroded.	Remove corrosion and connect the cable correctly.	11-59
The engine ground is disconnected.	Connect the ground cable.	—
Engine oil viscosity is too high.	Replace the oil. Use oil of the correct viscosity.	11-18

The engine cranks, but won't start

Possible cause	Remedy	Ref. page
The vehicle has run out of fuel.	Add fuel and bleed the fuel system.	12-23
There is air in the fuel system.	Bleed the fuel system.	12-23
The fuel filter is clogged.	Replace the fuel filter element.	11-29
The fuel is frozen.	Heat the fuel line with hot water [140°F (60°C) or less].	10-2
The air cleaner is clogged.	Clean or replace the air cleaner element.	11-31
The engine has not had time to preheat.	Follow the preheating instructions.	5-8
The engine preheating circuit fuse is blown.	Replace the fuse.	12-13
The fuel injection system is malfunctioning.	Bring the vehicle to an authorized Sterling service facility.	—

The engine starts but dies immediately

Possible cause	Remedy	Ref. page
The engine idle speed setting is set too low.	Bring the vehicle to an authorized Sterling service facility.	—
The fuel filter is clogged.	Replace the fuel filter element.	11-29
The air cleaner is clogged.	Clean or replace the air cleaner element.	11-31

The engine continues to run (diesels) after being shut down

Possible cause	Remedy	Ref. page
The fuel injection system is malfunctioning.	Bring the vehicle to an authorized Sterling service facility.	—
The ignition switch is malfunctioning.	Bring the vehicle to an authorized Sterling service facility.	—

The engine exhaust is black

Possible cause	Remedy	Ref. page
The fuel injection system is malfunctioning.	Bring the vehicle to an authorized Sterling service facility.	—
The air cleaner is clogged.	Clean or replace the air cleaner element.	11-31

The engine overheats

Possible cause	Remedy	Ref. page
The radiator is damaged or dirty.	Clean the radiator with a soft brush.	11-37
The coolant level is too low.	Add coolant.	11-36
The radiator pressure cap is not tight.	Install the pressure cap firmly.	11-36
The fan belt is loose.	Adjust the belt tension.	11-39
The coolant is contaminated.	Flush the cooling system and change the coolant.	11-33

The engine oil pressure is low

Possible cause	Remedy	Ref. page
The engine oil level is too low.	Add engine oil.	11-19
Engine oil viscosity is too low.	Replace the oil. Use oil of the correct viscosity.	11-19
Engine components are worn.	Bring the vehicle to an authorized Sterling service facility.	—

Fuel consumption is excessive

Possible cause	Remedy	Ref. page
There is a fuel leak.	Check the fuel system and retighten connections as necessary.	11-29
The air cleaner is clogged.	Clean or replace the air cleaner element.	11-31
Tire pressure is too low.	Add air to the tires.	11-45
The clutch disc is worn.	Bring the vehicle to an authorized Sterling service facility.	—

Engine oil consumption is excessive

Possible cause	Remedy	Ref. page
The wrong oil is being used.	Replace the engine oil with the correct type.	11-19
There is an oil leak.	Check the oil circuit and retighten connections as necessary.	11-28
The engine oil needs replacement.	Change the engine oil at prescribed intervals.	11-17
The oil filter is clogged.	Replace the oil filter element.	11-28

12-4*In an emergency***The vehicle lacks power**

Possible cause	Remedy	Ref. page
The parking brake is applied.	Release the parking brake completely.	5-17
The air cleaner is clogged.	Clean or replace the air cleaner element.	11-31
The fuel filter is clogged.	Replace the fuel filter element.	11-29
Air is present in the fuel system.	Bleed the fuel system.	12-23
The clutch disc is worn.	Bring the vehicle to an authorized Sterling service facility.	—
The radiator is damaged or dirty.	Clean the front of the radiator.	11-37

The clutch disengages incompletely

Possible cause	Remedy	Ref. page
The clutch fluid level is too low.	Add clutch fluid (DOT 3 brake fluid).	11-25
Clutch pedal play is excessive.	Adjust the clutch pedal.	11-45

Braking is difficult <COE 40, 45>

Possible cause	Remedy	Ref. page
Vacuum is insufficient.	Increase the engine speed to boost vacuum.	6-8
The brake fluid level is too low.	Add brake fluid.	11-25
There is a vacuum leak.	Check the vacuum circuit and retighten connections as necessary.	6-8
The disc brake pads or drum brake linings are worn.	Bring the vehicle to an authorized Sterling service facility.	—
There is air in the brake fluid.	Bring the vehicle to an authorized Sterling service facility.	—

Braking is difficult <COE 50>

Possible cause	Remedy	Ref. page
The brake fluid level is too low.	Add brake fluid.	11-25
Power steering system fluid pressure is insufficient.	Bring the vehicle to an authorized Sterling service facility.	—
There is a leak in the power steering system.	Bring the vehicle to an authorized Sterling service facility.	—
The power steering fluid level is too low.	Add power steering fluid.	11-26
The disc brake pads or drum brake linings are worn.	Bring the vehicle to an authorized Sterling service facility.	—
There is air in the brake fluid.	Bring the vehicle to an authorized Sterling service facility.	—

The vehicle pulls to one side during braking

Possible cause	Remedy	Ref. page
The tires are not uniformly inflated.	Inflate the tires properly.	7-15
The tires are unevenly worn.	Change the tires.	11-26
The cargo is overloaded to one side.	Load the cargo evenly.	11-51

Steering is difficult

Possible cause	Remedy	Ref. page
The cargo is overloaded towards the front.	Load the cargo evenly.	7-15
The power steering fluid level is too low.	Add power steering fluid.	11-26
The pressure in the front tires is too low.	Inflate tires to recommended pressures.	11-51

The steering wheel vibrates

Possible cause	Remedy	Ref. page
The wheel nuts are loose.	Tighten the wheel nuts to specification.	11-53
The tires are not uniformly inflated.	Inflate tires properly.	11-51
The tires are worn unevenly	Replace tires.	11-48
The tires are damaged.	Replace tires.	11-48
The tires or brakes are not properly balanced.	Bring the vehicle to an authorized Sterling service facility.	—
The brake rotors are worn (vibration is noticed during braking).	Bring the vehicle to an authorized Sterling service facility.	—

The steering wheel does not return smoothly to the straight ahead position

Possible cause	Remedy	Ref. page
The steering system components are improperly lubricated.	Bring the vehicle to an authorized Sterling service facility.	—

One of the lights does not illuminate

Possible cause	Remedy	Ref. page
The bulb is out.	Replace the bulb.	12-14
The fuse is blown.	Replace the fuse with one of the correct amperage.	12-8
There is an open circuit or defective grounding.	Bring the vehicle to an authorized Sterling service facility.	—

The battery frequently runs down

Possible cause	Remedy	Ref. page
The battery terminals are loose or corroded.	Scrape off all corrosion and tighten the terminals.	11-59
The fan belt is loose.	Adjust the belt tension.	11-39
The battery electrolyte level is low.	Add distilled water to the battery.	11-58
The battery will not take a charge.	Replace the battery.	11-59
The engine idle speed is set too low.	Bring the vehicle to an authorized Sterling service facility.	—
Added lights and accessories are causing excessive current draw.	Bring the vehicle to an authorized Sterling service facility.	11-59
Switches are left on.	Be sure to turn off the switches.	5-18
The alternator does not charge the battery properly.	Bring the vehicle to an authorized Sterling service facility.	—

Emergency stops

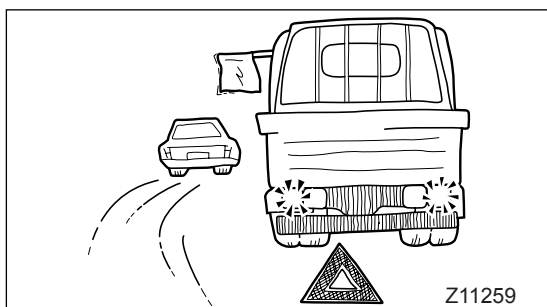
Should a mechanical breakdown occur, slow your vehicle while being alert to other vehicles. Pull off the road at a place where you do not hinder the flow of traffic.

WARNING

- Do not stop your vehicle in a tunnel. This could cause a serious personal injury or death. Drive out of the tunnel whenever possible.
- Be sure to chock the wheels after stopping the vehicle. Do not rely solely on the parking brake. The vehicle may roll and cause a serious personal injury.

NOTE:

If the engine shuts down, do not attempt to move the vehicle using only the starter.



1 Vehicle visibility

After you have pulled off the road, alert other drivers so that they do not hit your vehicle.

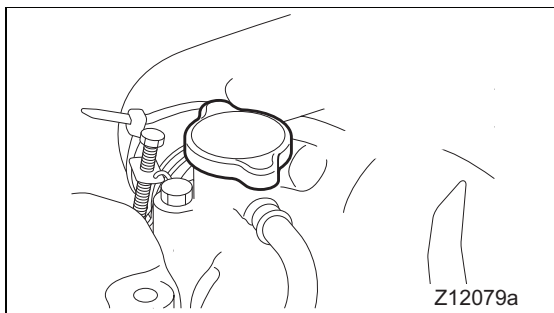
- Turn on the hazard warning flashers.
- Set up a reflective triangle or flare behind the vehicle.

2 Repair

Check the cause of the breakdown. If you judge it readily repairable, fix it while remaining alert to traffic. If you are unable to repair it, call an authorized Sterling service facility for help.

WARNING

Never attempt to perform repairs on an expressway or in a tunnel. This could cause a serious personal injury.



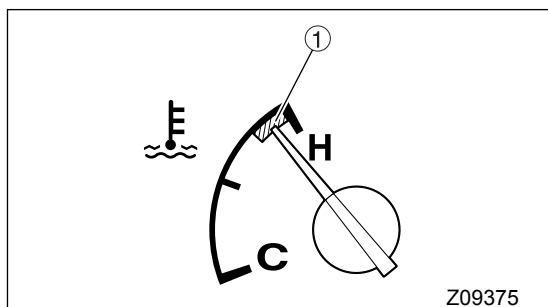
If the engine overheats

WARNING

Open the pressure cap only after the coolant temperature has dropped to at least 122°F (50°C). Hot coolant under pressure can spurt out and cause a severe burn injury.

CAUTION

- Allow the engine to idle for at least 3 minutes before shutting it down. Engine shutdown at high RPM could cause an engine malfunction.
- Suddenly pouring cold water into the radiator could crack the water jacket. Supply cold water a little at a time.



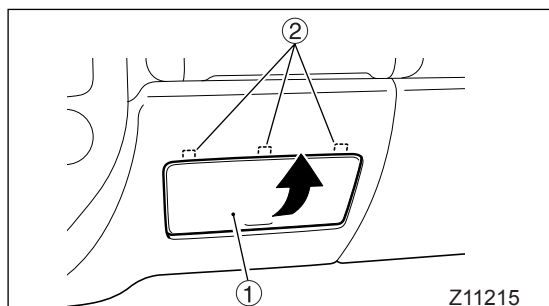
If the needle in the coolant temperature gauge enters the red zone ①, the engine has overheated. Stop the vehicle in a safe place. **Do not shut down the engine yet.** Use the engine idle control or light pressure on the accelerator pedal to run the engine at a speed slightly higher than the idle speed. ⇨ P. 5-5

When the needle in the coolant temperature gauge has come down to approximately the middle of the scale, shut down the engine and do the following steps:

1. Check that coolant is not leaking from radiator hoses or other parts of the cooling system.
2. Check that the fan belt is not broken and that its tension is normal. ⇨ P. 12-46
3. Check the coolant level. If the level is too low, add coolant.
 - Remove the radiator pressure cap. Add coolant until it reaches the top of the pressure cap opening. ⇨ P. 12-39
 - Remove the surge tank cap. Add coolant until it reaches the "FULL" line. ⇨ P. 12-39
4. Check the front of the radiator for dirt. Clean the radiator if necessary.
5. If there are coolant leaks or the engine repeatedly overheats, bring the vehicle to an authorized Sterling service facility.

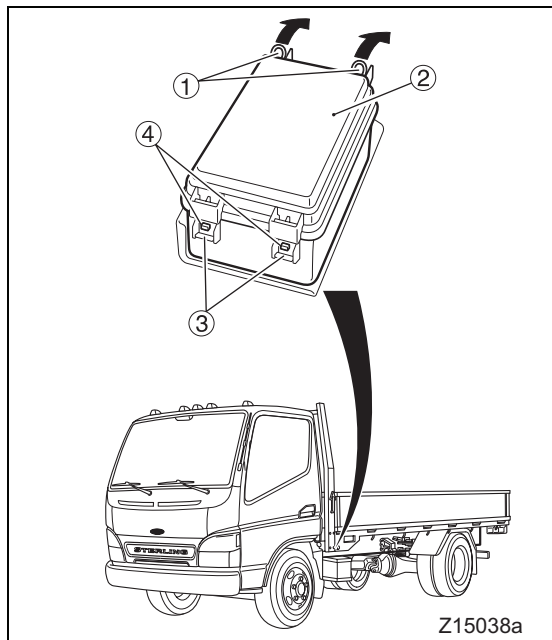
Replacing fuses

- The main fuse box is located in the lower center panel. Fuses are also found in the high-amp fuse box located behind the cab on the left frame rail.
- Before checking or replacing fuses, turn the ignition switch to the "LOCK" position and push all switches to the OFF position.
- If a light fails to illuminate or electrical equipment does not function, its fuse may have blown. Check the fuse boxes and replace fuses as necessary.



1 Removal and installation of the main fuse box cover

1. Pull the bottom of the fuse box cover ① toward you to remove it.
2. To install the cover, align and insert the tabs ② at the top. Press the bottom of the cover into place.

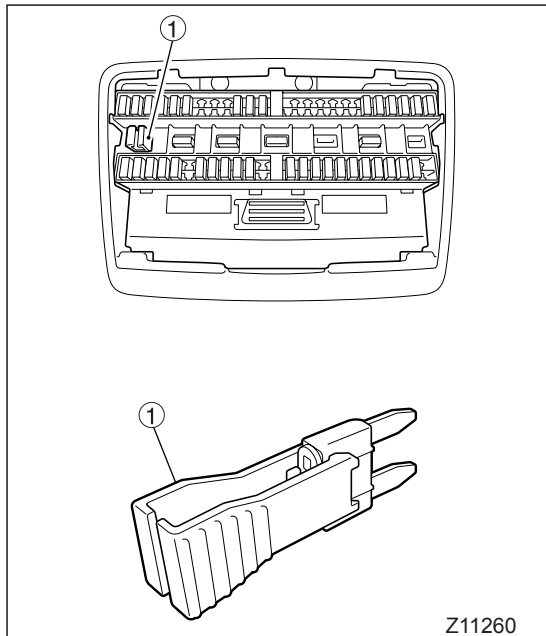


2 Removal and installation of the high-amp fuse box cover

1. Release the clamps ① and lift the high-amp fuse box cover ② straight upward to remove it.
2. To install the cover, place it on the box and press it straight downward. Align the holes of the latches ③ with the catches ④ on the box. While still pressing the cover downward, fasten the clamps.

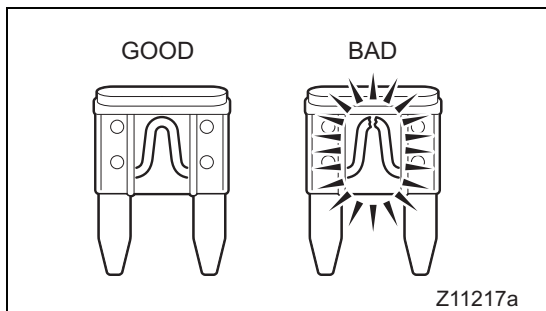
CAUTION

When installing the high-amp fuse box cover, be sure to retain it with the clamps while pressing it straight downward. Pushing the cover toward the inside of the vehicle with excessive force could break it.



3 Fuse replacement

1. To remove the fuse that is to be replaced, grip it using the fuse puller ① in the fuse box. The amperage and circuit designation for each fuse are shown on the inside of the main fuse box cover and on the inside of the high-amp fuse box cover.



2. Select a spare fuse of the correct amperage.

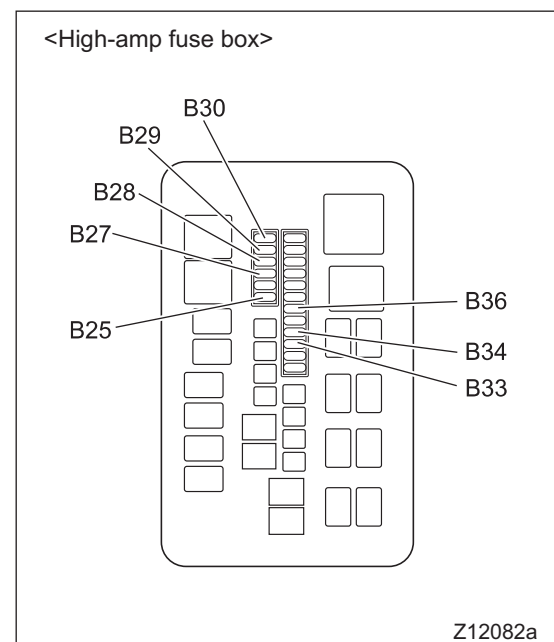
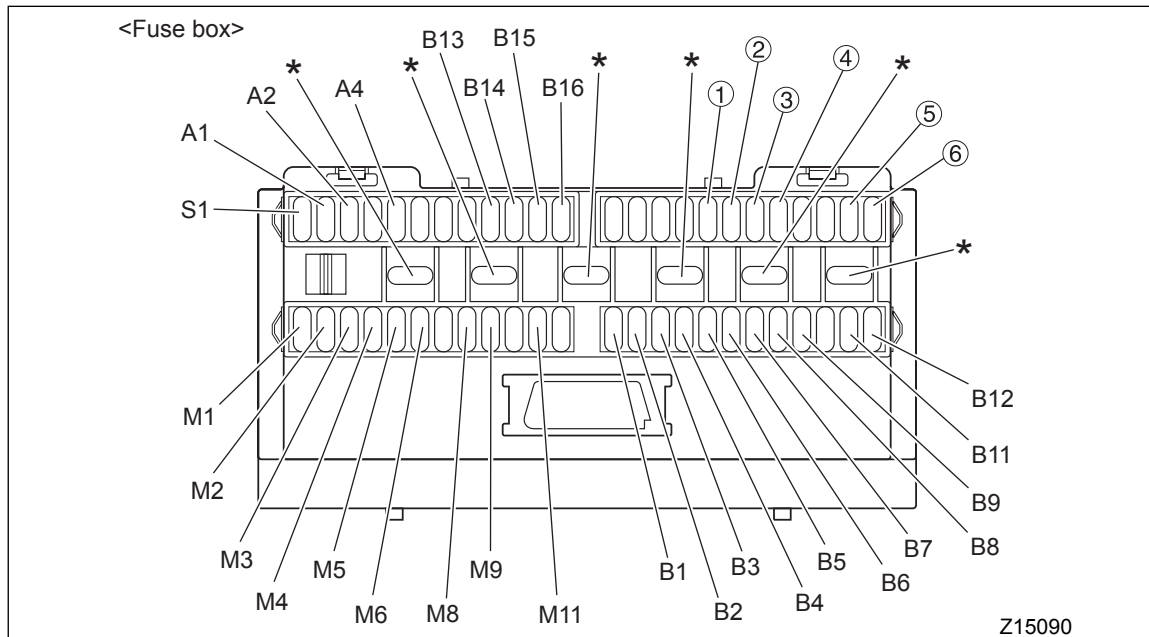
WARNING ⚠

Be sure to use fuses of the correct amperage. A fuse of incorrect amperage could cause a fire, resulting in burn injuries and loss of life.

CAUTION ⚠

- If the cause of a blown fuse cannot be determined, or the same fuse blows frequently, bring the vehicle to an authorized Sterling service facility.
- Use care not to splash water on or around the fuse box cover. Should water be splashed over the fuse box cover, check the inside of the fuse box for water.

12-10 *In an emergency*



Fuse No.	Amperage	Protected circuit
A1	15A	Cigarette lighter
A2	10A	Audio system
A4	10A	Auxiliary power supply (accessory bus)
B1	15A	Brake lights
B2	10A	Instrument cluster
B3	15A	Turn signals
B4	10A	Auxiliary power supply (battery bus)
B5	10A	Audio system
B6	10A	Dome lights
B7	30A	Power window (driver's)
B8	30A	Power window (passenger's)
B9	20A	Engine control unit
B11	20A	Heated mirror
B12	10A	Automatic transmission
B13	15A	Tester
B14	20A	headlights (high beam)
B15	20A	Left headlight (low beam)
B16	20A	Right headlight (low beam)
B25	15A	Taillights
B27	10A	Horn

Fuse No.	Amperage	Protected circuit
B28	10A	Air conditioner
B29	25A	Air conditioner condenser fan
B30	30A	HVAC blower fan
B33	10A	Dome light
B34	20A	Automatic transmission cooling fan
B36	20A	Engine drive unit
M1	10A	Backup lights
M2	10A	Instrument cluster
M3	15A	Wipers
M4	10A	Auxiliary power supply (ignition bus)
M5	10A	Relay control
M6	10A	Automatic transmission
M8	10A	Exhaust brake
M9	5A	Engine control unit
M11	10A	ABS
S1	10A	Starter
*	5A	Spare fuse
	10A	
	15A	
	20A	
	30A	
①	5A	Automatic transmission troubleshooting (diagnosis)
②	10A	Automatic transmission troubleshooting (memory clear)
③	5A	ABS troubleshooting (diagnosis)
④	10A	ABS troubleshooting (memory clear)
⑤	5A	Engine ECU troubleshooting (diagnosis)
⑥	10A	Engine ECU troubleshooting (memory clear)

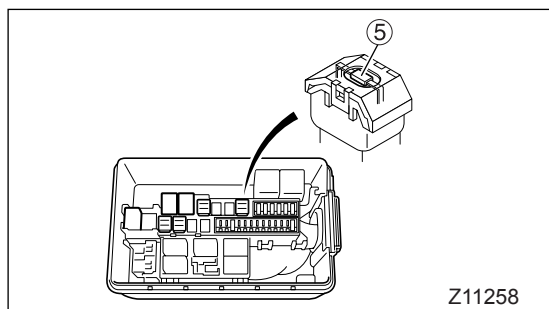
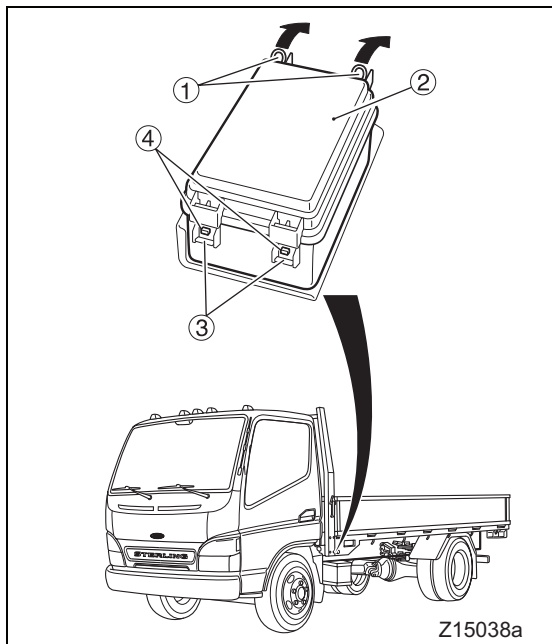
12-12 *In an emergency*

4 high-amp fuses

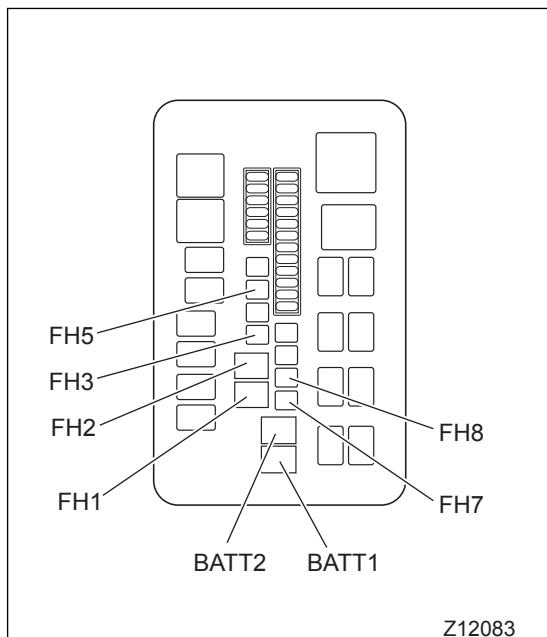
There are high-amp fuses between the battery and fuse box, and between the battery and alternator. These protect circuits in the same way that ordinary fuses do. If a high-amp fuse is blown, most of the vehicle's electrical circuits become inoperative.

4.1 Inspection

1. Pull down the clamps ① and lift the cover ② straight upward to remove it. To install the cover, place it on the box and press it straight downward. Align the holes of the latches ③ with the catches ④ on the box. While still pressing the cover downward, retain it with the clamps. The amperage and protected circuit of each high-amp fuse are shown on the inside of the high-amp fuse box cover.



2. Check for a blown high-amp fuse. Look into the inside of the fuse through the view window ⑤. If a high-amp fuse blows, call an authorized Sterling service facility immediately.



No.	Amperage (casing color)	Protected circuit
FH1	60A (yellow)	Fuse box (S1, A1 – A5, M1 – M12)
FH2	60A (yellow)	Fuse box (B1 – B12)
FH3	40A (green)	Fuse box (B13 – B16)
FH5	60A (yellow)	Hydraulic brake booster
FH7	40A (green)	ABS motor
FH8	40A (green)	ABS valve
BATT1	120A (white)	Alternator
BATT2	120A (white)	Alternator

WARNING

Replacement high-amp fuses should always be of the correct amperage. Using a high-amp fuse of incorrect amperage could cause a fire, resulting in burn injuries and loss of life.

CAUTION

- Close the cover completely to prevent rain water from entering and damaging the fuse box.
- When installing the high-amp fuse box cover, be sure to retain it with the clamps while pressing it straight downward. Pushing the cover toward the inside of the vehicle with excessive force could break it.

5 Engine preheat circuit fuse

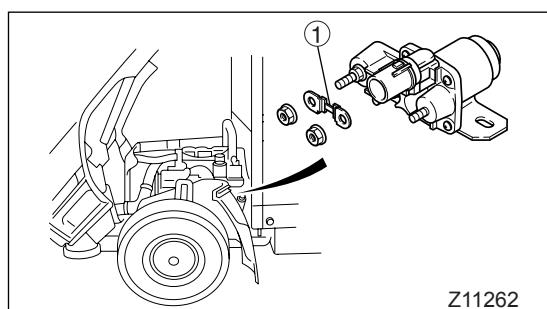
WARNING

Fuses carry electric current constantly. To prevent possible burn injuries, disconnect the negative battery cable before replacing any fuse.

If the engine preheat indicator does not illuminate in cold weather, check whether the glow relay fuse ① has blown. If it has blown, disconnect the ground (–) cable from the battery and replace the fuse with a new one (127A).

WARNING

Be sure to use fuses of the correct amperage. Using a fuse of incorrect amperage could cause a fire, resulting in burn injuries and loss of life.



Replacing light bulbs

Whenever replacing a bulb, be sure to place the ignition switch in the "LOCK" position and all other switches in the OFF position.

WARNING

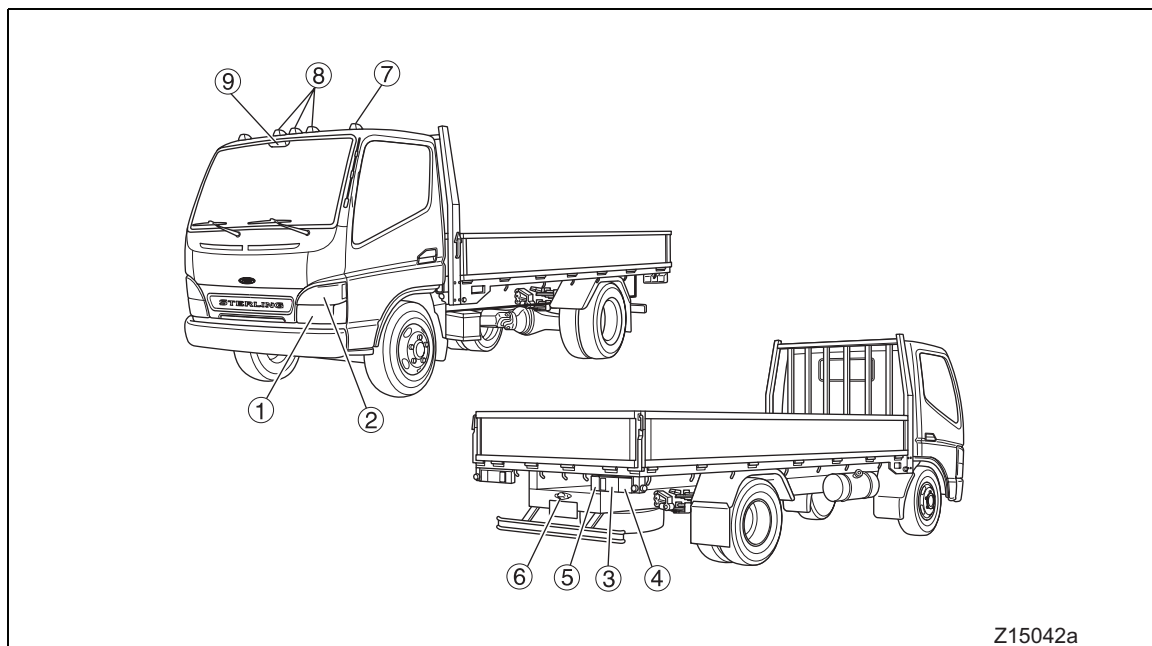
Use a bulb of the specified voltage and wattage shown in the following table. If the wrong bulb is used, excess current could flow through the wiring, and blow a fuse or cause the wiring to overheat. The resulting fire could cause burn injuries or loss of life.

CAUTION

- Do not directly touch the glass part of a halogen bulb with your fingers. Any oil and other substances contaminating the glass surface could shorten the bulb's service life.
- The turn signals have plastic lenses. Do not clean these lenses with alcohol or paint thinner. Also, be careful not to splash brake fluid on them when adding it to the braking system. Contact with such substances could discolor or crack the lenses. If one of these substances gets on a plastic lens, immediately wipe it or rinse it off with water.
- Burnt bulbs should be replaced as soon as possible.

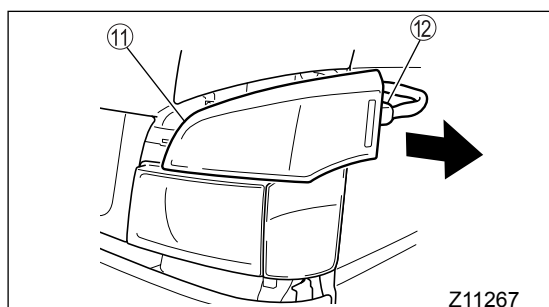
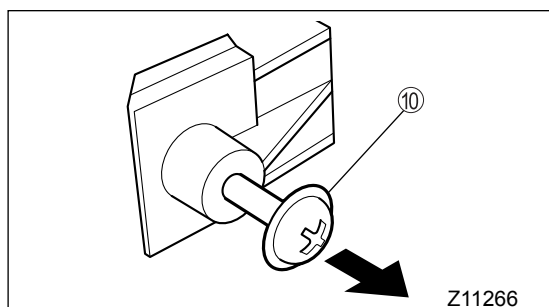
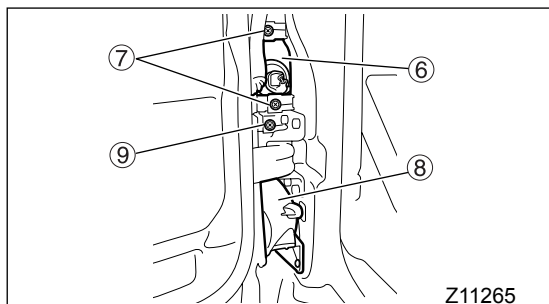
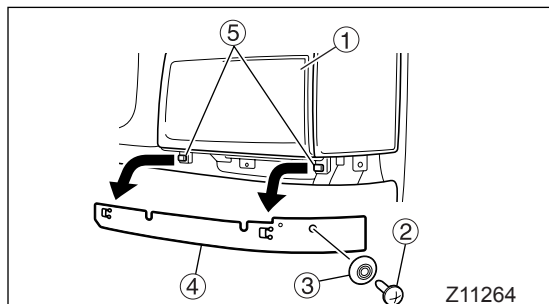
NOTE:

Condensation can sometimes form on the inside surfaces of the headlight lenses. This can happen in rainy weather, or just after the vehicle has been washed. The condensation forms owing to a temperature difference between the inside and outside of the lens. This condensation has no effect on headlight function and disappears naturally.



Z15042a

Ref. No.	Bulb	Specification	Part Number	Qty.
①	Headlight	12V-60/55W	MS820970	2
	Parking light	12V-5W	--	2
②	Front and side turn signal	12V-21W	MS820046	2
③	Brake light/taillight (double filament)	12V-21/5W	MS820040	2
④	Rear turn signal	12V-21W	MS820046	2
⑤	Backup light	12V-21W	MS820046	2
⑥	License plate light	12V-7.5W	MF820181	1
⑦	Clearance and side marker light	12V-7.5W	MF820181	2
⑧	Identification light	12V-7.5W	MF820181	3
⑨	Dome light	12V-10W	MH056122	1



1 Headlight bulb replacement

For safety and simplicity, bulb replacement is performed with the headlight removed. In order to remove the headlight, the front and side turn signal lens and the reflector must be removed first.

1.1 Headlight removal and installation

• Remove the headlight.

1. To remove the headlight ①, first remove the screw ② and rivet ③. Then move the headlight bezel ④ from underneath the headlight toward the centerline of the vehicle to release it from the mounting tabs ⑤.

CAUTION

When removing the headlight bezel, do not pull it with excessive force. The mounting tabs could break.

2. Open the door, then loosen the two keeper screws ⑦ behind the front and side turn signal lens ⑥ and the keeper screw ⑨ behind the reflector ⑧. Continue loosening the screws until they spin freely.

NOTE:

The keeper screws are designed to remain in the vehicle. They are not supposed to be removed.

3. Pull each keeper screw ⑩ toward you until it is fully extended.

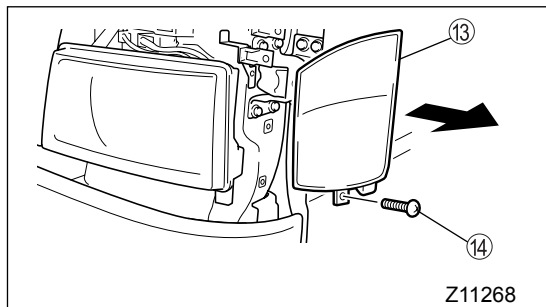
CAUTION

Unless the keeper screw is extended, the front and side turn signal lens and the reflector will catch on it and you will not be able to remove them from the vehicle without damaging them.

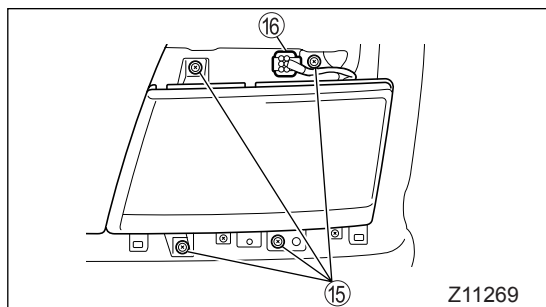
4. Close the door.
5. Pull the front and side turn signal lens ⑪ away from the vehicle as shown in the illustration. Then remove the connector ⑫.

CAUTION

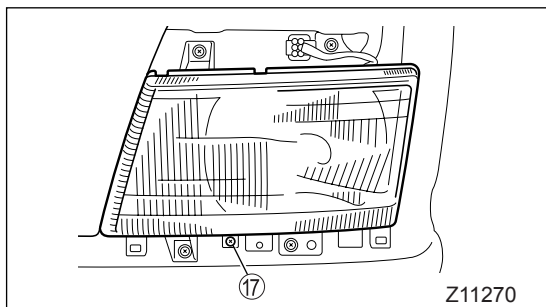
- When removing the front and side turn signal lens, do not pull it forward (toward the front of the vehicle) or its tabs could break.
- Do not open the door with the front and side turn signal lens moved outward (but not completely removed). The door could hit the lens and damage it.



6. Remove the screw ⑭ at the bottom of the reflector ⑬, then pull the reflector away from the vehicle as shown in the illustration.

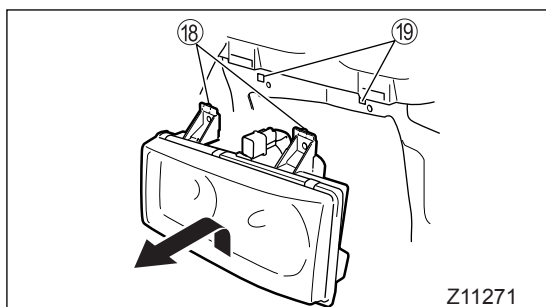


7. Remove the headlight bolts ⑮ and connectors ⑯.



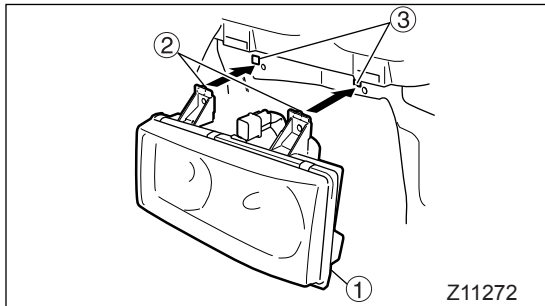
CAUTION

- Do not turn the beam adjusting screw ⑰. Turning the beam adjusting screw would change the beam setting, and could impair visibility for drivers of other vehicles. If you accidentally turn the beam adjusting screw, have an authorized Sterling service facility adjust the headlights.
- When setting down the removed headlight, place it on a soft cloth to avoid scratching the lens.



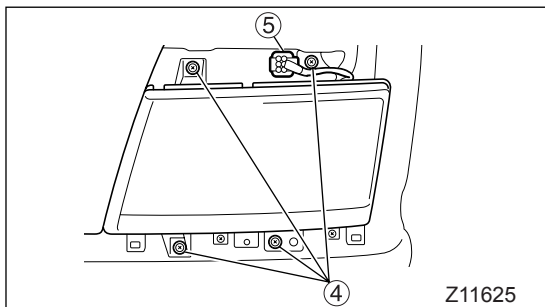
8. Raise the headlight slightly to remove the tabs ⑱ from the slots ⑲, then pull it out toward you.

12-18 *In an emergency*

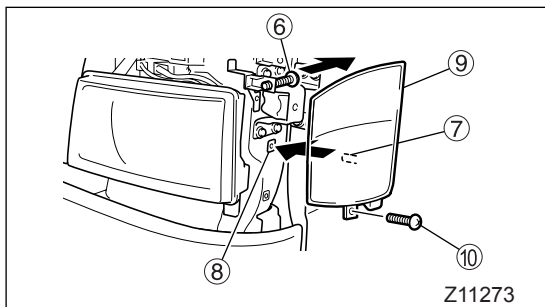


- **Install the headlight.**

1. Insert the tabs ② on the headlight ① into the slots ③, and position the headlight properly.



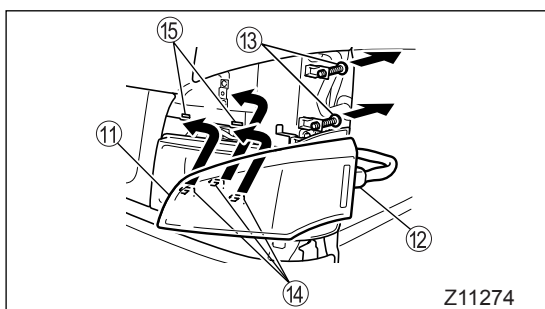
2. Install the headlight bolts ④ and connector ⑤.



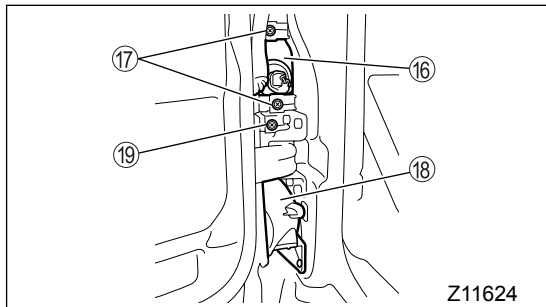
3. Pull out the reflector keeper screw ⑥ until it is fully extended.
4. Insert the stud ⑦ on the reflector ⑨ into the grommet ⑧, fit the reflector in place, and tighten the bottom screw ⑩ until firm.

CAUTION ⚠

Do not tighten the bottom screw too much. This could damage the mounting.



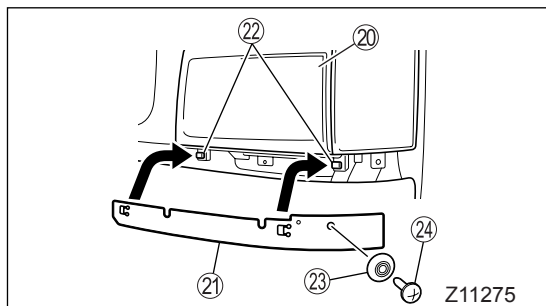
5. Install the connector ⑫ on the front and side turn signal lens ⑪.
6. Pull out the two turn signal keeper screws ⑬ until they are fully extended.
7. Align the tabs ⑭ with their slots ⑮, and press the front and side turn signal lens inward, toward the centerline of the vehicle.



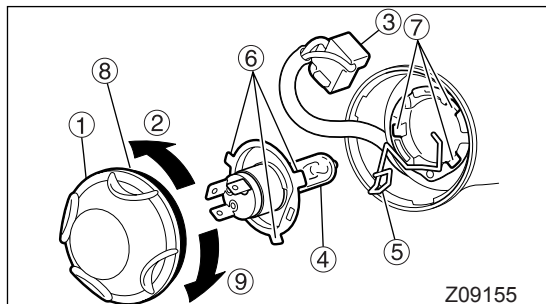
8. Open the door, then tighten the keeper screws 17 behind the front and side turn signal lens 16 and the keeper screw 19 behind the reflector 18.

CAUTION

- Press the front and side turn signal lens fully in toward the centerline of the vehicle. If the lens was not pressed fully into place and you opened the door, the door could hit the lens and damage it.
- Do not tighten the keeper screws too much. This could damage the mounting.



9. Fit the headlight bezel 21 under the headlight 20 onto the tabs 22 by moving it toward the outside of the vehicle.
10. Fit the rivet 23, then press in the screw 24.



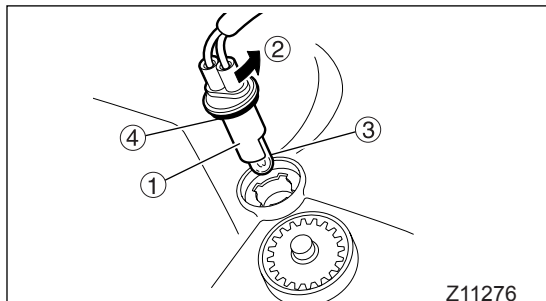
1.2 Headlight bulb replacement

• Removal

1. Remove the rear cover 1. Press it in and turn it counterclockwise (in the direction of arrow 2).
2. Pull the connector 3 toward you to remove it.
3. Move the wire retainer 5 away from the bulb 4.
4. Remove the bulb.

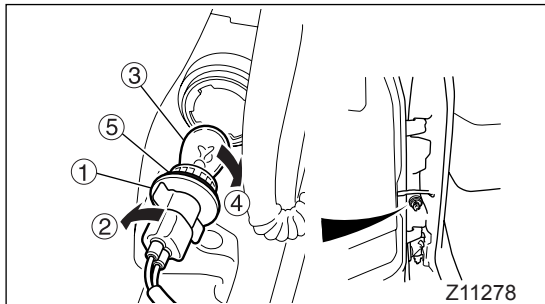
• Installation

1. Align the tabs 6 on the bulb collar with the grooves 7, fit the bulb in place, and fasten the wire retainer.
2. If the packing 8 is dirty, clean it. If the packing is kinked, install it properly.
3. Securely press the connector into place.
4. Install the rear cover. Press it in and turn it clockwise (in the direction of arrow 9).



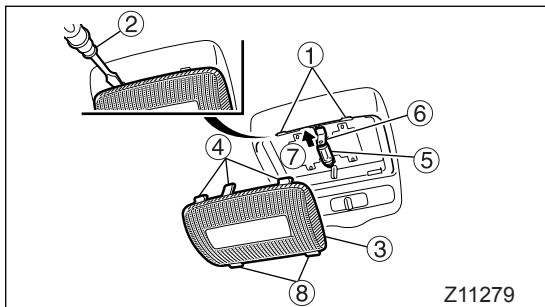
1.3 Parking light bulb replacement

1. Turn the bulb fixture 1 counterclockwise (in the direction of arrow 2) to remove it.
2. Remove the bulb 3 from the fixture.
3. To install the bulb, turn the fixture clockwise to tighten it.
4. If the packing 4 is dirty, clean it.



2 Front and side turn signal bulb replacement

1. Open the door.
2. Turn the bulb fixture ① counterclockwise (in the direction of arrow ②) to remove it from the vehicle.
3. Press in the bulb ③ and turn it clockwise (in the direction of arrow ④) to remove it from the fixture.
4. Install the bulb and turn it counterclockwise until seated.
5. Insert the fixture into the vehicle and turn it until it catches. Tug gently on the fixture to make sure the bulb is locked in position.
6. If the packing ⑤ is dirty, clean it.

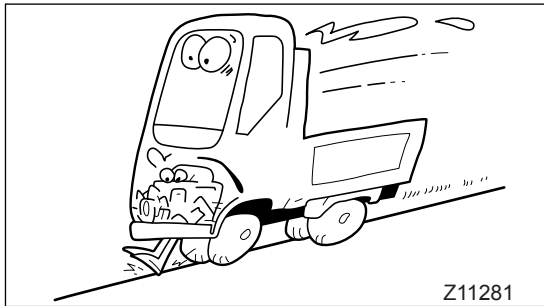


3 Dome light bulb replacement

1. Insert a flat-blade screwdriver ② into the notches ① and use it to release the tabs ④ on the bottom of the lens ③. Remove the lens.
2. Push the bulb retainer ⑥ in the direction of the arrow ⑦ and remove the bulb ⑤.
3. To install the lens, insert the tabs ⑧ on the bottom of the lens, align the tabs on the top of the lens, and press the lens into place.

4 Replacing other lights

1. Loosen the lens retaining screws (the screws that secure the lens to the fixture). Then remove the lens from its fixture.
2. Turn the bulb counterclockwise while pressing in until it can be removed.
3. Insert a new bulb and turn it clockwise.
4. Fit the lens onto the fixture.
5. Ensure that the packing is correctly positioned. If the packing is incorrectly installed, water can enter the fixture and shorten its life. If the packing is dirty, clean it.
6. Tighten the lens retaining screws until firm.



Difficult braking

If the vehicle suddenly becomes difficult to brake, depress the brake pedal as much as possible, downshift to increase the engine braking effect, and use the exhaust brake to stop the vehicle. Set the parking brake if necessary. Contact an authorized Sterling service facility right away.

WARNING

- Do not apply the parking brake with full force while the vehicle is in motion. This could cause the vehicle to skid, and result in a personal injury.
- Never continue driving with the brake system malfunctioning or leaking fluid. This could lead to an injury accident or loss of life.

Stalled engine (vehicle in motion)

When the engine stalls, it has the following effects:

- Braking becomes more difficult. Exert extra force on the brake pedal.
- The power steering assist ceases to function, making steering difficult. Use additional force when turning the steering wheel.

Drive the vehicle to the side of the road as soon as it is safe to do so. With the vehicle stopped, try to start the engine.

Flat tire (vehicle in motion)

Avoid sudden braking. Hold the steering wheel firmly, and gradually slow down before pulling over at a safe place.

To replace the tire, select a level surface where your vehicle will not hinder traffic.  P. 12-55

Emergency starting with jumper cables

WARNING

- If you attempt to charge a battery with a very low electrolyte level, it could overheat or explode, causing a severe personal injury.
- Do not allow the clamps of one cable to touch the clamps of the other cable. Otherwise, a spark could occur near a battery, possibly resulting in severe personal injury.
- Unless absolutely necessary, avoid push-starting the engine. This could cause an injury accident.

CAUTION

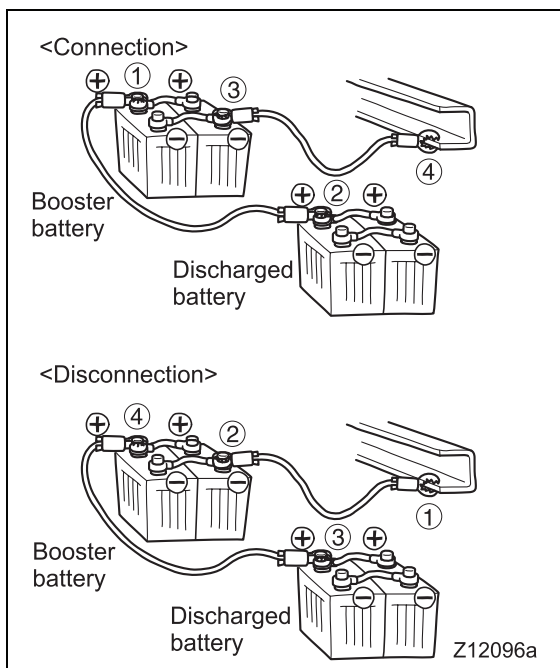
- Make sure both starting systems have the same voltage outputs, and avoid making sparks. Otherwise, the vehicle charging systems could be severely damaged.
- Always connect the battery, jumper cables and charger correctly (positive-to-positive and negative-to-negative). Connecting a charging device backwards (positive-to-negative) can damage the vehicle electrical systems.

When using jumper cables, follow the instructions below.

1. Shut down the engine of the vehicle with the booster battery.
2. Check the battery electrolyte level before connecting the booster cables. If the fluid is below the "LOWER" level, add battery fluid or distilled water.
3. Set the parking brakes on both vehicles and turn off all lights and other electrical devices.
4. Connect an end of one jumper cable to the positive (+) terminal of the booster battery ①. Connect the other end of the cable to the positive (+) terminal of the discharged battery ②.
5. Connect one end of the second jumper cable to the negative (-) terminal of the booster battery ③ and connect the other end of the second jumper cable to a ground at least 12 inches (300 mm) away from the discharged battery ④. The vehicle frame is usually a good ground.

NOTE:

Do NOT connect the cable to or near the discharged battery. Keep cigarettes and open flames well away from the battery.



6. Start the engine of the vehicle with the booster battery, and let the engine run a few minutes.
7. Attempt to start the engine of the vehicle with the discharged battery. Do not operate the starter longer than 15 seconds, and wait at least 30 seconds between starting attempts to allow the starter to cool.
8. When the engine starts, let it idle for a few minutes.
9. Disconnect the grounded cable from the frame ① or other non-battery location. Then disconnect the other end of the cable ②.
10. Disconnect the remaining cable. Remove the clamp from the newly-charged battery ③ first, then disconnect the other end ④.

Bleeding the fuel system

When the vehicle runs out of fuel and causes the engine to stall, when the fuel filter has been replaced, or when water is drained from the fuel filter, the air that enters the fuel system can prevent the engine from starting. In all of these cases, bleed the fuel system before starting the engine.

WARNING

- Do not drain fuel near, or expose fuel vapor to, open flame or intense heat. This could start a fire, possibly resulting in personal injury or property damage.
- Be careful when gaining access to the fuel filter. Clearances are tight in this area. Contact with sharp or rough surfaces could cause personal injury.

CAUTION

If the engine shuts down due to lack of fuel, it may damage the fuel injection system.

NOTE:

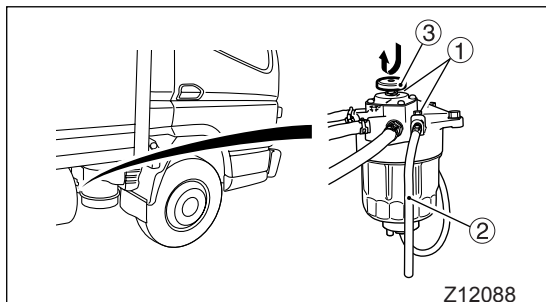
Diesel fuel is flammable and can ignite if exposed to open flame, intense heat, or other source of ignition. When working on the fuel system, have a fire extinguisher within arm's reach.

To bleed the fuel system, do the following steps:

1. Connect a transparent hose ② with an inside diameter of 8 mm (about 0.3 in) to one of the air vent plugs ① of the fuel filter.

NOTE:

- Use either air vent plug, but not both plugs at the same time.
- Use a transparent hose so you can easily check for air bubbles in the drained fuel.
- If no hose is available, cover the air vent plug area with a clean cloth and perform air bleeding.



12-24 *In an emergency*

2. Place a suitable container under the hose to catch the fuel.
3. Loosen the air vent plug on the fuel filter.
4. Operate the hand pump ③ on top of the fuel filter. Fuel containing air bubbles will flow from the air vent plug into the hose.
5. Continue to operate the hand pump a few dozen times more until the fuel no longer contains bubbles.
6. When the fuel is free of bubbles, tighten the air vent plug to the torque value given in the table.

Air vent plug torque	70-100 lbf·in (800-1200 N·cm)
----------------------	-------------------------------

7. To pressurize the fuel, operate the hand pump several more times.

NOTE:

Unless the fuel is cold, the hand pump will become noticeably harder to operate when the fuel is under sufficient pressure.

8. When finished, remove the hose and container. Wipe up any spilled fuel and dispose of used fuel properly.
9. Start the engine and check for fuel leaks.

Towing

If it becomes necessary to tow the vehicle, take the following precautions:

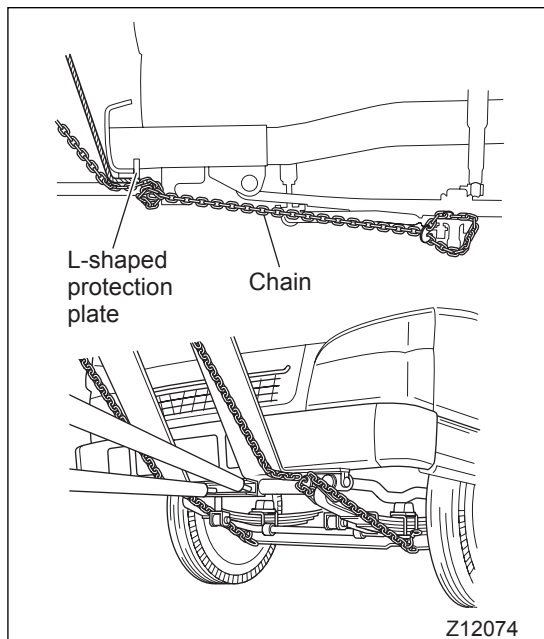
- Disconnect either the propeller shaft (driveshaft) or the rear axle shaft, whichever is easier. If you disconnect the rear axle shaft, cover the opening to prevent oil and grease from escaping.

WARNING

Do not tow unbraked vehicles if the combined weight of both vehicles is more than the sum of the gross axle weight ratings (GAWRs) of the towing vehicle. In this case brake capacity could be inadequate, which could result in personal injury or death.

CAUTION

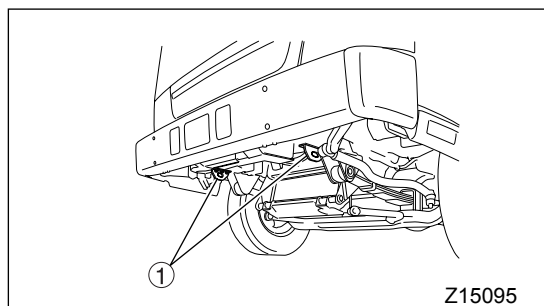
Before towing a vehicle with automatic transmission, disconnect the propeller shaft (driveshaft) or rear axle shaft. Alternatively, tow the vehicle with its rear wheels off the ground. Towing the vehicle without taking these precautions would damage the automatic transmission.



- To prevent damage to the front bumper when raising the front wheels, attach an L-shaped protection plate.
- Tow the vehicle only with a truck that is specially designed for towing heavy equipment.
- If you disconnect the rear axle shaft to tow the vehicle, the axle lubricant level may be low. Check the axle lubricant level and add more if necessary. → P. 11-23
- Attach the towing device securely to the front axle. Due to the variables that exist in towing, positioning the towing device is the sole responsibility of the towing vehicle operator.

CAUTION

- Do not attach the towing device to the bumper. This could damage the bumper.
- Before raising the front wheels for towing, make sure that the towing device will not damage the stabilizer bar or any other part of the vehicle.
- If the towing device looks likely to cause damage, use thicker L-shaped protection plates to hold the device further from the vehicle.
- Never use the tie-down hook(s) ① under the frame for towing purposes. The tie-down hook is used to secure the vehicle when transporting it, not for towing. If the hook is used for towing, it may cause damage to the front bumper or frame.



13. Service data

Recommended lubricants/hydraulic fluids and quantities	13-2
Service specifications	13-4

13-2 *Service data***Recommended lubricants/hydraulic fluids and quantities****1 Quantities of lubricating and hydraulic fluids**

Item		Quantity: quarts (liters)
Engine	Oil pan	9.5 (9.0)
	Oil filter	1.1 (1.0)
Manual transmission	5-speed	3.8 (3.6)
	6-speed	4.6 (4.4)
Automatic transmission	Total quantity	14.0 (12.9)
	Replacement quantity (when drained from drain plug)	6.8 (6.4)
Axle housing	All models	4.8 (4.5)
Power steering	COE 40, 45	2.0 (1.9)
	COE 50	2.4 (2.3)
Brake fluid (for both brakes and clutch)		As required

Quantities listed are approximate. After filling, check the fluid level and add fluid as necessary.

2 Recommended lubricating and hydraulic fluids

Be sure to use the specified lubricants.

Parts	Category	Classification	Viscosity	
			Driving condition	SAE viscosity number
Engine	Engine oil	API CD, CD/SF, CE, CE/SF, CF-4 or JASO classification DH-1	Below 32°F (0°C)	10W-30
			Above 5°F (-15°C)	15W-40
			5 to 59°F (-15 to 15°C)	20W-20
			23 to 104°F (-5 to 40°C)	30
			Above 86°F (30°C)	40
Manual transmission	Gear oil	API GL-3	Temperate climate	80
			Warm climate	90
		API GL-4	Tropical climate	90
	Engine oil	API CC	Long period of high-speed driving	30 or 40
Automatic transmission	Automatic transmission fluid	Exxon Mobil: Mobil ATF3309 or equivalent	—	—
Axle housing *1	Gear oil	API GL-5	Below 104°F (40°C)	90
			Above 104°F (40°C)	140 or 85W-140
Limited-slip differential	Gear oil for limited-slip differential	API GL-5 Genuine Gear Oil, Part No. 8149630EX	—	90
Power steering	Automatic transmission fluid	DEXRON, DEXRON II or DEXRON III	—	—
Brake, Clutch	Brake fluid	SAE J1703, FMVSS No. 116 (Grade DOT3)	—	—
Chassis grease fittings (rear spring pin, king pin) Door hinge Anchor hooks	Chassis grease	NLGI No. 1 (Li soap) Consistency 310 to 340 (at 77°F or 25°C) Dropping point 266°F (130°C) or higher	—	—
Wheel bearing propeller shaft (universal joint, slip joint)	Wheel bearing grease (Multipurpose type grease)	NLGI No. 2 (Li soap) Consistency 265 to 295 (at 77°F or 25°C) Dropping point 365°F (185°C) or higher	—	—
Midship bearing	Bearing grease	NLGI No. 3 (Li soap) Consistency 220 to 250 (at 68°F or 20°C) Dropping point 482°F (250°C) or higher Usable temperature range -40 to 302°F (-40 to 150°C)	—	—

*1: At ambient temperatures higher than 50°F (10°C), use an oil conforming to GL-5, SAE140 or SAE85W-140 if the vehicle is used under heavy load conditions, including frequent driving on prolonged steep upgrades.

Service specifications

Description			Standard value
Engine idle speed			625 to 675 rpm
Engine valve lash	Intake		0.016 in (0.4 mm)
	Exhaust		0.020 in (0.5 mm)
Intake manifold bolt torque value			30 lbf·ft (41 N·m)
Exhaust manifold nut torque value			17 lbf·ft (23 N·m)
Cranking power of 12-volt maintenance-free batteries			799 CCA
Belt tension [amount of deflection under a 22 lb (98 N) pressure at the point midway between pulleys]	Fan belt	Vehicles without air conditioner	New belt (when installed): 0.35 to 0.43 in (9 to 11 mm)
			Used belt (when inspected or reinstalled): 0.43 to 0.51 in (11 to 13 mm)
		Vehicles with air conditioner	New belt (when installed): 0.28 to 0.35 in (7 to 9 mm)
			Used belt (when inspected or reinstalled): 0.39 to 0.43 in (10 to 11 mm)
Coolant quantity			About 17 quarts (16 liters)
Clutch pedal free play (at center of pedal pad)			0.008 to 0.157 in (0.2 to 4.0 mm)
Brake pedal free play (at center of pedal pad)			0.004 to 0.118 in (0.1 to 3.0 mm)
Fully depressed brake pedal to floor clearance			0.79 in (20 mm) or more
Parking brake lever stroke			7 to 9 notches
Steering wheel play (measured on the outside diameter of steering wheel)			0.20 to 1.97 in (5 to 50 mm)
M18 Suspension U-bolt nut torque value			215 to 290 lbf·ft (292 to 394 N·m)
Wheel nut torque value			325 to 398 lbf·ft (440 to 540 N·m)
Tire tread groove depth			0.062 in (1.6 mm) or more
Tire inflation pressure	COE 40, 45	LT215/85R16-10PR (Load Range E)	80 psi (550 kPa)
	COE 50	215/75R17.5 124/123L (Load Range F)	100 psi (690 kPa)

14. Maintenance schedule

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Lubrication schedule	14-6

14-2

Maintenance schedule

Performing regular maintenance on your Sterling 360 vehicle will help ensure that it delivers safe, reliable service and optimum performance for years to come.

Failure to follow a regular maintenance program can result in inefficient operation and unscheduled downtime.

This manual describes simple maintenance checks and procedures that can be carried out by the owner. These procedures are cross-referenced in the maintenance schedule. For other procedures, please bring the vehicle to an authorized Sterling service facility, or see the Sterling 360 Service Manual.

1 Maintenance schedule

For replacement intervals for lubricants and other fluids, see under the heading "Lubrication schedule."

Ⓔ: Exhaust emission items.

Ⓖ: Noise control items.

Operation/ description	Time of inspection and maintenance									Remarks	Ref. page
	Pretrip inspection	Initial Maintenance at 2500 miles/4 000 km	Inspection interval								
			Every 6000 miles/ 10 000 km	Every 12,000 miles/ 20 000 km	Every 18,000 miles/ 30 000 km	Every 24,000 miles/ 40 000 km	Every 30,000 miles/ 50 000 km	Every 54,000 miles/ 90 000 km	Every 150,000 miles/ 250 000 km		
ENGINE											
Coolant, fuel, and oil leak checking	×									Check beneath the vehicle for signs of leakage.	11-8
Ⓔ Engine condition checking	×									Check that the engine starts smoothly and runs quietly.	11-9
Manifold fastener torque checking							×			Check intake and exhaust manifold fastener torques.	13-4
Ⓔ Valve lash checking and adjusting		×					×			Check valve lash with a feeler gauge (procedure in service manual).	13-4
Ⓔ Engine oil filter replacing		×	Every 6000 miles/10 000 km or 12 months							Replace the filter element.	11-28
Ⓔ Fuel filter replacing			Every 12,000 miles/20 000 km or 12 months							Replace the filter element.	11-29
Ⓔ Fuel system checking			Every 12,000 miles/20 000 km or 12 months							Check the fuel tank, cap, and lines for leakage.	11-32
Ⓔ Engine drive belt inspection	×		Every 6000 miles/10 000 km or 12 months							Visually inspect the belt. Check belt tension.	11-39
Ⓔ Cooling system inspection/Charge air cooler and radiator cleaning				×						Inspect the radiator, radiator mounts, pressure cap, and coolant hoses. Remove dust and deposits from the radiator and charge air cooler.	11-37
Coolant level checking	×									Check the coolant level and add coolant if necessary.	11-35
Coolant changing			Every 24 months							Replace the coolant.	11-37
Ⓔ Turbocharger checking									×	Check the turbocharger rotor play (procedure in service manual).	—

Operation/ description	Time of inspection and maintenance								Remarks	Ref. page
	Pretrip inspection	Initial Maintenance at 2500 miles/4 000 km	Inspection interval							
			Every 6000 miles/ 10 000 km	Every 12,000 miles/ 20 000 km	Every 18,000 miles/ 30 000 km	Every 24,000 miles/ 40 000 km	Every 30,000 miles/ 50 000 km	Every 54,000 miles/ 90 000 km		
Air cleaner element cleaning			Every 3000 miles/5 000 km						Clean the air cleaner element.	11-31
Ⓔ Air cleaner element replacing						×			Replace the air cleaner element.	11-31
Ⓔ Exhaust system inspection				×					Inspect the exhaust system for emission and noise control problems.	11-62
POWER TRAIN										
Clutch pedal free play checking	×		×						Check the clutch pedal free play.	11-45
Clutch wear checking			×						Check clutch disc wear.	11-45
Shift selector checking	×		Every 18,000 miles/30 000 km or 6 months						Check the operation of the shift selector.	11-40
Propeller shaft yoke checking			×						Check flange yoke bolts for looseness. Check the uni- versal joint for play (proce- dure in service manual).	—
Propeller shaft midship bearing checking							×		Check midship bearing lubrication. Check midship bearing for wear, damage, and play (procedure in service man- ual).	—
FRONT AND REAR AXLE										
Wheel bearing checking					×				Check wheel hub bearing for play (procedure in ser- vice manual).	—
Wheel bearing seal changing					×				Replace wheel hub bearing grease and seals (proce- dure in service manual).	—
Wheel and tire checking	×		×						Check the tire inflation pres- sure. Measure tire tread depth. Visually check tire tread and side wall. Check wheels for corrosion, deformation, and cracks.	11-45
			×						Rotate all tires.	11-54
Wheel nut Tightening		×	×						Check wheel nut torques. After changing a wheel, check after 30 to 60 miles/ 50 to 100 km.	11-53

14-4

Maintenance schedule

Operation/ description	Time of inspection and maintenance									Remarks	Ref. page
	Pretrip inspection	Initial Maintenance at 2500 miles/4 000 km	Inspection interval								
			Every 6000 miles/ 10 000 km	Every 12,000 miles/ 20 000 km	Every 18,000 miles/ 30 000 km	Every 24,000 miles/ 40 000 km	Every 30,000 miles/ 50 000 km	Every 54,000 miles/ 90 000 km	Every 150,000 miles/ 250 000 km		
SUSPENSION SYSTEM											
Suspension inspection	×									Check for broken springs. Check the vehicle body for tilt toward either side.	11-13
U-bolt torque checking		×		×						At the first 600 miles/1 000 km, remove and tighten the U-bolt nuts.	13-4
BRAKING SYSTEM											
Service brake pedal checking	×									Check brake pedal free play and stroke.	11-42
Service brake performance checking	×									Depress the brake pedal and check that the brakes work effectively and evenly on all wheels.	11-43
Disc brake checking			×							Check brake pad and disc.	11-42
Parking brake lever stroke checking	×									Check parking brake lever stroke.	11-44
Brake system inspection			×							Inspect the brake lines and hoses for signs of leakage. Inspect the brake master and slave cylinders.	11-42
STEERING SYSTEM											
Steering wheel free play checking	×									With the engine running, check the steering wheel free play.	11-41
Steering wheel operation check- ing	×									While driving slowly, check steering wheel operation.	11-41
Steering system inspection			×							Inspect the steering system for looseness, steering wheel play, and operating condition. Check for oil leaks. Check the booster and oil pumps for proper function.	11-41
CAB											
Defroster opera- tion checking	×									Make sure that warm air blows properly onto the windshield.	8-3, 8-7

Operation/ description	Time of inspection and maintenance								Remarks	Ref. page
	Pretrip inspection	Initial Maintenance at 2500 miles/4 000 km	Inspection interval							
			Every 6000 miles/ 10 000 km	Every 12,000 miles/ 20 000 km	Every 18,000 miles/ 30 000 km	Every 24,000 miles/ 40 000 km	Every 30,000 miles/ 50 000 km	Every 54,000 miles/ 90 000 km		
Rear view mirror adjusting	×								Seated in the driver's seat, adjust the angles for clear views of the sides and rear. Make sure the mirrors are clean.	11-11
License plate and reflector checking	×								Check the license plate and reflectors for loose installa- tion, damage, and dirt.	11-13
Door lock opera- tion checking	×								Verify that the door lock operates properly.	3-3
Seat belt checking	×								Confirm that the seat belt fastens correctly.	4-4
ELECTRICAL SYSTEM										
Horn operation checking	×								Check that the horn is work- ing properly.	11-10
Washer fluid level checking	×								Check the windshield washer fluid level and add fluid if necessary.	11-56
Windshield wiper and washer checking	×								Check the washer for proper fluid spray direction and the wipers for normal operation.	5-21
Lighting system checking	×								Make sure that each light works properly. Check lenses for dirt and damage.	5-18
Instrument cluster checking	×								Check that all gauges and telltales are working prop- erly.	6-2

2 Lubrication schedule

Ⓔ: Exhaust emission items.

Operation description		Time of inspection and maintenance						Reference page
		Pretrip inspection	Initial Maintenance at 2500 miles/4 000 km	Inspection interval				
				Every 6000 miles/ 10 000 km	Every 12,000 miles/ 20 000 km	Every 18,000 miles/ 30 000 km	Every 24,000 miles/ 40 000 km	
Ⓔ Engine oil level checking		×						11-17
Ⓔ Engine oil changing			×	×				
Manual transmission oil level checking				×				11-20
Manual transmission oil changing			×			×		
Automatic transmission fluid level checking				×				11-22
Automatic transmission fluid changing							×	11-22
Rear axle oil level checking				×				11-23
Rear axle oil changing			×			×		
Hub bearing lubrication						×		
Brake fluid level checking		×						11-25
Brake fluid changing							×	11-25
Power steering fluid level checking				×				11-27
Power steering fluid changing							×	11-27
Propeller shaft lubrication	Midship bearing						×	13-3
	Universal joint, slip joint			×				11-16
Rear suspension spring pin lubrication				×				11-15
Kingpin bearing lubrication				×				
Door hinge lubrication				×				11-16
Anchor hook lubrication				×				11-16

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