

Symbols Used in This Manual

DANGER

Failure to follow these instructions identified by this symbol could result in death or serious injury to you and/or other people.

WARNING

Failure to follow these instructions identified by this symbol could result in a fire inside your vehicle in addition to death or serious injury to you and/or other people.

CAUTION

Failure to follow these instructions identified by this symbol could result in injuries or an accident.

ADVICE


Failure to follow these instructions identified by this symbol could cause malfunction or damage to your vehicle.

NOTE

This symbol identifies information that you need to know.

This symbol also identifies information that would be useful for operating the vehicle.

The following symbols are also used in this manual.

-  : Market-/type-specific equipment (Your vehicle may not have the equipment with this symbol.)

Abbreviations

This manual uses the following abbreviations, as interpreted below.

Abbreviations	Description
A/C	Air Conditioner
ABS	Antilock Brake System
ACEA	Association des Constructeurs Europeens d'Automobiles (Association of European Automobile Constructors)
API	American Petroleum Institute
ASTM	American Society for Testing and Materials
BS	British Standards
DIN	Deutsche Industrie Normen
ELR	Emergency Locking Retractor
ETRTO	The European Tyre and Rim Technical Organisation
FMVSS	Federal Motor Vehicle Safety Standards
GVW	Gross Vehicle Weight
JASO	Japanese Automobile Standards Organization
JATMA	The Japan Automobile Tyre Manufactures Association
JIS	Japanese Industrial Standards
PTO	Power Take-Off
r/min	revolutions per minute
SAE	Society of Automotive Engineers
TRA	The Tire and Rim Association
VIN	Vehicle Identification Number
2WD	Two Wheel Drive

HOW TO USE THIS MANUAL AND HOW TO FIND A SPECIFIC TOPIC

0

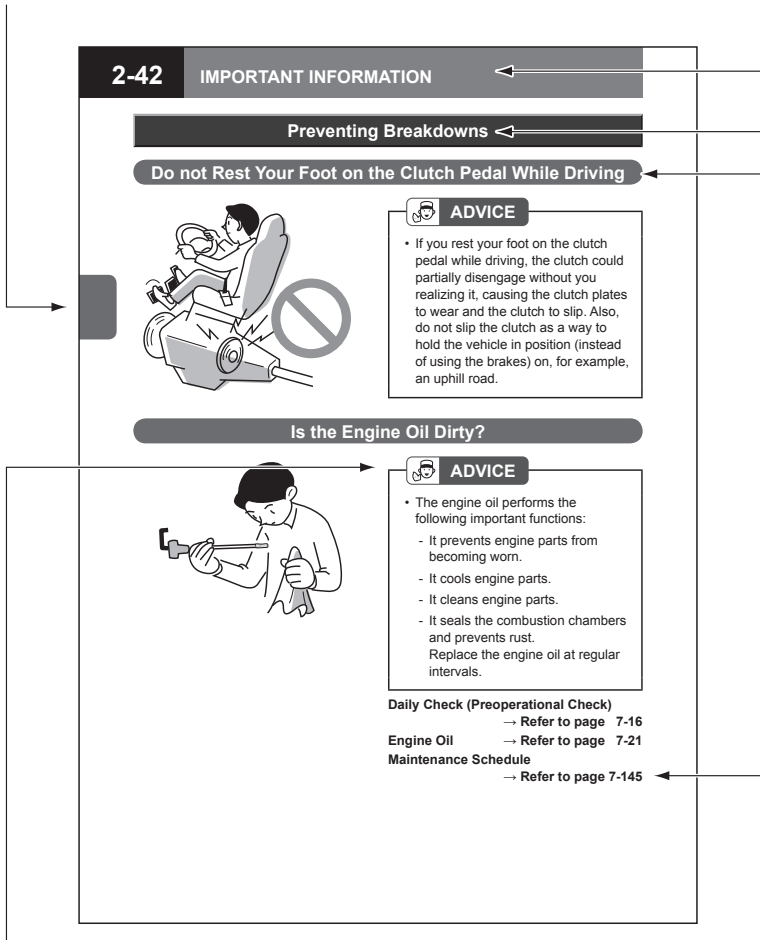
• HOW TO USE THIS MANUAL	0-2
• HOW TO FIND A SPECIFIC TOPIC	0-3
• CHAPTERS IN THIS MANUAL	0-5
• PICTORIAL INDEX	0-6
• WARNING/INDICATOR LIGHT INDEX	0-13
• WARNING/CAUTION LABELS	0-15

Chapter index tab

Use this for quick access to your desired chapter.

Chapter/section titles

These titles are useful for getting the gist of the content descriptions that follow at a glance.



- DANGER
- WARNING CAUTION
- ADVICE NOTE

Symbols

See the preceding page for the meanings of these symbols.

Reference page

Refers you to a page (or pages) of this manual that concerns the present topic and that you should also read concerning the topic you are now reading.

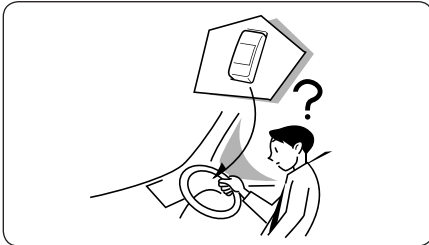
All values in this manual are indicated primarily according to the International System of Units (or in SI units) with the conventional metric values and American units system values indicated in parentheses.

Note: This page is shown only as an example. It is not intended to give you information on your particular vehicle.



Use chapter/section titles as keys
 ➔ Page 0-5

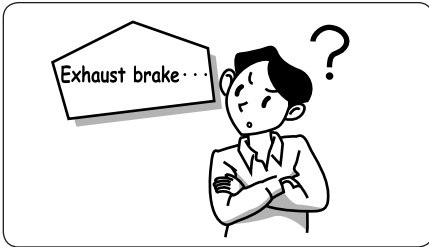
Search for the page describing the specific topic by using the general table of contents under CHAPTERS IN THIS MANUAL, the CHAPTER INDEX, and/or the TABLE OF CONTENTS on the first page of each chapter.



Use the pictorial indexes
 ➔ Pages 0-6 to 0-12

PICTORIAL INDEX

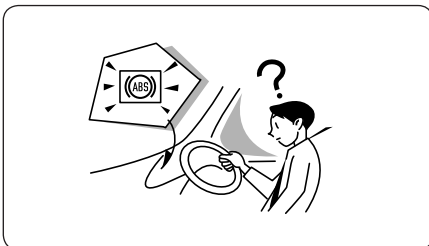
If you don't know the name of the switch or other device for which you need information, locate the page describing it by using the pictorial indexes.



Use device names as keys
 ➔ Pages 10-1 to 10-4

INDEX

If you know the name of the switch or other device for which you need information, locate the page describing it by using the Index at the end of this manual.



Use the Warning/Indicator Light Index
 ➔ Pages 0-13 to 0-14

WARNING/INDICATOR LIGHT INDEX

If a warning or indicator light is illuminated, you can use the WARNING/INDICATOR LIGHT INDEX to find the page that provides information on the light.



If you have a problem with your vehicle
 ➔ Pages 8-2 to 8-44

IN CASE OF EMERGENCY

0-4



PICTORIAL INDEX 0-6

VEHICLE INFORMATION 1

IMPORTANT INFORMATION 2

Describes what you should know before you can operate the vehicle safely and smoothly.

DOORS, WINDOWS AND SEATS 3

Shows the proper way to open/close the doors, windows and fuel filler cap. Also explains how to adjust the mirrors and seats including how to correctly fasten the seat belts.

CONTROLS AND INSTRUMENTS 4

Explains how to start and stop the engine; describes various controls and instruments; describes special equipment.

COMFORT AND CONVENIENCE 5

Contains information on the audio system, air conditioning system, and other comfort and convenience features.

TIPS ON SAFE AND SMOOTH OPERATION .. 6

Describes the points you should be aware of to operate the vehicle safely and smoothly under various conditions and in different seasons.

SERVICE AND MAINTENANCE 7

Describes daily and periodic inspections and other vehicle care and maintenance information necessary to keep your vehicle in good condition.

IN CASE OF EMERGENCY 8

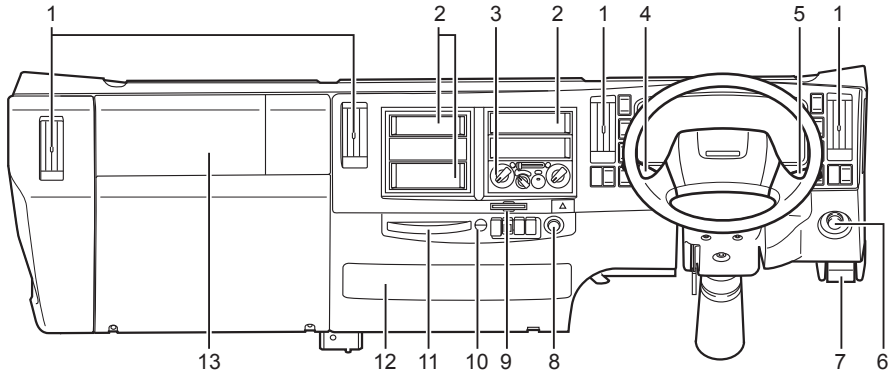
Enumerates possible emergency situations and describes the actions you should take to deal with any one of them.

MAIN DATA 9

INDEX 10

Interior

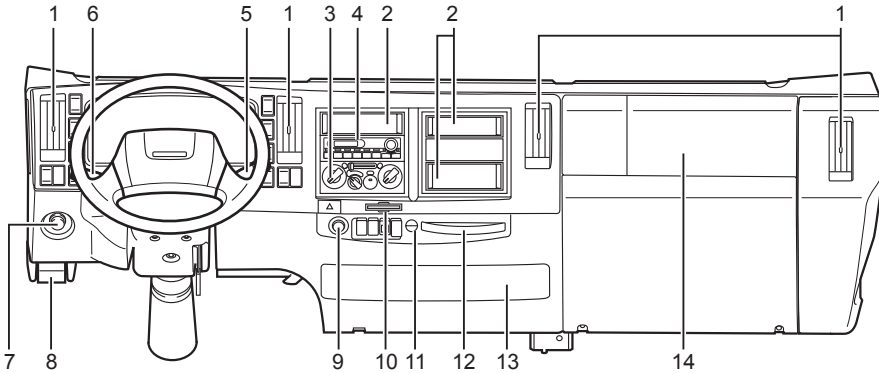
Right-hand drive



No.	Equipment	Page
1	Air flow direction control lever	5-3
2	Small article storage pocket	5-19
3	<input type="checkbox"/> Manual air conditioner/ cooler	5-6
4	Windshield wiper and windshield washer switch	4-39
	Exhaust brake switch	4-36
5	Combination light control switch	4-32

No.	Equipment	Page
6	Idling control knob	4-30
7	Front lid lever	7-8
8	Cigarette lighter	5-16
9	Card holder	5-19
10	Hook	5-24
11	<input type="checkbox"/> Cup holder	5-23
12	Relay box	8-31
13	<input type="checkbox"/> Glove compartment	5-20 5-21

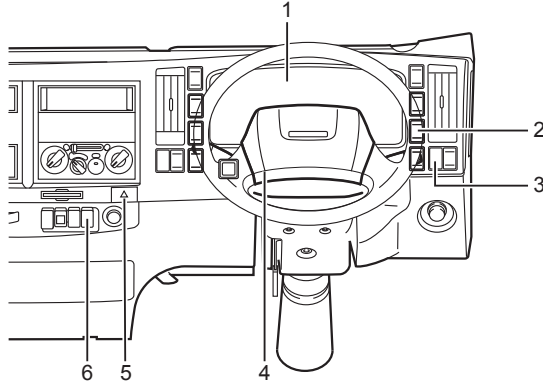
Left-hand drive



No.	Equipment	Page
1	Air flow direction control lever	5-3
2	Small article storage pocket	5-19
3	<input type="checkbox"/> Manual air conditioner/ cooler	5-6
4	<input type="checkbox"/> AM/FM Radio	5-26
	<input type="checkbox"/> CD player (with AM/FM radio)	5-34
5	Windshield wiper and windshield washer switch	4-39
	Exhaust brake switch	4-36

No.	Equipment	Page
6	Combination light control switch	4-32
7	Idling control knob	4-30
8	Front lid lever	7-8
9	Cigarette lighter	5-16
10	Card holder	5-19
11	Hook	5-24
12	<input type="checkbox"/> Cup holder	5-23
13	Relay box	8-31
14	<input type="checkbox"/> Glove compartment	5-20 5-21

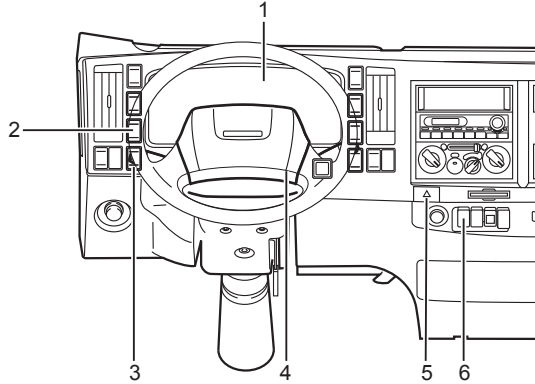
Right-hand drive



No.	Equipment	Page
1	Instruments, warning lights and indicator lights	4-8 4-15
2	<input type="checkbox"/> Front fog light switch	4-35
3	<input type="checkbox"/> Inter-differential lock switch	4-38

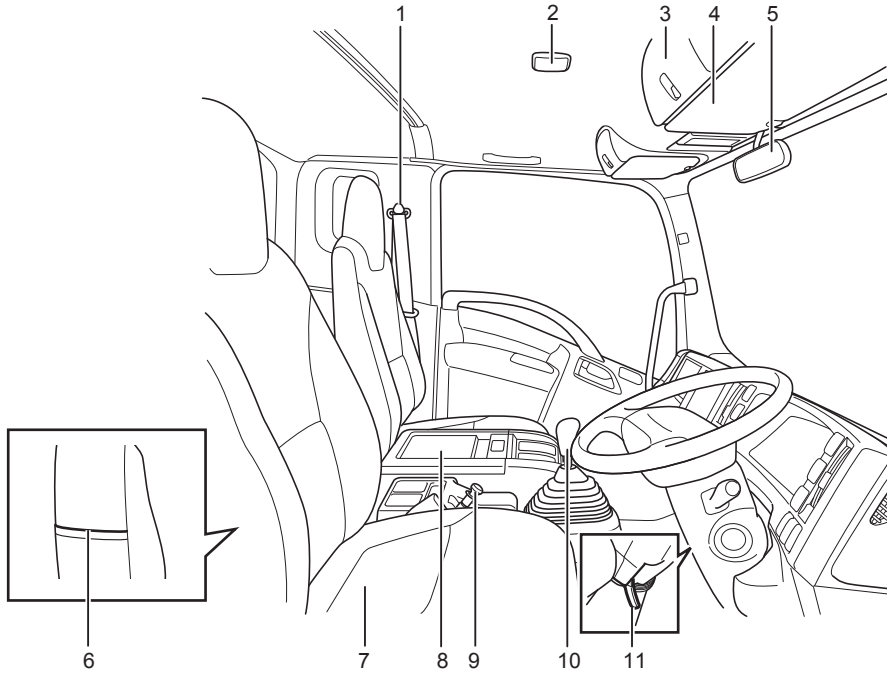
No.	Equipment	Page
4	Horn button	4-41
5	Hazard warning flasher switch	4-35
6	<input type="checkbox"/> PTO switch	4-58

Left-hand drive



No.	Equipment	Page
1	Instruments, warning lights and indicator lights	4-8 4-15
2	<input type="checkbox"/> Front fog light switch	4-35
3	<input type="checkbox"/> Headlight leveling switch	4-34

No.	Equipment	Page
4	Horn button	4-41
5	Hazard warning flasher switch	4-35
6	<input type="checkbox"/> PTO switch	4-58

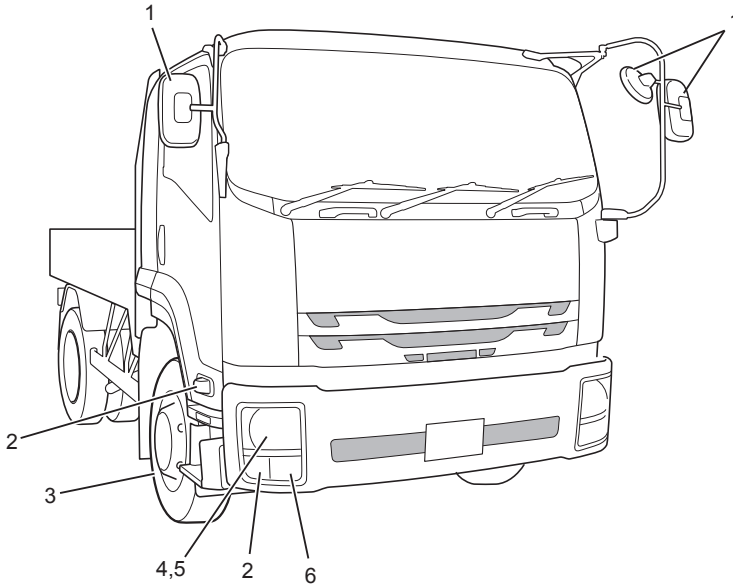


No.	Equipment	Page
1	Seat belts	3-21
2	Dome light	5-15
3	Overhead shelf	5-22
4	Sun visor	5-16
5	Inside mirror	3-18
6	Seatback pocket (driver's side)	5-19

No.	Equipment	Page
7	Seats	3-12
8	<input type="checkbox"/> Center console box	5-21
9	Parking brake lever	4-45
10	Gearshift lever	4-47
11	Fully adjustable steering	3-17

Exterior

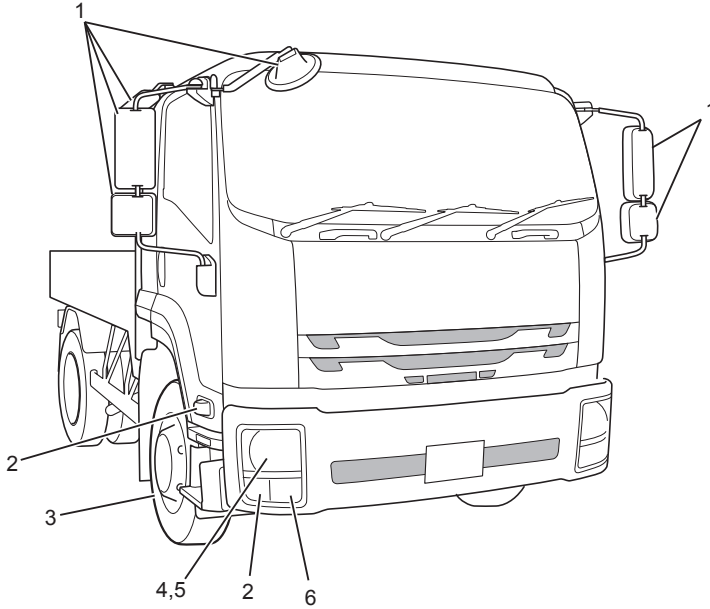
FTR/FVZ/FVM model



No.	Equipment	Page
1	Outside mirrors	3-19
2	Turn signal light	8-20
3	Wheels and tires	7-62

No.	Equipment	Page
4	Headlight	8-20
5	Clearance light	8-20
6	<input type="checkbox"/> Front fog light	8-20

FVR model














No.	Equipment	Page
1	Outside mirrors	3-19
2	Turn signal light	8-20
3	Wheels and tires	7-62

No.	Equipment	Page
4	Headlight	8-20
5	Clearance light	8-20
6	<input type="checkbox"/> Front fog light	8-20








Warning/Indicator Light Index

Instrument Panel

Warning Lights

Name	Symbol	Color	Page
Check engine warning light		Amber	4-21
Engine overheat warning light		Red	4-19
<input type="checkbox"/> ABS warning light		Amber	4-18
Generator warning light		Red	4-20
Air pressure warning light		Red	4-17
Water separator (fuel filter) warning light		Red	4-22
Parking brake warning light		Red	4-24
<input type="checkbox"/> Seat belt warning light		Red	4-17
<input type="checkbox"/> Low accessory air pressure warning light		Amber	4-25
Low fuel warning light		Amber	4-22
<input type="checkbox"/> Trailer brake warning light		Red	4-21

Indicator Lights

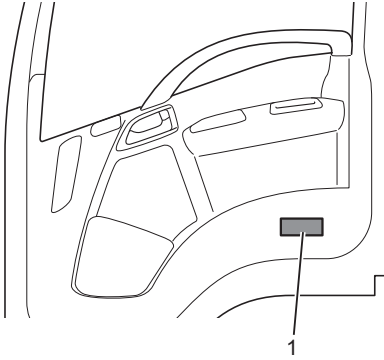
Name	Symbol	Color	Page
High beam indicator light		Blue	4-23
Exhaust brake indicator light		Green	4-24
<input type="checkbox"/> Inter-differential lock indicator light		Amber	4-25
Turn signal and hazard warning flasher indicator light – left		Green	4-23
Turn signal and hazard warning flasher indicator light – right		Green	4-23
<input type="checkbox"/> PTO indicator light		Red	4-25
<input type="checkbox"/> Low range indicator light		Green	4-25

Warning/Caution Labels in Your Vehicle

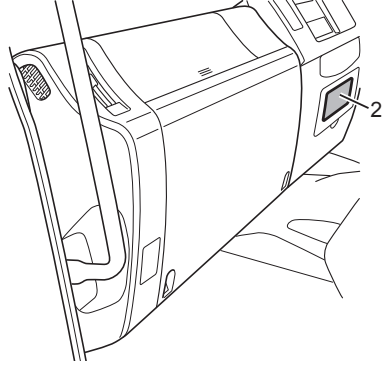
- The warning/caution labels in your vehicle indicate very important instructions and information that you should respect to ensure safe and proper use of the vehicle. Be sure to read them before using the vehicle.
- If any of these labels are peeling or illegible due to wear or scratches, please contact your Isuzu Dealer for a replacement.
- These warning/caution labels only concern the vehicle, not any additional installation. If your vehicle is equipped with a special body, check the instruction manual from the body manufacturer for warning/caution labels, if any.
- Some examples of warning/caution labels are indicated on the following pages, but there are many others not shown. Also, the contents of these labels may vary from model to model.
- The warning/caution labels indicated may be located differently in your vehicle.

Warning/Caution Labels – Cab Interior

Driver's door

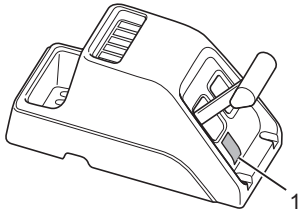


Dashboard



1	Towing
2	Fuses and relays

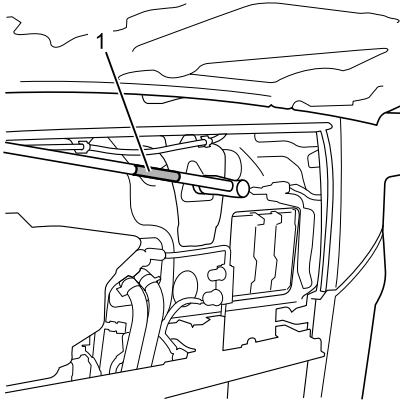
Center console



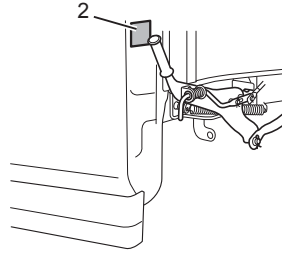
1	Trailer hand brake
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Warning/Caution Labels – Cab Exterior

Inside the front lid

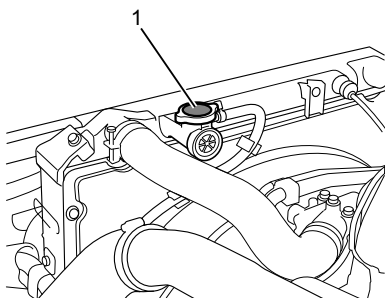


Left rear side of the cab



1	Windshield wiper
2	Cab tilt

Warning/Caution Labels – Engine Compartment



1	Radiator cap
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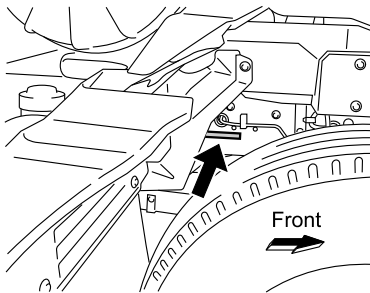
VEHICLE INFORMATION

1

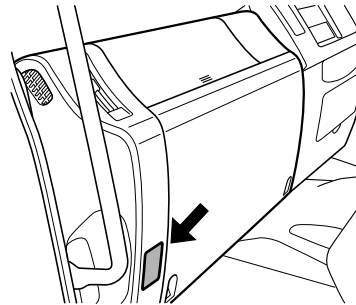
-
- **Vehicle Identification Number (VIN) and Engine Numbers** 1-2
-

Vehicle Identification Number (VIN) and Engine Numbers

The VIN and engine number are necessary for registering your vehicle. They are also necessary when your vehicle undergoes official inspections. Provide your Isuzu Dealer with these numbers when you are having the vehicle repaired or are ordering replacement parts. The Dealer will be able to do the requested jobs more competently and quickly.

VIN**VIN location on frame**

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

ID plate

The ID plate at the lower part of the dashboard indicates the VIN together with other information such as the option code.

**ADVICE**

- The location of the ID plate may differ depending on the market. For further details, ask your Isuzu Dealer.

You can determine the vehicle model, engine model, and so on, from the VIN stamped on the frame or indicated on the ID plate.



ADVICE

- There are two types of VIN, and either type is used according to the market. They are different in interpreting method from each other. For further details, ask your Isuzu Dealer.

J A L F T R 3 4 L G 7 0 0 0 0 0 1

1 2 3 4 5 6

Section	Description
1	World Manufacturer Identifier (WMI)
2	Vehicle model code FTR: 4 × 2 truck or tractor FVR: 4 × 2 truck FVZ: 6 × 4 truck FVM: 6 × 2 truck
3	Engine code 34: 6HK1 Engine
4	Wheelbase code
5	Model year code G: 2016 model H: 2017 model J: 2018 model
6	Chassis number

Option Codes

The ID plate also indicates option codes. These codes are three-digit, alphanumeric codes, each assigned to a particular component of the vehicle.

You will be able to use these codes to identify the model or type of engine, brake system or other components when your vehicle needs inspection and other services.

Option Codes	Engine
80L	6HK1-TCS
82L	6HK1-TCN

Option Codes	Transmission
RSZ	MZW6P model
Y5N	ES11109 model

Option Codes	Brake system
Z06	Full-air brake system

Option Codes	Rear axle and final drive
W1L	16.5-inch, gear ratio: 6.500 (39/6)
W3K	15.5-inch, gear ratio: 5.571 (39/7)
W3L	16.5-inch, gear ratio: 6.143 (43/7)
W3Y	17.5-inch, gear ratio: 6.143 (43/7)
W3Z	17.5-inch, gear ratio: 5.571 (39/7)

Option Codes	Rear axle and final drive
W4A	17.5-inch, gear ratio: 5.125 (41/8)
W4B	17.5-inch, gear ratio: 4.875 (39/8)
W4C	17.5-inch, gear ratio: 4.556 (41/9)
W4D	17.5-inch, gear ratio: 3.583 (43/12)
W4H	15.5-inch, gear ratio: 5.125 (41/8)
W4R	17.5-inch, gear ratio: 4.333 (39/9)
W5L	17.5-inch, gear ratio: 4.100 (41/10)
W6U	17.5-inch, gear ratio: 3.308 (43/13)
W7Q	17.5-inch, gear ratio: 3.727 (41/11)

Option Codes	Other components
SH5	PTO – transmission side mounted
K44	24V-90A generator
KG2	24V-60A generator

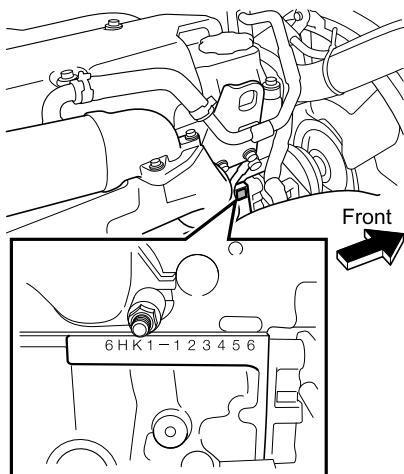


ADVICE

- There are more option codes than those indicated above. For detailed specifications of your vehicle, please ask your Isuzu Dealer.

Engine Number

The engine number is stamped on the right top area of the cylinder block.



1-6

VEHICLE INFORMATION



IMPORTANT INFORMATION

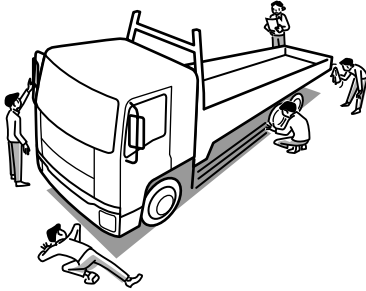
2

• Before Driving	2-2
• Carrying Children	2-15
• Driving	2-17
• Stopping and Parking	2-31
• Staying Safe	2-37
• Preventing Breakdowns	2-42
• When to Visit an Isuzu Dealer	2-44
• Speed Limit Device <input type="checkbox"/>	2-47
• Vehicle Data Collection	2-48

This chapter contains information and cautions that you should observe for safe and comfortable vehicle operation. Be sure to read it before using the vehicle.

Before Driving

Perform Daily (Pre-operation) Inspections



ADVICE

- For safe and comfortable driving, keep a record of the distances driven and the condition of the vehicle during operation. Perform inspections at appropriate intervals, and perform maintenance in accordance with the findings of the inspections. If an inspection reveals an abnormality or there was an abnormality the previous time the vehicle was driven, have the vehicle repaired by your Isuzu Dealer before it is driven again.

[1. Checking where there was an abnormality the previous time the vehicle was driven]

Check item	Reference page
Checking components that showed abnormalities during previous operation	7-18

[2. Checks to perform with the front lid opened or cab tilted]

Check item	Reference page
Loose or damaged fan belt	7-42
Windshield washer fluid level	7-116
Engine oil level	7-21
Engine coolant level	7-33
Power steering fluid level	7-99
Clutch fluid level	7-81

[3. Checks to perform in the driver's seat]

Check item	Reference page
Operation of meters, gauges and warning/indicator lights	4-8, 4-15
Engine start ability, abnormal noise and color of exhaust emissions	7-20
Brake pedal free play	7-58
Exhaust sound from brake valve	7-58
Increase in air pressure	7-56
Parking brake lever stroke	7-59
Windshield washer fluid spray condition and windshield wiper effectiveness	7-116, 7-117
Steering position and free play	3-17, 7-103
Operation of horn and turn signal lights	4-33, 4-41
Fuel level	4-14
Operation of door locks	3-3, 3-4, 3-5
Water separator (fuel filter) warning light	4-22

[4. Checks to perform during a walk around the vehicle]

Check item	Reference page
Illumination, flashing or stained or damaged lights	7-120
Battery fluid level	7-125
Condensation in air tank (draining water)	7-80
Leaf spring damage	—
Leakage of oil, engine coolant, fuel, brake fluid or power steering fluid	—

[5. Checking wheels and tires]

Check item	Reference page
Air pressure	7-62
Cracks and other damage	7-65
Abnormal wear	7-65
Tread depth	7-65
Disc wheel mounting condition	7-66

[6. Checks to perform while driving the vehicle]

Check item	Reference page
Brake effectiveness	7-58
Checking the engine at low speeds and during acceleration	7-20
Clutch system function	7-84

Use the Specified Fuel

**CAUTION**

- Be sure to use diesel fuel.
If you supply the vehicle with poor-quality fuel, water-removal additive or other additive, gasoline, kerosene or alcohol-based fuel, it could harm the fuel filter, prevent proper movement of fuel-lubricated parts in the injectors and adversely affect engine components, possibly resulting in a breakdown. If you accidentally put the wrong fuel in the tank, drain it all out. Starting the engine with the wrong fuel in the tank could result in fire and engine damage.
- Open the fuel tank filler cap slowly. If you open it quickly, fuel may spurt out.

**NOTE**

- The specifications of diesel fuel differ according to the climate and region.

Fuel Tank → Refer to page **3-9**
Fuel → Refer to page **6-23**

Using Self-service Filling Stations

WARNING

[Be sure to obey the following instructions when refueling the vehicle]

- Stop the engine and close the vehicle's doors and windows.
- Keep cigarettes and other flames away from the vehicle.
- Before opening the fuel tank filler cap, touch a metallic object to discharge static electricity from your body. If you have static charge on your body while refueling the vehicle, a spark caused by its discharge could ignite the fuel, resulting in burns.
- When filling, place the nozzle deeply into the fuel tank. If you try to fill more fuel by pulling out the nozzle from the fuel tank, the fuel may spill out, thus causing danger.
- All parts of the refueling procedure (from opening the fuel tank filler cap to completing the refueling and closing the fuel tank filler cap) must be performed by the same person.
Other people may be carrying static electricity. Do not allow them to approach the fuel filler.
The person performing the refueling procedure must not return to the seat in the cab part-way through the procedure. He/she could pick up another charge of static electricity by doing so.
- Do not use any fuel tank filler cap that is not an Isuzu genuine part.
- Obey all cautions posted in filling stations.

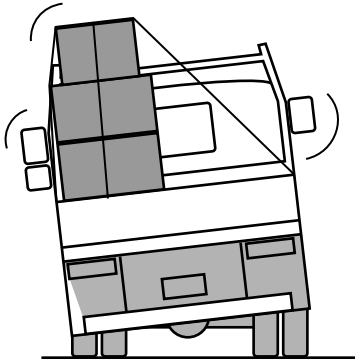
CAUTION

[Caution when refueling the vehicle]

- Be careful not to inhale fuel vapor when refueling the vehicle.

Fuel Tank → Refer to page 3-9

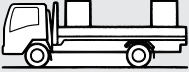






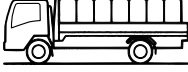
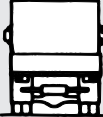
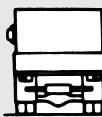
Load Cargo Correctly

**⚠ WARNING**

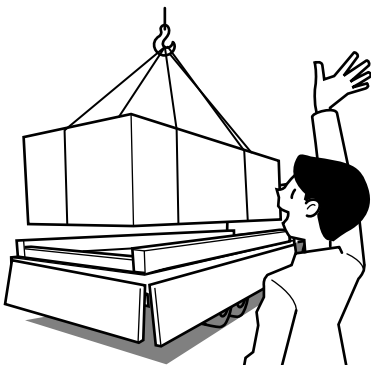
- Overloading can result in an accident because it places too much strain on the wheel bolts with the result that they break and the wheels come off.

⚠ CAUTION

- It is extremely dangerous to overload the vehicle or to load the vehicle with the cargo positioned on one side. Load the vehicle correctly, observing the maximum loading capacity.
- Incorrect loading can make the cargo unstable. It can also cause overload condition confined to a small area, resulting in damage to the cargo bed and frame.
- Overloading places undue strain on vehicle parts. It can shorten the vehicle's service life and cause an accident.

Cargo loading caution	Incorrect	Correct
Do not place cargo only at the front or only at the rear. Distribute it evenly.		
When using supports under cargo, position them uniformly along the cargo.		
To the greatest extent possible, do not allow long cargo to protrude beyond the rear edge of the cargo bed. Rather, use supports to raise it at an angle. Avoid supporting it using just the front guard frame and the rear edge of the cargo bed.		
Use ropes and tarpaulins to secure the cargo so it does not fall off the cargo bed. Use rubber bands or bungee cords to prevent the tarpaulins from flapping in the wind.		
Avoid loading cargo too high. It can cause the vehicle to tip sideways when it catches sidewinds and when turning the vehicle.		

Loading Heavy Cargo



 CAUTION

- When the cargo is heavy, take steps to prevent it from slipping and secure it with wire cables.

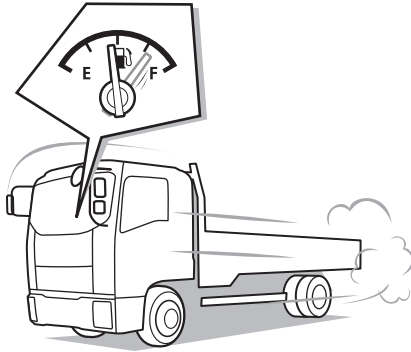
Do Not Secure Cargo Too Tightly**ADVICE**

- To prevent cargo from falling off the cargo bed, it is essential to secure it with ropes and tarpaulins. However, retaining it too tightly can damage the cargo bed's gates and front guard frame.

Make Sure There is No Flammable Material between the Cab and Cargo Bed**WARNING**

- Be careful not to allow the ends of ropes or edges of tarpaulins to come lower than the heat protector at the back of the cab. During vehicle operation, the engine's heat could set them on fire. Carefully secure the ends of ropes and edges of tarpaulins.

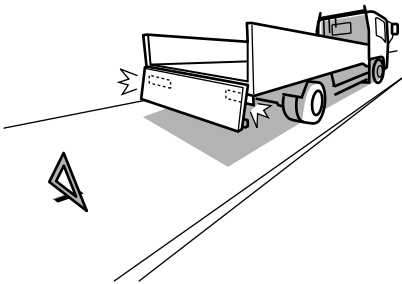
Economical Driving



Driving too fast, driving so slowly that the engine knocks, driving with the exhaust brake switched on all the time, and frequently using the exhaust brake to adjust your speed lead to poor fuel economy. To the greatest extent possible, drive at a constant speed.

When accelerating, increase your speed gently and slowly, and upshift early. Warming up the engine for longer than necessary and revving the engine are a waste of fuel. Driving with the vehicle overloaded is also a waste of fuel. Frequently check the tire pressures and make sure they are always correct.

Unloading Cargo



CAUTION

- When you load or unload cargo at the roadside and the cargo bed's gates or other body parts obscure the taillights, stop lights, hazard warning flashers, turn signal lights and/or reflectors, be sure to warn other drivers and road users by placing signs or emergency warning triangles where they are easy to see.
- When you load or unload cargo at the roadside, select a place where stopping and parking are allowed and other drivers and passersby will not be inconvenienced.

Do Not Carry Fuel and Spray Cans in the Cab



WARNING

- It is extremely dangerous to carry fuel and spray cans in the cab. If such a container were to ignite or rupture, it could cause a fire or explosion.

Using Curtains

CAUTION

- Retain the curtains so as not to obscure your view and hinder your driving.

Keep the Floor around the Driver's Seat Clean and Tidy



WARNING

- It is extremely dangerous to have empty cans, empty bottles or other items rolling around on the floor because they could get trapped under the brake pedal and prevent brake application. For proper pedal operation, it is also essential to lay floor mats properly. Otherwise, secure operation of each pedal cannot be performed.
- Do not use the dashboard pocket or the top of the dashboard as a place to put items that could roll, which could interfere with your driving.

Correct Driving Posture

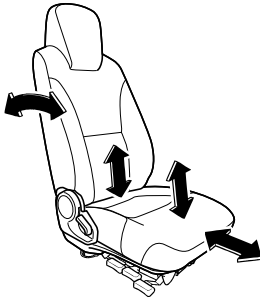
WARNING

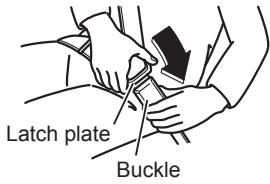
- Before driving, be sure to adjust the seat, steering wheel and mirrors to positions that give you a correct driving posture. Make sure the seat is securely retained by trying to rock it forward and backward, and put on the seat belt. All other passengers must wear seat belts.

- Seats** → Refer to page 3-12
- Seat Belts** → Refer to page 3-21
- Mirrors** → Refer to page 3-18

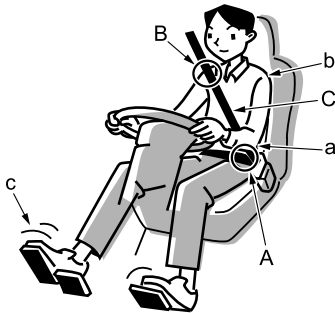
Seat Adjustment

Adjusting the seat for a correct driving posture is a fundamental part of safe driving.





Keep as low on hips as possible



Fastening Your Seat Belt

Be sure to wear your seat belt. Sit up straight with your lower back pressed against the seat and the lap belt as low on your hips as possible.

Seat adjustment recommendations	
a	Make adjustments that allow you to easily turn the steering wheel with your elbows slightly bent.
b	Position the seatback so it is always touching your shoulders.
c	Make sure you can adequately press each pedal.

Seat belt fastening cautions		Why?
A	Position the lap belt as low on your hips as possible.	The pressure applied by the seat belt in a collision would be dangerous if the belt is positioned incorrectly.
B	Position the shoulder belt so it is on your shoulder (not touching your neck chin or face).	
C	Make sure the seat belt is not twisted when you put it on.	To ensure that the seat belt is fully effective.

Passengers and Seat Belts

Only one person should use each seat belt.

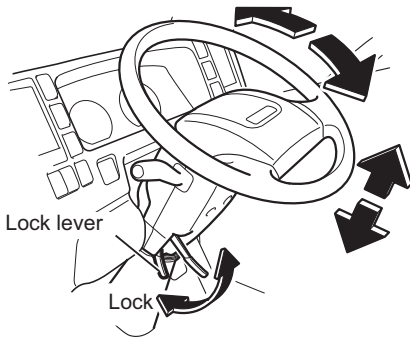
⚠ WARNING

- Be sure to adjust the seat before driving. Achieve the correct driving posture, gently rock the seat to make sure it is locked in place, and put on your seat belt before you start driving. In addition to the driver, all other passengers must wear seat belts.
- For a child who is so small that the seat belt touches his/her face or does not rest across his/her hips, use a child seat or other suitable restraint, not the seat belt. Using the seat belt could be dangerous.

Carrying Children → Refer to page 2-15

Adjusting the Position of the Steering Wheel

You can adjust the position of the steering wheel in the up-down and fore-aft directions. After making an adjustment, make sure the steering wheel and lock lever are securely locked.



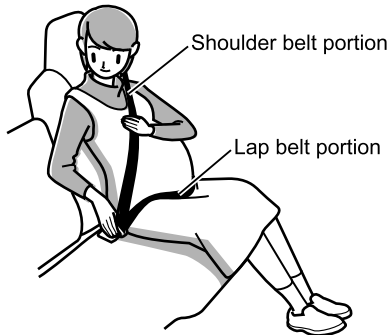
⚠ WARNING

- When you have adjusted the steering wheel, try pulling the steering wheel up and down to check that it is securely locked in position before driving.
- Adjust the position of the steering wheel before you start driving. Adjusting the position of the steering wheel while driving would be extremely dangerous because the steering wheel would rattle up and down, preventing precise steering.

Fully Adjustable Steering

→ Refer to page 3-17

Carrying an Expectant Mother or a Person Who is Ill

 **WARNING**

- An expectant mother or a person who is ill riding in the vehicle must also wear a seat belt. In light of the risk that the seat belt will apply pressure to the abdomen, chest and shoulders in the event of a collision, however, an expectant mother or a person who is ill should get advice from a physician beforehand.
 - An expectant mother should use a three-point seat belt.
 - An expectant mother should position the lap belt snugly as low as possible on the hips (not across the abdomen). Also, she should fasten the shoulder belt so it rests on her chest, not on her abdomen.
 - Unless the seat belt is correctly worn, it may dig into the abdomen in the event of hard braking or a collision, harming not only the expectant mother but also the unborn child, putting them both in danger of serious injuries or death.

Seat Belts → Refer to page 3-21

Carrying Children

Using Seat Belts with Children



WARNING

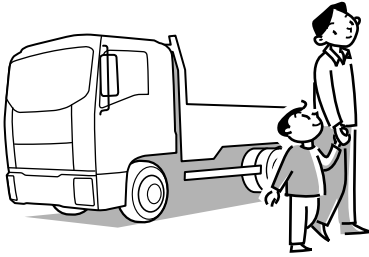
- The vehicle's seat belts are designed for adults. If a seat belt touches a child's neck or chin, or does not rest across his/her hips, use a baby seat, child seat or junior seat. If the seat belt were used as it is, it could apply intense pressure to the child's abdomen in the event of a collision. A small child who is not able to sit up by him/herself must be placed in a child seat.
- Do not fit a baby seat, child seat or junior seat on the center seat. It could hinder your driving.



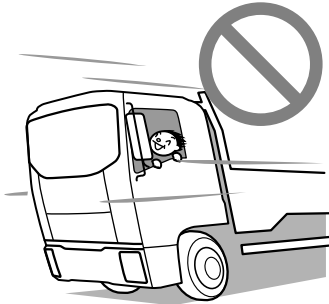
NOTE

- The appropriate type of baby seat, child seat or junior seat and the proper installation for it depend upon the weight and height of the child. It may not be possible to correctly fit certain child seats depending on their shapes. Be sure to use a child seat that is suitable for the vehicle.
 - * For detailed instructions, see the instruction manual supplied with the baby seat, child seat or junior seat.

Seat Belts → Refer to page 3-21

Do not Leave a Child Alone in the Vehicle **WARNING**

- When you leave the vehicle, take the child with you. If you leave the child alone in the cab, the child could interfere with things, causing vehicle movement, a fire or some other accident. Also, the cab inside could become dangerously hot when heated by the sun.

Do not Allow a Child to Put His/Her Head or Hands out of the Window **WARNING**

- Regardless of whether the vehicle is moving or stationary, you must never allow a child to put his/her head, hands, or other body parts out of the window. Allowing such behavior would be dangerous because the child could hit an obstacle.

An Adult must Open, Close, and Lock the Door for a Child



WARNING

- To protect the child from the danger of getting his/her hands and head trapped, an adult must open, close and lock the door for the child. Be careful that the child does not interfere with the power window switches and get his/her hands or head trapped in the window. While a child is in the cab, be sure to control the power windows using the power window switches beside the driver's seat.

Opening and Closing Doors

→ Refer to page 3-3

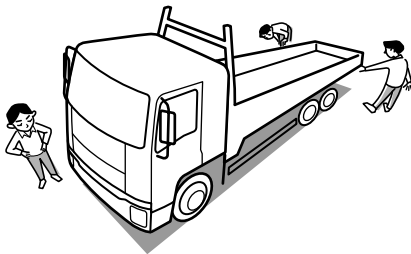
Power Windows

→ Refer to page 3-7

Driving

Check around the Vehicle before Starting the Engine

Before pulling away, perform a thorough safety check, making sure there are no children or obstructions around the vehicle.



WARNING

- Before starting the engine, make sure there is no flammable material under or around the vehicle. The presence of any such material could lead to a fire. If there is any wood within 50 cm (20 in) from the vehicle's heat source, it would represent a severe hazard as the wood could deform or discolor from the heat it could catch fire.

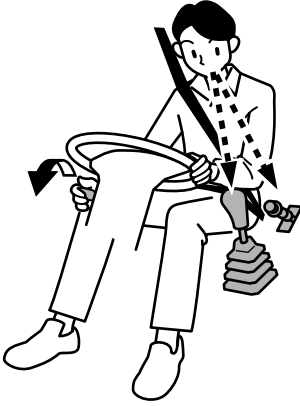
Starting the Engine

→ Refer to page 4-4

Be Careful about Exhaust Emissions**WARNING**

- Exhaust emissions contain carbon monoxide, which is colorless, odorless and poisonous. If you inhale exhaust emissions, you may suffer carbon monoxide poisoning.
- Do not keep the engine running for any length of time in a place that is poorly ventilated. It is particularly dangerous to run the engine in a garage or other indoor place that could easily fill with exhaust gases because you could suffer carbon monoxide poisoning.
- Inspect the exhaust pipe from time to time. If you notice any abnormality (for example, a damaged joint, or a hole or crack caused by corrosion), have checks and maintenance performed by the nearest Isuzu Dealer. Continuing to use the vehicle without having the defect repaired would be dangerous because exhaust gases could get into the cab and cause carbon monoxide poisoning.
- If exhaust gases get into the cab, completely open all of the windows and place the inside/outside air selector of the heater or air conditioner to outside air. Promptly have checks and maintenance performed by the nearest Isuzu Dealer. Continuing to use the vehicle without having the defect repaired would be dangerous because exhaust gases could get into the cab and cause carbon monoxide poisoning.

Starting the Engine

**CAUTION**

- Make sure the parking brake lever is firmly pulled, make sure the gearshift lever is in "N", and fully press the clutch pedal before starting the engine.
- Be sure to sit in the driver's seat to start the engine. If you are not sitting in the driver's seat (if, for example, you reach through the window or through the door opening), you cannot check the gearshift lever "N" position. If you start the engine with the transmission in any position other than "N", the vehicle would move.

Starting the Engine

→ Refer to page 4-4

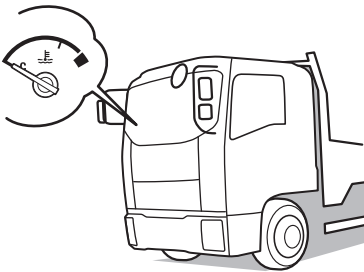
If the Vehicle Has Not Been Driven for a Long Period



ADVICE

- Before using a vehicle that has not been driven for a long period, check the engine and transmission for oil leakage, and make sure the oil is at the required levels. If there is insufficient oil, it will not adequately reach and lubricate components, and a breakdown will result.
- Start the engine and allow it to idle for at least 5 minutes. Check for abnormal noises.
- For instructions on warming up the engine, refer to "Starting the Engine" on page 4-4.

Recommendations for Warming Up the Engine



The engine is sufficiently warmed up when the needle of the engine coolant temperature gauge starts to move.



ADVICE

- Do not rev the engine or quickly accelerate before the engine has sufficiently warmed up (in other words, when the engine is cold). Oil would not have adequately reached and lubricated components, so a breakdown would result.
- The exhaust pipe becomes extremely hot while the engine is idling. Before warming up the engine, make sure there is no flammable material (for example, grass, waste paper, oil or old tires) near the exhaust pipe.

Do not Run the Engine in a Garage



WARNING

- Running the engine in a poorly ventilated place can lead to carbon monoxide poisoning. Start and warm up the engine only in places that have good ventilation.

Do not Forget to Release the Parking Brake



ADVICE

- Pulling away with the parking brake still applied can damage the brake system.
- Your vehicle has either of 2 types of parking brake:
 - Center parking brake:
When the parking brake lever is pulled, the center parking brake holds the propeller shaft in position, thereby locking the rear wheels.
 - Wheel parking brake:
When the parking brake lever is pulled, the rear wheel brakes are activated to lock the rear wheels. An air exhaust sound is heard at this time.

Parking Brake Warning Light

→ Refer to page 4-24

Parking Brake Lever

→ Refer to page 4-45

Pulling Away in a Manual Transmission Model



ADVICE

- Pull away gently in the gear indicated below. Pulling away in a high gear, pulling away rapidly or slipping the clutch for a long time while pulling away would damage the clutch.

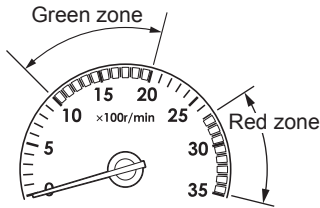
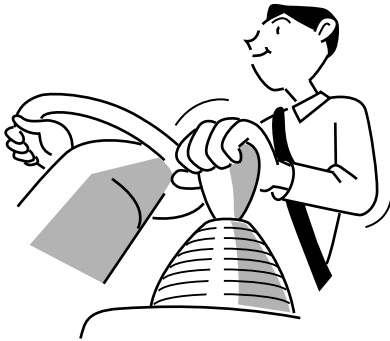
Transmission model	Pulling away on a level road	Pulling away on a slope
ES11109	1st	Crawler
Except for ES11109	2nd	1st

9 Speeds Manual Transmission Model



→ Refer to page 4-48

Appropriate Gearshifts



Green zone (r/min)	Red zone (r/min)
1,000 - 2,000	2,800 - 3,500



ADVICE

- Downshifts are performed for two main purposes:
 - For engine braking on a steep and/or long downward slope
 - For responsiveness and economy on an uphill slope

[Cautions for downshifts]

- Allowing the engine to overrun can result in engine damage. Do not allow the engine to overrun when downshifting.
- Driving uphill
Downshift early to avoid heavy engine load.
- Driving downhill
In principle, you should use the same gear(s) that you used to drive up the hill. Drive at a speed that does not cause the engine to overrun (exceed its r/min limit) and the tachometer needle to enter the red zone.

Drive at a speed that does not cause the tachometer needle to enter the red zone. The green zone is a guide for economical driving.

The graduation and the red zone of tachometer are various depending on the models fitted.

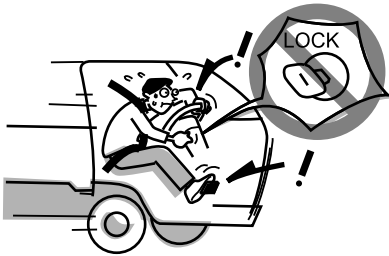
Tachometer → Refer to page 4-11

Gearshift Lever → Refer to page 4-47

**NOTE**

[What is engine brake?]

- Engine brake is the braking effect that occurs when you release the accelerator pedal while driving. The lower the gear, the stronger the engine brake.

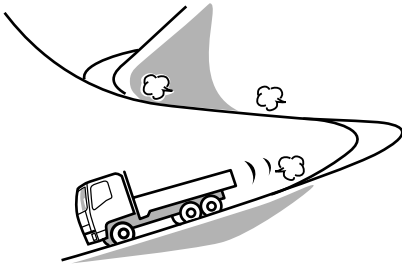
Never Stop the Engine While Driving**WARNING**

- Do not place the starter switch in any position other than "ON" while driving.
If the engine stops while the vehicle is moving, the brakes would work poorly, and the steering wheel and clutch pedal would become extremely stiff and hard to operate. Also, the engine could be damaged.
- Stopping the engine while driving would be extremely dangerous because the power steering would stop working, making the steering wheel extremely hard to turn.
- Stopping the engine while driving would be extremely dangerous because the warning lights, indicator lights and other electrical circuitry would completely stop working.
- Placing the starter switch in the "LOCK" position while driving would be extremely dangerous because the key could come out, causing the steering wheel to lock so that you could not turn it.

Starter Switch → Refer to page 4-28

Do not Use the Bed While the Vehicle is Moving**CAUTION**

- It is not possible to hold a person's body in position on the bed. Using the bed while the vehicle is moving would be dangerous because the occupant of the bed could be thrown out of the bed in the event of a collision or hard braking.

Driving Down a Long Slope

When driving down a long slope, use engine brake and auxiliary brake together with the foot brakes. Using the auxiliary brake and low-gear engine brake reduces the work load on the foot brakes and yields greater braking force. Even so, use the foot brakes appropriately to prevent the engine overrunning.

Exhaust Brake Switch

→ Refer to page 4-36

**CAUTION**

- Frequent use of the foot brakes can cause vapor lock and brake fade, resulting in reduced brake effectiveness. Even so, you should be very careful when using engine braking in a low gear because the engine is likely to over-run.
- Do not adjust the exhaust brake valve.

**NOTE**

[What is engine brake?]

- Engine brake is the braking effect that occurs when you release the accelerator pedal while driving. The lower the gear, the stronger the engine brake.

[What is the exhaust brake?]

- The exhaust brake is a system that closes the exhaust pipe and uses the force of the exhaust emissions to enhance the effectiveness of engine brake.

[What is brake fade?]

- Frequent use of the brakes can cause the brakes to overheat so that the frictional force of the friction surface decreases and the brakes become less effective than normal. This phenomenon is called brake fade.

[What is vapor lock?]

- If the brakes overheat due to frequent use, the heat can cause the brake fluid to boil so that air bubbles are created in the brake hoses.

Pressing the brake pedal simply compresses the air bubbles; pressure is not transmitted to the wheel cylinders, so the brakes' effectiveness sharply deteriorates. This phenomenon is called vapor lock.

[What is an engine overrun?]

- An engine overrun is an engine-speed increase that causes the tachometer needle to enter the red zone.

Driving in Bad Weather (Rain, Icy Roads, Snowy Roads, etc.)



CAUTION

- In bad weather, visibility is reduced and slippery road surfaces increase stopping distances. Drive more slowly than you would in good weather. Also, avoid sharp turns of the steering wheel and hard braking. Use engine brakes together with the foot brakes to decelerate. Using the exhaust brake on a slippery road surface could cause the tires to slip.



ADVICE

- There is a risk of hydroplaning, particularly where water tends to collect on the road surface. Drive at speeds that allow you to stay in complete control.
- If you cannot avoid driving on a flooded road, first check the depth of the water and then drive through the water at a slow, constant speed. There is a risk that water will get into the engine's cylinders and cause engine damage (water hammering). Keep your speed down, and drive with great care.



NOTE

[What is hydroplaning?]

- If a vehicle is driven at high speed on a road that is covered with water, a layer of water can form between the tires and road surface, causing the tires to lose their grip and slide across the water. This phenomenon is called hydroplaning. It is dangerous because it makes the steering wheel and brakes useless.

When the Vehicle Has Been Driven on a Flooded Road or Washed



CAUTION

- If the vehicle must be driven on a flooded road, is washed, or is parked in an area that becomes flooded, water can get into the brakes and reduce their effectiveness. If the brakes do not work well afterward, drive slowly and gently press the brake pedal several times until the brakes dry out and start working normally.



ADVICE

- If the vehicle must be driven on a flooded road or is parked in an area that becomes flooded, promptly have your Isuzu Dealer perform a check for the following points:
 - Effectiveness of the brakes
 - Water-ingress or damage to drum brakes, wheel parking brake chamber, servo unit or other brake parts
 - Engine damage due to water-ingress
 - Shorting of electrical components
 - Oil level and degradation (cloudiness) of the engine, transmission and differential
 - Greasing of each components (lubrication)
 - Water-ingress to clutch release bearing
(When water ingress is suspected, replace the release bearing.)
 - Damage to other clutch parts

Sidewinds



ADVICE

If the vehicle catches a sidewind and drifts sideways, firmly grip the steering wheel, decelerate to a speed that allows you to stay completely in control and make a directional correction. The vehicle may catch strong sidewinds in the following situations:

- emerging from a tunnel; driving over a bridge, driving on an embankment or driving through a cutting
- being overtaken by a large truck or bus
- overtaking a large truck or bus

Dealing with a Blowout or Flat Tire While Driving



WARNING

- If you feel any abnormality in a tire while driving, immediately stop in a safe place. If you continue to drive on a flat tire, undue force would be applied to the wheel bolts, possibly causing the bolts to break and the wheel to come off.



ADVICE

- If a blowout or flat tire occurs while you are driving, calmly grip the steering wheel and gradually apply the brakes to decelerate. (Hard braking would be dangerous because it could cause the steering wheel to be pulled to one side.) Stop the vehicle in a safe place, and change the tire.

Spare Tire → Refer to page 7-78

Handling the Jacks

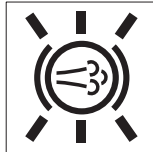
→ Refer to page 7-112

Changing a Tire (ISO 10-Bolt Wheels)

→ Refer to page 7-71

If the Underside of the Vehicle Receives a Hard Bump**ADVICE**

- If the underside of the vehicle receives a hard bump, stop in a safe place where the vehicle will not obstruct traffic and check for air leakage, brake fluid leakage, fuel leakage and component damage. If any part of the vehicle is damaged or broken, promptly have the vehicle inspected and repaired by the nearest Isuzu Dealer.

If a Warning Light or Indicator Light Comes On or Flashes**ADVICE**

- If a warning light comes on or flashes, do not ignore it and keep driving. Be sure to take corrective action while referring to the explanation of the meters, warning lights and indicator lights.

**How to Read the Instruments
(Instruments Layout)**

→ Refer to page 4-8

Warning and Indicator Lights Layout

→ Refer to page 4-15

Stopping and Parking

Parking



ADVICE

- Choose a flat place where stopping and parking are permitted and where the vehicle will not obstruct traffic. Firmly apply the parking brake and make sure the vehicle does not move.
- Avoid parking for long periods with cargo on the vehicle.
- Remove all dirt from the vehicle's light lenses and reflectors to ensure that the vehicle can be seen from other vehicles.

Applying the Parking Brake



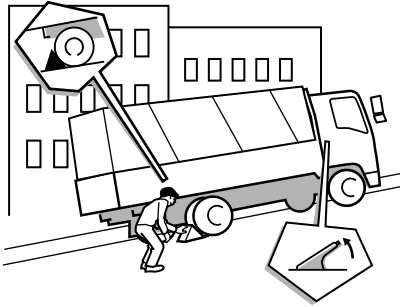
CAUTION

- Except in an emergency, do not apply the parking brake until the vehicle has come to a complete stop. Applying the parking brake before the vehicle has stopped can cause the tires to lock or the vehicle to spin, possibly causing an accident.

Parking Brake Lever

→ Refer to page 4-45

Parking Safely on a Slope

**CAUTION**

- As much as possible, choose level places to park and avoid parking on slopes. If you cannot avoid parking on a slope, firmly apply the parking brake and make sure the vehicle does not move. Apply chocks to the wheels for safety. Also, leave the vehicle in gear to further ensure that it will not move.
- Leave the steering wheel turned so that the vehicle will be stopped by an obstruction (for example, the curb) in the unlikely event that it moves.

Napping in the Vehicle

 **WARNING**

Before taking a nap in the vehicle, be sure to stop the engine and place the starter switch in the "LOCK" position. Otherwise, any unintended contact with the gearshift lever or accelerator pedal while you are asleep could cause the vehicle to move, resulting in an accident.

- If you leave the engine running and unintentionally keep the accelerator pedal pressed while asleep, the engine and exhaust pipe could become abnormally hot, resulting in a fire.
- If you leave the engine running while taking a nap with the vehicle parked in a place where exhaust gases could get into the cab (for example, a place that is poorly ventilated), you could suffer carbon monoxide poisoning.
- In a vehicle with a bed, use the bed when you wish to take a nap.

Keep Flammable Material away from the Vehicle**CAUTION**

- The exhaust pipe is extremely hot immediately after vehicle operation. Before parking, make sure the area is free of flammable material (for example, grass, waste paper, oil or old tires). Take particular care when parking in a garage.
- Use caution concerning hot exhaust gases while the engine is idling. Be particularly careful when the power take-off (PTO) is operating (if your vehicle is equipped with a PTO) while the engine is idling.

Stopping and Parking with the Engine Running**WARNING**

- When stopping and parking with the engine running, be sure to place the gearshift lever in "N" to select neutral. Then, firmly apply the parking brake. Unless you take these steps, any unintended pressure on the accelerator pedal could cause an accident.

**CAUTION**

- To prevent a fire, make sure there is no flammable material near the muffler, and exhaust pipe. Be careful not to get burned by hot exhaust gases.

Do not Touch the Gearshift Lever While the Vehicle is Stationary

⚠ WARNING

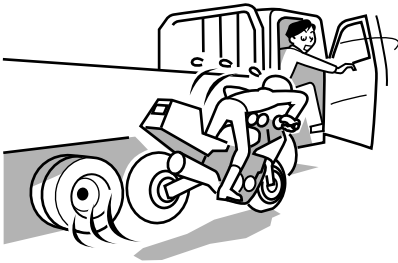
- Do not touch the gearshift lever while the vehicle is stationary with the engine idling. If you touch the gearshift lever at this time, a gear could be selected and the vehicle could move even with parking brake applied. The risk of knocking against the gearshift lever and causing an accident is particularly great when you move in or out of your seat.

Be Sure to Have the Engine Running When the Vehicle is Moving

⚠ CAUTION

- When the engine is not running, the power steering system does not work so the steering wheel is hard to turn. Also, the braking system does not work so there is little braking ability. If you coast down a slope without the engine running, you would not be able to properly control the vehicle and could have an accident.

Look around before Opening a Door



⚠ CAUTION

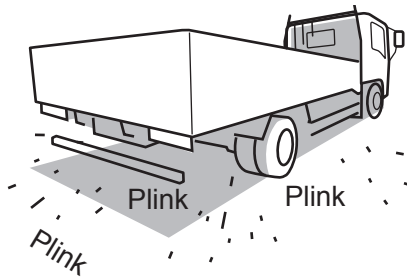
- Before opening a door, check the area around the vehicle by looking forward, rearward and to the sides. If you suddenly open a door without checking the surrounding area, the door could hit by a vehicle following you or a pedestrian.

Leaving the Vehicle

WARNING

- When leaving the vehicle, be sure to apply the parking brake, stop the engine and lock the doors. Do not leave valuables where they can be seen from outside the vehicle.
- If you are traveling with a child, do not leave the child alone in the vehicle. If the child touches the controls or equipment, an accident could occur. (For example, the vehicle could move or a fire could start.) Also, the cab inside could become dangerously hot when heated by the sun.
- Do not leave eyeglasses or a lighter in the vehicle. If the cab inside becomes hot, a lighter left there could explode and plastic eyeglass lenses or frames could deform or crack.

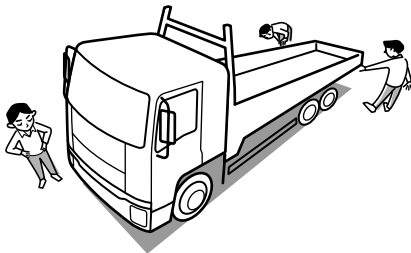
Metallic Plinking Sound from the Muffler



NOTE

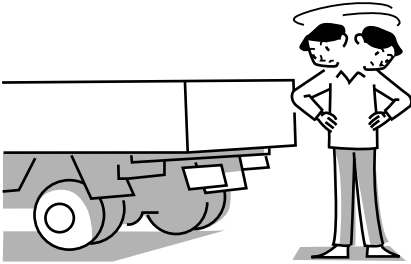
- Immediately after stopping the engine, you may hear a metallic plinking sound from the muffler. This sound occurs as the muffler cools down and contracts. It does not indicate an abnormality or breakdown.

Starting to Drive When the Vehicle has been Parked



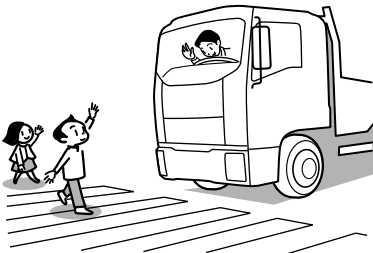
Before pulling away, perform a thorough safety check, making sure there are no children or obstructions around the vehicle.

Reversing



If you cannot see the area behind your vehicle well enough to confirm it is safe to back up, get out of the vehicle and check behind it.

Pulling away After a Temporary Stop



CAUTION

- Make it a habit to look around and confirm it is safe to pull away after a temporary stop (at traffic lights, for example).

Staying Safe

When the Engine Coolant is Hot



WARNING

- Do not loosen or remove the radiator cap or reserve tank cap while the engine coolant is hot. Suddenly removing the cap is dangerous as steam or hot air may spray out.

Engine Coolant → Refer to page 7-29

When the Muffler and Exhaust Pipe are Hot**CAUTION**

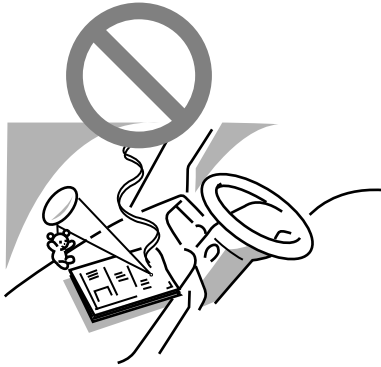
- When the engine is running and immediately after vehicle operation, the muffler and exhaust pipe are extremely hot. Be careful not to inadvertently touch them when working near them (for example, tilting the cab or operating an attachment).

After Using the Ashtray**WARNING**

- Be sure to close the ashtray after using it. Otherwise, any unextinguished cigarette butt could set fire to other cigarette butts, resulting in a fire.
- Do not allow the ashtray to become overly full of cigarette butts. Also, do not put flammable material in the ashtray.
- Never throw lit cigarette butts out the window. They not only litter the road and around but also can cause a fire.

Ashtray → Refer to page 5-18

Do not Attach Accessories to the Windshield or Windows



WARNING

- Do not attach ornaments, films or other accessories to the windshield or windows. They would impair visibility. Also, any plastic suction cups used to attach accessories could cause a fire or other accident by acting as lenses.

Do not Use a Mobile Telephone While Driving



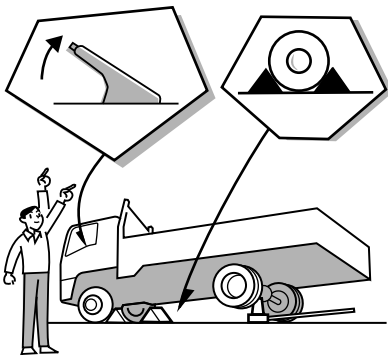
CAUTION

- Drivers should never use mobile telephones or car phones in any mode while driving. Doing so is dangerous.
- Using a mobile telephone while driving could result in an accident because you would not be paying full attention to your surroundings.
- If you are driving and you wish to use a mobile telephone, first stop the vehicle in a safe place.

Using the Jack

⚠ WARNING

- Jacking up a vehicle on a slope or soft ground is extremely dangerous. Be sure to jack up the vehicle on a firm, level surface.
- Set the jack in the correct position. Do not forget to first apply the parking brake and place chocks around the wheels.
- When a rear wheel is jacked up, the parking brake has no effect. Failing to first put chocks in the correct places would be dangerous because the vehicle could move.
- When jacking up a differential lock model, be sure to switch off all of the differential locks. When jacking up a part-time 4x4 model, be sure to switch off the front drive.
On a differential lock model and non-spin differential model, any transmission of torque to the front wheels or the rear wheels can make the vehicle move even if one front wheel and/or one rear wheel is off the ground. If any front or rear wheel is on the ground, do not apply torque to the front and rear wheels.
- Do not look under the vehicle or get under the vehicle while the vehicle is only supported by jacks. Doing so is dangerous. Always use the vehicle support stand.



Tools → Refer to page 7-7

Handling the Jacks

→ Refer to page 7-112

If the Battery Goes Flat



CAUTION

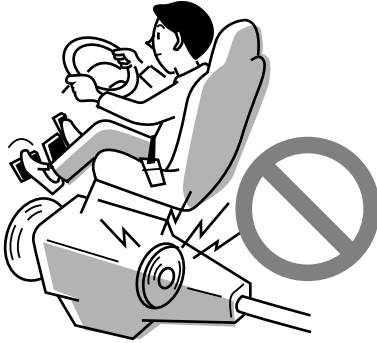
- Do not try to start the engine by pushing or towing the vehicle. You could damage the engine.

When the Battery Goes Flat

→ Refer to page 8-9

Preventing Breakdowns

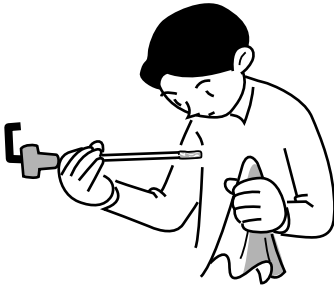
Do not Rest Your Foot on the Clutch Pedal While Driving



ADVICE

- If you rest your foot on the clutch pedal while driving, the clutch could partially disengage without you realizing it, causing the clutch plates to wear and the clutch to slip. Also, do not slip the clutch as a way to hold the vehicle in position (instead of using the brakes) on, for example, an uphill road.

Is the Engine Oil Dirty?



ADVICE

- The engine oil performs the following important functions:
 - It prevents engine parts from becoming worn.
 - It cools engine parts.
 - It cleans engine parts.
 - It seals the combustion chambers and prevents rust.
 Replace the engine oil at regular intervals.

Daily Check (Preoperational Check)

→ Refer to page 7-16

Engine Oil

→ Refer to page 7-21

Maintenance Schedule

→ Refer to page 7-145

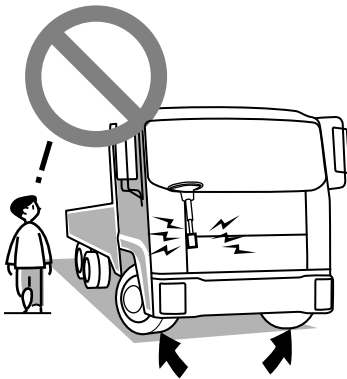
Do not Climb onto the Engine



ADVICE

- Do not step on the engine or climb onto it. You could cause an engine failure by, for example, damaging the cylinder head cover or various connectors.

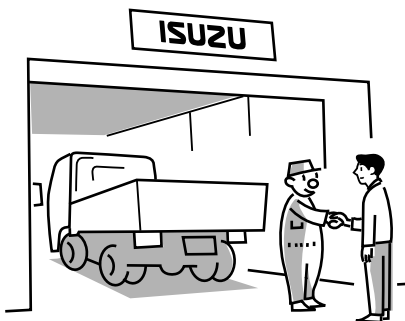
Do not Leave the Steering Wheel Fully Turned for a Long Time



WARNING

- If you leave the steering wheel fully turned for a long time, the oil in the power steering oil pump would become extremely hot. This would cause poor lubrication, oil tank damage and seal deterioration, leading to power steering oil pump damage, power steering unit damage and power steering hose damage. As a result, the steering wheel could become extremely hard to turn and a fire or other accident could occur.

Make Sure the Vehicle is Inspected at Regular Intervals



ADVICE

- Inspections and maintenance enable you to use the vehicle with peace of mind. They also extend the vehicle's service life.

Daily Check (Preoperational Check)

→ Refer to page 7-16

Engine Oil

→ Refer to page 7-21

Maintenance Schedule

→ Refer to page 7-145

When to Visit an Isuzu Dealer

Do not Modify the Vehicle

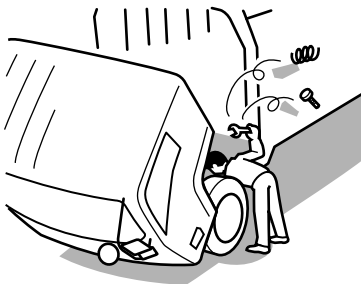


CAUTION

- Attaching parts that are not suitable for the vehicle's performance and functions could lead to a breakdown or accident. For adjustments (for example, engine adjustments) and equipment installation, consult your Isuzu Dealer.
- If you wish to attach accessories to the vehicle, consult your Isuzu Dealer.



Have Engine Adjustments Made by an Isuzu Dealer



CAUTION

- Do not make engine adjustments yourself.
- Be sure to consult your Isuzu Dealer.

Electric Welding



ADVICE

- Careless electric welding of vehicle parts can cause welding current to flow back through the vehicle's ground circuit and damage electrical and electronic parts so that they do not function normally. Whenever electric welding is necessary, consult your Isuzu Dealer.

Replacing Tires and Wheels

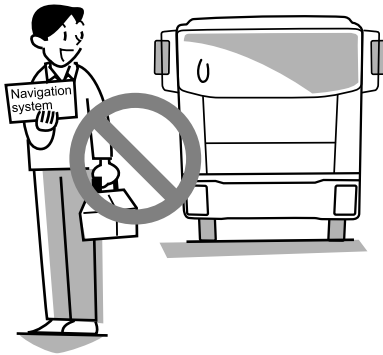


CAUTION

- Consult your Isuzu Dealer before replacing tires or wheels. Never use wheels that are not designed for the vehicle, tires of different types at the same time or tires that are not the specified size. Doing so would impede safe vehicle operation.

Wheels and Tires → Refer to page 7-62
Changing a Tire (ISO 10-Bolt Wheels)
 → Refer to page 7-71

Installing Electrical Equipment

**CAUTION**

- Inappropriate installation or removal of audio, radio or other electrical equipment can adversely affect other electrical equipment and cause a breakdown or fire. Be sure to have electrical equipment installed or removed by your Isuzu Dealer.

**ADVICE**

[Installation of radio equipment]

- Do not install any unauthorized radio set, or any radio set or antenna that does not comply with relevant standards. Noise from the radio set could cause electromagnetic interference with the vehicle's electronic equipment and other systems, resulting in a vehicle breakdown or in a malfunction of electronic equipment. Consult your Isuzu Dealer if you wish to install radio equipment.

Speed Limit Device v

Characteristics of the Speed Limit Device

The speed limit device is a device that restricts excessive speed to prevent a serious accident.

Market	Vehicle model	Set speed
Thailand	FVM	80 km/h (50 MPH)
	FTR/FVM	85 km/h (53 MPH)



NOTE

- The speed limit device restricts the vehicle's speed by controlling the fuel injection volume. It prevents the speed from exceeding a certain, predetermined level regardless of the pressure on the accelerator pedal.



CAUTION

- The speed limit device does not control braking, so it is possible for the vehicle to exceed the set speed on downhill slopes.
- If the tire size is changed, the speed limit device may not work normally. Have adjustments made by the nearest Isuzu Dealer.

Vehicle Data Collection

Your vehicle, like other modern motor vehicles, has a number of sophisticated computer systems that monitor and control several aspects of the vehicle's performance. Your vehicle uses on-board vehicle computers to monitor emission control components, to optimize fuel economy, and to help the driver control the vehicle in difficult driving situations. Some of the information may be stored during the regular operations to facilitate repair of detected malfunctions.

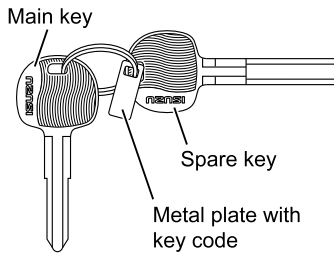
Isuzu may download and retrieve stored information for the purpose of diagnosing, servicing, and repairing your motor vehicle or further improvement to future Isuzu motor vehicles.

DOORS, WINDOWS AND SEATS

3

• Key	3-2
• Opening and Closing Doors	3-3
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Key



Both sides of the key are identical, so you can insert the key in the starter switch without worrying about which way you insert it.

The key code is indicated on a separate metal plate in order to prevent it from being acquired by an unauthorized person.

Where Is the Key Used?

Where	For what
Starter switch	Starting and stopping the engine
Front doors	Locking and unlocking the doors
Fuel tank filler cap (if equipped)	Locking and unlocking the filler cap



ADVICE

- Wipe off the key to remove any dirt or dust, etc. before using it.



NOTE

- To prevent theft, store the metal plate with key code in a safe place other than the vehicle.
- Should you lose the key, please give the key number to your Isuzu Dealer. The Isuzu Dealer will be able to duplicate your key.
- If you resell the vehicle, be sure to hand over the plate with key code to the new owner together with the vehicle.

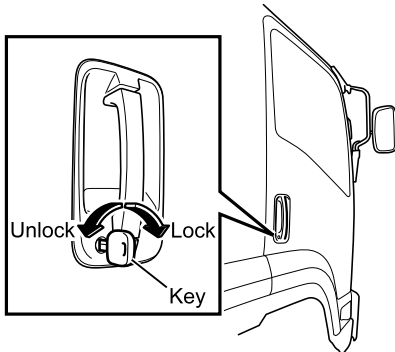
Opening and Closing Doors



CAUTION

- Be sure to do the following whenever you leave the vehicle: 1) Fully engage the parking brake. 2) Stop the engine. 3) Lock the doors.
- When you close the door after sitting behind the steering wheel, check that the door is fully closed. Driving with any door ajar is very dangerous.
- Before opening the door when climbing into or out of the cab, carefully check all areas around the vehicle for safety, especially the area at the rear of the vehicle.
- Never leave the key in the vehicle.
- Tilt the cab only after fully closing the doors.

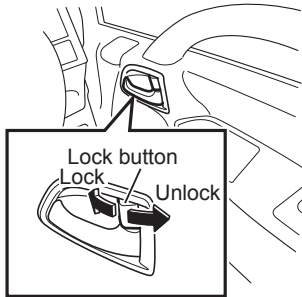
Locking and Unlocking the Front Doors



Locking and Unlocking the Door from Outside Using the Key

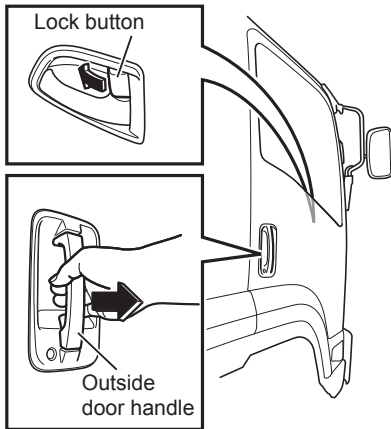
Firmly insert the key.

Turn the key toward the rear of the vehicle to unlock the door and turn it toward the front of the vehicle to lock it.



Locking and Unlocking the Door from Inside

Push the lock button forward to lock the door; pull the lock button backward to unlock it.



Locking the Door from Outside without Using the Key

First, push the lock button on the inside door handle forward and then close the door while keeping the outside door handle raised.



ADVICE

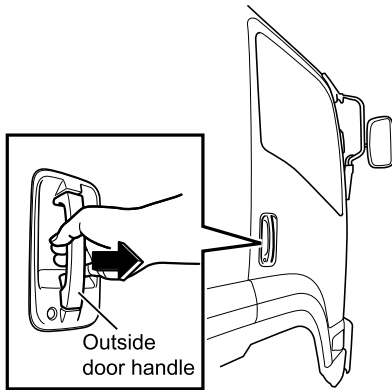
- Before closing the door, be sure to check that you have the key with you.

Power Door Lock (Central Door Lock)

How the Power Door Lock System Operates:

When you lock or unlock the driver's door using the key or by operating the lock button, the power door lock system will automatically lock or unlock all doors simultaneously.

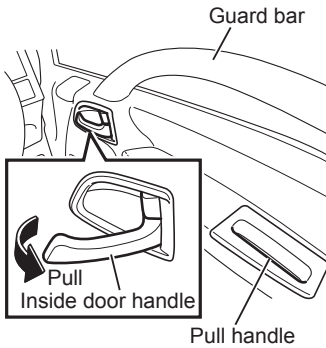
Opening and Closing the Front Doors



Opening and Closing the Door from Outside

To open the door, pull the outside door handle.

To close the door, push the outside door handle.



Opening and Closing the Door from Inside

To open the door, pull the inside door handle.

To close the door, pull the pull handle. For vehicles without pull handles, pull the guard bar.

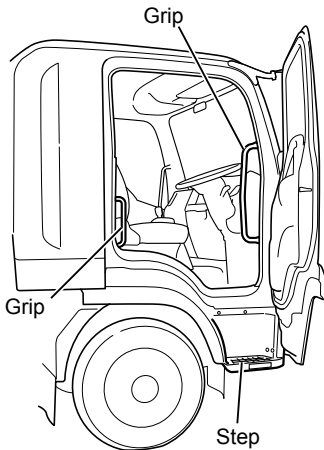


ADVICE

- When leaving the vehicle, be sure to stop the engine and lock the doors. Never leave the key in the vehicle.

Getting In and Out of the Vehicle

Type 1



Carefully check that the area around the vehicle is safe, hold the grip, and place your foot on the step or wheel step ring when getting in or out of the vehicle.

**CAUTION**

- When getting in or out of the vehicle, make sure you use the grip and step or wheel step ring to always support yourself from at least 3 points. It is very dangerous to stand on the tire or wheel when getting in or out of the vehicle.

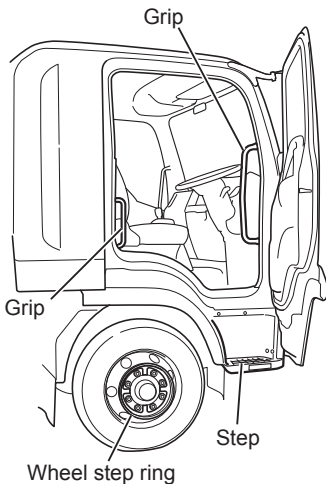
Furthermore, do not try to jump in or out of the vehicle, as doing so could cause unexpected accidents or injuries.

- Getting in or out of the vehicle with oily or greasy hands or shoes could cause you to slip. Always thoroughly clean grease etc. from your hands and shoes before getting in or out of the vehicle.

- Rain and snow can cause the step or wheel step ring to become very slippery. Therefore, always remove snow and ice from your shoes and the step or wheel step ring, and be careful not to slip when getting in and out of the vehicle.

- Exercise caution when opening or closing doors, as strong winds or steep slopes may cause doors to open or close suddenly.

Type 2

**ADVICE**

- Do not hold parts other than the grip when getting in or out of the vehicle. Doing so may cause damage to the vehicle or injuries to yourself or others.

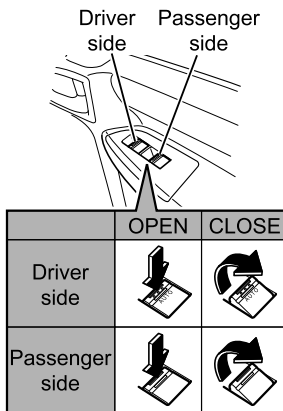
Power Windows

The power windows operate only when the starter switch is in the "ON" position. Open each door window by pressing the power window switch; close each one by raising the switch.

WARNING

- Before closing the windows, make sure that there is no risk of a hand, head or anything else being trapped in the moving window. Failure to do so could result in serious injury. This is especially true when a child is with you.

Window Switches on Driver's Door



To Open the Driver's Window

Lightly pressing the driver-side window switch will lower the driver's window until the switch is released (manual mode operation). When the switch is firmly pressed, the window will lower completely without the need to press the switch continuously (automatic mode operation). If you want to stop the automatic movement of the window before it lowers completely, raise the switch lightly.

To Close the Driver's Window

Lightly raising the driver-side window switch will cause the driver's window to move up until the switch is released.

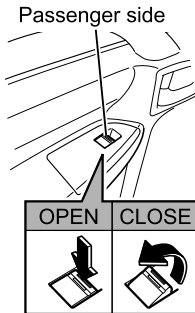
To Open the Passenger's Window

The passenger's window continues to lower while the passenger-side switch on the driver's door is being pressed.

To Close the Passenger's Window

The passenger's window continues to move up while the passenger-side switch on the driver's door is being raised.

Window Switch on Passenger's Door



CAUTION

- Be sure to warn passengers, especially in the case of a child, not to let any part of the body become trapped or caught in a moving window.

The window continues to lower while the window switch is being pressed and continues to rise while the switch is being raised. It will stop moving at any position when the switch is released.

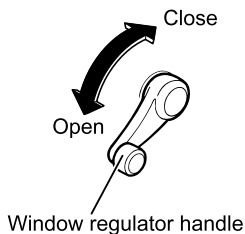
Manually Operated Windows



CAUTION

- Be sure that you and the passenger are at no risk of having any part of the body become trapped in the window. You should be especially careful if a child is with you.

Window Regulator Handle



Turn the window regulator handle to open or close the window.

Fuel Tank**WARNING**

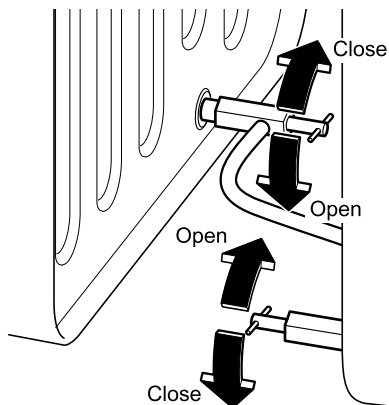
- Be sure to place the starter switch in the "ACC" or "LOCK" position to shut down the engine before refueling the vehicle. Refueling while the engine is running could cause a fire in your vehicle.
- When refueling, never smoke or place any ignition source nearby. There is a risk of fire.
- After refueling, make sure that the fuel tank filler cap is tightly closed.

**CAUTION**

- Be sure to use diesel fuel.
Avoid using the following: a low-quality fuel; any types of fuel additive including water remover; gasoline; kerosene; alcohol fuels; and a mixture of any of these with a permitted diesel fuel. Using such fuel will result in damage to the fuel filter, poor lubrication of injectors, and adversely affected engine components, likely causing vehicle malfunction. Should you refuel the vehicle with the wrong fuel, drain it completely before refueling the vehicle with the correct fuel. Starting the engine without replacing the wrong fuel is dangerous as it can cause damage to the engine and even a fire.
- Be sure to slowly open the fuel tank filler cap. If the cap is opened quickly, fuel may jet out from the filler port.

Using Self-service Filling Stations

→ Refer to page 2-5



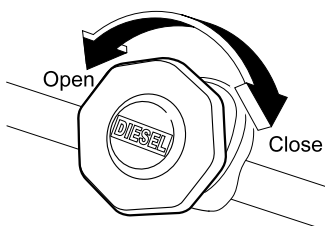
Emergency Fuel Tank

If the taps of the fuel tanks are open and only a small quantity of fuel remains in the tanks, you should be warned while idling the engine or driving on a steep slope. The engine can become starved of fuel because the fuel moves between tanks due to the difference in level between the tanks.



ADVICE

- When you will idle the engine or drive on steep slopes, we recommend you refill the tanks sufficiently or close the fuel tank taps beforehand.



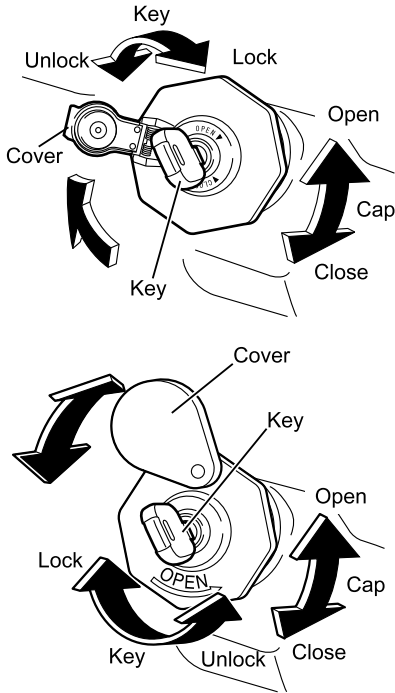
How to Open and Close the Fuel Tank Filler Cap (without Key Lock)

1. Eliminate static from your body before opening the fuel tank filler cap.
2. Slowly turn the cap counterclockwise to open it.
3. Refuel the tank.
4. Align the grooves on the cap and tank and turn the cap clockwise to close it.
5. Check that the cap is tightly closed.



WARNING

- If the fuel tank filler cap is not tightly closed, leaking fuel could start a fire while the engine is running.



Opening and Closing the Fuel Tank Filler Cap (with Key Lock)

1. Eliminate static from your body before opening the fuel tank filler cap.
2. Open the cover, then firmly insert the key and turn it to "OPEN" position.
3. Slowly turn the cap counterclockwise to open it.
4. Refuel the tank.
5. Securely screw the fuel tank filler cap onto the fuel tank.
6. Turn the key to lock the fuel tank filler cap.
7. Pull the key out, then make sure the fuel tank filler cap is securely closed.

WARNING

- If the fuel tank filler cap is not tightly closed, leaking fuel could start a fire during driving.

ADVICE

- When opening or closing the fuel tank filler cap, be sure to grasp the fuel tank filler cap itself, not the key. If you try to turn the fuel tank filler cap using the key, you could damage the key.
- Wipe off the key to remove any dirt or dust, etc. after pulling it out.

Seats

The driver's seat must be adjusted so that when you sit well back in the seat, you can fully depress the pedals without moving your back from the seatback, and you can operate the steering wheel easily and freely. After making adjustments, check that the seat is completely locked.

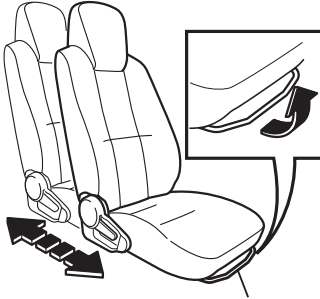
A correctly adjusted seat for the proper driving position is fundamental to safe vehicle operation.



 **WARNING**

- Use caution when adjusting the seat, as failure to do so could cause injury.
- Never allow children to adjust their seats themselves; an adult should adjust the seat for occupants who are children.
- Adjust the seat only before you start driving. Adjusting the seat while the vehicle is in motion must be avoided not only because the unlocked seat will move back and forth unstably, preventing you from taking the correct position, but might also cause you to lose control of the vehicle, possibly resulting in an accident.
- Try to move the seat without unlatching it after making adjustments to check that it is completely locked. A loosely locked seat may move unexpectedly and your position might then become unstable; this could lead to an accident. Take the vehicle to your Isuzu Dealer for service if you find that your seat adjusters do not latch. In addition, the seat belt will not operate properly if the seatback is not completely locked.
- Driving with the seat excessively reclined could be very dangerous in the event of a collision or sudden stop. Raise the seatback, and apply the seat belt correctly while sitting straight in the seat.
- Do not place a cushion or similar object between your back and the seatback. Doing so not only affects the stability of your driving position but also prevents the seat belt from working effectively in the event of a collision.
- Do not place any objects under the seat. If there are any objects under the seat, the seat could be locked in an improper position.
- Before making adjustments, check that the seat rails are free of anything that could obstruct the locking of the seat. Be careful that your hand or foot does not become trapped in the seat or rails when adjusting the seat.
- When adjusting the seat, be careful that the seat does not hit passengers or objects. Doing so could cause injury to passengers, or damage objects.
- Make sure not to hit passengers or luggage when adjusting your seat.

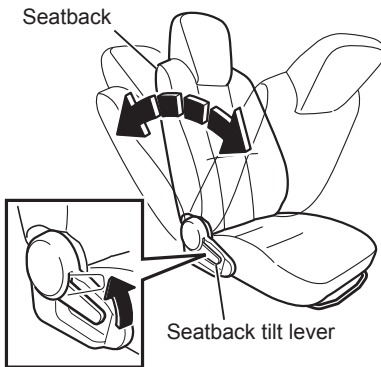
Driver's Seat



Fore-aft position adjustment lever

Forward/Backward Adjustment

While raising the lever, move the seat forward or backward. Release the lever when the seat is in the desired position. After making adjustments, try to move the seat back and forth to check that it is fully locked.



Seatback

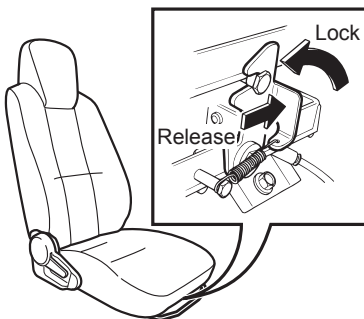
Seatback tilt lever

Reclining Adjustment

To recline the seatback, raise the seatback tilt lever and gently lean back to the desired position.

To move the seatback forward, lean forward with your back slightly clear of the seatback and raise the lever.

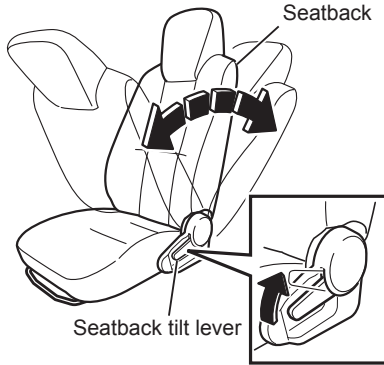
After making adjustments, check that the seatback is fully locked.



Suspension Lock (Air Suspension Seat)

Turn the lever up to lock the seat at the fixed height.

Passenger's Seat



Reclining Adjustment

To recline the seatback, raise the seatback tilt lever and gently lean back to the desired position.

To move the seatback forward, lean forward with your back slightly clear of the seatback and raise the lever.

After making adjustments, check that the seatback is fully locked.



CAUTION

- As with the driver, the passenger must also have a correctly fastened seat belt during driving, in case his/her body should undergo dangerously strong force from a collision or sudden braking.
- During driving, the passenger's seat should not have the seatback tilted forward. The passenger seat in this position will obstruct the driver's view of the passenger side.

Center Seat 

If the center seat is not occupied, fold its seatback forward by using the lever positioned in the side of the center seat.

 **CAUTION**

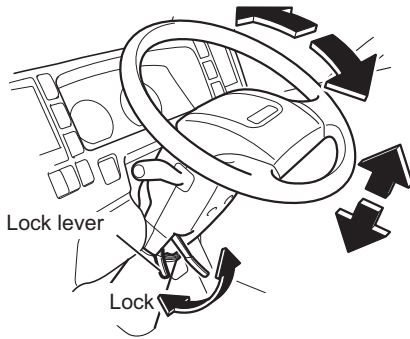
- As with the driver, the passenger must also have a correctly fastened seat belt during driving, in case his/her body should undergo dangerously strong force from a collision or sudden braking.
- Baggage must not be placed on the center seat. If the baggage falls on the floor when the vehicle is braked, it may prevent the driver from operating the pedals.

Fully Adjustable Steering

The steering wheel is adjustable up and down as well as forward and backward.

WARNING

- After adjusting the steering wheel, try moving it up and down to make sure it is fully locked before you drive the vehicle.
- Adjust the steering wheel only when the vehicle is not in motion. Steering wheel adjustment on a moving vehicle is very dangerous, since a vertically moving steering wheel prevents the driver from properly controlling the vehicle.



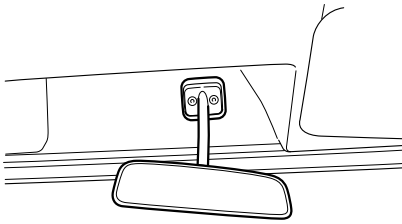
Adjustment

1. Lift the lock lever toward you to unlock the steering column.
2. Sit in the correct driving position, and then move the steering wheel up and down, and forward and backward to select the optimum steering wheel position.
3. Firmly lock the steering wheel at the selected position by moving the lock lever to the lock position.

Mirrors

Sit in the correct driving position on the properly adjusted seat, and then check each mirror to ensure that it provides a proper view of the rear, the sides, the area just in front of the vehicle, and the area directly opposite to the driver's seat. Make adjustments if necessary and clean any dirty mirrors.

Inside Mirror



Adjustment

Move the mirror to a position where it provides a proper rear view.



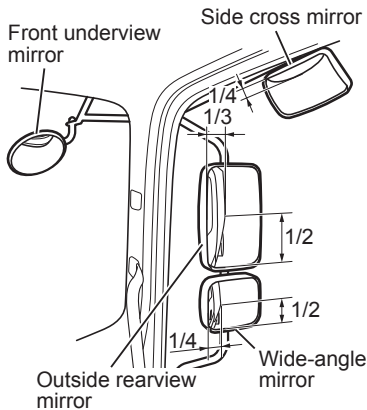
CAUTION

- Adjust the mirror when the vehicle is stationary, not while the vehicle is in motion.

Outside Mirrors

Door-mounted Mirrors

After properly adjusting your seat for proper driving position, adjust the mirrors indicated below so that they provide adequate views for checking the rear, the side and the areas just in front and immediately to the side of the vehicle by moving each of the mirrors.



Outside Rearview Mirror

Lateral-direction: Adjust the mirror so that you can see the vehicle's side including the cargo bed within the inner one-third of the mirror.

Vertical-direction: Adjust the mirror so that you see the rear bottom corner of the vehicle halfway up the height of the mirror.

Wide-angle Mirror

Lateral-direction: Adjust the mirror so that you can see the vehicle's side within the inner one-fourth of the mirror.

Vertical-direction: Adjust the mirror so that you see the rear bottom corner of the vehicle halfway up the height of the mirror.

Front Underview Mirror

Adjust the mirror so that you see the bumper's edge at the center of the mirror and the windshield's lower corner along the edge of the mirror.

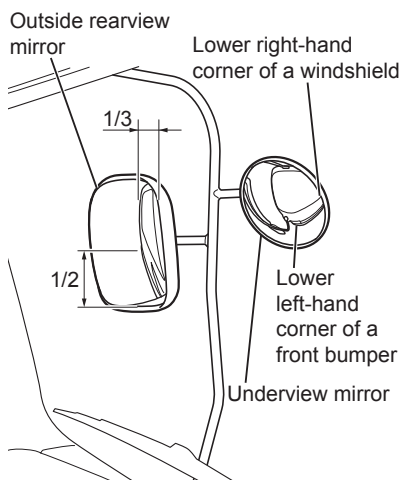
Side Cross Mirror

Lateral-direction: Adjust the mirror so that you can see the cab's side in the mirror.

Vertical-direction: Adjust the mirror so that you see the cab within the upper one-fourth of the mirror.

Pillar-mounted Mirrors

After properly adjusting your seat for proper driving position, adjust the mirrors indicated below so that they provide adequate views for checking the rear, the side and the areas just in front and immediately to the side of the vehicle by moving each of the mirrors.

**Outside Rearview Mirror**

Lateral-direction: Adjust the mirror so that you can see an image of the vehicle's side within the inner one-third of the mirror.

Vertical-direction: Adjust the mirror so that you see an image of the rear bottom corner of the door window halfway up the height of the mirror.

Underview Mirror

Adjust the mirror so that you see an image of the bumper's edge at the center of the mirror and the corner of the windshield along the upper edge of the mirror.

**CAUTION**

- Adjust the mirrors when the vehicle is stationary, not while the vehicle is in motion.
- When checking the rear of the vehicle with mirrors, be careful that this does not distract your attention from the traffic ahead.
- Rearview mirrors may make the vehicle behind you appear farther away than it really is. Use these mirrors very carefully until you are able to correctly determine distances from the images.
- Keep the mirrors in mind when passing another vehicle on a narrow road, moving the vehicle into a garage or driving near pedestrians.
- Do not drive with the mirrors folded.

Seat Belts



The protection provided by seat belts might be significantly reduced if they are not fastened properly; in certain cases, improperly fastened seat belts can even play a role in causing injury to the wearer. Seat belts must be worn not only by the driver but also by the passenger(s) before the vehicle starts moving. You should be fully acquainted with the proper use of seat belts and important points to be respected as described below. Familiarizing yourself with the correct use of seat belts is essential for your safety.



WARNING

- Seat belts must always be fastened before starting to drive.
- Seat belts provide full protection only when the driver and passenger(s) fasten them while sitting upright and fully back on the seat.
- Wearing a seat belt with the seatback excessively reclined could be very dangerous in a collision or sudden stop since the occupant may slide under the belt and be seriously injured. Seat belts work best only when the occupant is sitting well back and straight up in the seat.
- Be sure to insert the latch plate into the buckle until a click is heard. An incompletely inserted latch plate is dangerous in the event of a collision or sudden stop.
- Do not run the seat belt over your face, chin or neck.
- Wear the seat belt as low as possible around the hips, not around the waist. A seat belt running over the waist would press the abdomen with a strong force and could increase the likelihood of injuries in a collision or sudden stop.
- Do not use a seat belt for a small child if the belt is on or very close to the child's neck or chin. Also, do not use a seat belt if it does not fit snugly over the child's hips because restraining the child under those conditions could be dangerous in the event of a collision or sudden stop. Instead, use an appropriate child restraint system available on the market. For further details, please contact your Isuzu Dealer.

WARNING (Continued)

WARNING (Continued)

- Use a child restraint system that fits the size of the infant or child. Install the system according to the manufacturer's instructions.
- Remove any twists in the seat belt before fastening it. A seat belt with twists will not provide full protection because it cannot disperse shocks efficiently in the event of a collision or sudden stop.
- Pregnant women or people suffering from chest or abdominal conditions should check with their doctor for specific recommendations about wearing seat belts.
- Do not use one seat belt for more than one person. If worn by more than one person, the seat belt would not work effectively in a collision or sudden stop.
- Have seat belts inspected and, if necessary, replaced by your Isuzu Dealer when the webbing becomes frayed or worn and/or when the buckle or other mechanical parts fail to work properly.
- If your vehicle has been involved in a collision, the seat belts worn at the time may have lost their original strength due to impact even if they appear intact. These seat belts must be inspected and, if necessary, replaced by your Isuzu Dealer.
- Be careful to keep the buckles and retractors free of dust and foreign matter.
- Wearing seat belts is a legal requirement in most countries. The driver is responsible not only for wearing a seat belt himself/herself but also for prompting all passengers to wear their seat belts. It is necessary, however, to check with a doctor about the appropriateness of a seat belt for a pregnant woman or a passenger with a chest/abdominal condition.

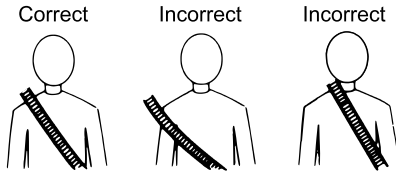
Seats → Refer to page 3-12

Seat Belt Warning Light

→ Refer to page 4-17

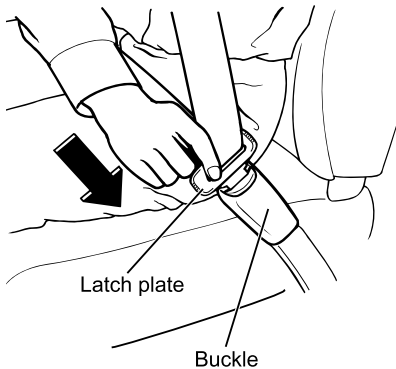
Three-Point Seat Belts

Every seat except the center seat on your vehicle is equipped with a three-point seat belt. The seat belt extends or retracts freely if the wearer moves slowly, but it locks and restrains the occupant during forward force caused in the occupant's body following a strong shock. Adjust the driver's shoulder belt for proper position by means of the shoulder anchor.



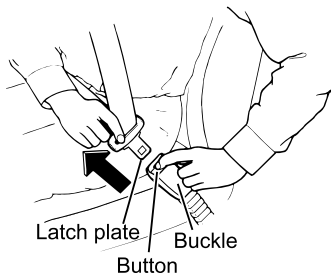
WARNING

- The shoulder belt should be adequately positioned on your shoulder but should not touch your neck and/or face. The shoulder belt could harm you in a collision or sudden stop if it is in contact with your neck and/or face.



To Fasten

1. Sit on the seat in the correct driving position.
2. Pull out the seat belt holding the latch plate. After checking that there are no twists in the belt, insert the latch plate into the buckle until it clicks.
3. Position the lap belt so that it snugly fits as low as possible on the hips.



To Unfasten

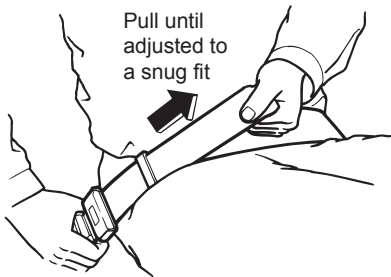
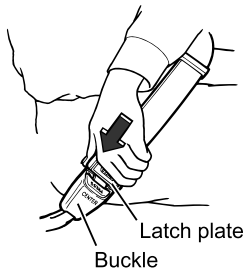
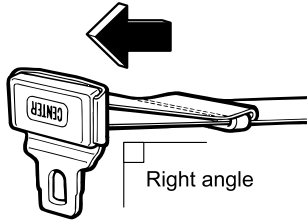
Push the button on the buckle. As the belt automatically retracts, let it be taken up slowly by holding on to the latch plate until the belt is fully retracted.

**ADVICE**

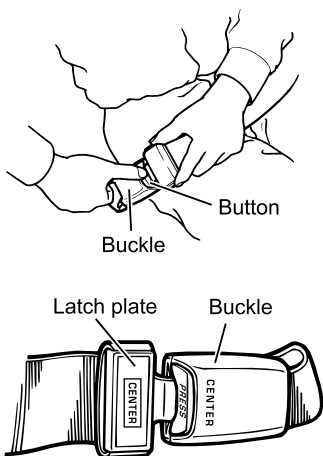
- While being automatically retracted, the seat belt could damage a nearby window or interior trim unless the latch plate is properly held. Hold the latch plate to ensure that the belt is taken up slowly.
- Before closing the door, check that the retracted seat belt is taut. A slack belt could become trapped in the door or seat rail.
- When the passenger's seat belt is fully taken up (or not pulled out), check that the stopper is holding the belt in a fully taut state.

**NOTE**

- The three-point seat belts are provided with an emergency locking retractor (ELR) function.
[ELR function]
 - The ELR normally allows the seat belt to move in and out freely as the occupant moves. However, it locks the seat belt to restrain the occupant when a forward force resulting from a collision or sudden stop acts on the occupant.
 - The ELR also locks the seat belt when the belt is pulled out quickly. If this happens, allow it to retract once and then pull it out slowly.
- [Load limiter function]
 - The load limiter allows the seat belt to extend while maintaining the load working on the belt at a constant level. This helps alleviate the shock applied on the occupant's chest.

Two-Point Seat Belt (Center Seat) **To Fasten**

1. Sit on the seat in the correct position.
2. Pull out the latch plate side of the belt a little longer than necessary. (Placing the latch plate at right angles with the belt makes this easier.)
3. After checking that there are no twists in the belt, insert the latch plate into the buckle until it clicks.
4. Position the seat belt across the lap as low as possible on the hips. Pull the fold-back end of the belt (upper side) until the belt is adjusted to a snug fit.



To Unfasten

Push the button on the buckle to unfasten the belt.



NOTE

[Center seat belt design to prevent incorrect fastening]

- The center seat belt (length-adjustable two-point belt) is designed so that it cannot be connected with any of the window-side seat belts (three-point seat belts with ELR).

In addition, both the latch plate and buckle of the center seat belt are identified by "CENTER" marks to prevent incorrect fastening of the center seat belt.

CONTROLS AND INSTRUMENTS

4

STARTING AND STOPPING THE ENGINE

4-3

**INSTRUMENTS, WARNING LIGHTS AND
INDICATOR LIGHTS**

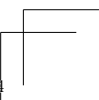
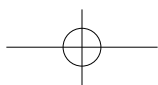
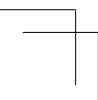
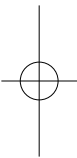
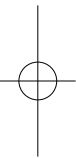
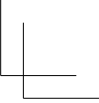
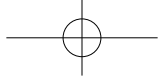
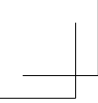
4-7

SWITCHES

4-27

DRIVING CONTROLS

4-43



STARTING AND STOPPING THE ENGINE

• Starting the Engine	4-4
• Stopping the Engine	4-6

Starting the Engine

Make sure that the switches, including those for the windshield wiper, light control and air conditioner, are in the "OFF" position.

Turn the starter switch to the "ON" position to check that the warning and indicator lights turn on normally and the fuel level is proper.

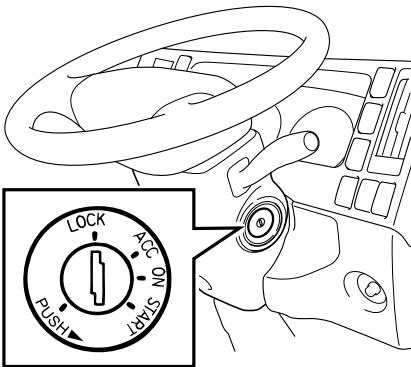
When the starter switch is turned to the "ON" position, indicator lights which are not applicable to your vehicle may turn on. This is for checking the light and does not indicate a failure.



ADVICE

- Using a key sticking with dirt or dust, etc. may possibly damage the starter switch. Make sure to wipe off any dirt or dust, etc. before inserting the key.

Starting the Engine



WARNING

- Do not keep the starter switch in the "START" position for more than about 10 seconds. Operating the starter for too long might cause battery failure or might result in overheating and even a fire.

Starter Switch → Refer to page 4-28



CAUTION

- Firmly engage the parking brake when you sit in the seat before starting the engine. Also, be sure to start the engine while pressing the clutch pedal and after making sure that the gearshift lever is in "N".
- It is dangerous to start the engine from outside through the window. If the gearshift lever is not in "N", your vehicle may start moving. Never start the engine in that way.

1. Fully press the clutch pedal.
2. Turn the starter switch to the "ON" position.
3. Then turn the starter switch to the "START" position to start the engine.
Use the idling control knob to stabilize the engine speed when the engine runs rough during warm-up.
When your vehicle has warmed up, fully turn the idling control knob counterclockwise and run the engine at idle.

Idling Control Knob

→ Refer to page 4-30

**ADVICE**

- At low ambient temperatures, a cold engine may emit more smoke (white smoke) than usual.

**NOTE**

[Preheating]

- Diesel engines are compression ignited, which makes them difficult to start when they are cold because the compression alone cannot create a temperature high enough for fuel to ignite. "Preheating" means warming the compressed air inside the combustion chambers to facilitate engine starting.

Stopping the Engine



Firmly apply the parking brake.

With the accelerator pedal released, turn the starter switch to the "ACC" or "LOCK" position.



ADVICE

- Do not shut down the engine immediately after driving the vehicle. Otherwise, seizure or other failures may result. Before stopping the engine, run the engine at idle for approximately 3 minutes to cool it down after applying the parking brake and making sure the gearshift lever is in "N".
- To prevent the battery from going dead, turn the starter switch to the "ACC" or "LOCK" position after stopping the engine. If you leave the vehicle for a long time, remove the key.

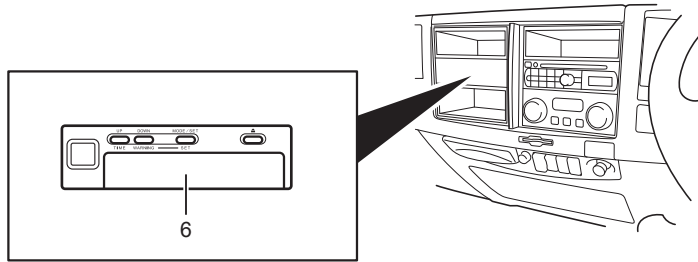
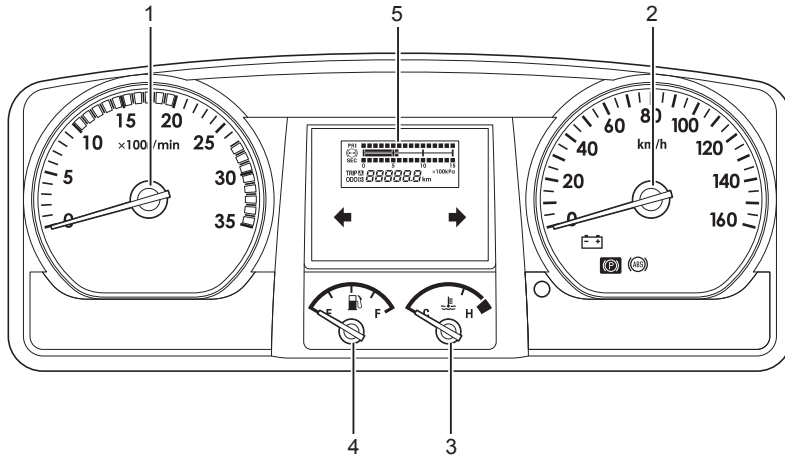
INSTRUMENTS, WARNING LIGHTS AND INDICATOR LIGHTS

• How to Read the Instruments (Instruments Layout)	4-8
• Speedometer	4-9
• Analog Tachograph <input type="checkbox"/>	4-10
• Tachometer	4-11
• Air Pressure Gauge	4-12
• Engine Coolant Temperature Gauge	4-13
• Fuel Gauge	4-14
• Warning and Indicator Lights Layout	4-15
• Warning and Indicator Lights	4-17
• Warning Buzzer	4-26

4-8

CONTROLS AND INSTRUMENTS

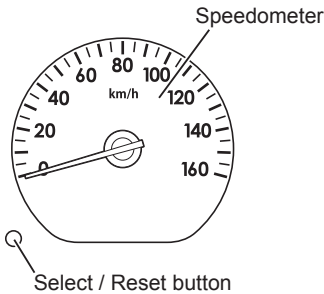
How to Read the Instruments (Instruments Layout)



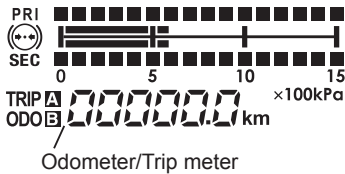
No.	Name	Reference page
1	Tachometer	4-11
2	Speedometer	4-9
3	Engine coolant temperature gauge	4-13

No.	Name	Reference page
4	Fuel gauge	4-14
5	Air pressure gauge	4-12
	Odometer/Trip meter	4-9
6	<input type="checkbox"/> Analog tachograph	4-10

Speedometer



The speedometer indicates the vehicle speed in km/h. Each time you press the select / reset button lightly with the starter switch in the "ON" position, the odometer / trip meter shows "ODO", "TRIP A" and "TRIP B" in this sequence and one at a time to indicate the selected meter.



Odometer

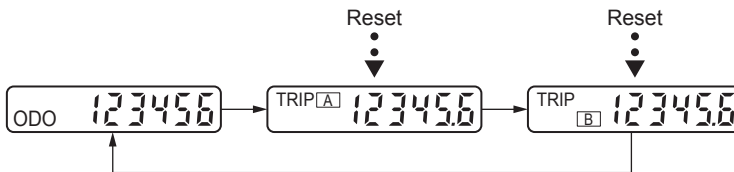
The total distance traveled by your vehicle is indicated in km. When 999,999 kilometers are exceeded, "B" is displayed.

Trip Meter

Use the trip meter to know the distance between the specific points or the distance traveled during a specific time frame.

The number on the left side of the decimal point is the distance in km, while the number on the right side is the distance in 100 m. In addition, two separate distances can be associated with "TRIP A" and "TRIP B". Use the two trip meters by switching between "TRIP A" and "TRIP B" as appropriate.

If you want to reset the trip meter, use the select / reset button to select and display the trip meter that you want to reset. Then, hold the button pressed for at least one second.

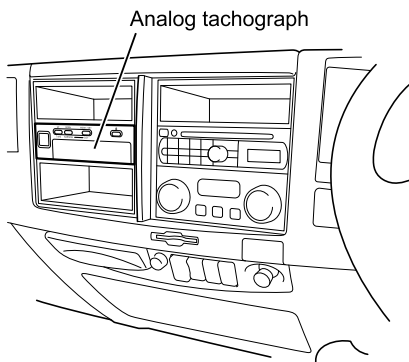



→ : Select / Reset button-Press once

••▶ : Select / Reset button-Press and hold (more than 1 second)

**NOTE**

- When you turn the starter switch to the "ON" position, the odometer / trip meter shows what was displayed the last time you turned the switch to the "LOCK" position.
- You can set the odometer to display on the odometer / trip meter each time you turn the starter switch to the "ON" position. To do this, turn the starter switch to the "LOCK" position while the odometer is being displayed, and then, with the select / reset button pressed, turn the starter switch to the "ON" position. Within 3 seconds after turning the switch to the "ON" position, turn the starter switch back to the "LOCK" position. Follow the same procedure to cancel the setting.

Analog Tachograph 

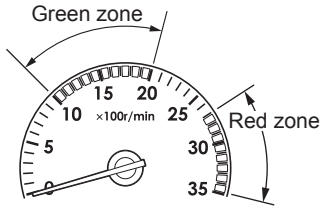
The analog tachograph records vehicle speeds, time, distance traveled and other information. The tachograph can be useful in achieving economic driving and optimum management of operation.

Refer to the separate instruction manual for the analog tachograph for details of its operation.

**ADVICE**

- Before opening the analog tachograph to replace the chart or for other purposes, stop the engine. Otherwise, the tachograph may not work properly.

Tachometer



Green zone (r/min)	Red zone (r/min)
1,000 - 2,000	2,800 - 3,500

The tachometer indicates the engine speed in revolution per minute (r/min). (Graduation "1" on the scale indicates 100 r/min.) The green zone indicates a range for economic driving. The red zone indicates a range of dangerous engine speeds beyond permissible levels.

Do not drive your vehicle with the needle of the tachometer in the red zone.

The graduation and the red zone of tachometer are various depending on the models fitted.



ADVICE

- Exercise extreme caution when shifting down on a steep downslope. The engine speed may easily exceed the critical speed, which can seriously damage the engine.

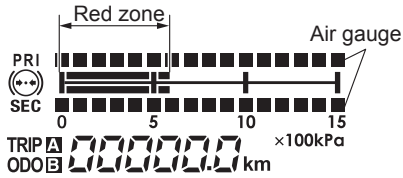
Appropriate Gearshifts

→ Refer to page 2-23

Gearshift Lever

→ Refer to page 4-47

Air Pressure Gauge



Proper air pressure range

780 - 890 kPa
(8.0 - 9.1 kgf/cm²/114 - 129 psi)

**BRAKE
AIR**

This gauge indicates the pressure of the compressed air in the air tank.

If the needle enters the red zone, the air pressure warning light comes on and the warning buzzer sounds (To stop the buzzer, pull up the parking brake lever).

If the air pressure warning light comes on, immediately stop driving and engage the parking brake. Place the gearshift lever into "N". Then, run the engine at idle to increase air pressure. If air pressure will not increase, or there is a great difference between the readings of the two gauges, or it takes time for the needles to go up, contact the nearest Isuzu Dealer.

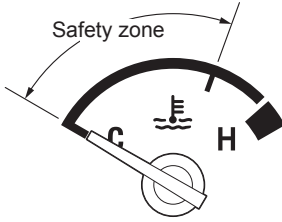
Checking Air Pressure

→ Refer to page 7-56

WARNING

- Do not drive your vehicle if the needles are in the red zone or the air pressure warning light is on. Brakes are then not fully functional, and it is dangerous to operate the vehicle.

Engine Coolant Temperature Gauge



Engine overheat warning light



With the starter switch in the "ON" position, this gauge indicates the temperature of the engine coolant. "C" means cold while "H" means hot. If the engine overheats, the engine overheat warning light comes on and a warning buzzer sounds. During operation, the needle should stay in the safety zone.



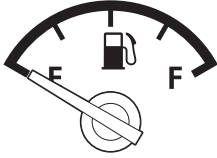
ADVICE

- If the needle goes up above the upper limit of the safety zone and enters the "H" zone while you are driving, the engine is likely to overheat. Immediately pull safely off the road out of the way of any traffic and take necessary actions to deal with engine overheating.
- If the needle nears the "H" zone but is still in the safety zone, this is not a problem. But, check the engine coolant level in the reserve tank. Add engine coolant up as required.
- The engine can seize up if it is stopped immediately after driving. Take appropriate actions for engine overheating.

Engine Coolant → Refer to page 7-29
When the Engine Overheats

→ Refer to page 8-16

Fuel Gauge



With the starter switch in the "ON" position, this gauge indicates the quantity of fuel remaining in the fuel tank. "F" means the tank is full while "E" means the tank is almost empty.

**NOTE**

- Make a habit of filling up the fuel tank well before it approaches empty.
- After filling up the fuel tank, it takes a while for the fuel gauge needle to stabilize after the starter switch is turned to the "ON" position.
- If the fuel tank is filled with the engine stopped but the starter switch in the "ON" position, the fuel gauge needle takes a while to show the correct reading. If so, turn the starter switch to the "LOCK" position and then to the "ON" position again.

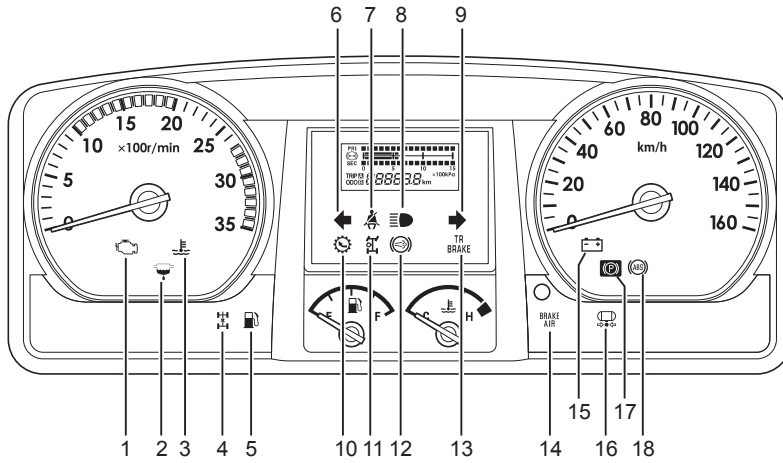
Low Fuel Warning Light

→ Refer to page 4-22

When the Fuel Runs Out

→ Refer to page 8-11

Warning and Indicator Lights Layout



4-16

CONTROLS AND INSTRUMENTS

No.	Name	Reference page
1	Check engine warning light	4-21
2	Water separator (fuel filter) warning light	4-22
3	Engine overheat warning light	4-19
4	<input type="checkbox"/> Inter-differential lock indicator light	4-25
5	Low fuel warning light	4-22
6	Turn signal and hazard warning flasher indicator light - left	4-23
7	<input type="checkbox"/> Seat belt warning light	4-17
8	High beam indicator light	4-23
9	Turn signal and hazard warning flasher indicator light - right	4-23

No.	Name	Reference page
10	<input type="checkbox"/> Low range indicator light	4-25
11	<input type="checkbox"/> PTO indicator light	4-25
12	Exhaust brake indicator light	4-24
13	<input type="checkbox"/> Trailer brake warning light	4-21
14	Air pressure warning light	4-17
15	Generator warning light	4-20
16	<input type="checkbox"/> Low accessory air pressure warning light	4-25
17	Parking brake warning light	4-24
18	<input type="checkbox"/> ABS warning light	4-18

Warning and Indicator Lights

Seat Belt Warning Light



This warning light comes on when the driver is not wearing the seat belt while the starter switch is in the "ON" position.



NOTE

- This warning light goes out as soon as the driver buckles the seat belt.

Air Pressure Warning Light

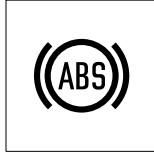


This warning light should normally come on when the starter switch is turned to the "ON" position, and then should go out after the engine has started.

This warning light comes on and a buzzer sounds if air pressure drops below the specified level. Immediately pull off to a safe place, check the vehicle and take necessary actions.

Air Pressure Gauge

→ Refer to page 4-12

ABS Warning Light 

This warning light should come on when the starter switch is turned to the "ON" position, and then should go out after approximately 2 seconds.

This warning light comes on when the antilock brake system (ABS) has a problem. In this case, the ABS stops working but the brakes still function as ordinary service brakes.

**CAUTION**

- If this warning light comes on while driving, immediately pull off to a safe place well clear of traffic and take the following actions.
 - Stop the engine.
 - Restart the engine. Check if the ABS warning light comes on and then goes out. If it does, there is no problem. The ABS operates normally.
- If the warning light does not go out, or comes on repeatedly, have the vehicle inspected / serviced at the nearest Isuzu Dealer as soon as possible.
- If the ABS has a problem, the brakes still function normally as ordinary service brakes. However, the ABS functions are no longer available.

Antilock Brake System (ABS) 

→ Refer to page 4-53

Engine Overheat Warning Light



This warning light comes on when the engine has overheated. When the engine overheats, the engine coolant temperature gauge needle moves to the red zone, and the engine overheat warning light comes on and at the same time a buzzer sounds. Immediately pull off to a safe place, and check the vehicle and take necessary actions.

WARNING

- Do not remove the radiator cap or reserve tank cap when the engine coolant is still hot. Careless removal could result in burns caused by hot vapor being released. Burns may also be caused by boiling water released due to the high temperature of the coolant. Perform inspection, refilling, and replacement of coolant only when its temperature has cooled.

Adding Engine Coolant

→ Refer to page 7-33

CAUTION

- If you continue to drive the vehicle with the engine overheat warning light on steady the engine may seize up.

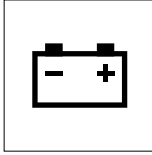
ADVICE

- Do not shut down an overheated engine immediately. Otherwise, the engine may seize up. Take appropriate actions for engine overheating.

When the Engine Overheats

→ Refer to page 8-16

Generator Warning Light



This warning light should come on when the starter switch is turned to the "ON" position, and then should go out after the engine is started.

This warning light comes on when, while the engine is running, there is a problem with the charging system (such as a loose or broken fan belt).



ADVICE

- If this warning light comes on while the engine is running, immediately pull off to a safe place well clear of traffic and promptly contact the nearest Isuzu Dealer for inspection.

Fan Belt → Refer to page 7-42

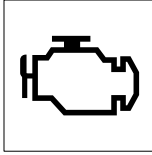
Handling the Battery

→ Refer to page 7-121

When the Battery Goes Flat

→ Refer to page 8-9

Check Engine Warning Light



This warning light will come on when the starter switch is turned to the "ON" position, and then, this warning light will go off after approximately 5 seconds or after the engine has started.

On a model equipped with a speed limit device, this warning light normally will come on when the starter switch is turned to the "ON" position. And the warning light keeps lighting for 15 seconds, and then will go off after flashing 3 times.

If this warning light comes on or flashes while the engine is running, this alerts you to a problem with the engine electronic control system.



ADVICE

- If this warning light comes on while the engine is running, immediately pull off to a safe place well clear of traffic and promptly contact the nearest Isuzu Dealer for inspection.

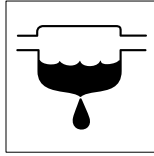
Trailer Brake Warning Light



Semi-tractor or Full-tractor

When the trailer hand brake lever is pulled, the trailer brakes are applied. At the same time, this warning light comes on.

Water Separator (Fuel Filter) Warning Light



This warning light comes on when water in the water separator (fuel filter) needs draining.

Drain water following the instructions in "Draining Water from the Fuel Filter" and make sure the warning light goes out.



CAUTION

- If this warning light comes on while the engine is running, immediately drain water from the fuel filter. If you still continue driving with the warning light on the fuel injection system may fail.

Draining Water from the Fuel Filter

→ Refer to page 7-53

How to Bleed Air → Refer to page 8-12

Low Fuel Warning Light



This warning light comes on when the fuel level in the tank becomes too low while the engine is running.



ADVICE

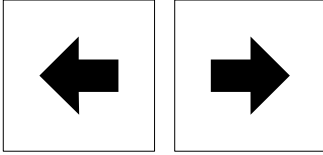
- If the low fuel warning light comes on add fuel at the earliest possible time.
- If the vehicle runs out of fuel, you must bleed the system.

Fuel Gauge → Refer to page 4-14

When the Fuel Runs Out

→ Refer to page 8-11

Turn Signal and Hazard Warning Flasher Indicator Light



Either of these indicator lights flashes when the turn signal switch is operated with the starter switch in any position.

Both indicator lights flash when the hazard warning flasher switch is operated irrespective of the position of the starter switch.

Turn Signal Light Switch

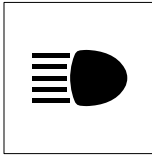
→ Refer to page 4-33



ADVICE

- These indicator lights will not flash if the bulbs are blown, or may flash abnormally if bulbs of incorrect wattage are used.

High Beam Indicator Light



This indicator light comes on when the head lights are on high beam or are turned on for high beam flash (passing signal).

Light Control Switch

→ Refer to page 4-32

Parking Brake Warning Light



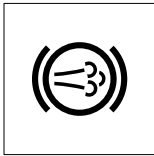
This warning light comes on when the parking brake lever is pulled up.



CAUTION

- The illumination of the warning light does not necessarily ensure firm application of the parking brake. The parking brake lever must be sufficiently pulled up and locked.
- Be careful not to drive the vehicle with the parking brake lever still pulled up.

Exhaust Brake Indicator Light



This indicator light comes on when the exhaust brake is engaged.



ADVICE

- The exhaust brake indicator light flashes if there is a problem with the exhaust brake system. Have your vehicle inspected by the nearest Isuzu Dealer as soon as possible.

Exhaust Brake Switch

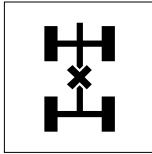
→ Refer to page 4-36

PTO Indicator Light 

This indicator light comes on when the PTO switch is pressed.

Power Take-Off (PTO)

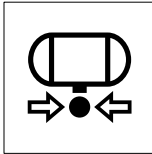
→ Refer to page 4-57

Inter-Differential Lock Indicator Light 

This indicator light comes on when the inter-differential lock switch is placed in the "ON" position.

Inter-Differential Lock Switch

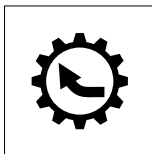
→ Refer to page 4-38

Low Accessory Air Pressure Warning Light 

This warning light comes on and a buzzer sounds when the accessory line air pressure drops below the minimum level. If the light comes on while driving, immediately pull safely off the road out of the way of any traffic. Then check the accessory line and take necessary measures.

Air Pressure Gauge

→ Refer to page 4-12

Low Range Indicator Light 

Model with ES11109 Model Transmission

This indicator light stays on while the gearshift lever is in the low range.

Model with ES11109 Model Manual Transmission

→ Refer to page 4-50

Warning Buzzer

A warning buzzer sounds under the following conditions.

Warning	Buzzer pattern	Location		Condition
		In cab	Outside cab	
Low air pressure	Continuous beep	•	×	Parking brake is released when air pressure is below specification.
Engine overheat	Continuous beep	•	×	Engine has overheated.
Backing up <input type="checkbox"/> V	Long, repeated beeps	•	•	Gearshift lever is placed in "R" position.
Parking brake inactive (when brake lock is in operation) <input type="checkbox"/> V	Continuous beep	•	×	The parking brake is disengaged or is insufficiently applied when the brake lock switch is "ON".
Loss of air pressure or brake fluid pressure (when brake lock is in operation) <input type="checkbox"/> V	Continuous beep	•	•	A brake fluid leak exists or air pressure falls below the specified pressure when the brake lock switch is "ON" and the parking brake is engaged.

•: Long lasting alarm ×: No alarm *: Refer to "Condition" column.



ADVICE

- The warning buzzer may not sound if there is a problem with the system. If this occurs, the system needs to be inspected. Please contact the nearest Isuzu Dealer.

SWITCHES

• Starter Switch	4-28
• Idling Control Knob	4-30
• Combination Light Control Switch	4-32
• Headlight Leveling Switch <input type="checkbox"/>	4-34
• Front Fog Light Switch <input type="checkbox"/>	4-35
• Hazard Warning Flasher Switch	4-35
• Exhaust Brake Switch	4-36
• Inter-Differential Lock Switch <input type="checkbox"/>	4-38
• Windshield Wiper and Windshield Washer Switch	4-39
• Horn Button	4-41

Starter Switch



WARNING

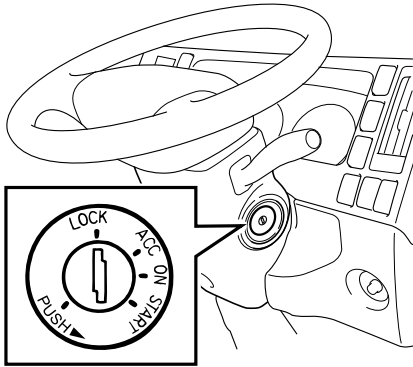
- While driving, never turn the starter switch to the "LOCK" position. The key could be removed from the switch, which then locks the steering wheel. This is extremely dangerous.



ADVICE

- Using a key sticking with dirt or dust, etc. may possibly damage the starter switch. Make sure to wipe off any dirt or dust, etc. before inserting the key.
- After starting the engine, do not turn the starter switch to the "START" position. Otherwise, the starter motor may be damaged.
- Using electronic devices such as the audio system for an extended time period with the engine stopped can completely discharge the battery.

Starter Switch

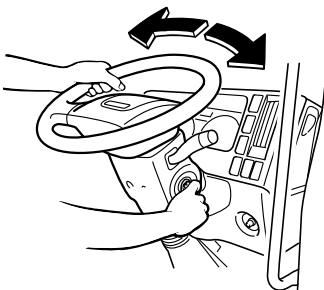


LOCK : Lock is in the position fully counterclockwise.
In this position, the key can be inserted or removed.
Remove the key, and turn the steering wheel until it locks. The steering wheel will be locked to help prevent theft. To place the starter switch in the "LOCK" position, press and hold the key in the "ACC" position and then turn it to the "LOCK" position.

ACC : Accessory is in the first position clockwise.
In this position, the audio and other accessories can be used with the engine stopped.

ON : This "ON" position is in the second position clockwise.
The key stays in this position while the engine is running. This position is also used for preheating before engine start.

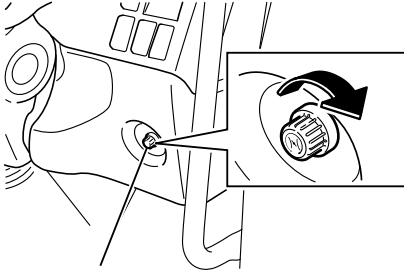
START : Start is in the position furthest clockwise.
The engine is started in this position. Release the key as soon as the engine has started. The key automatically returns to the "ON" position.



NOTE

- If the key cannot be turned from the "LOCK" position to the "ON" position, lightly move the steering wheel clockwise and counterclockwise while trying to turn the key.

Idling Control Knob



Idling control knob

This knob is used to warm up the engine. You can increase the engine speed by turning the knob clockwise without the need to use the accelerator pedal. Turn the knob back fully counterclockwise after you have used it for engine warm-up and keep it in this position.

WARNING

- Running the engine in a poorly ventilated place can lead to carbon monoxide poisoning. Choose a well ventilated place when starting and warming-up the engine.
- If you leave the idling control knob in a high speed position without returning it to the lowest speed position, the vehicle is likely to move suddenly during standing start or it will consume more fuel during subsequent drive or have a shortened clutch life. Never forget to fully turn the idling control knob back to the lowest speed position before driving the vehicle.

Adjustment angle 300°

**CAUTION**

- Do not use the idling control knob while the vehicle is in motion. This could cause a reduction in your ability to stop in an emergency, resulting in personal injury and/or property damage.

**ADVICE**

- The idling control knob is used to increase the efficiency of the heater and/or the defroster during engine idling, or to manually increase the engine idling speed.
- The idling control knob has an operating range of 300 degrees. Do not try to turn the knob beyond this range. Otherwise, the vehicle may develop a problem.

**NOTE**

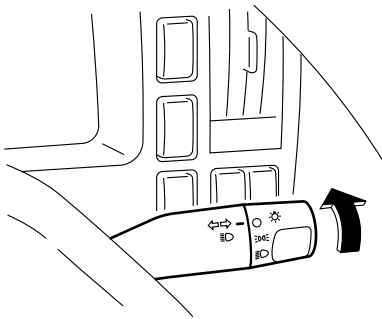
- Use the idling control knob to stabilize the engine at start when it runs rough.

Starting the Engine

→ Refer to page 4-4

Combination Light Control Switch

Light Control Switch



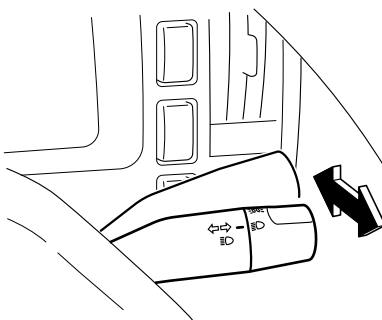
With the starter switch in the "ON" position, turning the light control switch to the positions indicated in the table below causes the relevant lights to illuminate.



ADVICE

- Placing the starter switch to a position other than the "ON" position while the lights are on causes them to go out.

Name	Position			
	○	☰☷	☰	☷
Headlight	OFF	OFF	ON	ON
Clearance light		ON		
Taillight				
License plate light				
Illumination light control				



Switching between High Beam and Low Beam

With the headlights on, move the lever forward and rearward to switch between the high beam and low beam.

Moving the lever forward selects high beam; moving the lever rearward selects low beam. While the headlights are on high beam, the high beam indicator light on the instrument panel remains on.

**NOTE**

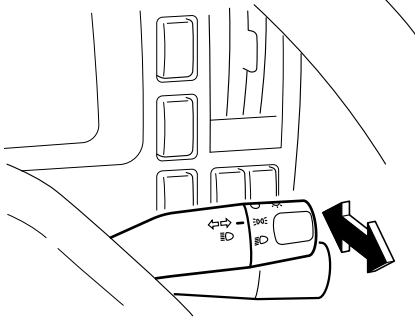
- Use low beam whenever there are vehicles ahead in the same lane or oncoming vehicles on the opposing lane.

When the Bulb Does not Come On

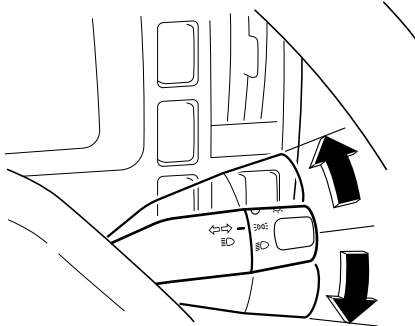
→ Refer to page 8-20

High Beam Flash (Passing Signal)

By lightly pulling the light control switch lever and releasing it, the high beam comes on and off. At the same time, the high beam indicator light on the instrument panel comes on and off. Use this function as a signal for passing a vehicle or other purposes.

**Turn Signal Light Switch**

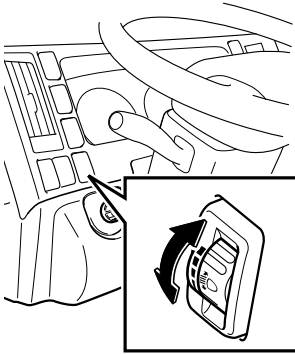
When turning left or right, move the lever up or down to flash the turn signal light.

**ADVICE**

- The turn signal lights come on even when the starter switch is in the "ACC" or "LOCK" position. Do not operate the turn signal lights for an extended time period with the engine stopped. Otherwise, the battery may go dead, making it impossible to start the engine.

**NOTE**

- If the steering wheel is only turned a small amount, turn off the turn signal manually. Lightly press and hold the lever up or down when overtaking or changing lanes. The turn signal light continues flashing as long as the lever is held up or down. The lever moves back to neutral as soon as it is released.

Headlight Leveling Switch 

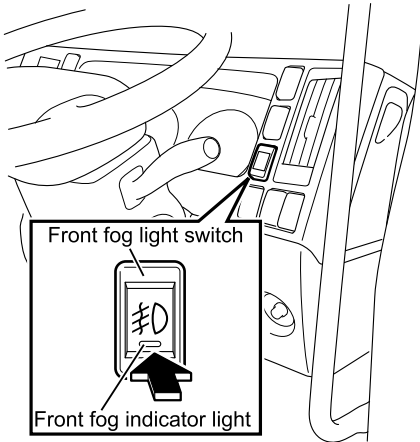
The headlight aim can be adjusted at four different angles. When the cargo load causes the headlights to aim upwards, this feature can be used to lower the aiming angle.

When your vehicle is not loaded with cargo, the switch should be set at the uppermost position. ("0" position)

**CAUTION**

- Do not lower the aiming angle too much. Otherwise, the illuminated range may be so reduced that you may be involved in an accident.

Front Fog Light Switch



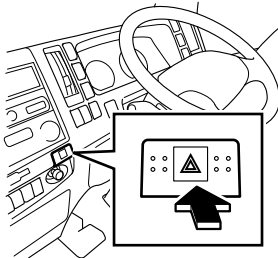
With the light control switch positioned in "☞☞☞" or "☞☞☞", when this switch is pressed, the front fog lights come on and the front fog indicator light comes on. To turn off the lights, press the switch again. The front fog lights are useful when forward visibility is poor such as in fog.

WARNING

- When replacing a front fog light bulb, do not use one of a larger wattage than the specified wattage. Otherwise, the wiring may be burned.

When the Bulb Does not Come On
→ Refer to page 8-20

Hazard Warning Flasher Switch



The hazard warning flasher is used to signal other vehicles that your vehicle is stationary on the road because of accident or component failure.

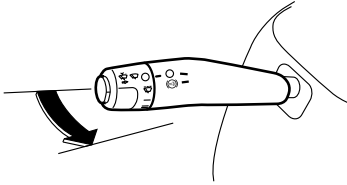
With the starter switch in any position, when this switch is pressed, all of the turn signal lights and the turn signal indicator lights flash to signal emergency. To turn off the hazard lights, press the switch again.



ADVICE

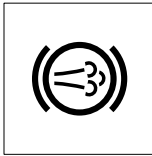
- Do not leave the hazard warning flasher operating for an extended time period with the engine stopped. Otherwise, the battery may go dead, making it impossible to restart the engine.

Exhaust Brake Switch



To apply the exhaust brake while driving, pull the lever rearward. The exhaust brake indicator light comes on. To disengage the exhaust brake, press the accelerator pedal or the clutch pedal. Releasing the pedal reengages the exhaust brake.

Exhaust brake indicator light



CAUTION

- It is extremely dangerous to apply the exhaust brake on slippery roads (with their surfaces covered with compacted snow, frozen, or wet) as the tires can skid.



ADVICE

- If a warning buzzer sounds when the exhaust brake is in operation, promptly pull over the vehicle safely and contact the nearest Isuzu Dealer for inspection.

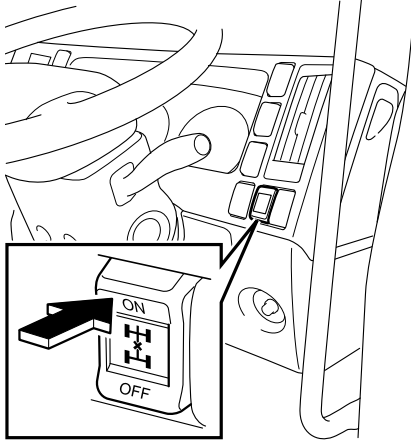
Conditions for Inoperable Exhaust Brake

Under the following conditions, the exhaust brake does not engage.

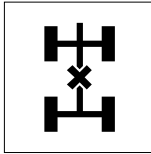
- The accelerator pedal or the clutch pedal is pressed.
- The gearshift lever is in the "N" position.
- The vehicle is traveling at a speed of 5 km/h (3 MPH) or lower, or the engine speed drops to a value where the exhaust brake does not engage.

**NOTE**

- If your vehicle is equipped with an antilock brake system (ABS), the exhaust brake may disengage during ABS operation even when the exhaust brake switch is in the "ON" position and the exhaust brake indicator light is on. The exhaust brake may disengage temporarily as the vehicle passes over a bump even when the brake pedal is not depressed.

Inter-Differential Lock Switch V

Inter-differential lock indicator light



Use the inter-differential lock when one or more than one of the tires on the drive axle is on a muddy or sandy road surface, frozen and sloped road surface, or other slippery road surfaces.

Stop the vehicle. Press the switch on the "ON" side. The inter-differential lock engages and the inter-differential lock indicator light comes on. To disengage the inter-differential lock, press the switch on the "OFF" side. The inter-differential lock indicator light goes out.

**CAUTION**

- The differential may develop a problem if the rear wheels are allowed to spin repeatedly without using the inter-differential lock.
- To engage the inter-differential lock, stop the vehicle and then press the inter-differential lock switch on the "ON" side.
- With the inter-differential lock engaged, the turning radius of the vehicle increases.
- Do not engage the inter-differential lock unless needed. Otherwise, tire wear, noise and vibration will result.

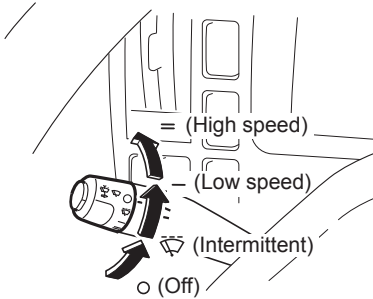
**NOTE**

- The inter-differential lock directly connects the forward rear axle with the rearward rear axle.

Windshield Wiper and Windshield Washer Switch

To use the windshield wiper and washer switches, the starter switch must be in the "ON" position.

Windshield Wiper Switch



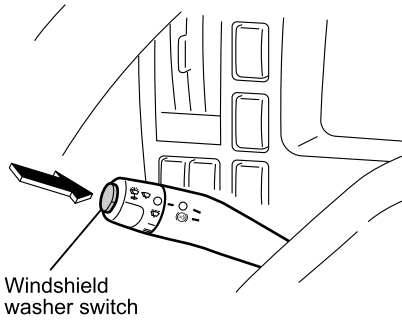
ADVICE

- The safety system may work to stop the wiper when excessive load is applied on the motor. In this case, turn the switch to the "OFF" position and, a few minutes later, check to see if the wiper is back to normal operation. If the wiper frequently stops operation, refrain from using it and contact the nearest Isuzu Dealer.
- Before operating the wiper, ensure that the wiper rubber is not stuck on to the windshield. If the wiper rubber is stuck on to the windshield and you still operate the wiper, the wiper may break or the wiper motor may fail.
- Do not operate the wiper on a dry windshield surface. Otherwise, the windshield surface may sustain damage. Always use the windshield washer when wiping a dry glass surface.

The windshield wiper switch has the following positions, which correspond to the states of the wiper.

Lever position	○		—	=
Wiper state	Stop	Intermittent (Light rain)	Low speed (Moderate rain)	High speed (Heavy rain)

Windshield Washer Switch



Windshield washer fluid is sprayed over the windshield when this switch is pressed. The wiper also operates if your vehicle features an intermittent windshield wiper function. The windshield washer is used when wiping the windshield clean.



CAUTION

- At extremely low temperatures, washer fluid may freeze on the windshield after being sprayed, obstructing your forward view. In such a case, warm up the windshield before using the windshield washer.

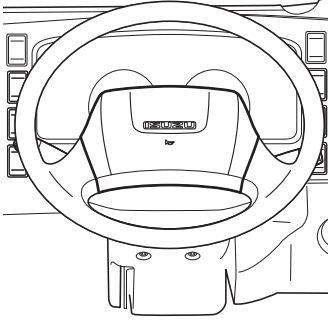


ADVICE

- If windshield washer fluid does not come out in sufficient quantity, immediately release the switch. Otherwise, the windshield surface may sustain damage.
- Do not hold the switch pressed for more than 30 seconds. Otherwise, the washer pump may sustain damage.
- If windshield washer fluid does not come out, release the windshield washer switch immediately. Otherwise the motor may seize up.
- When the vehicle is used in a cold-climate region, use washer fluid with appropriate concentration for the season to prevent frozen fluid.

Windshield Washer Fluid

→ Refer to page 7-116

Horn Button

To sound the horn, press the pad with a horn symbol on the steering wheel.

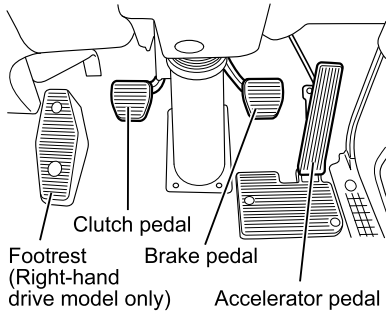




DRIVING CONTROLS

• Pedals	4-44
• Parking Brake Lever	4-45
• Gearshift Lever	4-47
• Model with ES11109 Model Manual Transmission <input type="checkbox"/>	4-50
• Antilock Brake System (ABS) <input type="checkbox"/>	4-53
• Power Take-Off (PTO) <input type="checkbox"/>	4-57

Pedals



Sit in a correct driving position on the seat and operate the brake pedal and accelerator pedal with your right foot. To avoid accidentally pressing the wrong pedal, check the pedal positions and practice putting your foot on the desired pedal.

WARNING

- A can or bottle rolling on the floor may prevent brake pedal operation if it is caught under the pedal. This is very dangerous. Lay a floor mat correctly. An incorrectly installed floor mat would hinder free movement of each pedal.

ADVICE

- Do not race the engine; engine components as well as fuel economy may be badly affected.
- Do not drive with your foot resting on the clutch pedal. Doing so may damage the clutch.

Parking Brake Lever



CAUTION

- When parking or stopping your vehicle, pull the parking brake lever and make sure that the vehicle does not start moving.
- Avoid parking your vehicle on a slope as much as possible and choose a level and flat place. If it is unavoidable to park your vehicle on a slope, be sure to set the parking brake fully, make sure that the vehicle does not move, and block the wheels with chocks for added safety. Engage the transmission in a gear for more secure parking.
- Do not use the parking brake while the vehicle is in motion except in an emergency. Applying the parking brake before the vehicle has stopped can cause the tires to lock or the vehicle to spin, possibly causing an accident.
- Unless the parking brake is fully released during driving, a fault and/or a fire may be caused.
- Illumination of the parking brake warning light does not mean that the parking brake is fully applied. The parking brake lever must be fully pulled up.
- After using the parking brake during driving, be sure to check if any failure has been caused.

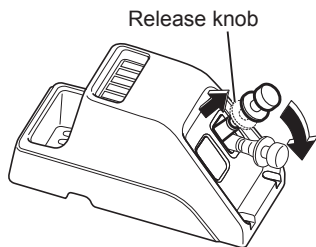
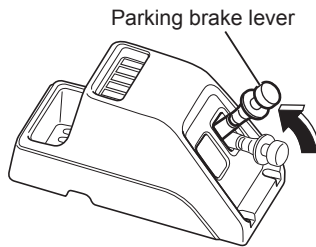


NOTE

There are two types of parking brake. Your vehicle has either of them.

- Center parking brake: When you pull the parking brake lever, the center parking brake works on the propeller shaft to lock the rear axle.
- Wheel parking brake: When you pull the parking brake lever, the wheel parking brake activates the rear wheel brakes to lock them.

Operation of the Parking Brake



To set the parking brake, raise the parking brake lever. The parking brake warning light will then come on. Make sure that you hear the air being released from the system.

To release the parking brake, lower the parking brake lever while raising the release knob.

The parking brake warning light will then go out.

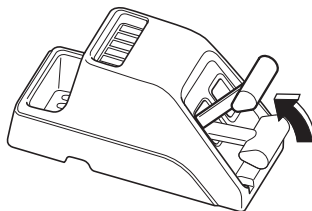


CAUTION

- If the parking brake warning light remains on when the parking brake lever is lowered, a brake failure or a drop in air pressure may be the cause.

Check the air pressure for correct level.

Trailer Parking Brake Lever V



Trailer brake warning light

**TR
BRAKE**

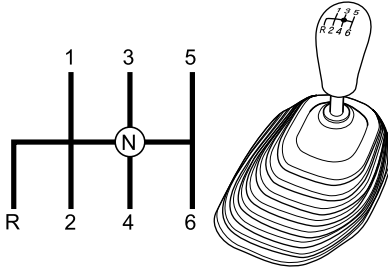
Semi-trailer Tractor and Full-trailer Tractor

When the lever is pulled up, the trailer's brakes are applied to a degree that varies according to the angle of the lever. The stop lights and trailer brake warning light will then come on.

When you release the lever, it automatically returns to the "OFF" (release) position.

This lever is used to prevent the tractor from being pushed by the trailer on a downhill slope.

Gearshift Lever

6 Speeds Manual Transmission Model **Model with MZW Model Transmissions**

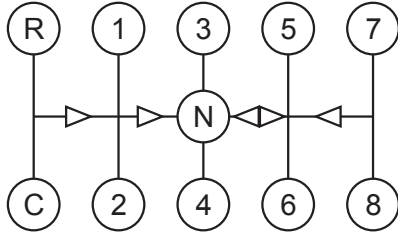
After fully pressing the clutch pedal and while pressing the brake pedal, place the gearshift lever into the "1" (1st gear) or "R" (reverse gear) position.

In a model with back-up lights, the back-up lights come on when the gearshift lever is placed into "R" (reverse gear). And, in a model with back-up warning buzzer, the buzzer sounds as well.

A manual transmission model requires you to fully depress the clutch pedal when making a gear shift.

**ADVICE**

- Make a shift into the reverse gear from a forward gear or into a forward gear from the reverse gear only when the vehicle has come to a complete stop. Doing otherwise may damage the transmission.

9 Speeds Manual Transmission Model **Model with ES11109 Model Transmission**

Models in this series provide nine forward speeds and one reverse speed, consisting of a five-speed front section and a two-speed auxiliary range section.

Crawler gear (C) in the front section is used only as a starting gear. The other four ratios are used once in LOW range and once again in HIGH range.

After shifting out of Crawler gear, shift the remaining gears in LOW range and HIGH range as you would shift any synchronized transmission.

When shifting from the Low range to the High range or vice versa, move the shift lever completely to the right or left. Doing so will cause the transmission to automatically perform synchronizer range shifting. Also, the low range indicator light comes on when in the Low range and goes out when in the High range.

High to Low Range Shifting

WARNING

- Never attempt to shift down at too high a vehicle speed as this will result in major damage to the driveline.
 - Some vehicles are fitted with a range shift over-speed protection device in conjunction with the vehicle manufacturer. Never assume a range over-speed device is fitted.
 - As a guide never shift from HIGH range to LOW range above 30 km/h (19 MPH) - not even if the vehicle is in neutral and the clutch pedal is depressed. This speed will vary based on the overall driveline configuration.

CAUTION

- Always use the clutch when making up shifts or down shifts. Premature synchronizer failure can result from not using the clutch.
- Always select an initial starting gear that provides sufficient reduction for load and terrain.
- Never slam or jerk the shift lever to complete gear engagement.
- Never coast with the shift lever in the neutral position.
- Never downshift at too high of a road speed.
- Never shift to crawler gear (C) while the vehicle is moving.
- Never select reverse gear while the vehicle is moving.

**Model with ES11109 Model Manual
Transmission V**

→ Refer to page 4-50

Model with ES11109 Model Manual Transmission V

Fully understand how to operate the gearshift lever and form a habit of operating it correctly.

Operation Method



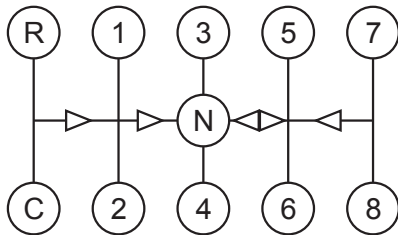
CAUTION

- Never shift to crawler gear (C) while the vehicle is moving.

Initial Start-Up

Before starting the vehicle, always be seated in the driver's seat, move the shift lever to neutral, and depress the master clutch fully.

Before moving a vehicle, make sure you understand your shift pattern configuration.



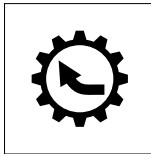
1. Make sure the shift lever is in neutral, the range section is in LOW, and the parking brakes are set.
2. Turn on the key switch. Start the engine.
3. Build up the air pressure to cut off.
4. Apply the service brakes.
5. Depress the clutch pedal to the floor.
6. Move the shift lever to the desired initial gear.
7. Release the parking brakes.
8. Slowly release the clutch pedal and apply accelerator.

Upshift

1. Fully depress the clutch pedal. Move the shift lever to the next desired speed.
2. Release the clutch pedal.
3. Accelerate the vehicle.
4. Continue upshifting to 4th speed.

Range Shift Low to High (4th to 5th)

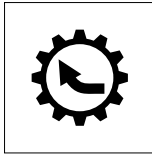
1. When in the last LOW range gear position (4th) and ready for the next upshift, with the engine / vehicle speed at a point that will allow the vehicle to accelerate.
2. Release the accelerator.
3. Fully depress the clutch pedal. Move the shift lever to neutral.
4. Move the shift lever fully RIGHT for a short period - doing this will trigger the range valve to automatically shift the transmission to HIGH range.
5. Allow the shift lever to return to its natural position.
6. With the clutch still depressed shift to 5th speed.
7. Release the clutch and apply the accelerator. When switching to the high range is completed, the low range indicator light goes out.
8. Continue upshifting to 8th speed.

Low range indicator light**Downshift**

1. Fully depress the clutch pedal, move the shift lever to the next desired speed.
2. Release the clutch pedal.
3. Continue downshifting to 5th speed.

Range Shift High to Low (5th to 4th)

1. When in the last HIGH range gear position (5th) release the accelerator.
2. Fully depress the clutch pedal. Move the shift lever to neutral.
3. Move the shift lever fully LEFT for a short period - doing this will trigger the range valve to automatically shift the transmission to LOW range.
4. Allow the shift lever to return to its natural position.
5. With the clutch still depressed shift to 4th speed.
6. Release the clutch. When the switching to the low range is completed, the low range indicator light comes on.
7. Slow the vehicle and continue downshifting.

Low range indicator light

Antilock Brake System (ABS) 

Wheels may lock causing a skid during sudden braking or when braking on a snowy or otherwise slippery road. The ABS prevents the wheels from locking during braking by sensing a skid and thus helps maintain directional and control stability of the vehicle. However, even with the ABS, difficulties resulting from driving and stopping exceeding safe limits cannot be avoided. It is your responsibility to drive safely.

**CAUTION**

- The braking distance on slippery road surfaces is longer than that on a normal dry paved road even with an ABS-equipped vehicle. The braking distance can become even slightly longer in deep snow and on a gravel road when the ABS works than when it does not work. Therefore, always be aware of the road and tire conditions (tire type and wear condition), observe safe driving habits, and drive while keeping a safe following distance.
- ABS does not prevent accidents if you do not drive safely with current road conditions in mind. Drive the vehicle at a safe speed.
- Install tires of the specified size, same brand and same tread design (including winter tires) on all wheels. If different tires are installed, the braking distance becomes longer and directional control stability of the vehicle decreases. This is very dangerous.
- The steering wheel during sudden braking (when the ABS is working) gives you a feeling slightly different than it does when the brakes are not applied. Operate the steering wheel carefully keeping this in mind.
- ABS operation consumes the brake system air. When the air pressure drops and the air pressure warning light and the buzzer are activated, immediately stop the vehicle at a safe place and wait for the required air pressure to be recovered before driving.

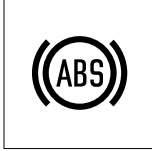
**ADVICE**

- Driving in sand or mud, or on a muddy road may adversely affect the brakes and ABS sensors. Wash the vehicle to remove sand and mud after operating the vehicle in sandy or muddy conditions.
- Before washing the vehicle, provide necessary protection to prevent water from being splashed on the ABS components (sensors and actuators). Especially when using high-pressure washing, be careful not to allow water to be directly sprayed onto the ABS components and their harness connectors.

**NOTE**

[These are not signs of ABS malfunction]

- Soon after you start the engine, the sound of valve working may be heard from the rear of the vehicle or underside of the cab. This sound is from a self-check by the ABS system and is normal.
- When ABS is properly operating, vibration is felt on the steering wheel or a mechanical operating sound is heard.
- When ABS is activated while the exhaust brake is in operation, the exhaust brake may disengage.
- ABS is more likely to activate when the brakes are applied during cornering or driving over a bump. This is because inside wheels or wheels that have gone over the bump tend to lock.
- ABS is not activated immediately after starting the vehicle. It is activated only when the vehicle speed reaches approx. 10 km/h (6 MPH). ABS operation is inactive when the vehicle speed reduces to approx. 5 km/h (3 MPH).

ABS Operation Indications and Signs**ABS warning light****Operation Indications of ABS**

When the starter switch is placed into the "ON" position, the ABS warning light comes on and then goes out in approx. 2 seconds. The ABS is normal if the warning light goes out.

Operation Signs of ABS

When ABS is activated, slight vibration is transmitted to the steering wheel and operating sound can be heard from the ABS components.

**NOTE**

- If the ABS warning light does any of the following, the ABS may be faulty. Please contact the nearest Isuzu Dealer.
 - The ABS warning light comes on during driving.
 - The light does not come on when the starter switch is placed into the "ON" position.
- Even if a problem has occurred with the ABS, the regular brakes still work normally. However, ABS will not operate.

ABS Warning Light 

→ Refer to page 4-18


Precautions for Driving an ABS-Equipped Vehicle

ABS is not a device that enables driving and stopping under conditions exceeding safe driving limits. It is your responsibility to drive safely.



CAUTION

- The braking distance on slippery road surfaces is longer than that on a normal dry paved road even with an ABS-equipped vehicle. When ABS is activated in the following road surface conditions, the braking distance may be slightly longer compared to that of vehicles not equipped with an ABS. Therefore, always be aware of the road and tire condition (tire type and wear condition), observe safe driving habits, and drive the vehicle while keeping a safe following distance.
 - Driving on a gravel road and deeply snow-covered road
 - When tire chains are used
 - When driving over road joints or steps such as cat's-eyes
 - When driving on a bumpy road, stone-paved road or track
 - When driving on an iron plate or manhole lid
- ABS does not work for wheel skid during a standing start, acceleration and cornering which do not involve braking. On a very slippery icy road, tires may lose their grip and the steering wheel operation may not be able to control the vehicle's direction, resulting in very unstable driving. Always drive the vehicle observing a safe speed well matched with both road surface and tire conditions, and avoid sudden braking.
- If powerful engine braking is applied on a very slippery icy road, the drive wheels may be locked (the ABS then does not work), resulting in loss of vehicle control. If this happens with a manual transmission vehicle, disengage the clutch or place the gearshift lever into "N" to prevent engine braking from acting on the drive wheels. Then, drive the vehicle with the gearshift lever placed in an appropriate gear.
- ABS operation consumes the brake system air. When the air pressure drops and the air pressure warning light and the buzzer are activated, immediately stop the vehicle at a safe place and wait for the required air pressure to be recovered before driving.
- When ABS is activated, slight vibration and pull to one side may be felt on the steering wheel (especially when the road surface condition is different between right and left wheels). In addition, an operating sound is produced from the ABS actuators. This does not indicate any abnormal condition. Stay calm and operate the steering wheel properly.

Power Take-Off (PTO) 

PTO is a device that is used to provide engine power to special equipment directly from the engine or through the transmission. This manual describes operation of the PTO, but for operation of any special equipment other than the PTO switch, please consult the separate Instruction Manual for the Special Equipment.

When Operating the PTO**CAUTION**

- Before operating the PTO, make sure that there are no persons or objects around and above the vehicle.
- Operate the PTO in a level surface.
- When operating the PTO and special equipment, be sure to place the gearshift lever into the "N" position, firmly pull the parking brake lever and keep the brake pedal fully depressed with your right foot.
- Do not operate the PTO or special equipment while driving.
- For the operation method of special equipment, consult the separate Instruction Manual for Special Equipment.
- Do not shift gears when the PTO is engaged.

**NOTE**

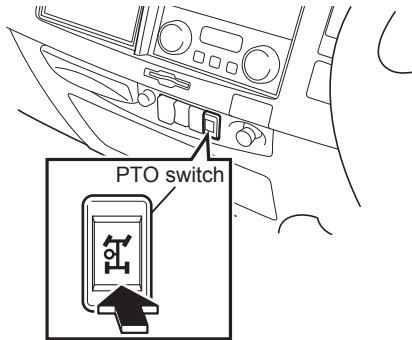
[Fast idle control]

- A supplementary function to warm up the engine by automatically increasing the idling speed while the engine is cold.

PTO Switch

This is a switch to engage and disengage the PTO. When PTO is engaged, the PTO indicator light comes on.

When engaging the PTO, be sure to stop the vehicle before operating the switch.



PTO indicator light



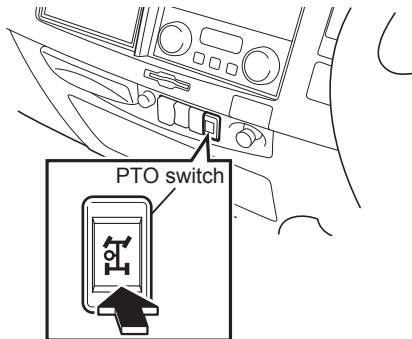
Engaging PTO

1. Set the parking brake and place the gearshift lever into "N".
2. Fully depress the clutch pedal, pause for a moment, and press the PTO switch to the "ON" position. Make sure that the PTO indicator light comes on and gently engage the clutch.

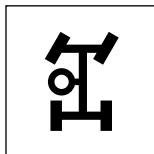


CAUTION

- Be sure to disengage the clutch before operating the PTO switch; otherwise damage to the gears will result.



PTO indicator light



Disengaging PTO

Fully depress the clutch pedal, press the PTO switch to the "OFF" position, and then make sure the PTO indicator light is off.

Dump Control Lever

The dump control lever is used to raise or lower the dump body.

This section describes how to use the dump control lever of a dump truck.

For operation of the controls other than the dump control lever, please refer to the separate "Instruction Manual for Dump Truck".



CAUTION

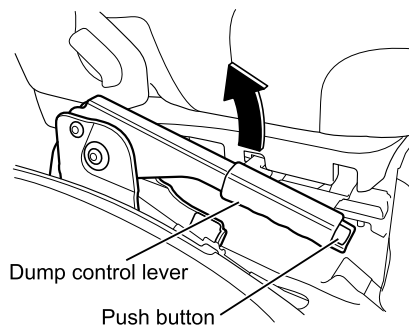
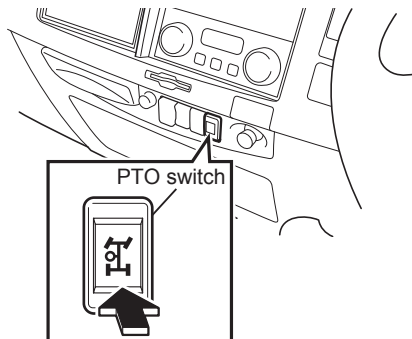
- While driving and during maintenance of the vehicle, be sure to place the dump control lever in the "down" position. Make sure the dump control lever is held in position by the lock button and does not move.
- When climbing into and out of the cab, never hold the dump control lever. Doing so is very dangerous should the lever be moved accidentally.

Basic Operation of Dump Control Lever

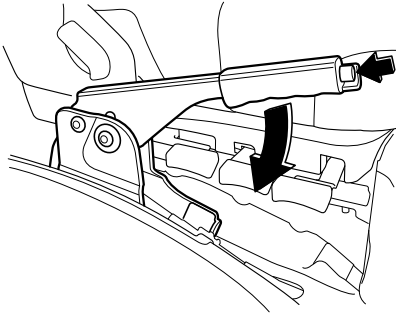
To Raise the Dump Body

1. Press the PTO switch to engage the PTO.

PTO Switch → Refer to page 4-58



2. Pull up the lever while pressing the push button. The dump body will rise. The lever is automatically locked when the dump body reaches the fully raised position.

**To Lower the Dump Body**

Move the lever down while pressing the push button.

**NOTE**

- For handling and more detailed instructions about the dump body, please refer to the dump body manufacturer's Instruction Manual.

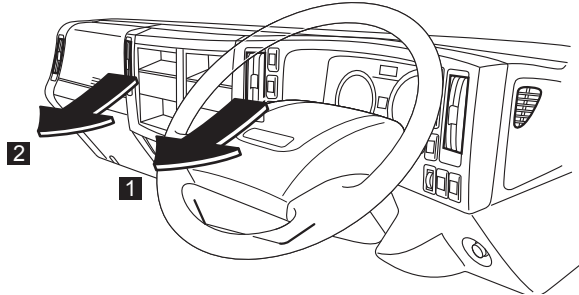
COMFORT AND CONVENIENCE

5

• Air Outlets	5-2
• Ventilator <input type="checkbox"/>	5-4
• Manual Air Conditioner/Cooler <input type="checkbox"/>	5-6
• Interior Lights	5-15
• Sun Visor	5-16
• Cigarette Lighter	5-16
• Ashtray	5-18
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• Small Article Storage Pocket	5-19
• Card Holder	5-19
• Glove Compartment with Lid <input type="checkbox"/>	5-20
• Glove Compartment without Lid <input type="checkbox"/>	5-21
• Center Console Box <input type="checkbox"/>	5-21
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• Operating Tips for the Audio	5-24
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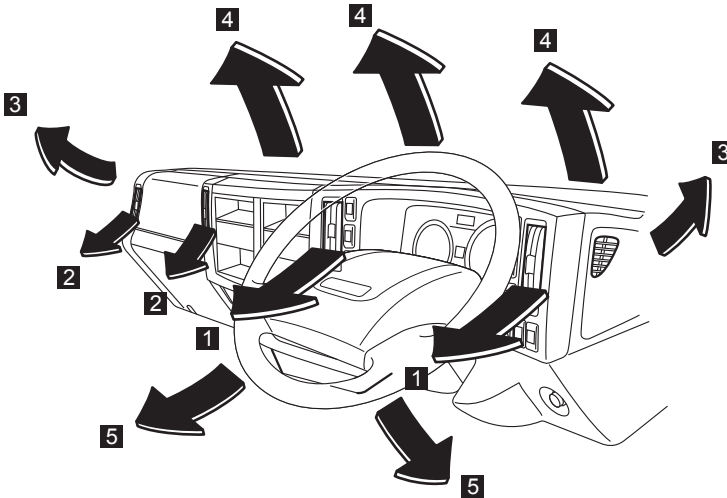
Air Outlets

Ram Air Vent Model



No.	Air outlets	Features
1	Driver side outlet	Air flow direction is adjustable with the lever.
2	Passenger side outlet	Air flow direction is adjustable with the lever.

Other Models

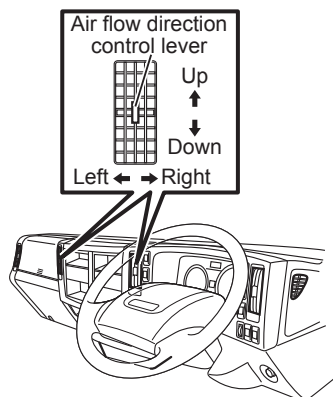


No.	Air outlets	Features
1	Driver side outlet	Air flow direction is adjustable with the lever.
2	Passenger side outlet	Air flow direction is adjustable with the lever.
3	Door windows	Air is delivered towards the door window.
4	Windshield	Air is delivered towards the windshield.
5	Foot outlet	Air is delivered towards the feet.

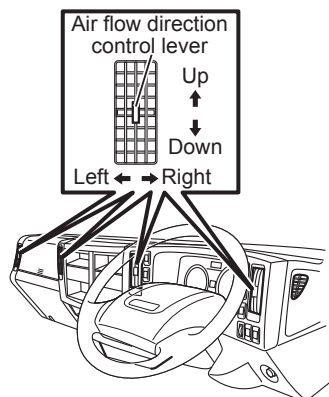
Air Flow Direction Control Lever

Use the control lever to adjust the air flow direction from the outlet. To close the outlet, move the lever down.

Ram air vent model



Other models



NOTE

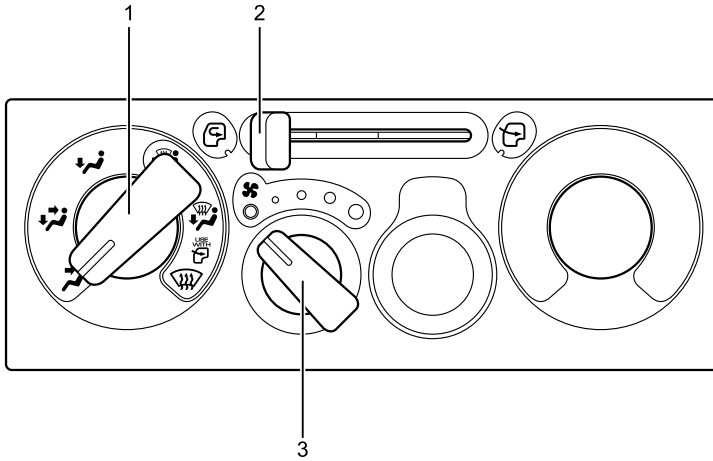
- Lower the control lever to adjust the direction of air blowing from outlets 1 (driver side) and 2 (passenger side) away from the direction of the driver or passenger.

5-4

COMFORT AND CONVENIENCE

Ventilator

How to Use the Controls



No.	Name
1	Outlet selector knob
2	Air source lever

No.	Name
3	Fan speed control knob

1. Outlet selector knob

Knob position	Air delivery	Outlet
	Face	Air flows through outlets 1 and 2.
	Bi-level	Air flows through outlets 1, 2 and 5.
	Feet	Air flows through outlets 5.
	Feet, door windows and windshield	Air flows through outlets 5 and some through outlets 3 and 4.
	Feet, door windows and windshield	Air flows through outlets 5 and air of greater volume than in position "
	Door windows and windshield	Air flows through outlets 3 and 4.

**NOTE**

- The "☞" sign advises you to place the air source lever in the outside air ventilation position when using the "☞", "☞☞", "☞☞☞", "☞☞☞☞" position to defog the windshield.

2. Air source lever

Lever position	Purpose	
	Outside air ventilation	Use this position to ventilate the cab interior. (This position should be normally selected.)
	Inside air recirculation	Use this position to prevent dusty or otherwise contaminated outside air from entering the cab. (such as in a tunnel or in congested traffic)

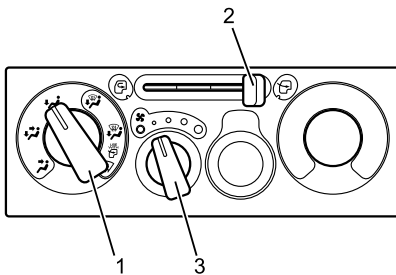
**NOTE**

- Extended use of the inside air recirculation position causes the windshield and windows to fog up easily, making visibility poor.

3. Fan speed control knob

The fan speed can be adjusted to any of the 4 speeds available.

Ventilation

**Outside Air Ventilation**

Turn the outlet selector knob (1) to the preferred position. Move the air source lever (2) to the "☞" position.

Adjust the fan speed control knob (3) to the preferred speed.

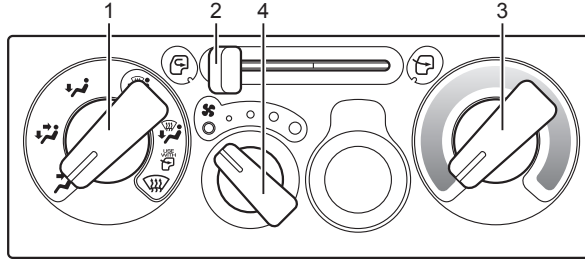
5-6

COMFORT AND CONVENIENCE

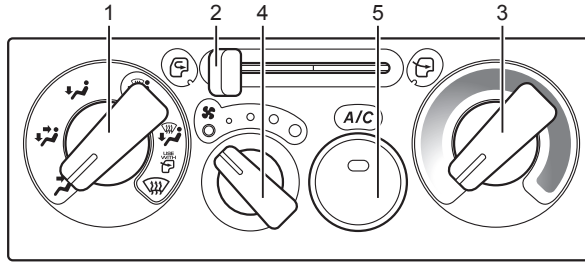
Manual Air Conditioner/Cooler V

How to Use the Controls

Model without air conditioner and cooler










Model with cooler







No.	Name
1	Outlet selector knob
2	Air source lever
3	Temperature control knob

No.	Name
4	Fan speed control knob
5	Air conditioning switch (A/C switch)



1. Outlet selector knob

Knob position	Air delivery	Outlet
	Face	Air flows through outlets 1 and 2.
	Bi-level	Air flows through outlets 1, 2 and 5.
	Feet	Air flows through outlets 5.
	Feet, door windows and windshield	Air flows through outlets 5 and some through outlets 3 and 4.
	Feet, door windows and windshield	Air flows through outlets 5 and air of greater volume than in position "  " flows through outlets 3 and 4.
	Door windows and windshield	Air flows through outlets 3 and 4.

**NOTE**

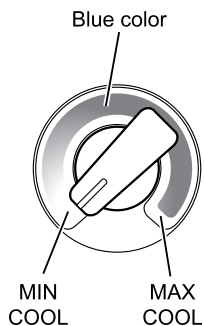
- The "" sign advises you to place the air source lever in the outside air ventilation position when using the "", "", "" position to defog the windshield.

2. Air source lever

Lever position	Purpose	
	Outside air ventilation	Use this position to ventilate cab interior. (This position should be normally selected.)
	Inside air recirculation	Use this position to prevent dusty or otherwise contaminated outside air from entering the cab. (such as in a tunnel or in congested traffic.)

**NOTE**

- Extended use of the inside air recirculation position causes the windshield and windows to fog up easily, making visibility poor.

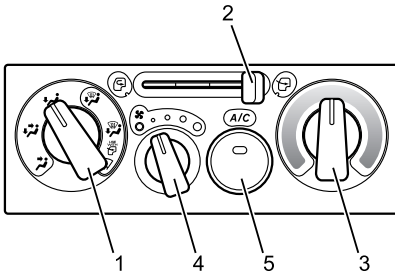


3. Temperature control knob
[Cooler]
Use this knob to select the preferred cab interior temperature. Turn the knob the way counterclockwise to minimize cooler operation. And turn the knob the way clockwise to maximize cooler operation.
4. Fan speed control knob
The fan speed can be adjusted to any of the 4 speeds available.
5. Air conditioning switch (A/C switch)
Press this switch to use the air conditioning system. The indicator light inside the switch will come on to show that the air conditioning system is in operation. The air conditioning system can also be used for dehumidifying while the heater is being used.

**NOTE**

- Even if the A/C switch is turned on, the air conditioning system will not operate when the fan speed control knob is placed in the stop position. Make sure that the fan speed control knob is in a position other than the stop position.
- Even in seasons when the air conditioning system is not used, occasionally operate the system for a few minutes with the engine running at a low speed in order to prevent poor lubrication of the system's components.

Ventilation

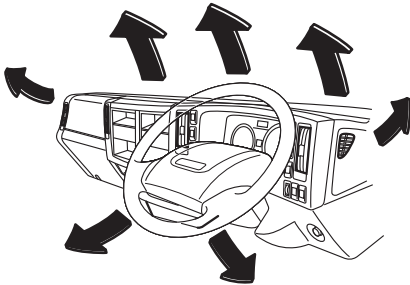
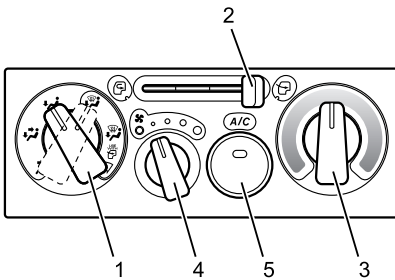


Outside Air Ventilation

Press the A/C switch (5) to the "OFF" position. Turn the outlet selector knob (1) to the preferred position. Move the air source lever (2) to the "☞" position. Set the temperature control knob (3) to the desired position.

Adjust the fan speed control knob (4) to the preferred speed.

How to Use the Heater



Normal Heating

Set the outlet selector knob (1) to the "☞" or "☞☞" "☞☞" position. Use the

"☞☞" position for warming your feet while defogging the windshield.

Set the air source lever (2) to the "☞" position.

Adjust the temperature control knob (3) and the fan speed control knob (4) to the desired positions.

To dehumidify the cab interior while heating, press the A/C switch (5) to the "ON" position.

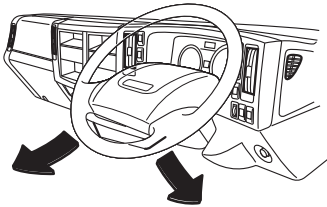
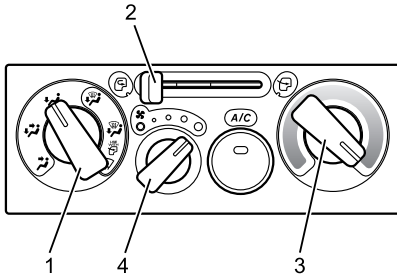


NOTE

- As the heater uses the heat from the engine coolant, its heating effect is weak when the engine coolant temperature is low. To increase the heating effect, increase the engine speed by turning the idling control knob.

Idling Control Knob

→ Refer to page 4-30



Maximum Heating

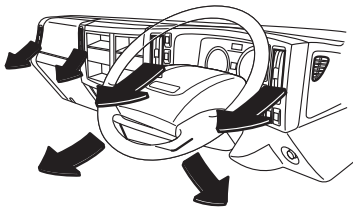
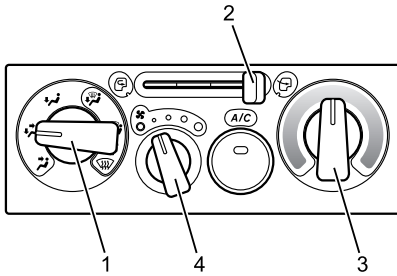
Turn the outlet selector knob (1) to the "فرد" position, set the air source lever (2) to the "☞" position, and turn the temperature control knob (3) fully towards the high temperature direction.

Set the fan speed control knob (4) to the maximum speed position.



NOTE

- Extended use of the inside air recirculation position causes the windshield and windows to fog up easily, making visibility poor.



Bi-level Heating

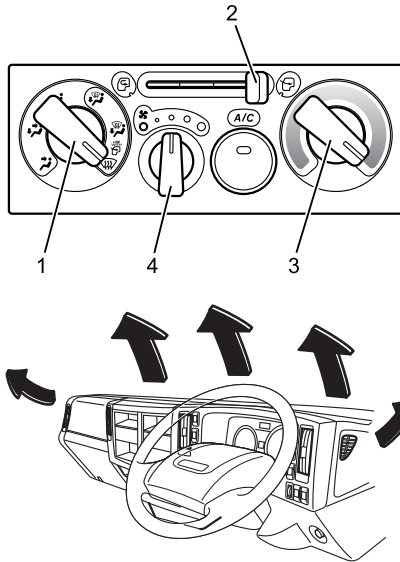
Set the outlet selector knob (1) to the "فرد" position.

Set the air source lever (2) to the "☞" position.

Set the temperature control knob (3) to the middle position.

Adjust the fan speed control knob (4) as desired.

Defogging and Defrosting the Windshield

**Defogging**

Set the outlet selector knob (1) to the "W" position.

Set the air source lever (2) to the "FR" position.

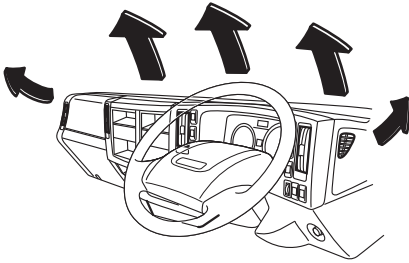
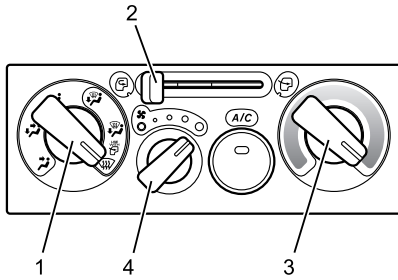
Turn the temperature control knob (3) to a high-temperature position according to your preference. For defogging in the summer months, set the temperature control knob (3) to any desired position.

Set the fan speed control knob (4) to any speed position (not the "OFF" position).

If your vehicle is equipped with an air conditioning system, using the dehumidifying effect of the system is very effective for defogging.

**NOTE**

- Do not use the maximum cooling position when operating the air conditioning system with the outlet selector knob (1) set to the "W" position. The outside surface of the windshield will get foggy, impeding forward visibility.



Defrosting

Set the outlet selector knob (1) to the "☃" position.

Set the air source lever (2) to the "☃" position.

Turn the temperature control knob (3) fully towards the high-temperature direction.

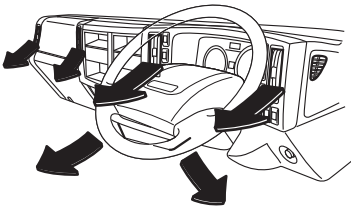
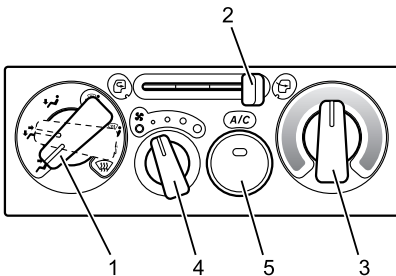
Set the fan speed control knob (4) to the maximum speed position.



NOTE

- After defrosting, be certain to return the air source lever (2) to the "☃" position. Failure to do so will cause the windshield to fog up, impeding forward visibility.

Cooling (Manual A/C or Cooler)



Normal/Moderate Cooling

This setting is suitable for extended periods of cooling or moderate cooling.

Press the A/C switch (5) to the "ON" position.

Set the outlet selector knob (1) to the "❄" position for normal cooling or set it to the "❄" position for moderate cooling.

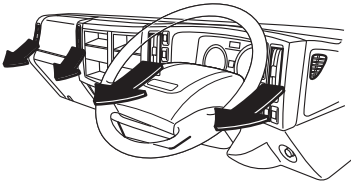
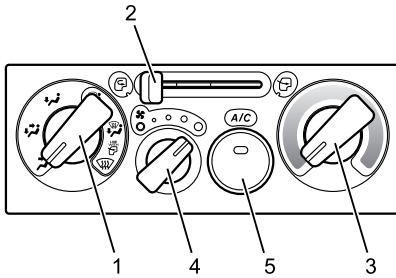
Adjust the temperature control knob (3) to the desired position.

Adjust the fan speed control knob (4) as desired.



NOTE

- When using the air conditioning system with the engine idling in extremely hot weather, place the air source lever (2) in the "☃" position.



Maximum Cooling

[Manual A/C]

Set the outlet selector knob (1) to the "❏" position.

Press the A/C switch (5) to the "ON" position. Move the air source lever (2) to the "❏" position.

Turn the temperature control knob (3) fully towards the low-temperature direction.

Set the fan speed control knob (4) to the maximum speed position.

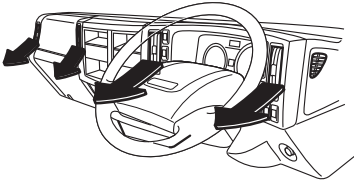
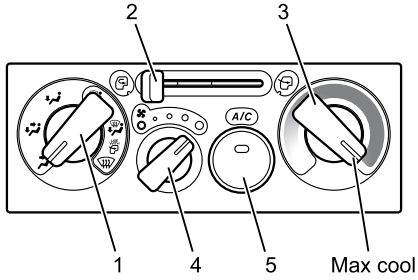


NOTE

- After prolonged parking under the sun, open the windows or doors to ventilate the cab interior and release the heat before turning the air conditioning system on.
- Prolonged use of the air conditioning system in the maximum cooling setting will make the interior air become stale. Occasionally move the air source lever (2) to the outside air ventilation position or open the windows to allow fresh air into the cab.
- During cooling operation, mist may appear coming out of the air outlets. This results from quick cooling of humid air, and does not indicate any problem.

5-14

COMFORT AND CONVENIENCE



[Cooler]

Set the outlet selector knob (1) to the "↗" position.

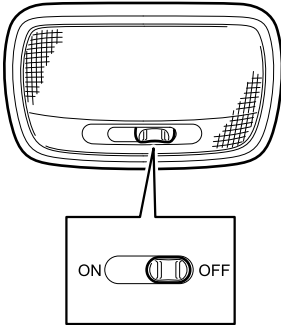
Press the A/C switch (5) to the "ON" position. Move the air source lever (2) to the "↖" position.

Turn the cooler control knob (3) fully towards the Max cool direction.

Set the fan speed control knob (4) to the maximum speed position.

Interior Lights

Dome Light



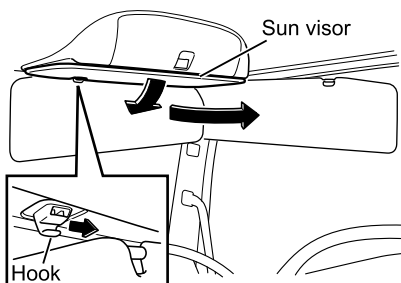
The dome light operates regardless of the starter switch position. So that the dome light is controlled by "DOOR" operation, move the dome light switch in half way between the "ON" and "OFF" positions.

ON : The light stays on regardless of the doors being open or closed.

DOOR : The light turns on when any of the doors is opened or the doors are unlocked with the remote control unit.

OFF : The light stays off regardless of the doors being opened or closed.

Sun Visor



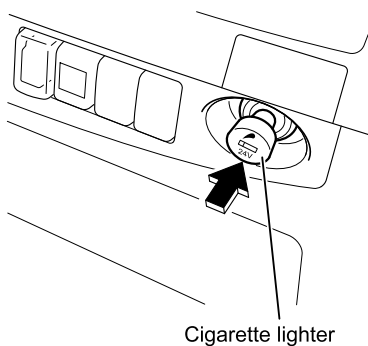
The sun visor protects your eyes in strong sunlight. Use it when sunlight is too bright. To reduce side glare, unhook the sun visor and swing it around to the side.



CAUTION

- For safety, make sure to fold up the sun visor after use.

Cigarette Lighter



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

1. Push the lighter in until it locks.
2. When the heater element becomes hot, the lighter pops out to the original position. Pull out and use it.



WARNING

- As there is a burn hazard, do not touch the heater element when using the cigarette lighter.
- Do not leave your finger on the cigarette lighter once it has been pushed in. The lighter will overheat and be damaged or cause a fire.
- If the cigarette lighter does not pop out after more than 20 seconds, the lighter is defective. Pull out the lighter by hand immediately.
- Do not leave the vehicle with the cigarette lighter pushed in. This could cause a fire.
- Do not bend the cigarette lighter. A bent lighter does not function properly and is dangerous.

**CAUTION**

- To substitute the cigarette lighter socket for an accessory power outlet, consult the nearest Isuzu Dealer.
- If the cigarette lighter socket was used as an accessory power outlet by necessity, the inside of socket may be deformed. When the cigarette lighter is used with the deformed inside, it may cause failures such as that the red-hot cigarette lighter pops out or it does not come out as it is pressed in.
- To use it once again as the cigarette lighter changing from the accessory power outlet, or to replace the broken cigarette lighter, use an Isuzu genuine part suitable for the vehicle. Do not use other cigarette lighters.
- When cleaning the cigarette lighter, do not use too much force. It may cause a deformation.
- Remove ashes and dirt inside the cigarette lighter socket and on the heater portion of cigarette lighter.

**ADVICE**

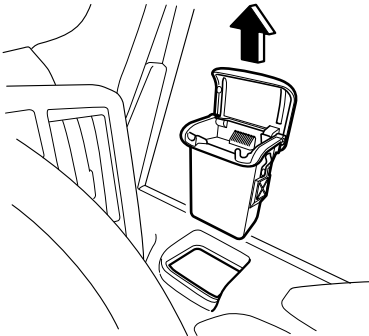
- Do not use the cigarette lighter while the engine is not in operation. As it consumes a lot of electricity, doing so can cause a dead battery.

Ashtray

WARNING

- After using the ashtray, be sure to close it. If a cigarette butt has not been extinguished completely, other butts in the ashtray may catch fire.
- Do not leave the ashtray full of cigarette butts.
- Put matches and cigarette butts in the ashtray only after they are fully extinguished.
- Never throw lit cigarette butts out the window. They not only litter the road and around but also can cause a fire.

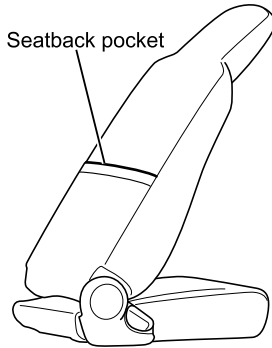
Driver's and Passenger's Ashtrays



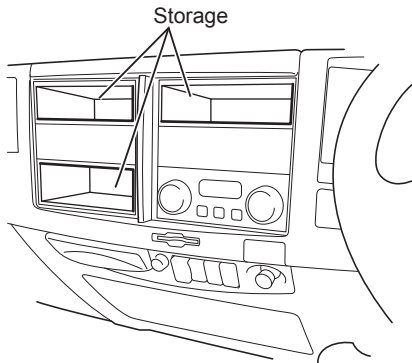
Open the lid to use.

Put out lit cigarettes on the crush-out tab.

To empty the ashtray, hold the lid and pull the ashtray up and out.

Seatback Pocket (Driver's Side)

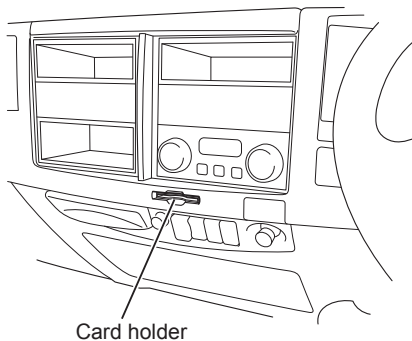
Use it for storing items such as vehicle registration documents or owner's manuals.

Small Article Storage Pocket

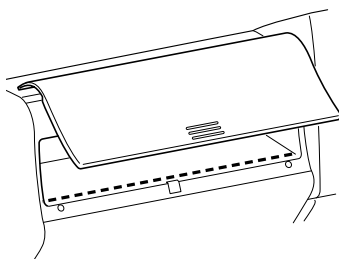
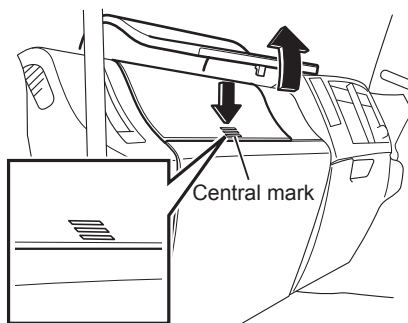
Use them for storing small articles.

**CAUTION**

- Do not leave eyeglasses or lighters inside the cab. Lighters may explode and plastic lenses or frames may deform or crack if the interior temperature becomes very hot.

Card Holder

Use this to hold your cards.

Glove Compartment with Lid V


Press on the central mark to lock and unlock the lid.

CAUTION

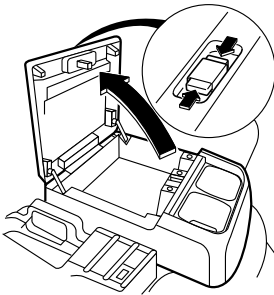
- For safety, close the glove box while driving. There is a risk of injury from the open lid or from items stored in the glove box.
- The glove box lid will automatically spring open when it is unlocked. Do not put your face or head near the lid.
- Do not leave eyeglasses or a lighter in the vehicle. Lighters may explode and plastic lenses or frames may deform or crack if the interior temperature becomes very hot.
- When closing the glove compartment lid, do not allow stored items to pass the line shown in the illustration. The glove compartment lid may break if it is closed when items inside have passed the line and are sticking out from the box.
- Store large documents such as vehicle registration documents or Owner's manuals that cannot be stored in the glove compartment in the pocket located on the rear side of the driver seat, or in the center console box, overhead shelf, or other location.

Seatback Pocket (Driver's Side)

→ Refer to page 5-19

Glove Compartment without Lid **CAUTION**

- Do not place a cup or something similar containing a beverage.
- Do not place anything in the way blocking the vision.
- Do not place anything that can fall when tilting the cab.

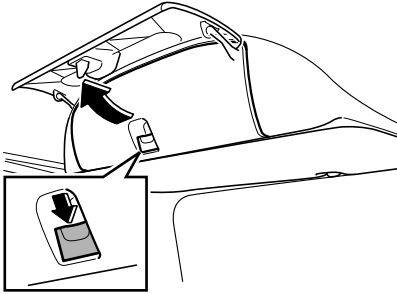
Center Console Box **2-seat model**

Squeeze the knobs on the lid to open. Use it for storing small articles.

There are cup holders in the front section of the center console.

CAUTION

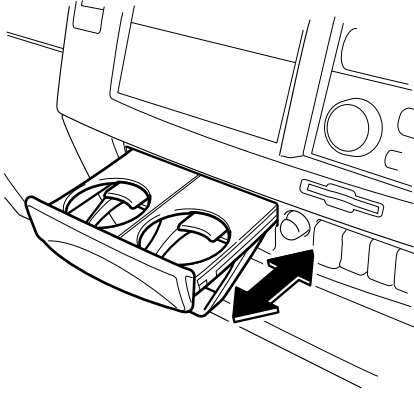
- Do not leave eyeglasses or lighters inside the cab. Lighters may explode and plastic eyeglass lenses or frames may deform or crack if the interior temperature becomes very hot.

Overhead Shelf

Hold down the knob on the lid to open. Use it for storing small articles.

**CAUTION**

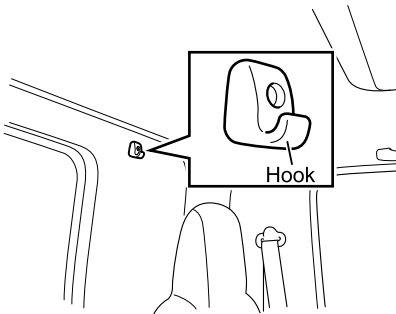
- Do not leave eyeglasses or lighters inside the cab. If the cab became hot, a lighter left there could explode and plastic eyeglass lenses or frames could deform or crack.

Cup Holder V

Pull towards you to open.

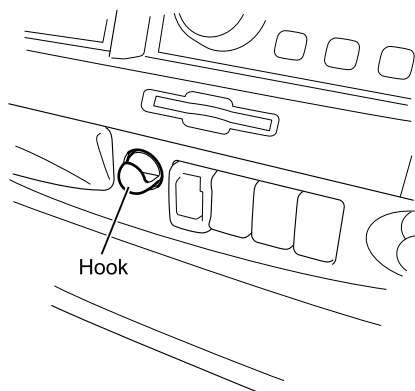
**CAUTION**

- Do not place a too-full in the cup holder. Spills could cause damage to the radio or other electrical circuits. If there is a spill, wipe it up immediately with a dry cloth.
- Do not tilt the cab with a filled cup in the cup holder. There may be a danger of the cup holder breaking if the weight on each holder exceeds 0.75 kg (26 oz).

Coat Hook

Use this to hang clothing.

Hook



This can be used to hold plastic shopping bags.



CAUTION

- Do not hang anything on the hook weighing over 3 kg (106 oz) or that may fall off while driving. Doing so may be dangerous.

Operating Tips for the Audio



CAUTION

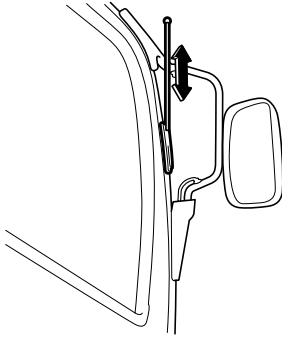
- Operate the radio or CD player only while the vehicle is stationary. Operating them while the vehicle is moving could cause an accident.
- Adjust the volume so that sound outside of the vehicle can be heard. If outside sound cannot be heard, accidents may be harder to avoid.
- Do not install a radio equipment antenna near the vehicle's radio antenna. This could cause unwanted noise on the radio or while playing a CD.



ADVICE

- Do not use the radio CD player for a long time when the engine is stopped. This may cause the battery to run out.
- Take care not to spill liquids, etc. on the radio or CD player.
- Do not disassemble or apply oil to radio or CD player.

Antenna



Pull the antenna out to its full length when using it.



ADVICE

- To prevent breaking the antenna, shorten it when passing through areas with low clearance or through a carwash.



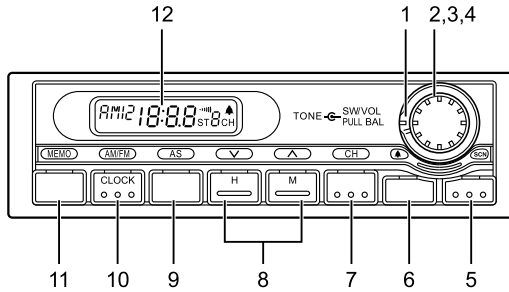
NOTE

[Radio reception]

- Compared with AM signals, FM signals are of better quality and compatible with stereo broadcasting. However, due to the nature of FM signals, conditions in which the quality of signals received in a moving vehicle may not be sustainable.
 - The directness of FM signal transmission
As FM signals are more strongly directional than AM signals, they are blocked easily by large objects such as mountains and buildings. Their reception area is much narrower than AM signals.
 - Sound loss
FM signals are reflected easily by objects, so when driving through urban areas, the sound may be interrupted or disturbed by noise.
 - Sound distortion
Simultaneous reception of direct signals from the radio station and reflected signals from buildings may cause flutter or noise disturbance.

AM/FM Radio v

The AM/FM radio can be used when the starter switch is in the "ACC" or "ON" position.



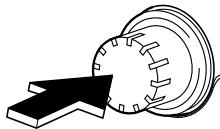
No.	Name
1	Tone control knob (TONE)
2	Power switch (SW)
3	Volume control (VOL)
4	Balance control (BAL)
5	Scan button (SCAN)
6	Alarm button
7	Channel button (CH)

No.	Name
8	Tuning buttons (v, ^)
9	Automatic storing button (AS)
10	Band selector button (AM/FM) Time adjusting button (CLOCK)
11	Memory button (MEMO)
12	Display

Control Panel

Turning the Power On

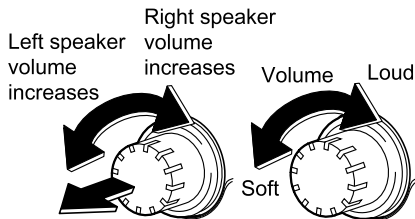
Press "SW" to turn the radio on. Press it again to turn it off.



Volume and Left-right Balance Adjustment

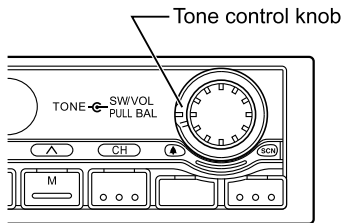
Turn the "VOL" control to adjust the volume.

Pull the "BAL" control out and turn it to adjust the left-right balance.



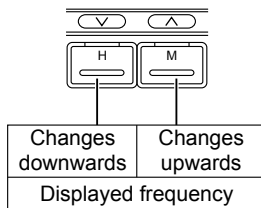
**ADVICE**

- Turning the power on or off with the volume set to maximum may damage the equipment and your hearing. Set the volume to a moderate level.

**Tone Adjusting**

Turn the "TONE" control knob.

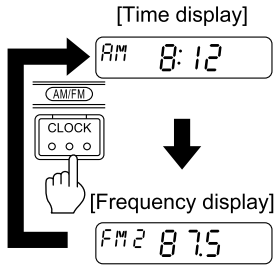
Turning clockwise emphasizes the treble, and turning it counterclockwise emphasizes the bass.

**Tuning**

1. Press the "AM/FM" button to select the band.
2. Each time the tuning button is pressed, the frequency changes by 1 kHz (AM) or 0.1 MHz (FM). Check the adjustments on the display.

**NOTE**

- When the displayed frequency reaches the highest frequency (1,629 kHz for AM, 108 MHz for FM) with the upward tuning button, it will return to the lowest frequency (522 kHz for AM, 87.5 MHz for FM). When the lowest frequency has been reached with the downward tuning button, it will return to the highest frequency.
- Program your preferred radio stations to the preset buttons in advance to conveniently use them during driving.



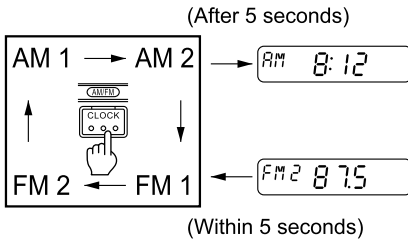
Display Selection

Each time you press the "AM/FM" button, the display toggles between the "time" indication and "frequency" indication.



NOTE

- If the "AM/FM" button is not pressed in 5 seconds, the display will return to the time indication.



AM/FM Band Selection

With the display indicating the time, press the "AM/FM" button. The display will change to the frequency indication. Press the "AM/FM" button again within 5 seconds to select the desired band. The display will cycle through the bands (AM1, AM2, FM1 and FM2) each time you press the button.



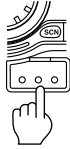
NOTE

- If the "AM/FM" button is not pressed in 5 seconds, the display will return to the time indication.

Radio Operation

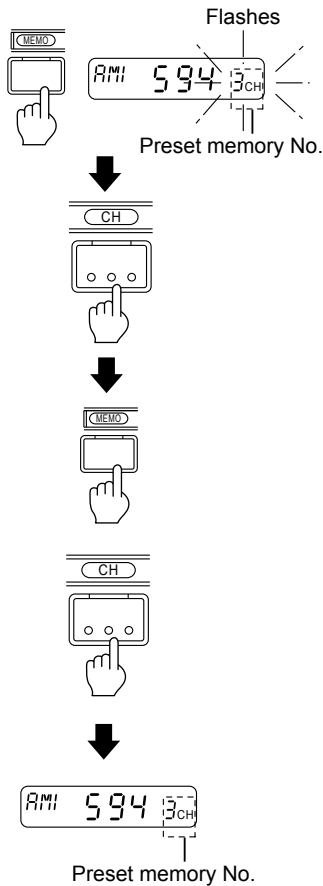
Scan Tuning

1. Press the "AM/FM" button to select the band.
2. Pressing the "SCAN" button starts an automatic scan-seek tuning upwards through frequencies. If the radio tunes to a receivable station, it receives the station for 5 seconds before the radio starts another scan-seek tuning. If you press the "SCAN" button during an automatic scan-seek tuning, the automatic tuning will be cancelled and the radio continues to receive the last tuned station.



NOTE

- The display will show "ST" when the radio is receiving a stereo broadcast.



Programming Stations to Preset Buttons

A maximum of 6 radio stations can be stored in the channels in each of the AM1, AM2, FM1 and FM2 bands.

1. While receiving a radio station, press the "MEMO" button to go to the storing-in-memory mode. The channel number will flash on the display.
2. Select the desired channel to which you want to program the station with the "CH" button. Press the "MEMO" button again to complete the presetting.

After presetting radio stations in the memory, press the "CH" button to receive any of them.

The display will show the frequency of the station now being received and the corresponding channel number.

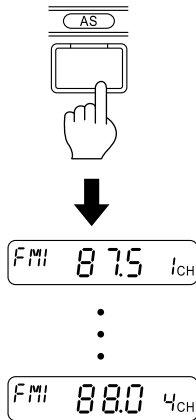


NOTE

- When the reception is poor for the preset radio stations, you may use the automatic storing function. The function allows the 6 stations with best reception in the area where you are driving to be automatically programmed to channels 1 to 6 with the lowest frequency station assigned to channel 1.

**NOTE**

- The radio stations in memory will be erased when the power supply is interrupted to change the battery, for example. You must then reprogram the stations.
- Use the automatic storing function if reception of the preset memory stations is poor.

**Automatic Storing Function**

The automatic storing function selects the 6 regional radio stations with the strongest signals and stores them in memory, arranging them in the order of ascending frequency.

1. Press the "AS" button for more than 2 seconds.

The radio starts tuning to stations in the currently selected band (AM1, AM2, FM1 or FM2).

2. When the radio completes storage into memory, it beeps. Frequency scan seek will end after one cycle.
3. For tuning, press the "CH" button and select any of the stations programmed to channels "1" to "6".

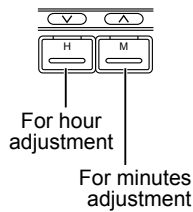
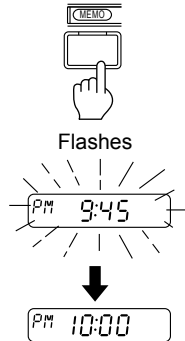
**NOTE**

- The preset stations in memory of the currently selected band will be erased if the automatic storing function is used.

Adjusting the Time

Press the "CLOCK" button for more than 2 seconds. The "time-of-day" indication on the display will flash, indicating that the time adjusting mode is active.

Time is shown in the 12 hour clock. Afternoon is identified by "PM".



Setting the Clock to Time Signal

Press the "MEMO" button to set your clock to time signal. The currently displayed time will be reset to the nearest hour. If the minutes are less than 30, the hour will remain unchanged. If the minutes are 30 or more, the hour will advance by one.

Adjusting the Time

While in the time adjustment mode, press the tuning buttons (the ∨-marked button adjusts the hours; the ∧-marked button adjusts minutes) to change the time.

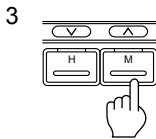
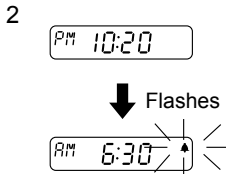
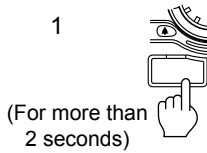
After adjusting, press the "CLOCK" button for less than 2 seconds. The adjusted time will then be set.



NOTE

- If the time adjustment operation is suspended for 15 seconds or more, the time adjustment mode will be cancelled. Restart the process from the beginning.
- The time display will flash when the power supply is disconnected and then reconnected due to replacing the battery for example. The flashing will stop when the time is adjusted.

Setting the Alarm



The alarm will sound at the time you have set. To set the alarm, you must press and hold the alarm button for 2 seconds or more to make the time display and the "⏰" icon flash.

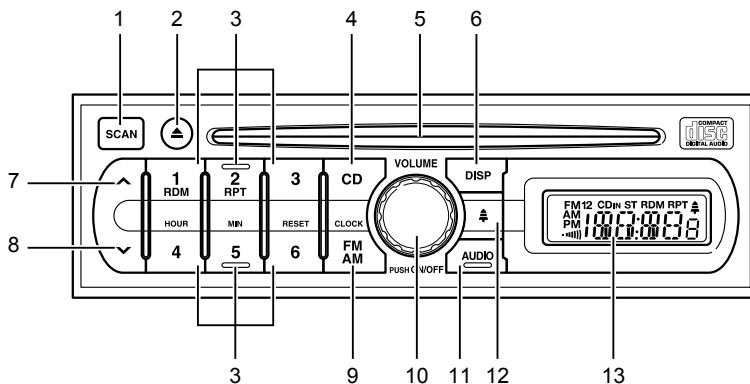
1. Press the alarm button for 2 seconds or more and check that the time display is flashing. Then, press the tuning buttons (the ∨-marked button adjusts hours; the ∧-marked button adjusts minutes) to change the time.
2. Change the display to the desired time, and wait until the current time returns.
3. Press the alarm button and check that the "⏰" icon is steadily on. To stop the alarm, press any button.

**NOTE**

- If the time adjustment operation is suspended for 15 seconds or more, the time adjustment mode will be cancelled. Restart the process from the beginning.
- To cancel the alarm, press the alarm button. Make sure the "⏰" icon is no longer displayed.
- If the vehicle is not to be used for an extended period, cancel the alarm.

CD Player (with AM/FM Radio) V

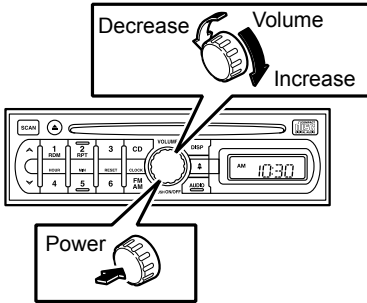
The CD player can be used when the starter switch is in the "ACC" or "ON" position.



No.	Name
1	Scan button
2	Eject button
3	Preset buttons
4	CD button
5	CD Slot
6	Display button
7	Tuning button

No.	Name
8	Tuning button
9	AM/FM button (Band selector/Clock adjust button)
10	Power switch/Volume control knob
11	Audio button
12	Alarm button
13	Display panel

Control Panel

**Turning the Power On**

Press the "Power switch" to turn the power on. Press it again to turn the power off.

Volume Adjustment

Turn the "Volume control knob" to adjust the volume.

Turn the knob to the right to increase the volume, and to the left to decrease the volume.

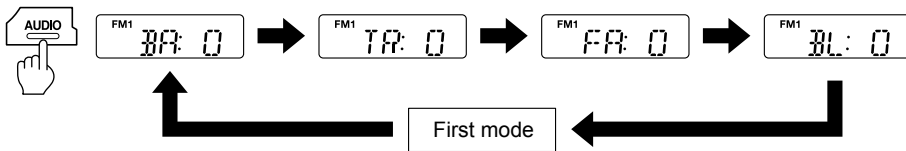
**ADVICE**

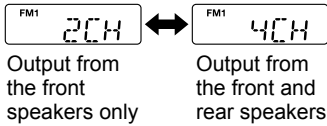
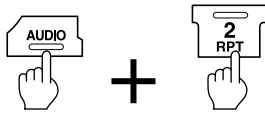
- Turning the power on or off with the volume set to maximum will damage the equipment and your hearing. Set the volume to a moderate level.

Adjusting the Tone/Balance

Each time you press the "AUDIO" button, the adjustment mode cycles through Bass Adjustment (BA), Treble Adjustment (TR), Front-rear Fading Adjustment (FA), Left-right Balance Adjustment (BL), and then returns to the first mode (cancellation of the adjustment mode).

Use the tuning button " \wedge \vee " to adjust the desired setting. Front-rear Fading Adjustment (FA) does not work when you select the 2-channel speaker system.





Speaker Configuration Selection

Press the preset button "2/RPT" while pressing the "AUDIO" button. You will hear the "beep", and the speaker configuration will switch between 2-channel and 4-channel systems.

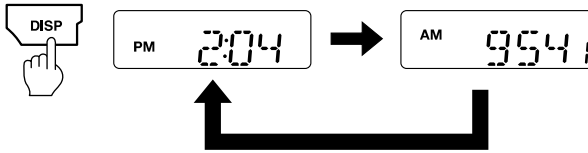


NOTE

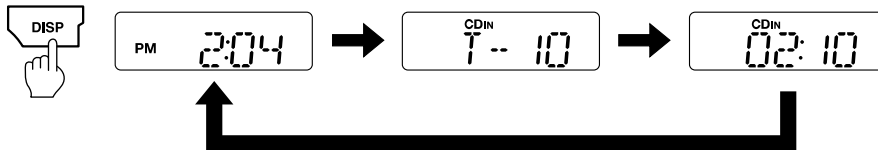
- The CD speaker configuration will change to the 4-channel system (default setting) when the battery is disconnected. If having selected the 2-channel speaker system, reset the configuration.

Display Selection

While you are listening to the radio, the display will change to show the "time", "frequency", and then "time" each time you press the "DISP" button.



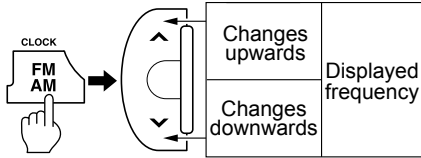
While you are listening to a CD, the display will change to show the "time", "CD track number", and then "playtime" each time you press the "DISP" button.



NOTE

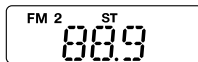
- The frequency, CD track number or playtime display returns to the time display after 5 seconds.

Listening to the Radio



Tuning

1. Press the "Power switch" or AM/FM button "AM/FM/CLOCK" to turn the power on.
2. Press the AM/FM button "AM/FM/CLOCK" to select the band. Each time the AM/FM button is pressed, the band changes between, FM1, FM2 and AM.
3. Each time the tuning button "**▲ ▼**" is pressed (for less than 0.5 sec.), the frequency changes by 1 step (manual tuning).
Check the display to make adjustments.
Press and hold the tuning button "**▲ ▼**" (for 0.5 seconds or more) to start scan tuning (automatic tuning).



NOTE

- When the displayed frequency reaches the highest frequency, it will return to the lowest frequency. When the lowest frequency has been reached, it will return to the highest frequency.
- When the radio is tuned to a stereo broadcast, "ST" is indicated in the display.
- Program your preferred radio stations to the preset buttons in advance to conveniently use them during driving.

Reception frequency

AM	FM
531 - 1,629 kHz (9 kHz step)	87.5 - 108 MHz (0.1 MHz step)

SCAN button



Blinks



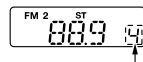
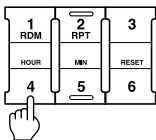
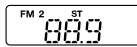
Scan Tuning (Automatic Tuning)

1. Press the AM/FM button "AM/FM/CLOCK" to select the band.
2. Pressing the "SCAN" button starts an automatic scan-seek tuning upwards through frequencies. If the radio tunes to a receivable station, it receives the station for 5 seconds before the radio starts another scan-seek tuning again. If you press the "SCAN" button during an automatic scan-seek tuning, the automatic tuning will be cancelled and the radio continues to receive the last tuned station.



NOTE

- If automatic tuning cannot be used due to a weak signal, tune to the desired station manually.



Preset memory No.

Preset Buttons

A maximum of 6 stations ("1" to "6") can be programmed to the preset buttons for each of the FM1, FM2, and AM bands.

1. Tune the radio to the station you want to store in memory.
2. Press and hold the desired preset button ("1" to "6") for 2 seconds or more. When you hear the "beep", the station is successfully stored in the memory.

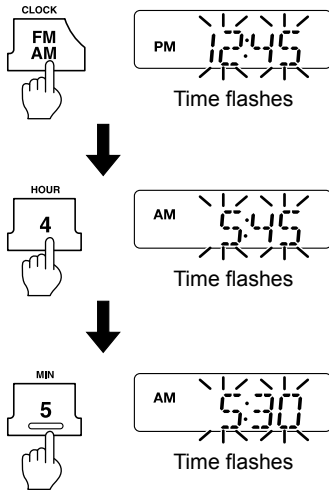
To listen to a preset station, press the appropriate preset button ("1" to "6") lightly for less than 2 seconds.



NOTE

- The radio stations in memory are erased when the power supply is interrupted to replace the battery or fuses.

Setting the Time



Adjusting the Time

Press and hold the AM/FM button "AM/FM/CLOCK" for 2 seconds or more to enter or exit the time adjustment mode.

When the time adjustment mode is switched on, you will hear the "beep", and the time display will flash.

Setting the Hour

Adjust the hour by pressing the preset button "4/HOUR" for less than 2 seconds.

Press and hold the preset button "4/HOUR" for 2 seconds or more to advance the hour continuously.

Setting the Minutes

Adjust the minutes by pressing the preset button "5/MIN" for less than 2 seconds.

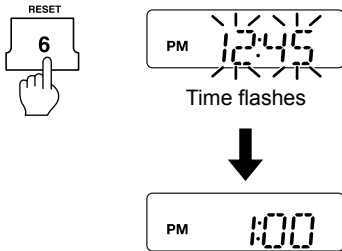
Press and hold the "5/MIN" button for 2 seconds or more to advance the minutes continuously.

After setting the minutes, press the AM/FM button "AM/FM/CLOCK" for less than 2 seconds to set the time (the display stops flashing). (Alternatively, if you do not press any buttons for 15 seconds, the display stops flashing and the time is set to the currently displayed time.)



NOTE

- If the time adjustment operation is suspended for 15 seconds or more, the time adjustment mode will be cancelled. Restart the process from the beginning.
- The time display will flash when the power supply is disconnected and then reconnected due to the replacement of the battery or fuses. The flashing stops when the time is reset.



Setting the Clock to Time Signal

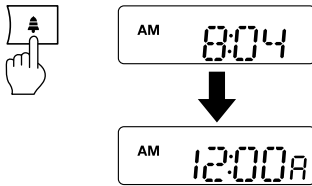
Press the preset button "6/RESET" while the time adjustment mode is active to set the time to the nearest hour.

If the minutes are less than 30, the hour will remain unchanged. If the minutes are 30 or more, the hour will advance by one.

Example: 12:00 – 12:29 → 12:00

12:30 – 12:59 → 1:00

Using the Alarm



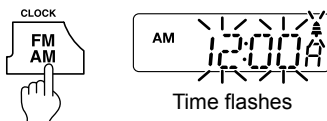
Setting the Alarm

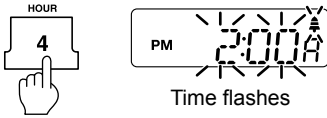
1. Press the alarm button "🔔" for less than 2 seconds to show the alarm time in the display ("A" is indicated in the display).



NOTE

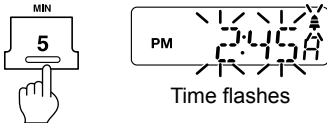
- Each time you press the alarm button "🔔", the display will cycle to show the "frequency, CD track number, playtime, time of day", "alarm time", and "time of day" in this order.
 - If the alarm setting is ignored for 5 seconds, the display returns to the time of day.
2. Press and hold the AM/FM button "AM/FM/CLOCK" for 2 seconds or more until you hear the "beep", and the display will flash and switch to the time adjustment mode ("🔔" is shown in the display).





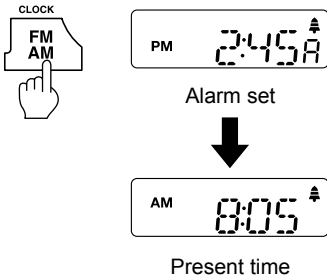
3. Adjust the hour by pressing the preset button "4/HOUR" for less than 2 seconds.

Press and hold the preset button "4/HOUR" for 2 seconds or more to advance the hour continuously.



4. Adjust the minutes by pressing the preset button "5/MIN" for less than 2 seconds.

Press and hold the preset button "5/MIN" for 2 seconds or more to advance the minutes continuously.

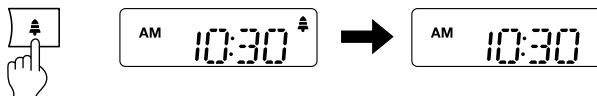


5. Press the AM/FM Button "AM/FM/CLOCK" for less than 2 seconds, the display returns to the time of day, and "▲" is shown in the top right of the display to indicate that the alarm has been set.

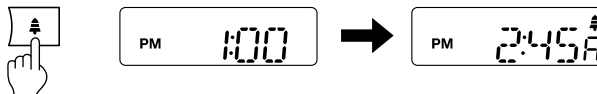
Switching the Alarm On/Off

Press and hold the "▲" button for 2 seconds or more until you hear the "beep" to switch the alarm ON/OFF.

Turning the Power Off

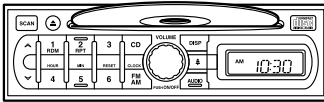


Turning the Power On



**NOTE**

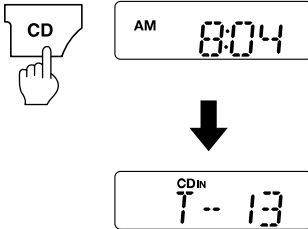
- After setting the alarm, you can check the set time by pressing the alarm button "🔔" for less than 2 seconds.
- To cancel the alarm, press the alarm button "🔔" for 2 seconds or more. Make sure the "🔔" icon is no longer shown in the display.
- If the vehicle is not to be used for an extended period, cancel the alarm.

Using the CD Player**Playing CDs**

Insert a CD into the CD slot with the label side (printed side) facing up. The power will switch on and playback will start automatically.

Switching to CD playback while listening to the radio

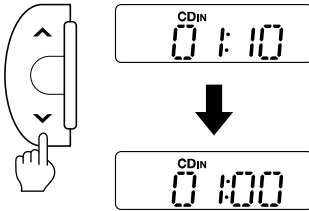
Press the "CD" button when a CD is inside the player, and playback will resume from the point at which playback was previously stopped.

**ADVICE**

- Check that there is no CD in the player before inserting a CD. Forcibly inserting a CD could damage the CD or cause the player to malfunction.

**NOTE**

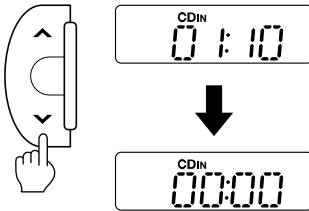
- Gently push the CD into the player and it will automatically load.



Fast Forwarding/Fast Reversing

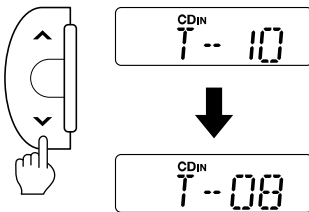
Press and hold the tuning button "▲▼" during playback for 0.5 seconds or more to advance the track forwards or backwards quickly.

- ▲: Fast forward
- ▼: Fast reverse



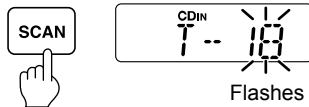
Replaying the Same Track

Press the tuning button "▼" for less than 0.5 seconds to start playback of the current track from the beginning.



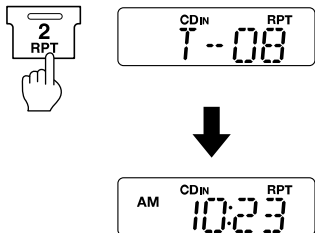
Track Selection

Press the tuning button for less than 0.5 seconds "▲▼" to select the desired track number.



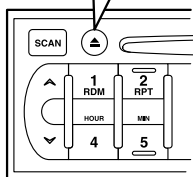
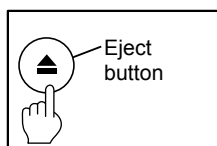
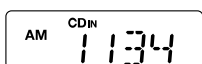
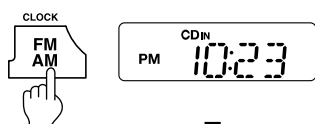
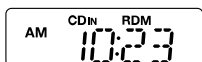
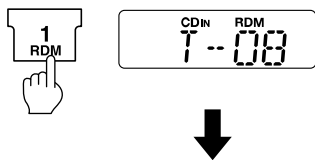
Track Search

Press the "SCAN" button during playback to play the first 10 seconds of each track, starting from the next track. Press the button again to cancel the track search.



Repeat Playback

Press the preset button "2/RPT" during playback to repeat the playback of the same track. Press the button again to cancel repeat playback.



Random Playback

Press the preset button "1/RDM" during playback to play the CD tracks in random order. Press the button again to cancel random playback.

Stopping CD Playback

Press the AM/FM button "AM/FM/CLOCK" during CD playback to stop CD playback and listen to the radio.

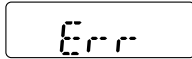
Ejecting the CD

Press the eject button "▲" to stop playback and eject the CD.



NOTE

- If the CD is ignored for 15 seconds after being ejected, it is automatically loaded back into the player to protect the CD. In this case, the CD is not played back.



Err

If "Err" Appears in the Display

If a problem occurs with the CD during playback, an error "Err" appears in the display.

Cause	Solution
CD was inserted upside down	Insert the CD with the label (printed) side facing upwards
CD is scratched, bent, or dirty	Replace with a different CD
A non-music CD is inserted	Replace with a music CD

TIPS ON SAFE AND SMOOTH OPERATION

6

• Driving Safely and with Confidence	6-2
• On the Road	6-2
• Driving with a Trailer	6-16
• Cautions for Parking	6-19
• Cautions for Driving in Hot Regions and Season	6-20
• Cautions for Driving in Cold Regions and Season	6-21
• Using Tire Chains	6-26

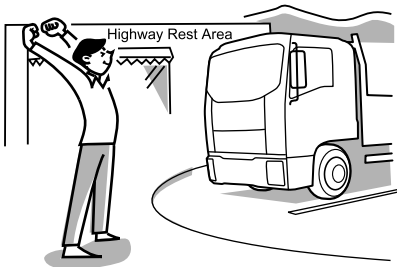
Driving Safely and with Confidence

Get Plenty of Rest



If you drive when you are tired, you will get sleepy and lose concentration. Please get plenty of rest before you drive.

Take Breaks during Long Journeys



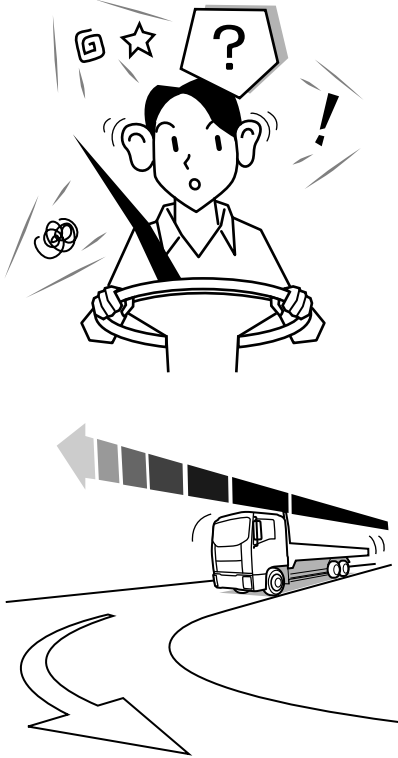
Driving long distances is tiring. Please take rest breaks from time to time.

On the Road

Cautions for Driving



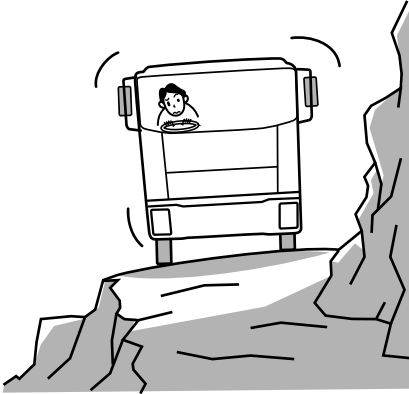
- Concentrate on driving safely, obeying all legally designated speed limits, road signs and traffic signals.
- Do not place the starter switch to any position other than the "ON" position while driving. The power steering would stop working, making steering extremely difficult. Also, the brakes would not work well, putting you in extreme danger.



- If you notice any abnormal noise, abnormal smell or abnormal vibration from any part of the vehicle, immediately stop the vehicle in a safe place and perform checks.
- If a warning light comes on or a buzzer sounds while you are driving, immediately stop the vehicle in a safe place and perform checks.
- Do not put your foot on the clutch pedal except when using the gearshift lever. Doing so would cause premature clutch wear.
- Slow down sufficiently when approaching a curve. Applying the brakes or sharply turning the steering wheel while turning the curve could cause the cargo to shift or fall off, the tires to slip and the vehicle to tip onto its side.
- While driving, do not place your hand on the shift lever except when changing gears. Doing so could cause the transmission to fail.
- Avoid scraping the tire sidewalls against curbstones or driving over dips and protrusions in the road surface.
You could damage the tires, resulting in a blowout or a flat tire.

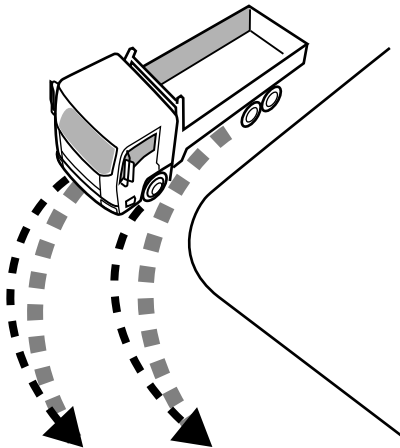
6-4

TIPS ON SAFE AND SMOOTH OPERATION



Narrow or Congested Roads

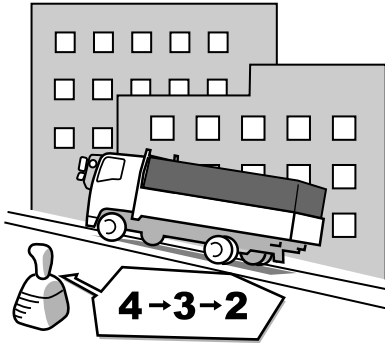
When passing or overtaking a vehicle on a narrow mountain road, or on a narrow or congested urban road, pay careful attention to obstacles on either side and to the condition of the shoulder of the road.



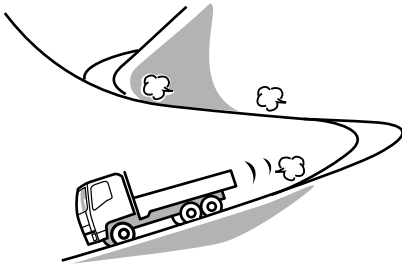
When Turning, the Rear Wheels will Follow Tighter Curves than the Front Wheels

Use the mirrors to confirm safety.

Driving Uphill or Downhill

**Uphill**

Downshift well ahead of time in order to avoid a heavy load to the engine.

**Downhill**

- Be careful not to drive too fast on a downhill road.
- Use the same gear(s) that you used to drive up the hill. Also, use the exhaust brake in order to avoid going too fast.
- Do not let the engine overrun.

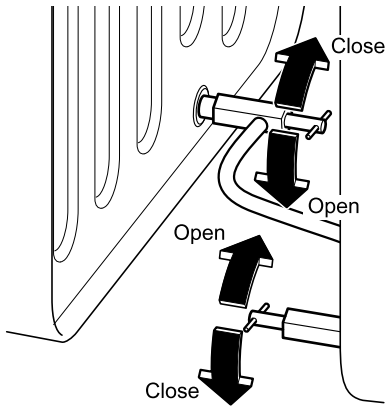
**NOTE**

[Overrunning]

- An engine overrun is an engine-speed increase that causes the tachometer needle to enter the red zone. It is dangerous because it can cause engine failure.

6-6

TIPS ON SAFE AND SMOOTH OPERATION



Emergency Fuel Tank

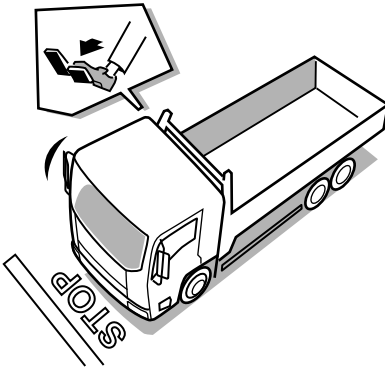
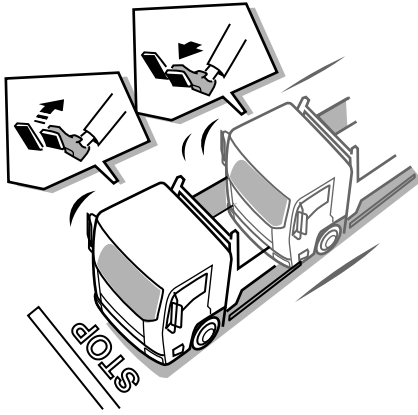
If the taps of the fuel tanks are open and only a small quantity of fuel remains in the tanks, you should be warned while idling the engine or driving on a steep slope. The engine can become starved of fuel because the fuel moves between tanks due to the difference in level between the tanks.



ADVICE

- When you will idle the engine or drive on steep slopes, we recommend you refill the tanks sufficiently or close the fuel tank taps beforehand.

Braking



Your vehicle has air-over-hydraulic brakes or full-air brakes for strong braking force with only a light pressure on the brake pedal. Do not press the brake pedal hard except in the event of an emergency.

1. Braking distances vary according to the vehicle speed and road conditions. First, slow down sufficiently using the engine brake and the exhaust brake.
2. Press the brake pedal and keep it pressed toward the point at which you want the vehicle to stop.
3. Ease off the brake pedal.



CAUTION

- Do not allow the brake pedal to fully return. If you allow the brake pedal to fully return, there will be a short delay before the brakes start to work the next time you press the pedal, meaning that the stopping distance may be increased.
- Unnecessary frequent depression and release of the brake pedal reduces the vehicle's air pressure, thereby detracting from brake effectiveness.

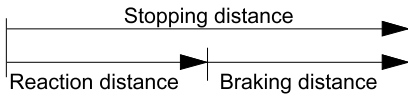
4. Immediately before the point where you want the vehicle to stop, gently press the brake pedal to bring the vehicle to a halt.



NOTE

[Air-over-hydraulic brakes]

- Air-over-hydraulic brakes use compressed air to produce hydraulic pressure, which in turn activates the brakes. Consequently, they provide strong braking force with only light pressure on the pedal.



Stopping Distance

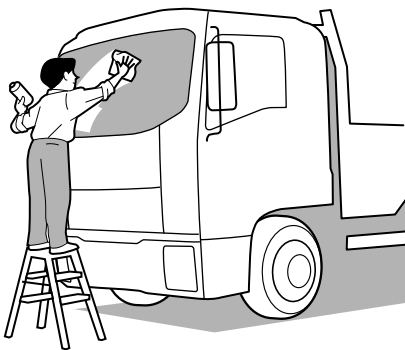
The vehicle's stopping distance consists of a reaction distance (from the point where the driver senses danger and presses the pedal to the point where the brakes start to work) and a braking distance (from the point where the brakes start to work to the point where the vehicle comes to a halt). When driving, bear the stopping distance in mind. Maintain a speed and headway distance that allow you to stop safely even if a hazard occurs.

Maintaining a Clear Field of View



If the Windshield Fogs Up

Use the heater to blow hot air on the windshield or dehumidify the cabin using the air conditioner and place the outlet selector knob in the "☂", "☂" or "☂" position. Place the air source lever in the outside-air position. Also, use commercially available anti-fog spray.



Nighttime Visibility

If there is an oil film on the windshield, the lights of oncoming traffic will be reflected in many directions, making it hard for you to see ahead. Use glass cleaner to clean the glass and the wiper blades.



NOTE

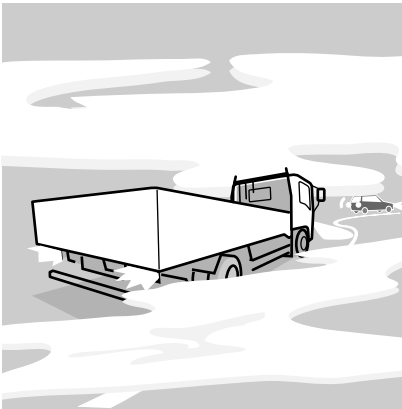
- Worn wiper blades cannot wipe the windshield clean and thus cannot maintain visibility. When the wiper blades become worn, replace them with new ones.

Driving at Night



Nighttime driving is more dangerous than daytime driving because the field of view is narrower. Keep your speed down, and maintain an ample headway distance.

Driving in Fog



Turn on the fog lights and drive slowly, using the road's center line as a guide. It is dangerous only to follow the lights of the preceding vehicle because they can cause optical illusions. Drive with caution.

Highways

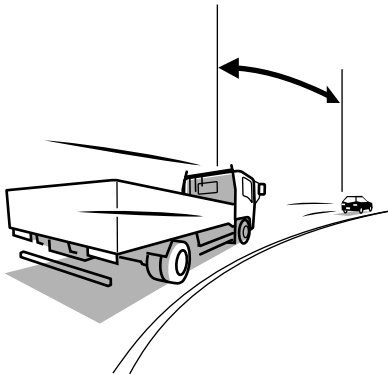
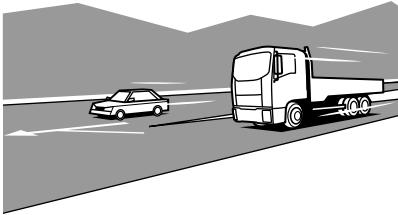
Tires	<ul style="list-style-type: none"> • Check that there is ample tread depth.
Engine	<ul style="list-style-type: none"> • Check that engine coolant is not leaking from the radiator and other parts of the cooling system. • Check that the engine coolant level is high enough. • Check that the fan belt is properly tensioned and free of damage. • Check that the engine oil level is correct.
Fuel tank	<ul style="list-style-type: none"> • Check that the fuel level is high enough.

1. Speeds on highways are higher than those on regular roads, so there is more danger. Also, a breakdown on a highway represents a hazard to other vehicles and can cause an accident. Concentrate on safe driving. Remember to perform daily pre-operation inspections and use highway driving techniques. When performing daily pre-operation inspections, perform the checks shown in the table on the left with particularly great care.

Daily Check (Preoperational Check)

→ Refer to page 7-16

2. When merging with traffic on a highway, use the turn signal to indicate your intentions ahead of time. Speed up sufficiently when you are in the acceleration lane. Pay attention to vehicles behind you and to conditions in the lane you are joining. Merge in such a way that you do not obstruct vehicles in the lane.
3. Your sense of how fast you are traveling becomes distorted on long highway drives. Constantly keep an eye on the speedometer, and maintain a suitable headway distance.





4. During high-speed driving, even a little turn of the steering wheel causes a big movement of the vehicle. Turn the steering wheel slowly.

5. Excessive use of the brake pedal is extremely dangerous because it rapidly wears the brake linings and causes brake fade. Make effective use of the engine brake and the exhaust brake when you wish to decelerate.

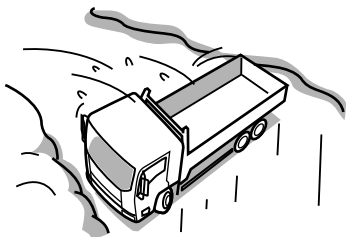
**NOTE**

[Brake fade]

- Frequent use of the brakes can cause the brakes to overheat so that the frictional force of the friction surfaces decreases and the brakes become less effective than normal. This phenomenon is called brake fade.

6. When you wish to turn off a highway, use the turn signal to indicate your intentions ahead of time. Paying attention to vehicles behind you, turn off the highway smoothly so as not to obstruct other vehicles.

Driving on Snowy or Frozen Roads



1. We recommend you use tire chains or winter tires.
2. Use a low gear and use the engine brake. Use the brake pedal as little as possible.

**CAUTION**

- On slippery roads, never accelerate rapidly, brake hard, decelerate rapidly or make sharp turns of the steering wheel.
- There is a risk of reduced grip between the tires and road surface and of increased braking distances. The danger of icy road surfaces is particularly great on bridges, in shady places and where there are puddles. Keep your speed down and be sure to use tire chains or winter tires on snowy or frozen road surfaces.

Using Tire Chains → Refer to page 6-26

Before Driving in Cold Regions**Getting In and Out of the Vehicle**

The step can get icy in cold regions. Be careful not to slip when getting in and out of the vehicle.

**Before Sitting in the Driver's Seat**

Remove snow and ice from your shoes when getting into the vehicle. If you try to drive with snow on your shoes, your shoes would slip on the pedals and you would not be able to press the pedals properly, meaning that your driving would be inconsistent. Also, the cabin could become more humid, causing the glass to fog up.

Starting the Engine

When you start the engine, check that the accelerator pedal works smoothly.

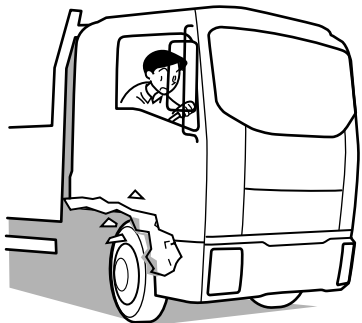
Check the Fuel Level

Fuel consumption becomes higher when tire chains are used. Check how much fuel you need to reach your destination and top up the tank in advance.

Fuel → Refer to page 6-23



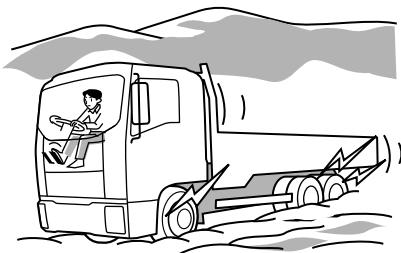
Driving on Snowy or Frozen Roads (Fenders)



Pay Attention to the Way the Steering Wheel Turns and Feels

 CAUTION

- On snowy roads, water and snow splashed up by the tires can freeze and accumulate inside the fenders, making the steering wheel hard to turn. From time to time, get out of the vehicle and remove any accumulated snow. Do not use a sharp implement to remove the snow. Sharp edges could damage rubber parts.



Check the Brakes from Time to Time

 CAUTION

- When the vehicle is driven or parked on a snowy surface, ice can form on the brakes, decreasing from their effectiveness. From time to time while you are driving, press the brake pedal lightly and check the brake's effectiveness. Pay attention to vehicles both ahead of and behind you when checking the brakes in this way.
- Also, check the brake's effectiveness as soon as possible when starting to drive the vehicle after it has been parked. If the brakes do not work well, drive slowly and gently press the brake pedal several times until the brakes dry out and start working normally.

Removing Snow from the Glass and Underbody



To maintain an adequate field of view, use a plastic scraper to remove snow and frost from the glass surfaces. By using a plastic scraper, you can remove the snow and frost without scratching the glass. At this time, check whether the wiper blades are frozen onto the glass.

Also, look under the vehicle and remove any lumps of ice that are stuck to the underbody. Be careful not to damage components.



ADVICE

- Do not use a sharp implement to remove snow. Sharp edges could damage rubber parts.

Driving on Poor Road Surfaces (Sand or Mud)



If the vehicle gets stuck in mud, pressing the accelerator pedal more than necessary will simply dig the vehicle deeper into the mud and make it harder to extricate. Either put stones, tree branches or blankets under the tires to gain traction, or repeatedly drive forward and backward to use the vehicle's momentum to extricate it.

When you cannot avoid driving through deep mud, using tire chains is an effective way to avoid getting stuck.



ADVICE

- When driving in sand or mud, avoid hard braking, sudden acceleration and sharp turns of the steering wheel. Such actions could get the vehicle stuck and make it impossible to extricate.
- After driving through deep mud, any mud stuck to the vehicle can harm the steering, brakes and powertrain. Wash the vehicle and remove all mud and other incrustation.

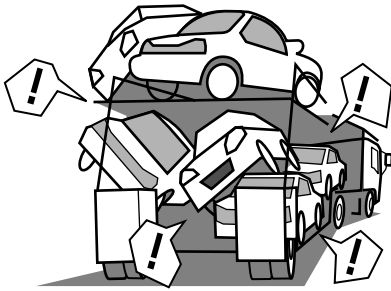
Exterior Maintenance

→ Refer to page 7-134

Driving with a Trailer

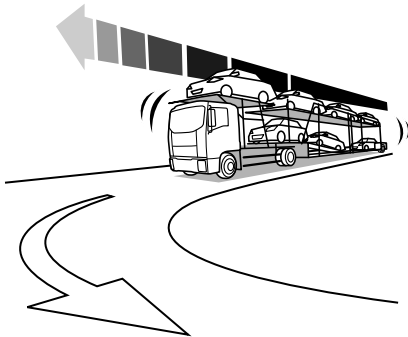
When you drive with a trailer, there are special considerations in addition to the cautions that you must take when driving without a trailer.

Pay close attention to the following checks and driving methods:



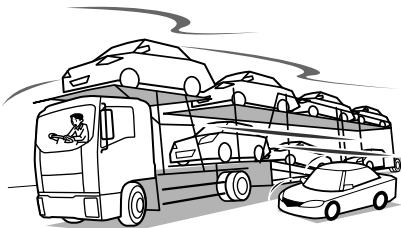
Cautions for Loading

The balance of the cargo weight, the height of the cargo's center of gravity and the weight of the cargo affect the trailer's handling characteristics, so you must drive in a way that's appropriate for the cargo. Make an effort to distribute the cargo evenly and to load it so that its center of gravity is low and in the middle of the cargo bed.



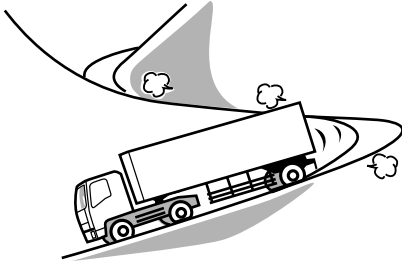
No Hard Braking or Sharp Steering

When driving on slippery roads, on curves (for example, on mountain roads) or on surfaces where there are bumps or steps (for example, joints in bridge surfaces or joints in road surfaces), do not make sharp turns of the steering wheel. (It is particularly important not to make sharp turns of the steering wheel while braking.) Drive at a safe speed to suit the conditions.



Cautions for Changing Direction

Since a vehicle with a trailer is long, you must try to avoid passing other vehicles and changing lanes. If you have to pass or change lanes, confirm safety around the vehicle and give yourself plenty of time for the maneuver. On tight bends, pay attention to the movement of trailer, bearing in mind that the trailer's inner wheels will follow much tighter curves than the other ones.

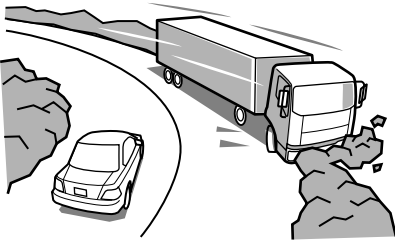


Effective Use of the Various Types of Brakes

Use the various types of brakes appropriately to achieve stable braking. On slippery roads and curves, avoid using just one type of brake at a time. Particularly on a long downward slope, you should make effective use of the engine brake and the exhaust brake, additionally using the foot brakes as necessary.

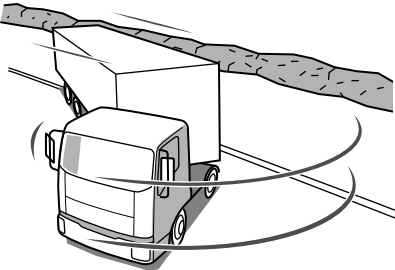
Abnormal Motion During Braking

Sharp steering and braking, poor loading, poor maintenance and slippery road surfaces can cause abnormal motion. Pay attention to daily maintenance and inspections, and always concentrate on safe driving.



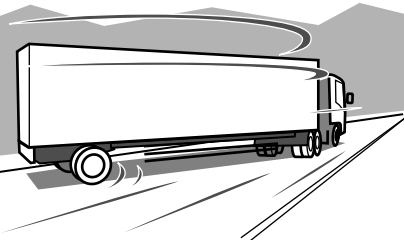
Plow Out

Here, the tractor and trailer run off a curve and keep going in a straight line. This phenomenon can occur if the tractor's front wheels lock up.



Jackknifing

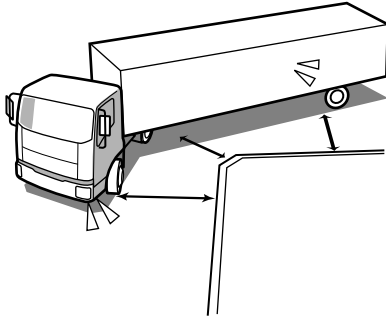
Here, the tractor and trailer "fold" like a jackknife. This phenomenon can occur if the tractor's rear wheels lock up.



Trailer Swing

Here, the trailer swings to the left or right. This phenomenon can occur if the trailer's wheels lock up.

Turning with a Trailer



When turning with a trailer hitched to the tractor, pay attention to the path followed by the trailer and to inclination of the trailer.

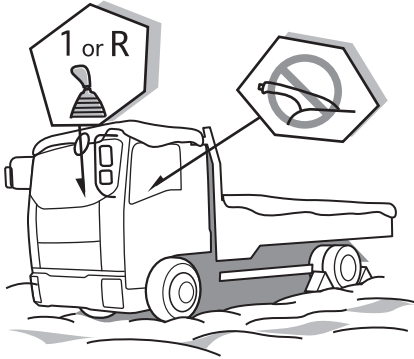


CAUTION

- The rear wheel of the trailer will run closer to the turning side of the road. It may be difficult to check the trailer's movement using the tractor's mirrors. Exercise caution.

Cautions for Parking

Parking in Cold Regions



When snow collects around the wheels and lights, try to remove it before night falls.



CAUTION

- When there is a risk that the parking brake will freeze in a cold region: With wheel parking brake model, dry the brake linings and drums by lightly pressing the brake pedal five or six times while driving at a speed of 30 km/h (19 MPH) before bringing the vehicle to a halt; and apply the parking brake. With center parking brake model, apply chocks under the wheels after stopping the engine and park the vehicle without applying the parking brake.
- For parking in gear: Place the gearshift lever in the "1" (1st gear) or "R" (reverse gear) position.

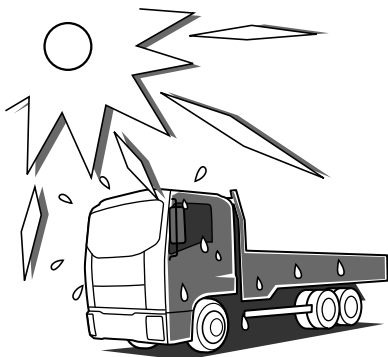
9 Speeds Manual Transmission

Model V → Refer to page 4-48



NOTE

- When parking outdoors, take steps to prevent the engine from getting unnecessarily cold. For example, position the vehicle with the front end downwind.
- Do not park under trees or under the eaves of a building. Chunks of ice could fall on the vehicle if you park in such a place.

Cautions for Driving in Hot Regions and Season

The engine will be prone to overheating in an environment where the ambient temperature is high. To prevent the engine from overheating, pay attention to the following points:

If the engine does not contain the appropriate concentration of engine coolant, overheating is likely to occur.

Engine Coolant → Refer to page 7-29

**CAUTION**

- Do not put well water, river water or other hard water in the engine cooling system. It would hasten the formation of rust and scale.

If foreign matter (insects, mud, etc.) gets stuck in the radiator's air passages, the cooling system's performance will deteriorate. Check the air passages for clogging, and remove any foreign matter using water under low pressure.

Handling the Radiator and Intercooler

→ Refer to page 7-41

**ADVICE**

- When the ambient temperature is high, evaporation of battery fluid will become quicker. Frequently check the battery fluid level and, when necessary, add more fluid.

Cautions for Driving in Cold Regions and Season

The following cautions apply to snowbound regions and to mountainous regions, ski resorts and other areas of extreme cold and/or snowfall. Please use them also for reference in winter in other regions.

For the sake of your vehicle, have your Isuzu Dealer make the winter preparations described hereafter. Also have these preparations made before driving to a cold region.

Engine Coolant → Refer to page 7-29

Windshield Washer Fluid

→ Refer to page 7-116

Handling the Battery

→ Refer to page 7-121

Engine Oil → Refer to page 7-21

Using Tire Chains → Refer to page 6-26

Winter Tires → Refer to page 6-24

**CAUTION**

- Do not cover the front of the radiator with newspapers, cardboard or any other flammable material to raise the engine coolant temperature.
- If you allow the engine to warm up but the engine coolant temperature does not rise, have your Isuzu Dealer inspect the thermostat.
- If you park in a place where there is a lot of snowfall, snow accumulating around the vehicle could limit ventilation. Running the engine with the vehicle in such a situation could cause exhaust gases to enter into the cab, resulting in carbon-monoxide poisoning. Take preventive action by, for example, clearing the snow around the vehicle.

Fuel → Refer to page 6-23

Engine Coolant



To prevent the engine damage due to freezing of the engine coolant, mix the coolant and water to be an appropriate concentration.

Changing the Engine Coolant

→ Refer to page 7-34

Preparing Engine Coolant

→ Refer to page 7-30

Recommended Fluids, Lubricants and

Diesel Fuels → Refer to page 7-158

Replacing the Engine Oil

The engine oil tends to thicken with lowering temperatures. Use engine oil with a viscosity suited to ambient temperature.

Changing the Engine Oil and Oil Filter

→ Refer to page 7-25

Recommended Fluids, Lubricants and

Diesel Fuels → Refer to page 7-158

Engine Oil and Gear Oil Viscosity

Charts → Refer to page 7-162



WARNING

- If you leave the vehicle with the engine running, be sure to apply the parking brake to prevent the vehicle from rolling suddenly.

Fuel

**CAUTION**

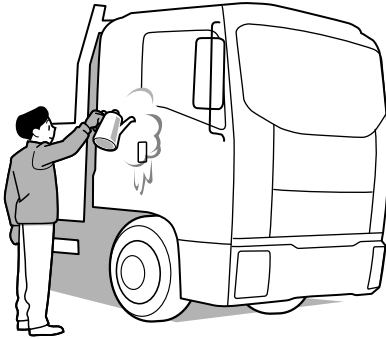
- Be sure to use diesel fuel.
If you supply the vehicle with poor-quality fuel, water-removal additive or other additive, gasoline, kerosene or alcohol-based fuel, it could harm the fuel filter, prevent proper movement of fuel-lubricated parts in the injectors and adversely affect engine components, possibly resulting in a breakdown. If you accidentally put the wrong fuel in the tank, drain it all out. Starting the engine with the wrong fuel in the tank could result in fire and engine damage.
- Open the fuel tank filler cap slowly. If you open it quickly, fuel may spurt out.

If you drive to a cold region in winter while using diesel fuel for warmer regions that freezes at a relatively high temperature, the fuel may freeze. As the ambient temperature decreases, the fuel in the fuel tank and pipes may freeze like slush, making the engine hard to start.

**NOTE**

- The specifications of diesel fuel differ according to the climate and region.
- When driving to a cold region, put just enough fuel to reach the colder region in the tank. As soon as you reach the cold region, fill the tank with fuel that has a low freezing temperature.
- When taking the vehicle to a cold region on a ferry, board the ferry with only a minimal amount of fuel in the tank and then, after reaching the cold region, fill the tank with fuel that has a low freezing temperature.

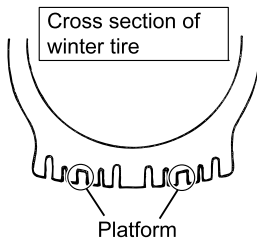
When Ice Prevents You from Putting the Key in the Door or Opening the Door



If you try to force the key into the door, you could bend it. And if you try to pull the door open with undue force, the rubber seal around the door could come unstuck or become damaged. Use warm water to melt the ice, then quickly wipe it away and open the door.

If the wipers, or electric outside mirrors, or power windows freeze up, also use warm water to melt the ice and then operate the system. Otherwise, you could damage the mechanism and drain the battery. After that, wipe the water away.

Winter Tires



A winter tire has reached its wear limit when the tread grooves have worn to half of the depth of the new tire. At this time, platforms indicating that the tire can no longer give adequate performance on snow become visible in the grooves. Replace the tire with a new one.



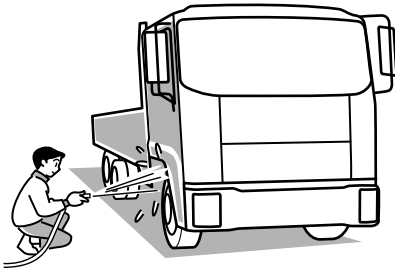
CAUTION

- Use winter tires of the same sizes as the standard tires. Also, use wheels of the same size as those with the standard tires.
- Winter tires have wider contact areas, so they may interfere with other components. Consequently, it is necessary to adjust the steering angle. After putting winter tires on the vehicle, have the adjustment made by your Isuzu Dealer.
- Avoid sharp turns of the steering wheel and hard braking. Use the engine brake to decelerate. When applying the brakes on snowy or frozen road, lightly press the pedal several times rather than giving it one hard press. A single hard press of the pedal would be dangerous because it could cause the vehicle to slip or skid.

CAUTION (Continued)

CAUTION (Continued)

- If you use the exhaust brake on a slippery road when the vehicle is not loaded, the resulting hard deceleration can cause the back of the vehicle to swing sideways. Exercise caution.
- Avoid driving at high speeds on a dry road with winter tires.
- Comply with local legal requirements when using winter tires.

Cleaning the Vehicle After Driving on Snowy Roads**CAUTION**

- Remove snow that has stuck to the inside of the fenders and to the brake hoses. Otherwise, it may damage components. After driving on a salted road, wash the underside of the vehicle as soon as possible to prevent the salt from causing rust. Spraying water under high pressure is an effective way to get the salt off.
- After washing the vehicle, wipe the door openings dry.

**ADVICE**

- On antilock brake system (ABS) equipped model, the vehicle speed sensors are fitted on the wheels. When removing snow, ice and other incrustation, take great care not to damage the components.
- Do not use a sharp implement to remove snow. Sharp edges could damage rubber parts.

Antilock Brake System (ABS)

→ Refer to page 4-53

Using Tire Chains

Before the onset of winter, make preparations for use of tire chains by fitting the tire chains, adjusting their lengths and checking them for damage.



CAUTION

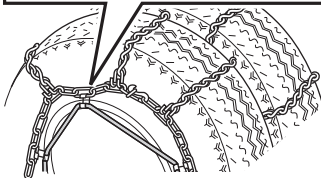
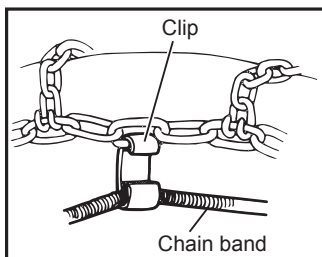
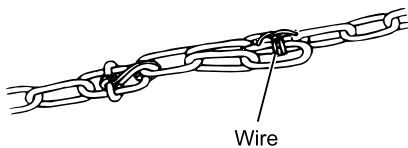
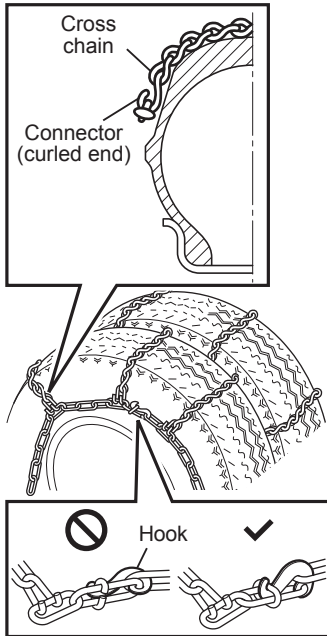
- Fit the tire chains securely without looseness. If the vehicle is driven with the loosened tire chains, they may interfere with other components or come off, leading to an unexpected accident.
- If an abnormal sound is heard, it may indicate a possibility that a tire chain was cut or came off partially. Immediately pull off to a safe place, and check the fitting condition of the tire chains.
- The exhaust pipe and muffler are extremely hot when the engine is running or immediately after the vehicle is driven, so be careful not to touch them.
- Be careful not to hurt yourself on the edges of the vehicle while working with the tire chains.



ADVICE

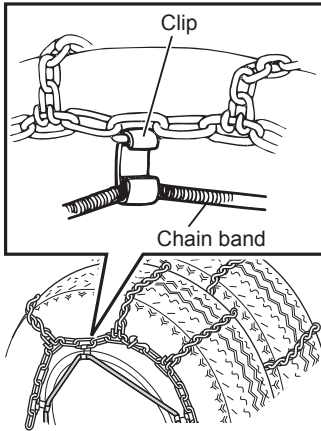
- Tire chains cannot be fitted on the front wheels. Make sure to fit the tire chains suitable for the tire size on the rear wheels.
- For triple chains, they may not be fitted depending on vehicle specifications, so please consult the nearest Isuzu Dealer for details.
- For dual tires, do not fit a single chain only on the outer tire. The chain may interfere with other components and adversely affect driving.
- The sidewalls of radial tires are prone to damage by tire chains. Be sure to use tire chains that are designed for radial tires, or use winter tires.
- When purchasing tire chains, fit them on the tires once and, if they are too long, adjust them to suit the tires.
- When the vehicle is fitted with tire chains, drive at speeds below 30 km/h (19 MPH) and avoid driving on surfaces other than snowy or frozen roads.
- For fitting and handling of tire chains, refer to the instruction manual attached to the tire chains.

How to Fit a Tire Chain



1. Making sure the tire chain is not twisted, place it on the tire such that the curled ends are on the outside (the side that will make contact with the ground).
2. Pull both ends of the tire chain as far as possible. Couple the inner hooks first, and then couple the outer hooks.
3. The hook should be connected such that it is flat against the tire side face. Also, confirm that there is no twisting or bending in the chain.
4. Retain any excess portion of chain with wire so it does not hit the vehicle's body or brake pipes.
5. Hook the clips over the chain band (with the clips pointing outward) such that the clips are evenly positioned around the band.
6. After fitting the tire chains and driving for a while, check whether the chains are loose or they have come unfastened.

How to Remove a Tire Chain



1. Remove the chain band and wires, and undo the outer hook first.
2. Move the vehicle and remove the chain.

SERVICE AND MAINTENANCE

7

BEFORE SERVICE AND MAINTENANCE

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DAILY INSPECTION

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**ENGINE-RELATED SERVICE AND
MAINTENANCE**

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**CHASSIS-RELATED SERVICE AND
MAINTENANCE**

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OTHER SERVICE AND MAINTENANCE

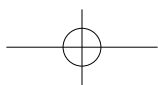
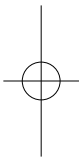
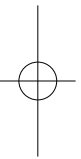
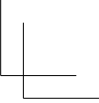
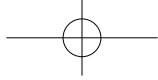
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**INTERIOR AND EXTERIOR
MAINTENANCE**

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MAINTENANCE DATA

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BEFORE SERVICE AND MAINTENANCE

• Precautions for Checking and Adjustments	7-4
• Discarded Parts, Oils and Other Liquids	7-6
• Isuzu Genuine Oils and Grease	7-6
• Tools	7-7
• Front Lid	7-8
• Tilting the Cab	7-10

Precautions for Checking and Adjustments**WARNING**

- Make sure to turn off the engine and remove the key from the starter switch before performing any checks.
- Pull the parking brake lever firmly and put the transmission in neutral. Make sure the gearshift lever is in "N".
- Select a place with a hard and level surface for performing the checking and maintenance work. Make sure to chock the wheels. It would be very dangerous if the vehicle started to move.
- When raising the vehicle, use a suitable jack, not the one provided on the vehicle.
- After raising the vehicle and before going underneath to perform work, make sure the vehicle is supported with jack stands.
- When performing work on the electrical system, begin by turning the starter switch to the "LOCK" position, wait at least 1 minute, and then disconnect the negative cable from the negative terminal on battery. If the negative cable is disconnected within 1 minute, the engine control module may malfunction.
- The engine, exhaust pipe, radiator, and other parts surrounding them will be hot immediately after the vehicle is driven. Be careful around these parts to prevent burns. Perform all checks when the engine is cold.
- Do not perform work near an open flame or other heat sources.
- When working on the fuel line or fuel filter, remove the fuel tank filler cap. The fuel system is under pressure, and the fuel will overspill unless the pressure is relieved, possibly leading to combustion or a fire.
- Do not let the engine run in poorly ventilated garages or sheds. This could cause carbon monoxide poisoning.

**CAUTION**

- Discarded parts, oil, grease, and fluids could have an adverse effect on the environment. It is difficult to dispose of these, so have your Isuzu Dealer handle all checks and replacements.

**ADVICE**

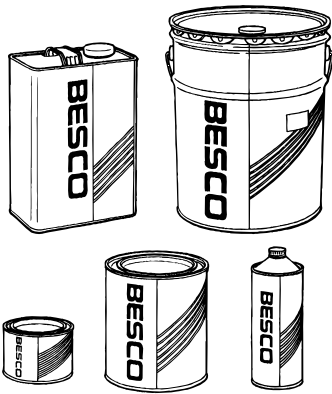
- Use only appropriate tools.
 - Oils, brake fluid, battery fluid, and engine coolant have lubrication, cooling, and rust prevention functions. If these liquids deteriorate through loss or contamination, it will cause a decline in the performance of parts and such problems as seizure or malfunctioning. Replenish or change these liquids when performing checks (daily and periodic checks) as required by the relevant regulations, or in accordance with the Maintenance Schedule (when either the specified driving distance or period of time, whichever comes first, has expired).
 - Confirm that all systems and components are normal after performing the work.
 - Do not leave the removed parts or tools in the engine compartment. They could damage the equipment if caught in the belts or other moving components.
 - Dirty water, dirt and other impurities seriously impair the effectiveness of the oil, grease and fluids, and damage parts.
- Exercise all due caution to prevent waste or other refuse from coming in contact with parts or material that have been removed when handling them for change or replenishment.



Discarded Parts, Oils and Other Liquids

- When changing oils, filters, engine coolant or other liquids, be sure to have a container ready in advance for their disposal.
- Use methods conforming to legal requirements for discarding or disposing of parts, oils, filters or engine coolant after change or replacement.

Isuzu Genuine Oils and Grease



Periodically replenishing and changing the oil and grease is extremely important for maintaining your vehicle's performance and preventing malfunctions.

Isuzu Motors guarantees the quality and performance of Isuzu genuine oils and grease.

We recommend the use of Isuzu genuine oils and grease for maintenance and service of your vehicle.

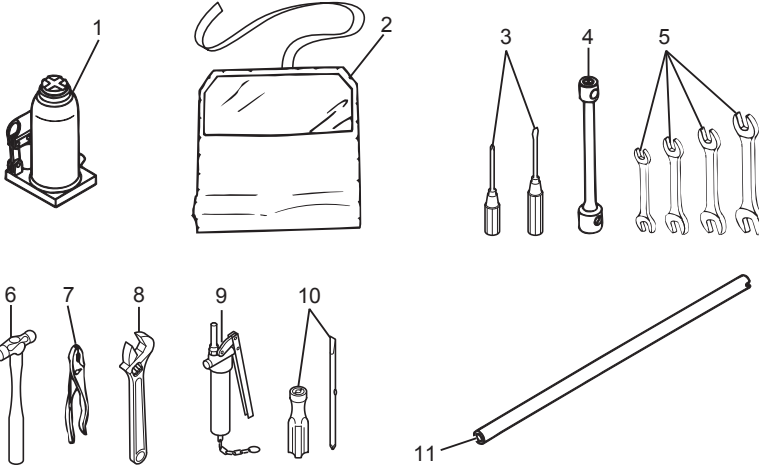


CAUTION

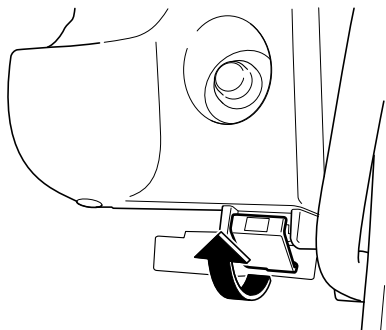
- Flames or other heat sources near spilled oil can cause a fire. Make sure to clean up all oil spills.

Tools

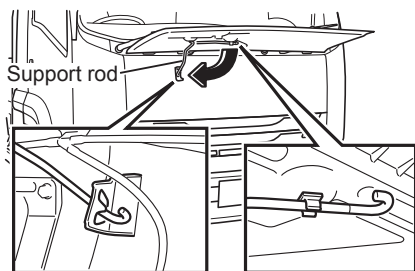
Tools Carried on Your Vehicle



1	Hydraulic jack
2	Tool bag
3	Screwdriver (Phillips head and flat head)
4	Wheel nut wrench
5	Wrench
6	Hammer
7	Pliers
8	Adjustable wrench
9	Grease pump
10	Screwdriver (Phillips head/flat head interchangeable type)
11	Wrench handle

Front Lid**To Open**

1. Pull the lever at the bottom right (right-hand drive model) or bottom left (left-hand drive model) of the instrument panel.



2. To hold the front lid open, take the end of the support rod and fit it securely into the bottom of the hole in the bracket.

**CAUTION**

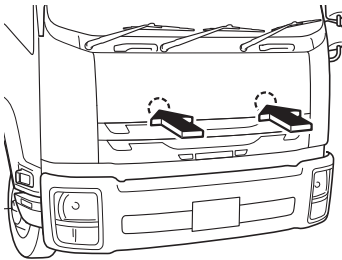
- Do not pull the lever while driving. This is extremely dangerous, because opening the front lid while driving blocks your view.
- When opening the front lid, make sure to place the starter switch in the "LOCK" position. Otherwise, your hand could be caught in the windshield wiper link and injured.
- On a vehicle with a side under-mirror, open and close the front lid carefully to prevent the lid from interfering with the mirror if it is retracted. If the clearance between the front lid and the side under-mirror is too small, adjust the mirror position toward the outer side of the vehicle.
- Do not use high pressure cleaning methods for the brake valve and surrounding area inside the front lid. It could cause a faulty brake system.

**ADVICE**

- Do not apply water directly to the air conditioning filter, or the connections for the air conditioning pipe or heater hose inside the front lid. This could cause water to enter the cab.

Exterior Maintenance

→ Refer to page 7-134

**To Close**

1. Return the support rod to its original position and close the front lid.
2. Press on the lock locations at the lower portion of the front lid with the palm of your hand to securely lock the lid.
3. Confirm that the front lid is firmly locked.

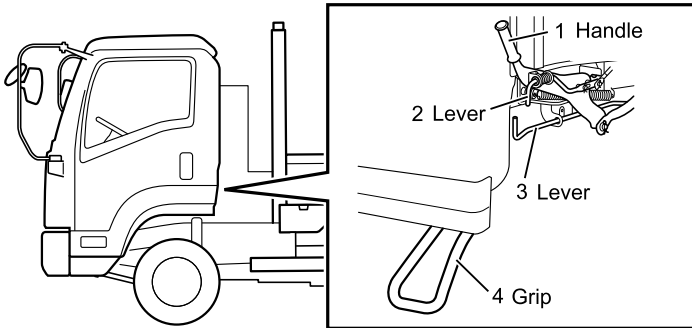
**CAUTION**

- Confirm that the front lid is firmly locked. A dangerous condition could result if it is not locked. For example, the front lid could fly open while driving, blocking your view.
- Do not use excessive force to close the front lid. Doing so might warp or otherwise damage the lid.

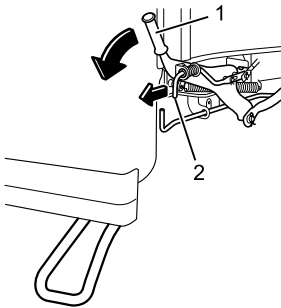
Tilting the Cab**CAUTION**

- Tilt the cab only on a level surface.
- Make sure to apply the parking brake and set the gear in the neutral position.
- Check the areas in front of and above the cab for sufficient clearance when tilting the cab indoors. (Particular care is required if your vehicle is equipped with an air deflector.)
- When tilting the cab, make sure to securely close both the left and right doors. Also, the doors become heavy while tilting the cab, so do not open or close the doors.
- When you must unavoidably open or close a tilted cab's door, securely support the weight of the door while opening or closing it. It is dangerous to release the door from your hand when it is being opened or closed. The door could hit you or someone and cause an injury, or the door could be damaged. Confirm that the door is completely locked after closing it.
- Confirm that people are not near the vehicle or inside the cab when tilting the cab.
- Confirm that the lock lever for the tilt support is fully engaged in the lock position after the cab is tilted.
- The muffler and exhaust pipe will be very hot immediately after driving. Use all due caution to avoid accidentally touching these when doing cab tilt operation.
- Do not tilt the cab when objects are placed on or in the instrument panel, seats, cup holders, or floor surface.
- Tilt the cab only with the engine turned off.
- Make sure everything has been removed from the roof rack.
- Remove any ice or snow accumulating on the top of the bumper before tilting the cab. Failure to do so could damage the bumper, lights or other vehicle components.

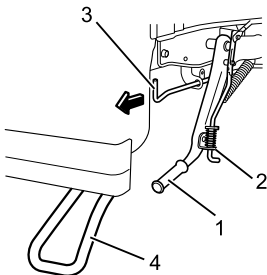
Cab Tilt Levers and Grip



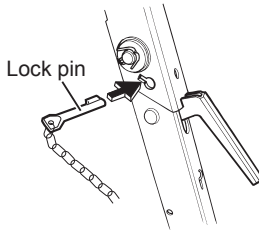
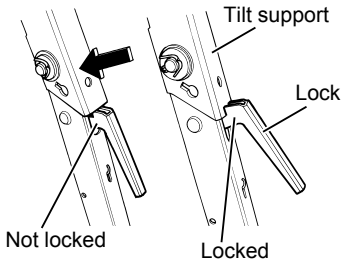
Tilting Up the Cab



1. Apply the parking brake firmly and make sure the transmission is in neutral. Close the doors completely.
2. Pull the lever (2) with your left hand and turn down the handle (1) by pulling it toward you with your right hand to release the cab lock. The cab will rise slightly at this time.



3. While grasping the grip (4) with your left hand, pull the lever (3) with your right hand and slowly raise the cab.



4. Fully lift up the cab, and lock the tilt support while holding the part indicated by the arrow. When it is locked, it makes a "click" sound. Confirm that the lock of tilt support is securely engaged.

WARNING

- Do not touch the lock on the tilt support while the cab is tilted. If you touch it, the lock will release.

5. Insert the attached lock pin in the hole in the tilt support.

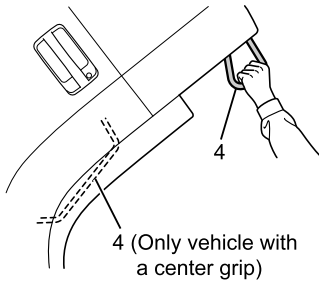
WARNING

- When performing work with the cab tilted, securely insert the lock pin in the hole first.

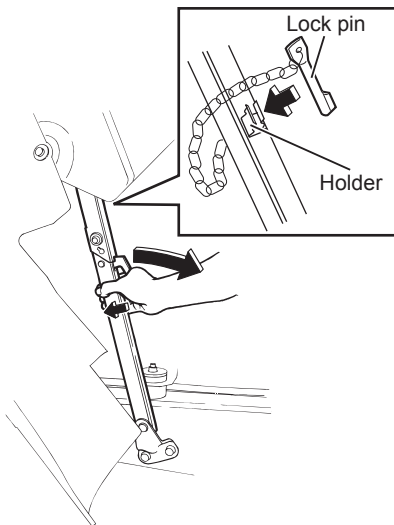
Lowering the Cab

WARNING

- After lowering the cab, make sure the cab is securely locked.
- When the starter switch is turned to the "ON" position with the lock being incompletely engaged.



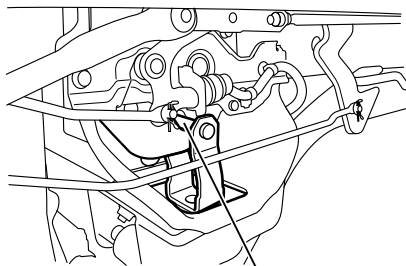
1. Support the cab while gripping the grip (4) with your left hand.



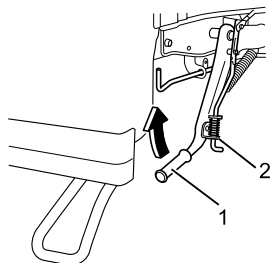
2. Remove the tilt support lock pin and place it in the holder.
3. Pulling the tilt support while pressing the lock with your right hand will cause the tilt support to bend, lowering the cab. After the tilt support has bent, grasp the grip (4) with both hands and lower the cab completely.

CAUTION

- Do not operate the tilt lock lever while the cab is being lowered.
- When a load is attached to the outside or inside of the cab, or the cab is loaded, be advised that the cab will lower faster.



Lock portion



4. Confirm that the lock portion of lever is securely engaged after the cab has been lowered.

5. Raise the handle (1) until the lever (2) catches. Place the starter switch in the "ON" position.

DAILY INSPECTION

-
- **Daily Check (Preoperational Check)** 7-16
-
- **Checking a Part Where there was an Abnormality the Previous Time the Vehicle was Driven** 7-18
-

Daily Check (Preoperational Check)

Check your vehicle for the items listed below before starting the day's operation to ensure safe, trouble-free operation. Also, make note of the distance the vehicle has covered and the conditions under which the vehicle has been operated to be able to determine the inspection intervals most appropriate for your specific vehicle and adequately service it according to inspection results.

If the checks reveal an abnormality or if there are components that showed abnormalities the last time the vehicle was driven, have the vehicle repaired by your Isuzu Dealer before using the vehicle.

Daily Check (Preoperational Check) Items

[1. Checking where there was an abnormality the previous time the vehicle was driven]

Check item	Reference page
Checking components that showed abnormalities during previous operation	7-18

[2. Checks to perform with the front lid opened or cab tilted]

Check item	Reference page
Loose or damaged fan belt	7-42
Windshield washer fluid level	7-116
Engine oil level	7-21
Engine coolant level	7-33
Power steering fluid level	7-99
Clutch fluid level	7-81

[3. Checks to perform in the driver's seat]

Check item	Reference page
Operation of meters, gauges and warning/indicator lights	4-8, 4-15
Engine start ability, abnormal noise and color of exhaust emissions	7-20
Brake pedal free play	7-58
Exhaust sound from brake valve	7-58
Increase in air pressure	7-56
Parking brake lever stroke	7-59
Windshield washer fluid spray condition and windshield wiper effectiveness	7-116, 7-117
Steering position and free play	3-17, 7-103
Operation of horn and turn signal lights	4-33, 4-41
Fuel level	4-14
Operation of door locks	3-3, 3-4, 3-5
Water separator (fuel filter) warning light	4-22

[4. Checks to perform during a walk around the vehicle]

Check item	Reference page
Illumination, flashing or stained or damage of lights	7-120
Battery fluid level	7-125
Condensation in air tank (draining water)	7-80
Leaf spring damage	—
Leakage of oil, engine coolant, fuel, brake fluid or power steering fluid	—

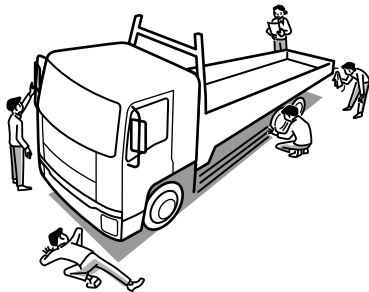
[5. Checking wheels and tires]

Check item	Reference page
Air pressure	7-62
Cracks and other damage	7-65
Abnormal wear	7-65
Tread depth	7-65
Disc wheel mounting condition	7-66

[6. Checks to perform while driving the vehicle]

Check item	Reference page
Brake effectiveness	7-58
Checking the engine at low speeds and during acceleration	7-20
Clutch system function	7-84

Checking a Part Where there was an Abnormality the Previous Time the Vehicle was Driven



Check the components that showed abnormalities during the previous day's operation or the last time the vehicle was driven. Have any abnormalities repaired by your Isuzu Dealer before using the vehicle.

**ENGINE-RELATED SERVICE AND
MAINTENANCE**

• Engine Conditions	7-20
• Engine Oil	7-21
• Engine Coolant	7-29
• Handling the Radiator and Intercooler	7-41
• Fan Belt	7-42
• Air Cleaner	7-45
• Fuel Filter	7-48

Engine Conditions

Checking the Engine for Easy Starting and Abnormal Noises

1. Make sure the parking brake is securely engaged. Step firmly on the brake pedal.
2. Make sure the transmission is in neutral.



CAUTION

- For safety, firmly press the brake pedal before starting the engine.

3. Turn the starter switch to start the engine.
Check that the engine starts quickly with no abnormal noises.

Starting the Engine

→ Refer to page 4-4

Checking the Engine for Condition at Low Speeds and during Acceleration



1. Make sure the transmission is in neutral and the parking brake is securely engaged.
2. Turn the starter switch to start the engine, and run it to warm up.

Starting the Engine

→ Refer to page 4-4

3. Check that the engine is running at a speed within the standard idling speed range.

Idling Control Knob

→ Refer to page 4-30

4. Drive the vehicle, make sure the accelerator pedal does not stick when gradually accelerating, the engine speed rises smoothly and it does not knock.

Engine Oil

Engine oil is an important factor determining engine performance and longevity. Be sure to use only the specified oil and oil filters. The engine oil level must be checked and the oil should be changed regularly according to the Maintenance Schedule.

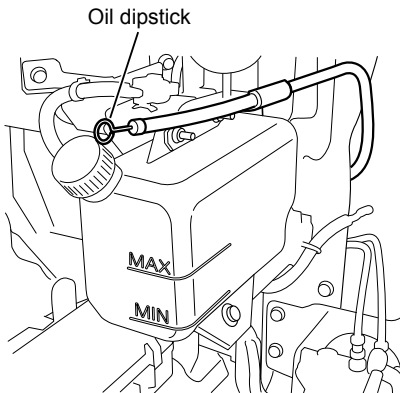
Maintenance Schedule

→ Refer to page 7-145

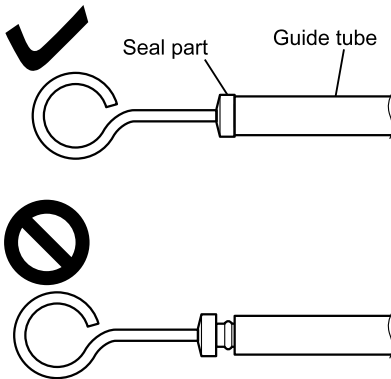
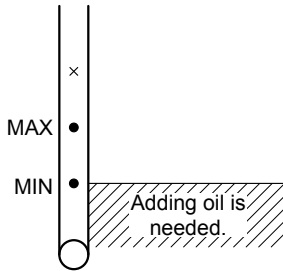
Recommended Fluids, Lubricants and

Diesel Fuels → Refer to page 7-158

Checking the Engine Oil Level



Park the vehicle on a level surface, and check the engine oil level before starting or 20 or 30 minutes after turning off the engine. To check the oil level, remove the oil dipstick, wipe off the end with a clean cloth, reinsert it, and then gently remove it. If the oil level is between the "MAX" and "MIN" marks, the oil is at the correct level. Also check to see if there are any oil leaks.



Checking the Engine Oil Level

1. Remove the oil dipstick and wipe off any oil on the gauge.
2. Reinsert the oil dipstick and then gently remove it. If the oil level is between the "MAX" and "MIN" marks, the oil is at the correct level.
3. If the oil level is too low, add oil to a level between the "MAX" and "MIN" marks.
4. Reinstall the oil dipstick into position after checking the oil level.

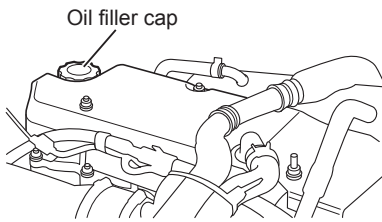


ADVICE

- Any oil level above the "MAX" mark on the gauge causes engine breakdowns. Change the oil whenever it exceeds this level.
- Fuel will gradually become mixed with the engine oil, thinning it out. Be sure to change the oil at the specified intervals.
- Insert the oil dipstick while being careful not to use excessive force. Failure to do so may cause deformation of the oil dipstick.
- Insert the oil dipstick until the dipstick seal part makes contact with the guide tube. This is to prevent water intrusion.

**NOTE**

- Perform all engine oil level checks on a level surface before starting the engine.
- The oil level cannot be measured accurately when the engine is running.
- Fuel will gradually become mixed with the engine oil, and the engine oil level will rise beyond the original level. This does not indicate an engine malfunction.
- Wait for 20 or 30 minutes after stopping the engine when measuring the oil level after the engine has been operated.

Adding Engine Oil

When the engine oil level is near the "MIN" mark on the oil dipstick, remove the oil filler cap and add the oil, after removing the dipstick. Use the specified engine oil.

**WARNING**

- When adding oil, keep a rag handy and be careful not to spill any. If any oil spills on the engine, wipe it all off. It could ignite and cause a fire.
- Do not leave flammable items, such as rags or gloves in the engine compartment. They could cause a fire.
- The engine oil is hot after driving, so when changing the oil after driving, be careful not to be scalded.

**ADVICE**

- Engine oil lubricates and cools the engine interior components. The quality of the oil is degraded and the quantity of oil is reduced by evaporation, exhaust, and combustion during the engine's operation. Continually using the same oil without checking the level, or without replenishing and changing it could cause seizure or damage to the engine. Add or change the oil when the quality of the oil has degraded or the quantity is reduced, even if that occurs before expiration of the specified intervals in the Maintenance Schedule, which will differ depending on the conditions of use.
- Prevent dirt from entering the filler port when adding oil. If foreign matter were to become mixed with the oil, it could damage the engine.
- Do not fill the engine with oil above the "MAX" mark on the oil dipstick. This could damage the engine.

Changing the Engine Oil and Oil Filter

Engine oil and the oil filter are important factors in engine performance and lifespan. Be sure to use only the specified oil and oil filters. The engine oil level must be checked and the oil should be changed regularly according to the Maintenance Schedule.



ADVICE

- Use the oil quantity indicated below only as guidelines when changing the engine oil. After changing the oil, ensure that it is at the proper level.

Quantity of Engine Oil to be Changed

Oil quantity [Reference value]

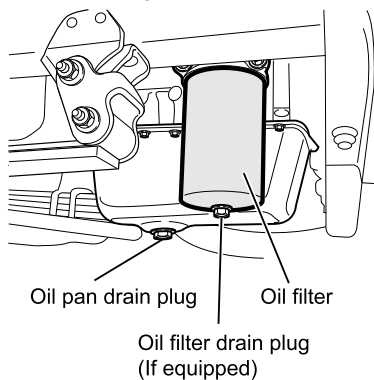
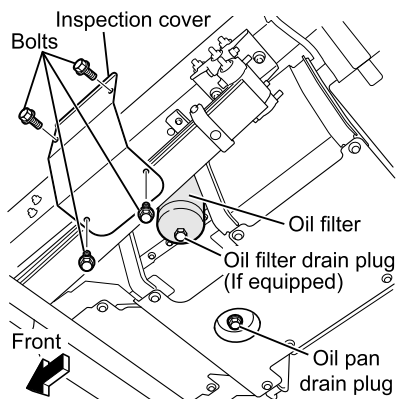
18.5 liters (4.89 US gal./**4.07 Imp gal.**) including **2.0 liters** (0.53 US gal./**0.44 Imp gal.**) in filter & **16.5 liters** (4.36 US gal./**3.63 Imp gal.**) in oil pan.

Maintenance Schedule

→ Refer to page 7-145

Recommended Fluids, Lubricants and

Diesel Fuels → Refer to page 7-158

6HK1-TCN engine model**6HK1-TCS engine model****Changing the Oil**

1. Clean around the oil filler cap so that foreign matter does not enter. Remove the oil filler cap.
2. Remove the inspection cover. (6HK1-TCS engine model)
3. Place a container to receive the oil beneath the oil pan and the oil filter.
4. Remove the oil pan drain plug and the oil filter drain plug (if equipped) to allow the oil drain out.
If changing only oil, go to step 8.

**ADVICE**

- Drained oil must be disposed of in a method conforming to the regulatory requirement in your country.
- When changing the oil, make sure that the oil is completely drained from the oil filter drain.

5. Use the special oil filter wrench to remove the oil filter.
6. Lightly coat the gasket of the new oil filter with clean engine oil.
7. Install the new oil filter. After the filter gasket comes in contact with the surface to which it will be attached, use the special oil filter wrench and tighten it.

**ADVICE**

- When installing the oil filter, make sure the gasket is not caught in the screw threads. This could cause oil leaks.
- Ensure that the oil filter is installed using the specified tightening torque. Failure to do so may result in breakage or oil leakage.

8. Check that the oil pan drain plug and the oil filter drain plug (if equipped) are firmly tightened.

Oil pan drain plug tightening torque

78 N·m (8.0 kgf·m/58 lb·ft)

Oil filter drain plug tightening torque
(If equipped with an oil filter drain plug)

12 N·m (1.2 kgf·m/104 lb·in)



ADVICE

- The dirt on the plug should be wiped off before installing it.

9. Remove the oil dipstick and carefully pour the specified oil into the oil filler opening.
10. Install the oil dipstick and the oil filler cap. Start the engine 5 minutes after refilling it with the new oil and let it idle. While the engine is idling, check to see if any oil leaks around the oil filter or drain plug.



ADVICE

- Avoid revving up the engine, as this could damage the engine.

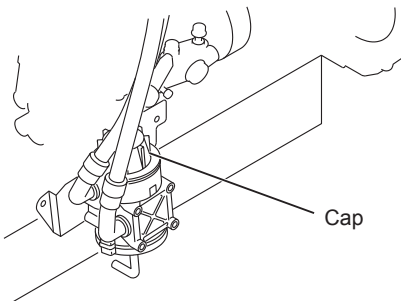
11. Shut off the engine, wait 20 to 30 minutes, and then check the oil level with the oil dipstick.

**WARNING**

- Bringing flames or other heat sources near spilled engine oil could cause a fire. Make sure to wipe it all up.
- Do not leave flammable items, such as rags or gloves in the engine compartment beneath the cab. They could cause a fire. Also, do not forget your tools.

**ADVICE**

- Avoid revving up the engine, as it could damage the engine.
- Do not fill the engine with oil above the "MAX" level on the oil dipstick. This could damage the engine.

Engine Oil Separator v

The element must be changed according to the Maintenance Schedule.

Maintenance Schedule

→ **Refer to page 7-145**

Replacement

1. Remove the cap, and then remove the element.
2. Install the new element. Replace the O-ring at the same time.
3. Install the cap firmly.

Engine Coolant

The engine coolant must be changed according to the Maintenance Schedule.

Maintenance Schedule

→ Refer to page 7-145

Recommended Fluids, Lubricants and

Diesel Fuels → Refer to page 7-158

WARNING

- Check, replenish or change the engine coolant only after the engine has sufficiently cooled down.
- Do not remove the radiator cap or reserve tank cap when the engine coolant is still hot. Careless removal could result in burns caused by hot vapor being released. Burns may also be caused by boiling water released due to the high temperature of the coolant. Perform inspection, refilling, and replacement of coolant only when its temperature has cooled.
- When removing the radiator cap or reserve tank cap, use a thick cloth to cover the cap and turn it slowly.
- Engine coolant is toxic and must not be ingested. If the engine coolant is mistakenly ingested, immediately vomit it and seek prompt medical attention.
- If the engine coolant gets in your eyes, rinse it off immediately with a large amount of water for 15 minutes or longer. Also, if still abnormality such as irritation is felt, seek medical attention.
- If the engine coolant gets on your skin, rinse it off using a soap with a large amount of water. Also, if abnormality is seen, seek medical attention.
- Engine coolant is flammable, and therefore, it must be kept away from flames and other heat sources. Engine coolant also could ignite if it comes in contact with a hot surface, such as the exhaust manifold. Exercise caution to prevent this from happening.

ADVICE

- Replace the engine coolant periodically.
If the engine coolant is not replaced periodically, rust is generated due to degradation of the engine coolant, which may cause a failure such as water leakage or clogging of the radiator or heater core.

**NOTE**

- Engine coolant is fluid which is made by mixing coolant and water at an appropriate concentration.

Preparing Engine Coolant

To prevent the engine damage due to freezing of the engine coolant and to protect the cooling system from corrosion, mix the Isuzu recommended coolant and water to be at 50% concentration.

For other than Isuzu genuine coolant (Caltex/Texaco/Chevron, etc.), it is recommended to use directly "50/50 Pre-diluted" product which is already diluted to 50% concentration.

Recommended Fluids, Lubricants and Diesel Fuels → Refer to page 7-158

**ADVICE**

- Isuzu does not guarantee the use of the engine or vehicle at the outside temperature of -30°C (-22°F) or below.
- However, if the engine or vehicle is used at the outside temperature of -30°C (-22°F) or below, the coolant concentration of 55% is recommended.

Engine Coolant Quantity

The quantity of engine coolant is indicated below for your use as a guideline when changing the engine coolant. After changing the engine coolant, check that the engine coolant is up to the specified level.

Models confirming to EuroIII emission standards

Engine model	Engine coolant quantity [Reference value] liters (US gal./Imp gal.)
6HK1-TCN	29.0 (7.66/6.38)
6HK1-TCS	29.6 (7.82/6.51)

Models confirming to EuroIV emission standards

Engine model	Engine coolant quantity [Reference value] liters (US gal./Imp gal.)
6HK1-TCN	29.6 (7.82/6.51)
6HK1-TCS	30.2 (7.98/6.64)

⚠ WARNING

- Coolant is toxic and must not be ingested. If the coolant is mistakenly ingested, immediately vomit it and seek prompt medical attention.
- If the coolant gets in your eyes, rinse it off immediately with a large amount of water for 15 minutes or longer. Also, if still abnormality such as irritation is felt, seek medical attention.
- If the coolant gets on your skin, rinse it off using a soap with a large amount of water. Also, if abnormality is seen, seek medical attention.
- For storage, close the cap securely and keep it in a place inaccessible to children.
- Coolant is flammable, and therefore, it must be kept away from flames and other heat sources. Coolant also could ignite if it comes in contact with a hot surface, such as the exhaust manifold. Exercise caution to prevent this from happening.

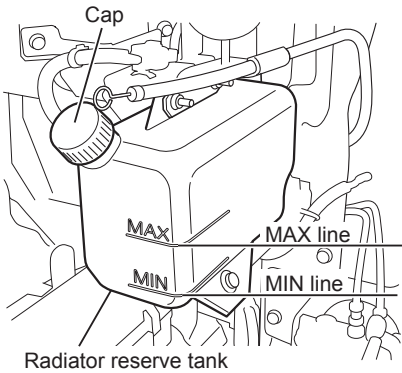
**CAUTION**

- Use only an Isuzu recommended coolant.
- Using any coolant other than that Isuzu recommended could cause damage to the engine, radiator or heater core. In particular, use of coolants containing borate salts or silicates may result in engine or radiator corrosion, causing engine coolant leaks and other problems.

**ADVICE**

- To dilute the coolant, use distilled water or deionized water.
- Do not use the coolant at any coolant concentration other than that specified. If the coolant concentration is 60% or higher, overheating is likely to occur, while if it is 30% or lower, anti-corrosion function is not provided sufficiently.
- Using coolant at any coolant concentration other than that specified may reduce anti-freezing performance, and engine coolant may freeze.
- If the engine coolant decreases rapidly, go immediately to the nearest Isuzu Dealer for a check or repair.

Checking the Engine Coolant Level



Check that the engine has cooled sufficiently, and inspect the coolant level of the radiator reserve tank. The level is correct if it is between the "MIN" and "MAX" lines. If the engine coolant level is lower than the "MIN" line, replenish it by filling up to the "MAX" line.

Also, check to make sure there are no leaks from the radiator or radiator hose. Check for stains or fluid on the ground where the vehicle is parked that would indicate there is a leak. Contact your Isuzu Dealer when you discover leaks.



CAUTION

- Using the vehicle when there are leaks can lead to the engine seizing up.

Adding Engine Coolant

When the engine coolant level is too low, open the cap on the reserve tank and fill the tank almost to the "MAX" line with engine coolant. Tighten the cap securely after the engine coolant has been replenished.



WARNING

- Check, replenish or change the engine coolant only after the engine has sufficiently cooled down.



ADVICE

- Check the reserve tank to determine engine coolant level. In situations, however, where the level in the reserve tank rises or falls suddenly, open the radiator cap and check the level within the radiator itself.
- When the engine is still hot, take care to prevent engine coolant from contact with the exhaust manifold. Any such contact could result in exhaust manifold damage.
- If the level of engine coolant changes rapidly, have your vehicle inspected at your Isuzu Dealer.

Changing the Engine Coolant

Change the engine coolant according to the Maintenance Schedule.



ADVICE

- Drained engine coolant must be disposed of in a method conforming to the regulatory requirements in your country.

Maintenance Schedule

→ Refer to page 7-145

Recommended Fluids, Lubricants and

Diesel Fuels → Refer to page 7-158

Engine Coolant Level

Models confirming to EuroIII emission standards

Engine model	Engine coolant quantity [Reference value] liters (US gal./Imp gal.)
6HK1-TCN	29.0 (7.66/6.38)
6HK1-TCS	29.6 (7.82/6.51)

Models confirming to EuroIV emission standards

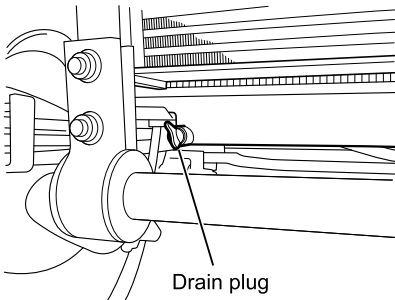
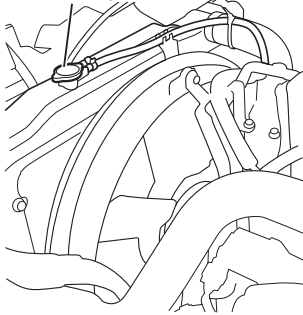
Engine model	Engine coolant quantity [Reference value] liters (US gal./Imp gal.)
6HK1-TCN	29.6 (7.82/6.51)
6HK1-TCS	30.2 (7.98/6.64)

When changing the engine coolant, also clean the radiator cap, radiator, intercooler and engine coolant passages.

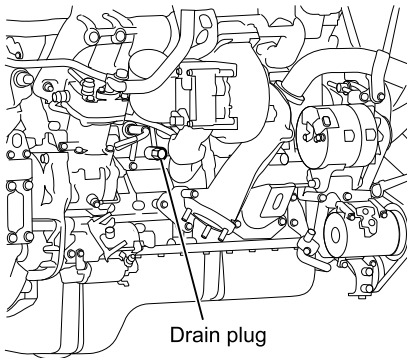
Handling the Radiator and Intercooler

→ Refer to page 7-41

Radiator cap



Drain plug



Drain plug

Draining the Cooling System

1. Check that the engine has cooled sufficiently.
2. Remove the radiator cap.
3. Open the drain plugs on the radiator and the engine to let the engine coolant run out.
Drain the engine coolant from the reserve tank as well.
4. Close the drain plugs on the radiator and the engine.
Replace the gasket of the engine drain plug with a new one before installing it (if equipped).

Engine drain plug tightening torque

M10	22 N·m (2.2 kgf·m/16 lb·ft)
M14	44 N·m (4.5 kgf·m/33 lb·ft)

CAUTION

- Do not start the engine when engine coolant has been drained from the radiator.
This could cause the engine to seize up.
- The radiator cap is a double-action type that must be opened and closed in two turning motions. When removing the cap, take care not to damage the cap or filler.

ADVICE

- Tighten the radiator drain plug by hand. Tightening with pliers or some other tool could damage it.

Cleaning the Radiator Core and Intercooler Core

Cooling efficiency is compromised when there is dirt or dust plugging air passages in the radiator core and intercooler core. It also could cause corrosion of the core. Periodically wash the core with water.

Handling the Radiator and Intercooler

→ Refer to page 7-41

**ADVICE**

- When cleaning the radiator core and the intercooler core, do not crush or damage the fins.

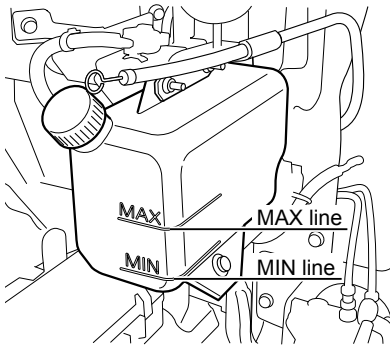
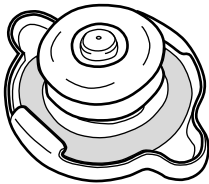
Cleaning the Engine Coolant Passages

1. Fill with tap water up to brim of the radiator inlet.



CAUTION

- The radiator cap is a double-action type that must be opened and closed in two turning motions. When removing the cap, take care not to damage the cap or filler.



2. Check and clean the radiator cap. Replace the cap if there is anything abnormal with it.
3. Securely fasten the radiator cap.
4. Engine coolant may leak from even minor cracks. Replace damaged rubber hoses.
5. Refill the reserve tank with tap water to the "MAX" line.
6. Close the cap of the reserve tank.
7. Start the engine and let it idle for 20 minutes. Stop the engine, wait until it cools down, and then drain out the water.

Draining the Cooling System

→ Refer to page 7-35

Filling the Cooling System



CAUTION

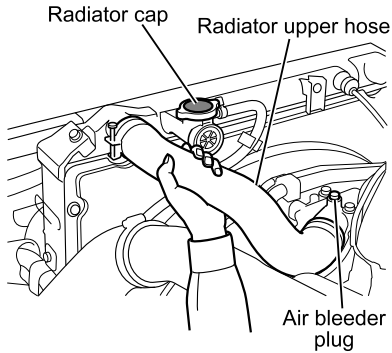
- A failure to correctly fill the engine cooling system in changing or topping up engine coolant may sometimes cause the engine coolant to overflow from the filler neck even before the engine and radiator are completely full.
- If the engine runs under this condition, the shortage of engine coolant may possibly result in engine overheating. To avoid such trouble, the following precautions should be taken when refilling with the engine coolant.

1. Confirm that the engine has fully cooled down before starting work.
2. Tighten the radiator drain plug. Tighten the engine drain plug. Replace the gasket of the engine drain plug with a new one (if equipped).

Engine drain plug tightening torque

M10	22 N·m (2.2 kgf·m/ 16 lb·ft)
M14	44 N·m (4.5 kgf·m/ 33 lb·ft)

3. Fill with engine coolant up to brim of the radiator inlet.



4. Squeeze the radiator upper hose two or three times.

If this action results in air being discharged from the hose and the level of engine coolant goes down, add engine coolant up to the top of the radiator filler opening from the radiator cap section.

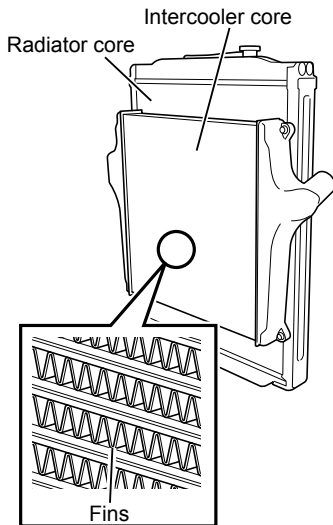
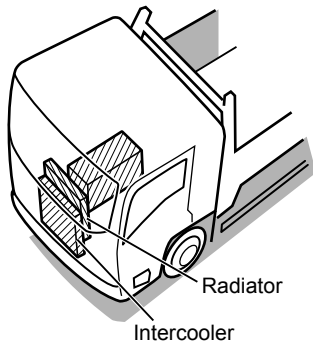
Repeat until the level of the engine coolant no longer decreases.

**CAUTION**

- The radiator cap is a double-action type that must be opened and closed in two turning motions. When removing the cap, take care not to damage the cap or filler.
- Refill with engine coolant slowly to avoid air being mixed in.

5. Fill the reserve tank with engine coolant to the "MAX" line. Close the cap of the reserve tank.
6. Start the engine, let it idle for 5 minutes or more and then stop the engine.
7. Check that the engine has cooled sufficiently and remove the radiator cap. If the engine coolant level has decreased, add coolant up to the brim of the radiator inlet. If the level is extremely low, inspect whether coolant is leaking from the radiator, coolant passages, or the reserve tank hose. If a leakage is found, contact your nearest Isuzu Dealer.
8. After firmly closing the radiator cap, idle the engine until the needle of the coolant temperature gauge reaches the center and the thermostat opens.
If the vehicle is equipped with an air conditioner, turn the A/C switch off to facilitate warming.
If the vehicle is equipped with a heater, turn off the fan to facilitate warming.
In order to save time.
Maintain the engine speed approximately 2,000 r/min to warm up the engine.
After the needle of the coolant temperature gauge reaches the center, increase the engine speed to approximately 2,000 r/min, and maintain this speed for 5 minutes.
Check if the thermostat is open or not by checking whether the upper hose is hot.
If the vehicle is equipped with a heater, turn the temperature control to the maximum setting and make sure that hot air comes out.
9. Let the engine idle for 5 minutes and then stop the engine.
10. Check that the engine has cooled sufficiently and remove the radiator cap. If the engine coolant level has decreased, add coolant up to the brim of the radiator inlet. If the level is extremely low, inspect whether coolant is leaking from the radiator, coolant passages, or the reserve tank hose. If a leakage is found, contact your nearest Isuzu Dealer.
11. Repeat steps 8 through 10 until the engine coolant level in the radiator filler opening stops declining.
12. Firmly close the radiator cap.
13. Replenish the engine coolant in the reserve tank up to the "MAX" line, and then close the reserve tank cap.
14. Check the engine coolant level of the reserve tank the next morning. If the engine coolant level has decreased, refill with engine coolant to the "MAX" line.

Handling the Radiator and Intercooler



Cleaning the Radiator Core and Intercooler Core

Cooling efficiency is compromised when there is dirt or dust plugging air passages in the radiator core and intercooler core. This can also cause corrosion of these cores. When replacing the engine coolant, wash the radiator core and intercooler core with tap water.

WARNING

- Make sure to turn the engine off and remove the key from the starter switch before cleaning cores.
- The engine, exhaust pipe and radiator will be hot immediately after the vehicle is driven. Be careful around these parts to prevent burns. Clean the engine when it is cold.

CAUTION

- Do not clean the radiator, intercooler and their surrounding areas using water that is supplied under high pressure. Doing so may cause damage.
- When cleaning the radiator core and intercooler core, do not crush or damage the fins.
- The fins are very fragile so be careful not to bend them out of shape. If they become deformed, their cooling performance will be impaired.
- Before cleaning, take steps to ensure that no water will splash onto the surrounding electrical components and wires.

CAUTION (Continued)

CAUTION (Continued)

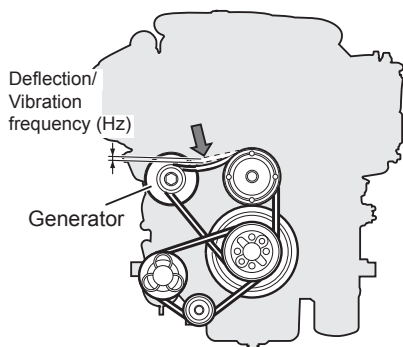
- If stubborn dirt still remains even after the radiator core and intercooler core have been cleaned, have the vehicle inspected and serviced at your Isuzu Dealer.

Fan Belt



CAUTION

- The V ribbed fan belt used in your engine requires the tension be adjusted more accurately than is required with conventional V belts. Inappropriate tension could cause the belt to make noise or break. When the fan belt is damaged, electricity is not properly generated and becomes a cause of overheating. You must check the tension of the fan belt carefully.
- To accurately check fan belt tension, use a sonic wave tension gauge, which will show you whether the belt's vibration frequency (representing the belt tension) is as listed below. Ask about the sonic wave tension gauge at your Isuzu Dealer.
- Use an Isuzu genuine product when changing the fan belt.



Daily Checks

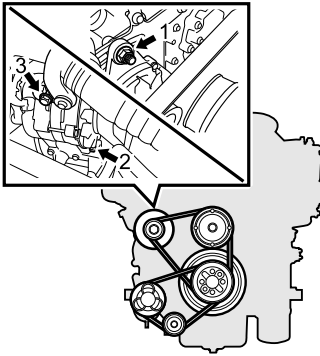
Press the center of the span between pulleys (see the figure) of the belt with a pressure of **98 N (10.0 kgf/22 lb)** and check the amount of deflection or vibration frequency. The amount of deflection or vibration frequency must fall within the standard value range indicated below. Otherwise, adjust the tension or replace the belt. Also check the fan belt for cracks or other damage. If there are cracks or damage, replace the belt.

Fan belt	Standard values	
	Degree of deflection	Vibration frequency
New belt	4 - 5 mm (0.16 - 0.20 in)	191 - 209 Hz
When reused	6 - 7 mm (0.24 - 0.28 in)	162 - 172 Hz

 **CAUTION**

[Follow this to properly adjust belt tension]

- Initial stretching takes place in any new belt after installation. Furthermore, an installed new or reused belt should be in good alignment with the pulley grooves. These require the following adjustments to be carried out.
 - Align the belt and pulley grooves and adjust the belt tension using the indicated method.
 - Start the engine, and let it idle for at least 5 minutes to allow the belt to settle into the pulley grooves.
 - Stop the engine. Then measure the belt tension, and if not appropriate, readjust the belt tension to the specified value.
 - Use the new belt tension specification only after replacing the belt with a new one.



Adjustments

1. Loosen the generator's upper and lower bolts or nuts (1, 2).
2. Turn the adjusting bolt (3) until the belt tension falls within the standard value range.
3. After adjustment, firmly tighten all the loosened bolts and nuts.

Replacement

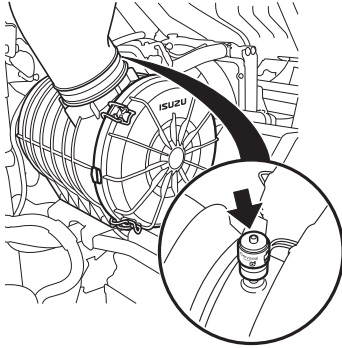
1. Remove the air conditioning compressor belt.

Air Conditioning Compressor Belt V

→ Refer to page 7-131

2. Loosen the generator's upper and lower bolts or nuts (1, 2), and then detach the belt from the pulleys.
3. Take out the belt through the opening in the fan guide.
4. Insert the new belt through the opening in the fan guide and install the belt while aligning its grooves with those in the generator pulley and crank pulley.
5. Turn the adjusting bolt (3) until the belt tension falls within the standard value range.
6. After adjustment, firmly tighten all the loosened bolts and nuts.
7. Install the air conditioning compressor belt.

Air Cleaner



Check the signal part of the indicator to see if it is red. If it is transparent, the air cleaner is satisfactory. If it is red, the air cleaner must be cleaned.

Replace the air cleaner element according to the Maintenance Schedule.

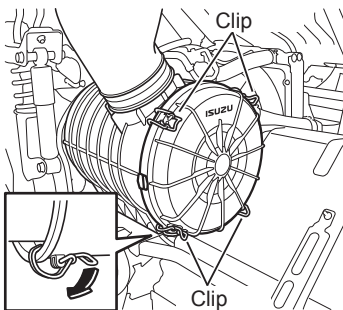
**CAUTION**

- Do not attempt to remove (and clean for reuse) the inner element unless the element replacement becomes necessary.
- The inner element should be replaced whenever the outer element becomes due for replacement or whenever found to be broken. It is always advisable to use Isuzu genuine elements for replacement. Otherwise its filtering efficiency will be lost and the engine will be damaged.

Maintenance Schedule

→ Refer to page 7-145

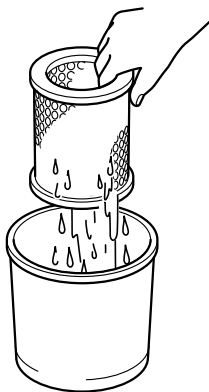
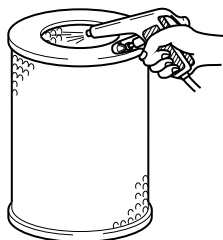
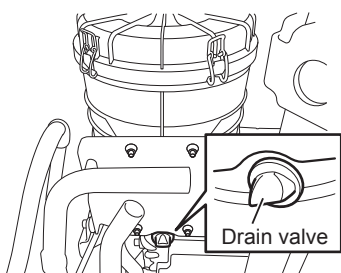
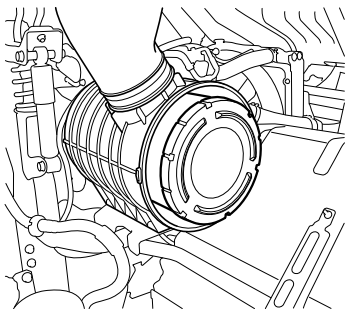
Cleaning and Changing the Air Cleaner Element



1. Tilt the cab.

Tilting the Cab → Refer to page 7-10

2. Remove the 4 clips and the air cleaner cover.



3. Remove the air cleaner element by pulling it out toward you.

4. Remove the dirt that has accumulated on the air cleaner cover and the air cleaner body.

5. Clean the drain valve at the bottom of the air cleaner.

6. Clean the air cleaner element.

Choose one of the following cleaning methods depending on how the element has become dirty.

a. When dry dust has become adhered to the element

1. Blow compressed air at a pressure below **690 kPa** (7.0 kgf/cm²/ **100 psi**) into the inside of the element while turning it to remove the dust.
2. Check to see if the element has become damaged or become thin in spots.

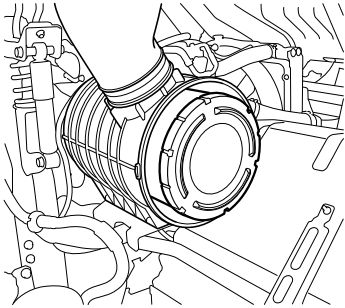
b. When the element has become blackened by oily smoke or soot

1. Soak the element in a mixture of water and neutral detergent for about 30 minutes.
2. Rinse the element off well in clean water.

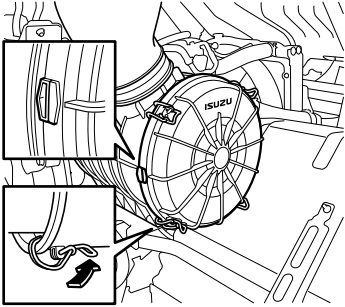
3. After cleaning, let the element dry naturally in a well-ventilated location.

**ADVICE**

- Do not hit or strike the element, as this might damage it.
- Air drying will take two or three days. We recommend using a spare element.
- Do not use compressed air or fire to dry.



7. Push the element back into position in the air cleaner body.



8. Install the air cleaner cover.
When installing the cover, ensure that the "ISUZU" mark at the top and the notch on the left side are aligned with the claw on the body.
Lock the cover securely using the 4 clips.

**CAUTION**

- Do not attempt to clean the inner element. It should be replaced together with the outer element.
- When cleaning the outer element, leave the inner element installed in order to prevent foreign matter from entering the clean side of the filter.

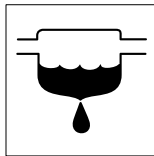
Fuel Filter

Change the engine-side main fuel filter (secondary filter) and the vehicle-side pre-fuel filter in accordance with the Maintenance Schedule. Drain the water from the fuel filter when the water separator (fuel filter) warning light comes on.

Maintenance Schedule

→ Refer to page 7-145

Water Separator (Fuel Filter) Warning Light



When the water collecting in the water separator (fuel filter) exceeds a preset level, a warning light comes on.

Drain the water and make sure that the light or the indicator goes off.



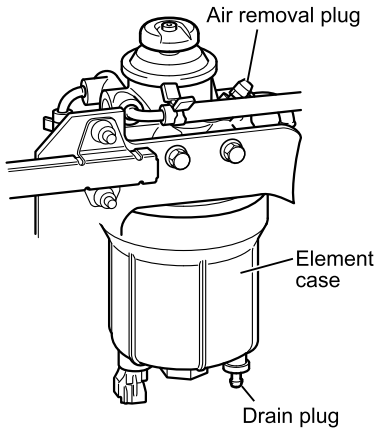
CAUTION

- Any water remaining in the water separator could freeze, damaging the vehicle.
- If the warning light comes on while the engine is in operation, immediately drain the water from the water separator (fuel filter). Continuing to drive with the light on could damage the fuel injection system. If this happens, have the vehicle checked and serviced by the nearest Isuzu Dealer.

Draining Water from the Fuel Filter

→ Refer to page 7-53

Changing the Fuel Filter



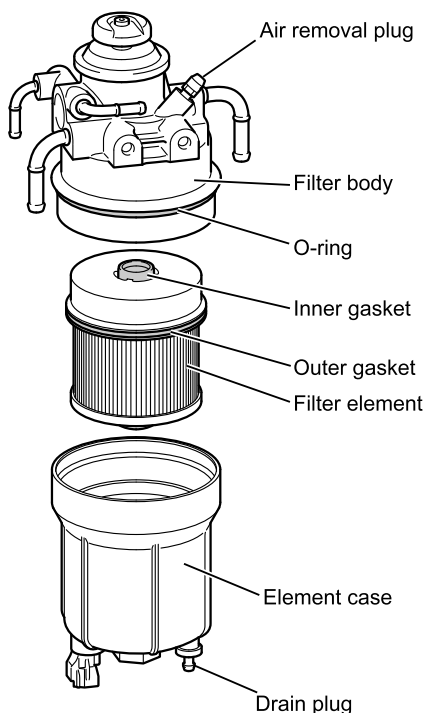
Engine-side Main Fuel Filter

1. Connect one end of a plastic hose to the drain plug at the bottom of the engine-side fuel filter and place the other end of the hose inside a container to receive the drained fluid.
2. Loosen the drain plug at the bottom of the filter element case. Remove the rubber cap of the air removal plug and then loosen the plug. This will allow the fuel in the filter element case to drain from the drain plug. Tighten the air removal plug.
3. Use a tool (like a socket wrench, 29 mm) to loosen the hexagonal part at the bottom of the element case by turning it counterclockwise. Remove the element case.
4. Pull out the filter element downward and remove the O-ring. Use a clean cloth to wipe off any foreign matter that has accumulated on the inside surface of the filter body.



ADVICE

- Do not use compressed air to remove foreign matter. Use a clean cloth instead. Air blowing may bring foreign matter into the fuel passage, which could cause the engine to malfunction.



5. Attach the new O-ring to the filter body, making sure that it is not damaged by the screw threads.
6. After lightly coating the inner and outer gaskets of the new filter element with diesel fuel, turn the element clockwise until its end touches the filter body.

**ADVICE**

- Do not allow foreign matter to get into the 4 holes next to the inner gasket.
7. After lightly coating the inside socket surface of the element case or the O-ring with diesel fuel, turn the element case until its end touches the filter body.
If the element case end fails to touch the filter body, the filter element has not been inserted fully. Reinsert the element while turning it.

**WARNING**

- When fitting the element case, be careful not to let the O-ring be caught in the screw threads. This could cause a fuel leak and start a fire.

**ADVICE**

- Be sure to use an Isuzu genuine fuel filter.
- Replace the gasket when replacing the filter.
- Dispose of the replaced filter in a method conforming to the regulatory requirements in your country.

8. Install the element case.

Tightening torque

51 - 61 N·m (5.2 - 6.2 kgf·m/38 - 45 lb·ft)

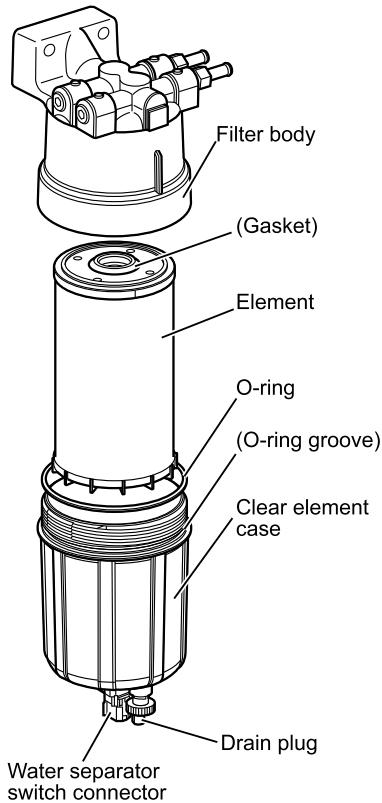
9. Tighten the drain plug.

10. Bleed the fuel system.

How to Bleed Air → Refer to page 8-12

11. After restarting the engine, confirm that there is no fuel leakage from the area around the fuel filter.

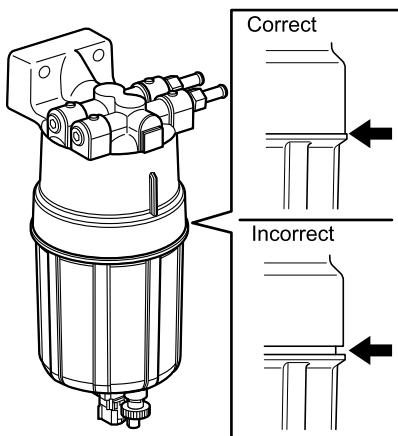
Vehicle-side Pre-fuel Filter



1. Connect one end of a plastic hose to the drain plug at the bottom of the vehicle-side pre-fuel filter (primary filter) and place the other end of the hose inside a container to receive the drained fluid.
2. Pull out the fuel hose connecting the fuel tank and filter body at the fuel tank side.
3. Loosen the drain plug at the bottom of the element case to drain out the fuel from the element case.
4. Tighten the drain plug and disconnect the water separator switch connector.
5. Carefully turn the element case counterclockwise and remove the element case from the filter body.
6. Pull out the filter element downward and remove the O-ring.
7. Attach the new O-ring to the groove in the periphery of the element case, making sure that it is not damaged by the screw threads.
8. After lightly coating the gaskets of the new filter element with diesel fuel, place the element until it touches the filter body.
9. Thinly apply the diesel fuel to the O-ring of the element case, and put approx. **0.8 liter** (0.21 US gal./**0.18 Imp gal.**) of new fuel in the element case.
10. Install the element case to the filter body by turning it in clockwise direction.

**CAUTION**

- Be careful not to spill the fuel.
- Be careful not to let the O-ring get caught by the screw.



- Using a filter wrench, install the element case by rotating it further until it touches the filter body.
- Connect the connector of water separator switch, and put the fuel hose that is disconnected in step 1 back in place.
- Bleed the fuel system.

How to Bleed Air → Refer to page 8-12

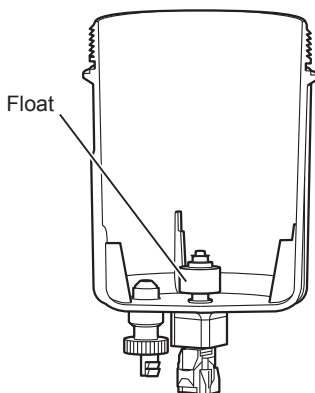
- After restarting the engine, confirm that there is no fuel leakage from the area around the fuel filter.

**CAUTION**

- Since the filter element case is made of plastic, applying clear lacquer or other organic solvents to the case could cause cracks (fuel leakage). Do not apply paint or the like to the case.

**ADVICE**

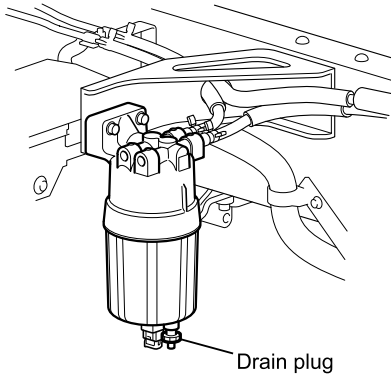
- Clean any foreign matter or dirt from the bottom of the filter element case and check that the float moves freely and smoothly.
- Use only an Isuzu genuine fuel filter.
- Replace the O-ring when replacing the filter.
- Dispose of the replaced filter in compliance with the regulatory requirements in your country.



 **WARNING**

- After changing the fuel filter, operate the engine to check that there are no leaks around the filter. Fuel leaks could cause a fire.

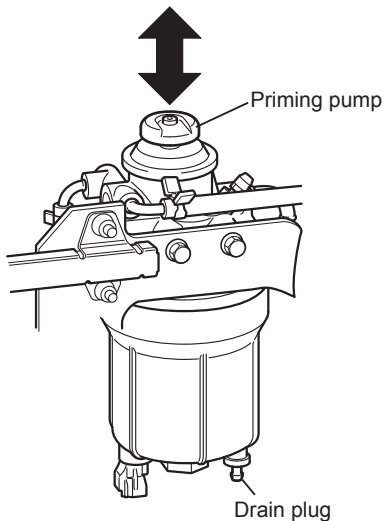
Draining Water from the Fuel Filter



Vehicle-side Pre-fuel Filter

1. Connect one end of a plastic hose to the drain plug at the bottom of the vehicle-side pre-fuel filter (primary filter) and place the other end of the hose inside a container to receive the drained fluid.
2. Loosen the drain plug on the clear case at the bottom of the fuel filter to drain out water.
3. Tighten the drain plug once all of the water has drained off. If the amount of water exceeds **0.3 liter** (0.08 US gal./**0.07 Imp gal.**), drain the water from the engine-side main fuel filter as well.

Engine-side Main Fuel Filter



1. Connect one end of a plastic hose to the drain plug at the bottom of the engine-side fuel filter and place the other end of the hose inside a container to receive the drained fluid.
2. Loosen the drain plug at the bottom of the fuel filter and move the priming pump up and down to discharge the water.
3. Fully tighten the drain plug and move the priming pump several times.
4. Check that there are no fuel leaks from the drain plug and that the water separator (fuel filter) warning light stays off after the engine is started.

**CAUTION**

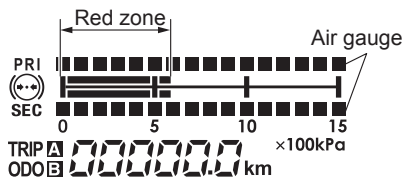
- Clean off any fuel that has adhered to the vehicle body.
- Starting the engine immediately after draining the water from the fuel filter requires a little more time than usual. If the engine doesn't start in 10 seconds, wait for a while and try again.
- Fuel will be mixed in the drained water. Dispose of it in a method conforming to the regulatory requirements in your country.

**CHASSIS-RELATED SERVICE AND
MAINTENANCE**

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Brakes

Air Pressure



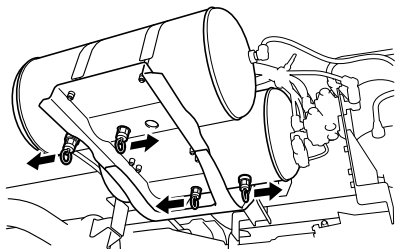
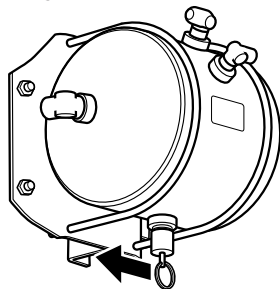
Checking Air Pressure

1. Check the air pressure gauges to see that the primary and secondary air systems are charged with air to proper pressures.

Optimum air pressure

780 - 890 kPa
(8.0 - 9.1 kgf/cm²/114 - 129 psi)

2. Next, check the rate at which the air pressure rises. After confirming that the parking brake lever is fully pulled, pull the drain tap at the bottom of the air tank to let all the air in the air tank be discharged.

Accessory air tank 

For air tanks installed at other locations, perform the water draining procedure described above.

Air pressure warning light

 A rectangular box containing the words "BRAKE" and "AIR" stacked vertically in a bold, sans-serif font.

3. Start and run the engine at idle.
The brake air systems are in order if the time taken for the air pressure warning light to go out matches the time indicated in the following table for your particular vehicle.

Air Pressure Warning Light

→ Refer to page 4-17

Time taken before air pressure warning light goes out

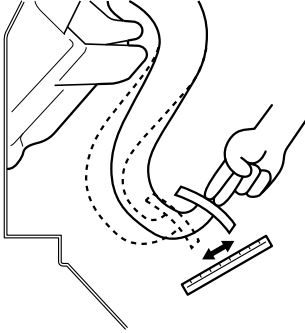
Vehicle model and specification	Time (minutes)
FTR/FVR	11
FVM	14
FVZ	14

The time taken before the air pressure warning light goes out may somewhat vary depending on the temperature and other environmental conditions. However, you should contact the nearest Isuzu Dealer if air pressure does not increase at all, the time taken before reaching a proper pressure is significantly different from that indicated in the table, or the needles of the two air pressure gauges indicate considerably different pressures.


WARNING

- Do not operate the vehicle while any of the pressure gauge needles are in the red zone or the air pressure warning light is on. Brakes are then not fully functional, and it is dangerous to operate the vehicle.

Brake Pedal



Free Play

Press the brake pedal with two fingers to check that the pedal free play is proper and the pedal moves smoothly without abnormal interference.

Free play (measured at the tip of pedal)

10 - 18 mm (0.39 - 0.71 in)



Brake Valve Operation

Release the brake pedal after stepping on it to check that an air release sound comes from the exhaust hole at the brake valve and the pedal fully returns to the released position.

Brake Performance

Drive the vehicle slowly on a dry road and apply the brakes. Check that the brakes are working fully and does not pull on one side.



CAUTION

- A brake performance check should be performed on a wide road with good visibility while paying adequate attention to the traffic behind and the surroundings.

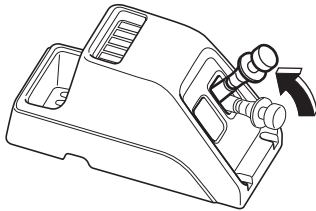
Parking Brake



NOTE

- When you pull the parking brake lever, the wheel parking brake activates the rear wheel brakes to lock them.

Checking the Parking Brake Lever Stroke



Pull the parking brake lever from the fully released position to the wheel locked position to check that the air exhaust sound is heard and the lever stays in position. Also, on a dry sloping road, check that the parking brake can hold the vehicle stationary.

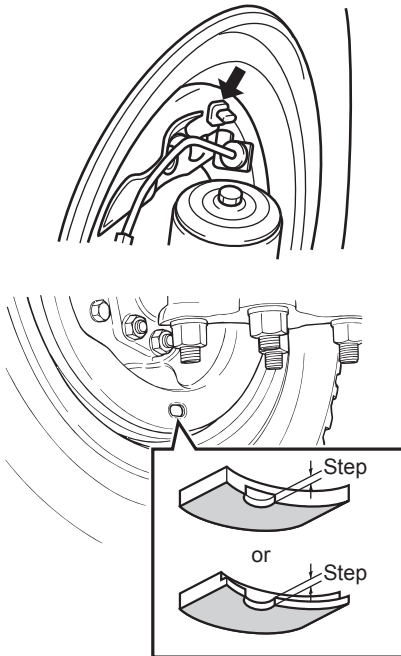
Drum Brakes

If the linings wear out beyond the limit, not only will the brakes' performance deteriorate, but there could also be a brake component failure.

WARNING

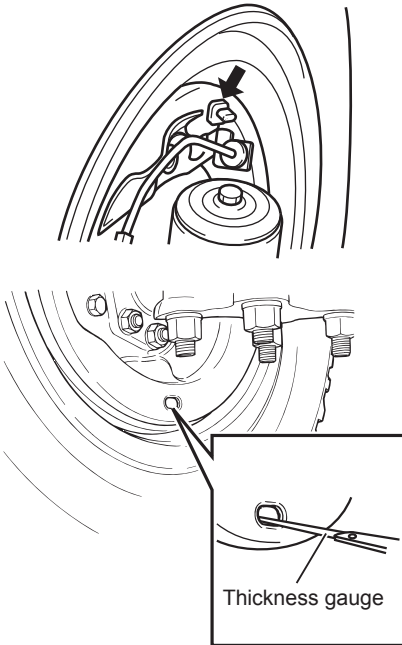
- Do not drive with brake shoe linings worn out beyond the limit. Excessively worn brake shoe linings may cause breakdown of brake components and poor braking performance. This is very dangerous.

Checking Brake Shoe Linings for Wear



1. Remove the rubber plug from the inspection hole in the backing plate.
2. Each brake shoe lining has a step that is cut at its side as shown in the figure. Check that the step is remaining. Also check the side surfaces of the lining for cracks, flaking or other damage.
3. The lining must be replaced if the step is lost or there are cracks or flaking on the side surfaces. Have the replacement carried out by the nearest Isuzu Dealer.

Checking the Drum-to-Lining Gap



1. Perform this check under the following conditions: Center parking brake model: Fully apply the parking brake. Wheel parking brake model: Park the vehicle on a level and flat surface. Prevent the vehicle from moving by applying chocks to the front and back of each wheel and release the parking brake completely.
2. Remove the rubber plug from the inspection hole in the backing plate.
3. Insert a thickness gauge through the inspection hole in between the brake drum and brake shoe lining to check that the gap is up to the specification indicated below.



ADVICE

- If the drum-to-lining gap measurement is not as specified, have the brakes inspected by the nearest Isuzu Dealer.

Standard drum-to-lining gap

Gap*	Remarks
Within 1.3 mm (0.051 in)	Brake shoe lining should not drag on the drum.

*Drum-to-lining gap as measured when the drum temperature is almost equal to the environmental temperature

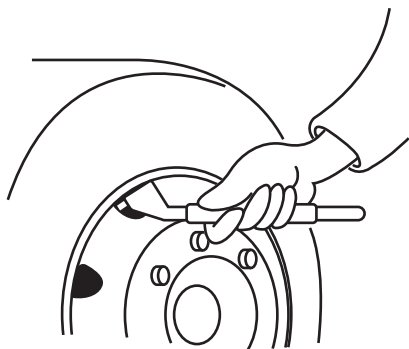
Wheels and Tires

The wheels have major influence upon safety and comfort of driving. Should any wheel fall off the vehicle, it not only causes the vehicle to break down on the road and hinder the other traffic to get blocked, but also, according to circumstances, it may lead to a serious accident. We strongly recommend that you check the wheels and tires daily and maintain them in satisfactory condition.

WARNING

- If you find anything abnormal in wheel bolts, wheel nuts or disc wheels as a result of checking, avoid driving the vehicle, and contact the nearest Isuzu Dealer as soon as possible.
- If you find anything abnormal on left wheels, check the right wheels carefully for similar defects. A defect on a wheel may be a sign of defects on other wheels.

Checking Tires



Air Pressure

A tire pressure that is too low or too high not only affects ride or causes damage to the cargo but also causes abnormal heat buildup, premature wear or a flat tire and burst.

- Use an appropriate tire air pressure gauge when measuring tire air pressure. Tire air pressure should be measured when the tire is cold, or before the vehicle is driven. (After driving, tire air pressure increases by about 10%.)
- Also check air pressure of the spare tire using a tire air pressure gauge at the intervals specified by the Maintenance Schedule.

Tire size	Standard air pressure kPa (kgf/cm ² /psi)			
	JATMA	ETRTO	TRA	
			Front	Rear
10.00R20-14PR	725 (7.25/105)	—	720 (7.20/104)	720 (7.20/104)
10.00-20-16PR	—	750 (7.50/109)	790 (7.90/115)	720 (7.20/104)
10.00R20-16PR	—	—	830 (8.30/120)	830 (8.30/120)
11.00-20-16PR	725 (7.25/105)	675 (6.75/98)	790 (7.90/115)	720 (7.20/104)
11.00R20-16PR	775 (7.75/112)	825 (8.25/120)	830 (8.30/120)	830 (8.30/120)
11R22.5-14PR	700 (7.00/102)	—	720 (7.20/104)	720 (7.20/104)
11R22.5-16PR	—	850 (8.50/123)	—	—
295/80R22.5-152/148	—	850 (8.50/123)	—	—

**WARNING**

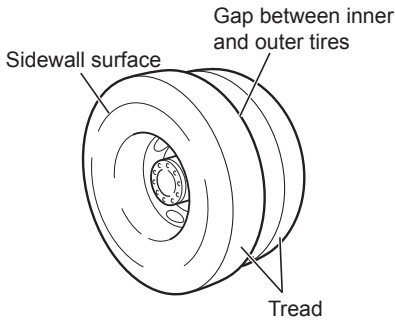
- Insufficiently inflated or worn-out tires are highly dangerous as they easily skid and can even burst. Should they burst, the tires may burn and this could cause a fire in the vehicle.
- If you drive on under-inflated or flat tires, the wheel bolts will be placed under excessive stress. Under this condition, the bolts may break and the wheel may come off the vehicle, possibly causing an accident.

**CAUTION**

- Over-inflated tires result in harsh ride and are likely to cause damage to the cargo. Under-inflated tires build up heat and could burst. Always keep the tires of your vehicle inflated to the standard air pressures.

**ADVICE**

- There should not be a difference in air pressure between the inside and outside tires on a dual-tire rear wheel.
- It is not easy to identify an under-inflated dual-wheel tire or low aspect ratio tire (aspect ratio at 70%). Always use a tire air pressure gauge to check the air pressure of any tire.



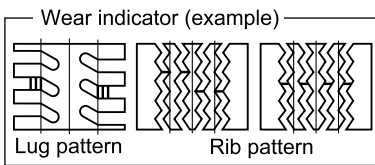
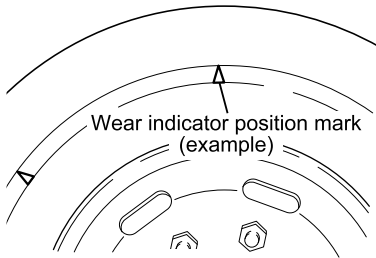
Cracks and Other Damage

Check the tread and sidewall surfaces of tire for cracks or other damage. Especially check the tread for nails or other metal pieces embedded in grooves. Also check the gap between the inner and outer tires of a dual-tire wheel for pebbles lodged in it.



ADVICE

- When checking tires, pay special attention to: low air pressure; pebbles or nails in tread grooves; cracks or other damage on tire surfaces; uneven wear; and pebbles lodged in the gap between tires of dual-wheel tires.



Tread Groove Depth and Abnormal Wear

Using worn-out tires is dangerous because they are punctured or burst more easily while you are driving than newer tires in good condition. Check all tires to see if tread wear indicators appear and also check the tread depth on the entire tire depth gauge to make sure that the grooves are deeper than the specified depth.

A tire with tread wear indicators appearing must be changed. Also, check the tires for uneven or otherwise abnormal wear.

Tread depth (Standard value)

1.6 mm (0.063 in) or more



CAUTION

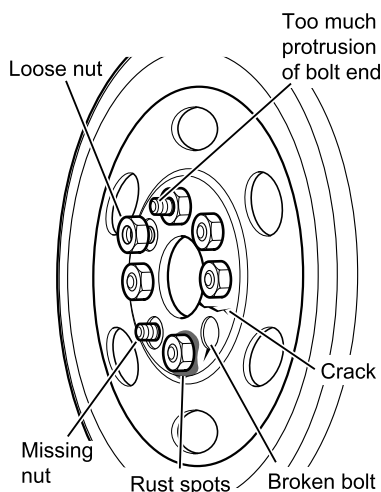
- Tires with excessively shallow tread grooves will increase the chance of skidding and, when driving at high speeds, hydroplaning.

**NOTE**

- Hydroplaning occurs when a vehicle is running at high speeds on a wet road if a layer of water forms between the road surface and tires causing the tires to float on it. Hydroplaning prevents the driver from steering correctly and slowing down the vehicle with the brake pedal.

Tires Used for Long Term

Tires are made of rubber whose property changes gradually by aging as time goes on (even when they are stored on the rim like a spare tire). Tires must receive an aging check after being used for up to 5 to 7 years if they are to be used continuously.

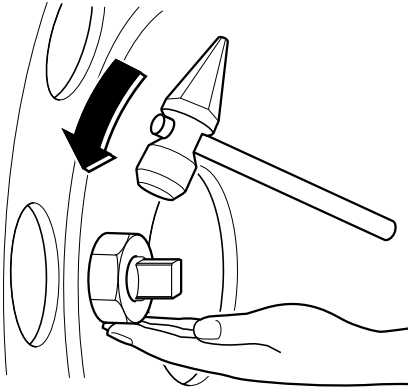
**Visual Checking of Wheel Installation Condition**

Visually check the installation condition of each disc wheel.

1. Check that there are no missing wheel bolts and wheel nuts.
2. Check each disc wheel to see if there is any rust apparent on wheel bolts or nuts. Also check the disc wheel for cracks or other damage.
3. Check the end of each wheel bolt to make sure it protrudes the proper length from the wheel nut. The protrusion should be uniform among all bolts on a wheel and among all wheels.

**CAUTION**

- Any abnormality in wheel installation is likely to lead to loose or missing wheel nuts and/or broken wheel bolts.



Checking Wheel Installation Condition with Inspection Hammer

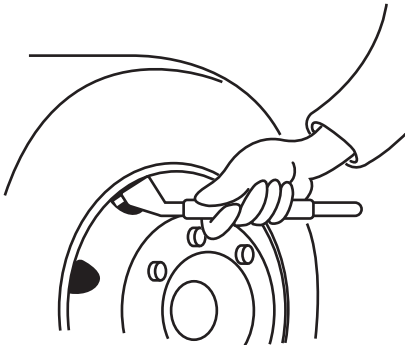
Place your fingers on the bottom of each wheel nut and tap the top of the nut with an inspection hammer or small hammer in the tightening direction.

There may be some defect with a nut or its bolt if the vibration you feel is different from the other nuts or if the sound it produces is not clear.



CAUTION

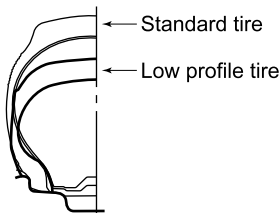
- If you detect any abnormal condition, it is likely that there are loose wheel nuts or broken wheel bolts.



Spare Tire Air Pressure

Keep the air pressure of the spare tire slightly higher than the standard pressure. Adjust the pressure correctly when you use it.

Tires heat up while you are driving, and their air pressures become higher accordingly. If you must wait until right after driving to adjust the air pressure, determine the target pressure for adjustment by adding about **20 kPa (0.2 kgf/cm²/3 psi)** to the standard pressure.



Use of Low Aspect Ratio Tires

Low aspect ratio tires for truck applications (aspect ratio at 70%) have an air chamber volume 20 to 30% smaller than that of normal tires. This makes low aspect ratio tires adversely affect driving faster than normal tires when the air leaks during operation. Check air pressure of low aspect ratio tires more often than normal tires using a tire air pressure gauge.

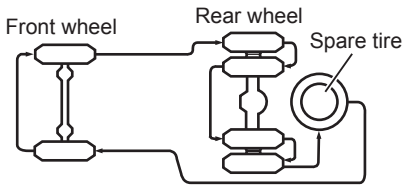
Tire Rotation



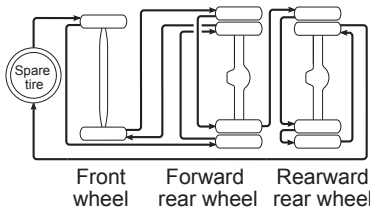
CAUTION

- Be sure to check the wheel bolts, wheel nuts and disc wheel for any abnormality whenever the disc wheel is removed.
- If you find any abnormal condition on the wheel bolts, wheel nuts or disc wheel, do not continue to use a wheel with such an abnormality, but contact the nearest Isuzu Dealer as soon as possible.

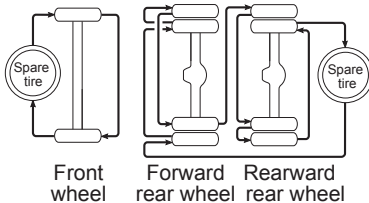
Rear dual-tire wheel model (same size wheels for front and rear axles)



Rear two-axle model (same size wheels on both front and rear axles)



Rear two-axle model (different size wheels on front axle and rear axles)



Tires at different locations wear differently. For uniform tire wear and longer tire life, you should rotate the tires on your vehicle regularly.

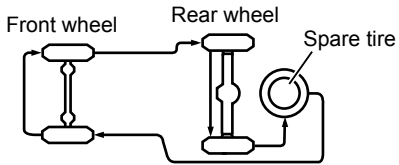
Make sure to use tires of the same type on the same axle. If you install tires of different types on the same axle, the vehicle may drift right or left when you apply the brakes.

New tires are more likely to build up heat and wear faster than old tires, so they should be installed on the front axle where the load is smaller.

If there is a difference in diameter between the inner and outer tires of a dual-tire wheel, install the smaller diameter tire inside.

The difference in diameter of the tires for a dual-tire wheel should be within the limit specified in the table below. If the limit is exceeded, the tires wear more rapidly than they should.

Permissible diameter difference	
Radial tire	Within 8 mm (0.31 in)
Bias tire	Within 12 mm (0.47 in)

Rear single-tire wheel model (same size wheels for front and rear axles)**CAUTION**

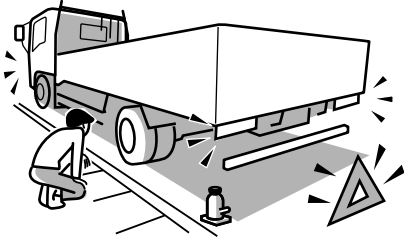
- If differently sized tires are used on the front and rear axles, do not exchange tires between the front and rear axles; otherwise, the tires get loaded beyond their limits. This is highly dangerous because the tires and disc wheels could be broken down under an excessive load.

**ADVICE**

- Tightening torque of the wheel nuts may decrease after tire change due to their initial settlement. Upon driving 50 to 100 km (31 to 62 miles) after a tire change, retighten the wheel nuts to the specified torques according to the instructions in the "Retightening Wheel Nuts" section in this chapter.

Retightening Wheel Nuts (ISO 10-Bolt Wheels) → Refer to page 7-76

Preparation for Changing a Tire



When you park the vehicle to change tires, choose a place listed below.

- Your vehicle does not hinder other traffic.
- The surface is level, flat and solid.
- You can change a tire safely.

When changing a tire on a road, use the hazard warning flasher and triangle reflectors to alert other traffic to the presence of your vehicle.

Fully pull the parking brake lever. Chock both the front and back sides of the wheel diagonally opposite to the one to be changed with chocks (or stones, wood blocks, etc.). (Example: When changing the right rear wheel, chock the left front wheel.) Have the passengers get out of the vehicle.



CAUTION

- If your vehicle is equipped with an antilock brake system (ABS), use a tire of the specified size and the same tread pattern as the one to be replaced.

Changing a Tire (ISO 10-Bolt Wheels)

Select a level, flat and hard surface for changing a tire. Also, refer to "Handling the Jacks" on page 7-112 for the method of using a jack.

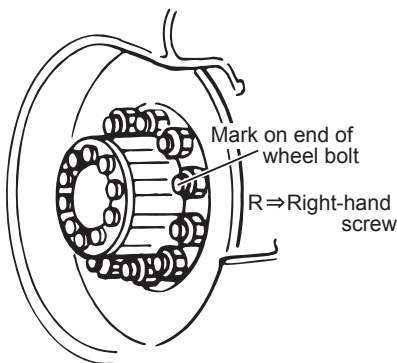
Removing the Tire

WARNING

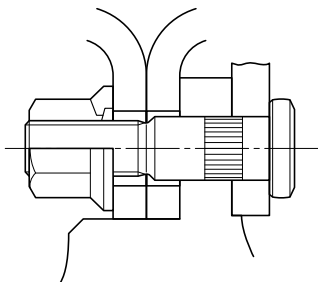
- Before jacking up the vehicle, be sure to fully engage the parking brake and block the wheels with chocks. A vehicle held stationary by the parking brake alone will move when you raise the rear wheels; this is extremely dangerous.
- Never open any doors or start the engine while the vehicle is being jacked up. Do not look under the vehicle or get under the vehicle while the vehicle is jacked up. Doing so would be very dangerous.
- To avoid danger should the jack slip off, place the removed spare tire near the jack under the vehicle.

CAUTION

- The wheel is heavy. Handle it carefully to avoid getting hurt when removing and installing the wheel.
- Immediately after vehicle operation, the exhaust pipe is extremely hot. Be careful not to touch it.



1. When removing a front wheel, fully apply the parking brake and chock the rear wheels. When removing a rear wheel, chock the front wheels after applying the parking brake.
2. Place the jack under the appropriate jacking point and firmly apply the jack head.
3. Raise the vehicle just enough so that the tire is almost but not quite clear of the ground.
4. Using the wheel bolt wrench, loosen the wheel nuts just enough so that the wheel does not wobble. Do not remove the wheel nuts at this stage.



The two disc wheels are tightened with one rear nut, so be sure to jack up both of the dual tires.

⚠ CAUTION

- All bolts and nuts from the wheels on both sides have right-hand screw threads.
- Do not loosen wheel nuts more than necessary. Doing so could damage the wheel bolts.
- An anti-lock brake system (ABS) equipped model must use tires of the specified size and identical tread pattern.

5. Raise the vehicle until the tires completely leave the ground.
6. Remove all wheel nuts that have been loosened, remove the outer wheel, and then remove the inner wheel. When removing the wheels, be careful not to damage the threads of the wheel bolts and the disc wheel mounting surface of the hub.

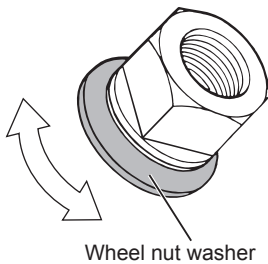
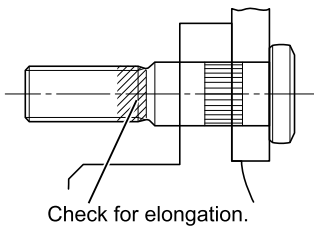
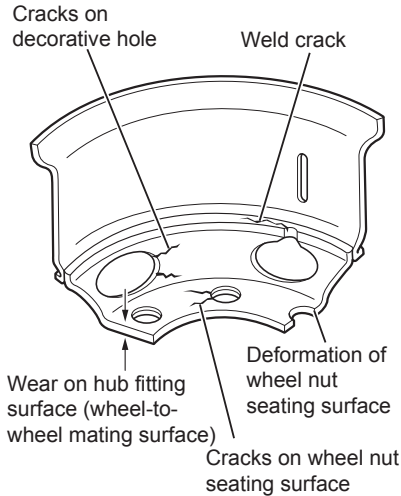
Installing a Wheel

⚠ WARNING

- A disc wheel, wheel bolts or wheel nuts in any abnormal condition could eventually break, causing the wheel to detach from the vehicle while driving.
- Do not repaint any mating surfaces, wheel nut seating surfaces or hub fitting surface of the disc wheel. Thick paint film could cause loosened or broken wheel bolts.

⚠ CAUTION

- Change wheels only when the tires are clear of the ground. Failure to do this may result in an incompletely mounted tire, which will adversely affect the vehicle's driving performance.
- Remove mud and rust from the hub fitting surface or wheel-to-wheel mating surfaces. Failure to do so may cause the wheel to work loose while the vehicle is moving.



1. Check the disc wheel for the following:

- Cracks or other damage around the bolt holes and decorative holes
- Cracks, deformation or other damage on the wheel nut seating surfaces (tapered surfaces)
- Cracks or other damage on welds
- Wear or other damage on the hub fitting surface or wheel-to-wheel mating surface

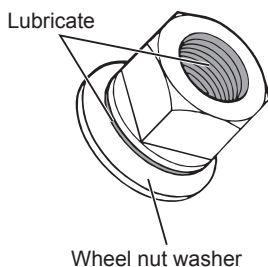
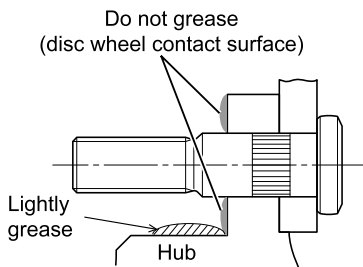
2. Check the wheel bolts and wheel nuts for the following:

- Cracks or other damage
- Bolt elongation. If the bolt diameter has been reduced to 21.5 mm (0.85 in) from the original standard diameter of 22 mm (0.87 in), replace the bolt. Also check the bolt for noticeable rust.
- Crushed, thinned or seized threads
- Loose drum nuts

Wheel bolt replacement involves component disassembly work, so have it done by your Isuzu Dealer.

- Sticky washer rotation. Replace washers that do not turn smoothly.

3. Remove rust, dust and mud from the fitting surface, hub fitting surface or wheel-to-wheel mating surface, and wheel nut seating surfaces (tapered surfaces) of the disc wheel, and from the threads of the wheel bolts and nuts.



If there is rust on the hub and the socket portion surface (unpainted) of the disc wheel, remove the rust and apply a light coat of grease.

4. Lubricate the threads of each wheel nut.
 - Apply lubricant to the gap between the nut and washer. (Lubrication is not necessary for new parts.)
 - Lubricate the threads of the nut.

Lubricant used

Engine oil, gear oil, power steering fluid



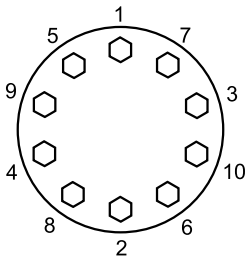
CAUTION

- Remove rust and dirt from the wheel bolt and nut, lightly lubricate the threads with engine oil, gear oil or chassis grease, and turn the nut on the bolt. If the nut does not turn smoothly, the threads are defective.
- If the threads are defective, replace both the wheel bolt and wheel nut as a set.
- If a wheel bolt is broken, replace all of the wheel bolts and nuts on the wheel.
- When using an impact wrench, be careful when adjusting the air pressure regulator and selecting the tightening time. We recommend using a torque wrench for final tightening to ensure that nuts are tightened to the specified torque.
- Clean the disc wheel to remove dirt and rust from its mounting surfaces, hub fitting surfaces or wheel-to-wheel mating surface. Also clean the nut seating surfaces. If you fail to do this, the wheel nuts could eventually loosen and the wheel might fall off the vehicle while you are driving. This could be extremely dangerous.
- Do not use oil that contains molybdenum disulfide. When tightened to the same torque, the bolts and nuts coated with this oil produce a grip force much greater than those coated with other oils. Too large a grip force could cause wheel bolts to break.

CAUTION (Continued)

CAUTION (Continued)

- Do not apply oil or grease to the disc wheel contact surface of the hub. Any lubricant on the surface will reduce the fastening force and may cause the wheel to become loose.
- Some impact wrenches available on the market produce a torque higher than the maximum torque specified for tightening the wheel nuts. If the wheel nuts are tightened with such an impact wrench, they could break. Before using an impact wrench, check that the torque it produces conforms to the specification.

Wheel nut tightening sequence

5. When installing a rear wheel, place the outer wheel so that its tire air valve will be a way from that of the inner wheel to enable inflating both tires.
6. Install the wheel nuts, and finger-tighten them until the wheels are held in position without wobbling.
7. Turn the release valve of the jack counterclockwise to lower the vehicle slowly.
8. Tighten the wheel nuts in a diagonal sequence and in two or three passes.
9. Finally, tighten all wheel nuts using a torque wrench to the specified torque.

Wheel nut tightening torque

550 - 600 N·m
(55 - 60 kgf·m/**406 - 443 lb·ft**)

**ADVICE**

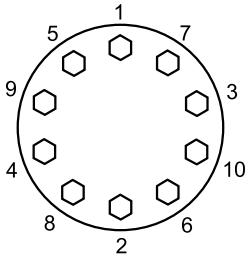
- After changing a tire, turn the steering wheel in both directions to make sure that the wheels do not interfere with the surrounding components. If you are unsure of anything, please contact the nearest Isuzu Dealer.
- Tightening torque of the wheel nuts may decrease after tire replacement due to initial settling. Approximately 50 to 100 km (31 to 62 miles) after replacing a tire, be sure to retighten the wheel nuts to the specified torque.

**Retightening Wheel Nuts (ISO 10-Bolt
Wheels) → Refer to page 7-76**

Retightening Wheel Nuts (ISO 10-Bolt Wheels)

Check the wheel nuts to confirm that they are tightened to the specified torque by using a torque wrench.

Use the following method to check for loose wheel nuts. Tightening torque of the wheel nuts may decrease after tire change or rotation due to initial settling. After driving 50 to 100 km (31 to 62 miles), be sure to retighten the wheel nuts to the specified torque.

Wheel nut tightening sequence

Tighten the wheel nuts in a diagonal sequence to the specified torque.

Wheel nut tightening torque

550 - 600 N·m
(55 - 60 kgf·m/406 - 443 lb·ft)

**CAUTION**

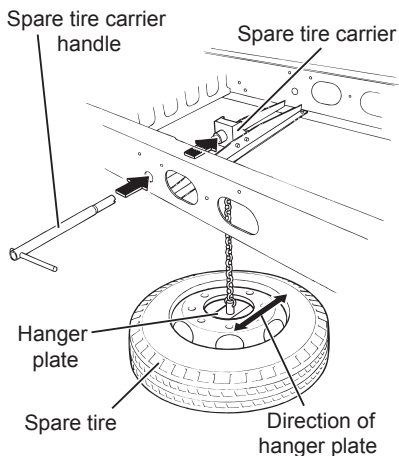
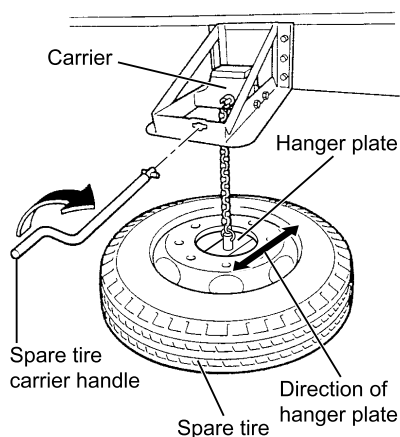
- The bolts and nuts of both the left and right wheels have right-hand screw threads.

**WARNING**

- If you find any abnormal conditions with the wheel nuts such as frequent loosening of retightened nuts, have your vehicle checked or serviced at the nearest Isuzu Dealer as soon as possible.

**CAUTION**

- Fully engage the wheel bolt wrench on a wheel nut to be able to tighten the nut to the specified torque. However, do not use a pipe as a handle extension or your foot to apply force to the wrench. This could tighten the nut more than necessary and damage the components.
- Both under-tightening and over-tightening the wheel nuts might cause broken wheel bolts or a cracked disc wheel and could lead to wheel detachment. Adhere to the specified tightening torque.
- When replacing a tire with a new one, use only a tire of the same type and size as the replaced tire; otherwise, driving safety could be compromised. Avoid mixing different types and sizes of tires at all costs.

Spare Tire v**Spare tire carrier – under rear part of frame****Spare tire carrier – under rear side of frame****Removal**

Insert the handle in the spare tire carrier and turn the handle counterclockwise.

Storage

1. Place the tire with the convex side of the disc wheel facing up and then fit the hanger plate inside the disc wheel with its claws properly engaged.
2. Check that the chain is not twisted.
3. Insert the spare tire carrier handle into the carrier and turn the handle clockwise to wind up the chain. Do not twist the chain while winding it up. The hanger plate should be at right angles with the carrier when the spare tire reaches the storage position.
4. After fully winding up the chain, exert a force on the handle of more than **196 N (20 kgf/44 lb)** for the 6-bolt wheels, and a force of more than **294 N (30 kgf/66 lb)** for the 8-bolt or 10-bolt wheels, to firmly lock the tire.
5. Pull out the spare tire carrier handle from the spare tire carrier without reversing it.

**CAUTION**

- If the chain twisted when it is wound, it becomes loose while running due to vibration or shocks and the tire might fall off; this is very dangerous.
- After storing the tire in the carrier, check that the tire is held firmly. If loosely retained, the tire becomes loose while you are driving due to vibration or shocks and the tire might fall off; this is very dangerous.

**ADVICE**

- After storing the spare tire, check that it is not loose by strongly pushing the tire with your foot. If the tire is loose, fasten it again after checking that the carrier is not damaged and does not have a deformed bracket or hanger plate. If you cannot tighten the tire in the carrier, do not continue driving but contact the nearest Isuzu Dealer.

Air Pressure

Check the air pressure of the spare tire using a tire air pressure gauge at the intervals specified in the Maintenance Schedule.

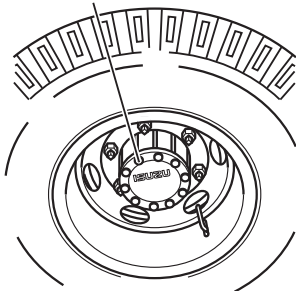
A spare tire inflated to a normal pressure may lose its pressure little by little due to leaks over time. You should therefore inflate it to a pressure a little higher than the normal pressure.

Maintenance Schedule

→ Refer to page 7-145

Checking Axle Shaft Bolts

Rear axle shaft bolts



Check the axle shaft bolts for looseness.

Axle shaft bolt tightening torque

167 - 196 N·m
(17.0 - 20.0 kgf·m/123 - 145 lb·ft)

Air Tanks

Air tanks may contain water. You must drain them by pulling the ring of the drain taps at the bottom of the air tank to discharge water.

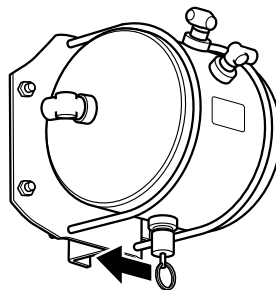
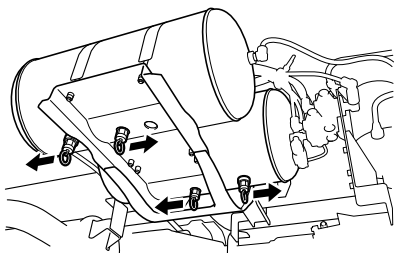
After discharging water, check that air is not leaking from each drain tap.

If a large volume of water drains from an air tank, the desiccant of the air dryer may have deteriorated. If desiccant replacement is necessary, have it performed by the nearest Isuzu Dealer.

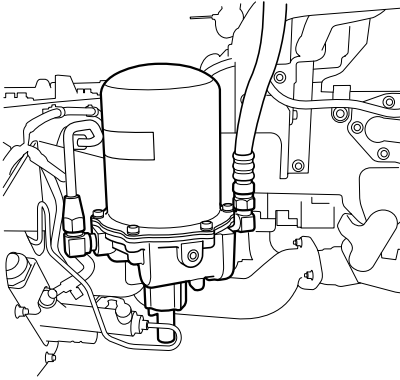
WARNING

- Water collecting in the air tank may cause moisture to freeze inside the air piping in winter. This is very dangerous because the air compressor may fail and as a result, sufficient braking forces may no longer be available.

Accessory air tank



For air tanks installed at other locations, perform the water draining procedure described above.

Air Dryer 

Change the desiccant and the filter's rubber parts of the air dryer at the intervals specified by the Maintenance Schedule.

Take care to ensure that the drain port is not blocked or obstructed by foreign material.

The air dryer removes moisture and oil that is present in the vehicle's air piping by means of an inside desiccant.

If water and oil is discharged when the drain tap on the air tank is opened for checking, the desiccant has deteriorated and needs be changed. Desiccant replacement requires disassembling of the relevant components, so you should have it done by the nearest Isuzu Dealer.

Clutch Fluid**CAUTION**

- When refilling the tank with clutch fluid, be careful not to let dust or water enter the tank; otherwise, the clutch may not work.
- Be careful not to spill clutch fluid on a painted surface or let it come in contact with your skin. If the fluid is spilled on a painted surface, wipe it off immediately. If the fluid comes in contact with your skin, wash it off with water immediately.
- Use only the specified clutch fluid and change it according to the Maintenance Schedule.
- Clutch fluid is highly hygroscopic. Close the cap of the container tightly when storing it.
- Do not mix the specified clutch fluid with one of any other brand.
- If clutch fluid decrease too rapidly, there might be a problem in the clutch system or the clutch disc might be worn out beyond safe limits. Have your vehicle inspected the nearest Isuzu Dealer immediately.

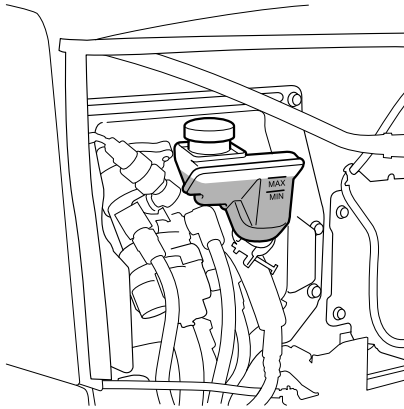
Maintenance Schedule

→ Refer to page 7-145

Recommended Fluids, Lubricants and

Diesel Fuels → Refer to page 7-158

Checking Clutch Fluid



Check the clutch fluid tank behind the front lid for the fluid level. It should normally be between the "MAX" and "MIN" lines.

If the level is below the "MIN" line, refill the tank with the specified clutch fluid up to the "MAX" line.

Front Lid → Refer to page 7-8

Adding Clutch Fluid

Open the front lid and remove the cap from the clutch fluid tank to refill the tank with clutch fluid. Add the specified clutch fluid up to the "MAX" line.



CAUTION

- Before refilling the tank, clean the area around the cap and pour clutch fluid from a clean container. Foreign objects getting in the tank will lead to a clutch system failure.
- Clutch fluid melts paint and vehicle component materials such as plastic, vinyl and rubber. It is also highly corrosive for metals. If it is spilled, wipe it off the affected surface immediately and wash the affected surface fully with water.
- Do not mix clutch fluid with fluid of a non-specified brand. Due to chemical reaction, any mixture of different brand fluids will cause failure of the clutch system.

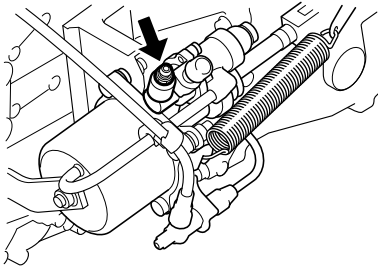
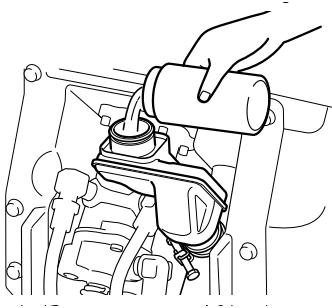
Changing Clutch Fluid

Change clutch fluid according to the Maintenance Schedule using the specified fluid. Since clutch fluid change requires disassembly of the related components, have this service performed by your Isuzu Dealer.

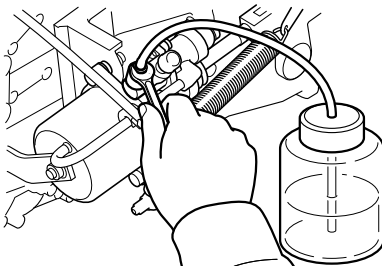
Bleeding the Clutch Hydraulic System

If air is present in the clutch hydraulic system, the clutch may disengage incompletely. Bleed the system if the clutch is used when the quantity of the clutch fluid in the tank is extremely low or the clutch piping is removed during a maintenance operation. Do not perform bleeding by yourself; it should be done with the help of another person.

1. Chock the wheels and firmly apply the parking brake.
2. Check the level of the clutch fluid in the clutch fluid tank and add fluid as required.



3. Detach the rubber cap from the bleeder screw on the clutch booster. Wipe clean the bleeder screw.



4. Attach one end of a bleeder hose to the bleeder screw and put the other end in a clear container. Fill the container with clutch fluid to about one-third ($1/3$) of its capacity.

5. Press the clutch pedal several times and keep it pressed the last time.
6. Loosen the bleeder screw to let the clutch fluid containing air bubbles flow into the container and then tighten the bleeder screw immediately.
7. Release the clutch pedal slowly. Repeat steps 5 and 6 until the fluid from the hose no longer contains air bubbles. After bleeding, install the rubber cap in position.

**CAUTION**

- While bleeding, ensure that the fluid level in the clutch fluid tank is not below the "MIN" line.

Clutch

The clutch disc wears down as the clutch is used, and this causes the free play of the clutch pedal to decrease. If you continue to use the clutch with reduced clutch pedal play, the clutch slips easily. On the other hand, if there is too much free play, the clutch disengages poorly, making gearshifts difficult.

Maintenance Schedule

→ Refer to page 7-145

Checking the Clutch

Daily Check

Inspect whether an abnormal sound is heard or the clutch pedal is abnormally heavy when the clutch pedal is depressed while the engine is idling. If an abnormal sound is heard or the clutch pedal operation is heavy with the sufficient air pressure supplied, provide lubrication. Also, check whether the shift lever can be placed in the 1st or reverse position easily.

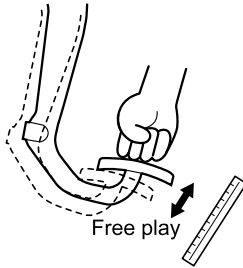
Check also that the clutch engages smoothly without any slip when the vehicle starts to move slowly.

Greasing Chassis Components

→ Refer to page 7-105

**ADVICE**

- Release the clutch pedal carefully to prevent the vehicle from starting too suddenly.

**Checking the Clutch Pedal Free Play**

Lightly press the clutch pedal by hand until you feel a slight resistance. The distance of the pedal movement to this point is the free play.

Clutch pedal free play

40 - 60 mm (1.57 - 2.36 in)

**ADVICE**

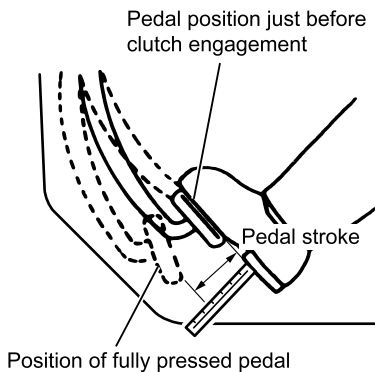
- If the free play of the clutch pedal is not within the specified range, make adjustments at the clutch booster.

Adjustment of Clutch Booster

→ Refer to page 7-86

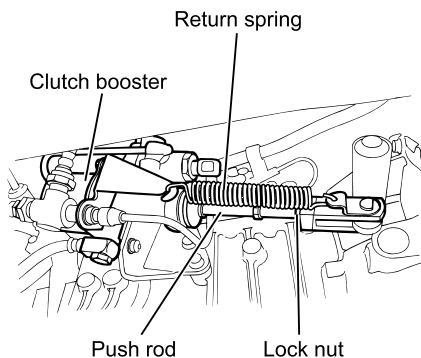
Checking the Clutch Pedal Stroke

1. Make sure that the parking brake lever is pulled completely. Start and run the engine at idle and then press the clutch pedal fully.
2. Move the gearshift lever to the 1st position and then release the pedal slowly. The clutch pedal is normal if the pedal stroke from the fully pressed position to the position just before the clutch engages is 60 mm (2.36 in) or more.

**ADVICE**

- If the clutch pedal stroke is not within the specified range, contact the nearest Isuzu Dealer.

Adjustment of Clutch Pedal Free Play



Adjustment of Clutch Booster

If the free play of the clutch pedal is not within the specified range, make adjustments at the clutch booster and the clutch master cylinder with the engine stopped.

1. Remove the return spring from the clutch booster.
2. Loosen the push rod lock nut.
3. Turn and extend the push rod until it becomes stiff.
4. From this point, turn the push rod back the number of turns indicated in the table below.

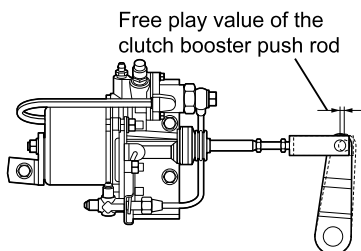
Transmission model	Number of turns
MZW	2 - 1/4 to 2 - 3/4
ES11109	2 - 1/2 to 3

5. Tighten the lock nut to specified torque.

Lock nut tightening torque

21 - 39 N·m (2.1 - 4.0 kgf·m/15 - 29 lb·ft)

6. Confirm the free play value is within the range below.



Transmission model	Free play value of the clutch booster push rod
MZW	3.0 - 3.5 mm (0.12 - 0.14 in)
ES11109	3.5 - 4.0 mm (0.14 - 0.16 in)

7. If the free play value is out of the range, loosen the push rod lock nut and readjust the push rod accordingly by rotating either clockwise or counter clockwise until it is within the specified value.
(1mm = 3/4 rotation of push rod)
8. Tighten the lock nut to specified torque.

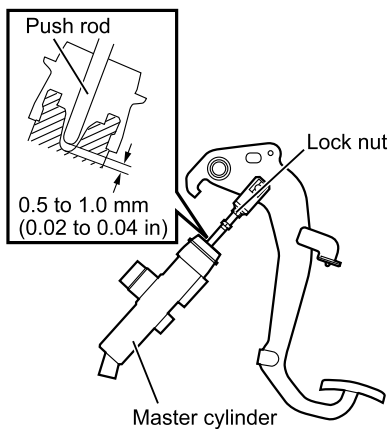
Lock nut tightening torque

21 - 39 N·m (2.1 - 4.0 kgf·m/15 - 29 lb·ft)
--

9. Confirm the free play value is within the range above.
10. Re-attach the return spring.
11. Check the free play of the clutch pedal. If the free play is not up to the specification, continue with the following steps to make another adjustment at the master cylinder.

Adjustment of Master Cylinder

1. Remove the return spring from the clutch pedal.
2. Loosen the master cylinder push rod lock nut.
3. Turn in the push rod until it makes contact with the piston.
4. Return the push rod from this position by 2/5 to 4/5 of a turn. At this point, the gap between the tip of the push rod and the piston should be 0.5 to 1.0 mm (0.02 to 0.04 in).
5. Fasten the lock nut firmly and install the return spring.



Transmission Oil**WARNING**

- If the level of transmission oil is extremely low, the transmission might become damaged and this could lead to an accident. Periodically check the oil level according to the Maintenance Schedule.
- Do not touch the transmission oil when it is hot. You are likely to be burned.

**CAUTION**

- When checking the oil level, be sure to also check for oil leakage from the transmission.

Change the transmission oil according to the Maintenance Schedule.

Maintenance Schedule

→ Refer to page 7-145

Recommended Fluids, Lubricants and

Diesel Fuels → Refer to page 7-158

Maintenance Schedule - ES11109 Model

Transmissions → Refer to page 7-155

**ADVICE**

- Use the oil quantity indicated below only as guidelines when changing the transmission oil. After changing the oil, ensure that it is at the required level.
- Drained oil must be disposed of in a method conforming to the regulatory requirement in your country.

Quantity of transmission oil to be changed

Transmission model		Oil quantity [Reference value] liters (US gal./Imp gal.)	
		Without power take-off (PTO)	With PTO
MZW	6 speeds	5.3 (1.40/1.17)	6.0 (1.59/1.32)
ES11109	9 speeds	8.5 (2.25/1.87)	9.0 (2.38/1.98)

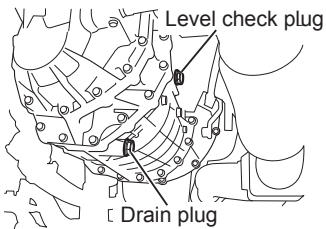


NOTE

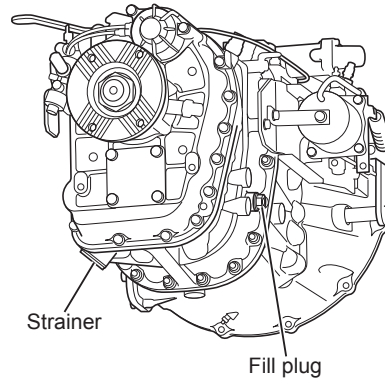
- The transmission model is indicated on the ID plate in the cab.

Option Codes → Refer to page 1-4

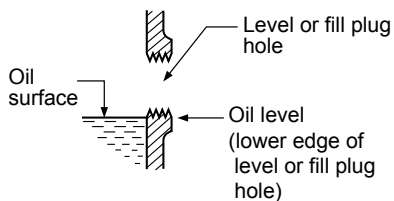
MZW model



ES11109 model



Checking the Transmission Oil Level



Before checking the oil level, be sure to park the vehicle on a level surface.

1. Remove the level or fill plug.
2. Check that the oil level is up to the lower edge of the level or fill plug hole.
 - If the oil level is too low, add oil through the level or fill plug hole.
3. Fasten the level or fill plug to the specified torque.

Level or fill plug tightening torque

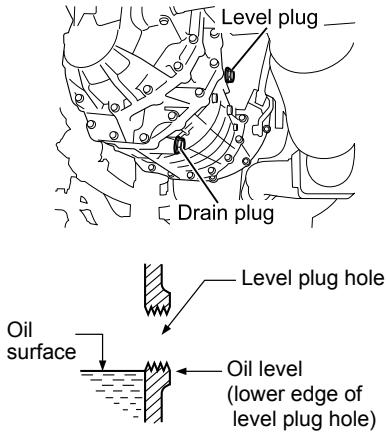
MZW model	29 - 49 N·m (3.0 - 5.0 kgf·m/22 - 36 lb·ft)
ES11109 model	32 - 37 N·m (3.3 - 3.8 kgf·m/24 - 27 lb·ft)



ADVICE

- Any dirt on the plug should be wiped off before installing it.

Changing the Transmission Oil – MZW Model Transmissions



Transmission oil must be changed at the specified intervals.

1. Before changing the oil, make sure that the vehicle is on a level surface.
2. Place a container under the drain plug to receive oil.
3. Remove both the level plug and the drain plug to discharge the oil into the container.
4. After installing the drain plug by tightening it to the specified torque, refill the transmission with new oil through the level plug hole up to the lower edge of the hole.

Drain plug tightening torque

MZW model	29 - 49 N·m (3.0 - 5.0 kgf·m/22 - 36 lb·ft)
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ADVICE

- Any dirt on the plug should be wiped off before installing it.

5. After refilling, confirm that the oil level is up to the lower edge of the level plug hole.
6. Install the level plug to the specified torque.

Level plug tightening torque

MZW model	29 - 49 N·m (3.0 - 5.0 kgf·m/22 - 36 lb·ft)
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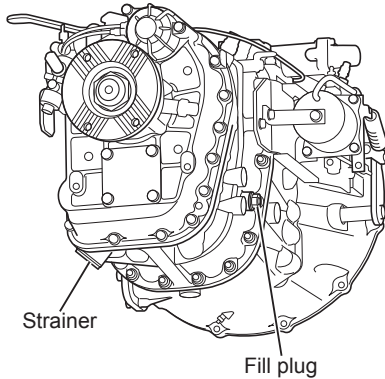
**ADVICE**

- Any dirt on the plug should be wiped off before installing it.
- Because the cases of the MZW transmissions are made of aluminum, be extremely careful not to tighten the oil level plug and drain plug to an excessively large torque when installing them. Otherwise, the threads might be damaged.

**NOTE**

- The transmission model and model code is indicated on the ID plate in the cab.

Changing the Transmission Oil – ES11109 Model Transmissions



The transmission oil must be changed at the specified intervals.

1. Before changing the oil, make sure that the vehicle is on a level surface.
2. Make sure that the oil in the transmission is warm enough for draining.
3. Place a container beneath the drain plug.
4. Remove the strainer at the bottom of the transmission case to allow the oil to discharge into the container.



ADVICE

- Be sure to wipe off any dirt on the drain plug before installing it.
- Remove dirt from the removed strainer. Also, wash the strainer with kerosene or other solvent and dry it completely.
- Replace the strainer's washer and O-ring as necessary.

5. Install the strainer by tightening it to the specified torque.

Transmission model	Drain plug/strainer tightening torque
ES11109	40 - 47 N·m (4.1 - 4.8 kgf·m/ 30 - 35 lb·ft)

6. Clean the area around the fill plug hole and then add oil up to the lower edge of the fill plug hole.

**ADVICE**

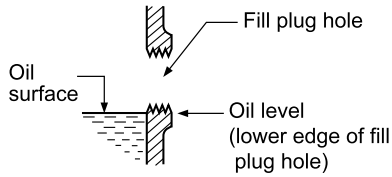
- Avoid overfilling, which may result in oil leakage.

7. Check the oil level, and install the fill plug by tightening it to the specified torque.

Fill plug tightening torque

32 - 37 N·m
(3.3 - 3.8 kgf·m/24 - 27 lb·ft)

Although the oil level after refilling will vary depending upon the transmission angle and vehicle model, always add oil up to the lower edge of the fill plug hole.



Differential Gear Oil

The rear axle differential gear oil must be changed according to the Maintenance Schedule.



ADVICE

- Use the oil quantity indicated later in this section only as guidelines when changing the rear axle differential gear oil.
- After changing the oil, ensure that it is at the required level.
- Drained oil must be disposed of in a method conforming to the regulatory requirement in your country.

Maintenance Schedule

→ Refer to page 7-145

Recommended Fluids, Lubricants and

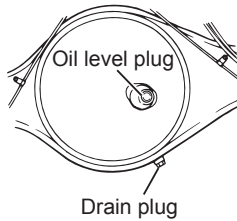
Diesel Fuels → Refer to page 7-158



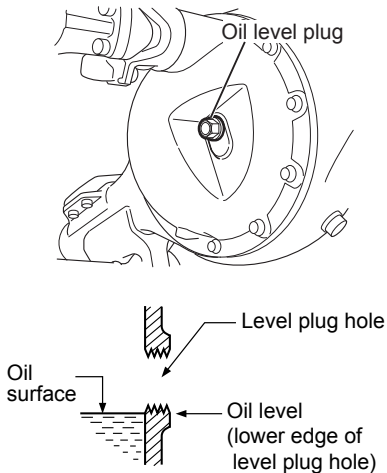
Checking the Oil Level

FTR/FVR model, forward rear axle of FVM model and rearward rear axle of FVZ model

1. Remove the oil level plug.



Forward rear axle of FVZ model



2. Check that the oil level is up to the lower edge of the oil level plug hole.
 - If the oil level is too low, add oil through the oil level plug hole.
3. Fasten the oil level plug to the specified torque.

Plug tightening torque

49 - 88 N·m (5.0 - 9.0 kgf·m/36 - 65 lb·ft)

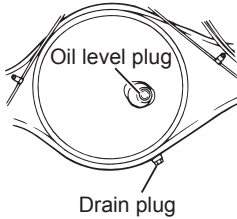


ADVICE

- Any dirt on the plug should be wiped off before installing it.

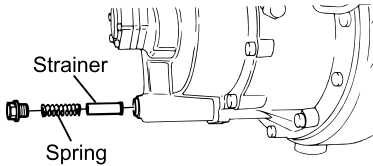
Changing the Oil

FTR/FVR model, forward rear axle of FVM model and rearward rear axle of FVZ model



1. Place a container under the drain plug to receive oil.
2. Remove the plugs indicated in the figure to discharge the oil into the container.
3. After installing the drain plug by tightening it to the specified torque, refill the rear axle case with new oil through the oil level plug hole up to the lower edge of the hole.

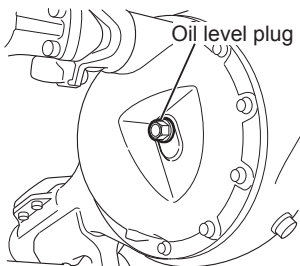
Forward rear axle of FVZ model



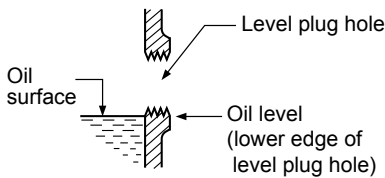
ADVICE

- Any dirt on the plug should be wiped off before installing it.

Forward rear axle of FVZ model



4. After refilling, confirm that the oil level is up to the lower edge of the oil level plug hole.
5. Install the oil level plug to the specified torque.
6. For a FVZ model, remove the level plug at the top of the forward rear axle inter-differential gear case and pour **0.5 liter (0.13 US gal./ 0.11 Imp gal.)** of oil into the case through the filler port.



Plug tightening torque

49 - 88 N·m (5.0 - 9.0 kgf·m/36 - 65 lb·ft)

Quantity of differential gear oil to be changed

Differential size		Oil quantity [Reference value] liters (US gal./Imp gal.)
14.5 inch		6.5 (1.72/1.43)
15.5 inch		9.0 (2.38/1.98)
16.5 inch		14.0 (3.70/3.08)
17.5 inch (single axle)		14.0 (3.70/3.08)
18.5 inch		13.0 (3.43/2.86)
17.5 inch (tandem drive axle)	Forward rear axle	18.0 (4.76/3.96)
	Rearward rear axle	12.0 (3.17/2.64)

**ADVICE**

- Use only the Isuzu recommended differential gear oil.

**Recommended Fluids, Lubricants and
Diesel Fuels** → Refer to page 7-158

Power Steering Fluid

The power steering fluid level must be checked and it should be changed according to the Maintenance Schedule.

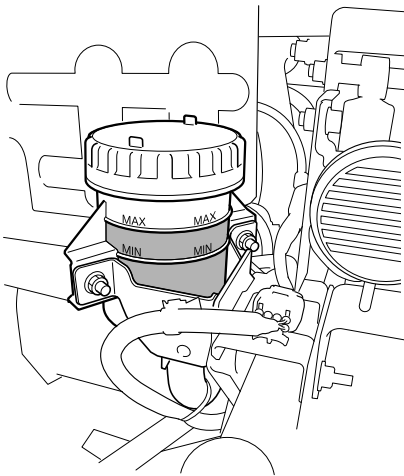
Maintenance Schedule

→ Refer to page 7-145

Recommended Fluids, Lubricants and

Diesel Fuels → Refer to page 7-158

Checking the Power Steering Fluid Level



The fluid level is correct if it is between the "MAX" and "MIN" lines on the power steering fluid tank. If the level is lower than the "MIN" line, add fluid up to the "MAX" line.



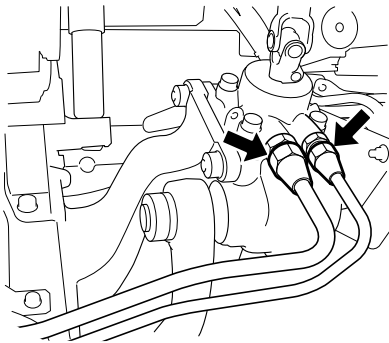
CAUTION

- Before adding fluid, clean the area around the cap and pour fluid from a clean jug or container. Foreign matter getting in the tank will cause power steering system failure.
- Do not mix the recommended power steering fluid with fluid of another brand. Due to chemical reaction, any mixture of different brand fluids will cause failure of the system.

Changing the Power Steering Fluid

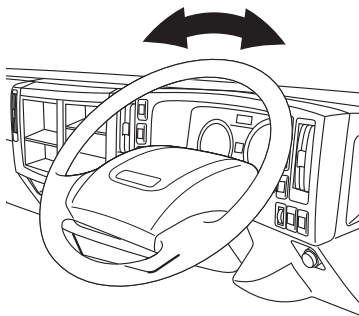
Draining

1. Apply the parking brake firmly and chock the rear wheels.
2. Apply the head of the jack to the jacking point firmly.
3. Raise the vehicle until the front wheels are completely clear of the ground.
4. Disconnect the oil pipe joints of the power steering unit and then turn the steering wheel in both directions slowly to drain fluid out of the system.



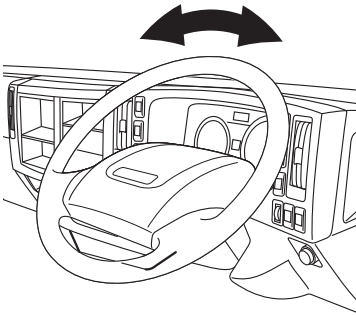
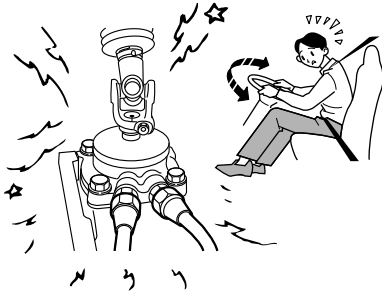
Refilling

1. Connect the oil pipe joints of the power steering unit and refill the power steering fluid tank with the specified power steering fluid.
2. When the power steering fluid tank is filled with the fluid up to the specified level, wait for 2 to 3 minutes to allow the fluid level to lower.
3. Without running the engine, fully turn the steering wheel in both directions a few times.
4. Lower the vehicle and start the engine. While running the engine at idle, fully turn the steering wheel in both directions a few times. If you do not hear abnormal sounds, the system has been properly bled.



CAUTION

- While refilling the system, keep the power steering fluid tank full of fluid by adding it as necessary to prevent air from getting mixed in the hydraulic system.



Bleeding

If you hear an abnormal sound when you turn the steering wheel, air has entered into the hydraulic system. Follow the steps below to bleed the system.

1. Apply the parking brake firmly and chock the rear wheels.
2. Apply the head of the jack to the jacking point firmly.
3. Raise the vehicle until the front wheels are completely clear of the ground.
4. Start the engine. Turn the steering wheel fully in both directions a few times.
5. Lower the vehicle. With the engine still running, fully turn the steering wheel in both directions a few times. If you do not hear abnormal sounds, the system has been properly bled. If you still hear abnormal sounds, this means there is air remaining in the power steering system. To expel the remaining air from the system, fully turn the steering wheel in both directions a few times to increase the fluid temperature. When the fluid temperature has risen to 60 to 80°C (140 to 176°F), stop the engine and wait for about 5 minutes (the air will dissipate when the fluid gets hot).
6. Check the level of the fluid in the power steering fluid tank and also check the joints for fluid leaks.
7. Test drive the vehicle on a road while checking that the steering wheel turns smoothly and the system produces no abnormal sound when you turn the steering wheel.

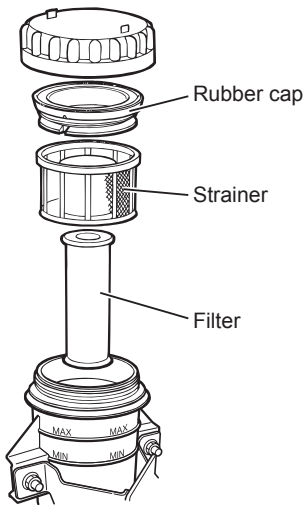
Power Steering Fluid Filter

The power steering fluid filter must be cleaned according to the Maintenance Schedule.

Maintenance Schedule

→ Refer to page 7-145

Cleaning the Power Steering Fluid Filter



1. Remove the cap from the power steering fluid tank.
2. After removing the rubber cap, take out the strainer and check it for foreign matter. Remove any foreign matter.
3. Take out the filter slowly while being careful not to drop foreign matter collected on it into the tank.
4. Wash the filter in diesel fuel.
5. Blow compressed air at about **200 kPa (2.0 kgf/cm²/28 psi)** on the outside surface of the filter to clean foreign matter from inside the filter.



ADVICE

- Blow compressed air onto the filter's outside surface, not onto the inside surface.

6. Wash the filter in diesel fuel again to remove foreign matter.
7. Blow compressed air at about **200 kPa (2.0 kgf/cm²/28 psi)** on the filter to evaporate diesel fuel.



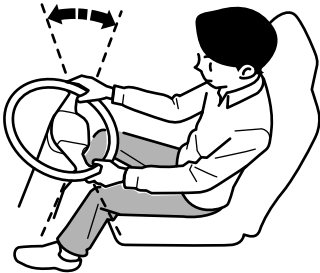
ADVICE

- The diesel fuel used for cleaning must be disposed of in a method conforming to the regulatory requirement in your country.

8. Install the filter in the power steering fluid tank.
9. Install the strainer in the power steering fluid tank and fit the rubber cap in position.
10. Close the power steering fluid tank by installing the cap.

**ADVICE**

- During filter cleaning, be careful not to let dust or other foreign matter get inside the tank. Foreign matter in the steering fluid might cause failure of the power steering system.

Steering Wheel**Daily Check**

Check the steering wheel for the amount of play by turning the steering wheel in both directions until the tires begin to move with the engine running.

Standard free play

10 - 60 mm (0.39 - 2.36 in)



Also check the steering wheel for looseness in mount by moving it back and forth and sideways.

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

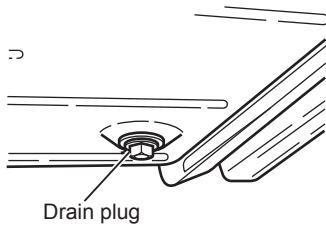
Fuel Tank

Sediment and water collected in the fuel tank must be removed according to the Maintenance Schedule.

Maintenance Schedule

→ Refer to page 7-145

Removing Sediment and Water from the Fuel Tank



1. Remove the cap from the fuel tank and pump out the fuel.
2. Remove the drain plug to discharge water and sediment out of the tank.
3. Install the drain plug.

Model for Vietnam

Tank capacity	Drain plug size	Drain plug tightening torque
200 liters	ISO M18	74 ± 15 N·m (7.5 ± 1.5 kgf·m/ 54 ± 11 lb·ft)

Model for Thailand

Tank capacity	Drain plug tightening torque
200 liters	44 ± 5 N·m (4.5 ± 0.5 kgf·m/ 33 lb·ft ± 43 lb·in)
370 liters	



ADVICE

- The contaminant and fuel discharged from the tank must be disposed of in a method conforming to the regulatory requirement in your country.

Greasing Chassis Components



ADVICE

- The type (characteristics) of the grease specified for use with a chassis component differs from that of the grease specified for use with another component. Multi-purpose type grease can generally be used for all greasing points, whereas chassis grease can be used only for the specified greasing points. Be sure to use only the specified grease for each component and perform greasing according to the Maintenance Schedule.

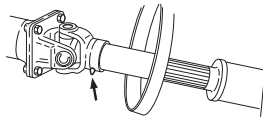
Maintenance Schedule

→ Refer to page 7-145

Recommended Fluids, Lubricants and

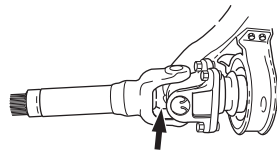
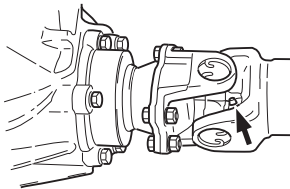
Diesel Fuels → Refer to page 7-158

Propeller shaft splines



FVZ model requires greasing of a point between the two rear axles.

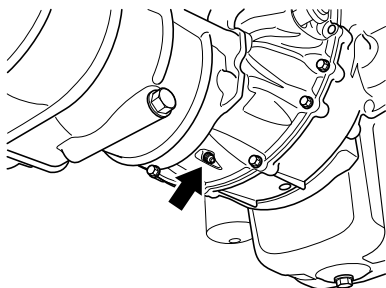
Propeller shaft universal joint



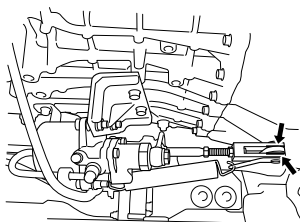
Single-piece propeller shaft vehicle: 2 points; Two-piece propeller shaft vehicle: 3 points; Three-piece propeller shaft vehicle: 4 points; Four-piece propeller shaft vehicle: 5 points

**ADVICE**

- Each of propeller shaft universal joints must be greased heavily until grease oozes at the 4 needle bearing oil seal locations. After greasing, wipe excess grease off.

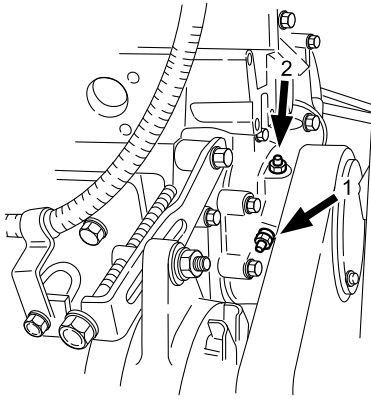
Shift block

1 position on the lower side (ES11109 transmission vehicles)

Clutch booster joint pin

1 position on the right side
Lubricate directly around the pin (without grease fitting).

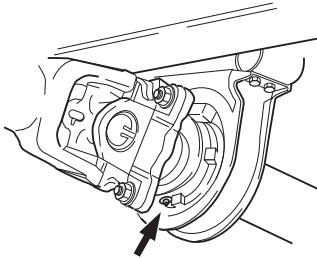
Water pump



1 point
Tilt the cab for greasing.

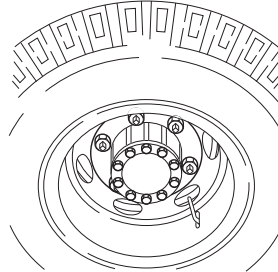
Inject the specified grease through the grease fitting (1) until the grease oozes out from the grease fitting (2).

Propeller shaft center bearing



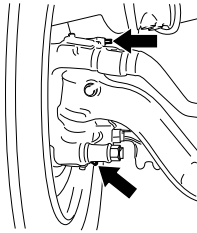
Two-piece propeller shaft: 1 point;
Three-piece propeller shaft: 2 points;
Four-piece propeller shaft: 3 points

Wheel hub bearings (left and right)



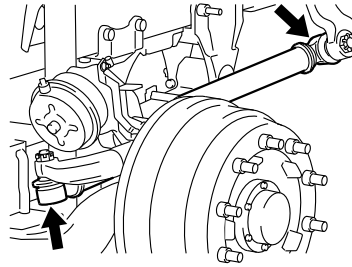
4 points or 6 points
Since disassembling is required for this greasing, have it performed by your Isuzu Dealer.

King pins (left and right)



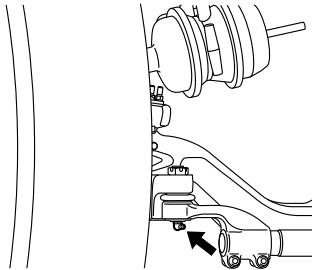
2 points each (top and bottom)
FTR/FVR model

Drag link



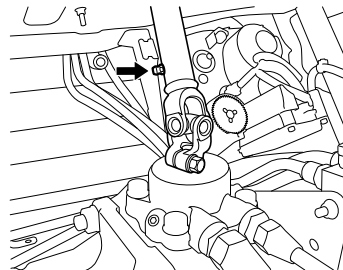
2 grease fittings (front and rear)
(not required for types without grease fittings)

Tie rod ends (left and right)



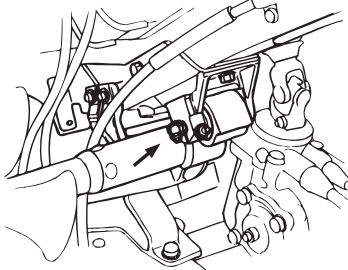
1 point each

Steering shaft sliding sleeve



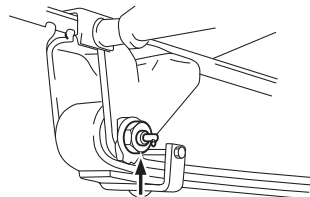
1 point beneath the cab
Place the steering wheel in the straight-ahead position and tilt the cab.

Cab mountings (left and right)



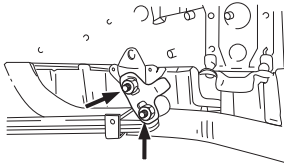
1 point each

Front spring pins (left and right)



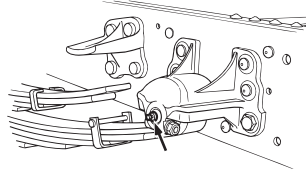
1 point each

**Front spring shackle pins
(left and right)**



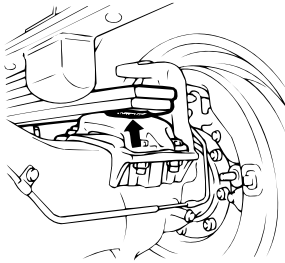
2 points each

**Rear spring pins (front end)
(left and right)**



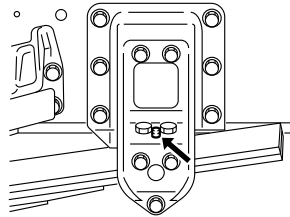
1 point each

**Rear spring pad (front and rear, left
and right)**



2 points each
FVM/FVZ model

**Rear spring sliding shackles
(left and right)**



1 point each
FVR model

7-110

SERVICE AND MAINTENANCE



OTHER SERVICE AND MAINTENANCE

• Handling the Jacks	7-112
• Windshield Washer Fluid	7-116
• Windshield Wiper Blades	7-117
• Exterior Lights	7-120
• Handling the Battery	7-121
• Air Conditioning Filters <input type="checkbox"/>	7-128
• Refrigerant <input type="checkbox"/>	7-130
• Air Conditioning Compressor Belt <input type="checkbox"/>	7-131

Handling the Jacks

WARNING

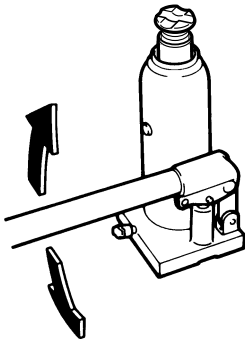
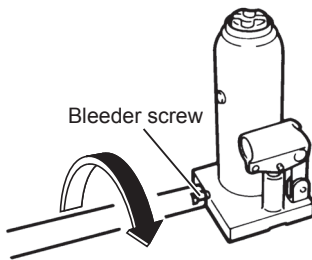
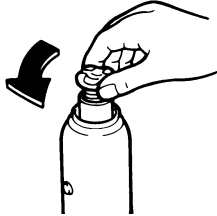
- Raising the vehicle with a jack is extremely dangerous when carried out on soft or inclined surfaces. Ensure that you always carry out this operation on flat, hard surfaces.
- Always apply the parking brake fully and correctly chock the wheels before raising the vehicle. Applying only the parking brake is insufficient to prevent the vehicle from moving; when a rear wheel is jacked up, the vehicle blocked only by the parking brake could move, creating a very dangerous situation.
- Ensure that there are no people or objects present in the vehicle before it is jacked up.
- In order to ensure safety, doors should never be opened and the engine should never be started during a jack-up operation. In addition, you should never have any part of your body below the vehicle at this time, nor allow anybody else to do so. Failure to observe this precaution could result in serious injury if the jack were to slip.
- If the underside of the vehicle is to be worked on after jacking up, jack stands must be used to support the vehicle.
- The jack must only be used at one of the specified jacking points. In addition, you must confirm that it makes good contact with the specified point.
- In order to provide extra safety should the jack slip, once a spare tire has been removed, it should be placed under the vehicle near the jack.
- Before starting a jacking operation, ensure that the jack and the jacking point to be used are clear of dirt, oil, and grease. Failure to observe this precaution can lead to extremely dangerous situations such as entrapment beneath the vehicle should the dirt or oil cause the jack to slip.
- If your vehicle is equipped with a differential lock system or non-spin differential system, it might start moving when the engine power is transmitted to the rear axle even when one of the wheels on the axle is raised clear of the ground. Do not start the engine with any rear wheel in contact with the ground.
- The jack provided with your vehicle must be used only for changing tires and fitting or removing tire chains. In order to ensure safety, furthermore, only one wheel should be jacked up at a time.
- If using a two-stage, extension type jack and the stop mark (yellow) becomes visible, stop raising the vehicle. Failure to observe this precaution can result in jack breakage.

Operating the Jack

Raising the Vehicle

1. Place the jack immediately below the jacking point and ensure that it is upright.
The jack must be placed on a flat, hard surface.

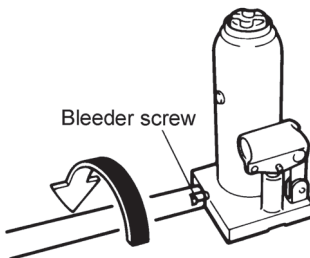
Jacking Points → Refer to page 7-114



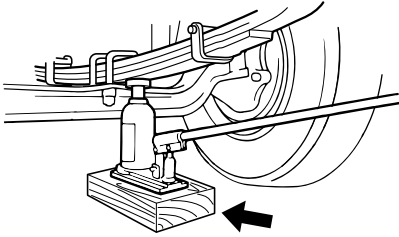
2. Turn the head of the jack to extend it to the height of the jacking point. Turn it counterclockwise to extend.
3. Insert the jack handle into the socket. Before jacking up, use the notched end of the jack handle to turn the bleeder screw fully clockwise.
4. Move the jack handle gently up and down to extend it slightly.
5. Confirm that the jack is in good contact with the jacking point, and then continue to raise the vehicle.

Lowering the Vehicle

1. Line up the jack handle end notch with the bleeder screw.
2. Slowly turn the bleeder screw counterclockwise to lower the vehicle.
3. When the vehicle has been fully lowered, turn the bleeder screw as far as it will go in the clockwise direction.
4. Turn the jack head fully clockwise.



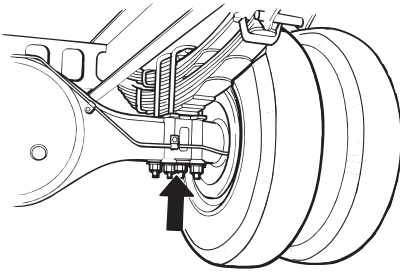
Jacking Points



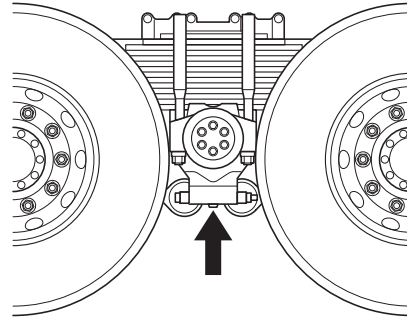
ADVICE

- If the jack stroke is insufficient, place the wood or the equivalent under the jack.
- The wood shall be thick and hard with sufficient width bigger than jack base.
- The jack cannot be placed under the front axle depending on the condition of the vehicle (flat tire, etc.).

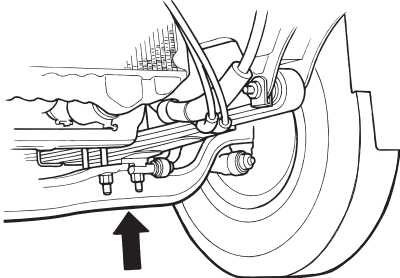
FTR/FVR model
Rear jacking point



FVM/FVZ model
Rear jacking point



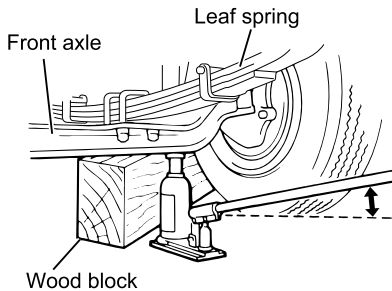
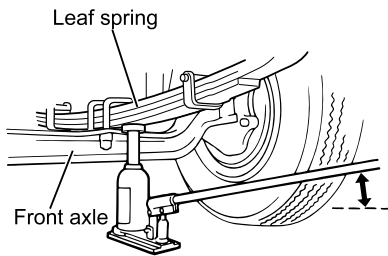
Front jacking point



Jacking When a Front Wheel Tire Is Punctured

WARNING

- Position the jack as close as possible to the front axle.
- The wood block should be as thick as possible in order to improve stability.
- As the bottom of the leaf spring is curved, special care must be taken during the jacking operation. Slipping of the jack can lead to extremely dangerous situations such as entrapment beneath the vehicle.



Jacking cannot be performed using the normal jacking points in the case of a front-wheel tire puncture. You must use the following procedure using a wood block or the equivalent.

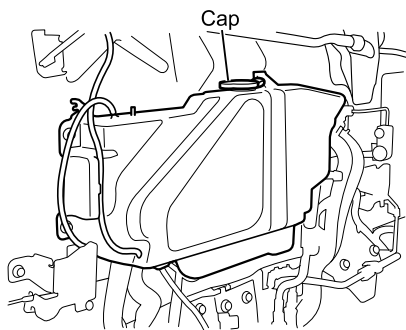
1. Apply wheel chocks in front of and behind the rear wheels.
2. Apply the jack to the bottom of the leaf spring in rear of the front axle, and jack up the vehicle.
3. Insert the wood block below the bottom surface of the front axle.
4. Lower the jack slightly to confirm whether the front axle is being supported securely by the wood block. If so, continue lowering the jack.
5. Next, move the jack to the specified jacking point and jack up the vehicle to the necessary height for wheel removal.

Jacking Points → Refer to page 7-114

Windshield Washer Fluid

Windshield Washer

Check the level of fluid in the windshield washer tank. In addition, spray windshield washer fluid and operate the windshield wipers to check for any areas not properly wiped. At this time, also check that the windshield washer sprays correctly.



Refilling Windshield Washer Fluid

1. Open the front lid.

Front Lid → Refer to page 7-8

2. Open the cap (black) and fill the washer tank with windshield washer fluid up to the opening of the tank.

The capacity of the tank is approximately **5 liters** (1.32 US gal./1.1 Imp gal.).



ADVICE

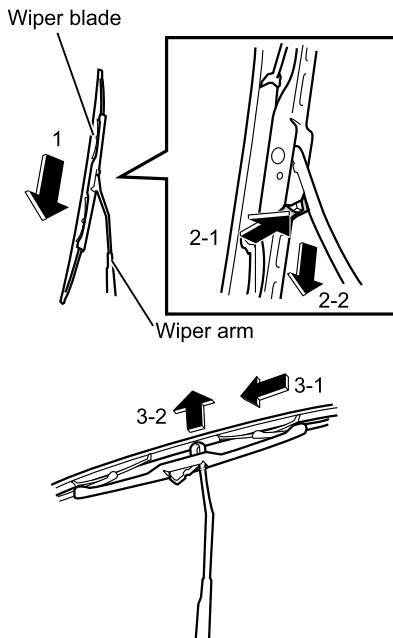
- When shipped from the factory, new vehicles contain only tap water in the washer fluid tank. Adjust the concentration of the fluid to suit your own usage.
- Be sure to follow the instructions provided with the windshield washer fluid regarding the ratio for mixing with tap water.
- Poor quality products, engine coolant, and soapy water must not be used. Failure to observe this precaution can result in nozzle blockage or damage to painted surfaces.
- The washer should never be used while the tank is empty. Operating the washer with the tank empty can result in motor damage.

Windshield Wiper Blades

Daily Check

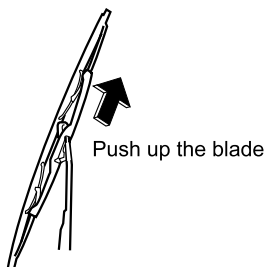
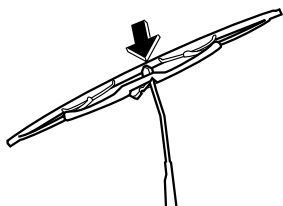
Spray windshield washer fluid and then operate the windshield wipers to check for any poorly wiped areas. In addition, confirm that each of the "☒" (intermittent), "LO", and "HI" functions operate normally.

Windshield Wiper Blade Replacement



Removal

1. Pull the wiper arm up to the vertical position.
2. While pressing the wiper blade hook towards the arm, slide the blade downwards (towards the base of the arm).
3. With the blade and arm almost perpendicular, remove the blade from the arm.



Installation

1. Insert the blade while holding it almost perpendicular to the arm.
2. Then, with the blade and arm oriented in the same direction, push up the blade until it locks into place on the arm.



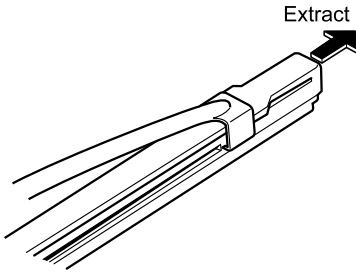
ADVICE

- Do not lower the wiper arm with its blade removed; the windshield glass may be scratched.
- Whenever a wiper blade has been attached, ensure that it is locked into place. Failure to observe this precaution can result in the wiper blade becoming dislocated when the windshield wiper switch is turned on.

Replacement of Wiper Rubber Element

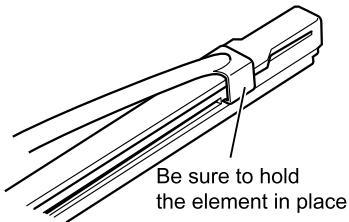
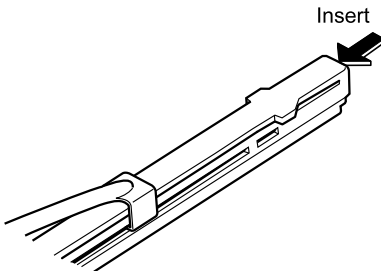
Removal

1. Remove the wiper blade from the wiper arm.
2. Pull the wiper rubber element in the direction indicated by the arrow and extract it from the wiper blade.



Installation

1. Insert a new wiper rubber element into the wiper blade.



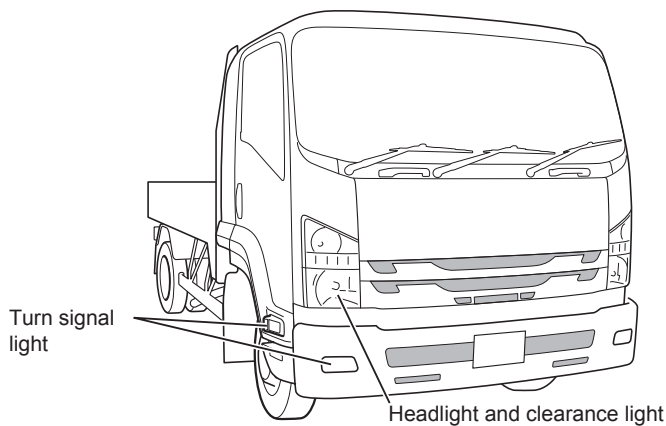
2. Continue pushing in the wiper rubber element until the wiper blade's hook engages with the hole in the element, and then confirm that the wiper rubber element is securely held in place.
3. Attach the wiper blade to the wiper arm.

Exterior Lights

Turn the starter switch to the "ON" position, and then check the way in which the headlights, turn signal lights, and other exterior lights come on and flash. In addition, depress the brake pedal to confirm whether the stop lights come on, and shift the transmission to "R" position to confirm whether the backup lights come on. Also examine the lights for discoloration, damage, and looseness.

When the Bulb Does not Come On

→ Refer to page 8-20



Handling the Battery

DANGER

- Usage or charging of the battery when the battery fluid is below the "LOWER LEVEL" line can accelerate deterioration and give rise to dangerous situations such as the generation of heat and even explosion.
- If battery fluid should enter an eye, immediately wash away using a large amount of water and continue washing for at least 5 minutes. Following this, you should seek medical assistance.
- When using tools or other metal objects in the vicinity of the battery, take care to prevent them from coming into contact with the positive terminal. As the vehicle itself will conduct electricity, any such contact can result in a short-circuit and a highly dangerous electric shock.
- A vehicle battery generates extremely flammable hydrogen gas. For this reason, operations producing sparks or requiring the usage of open flames must never be carried out near a vehicle battery. Failure to observe this precaution can result in explosion if the hydrogen gas ignites. Whenever wiping up battery fluid, a damp cloth should be used.

WARNING

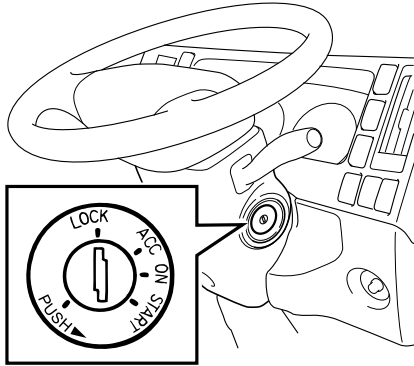
- Always stop the engine whenever the battery is to be inspected.
- Dilute sulfuric acid is used as the battery fluid. Special care must be taken to ensure that this fluid does not come into contact with skin, clothing, or metal surfaces.
- When disconnecting cables, turn the starter switch to the "LOCK" position, wait at least 1 minute, and then disconnect the cables starting with the negative cable from the terminals. If the negative cable is disconnected within 1 minute, the engine control module may malfunction. When reconnecting them, the negative cable should be reconnected last.

**ADVICE**

- Battery fluid should never be filled beyond the "UPPER LEVEL" line. Failure to observe this precaution can result in battery fluid spillage and corrosion of battery terminals and other components. Any spilled battery fluid should be immediately washed away with water.
- Whenever battery fluid has been added, the battery should be recharged (by driving the vehicle). In winter months in particular, battery fluid can freeze and damage the battery case if you fail to recharge the battery.
- If the battery fluid level continues to drop at an unusually fast rate, have an inspection carried out immediately by the nearest Isuzu Dealer.

Battery Handling Precautions

Keep the battery clean. If the battery is left in a dirty condition, contaminants can get mixed into the battery fluid, the battery plates can be damaged, short circuits can occur on the top surface of the battery, and the battery's service life can be reduced.



When Performing Inspection or Maintenance

Before starting inspection and maintenance of the battery and other parts of the electrical system, turn the starter switch to the "LOCK" position, wait at least 1 minute, and then disconnect the negative cable from the negative terminal. If the negative cable is disconnected within 1 minute, the engine control module may malfunction.

There is a danger that electrical components could be damaged if inspection or maintenance is carried out with the battery still connected.

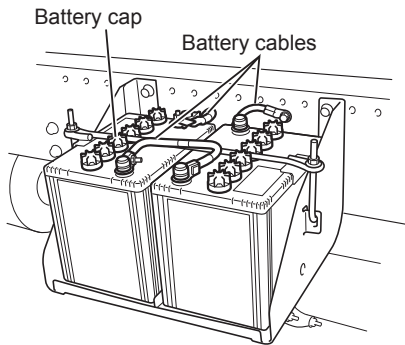
Removing the Battery

When the battery is to be removed, turn the starter switch to the "LOCK" position, wait at least 1 minute, and then disconnect the cables starting with the negative cable from the terminals. If the battery cable remains connected to the negative terminal, any contact made by tools and the like between the positive terminal and the vehicle body could lead to a short-circuit and dangerous electrical shocks. The electrical system can also be damaged.



CAUTION

- If the negative cable is disconnected from the negative terminal on the battery within 1 minute after turning the starter switch to the "LOCK" position, the engine control module may malfunction.



Charging the Battery

1. Before charging the battery, remove it from the vehicle to a location with good ventilation and take off the battery caps. If, on the other hand, the battery is to be charged while still inside the vehicle, be sure to first disconnect the battery cables.
2. Whenever a charger is being connected to or disconnected from a battery, ensure that it is turned off.
3. Battery cables must always be disconnected when performing fast (quick) charging. Failure to observe this precaution can result in generator burnout.

DANGER

- Do not use open flames in the vicinity of the battery when it is being charged. Hydrogen gas is generated by the battery during the charging process; accordingly, failure to observe this precaution can result in fire or explosion.

Installing the Battery

1. When installing the battery in your vehicle, ensure that it is oriented correctly and securely fastened without any looseness. If the battery is not installed correctly, the battery case and battery plates can be damaged as a result of vibration during driving.
2. When connecting the battery cables, start with the positive terminal and then connect the negative terminal.

CAUTION

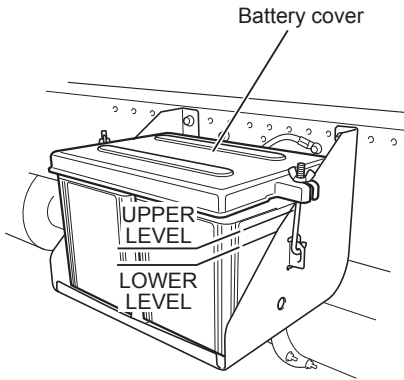
- Take care to avoid mixing up the positive and the negative terminals when connecting battery cables. Incorrect connection to these terminals can result in flow of excessive current and burnout of the generator or vehicle wiring.

Using the Battery as a Direct Power Source

The battery should not be used as a direct source of 12-volt power.

If your battery must be used as a direct power source, please consult with your Isuzu Dealer.

Checking the Battery Fluid Level



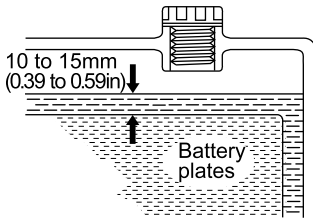
The battery is located almost exactly at the center of the external chassis member.

Daily Check

Remove the battery cover and confirm whether the level of fluid inside the battery case is within the specified range.

The surface of the battery fluid should be between the "UPPER LEVEL" and "LOWER LEVEL" lines. If the surface of the fluid cannot easily be seen, rock the vehicle gently.

If no level marks are indicated on the case, a range between 10 and 15 mm (0.39 and 0.59 in) from the top of the battery plates is considered appropriate.



Filling Battery Fluid

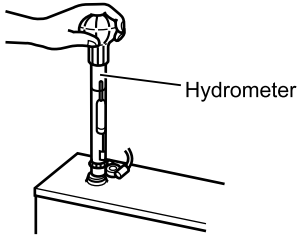
If the quantity of battery fluid inside the battery is insufficient, remove the cover and cap, and then add distilled water until the surface is close to the "UPPER LEVEL" line or in a range between 10 and 15 mm (0.39 and 0.59 in) from the top of the battery plates. When you have finished adding the distilled water, securely install the cap and battery cover.



ADVICE

- Battery fluid should never be filled beyond the "UPPER LEVEL" line. Failure to observe this precaution can result in battery fluid spillage and corrosion of battery terminals and other components. Any spilled battery fluid should be immediately washed away with water.
- Whenever battery fluid has been added, the battery should be recharged (by driving the vehicle). In winter months in particular, battery fluid can freeze and damage the battery case if you fail to recharge the battery.
- If the battery fluid level continues to drop at an unusually fast rate, have an inspection carried out immediately by the nearest Isuzu Dealer.

Checking the Specific Gravity of Battery Fluid



1. Check the specific gravity of the battery fluid using a hydrometer. If the specific gravity is too low, the battery should be charged.

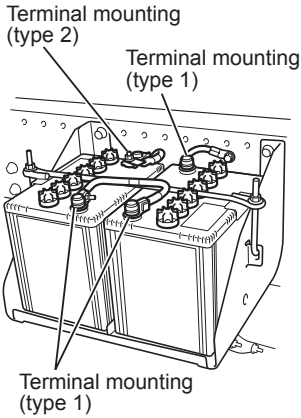
Proper specific gravity at a fluid temperature of 20°C (68°F)

1.27 - 1.29

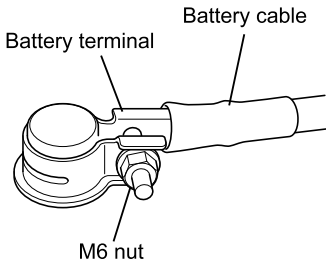
Checking the Battery Terminals



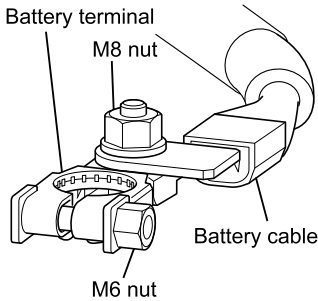
1. Check the terminals for looseness and corrosion.
2. If a terminal is found to be corroded and coated in white powder, wash this away with warm water and then wipe fully dry. Excessively corroded terminals should be polished using a wire brush or sandpaper.



Terminal mounting (type 1)



Terminal mounting (type 2)



- When you have finished cleaning the terminals, apply a thin layer of grease and securely connect the battery cables, taking care to ensure that they are tightly connected.
See "When the Battery Goes Flat" regarding steps to be taken should the battery be completely discharged.

Tightening torque for terminal nuts

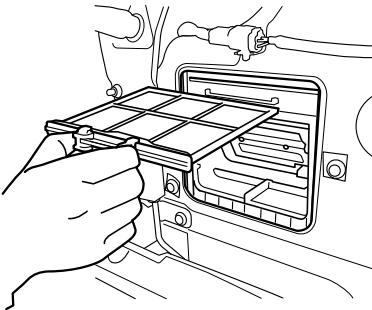
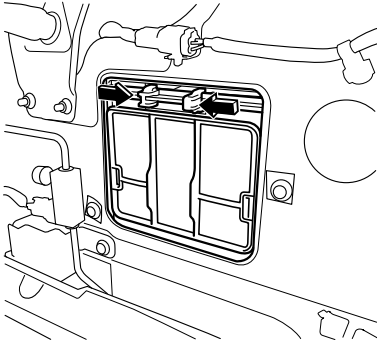
M6 nut	3 - 6 N·m (0.3 - 0.6 kgf·m/26 - 52 lb·in)
M8 nut	10 - 12 N·m (1.0 - 1.2 kgf·m/87 - 104 lb·in)

When the Battery Goes Flat

→ Refer to page 8-9

Air Conditioning Filters V

The air conditioning filters should be removed and cleaned once every month.

**Removing the Inside-air Filter**

1. Open the front lid.

Front Lid → Refer to page 7-8

2. While pressing in on both sides of the filter lock, pull out the filter.

3. Fully remove the filter. Use a vacuum cleaner or the like to clean dust and dirt from its surface.

**ADVICE**

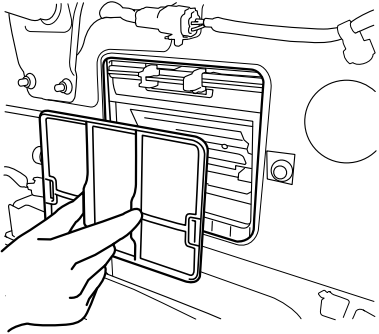
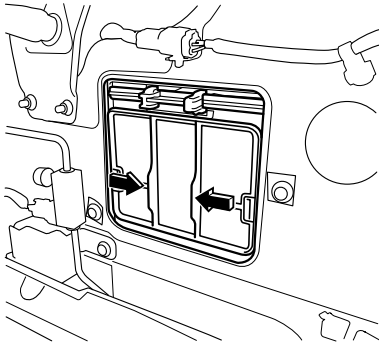
- In order to avoid filter damage, hard brushes should not be used for filter cleaning.

Installing the Inside-air Filter

1. Install the filter in the reverse order to removal.

**CAUTION**

- Ensure that the filter is returned securely to its original position. Failure to observe this precaution can lead to rattling during travel, or should the filter become loose, to very dangerous situations.
- The vehicle must not be used with the filter removed or incorrectly installed. Failure to observe this precaution can lead to air conditioning system damage as a result of dust, dirt, water, snow, and the like entering the system.



Removing the Outside-air Filter

1. While pressing in on both sides of the filter lock, pull out the filter.
2. Use a vacuum cleaner or the like to clean dust and dirt from its surface.



ADVICE

- In order to avoid filter damage, hard brushes should not be used for filter cleaning.

Installing the Outside-air Filter

1. Install the filter in the reverse order to removal.



ADVICE

- Ensure that the filter is returned securely to its original position. Failure to observe this precaution can lead to rattling during travel, or should the filter become loose, to very dangerous situations.
- The vehicle must not be used with the filter removed or incorrectly installed. Failure to observe this precaution can lead to air conditioning system damage as a result of dust, dirt, water, snow, and the like entering the system.

Refrigerant V

The air conditioning system will not be able to cool the cab interior effectively if the refrigerant level is low. Accordingly, the refrigerant level must be topped up whenever necessary.

Please contact your Isuzu Dealer whenever refrigerant must be added.

**ADVICE**

- Operating the air conditioning while the refrigerant level is too low leads not only to poor cooling performance but also to air conditioning system damage.
- This vehicle uses the new refrigerant HFC134a (R134a) in the air conditioning system. No other type of refrigerant can be used. In order to protect the environment, care must be taken to ensure that refrigerant gas is never released into open air. When refrigerant must be replaced, therefore, please contact your Isuzu Dealer or another service facility equipped with a gas recovery system.

Air Conditioning Compressor Belt

Looseness in the air conditioning compressor belt can result in poor cooling performance. It is important to inspect belt tension to ensure proper cab interior cooling.



CAUTION

- When the belt tension is not at a suitable level, belt screeching or breakage can occur.
- In order to accurately measure the belt tension, it will be necessary to use a sonic tension meter to confirm whether the vibration frequency is as set out below. For more information on sonic tension meters, please contact your Isuzu Dealer.

Checking the Belt Tension

Inspect the amount of deflection or vibration frequency when a force of approximately **98 N (10.0 kgf/22 lb)** is applied midway between the pulleys.

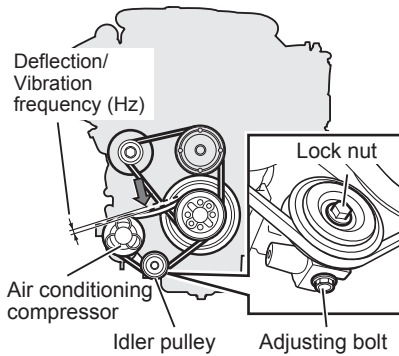
Air conditioning compressor belt	Standard values	
	Amount of deflection	Vibration frequency
New belt	10 - 13 mm (0.39 - 0.51 in)	115 - 141 Hz
When reused	13 - 15 mm (0.51 - 0.59 in)	101 - 115 Hz



CAUTION

[Precautions for belt adjustment]

- Initial stretching takes place in any new belt after installation. Furthermore, an installed new or reused belt should be in good alignment with the pulley grooves. These require the following adjustments to be carried out.
 - Perform belt-pulley alignment and tension adjustments using the indicated method.
 - Start up the engine and allow it to idle for at least 5 minutes in order to run-in the belt.
 - Stop the engine. Then, measure the belt tension, and if not appropriate, readjust the belt tension to the specified value.
 - Use the new belt tension specification only after replacing the belt with a new one.



Adjustment

1. Loosen the idler pulley's lock nut.
2. Adjust the belt tension using the adjusting bolt.
3. After the belt tension has been adjusted, securely fasten the lock nut.

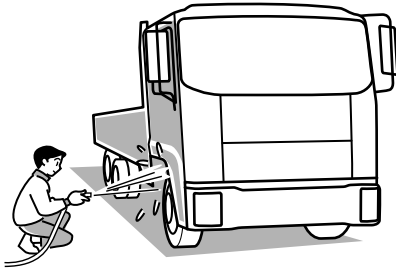
Replacement

1. Loosen the idler pulley's lock nut.
2. Loosen the idler pulley's adjusting bolt, and then detach the belt from the pulleys.
3. Take out the belt through the opening in the fan guide.
4. Insert the new belt through the opening in the fan guide and install the belt while aligning its grooves with those in the air conditioning compressor's pulley, generator's pulley and crank pulley.
5. Turn the adjusting bolt until the belt tension falls within the standard value range.
6. After adjustment, firmly tighten all the loosened bolts and nuts.

INTERIOR AND EXTERIOR MAINTENANCE

• Exterior Maintenance	7-134
• Interior Maintenance	7-138

Exterior Maintenance



Washing

If the vehicle is operated with foreign material adhering to the exterior, this material may react chemically with paint, resulting in staining, discoloration, rusting, or corrosion of components. Also, the material may become trapped within mechanical components, negatively affecting their functions or forming an aerodynamic resistance. In the following cases, therefore, the vehicle must be washed and all foreign matter removed.

- When soot, iron powder, dead bugs, bird droppings, tree sap, or oily matter from coal tar and smoke has adhered to painted surfaces.
 - When the vehicle has been driven in coastal areas.
 - When the vehicle has been driven on roads where road chemicals have been applied.
 - When a large amount of mud or dirt has adhered to the exterior.
1. Fully turn on the tap, and wash out the undercarriage and suspension.
 2. Close all openings and wash the cab and cargo body panels using a neutral detergent.
 3. Clean wheels and tires using a brush and detergent.
 4. After washing away all remaining detergent, use a shammy or other clean cloth to fully remove all moisture and water droplets.

**CAUTION**

- Do not apply water directly in order to clean the cab interior. Failure to observe this precaution can result in malfunction or breakdown of electronic control units and electrical components, or in rusting of the cab floor.
- Do not apply water from a high-pressure washer nozzle directly to the electric connectors. Failure to observe this precaution can lead to faulty operation of electrical system components.
- Do not spray high pressure water at or near the brake valves behind the front lid. Failure to observe this precaution can lead to faulty operation of the related components.
- Do not spray water directly at the air conditioning filter area, the air conditioning piping, or the heater hose connections behind the front lid. Failure to observe this precaution can result in water entering the cab.

**ADVICE**

- If automatic washing is used with vehicles having dark or metallic coating, the painted surfaces can be damaged by the brushes, lose their luster, or be very noticeably scratched.
- When cleaning the front-lid area, set the air source lever to the "☞" position in order to prevent water entering the cab.
- Do not apply water directly to the air conditioning filter, or the connections for the air conditioning pipe or heater hose inside the front lid. Failure to observe this precaution can result in water entering the cab.
- Do not apply water to the engine compartment or to electrical components. Failure to observe this precaution can lead to a poorly starting and operating engine and problems in electrical system components.
- Ensure that mirrors and the antenna are retracted before washing the vehicle.
- When washing the vehicle, be sure to observe the following precautions to avoid heat deformation of the plastic parts, mechanical breakage and water entry into the cab.
 - Avoid washing with water jet of high pressure and/or of high temperature.
 - Keep the distance of more than 0.4 m (15.75 in) between the washer nozzle and the vehicle, and hold the nozzle at a right angle to the door glasses.
- Ensure that all detergent is fully washed and wiped away. Particularly in the case of strong alkaline detergents (typically those for industrial uses), there is a danger that hairline cracks can develop in lighting-cluster lenses if the vehicle is operated without detergent being fully wiped away.

Vehicle Storage

In order to maintain your vehicle's attractive appearance as long as possible, special consideration must be given to its storage location.

If the vehicle is stored or kept for an extended period of time in any of the following locations, a chemical change may occur in the paintwork, resulting in staining, discoloration, rusting, and corrosion of components.

- Locations where a large amount of oily matter, soot, heavy smoke or metal powder can adhere.
- Areas around pharmaceutical plants and other facilities that discharge chemical matter.
- Coastal areas
- Locations where a large amount of dead bugs, bird droppings or tree sap can adhere.

Waxing

Painted and chrome-plated surfaces should be waxed once or twice a month, or whenever water is being poorly repelled by the surfaces. Ensure that wax is applied in the shade, and that the temperature of the painted surface is no more than 40°C (104°F).

Always follow the instructions provided with your wax product.



CAUTION

- Wax must not be applied to the windshield. Failure to observe this precaution can result in irregular reflection of light, impairing your view.



ADVICE

- Do not use wax containing abrasive material. Failure to observe this precaution can lead to scratching of painted surfaces or plastic components.
- The application of wax to rubber component surfaces can result in permanent whitening.



NOTE

- Wax must not be applied to the windshield. A layer of wax can impair your view in rainy weather, and can also lead to rough movements of the windshield wiper.
- If engine oil or grease comes into contact with the windshield, staining or discoloration may result. It must be immediately cleaned away.



Windshield Care

If not fully cleaned by the windshield wipers, the windshield should be cleaned using glass cleaner.



CAUTION

- When cleaning the windshield, do not place your feet or stand on the top of the bumper if it does not have a step. The top of the bumper is slippery and could cause a fall or other injury.

Interior Maintenance

Remove dust and dirt from the interior of the cab using an automotive cleaner or vacuum cleaner, and gently wipe surfaces clean using a cloth wet with warm or cold water.



WARNING

- When cleaning the interior of the cab, water should never be sprayed directly. Failure to observe this precaution can lead to vehicle malfunction and possibly fire if water should enter the audio system or other electrical components located underneath the floor carpet.
- Petroleum ether, gasoline, and other organic solvents should not be used to clean seat belts. In addition, seat belt webbing should be neither bleached nor redyed. Failure to observe these precautions can lead to the performance or strength of the seat belts being impaired. In the case of a collision, therefore, the belts could be insufficiently effective, and serious life-threatening injuries could result. When cleaning, use warm water in which a small amount of neutral detergent has been dissolved to gently wipe the seat belts.



CAUTION

- The interior of the vehicle must never be cleaned using acidic or alkaline solvents, or petroleum ether, gasoline, and other organic solvents. Failure to observe this precaution can result in discoloration and staining. It should be noted that certain types of cleaning products contain these compounds. Be sure to read cleaning product labels carefully.
- Air freshener (liquid, solid, gel, or plate types) must not come into direct contact with, or spill onto, interior components such as the air conditioning or audio system. Compounds contained in these products can cause discoloration, staining, or peeling of paint.
- Glass cleaners that contain these compounds must not be used to clean the inside of the windshield or window glass. To clean the glass, wipe using a cloth wet with warm or cold water.

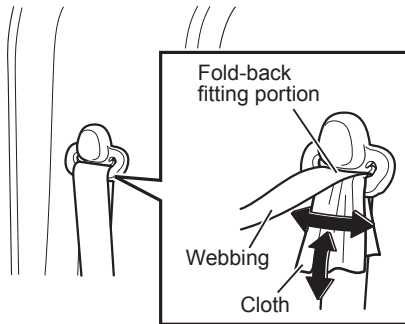
Seat Belt Care

A dirty seat belt can develop retracting problems, and for this reason, regular inspection and upkeep are required.



CAUTION

- Seat belt webbing can lose its strength when bleached or dyed, or when cleaned using gasoline, paint thinners, and other volatile substances.
- Do not disassemble the seat belt mechanism in order to remove any foreign material or objects that may have entered the buckle. Instead, arrange for inspection and maintenance to be carried out by your Isuzu Dealer.



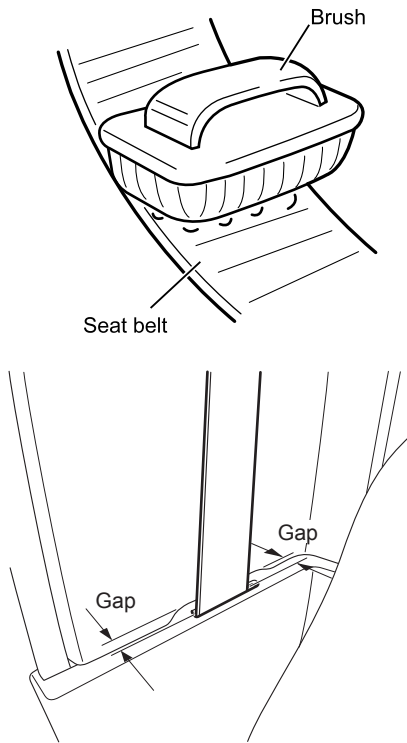
Cleaning a Seat Belt's Fold-back Fitting Portion

1. Fold a piece of cotton cloth, absorbent gauze, or the like of approximately 50 mm (2 in) in width into a rectangle.
2. Mix one part neutral detergent into approximately twenty parts warm water.
3. Wet the cloth in the detergent mixture, pass it through the fold-back fitting portion of the belt, and slide it back and forth and laterally until dirt can no longer be seen.
4. Remove the cloth, remove moisture from the fitting portion of the belt using a dry cloth, and then allow it to dry naturally out of direct sunlight.
5. Check to be sure the seat belt retracts and pulls out correctly.



ADVICE

- Avoid using anything like a tool to pass the cloth through the fold-back fitting portion or try to remove stubborn dirt. Using such a thing can result in damage to plastic parts or seat belt webbing.



Cleaning a Belt Webbing

1. Fully extract the belt and examine for any difference in color between the front and back surfaces.
2. Mix one part neutral detergent into approximately twenty parts warm water.
3. Wet a nail brush or another similar brush having soft bristles (of nylon or the like) in warm water, and use this to clean away dirt.
4. Wipe the seat belt dry using a dry cloth, and then allow it to dry naturally out of direct sunlight.
5. Check to be sure the seat belt retracts and pulls out correctly.



ADVICE

- If the above-described upkeep operations do not improve the operation of the seat belt through the retractor, there is a possibility that the belt is making contact with the door pillar trim. In this case, arrange for inspection and maintenance to be carried out by your Isuzu Dealer.
- If the belt is not winding and unwinding correctly, or if inspection reveals problems such as loose mountings, metal parts deformation, webbing damage, fraying, or discoloration, arrange for replacement to be carried out by your Isuzu Dealer.

Fabric Seat Covering and Carpet Care

Remove dirt and dust using a home-use electric vacuum cleaner.

Do not remove the carpet. Use standard household cleaning products and methods to remove stains from food, drink, and the like.

Be sure to use neutral detergents or cleaning products indicated as higher alcohol based detergents.

7-142

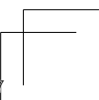
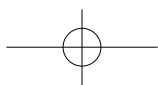
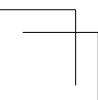
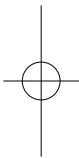
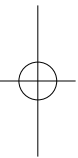
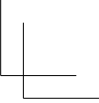
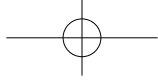
SERVICE AND MAINTENANCE



MAINTENANCE DATA

• Inspection and Maintenance

7-145



Inspection and Maintenance

For safe and economic driving, we recommend that you have your vehicle inspected and serviced regularly according to the schedule indicated in this chapter.

Maintenance Schedule

To drive your vehicle safely and at minimum cost, it is essential to have your vehicle regularly inspected and serviced at your Isuzu Dealer as per the specified maintenance schedule.

Contact your Isuzu Dealer for inspection that requires disassembly and/or special equipment.

Letters Used to Indicate Maintenance Service Types

I : Inspect then clean, repair or replace as necessary

A: Adjust

R: Replace

T: Tighten to the specified torque

L: Add lubricant



ADVICE

- When inspecting the items listed below, also inspect the routine inspection items as well.

*: Your vehicle needs to be maintained more often if it is driven in severe conditions.

** : Your vehicle needs to be maintained more often if it is driven in severe conditions.
Check for oil leakage every 20,000km (12,000 miles).

***: Clean when the signal part of the indicator on the air cleaner is red.

Maintenance Schedule for Severe-condition Operations

→ Refer to page 7-154

Maintenance Schedule (No. 1):

I : Inspect then clean, repair or replace as necessary A: Adjust R: Replace
 T: Tighten to the specified torque L: Add lubricant

Service interval	x1,000 km	1	5	8	10	15	20	25	30	35	40
	x1,000 miles	0.6	3	5	6	9	12	15	18	21	24
Engine startability and abnormal noise		-	-	-	I	-	I	-	I	-	I
Idling speed and acceleration		-	-	-	I	-	I	-	I	-	I
* Air cleaner element (models for Thailand)											
* Air cleaner element (models for Vietnam)		-	-	-	I	-	I	-	I	-	I
Intake and exhaust manifolds		T	-	-	-	-	-	-	-	-	-
Valve clearance		-	-	-	-	-	-	-	-	-	-
Compression pressure for each cylinder		-	-	-	-	-	-	-	-	-	-
Oil contamination		-	-	-	I	-	I	-	I	-	I
* Engine oil		R	-	-	I	-	R	-	I	-	R
** Engine oil filter (models for Thailand)		-	-	-	-	-	-	-	-	-	R
* Engine oil filter (models for Vietnam)		-	-	-	-	-	R	-	-	-	R
<input type="checkbox"/> Engine oil separator											
Fuel filter		-	-	-	-	-	-	-	R	-	-
Pre-fuel filter		-	-	-	-	-	-	-	R	-	-
Leaks from, damage to, or loose connection of fuel hose or pipe											
Fuel hose											
Fuel tank strainer		-	-	-	I	-	I	-	I	-	I
Inside fuel tank		-	-	-	I	-	I	-	I	-	I
Air compressor, governor and unloader valve functions		-	-	-	-	-	-	-	-	-	-
Radiator cap function											
Damage to fan belt		I	-	-	I	-	I	-	I	-	I
* Loose or otherwise improper installation of exhaust pipe		I	-	-	I	-	I	-	I	-	I
Cooling circuit and radiator											
Engine coolant											
Inspection for radiator hose cracking and damage											
Turbocharger to air duct connection and gasket		-	-	-	I	-	I	-	I	-	I

*: Your vehicle needs to be maintained more often if it is driven in severe conditions.

** : Your vehicle needs to be maintained more often if it is driven in severe conditions.
 Check for oil leakage every 20,000km (12,000 miles).

***: Clean when the signal part of the indicator on the air cleaner is red.

45	50	55	60	65	70	75	80	85	90	95	100	105	Odometer reading or months, whichever comes first
27	31	34	37	40	43	46	49	52	55	59	62	65	
-	I	-	I	-	I	-	I	-	I	-	I	-	or every 3 months
-	I	-	I	-	I	-	I	-	I	-	I	-	or every 3 months
Every 10,000 km (6,000 miles): I Every 12 months or after 6th cleaning: R ***													
-	R	-	I	-	I	-	I	-	I	-	R	-	or every 3 months: I every 15 months: R After 6th cleaning: R
-	T	-	-	-	-	-	-	-	-	-	T	-	or every 15 months
-	A	-	-	-	-	-	-	-	-	-	A	-	or every 12 months
-	I	-	-	-	-	-	-	-	-	-	I	-	or every 15 months
-	I	-	I	-	I	-	I	-	I	-	I	-	or every 3 months
-	I	-	R	-	I	-	R	-	I	-	R	-	or every 3 months: I every 6 months: R
-	-	-	-	-	-	-	R	-	-	-	-	-	or every 12 months
-	-	-	R	-	-	-	R	-	-	-	R	-	or every 6 months
Every 12 months: R													
-	-	-	R	-	-	-	-	-	R	-	-	-	or every 9 months
-	-	-	R	-	-	-	-	-	R	-	-	-	or every 9 months
Every 3 months: I													
Every 48 months: R													
-	I	-	I	-	I	-	I	-	I	-	I	-	or every 3 months
-	I	-	I	-	I	-	I	-	I	-	I	-	or every 3 months
-	I	-	-	-	-	-	-	-	-	-	I	-	or every 15 months
Every 24 months: I													
-	I	-	I	-	I	-	I	-	I	-	I	-	or every 3 months
-	I	-	I	-	I	-	I	-	I	-	I	-	or every 3 months
Every 24 months: I													
Every 12 months : I First 200,000 km (120,000 miles) or 24 months : R Then every 600,000 km (370,000 miles) or 36 months : R (when isuzu recommended coolant is used)													
Every 12 months: I													
-	I	-	I	-	I	-	I	-	I	-	I	-	or every 3 months

Maintenance Schedule (No. 2):

I : Inspect then clean, repair or replace as necessary A: Adjust R: Replace
T: Tighten to the specified torque L: Add lubricant

Service interval	x1,000 km	1	5	8	10	15	20	25	30	35	40
	x1,000 miles	0.6	3	5	6	9	12	15	18	21	24
* Clutch fluid (models for Thailand)											
* Clutch fluid (models for Vietnam)		-	-	-	I	-	I	-	I	-	I
Clutch system function		-	-	-	I	-	I	-	I	-	I
Clutch pedal free play and stroke		-	-	-	I	-	I	-	I	-	I
Clutch booster exhaust cover		-	-	-	I	-	I	-	I	-	I
Leaks from, damage to, or loose connection of clutch hose or pipe											
Clutch hose											
Rubber parts and gaskets of clutch booster											
* Transmission oil (MZW model)		R	-	-	I	-	I	-	I	-	I
* Transmission oil (ES11109 model)											
Loose gear control mechanism		-	-	-	I	-	I	-	I	-	I
Loose propeller shaft joints		-	-	-	-	-	-	-	-	-	-
* Worn propeller shaft universal joints and splines		-	-	-	-	-	-	-	-	-	-
Loose propeller shaft bearing and related parts		-	-	-	-	-	-	-	-	-	-
* Rear axle differential gear oil		R	-	-	I	-	I	-	I	-	I
* Inter-differential gear oil (FVZ model)		R	-	-	I	-	I	-	I	-	I
Rear wheel hub bearing grease (models for Thailand)		-	-	-	-	-	-	-	-	-	-
Rear wheel hub bearing grease (models for Vietnam)		-	-	-	-	-	-	-	-	-	-
Damaged or distorted rear axle case		-	-	-	-	-	-	-	-	-	-
Front wheel hub bearing grease (models for Thailand)		-	-	-	-	-	-	-	-	-	-
Front wheel hub bearing grease (models for Vietnam)		-	-	-	-	-	-	-	-	-	-
Damaged or distorted front axle case		-	-	-	-	-	-	-	-	-	-
* Leaf spring U-bolt nuts		T	-	-	-	-	-	-	-	-	-
Damaged leaf spring		-	-	-	I	-	I	-	I	-	I
Uneven suspension due to leaf spring fatigue		-	-	-	-	-	-	-	-	-	-
Loose or damaged leaf spring mounting		-	-	-	-	-	-	-	I	-	-
Spring leaves for misalignment		-	-	-	-	-	-	-	I	-	-
Oil leaks from or damage to shock absorbers		-	-	-	-	-	-	-	I	-	-
Loose shock absorber mounting		-	-	-	-	-	-	-	I	-	-
Foreign object in wheels		-	-	-	I	-	I	-	I	-	I
Wheel nuts		T	-	-	T	-	T	-	T	-	T

*: Your vehicle needs to be maintained more often if it is driven in severe conditions.

45	50	55	60	65	70	75	80	85	90	95	100	105	Odometer reading or months, whichever comes first
27	31	34	37	40	43	46	49	52	55	59	62	65	
Every 10,000 km (6,000 miles) or 3 months: I Every 120,000 km (75,000 miles) or 12 months: R													
-	R	-	I	-	I	-	I	-	I	-	R	-	or every 3 months: I every 15 months: R
-	I	-	I	-	I	-	I	-	I	-	I	-	or every 3 months
-	I	-	I	-	I	-	I	-	I	-	I	-	or every 3 months
-	I	-	I	-	I	-	I	-	I	-	I	-	or every 3 months
Every 3 months: I													
Every 48 months: R													
Every 48 months: R													
-	R	-	I	-	I	-	I	-	I	-	R	-	or every 3 months: I every 15 months: R
Refer to page 7-155 for the maintenance schedule of the ES11109 model.													
-	I	-	I	-	I	-	I	-	I	-	I	-	or every 3 months
-	I	-	-	-	-	-	-	-	-	-	I	-	or every 15 months
-	I	-	-	-	-	-	-	-	-	-	I	-	or every 15 months
-	I	-	-	-	-	-	-	-	-	-	I	-	or every 15 months
-	R	-	I	-	I	-	I	-	I	-	R	-	or every 3 months: I every 15 months: R
-	R	-	I	-	I	-	I	-	I	-	R	-	or every 3 months: I every 15 months: R
-	-	-	R	-	-	-	-	-	-	-	-	-	or every 12 months
-	R	-	-	-	-	-	-	-	-	-	R	-	or every 15 months
-	I	-	-	-	-	-	-	-	-	-	I	-	or every 15 months
-	-	-	R	-	-	-	-	-	-	-	-	-	or every 12 months
-	R	-	-	-	-	-	-	-	-	-	R	-	or every 15 months
-	I	-	-	-	-	-	-	-	-	-	I	-	or every 15 months
-	T	-	-	-	-	-	-	-	-	-	T	-	or every 15 months
-	I	-	I	-	I	-	I	-	I	-	I	-	or every 3 months
-	I	-	-	-	-	-	-	-	-	-	I	-	or every 15 months
-	-	-	I	-	-	-	-	-	I	-	-	-	or every 9 months
-	-	-	I	-	-	-	-	-	I	-	-	-	or every 9 months
-	-	-	I	-	-	-	-	-	I	-	-	-	or every 9 months
-	I	-	I	-	I	-	I	-	I	-	I	-	or every 3 months
-	T	-	T	-	T	-	T	-	T	-	T	-	or every 3 months

Maintenance Schedule (No. 3):

I : Inspect then clean, repair or replace as necessary A: Adjust R: Replace
T: Tighten to the specified torque L: Add lubricant

Service interval	x1,000 km	1	5	8	10	15	20	25	30	35	40
	x1,000 miles	0.6	3	5	6	9	12	15	18	21	24
Damaged disc wheels		-	-	-	I	-	I	-	I	-	I
Loose front wheel hub bearings		-	-	-	-	-	-	-	-	-	-
Loose rear wheel hub bearings		-	-	-	-	-	-	-	-	-	-
Power steering fluid (models for Thailand)		-	-	-	I	-	I	-	I	-	I
Power steering fluid (models for Vietnam)		-	-	-	I	-	I	-	I	-	I
Power steering fluid filter		-	-	-	-	-	-	-	-	-	-
Leaks from, damage to, or loose connection of power steering hose or pipe											
Power steering hose											
Loose power steering system mounting		-	-	-	I	-	I	-	I	-	I
Excessive play in power steering bearing		-	-	-	-	-	-	-	-	-	-
* Damage to, loose or excessive play in power steering joints		I	-	-	-	-	-	-	I	-	-
Knuckle-to-front axle clearance		-	-	-	-	-	-	-	-	-	-
Wheel alignment		-	-	-	-	-	-	-	-	-	-
Steering angle range for right and left turns		-	-	-	-	-	-	-	-	-	-
King pin-to-bearing clearance		-	-	-	-	-	-	-	-	-	-
<input type="checkbox"/> Hydraulic unit											
* Brake lining wear		-	-	-	I	-	I	-	I	-	I
* Brake drum wear or damage		-	-	-	-	-	-	-	-	-	-
Leaks from, damage to, or loose connection of brake hose or pipe		-	-	-	I	-	I	-	I	-	I
Brake hose		-	-	-	I	-	I	-	I	-	I
Brake chamber rod stroke		-	I	-	I	-	I	-	I	-	I
Function of brake chamber		-	-	-	-	-	-	-	-	-	-
Functions of brake and relay valves		-	-	-	-	-	-	-	-	-	-
<input type="checkbox"/> Air dryer											
<input type="checkbox"/> ABS modulator											
Rubber parts of wheel cylinder											
Rubber parts of brake valve, relay valve, parking brake valve, quick release valve, reducing valve, double check valve, multi-protection valve, AIR MASTER, trailer control valve and load sensing proportioning valve											
Rubber parts of brake chamber											

*: Your vehicle needs to be maintained more often if it is driven in severe conditions.

45 27	50 31	55 34	60 37	65 40	70 43	75 46	80 49	85 52	90 55	95 59	100 62	105 65	Odometer reading or months, whichever comes first	
-		-		-		-		-		-		-	or every 3 months	
-		-	-	-	-	-	-	-	-	-	-		-	or every 15 months
-		-	-	-	-	-	-	-	-	-	-		-	or every 15 months
-		-	R	-		-		-		-		-	or every 3 months: I every 12 months: R	
-	R	-		-		-		-		-	R	-	or every 3 months: I every 15 months: R	
-		-	-	-	-	-	-	-	-	-	-		-	or every 15 months
Every 3 months: I														
Every 48 months: R														
-		-		-		-		-		-		-	or every 3 months	
-		-	-	-	-	-	-	-	-	-	-		-	or every 15 months
-	-	-		-	-	-	-	-		-	-	-	or every 9 months	
-		-	-	-	-	-	-	-	-	-	-		-	or every 15 months
-		-	-	-	-	-	-	-	-	-	-		-	or every 15 months
-		-	-	-	-	-	-	-	-	-	-		-	or every 15 months
-		-	-	-	-	-	-	-	-	-	-		-	or every 15 months
Every 10 years: R														
-		-		-		-		-		-		-	or every 3 months	
-		-	-	-	-	-	-	-	-	-	-		-	or every 12 months
-		-		-		-		-		-		-	or every 3 months	
-	R	-		-		-		-		-	R	-	or every 3 months: I every 24 months: R	
-		-		-		-		-		-		-	or every 3 months	
-		-	-	-	-	-	-	-	-	-	-		-	or every 12 months
-		-	-	-	-	-	-	-	-	-	-		-	or every 12 months
Change the desiccant, filter and rubber parts of air dryer at 100,000 km (62,000 miles) or every 12 months.														
Every 24 months: R														
Every 12 months: R														
Every 24 months: R														
Every 3 months: I Every 24 months: R														

Maintenance Schedule (No. 4):

I : Inspect then clean, repair or replace as necessary A: Adjust R: Replace
 T: Tighten to the specified torque L: Add lubricant

Service interval	x1,000 km	1	5	8	10	15	20	25	30	35	40
	x1,000 miles	0.6	3	5	6	9	12	15	18	21	24
Brake chamber piggy-bag											
Brake expander											
Worn parking brake lining (center parking brake model)		-	-	-	-	-	-	-	-	-	-
Worn or damaged parking brake drum (center parking brake model)		-	-	-	-	-	-	-	-	-	-
Loose parking brake system mounting		-	-	-	I	-	-	-	I	-	-
Damaged or loosely connected rod or cable		-	I	-	I	-	I	-	I	-	I
Function of parking brake control valve system (wheel parking brake model)		-	I	-	I	-	I	-	I	-	I
Function of brake chamber (wheel parking brake model)		-	-	-	-	-	-	-	-	-	-
Brake chamber rod stroke (wheel parking brake model)		-	I	-	I	-	I	-	I	-	I
Function of cab tilt system		-	-	-	-	-	-	-	-	-	-
Specific gravity of battery fluid		-	-	-	-	-	-	-	I	-	-
Function of starter motor		-	-	-	-	-	-	-	I	-	-
Wear of starter motor brushes		-	-	-	-	-	-	-	-	-	-
Function of generator		-	-	-	I	-	I	-	I	-	I
Damage to or loose connection of wiring harness terminals		-	-	-	I	-	I	-	I	-	I
Engine water pump bearing		-	-	-	-	-	-	L	-	-	-
Front spring pins		-	L	-	L	L	L	L	L	L	L
Front spring shackles		-	L	-	L	L	L	L	L	L	L
King pins		-	L	-	L	L	L	L	L	L	L
Tie rod ends		-	-	-	-	-	-	L	-	-	-
Drag link (not required for types without grease fittings)		-	-	-	-	-	-	L	-	-	-
Propeller shaft universal joints and sliding sleeves		-	L	-	L	L	L	L	L	L	L
Propeller shaft center bearing		-	L	-	L	L	L	L	L	L	L
Rear spring pins		-	L	-	L	L	L	L	L	L	L
Rear spring shackle pins or rear spring sliding shackles		-	L	-	L	L	L	L	L	L	L
Rear spring pads (FVM/FVZ model)		-	L	-	L	L	L	L	L	L	L
Steering shaft sliding sleeve		-	L	-	L	L	L	L	L	L	L
Clutch shift block (ES11109 model transmissions)		-	L	-	L	L	L	L	L	L	L
Clutch booster joint pin		-	L	-	L	L	L	L	L	L	L
<input type="checkbox"/> Cab mounting		-	L	-	L	L	L	L	L	L	L

45	50	55	60	65	70	75	80	85	90	95	100	105	Odometer reading or months, whichever comes first	
27	31	34	37	40	43	46	49	52	55	59	62	65		
Every 36 months: R														
Every 12 months: I														
Every 36 months: overhaul														
-	I	-	-	-	-	-	-	-	-	-	-	I	-	or every 12 months
-	I	-	-	-	-	-	-	-	-	-	-	I	-	or every 12 months
-	-	-	I	-	-	-	-	-	I	-	-	-	-	or every 3 months
-	I	-	I	-	I	-	I	-	I	-	I	-	-	or every 3 months
-	I	-	I	-	I	-	I	-	I	-	I	-	-	or every 3 months
-	I	-	-	-	-	-	-	-	-	-	-	I	-	or every 12 months
-	I	-	I	-	I	-	I	-	I	-	I	-	-	or every 3 months
-	I	-	-	-	-	-	-	-	-	-	-	I	-	or every 15 months
-	-	-	I	-	-	-	-	-	I	-	-	-	-	or every 9 months
-	-	-	I	-	-	-	-	-	I	-	-	-	-	or every 9 months
-	I	-	-	-	-	-	-	-	-	-	-	I	-	or every 15 months
-	I	-	I	-	I	-	I	-	I	-	I	-	-	or every 3 months
-	I	-	I	-	I	-	I	-	I	-	I	-	-	or every 3 months
-	L	-	-	-	-	L	-	-	-	-	-	L	-	or every 6 months
L	L	L	L	L	L	L	L	L	L	L	L	L	L	or every month
L	L	L	L	L	L	L	L	L	L	L	L	L	L	or every month
L	L	L	L	L	L	L	L	L	L	L	L	L	L	or every month
-	L	-	-	-	-	L	-	-	-	-	-	L	-	or every 6 months
-	L	-	-	-	-	L	-	-	-	-	-	L	-	or every 6 months
L	L	L	L	L	L	L	L	L	L	L	L	L	L	or every month
L	L	L	L	L	L	L	L	L	L	L	L	L	L	or every month
L	L	L	L	L	L	L	L	L	L	L	L	L	L	or every month
L	L	L	L	L	L	L	L	L	L	L	L	L	L	or every month
L	L	L	L	L	L	L	L	L	L	L	L	L	L	or every month
L	L	L	L	L	L	L	L	L	L	L	L	L	L	or every month
L	L	L	L	L	L	L	L	L	L	L	L	L	L	or every month
L	L	L	L	L	L	L	L	L	L	L	L	L	L	or every month
L	L	L	L	L	L	L	L	L	L	L	L	L	L	or every month
L	L	L	L	L	L	L	L	L	L	L	L	L	L	or every month

Maintenance Schedule for Severe-condition Operations

Driving condition

A: Driving with a trailer B: Operation involving frequent starts and stops

C: Driving on rough roads, mountain roads or uphill roads D: Driving in dusty areas

E: Driving on snowy roads or along the seashore

Item	Distance covered	Condition					
		A	B	C	D	E	B+E
Air cleaner element (models for Thailand)	Inspect every 5,000 km (3,000 miles) Replace every 12 months or after 6th cleaning				D		
Air cleaner element (models for Vietnam)	Replace every 24,000 km (15,000 miles) or after 6th cleaning				D		
Engine oil	Change every 10,000 km (6,000 miles)	A			D		B+E
Engine oil filter (models for Thailand)	Change every 20,000 km (12,000 miles)	A			D		B+E
Engine oil filter (models for Vietnam)	Change every 10,000 km (6,000 miles)	A			D		B+E
Loose or otherwise improper installation of exhaust pipe	Inspect every 2,000 km (1,250 miles)	A	B	C		E	
Transmission oil (MZW model)	Replace every 24,000 km (15,000 miles)	A		C			
Transmission oil (ES11109 model)	Refer to page 7-155 for the maintenance schedule of the ES11109 model.						
Clutch fluid (models for Thailand)	Change every 60,000 km (37,500 miles)		B				
Clutch fluid (models for Vietnam)	Change every 24,000 km (15,000 miles)		B				
Worn propeller shaft universal joints and splines	Inspect every 24,000 km (15,000 miles)			C			
Rear axle differential gear oil	Change every 24,000 km (15,000 miles)	A		C			
Inter-differential gear oil (FVZ model)	Change every 24,000 km (15,000 miles)	A		C			
Leaf spring U-bolt nuts	Tighten to the specified torque every 24,000 km (15,000 miles)			C			
Damage to, or looseness or excessive play in power steering joint	Inspect every 6,000 km (3,750 miles)			C			
Brake lining wear	Inspect every 2,500 km (1,500 miles)	A	B	C	D		
Brake drum wear or damage	Inspect every 20,000 km (12,000 miles)	A	B	C	D		

Maintenance Schedule - ES11109 Model Transmissions

Carry out periodic maintenance on the transmission in order to maintain its original performance. It is particularly important to replace the transmission oil according to the Maintenance Schedule.

The Maintenance Schedule varies according to the type of oil used.

Mineral Oil

Operating conditions	Replacement interval	Inspection and replacement item
Highway use	First 5,000 to 10,000 km (3,000 to 6,000 miles)	Change transmission oil at the driver's discretion
	Every 20,000 km (12,000 miles)	Check oil level and inspect for leakage
	Every 100,000 km (62,000 miles) or every 12 months	Change transmission oil
Off-highway use	First 30 hours	Change transmission oil at the driver's discretion
	Every 40 hours	Check oil level and inspect for leakage
	Every 500 hours	Change transmission oil (driving on unpaved roads)
	Every 1,000 hours	Change transmission oil (driving on normal paved roads)

Recommended lubricants

Type	Grade (SAE)	Outside temperature
Heavy Duty Engine Oil API-CD	50	-12°C (10°F) or above
	40	-12°C (10°F) or above
	30	-12°C (10°F) or below
Mild EP Gear Oil API-GL-4	90	-12 to 38°C (10 to 100°F)
	80W	-26 to 21°C (-15 to 70°F)

The multi information display provides information on the replacement interval assuming mineral oil is used. However, replacement intervals differ if synthetic oil or semi-synthetic oil is used, and the owner must therefore manage the replacement interval.

Synthetic Oil

Operating conditions	Replacement interval	Inspection and replacement item
Highway use	Every 20,000 km (12,000 miles)	Check oil level and inspect for leakage [All recommended oils]
	Every 500,000 km (300,000 miles) or 36 months	Change transmission oil [When COGNIS (HENKEL/EMERY) is used]
	Every 400,000 km (240,000 miles) or 36 months	Change transmission oil [When CASTROL SYNTRANS is used]
	Every 300,000 km (180,000 miles) or 36 months	Change transmission oil [When MOBILUBE 1 SHC is used]
Off-highway use	Every 40 hours	Check oil level and inspect for leakage [All recommended oils]
	Every 500 hours	Change transmission oil where severe dirt conditions exist [All recommended oils]
	Every 36 months	Change transmission oil (Normal off-highway use) [All recommended oils]

Recommended oil

- COGNIS (HENKEL/EMERY) MTF 4200
- CASTROL SYNTRANS
- MOBILUBE 1 SHC

Semi-Synthetic Oil

Operating conditions	Replacement interval	Inspection and replacement item
Highway use	Every 20,000 km (12,000 miles)	Check oil level and inspect for leakage [All recommended oils]
	Every 300,000 km (180,000 miles) or 36 months	Change transmission oil [All recommended oils]
Off-highway use	Every 40 hours	Check oil level and inspect for leakage [All recommended oils]
	Every 500 hours	Change transmission oil where severe dirt conditions exist [All recommended oils]
	Every 36 months	Change transmission oil (Normal off-highway use) [All recommended oils]

Recommended oil

- ELF TRANSELF 75W80W (as known as RVI Longevia)
- MOBIL MOBILUBEXHP
- KUWAIT Q8 T 60
- FUCHS DEA DEAGEAR LD & TITAN CYTRAC LD
- FIAT LUBRIFICANTI TUTELA TRUCK GEAR FE
- DE OLIEBRON TOR MT/LD GEAR OIL
- OMV AKTIENGESELLCHAFT OMVLDL 75W-80
- PAKELO MOTOR OIL PAKELO GOLDENGear LD
- TEXACO MULTIGEAR MTF 75W80W



NOTE

- When an oil filter element is installed, replace it when changing the oil.
- If your vehicle is used under severe conditions, change the oil accordingly.

Recommended Fluids, Lubricants and Diesel Fuels

It is extremely important to select correct lubricants and diesel fuels so that your Isuzu vehicle demonstrates its full performance over years.

Top up the lubricants in accordance with the Maintenance Schedule specified for your vehicle. Use Isuzu genuine lubricants or those recommended in the list below.

The lubricant change intervals specified in the Maintenance Schedule and the terms and conditions of the new vehicle warranty assume the use of Isuzu genuine or Isuzu recommended lubricants listed below.

LUBRICATION	MAKE	BRAND	GRADE		
			API	ACEA	JASO
Diesel engine crankcase	ISUZU	BESCO DURAMAX (10W-30)	CH-4	—	DH-1
	ISUZU	BESCO MULTI Z CH-4 (10W-30)	CH-4	—	DH-1
	Castrol	Tecton J-Max (15W-40)	CH-4	E3	DH-1
	Chevron/Texaco/Caltex	Delo 400 Multigrade (15W-40)	CI-4	E7	DH-1
	Chevron/Texaco/Caltex	Delo Gold Multigrade (15W-40)	CH-4	E3	—
	Elf	Performance Victory (15W-40)	CI-4	E7	—
	ExxonMobil	Delvac MX (15W-40)	CI-4	E7	—
	Shell	Rimula R4X (15W-40)	CI-4	E7	DH-1
	Total	Rubia Works 1000 (15W-40)	CI-4	E7	DH-1
	Total	Rubia TIR 7400 (15W-40)	CI-4	E7	—
Manual transmission (MZW model)	ISUZU	BESCO GEAR SH (80W-90)	GL-5	—	—
	Castrol	Syntrax Universal (80W-90)	GL-5/MT-1	—	—
	Chevron/Texaco/Caltex	Thuban GL-5 EP (80W-90)	GL-5/MT-1	—	—
	ExxonMobil	Mobil Delvac 1 Gear Oil (75W-90)	GL-5/MT-1	—	—
	ExxonMobil	Mobilube S (80W-90)	GL-5/MT-1	—	—
	Shell	Spirax S2 A IZ (80W-90)	GL-5	—	—
	Total	Transmission XPM (80W-90)	GL-5/MT-1	—	—
Differential (without LSD) Oil lubricated wheel hub bearing	ISUZU	BESCO GEAR SH (80W-90), (90), (140)	GL-5	—	—
	Castrol	Syntrax Universal (80W-90)	GL-5/MT-1	—	—
	Chevron/Texaco/Caltex	Thuban GL-5 EP (80W-90), (85W-140)	GL-5/MT-1	—	—
	Elf	Gearelf 5 (80W-90), (85W-140)	GL-5	—	—
	ExxonMobil	Mobil Delvac 1 Gear Oil (75W-90)	GL-5/MT-1	—	—
	ExxonMobil	Mobilube S (80W-90)	GL-5/MT-1	—	—
	Shell	Spirax S2 A IZ (80W-90)	GL-5	—	—
	Shell	Spirax S3 AX (80W-90)	GL-5	—	—
	Total	Transmission XPM (80W-90)	GL-5/MT-1	—	—
	Total	Transmission TM (80W-90), (85W-140)	GL-5	—	—



ADVICE

- Be sure to use the LSD gear oil additive mentioned above, otherwise a chattering noise and/or excessive vibration may occur when turning.

LUBRICATION	MAKE	BRAND	GRADE		
			API	ACEA	JASO
Differential (Limited slip differential)	ISUZU	BESCO LSD (140)	GL-5*	—	—
	Castrol	Axle Limited Slip (85W-140)	GL-5	—	—
	Chevron/Texaco/Caltex	Gear Oil ZF (80W-90)	GL-5	—	—
	Elf	Tractelf BLS (80W-90)	GL-5	—	—
	ExxonMobil	Mobilube LS (85W-90)	GL-5	—	—
	Total	Dynatrans DA (80W-90)	GL-5	—	—
Power steering	ISUZU	BESCO ATF III (Dexron® III)	—	—	—
	BP	Autran DXIII (Dexron® III)	—	—	—
	Castrol	ATF Heavy Duty (Dexron® III)	—	—	—
	Chevron/Texaco/Caltex	Havoline ATF-J (Dexron® III)	—	—	—
	ExxonMobil	Mobil Multipurpose ATF (Dexron® III)	—	—	—
	Shell	Spirax S3 ATF MD3 (Dexron® III)	—	—	—
	Total	Fluidmatic III G (Dexron® III)	—	—	—
	Total	Fluide G3 (Dexron® III)	—	—	—
Propeller shaft sliding yoke Universal joint Center bearing Kingpins (Multi purpose grease)	ISUZU	BESCO L2 GREASE (No.2), L3 GREASE (No.3)	—	—	—
	Chevron/Texaco/Caltex	Starplex EP (No.2)	—	—	—
	ExxonMobil	Mobilgrease XHP 222 (No.2), 223 (No.3)	—	—	—
	Shell	Gadus S3 V220C 2 (No.2)	—	—	—
	Total	Multis Complex EP2 (No.2), EP3 (No.3)	—	—	—
Brake camshaft (Multi purpose grease containing molybdenum disulfide)	ISUZU	BESCO ONE LUBER Mo GREASE (No.2)	—	—	—
	Chevron/Texaco/Caltex	Molytex Grease EP2 (No.2)	—	—	—
	Shell	Gadus S2 V220AD 2 (No.2)	—	—	—
	Total	Multis Complex HV2 Moly (No.2)	—	—	—

*: If API GL-5 limited slip differential gear oil is not available, use API GL-5 differential gear oil together with limited slip differential gear oil additive (Part No. 8-88900-330-0) or an equivalent additive.

COOLANT	MAKE	BRAND*
Engine cooling system	ISUZU Arteco BASF Total Total	BESCO LLC SUPER TYPE E, AS Havoline XLC Glysantin G34 Glacelf Auto Supra Coolelf Auto Supra 37

*: Use Isuzu recommended coolant, or GENERAL MOTORS ENGINEERING STANDARDS GM6277M (Ethylene glycol based non-silicate and non-borate coolant) or equivalent.



ADVICE

- Mix the coolant and water at an appropriate concentration.

Preparing Engine Coolant

→ Refer to page 7-30

FLUID	BRAND
Electric-hydraulic cab tilt pump	MIL-H-5606E aviation oil or equivalent

FLUID	MAKE	BRAND	GRADE **
Clutch and brake fluid reservoir	ISUZU AC Delco	BESCO BRAKE FLUID SUPER Supreme 11	DOT 3 DOT 3

**: This material meets GENERAL MOTORS ENGINEERING STANDARDS GM4653M, FMVSS 116 or SAE J1703 requirements.

DIESEL FUEL / APPLICABLE STANDARD	
Japanese Industrial Standards (JIS)	Based on K2204 : 1997 Diesel Fuel
Deutsche Industrie Normen (DIN)	Based on EN590 : 1997
American Society for Testing and Materials (ASTM)	Based on D975-04C No.1-D S500 or No.2-D S500 (below 500 ppm)
British Standards (BS)	Based on EN590 : 1997

DIESEL FUEL / APPLICABLE STANDARD (Sulfur content below 50 ppm)	
Japanese Industrial Standards (JIS)	Based on K2204 : 2007 Diesel Fuel
Deutsche Industrie Normen (DIN)	Based on EN590 : 2004
American Society for Testing and Materials (ASTM)	Based on D975-04c No.1-D S15 or No.2-D S15 (below 15 ppm)
British Standards (BS)	Based on EN590 : 2004

**CAUTION**

- Be sure to use diesel fuel.
If you supply the vehicle with poor-quality fuel, water-removal additive or other additive, gasoline, kerosene or alcohol-based fuel, it could harm the fuel filter, prevent proper movement of fuel-lubricated parts in the injectors and adversely affect engine components, possibly resulting in a breakdown. If you accidentally put the wrong fuel in the tank, drain it all out. Starting the engine with the wrong fuel in the tank could result in fire and engine damage.
- Open the fuel tank filler cap slowly. If you open it quickly, fuel may spurt out.

**ADVICE**

- Only use fuels listed above. Do not use other fuels as they may adversely affect the engine.

Refueling Using Fuels that Contain Biodiesel Fuel (Fatty Acid Methyl Esters (FAME))

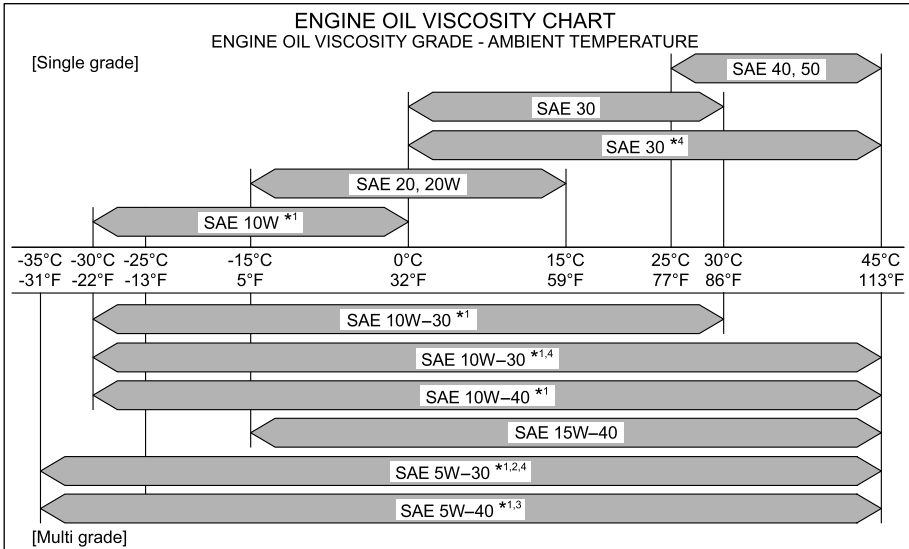
- You can use standard type diesel fuels that meet EN590. A standard type diesel fuel means the fuel that contains biodiesel fuel (FAME) which meets EN14214.
- Using diesel fuels that do not meet EN590, or using fuels that contain FAME which does not meet EN14214 may, in the worst case, cause a serious engine failure.
- Do not leave the diesel fuel that contains FAME unused in the vehicle for a long period of time. FAME contents may block up the fuel system, causing a serious engine failure.
- The vehicle is covered under the vehicle warranty given if the fuel that meets EN590 is used. However, if the vehicle is left unused for a long period of time, the characteristics of the fuel may change, causing a vehicle failure. The vehicle warranty is not applicable in such cases.

**NOTE**

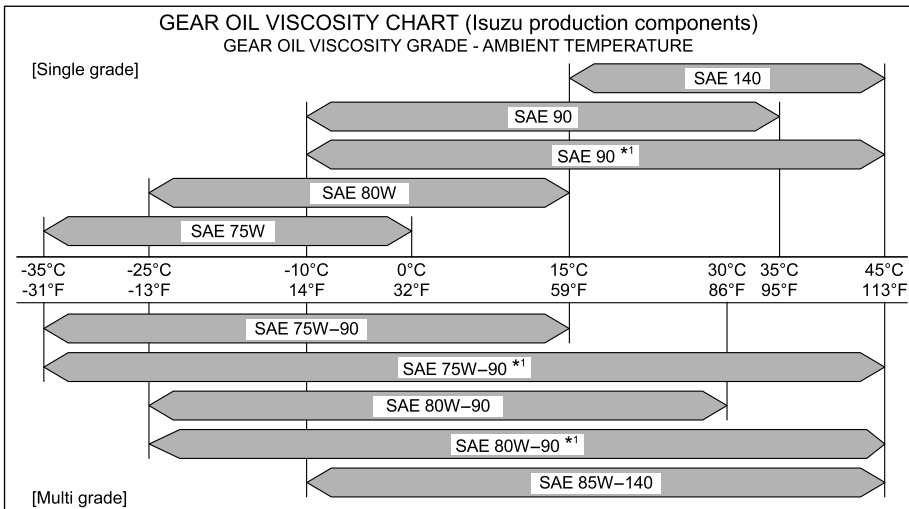
- When changing from 0% FAME diesel to the fuel that contains FAME which meets EN590, there may be a negative impact on performance when pulling away and driving in general.

Engine Oil and Gear Oil Viscosity Charts

Select appropriate engine and gear oils in accordance with the tables below. It is also important to select the viscosity appropriate for the temperature at which your vehicle operates. Use the following tables for making correct selections.



- *1: At ambient temperatures below -25°C (-13°F), this can only be used when starting aids (oil pan heater, block heater, etc.) are used.
- *2: In the case of 5W-30 oil for commercial vehicles (CV), only Isuzu genuine oil can be used.
- *3: 5W-40 oil is specified as the recommended oil only for cold regions (Russia, China, etc.).
- *4: Use is possible at ambient temperatures up to 45°C (113°F) only in the case of Isuzu genuine oil.

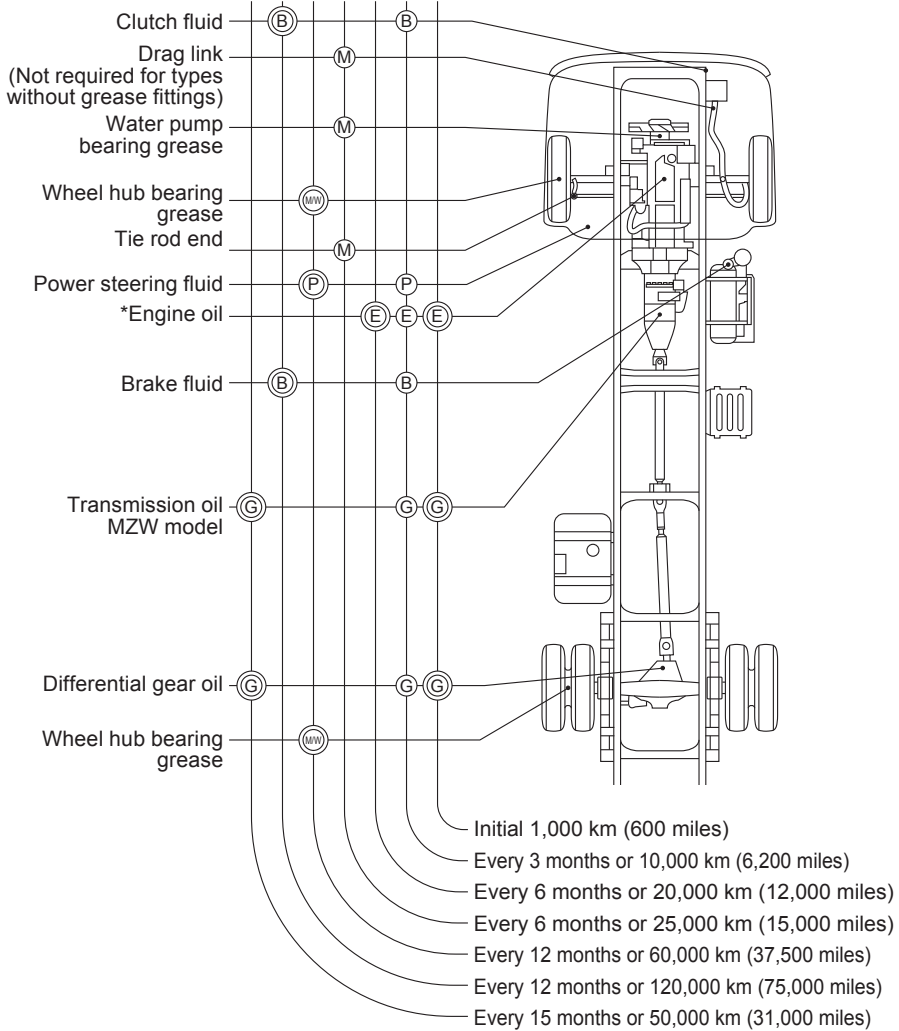


- *1: Use is possible at ambient temperatures up to 45°C (113°F) only in the case of Isuzu genuine oil.

Lubrication Chart

FTR Model

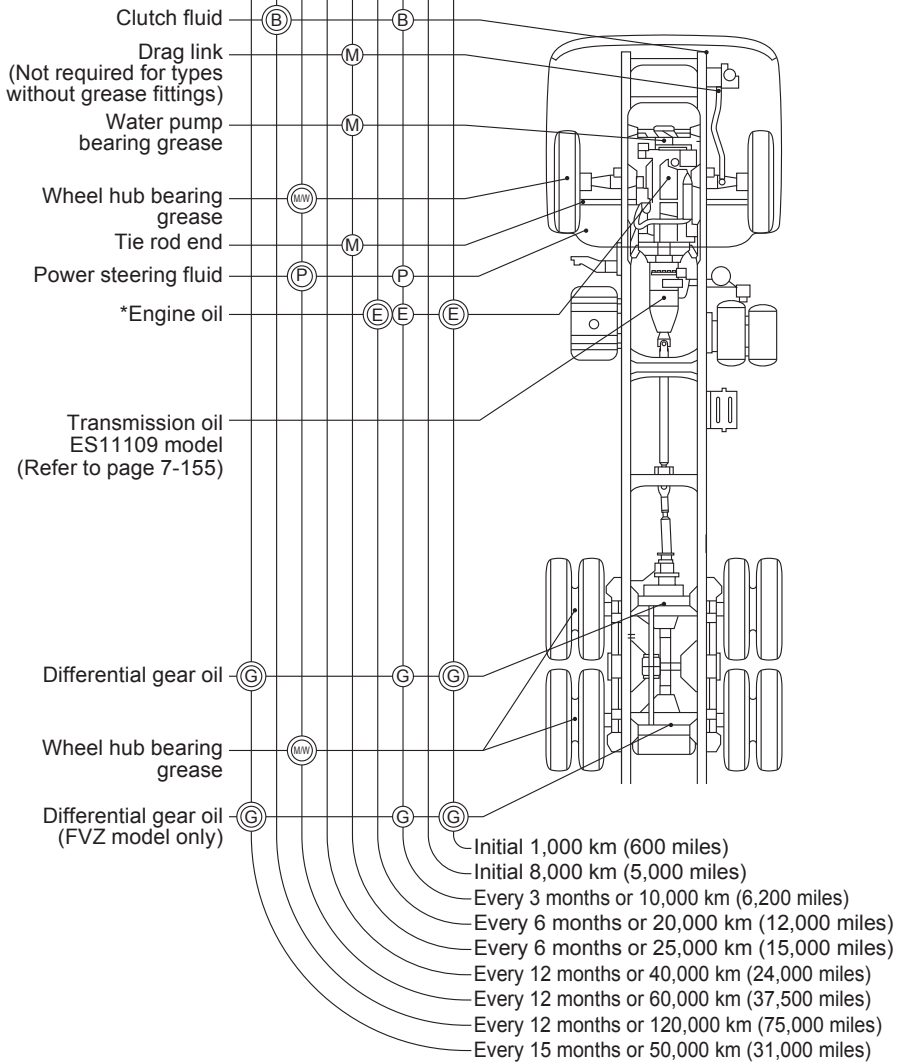
- CHECK or SUPPLY
- ⊙ CHANGE
- ⓔ ...ENGINE OIL
- ⓖ ...GEAR OIL
- ⓐ ...AUTOMATIC TRANSMISSION FLUID
- Ⓜ ...MULTIPURPOSE TYPE GREASE
- Ⓜ/Ⓦ ...MULTIPURPOSE TYPE GREASE or WHEEL BEARING GREASE
- ⓑ ...BRAKE FLUID
- Ⓟ ...POWER STEERING FLUID



*** Items with an asterisk, check oil and fluid level daily.**

FVM/FVZ Model

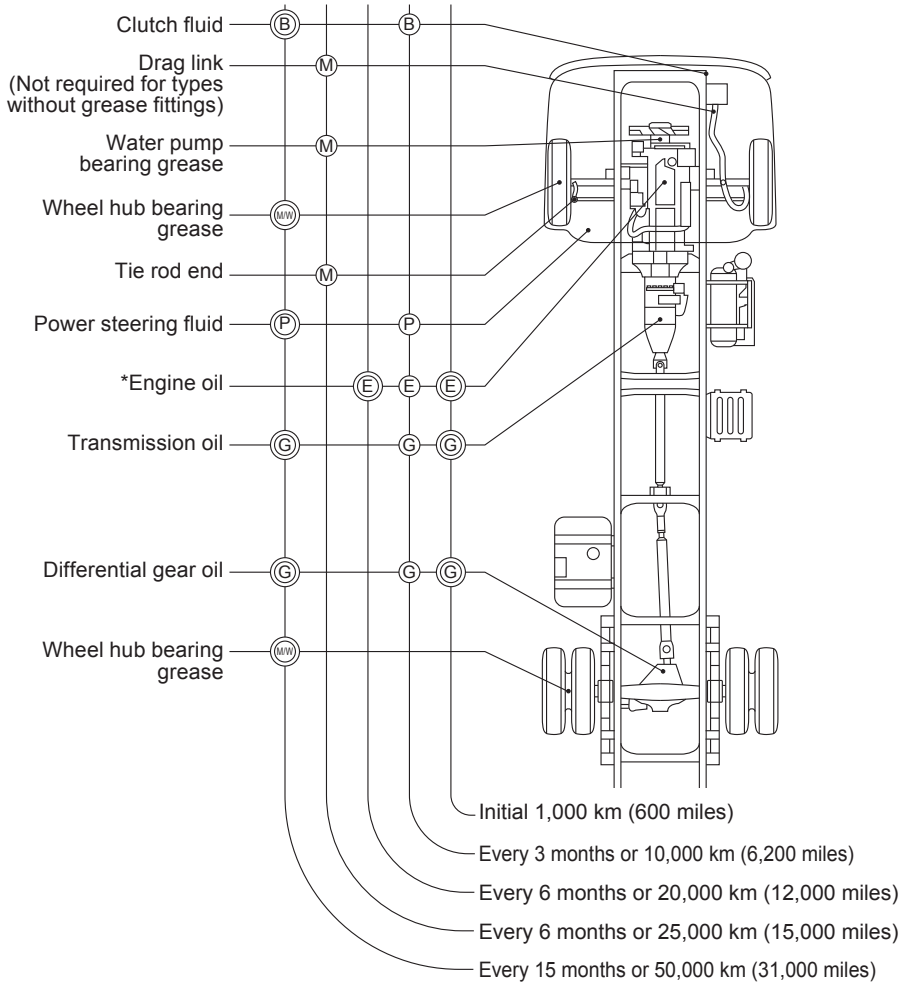
- CHECK or SUPPLY
- ⊙ CHANGE
- ⓔ ...ENGINE OIL
- ⓖ ...GEAR OIL
- ⓐ ...AUTOMATIC TRANSMISSION FLUID
- Ⓜ ...MULTIPURPOSE TYPE GREASE
- ⓂⓂ ...MULTIPURPOSE TYPE GREASE or WHEEL BEARING GREASE
- ⓑ ...BRAKE FLUID
- Ⓟ ...POWER STEERING FLUID



*** Items with an asterisk, check oil and fluid level daily.**

FVR Model

- | | | |
|-------------------|---|---------------------------|
| ○ CHECK or SUPPLY | ⓔ ...ENGINE OIL | ⓑ ...BRAKE FLUID |
| ⊙ CHANGE | ⓖ ...GEAR OIL | Ⓟ ...POWER STEERING FLUID |
| | Ⓜ ...MULTIPURPOSE TYPE GREASE | |
| | Ⓜ/Ⓜ ...MULTIPURPOSE TYPE GREASE or WHEEL BEARING GREASE | |

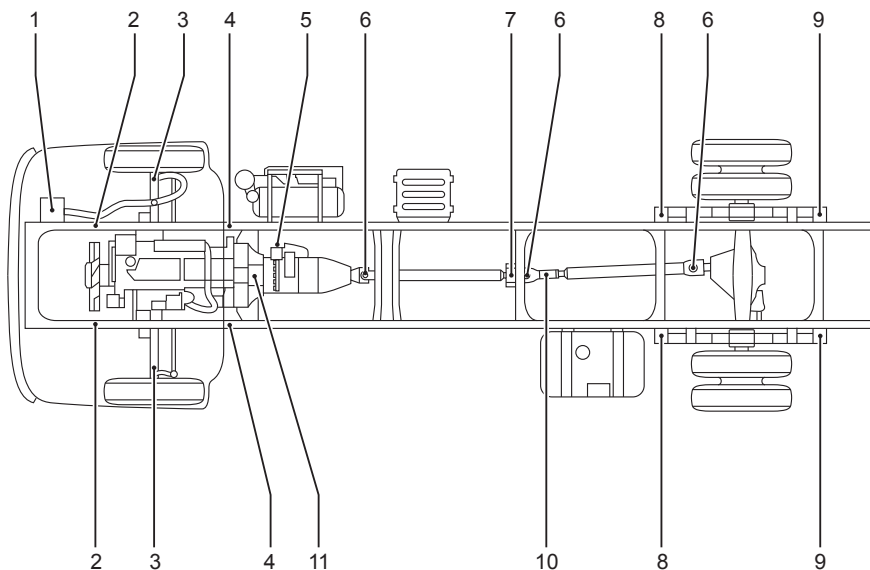


*** Items with an asterisk, check oil and fluid level daily.**

Greasing Points

FTR/FVR Model

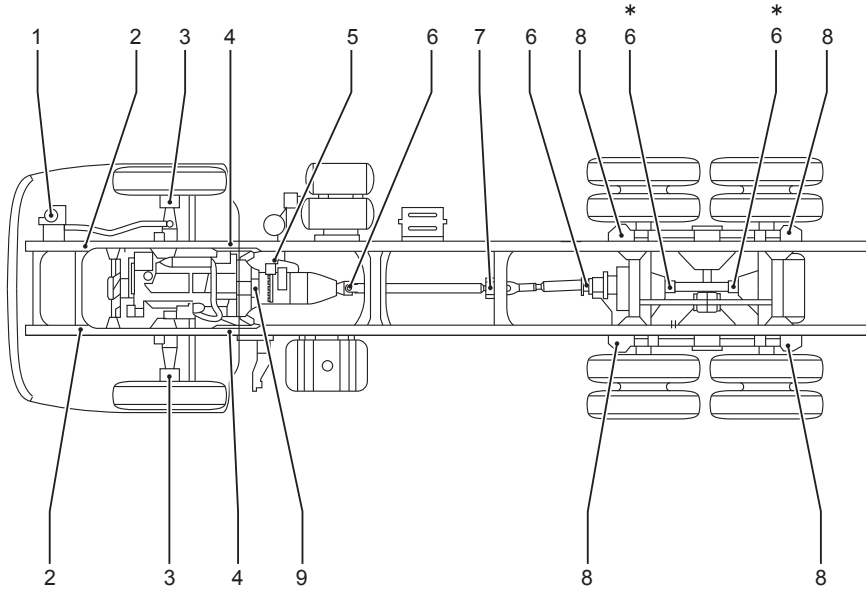
Every month or every 5,000km (3,000miles)



1. Steering shaft sliding sleeve
2. Front spring pin
3. Kingpin
4. Front shackle pin
5. Clutch booster joint pin
6. Propeller shaft universal joint
7. Propeller shaft center bearing
8. Rear spring pin
9. Rear shackle pin or Rear spring sliding pad
10. Propeller shaft sliding yoke
11. Clutch shift block(ES11109 model transmissions)

FVM/FVZ Model

Every month or every 5,000km (3,000miles)



* : For FVZ model only

1. Steering shaft sliding sleeve
2. Front spring pin
3. Kingpin
4. Front spring pin and shackle pin
5. Clutch booster joint pin
6. Propeller shaft universal joint and sliding sleeve
7. Propeller shaft center bearing
8. Rear spring sliding pad
9. Clutch shift block(ES11109 model transmission)

7-168

SERVICE AND MAINTENANCE



IN CASE OF EMERGENCY

8

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• When the Brakes Do not Work	8-8
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Troubleshooting

Performing regular inspections and maintenance prevents damage. Be sure to perform inspections and maintenance at regular intervals. Also, quickly rectify any fault in the vehicle (even a small fault) to prevent it from becoming more serious.

If a symptom shown in the following table occurs, perform inspections and take corrective action in accordance with the table. If you are unable to perform a repair, the corrective action shown in the table does not eliminate a symptom or you can not locate a fault, contact the nearest Isuzu Dealer.



ADVICE

- Any item for which there is a ⊙ in the "Corrective action" column requires repairs and adjustments. Contact the nearest Isuzu Dealer.

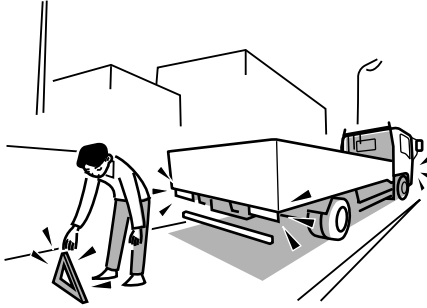
Symptom		Cause	Corrective action	Reference page
Engine does not start	Starter does not turn over, or is weak	Flat batteries	Recharge or replace	8-9
		Battery terminals detached, loose or corroded	After repairing corroded section, connect the terminals firmly	—
		Starter ground wire terminal detached, loose or corroded	After repairing corroded section, connect the terminals firmly	—
		Engine oil viscosity too high	Change to oil with proper viscosity	7-162
		Starter or electrical system faulty	⊙	—
	Starter turns over	No fuel	Make sure there are no fuel leaks, and then add fuel	—
		Air in the fuel system	Bleed fuel system	8-12
		Fuel filter clogged	Replace filter	7-49
		Fuel frozen	Warm fuel pipe with hot water or wait until it gets warmer	—
		Common rail system faulty	⊙	—
Preheating system faulty		⊙	—	

Symptom	Cause	Corrective action	Reference page
Engine starts, but immediately stops	Idling speed too low	Adjust idling speed	4-30
	Fuel filter clogged	Replace filter	7-49
	Air cleaner clogged	Clean or replace element	7-45
	Common rail system faulty	⊙	—
Unsteady engine speed	Water or air in fuel system	Drain water from fuel filter or bleed fuel system	7-53 8-12
	Fuel system faulty	⊙	—
White or black exhaust smoke	Engine not sufficiently warmed up	Allow engine to warm up sufficiently	4-30
	Excessive engine oil	Correct oil level	7-21
	Air cleaner clogged	Clean or replace element	7-45
	Fuel system faulty	⊙	—
Engine is overheating	No engine coolant	Add engine coolant	7-33
	Front of radiator is clogged with dirt	Wash clean with water	7-41
	Radiator cap not fully tightened	Make sure it is firmly tightened or replace radiator cap	—
	Fan belt looseness	Adjust the tension or replace the belt	7-44
	Engine coolant dirty	Clean the radiator interior or change engine coolant	7-34
	Fan clutch faulty	⊙	—
	Radiator cap dirty or faulty	Clean or replace	—
Oil pressure is low	Improper engine oil viscosity	Change to oil with proper viscosity	7-162
	Engine oil level too low	Add engine oil	7-23
	Engine inner components faulty	⊙	—
	Meter, lights or switches faulty	⊙	—
Air pressure is low	Air compressor faulty	⊙	—
	Air leaking from pipes	⊙	—
	Air governor faulty	⊙	—

Symptom	Cause	Corrective action	Reference page
Engine not powerful enough	Parking brake not fully disengaged	Make sure it is disengaged	—
	Brake dragging	⊙	—
	Clutch slipping	Adjust clutch control stroke	7-86
	Air cleaner clogged	Clean or replace element	7-45
	Fuel filter clogged	Replace filter	7-49
	Engine control system faulty	⊙	—
	Commonrail system faulty	⊙	—
	Engine faulty	⊙	—
Brake not effective	Drum-to-lining gap too large	⊙	—
	Low air pressure	Raise engine speed to supply air	—
Uneven braking	Unbalanced air pressure in tires	Adjust to proper air pressure	7-62
	Tire unevenly worn	Replace tire	7-71
	Unbalanced drum-to-lining gap of the wheels	⊙	—
Exhaust brake not working	Low air pressure	Raise engine speed to supply air	—
	Air system faulty	⊙	—
	The electrical system faulty	⊙	—
Steering wheel hard to turn	Loaded too far forward	Load properly	—
	Power steering fluid level too low	Add fluid	7-99
	Insufficient air in front tires	Adjust to proper air pressure	7-62
Excessive play in steering wheel	Wheel bolts and nuts loose	Tighten to the specified torque	7-76
	Unbalanced air pressure in the tires	Adjust to proper air pressure	7-62
	Unbalanced tires	⊙	—
	Excessive steering wheel play	⊙	—

Symptom		Cause	Corrective action	Reference page
Poor steering wheel return		Poor lubrication in the steering mechanisms	Lubricate the mechanism	7-105
		Poor wheel alignment	⊙	—
Clutch disengages poorly		Insufficient air	Fill with air	—
		Insufficient clutch fluid	Add fluid	7-82
		Excessive clutch pedal free play	Adjust to proper level	7-86
Loud or abnormal noises	From transmission	Insufficient transmission oil	Add oil	7-88
		Transmission inner components faulty	⊙	—
	From differential	Insufficient differential gear oil	Add oil	7-96
		Differential inner components faulty	⊙	—
	From suspension	Spring pins, shackles or stoppers worn	⊙	—
	From propeller shaft	Poor lubrication in each component	Lubricate them	7-105
Splines or bearings worn		⊙	—	

When the Vehicle Breaks Down during Driving



1. Operate the hazard warning flasher and pull the vehicle immediately over to a safe place that does not impede traffic (shoulder, verge). Place the triangle reflectors to alert other traffic to presence of your vehicle.
2. Have the other passengers get out and wait in a safe place.
3. Walk to a safe place and take appropriate measures by using the closest telephone, etc.

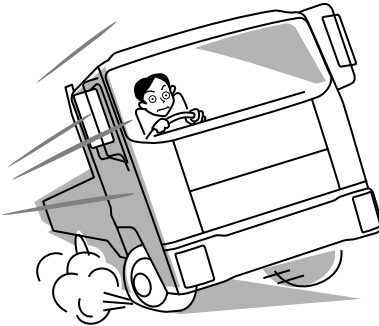


WARNING

[If there is a fuel leak]

- Leaking fuel from the vehicle is dangerous due to possible combustion or explosion. Stop the engine immediately.

When the Tire Goes Flat



When the tire goes flat while driving, avoid hard braking, hold on to the steering wheel firmly and stop the vehicle.

The tire should be changed on a flat space to prevent obstructing other vehicles or pedestrians.



WARNING

- If you continue to drive on a flat tire, undue force would be applied to the wheel bolts, possibly causing the bolts to break and the wheel to come off.

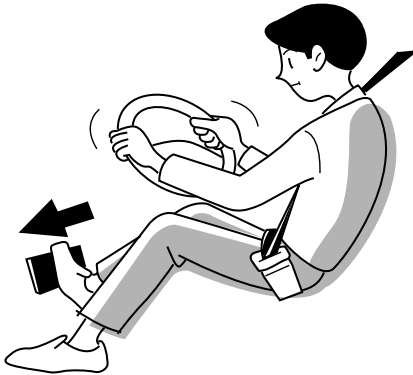
Spare Tire **v** → Refer to page 7-78
Handling the Jacks

→ Refer to page 7-112

**Changing a Tire (ISO 10-Bolt
 Wheels)**

→ Refer to page 7-71

When the Engine Stops While Driving



Do not panic. Press the brake pedal to reduce speed, head immediately for a safe place, stop the vehicle and perform an inspection.

If the engine stopped because the vehicle ran out of fuel while driving, refueling alone will not be enough to restart the engine. Bleed the fuel system after refueling the vehicle.

When the Fuel Runs Out

→ Refer to page 8-11

WARNING

- Driving operations will change, so stop the vehicle in a safe place with the following in mind.
 - The power steering system will not work so the steering wheel will be hard to turn. It will require more strength than during normal operation.
 - The brake air pressure will not rise, so immediately stop the vehicle at a safe place.

When the Engine Stalls and Cannot be Restarted

Place the gearshift lever in "N" and push the vehicle to a safe place.

CAUTION

- In case of emergency, place the gearshift lever in "R" (reverse gear), "1" (1st gear) or "2" (2nd gear) if the starter turns over.
- Then, keep the starter switch in "START" with your foot off the clutch pedal to move the vehicle.

When the Brakes Do not Work



When the brakes do not work unexpectedly, this can cause a serious accident. Reduce speed by quickly shifting down from third to second to first gear using the gearshift lever. Gradually pull the parking brake lever while firmly holding on to the steering wheel. Stop the vehicle on the side of the road.



CAUTION

- It is very dangerous to suddenly pull back all the way on the parking brake lever while moving at high speed. Reduce speed first by shifting down and then gradually pull back on the parking brake lever.



NOTE

- In worst case conditions on a mountain road or in similar situations, stop the vehicle by scraping along a guardrail or cliff, or dropping the front and rear wheels of one side into a channel at the side of the road.

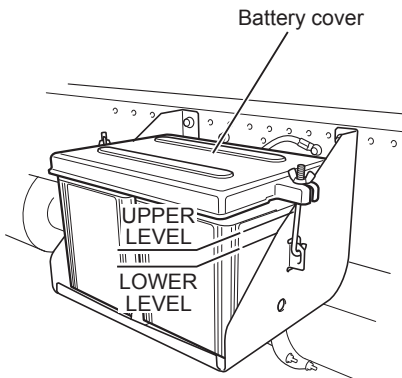
When the Battery Goes Flat

Use a booster cable (sold separately) and the battery of another vehicle to start the engine in this sequence.



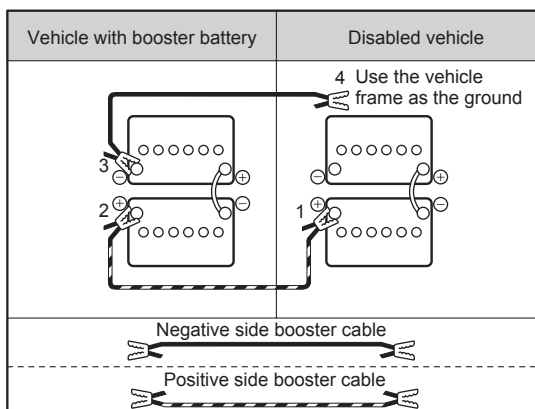
CAUTION

- For safety and the protection of the vehicle, don't push-start the vehicle.
- Make sure that the booster battery of the vehicle providing the charge has the same voltage as the disabled vehicle.
- Under no circumstances put the battery's positive and negative terminals in contact with one another.
- When connecting the cables, under no circumstances allow the clips to touch each other.
- Ask your Isuzu Dealer to recharge the battery.
- Do not disconnect a battery terminal with the engine running. It could cause a breakdown in the electrical system.



1. Check the battery fluid level in the disabled vehicle.
2. Use a vehicle that has a charged battery with the voltage of 24V.

- Remove the battery cover and connect the booster cables in the numbered sequence in the drawing.



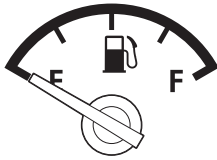
- After connecting the cables, start the engine of the vehicle with the booster battery.
- Slightly rev up the engine of the vehicle with the booster battery and start the engine of the disabled vehicle.
- If the engine in the disabled vehicle starts, remove the booster cables in the reverse sequence as they were connected.

**WARNING**

- Check the battery fluid level before connecting the booster cables. Usage or charging of the battery when the battery fluid is below the "LOWER LEVEL" can accelerate deterioration, and give rise to dangerous situations such as the generation of heat and may even cause an explosion. Perform the work after adding the battery fluid.
- A vehicle battery generates flammable gas that could explode. Be careful of the following to avoid creating sparks.
 - Do not connect one end of the booster cable shown in the step 4 on the drawing directly to the battery's negative terminal. Connect the booster cable to a metal part of the engine that is away from the battery.
 - Do not let the positive end of the cable come in contact with the negative end of the cable or with the vehicle body.
 - Keep flames away from the battery.
- Use care not to become entangled in any belts when connecting the cable.

**NOTE**

- When it is difficult to start the engine in a cold area, first start the engine of the vehicle with booster battery and a few minutes after that start the engine of the disabled vehicle.

When the Fuel Runs Out

When changing the fuel filter or when the fuel runs out, air will enter the fuel system, so refueling alone will not be enough to restart the engine. Use the following methods to bleed the fuel system.

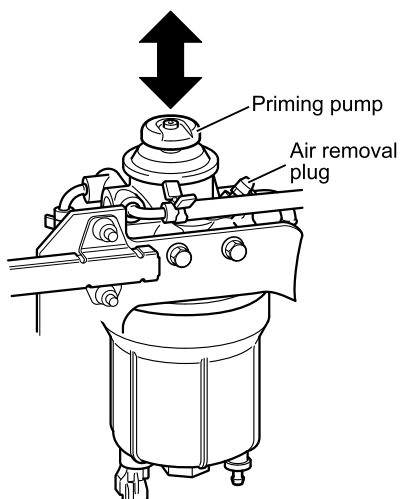
**WARNING**

- Wipe off any fuel that adheres to the vehicle body or the engine compartment below the cab. This could cause a fire.

**CAUTION**

- Before starting the engine, sit in the driver's seat and make sure that the gearshift lever or selector lever is placed in the "N" position. Do not start the engine unless you are sitting in the driver's seat. For example, do not start the vehicle by reaching through the window from the outside, or from outside the vehicle with the door open. Pay particular attention to the fact that will move when the engine is started with the transmission in a position other than "N".

How to Bleed Air



1. Remove the rubber cap of the air removal plug and then use a tool to loosen it. Attach a plastic hose to the air removal plug so that fuel does not spray out.
2. Operate the priming pump quickly until the fuel comes out swiftly from the air removal plug.

**NOTE**

- When only the pre-filter is replaced, in the first approx. 50 times of pumping since the operation start, the fuel in the main fuel filter and the fuel pipe comes out from the air removal plug. In the next approx. 50 times, the air is discharged from the air removal plug. After that, the fuel comes out again. Operate the pump until this point.
- The amount of fuel discharged first from the air removal plug is approx. 250 cc.

3. Tighten the air removal plug, and disconnect the plastic hose. Install the rubber cap that was removed in step 1 to the air removal plug.

4. After tightening the air removal plug, operate the priming pump until it comes hard to pump, or 30 times.

**NOTE**

- The priming pump may not become hard to pump when operated if the fuel temperature is low. In that case, use the minimum number of strokes as a guideline.

5. Wipe off any fuel that has leaked out, start the engine and make sure that fuel hasn't leaked. If the engine doesn't start, repeat the bleeding procedure from step 4.

When the Warning Light Comes On

Air Pressure



**BRAKE
AIR**

When this warning light comes on, there is insufficient air pressure in the air tank and the brakes will not work properly. A warning buzzer will sound at this time.

Immediately stop the vehicle in a safe place, perform checks and take corrective action. The warning buzzer will stop when the parking brake lever is pulled.

Air Pressure Warning Light

→ Refer to page 4-17

Check and Corrective Action

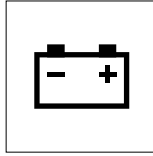
- Run the engine at idle and raise the air pressure until the warning light goes out.
- When the warning light does not go out or when it takes longer than the specified time for the light to go out after an air pressure of **0 kPa** (0 kgf/cm²/**0 psi**) is reached (refer to page 7-56), repair is required. Contact the nearest Isuzu Dealer.



WARNING

- Do not drive the vehicle when the warning light is on. Brakes are not fully functional, so the vehicle is in a dangerous condition to operate.

Generator



When this warning light comes on, the charging system may have failed. Immediately stop the vehicle in a safe place, perform checks and take corrective action.

Check and Corrective Action

1. Check to see if the fan belt is broken or loose.
2. If the fan belt is loose, adjust the tension.
3. If there is no abnormality in the fan belt, contact the nearest Isuzu Dealer.

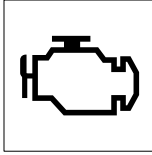
Fan Belt → Refer to page 7-42

**CAUTION**

- Do not drive the vehicle when the warning light is on. The battery may drain.

**NOTE**

- Since disassembling is required for replacing the fan belt, have it performed by the nearest Isuzu Dealer.

Check Engine

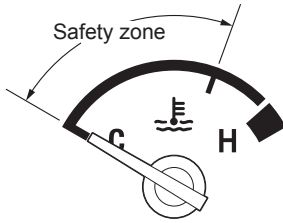
If this warning light comes on or flashes while the engine is running, this alerts you to a problem with the engine electronic control system. Since checking and repairing the control system is required, immediately contact the nearest Isuzu Dealer.

ABS 

Antilock Brake System (ABS)
→ Refer to page 4-53

When the Engine Overheats

If engine power drops and the needle on the engine coolant temperature gauge goes up above the upper limit of the safety zone and enters the "H" zone, the engine is overheating. The engine overheat warning light will come on and the warning buzzer will sound. Take the following corrective actions immediately.



Engine overheat warning light



1. Operate the hazard warning flasher switch and pull the vehicle immediately over to a safe place that doesn't impede traffic (shoulder, verge) and park it.
2. Lower the temperature of the engine for a while with the engine idling.



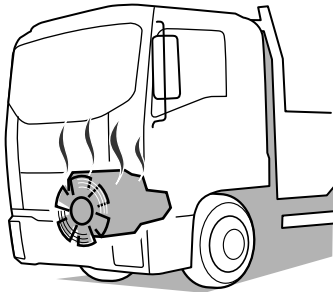
ADVICE

- Do not stop the engine immediately. Otherwise, the engine may seize.
3. When the needle of the engine coolant temperature gauge returns to the middle of the safety zone, stop the engine.



WARNING

- Do not remove the radiator cap or reserve tank cap when the engine coolant is still hot. Careless removal could result in burns caused by hot vapor being released. Burns may also be caused by boiling water released due to the high temperature of the coolant. Perform inspection, refilling, and replacement of coolant only when its temperature has cooled.
- When removing the radiator cap and reserve tank cap, use a thick cloth to cover the cap and turn it little by little.
- Engine coolant is toxic and must not be ingested. If the engine coolant gets in your eyes, rinse it off immediately.
- Engine coolant is flammable, and therefore, it must be kept away from flames and other heat sources.

**ADVICE**

- When the cooling fan for the radiator is not turning, turn off the engine immediately.
4. Check the engine coolant level in the reserve tank and radiator after the engine has sufficiently cooled. If it is insufficient, add engine coolant. Also, check to see if the fan belt is loose or has been damaged.
 5. Inspect to see if there is any dirt, etc. attached to the front surface of the radiator and intercooler. Also, inspect to see if there is anything blocking the core. If there is anything attached, clean and remove it.
 6. After inspection, please contact the nearest Isuzu Dealer.

**ADVICE**

- Make sure that the needle on the engine coolant temperature gauge is below "C" before adding engine coolant. Adding engine coolant when the engine is not sufficiently cool could cause a breakdown in the engine or damage it.
- When tap water only has been used for engine coolant in an emergency, change the engine coolant as soon as possible.
- Engine damage may be caused if an overheating engine is suddenly refilled with water. Instead, refill slowly.

Engine Coolant → Refer to page 7-29

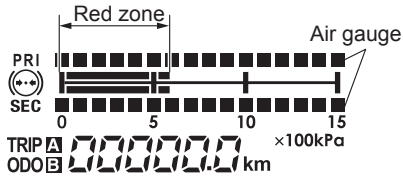
Fan Belt → Refer to page 7-42

Cleaning the Radiator Core and Intercooler Core

→ Refer to page 7-41

When the Meter Shows an Abnormality

Air Pressure Gauge



When the needle on this gauge moves into the red zone, a warning light will come on at the same time.

Air Pressure Gauge

→ Refer to page 4-12

Air Pressure Warning Light

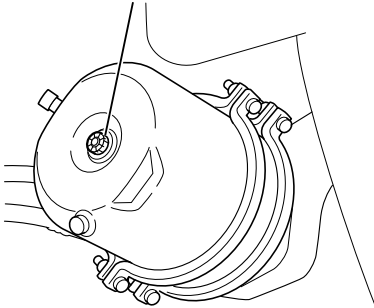
→ Refer to page 4-17

**BRAKE
AIR**

When the Parking Brake Cannot be Released V**Vehicle with Wheel Parking Brake****CAUTION**

- When the spring brake is released manually to move the vehicle with a wheel parking brake, the brakes will not work. Do not release the spring brake on a slope.
- Do not release the brake manually, other than when the vehicle is being towed by a tow truck or the vehicle is being moved temporarily.
- Contact the nearest Isuzu Dealer immediately after moving the vehicle.

Mechanical release bolt



1. Firmly chock the wheels.
2. Turn the mechanical release bolt counterclockwise to release the parking brake.

Extruded length of mechanical release bolt

Approx. 75 mm (3.0 in)

3. To return from mechanical release to normal, perform the same sequence of operations in reverse.

Mechanical release bolt tightening torque**25 - 45 N·m (2.5 - 4.6 kgf·m/18 - 33 lb·ft)**

When the Bulb Does not Come On

1. Check the bulbs for blowout.
2. If the bulb is blown out, replace it. Always place the starter switch in the "LOCK" position and place all the other switches in the "OFF" position before replacing the blown bulbs.
3. If the bulb is not blown out, the fault may be in the wiring. Contact the nearest Isuzu Dealer.

Bulb Wattage

Position	Lights	Bulb wattage
Front	Halogen headlight High beam/low beam	75/70W
	Front fog light <input type="checkbox"/>	70W
	Turn signal light (front)	21W
	Clearance light	5W
	Turn signal light (side)	21W (Amber)
Rear	Taillight and stop light	10/25W
	Turn signal light	25W
	Back up light	25W
	License plate light	10W
Interior	Dome light	10W

Contact the nearest Isuzu Dealer when replacing lights that aren't listed here.

**CAUTION**

- Using bulbs with a wattage other than that specified could cause the bulb or the wiring to become hot. This could result in the warping of the lens and case, leading to a fire.
- Bulbs are hot immediately after they go out. When replacing the bulbs, avoid being burned by making sure they are fully cooled.
- Never drive the vehicle with the bulbs not working. This could result in an accident.

**ADVICE**

- When one bulb of a pair of lights, such as a headlight blows out, the other bulb is approaching the end of its useful life. We recommend that both be changed at the same time.

**NOTE**

- For the lights (lighting equipment) such as headlights, inside of the lens can mist up momentarily when driving in the rain or during the car wash. Also, the temperature difference between inside and outside of the lights can sometimes cause the water condensation inside the lens. This is not abnormal because this is the same phenomenon as the windshield or door glass fogs up when it rains. If it is demisted minutes after the light is turned on, things are normal.

Replacing the Headlights

When the bulb has blown out, replace it with a bulb of the specified wattage. Be careful not to excessively tighten the screws when installing.

**ADVICE**

- Do not replace a bulb with other than the specified wattage. This will cause abnormal flashing, particularly for turn signal lights.
- When replacing headlight bulbs, have the headlight aim adjusted at the nearest Isuzu Dealer.

Bulb Wattage → Refer to page 8-20

Halogen Headlight

1. Tilt the cab and work from front-sideways of the vehicle for the replacement.

 **WARNING**

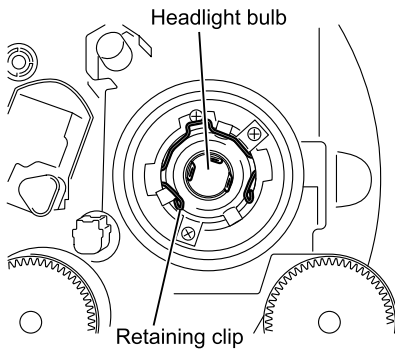
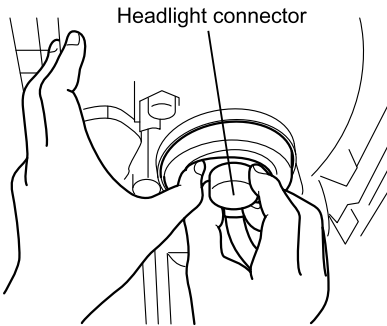
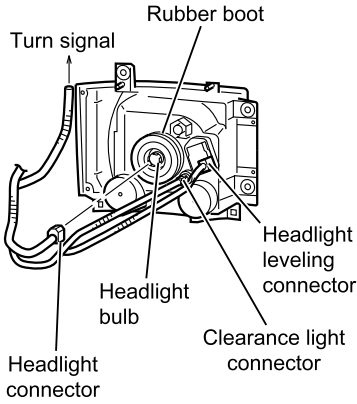
- Do not touch the lock on the cab support while the cab is tilted. If you touch it, the lock will release.

 **CAUTION**

- Tilt the cab only on a level surface.
- Check the areas in front of and above the cab for sufficient clearance when tilting the cab indoors.
- When tilting the cab, close the doors securely. You should avoid opening or closing the doors when the cab is tilted.
- Confirm that the lock for the cab support is securely engaged after the cab is tilted.
- Do not tilt the cab when objects are placed on or in the instrument panel, seats, cup holders or on floor.
- Remove any ice or snow accumulating on the top of the bumper before tilting the cab. Failure to do so could damage the bumper, headlights, back panel tray or other components.
- When you must unavoidably open or close a tilted cab's door, securely support the weight of the door while opening or closing it. It is dangerous to release the door from your hand when it is being opened or closed. The door could hit you or someone and cause an injury or the door could be damaged. Confirm that the door is completely shut after closing it.

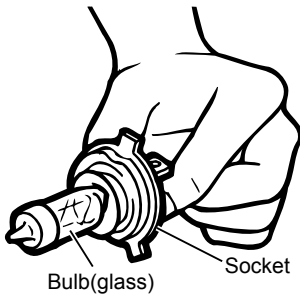
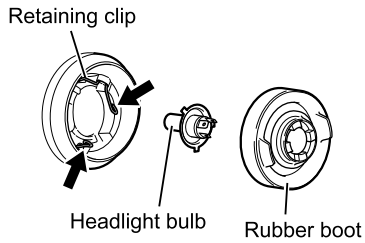
Tilting the Cab → Refer to page 7-10

2. Disconnect the headlight connector.



ADVICE

- When removing the headlight connector, pull out the connector while holding the center portion of the rubber boot. If the headlight connector is pulled out without holding the center portion of the rubber boot, the bulb will lift up and when the connector is removed, the bulb can hit the reflector by the reactive force of the retaining clip, resulting in the breakage of the bulb.



3. Remove the rubber boot, grip the left and right sides of the bottom of the clip that secures the bulb, and unlock the clip by moving it upwards.
4. Pull off the bulb and replace with a new one.
5. After replacing the bulb, install the parts in the reverse order to removal.

**ADVICE**

- Do not touch the glass of the bulb with your hand. Soiling the glass will cause the bulb to blow out.
- When attaching the rubber boot, press in both the outside and inside circumference of it. Make sure that the rubber boot, the headlight assembly, and the bulb are securely installed without any raised section. If the rubber cover is not firmly in place, water could get inside the headlight and lead to a breakdown.

Replacing the Clearance Lights

1. Tilt the cab and work from front-sideways of the vehicle for the replacement.

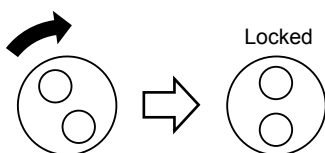
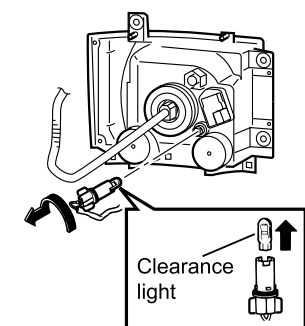
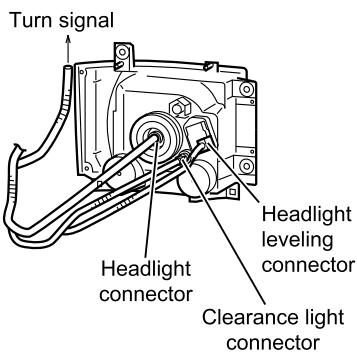
WARNING

- Do not touch the lock on the cab support while the cab is tilted. If you touch it, the lock will release.

CAUTION

- Tilt the cab only on a level surface.
- Check the areas in front of and above the cab for sufficient clearance when tilting the cab indoors.
- When tilting the cab, close the doors securely. You should avoid opening or closing the doors when the cab is tilted.
- Confirm that the lock for the cab support is securely engaged after the cab is tilted.
- Do not tilt the cab when objects are placed on or in the instrument panel, seats, cup holder or on floor.
- Remove any ice or snow accumulating on the top of the bumper before tilting the cab. Failure to do so could damage the bumper, headlights, back panel tray or other components.
- When you must unavoidably open or close a tilted cab's door, securely support the weight of the door while opening or closing it. It is dangerous to release the door from your hand when it is being opened or closed. The door could hit you or someone and cause an injury or the door could be damaged. Confirm that the door is completely shut after closing it.

Tilting the Cab → Refer to page 7-10



2. Remove the clearance light socket from the headlight assembly.

3. Pull off the bulb from the clearance light socket and replace with a new one.

4. To install the lights, perform the same sequence of operations in reverse taking care of the following points:

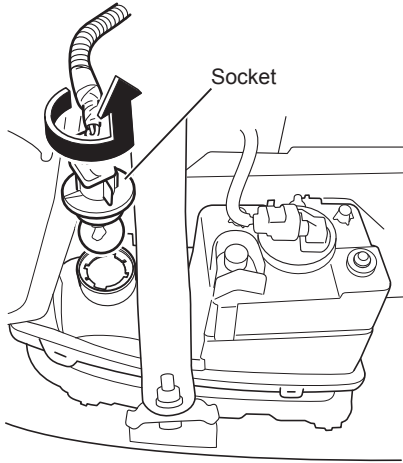
- Turn the connector clockwise to securely lock it.



ADVICE

- If the connector is not locked securely, water could get inside the light and lead to a breakdown.

Replacing the Turn Signal Lights

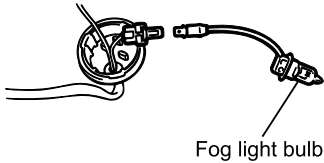
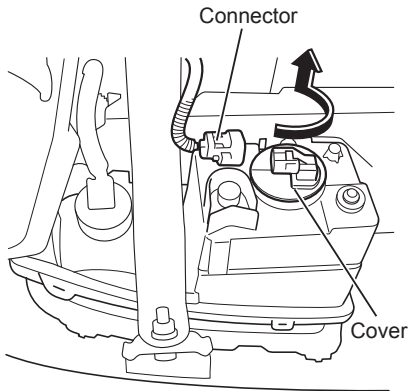


1. Remove the socket from the rear of the bumper by turning it counterclockwise.
2. Pull off the bulb from the socket and replace with a new one.
3. To install, perform the same sequence of operations in reverse taking care of the following points:
 - Turn the socket clockwise to securely lock it.



ADVICE

- If the socket is not locked securely, water could get inside the light and lead to a breakdown.

Replacing the Front Fog Light v

1. Disconnect the connector, and turn the cover counterclockwise to disconnect it.
While pushing the clip that holds the bulb in place, slide it downward.
2. Disengage the terminal from the cover and replace with a new bulb.

**ADVICE**

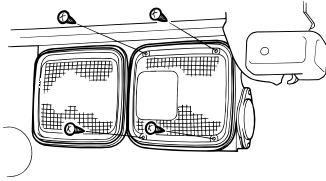
- Do not touch the glass of the bulb with your hand. Soiling the glass will cause the bulb to blow out.
3. To install, perform the same sequence of operations in reverse taking care of the following points:
 - Since there are different notches on the bulb on top and bottom (rounded or square), pay attention to the direction of insertion when installing.
 - The square notch should face up on both the left and right sides.
 - Turn the cover clockwise to lock it. When locking the cover, be sure that the harness will not be caught in the cover.

**ADVICE**

- If the socket is not locked securely, water could get inside the light and lead to a breakdown.

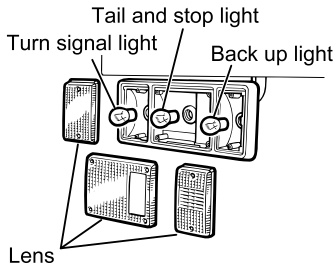
Replacing the Rear Turn Signal Light, Taillight, Stop Light and Backup Light

Type 1

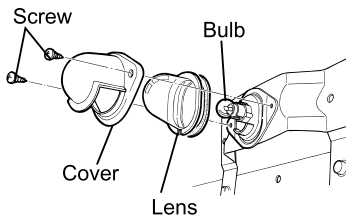


1. Loosen the screws and remove the lens.
2. Loosen the bulb by turning it counterclockwise while pushing it.
3. To install, follow the removal procedure in reverse.

Type 2

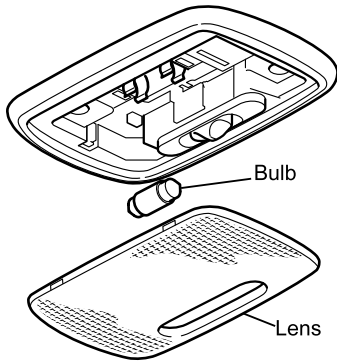


Replacing the License Plate Light



1. Loosen the screws and remove the cover.
2. Remove the lens.
3. Loosen the bulb by turning it counterclockwise while pushing it.
4. To install the lights, follow the removal procedure in reverse.

Replacing the Dome Light

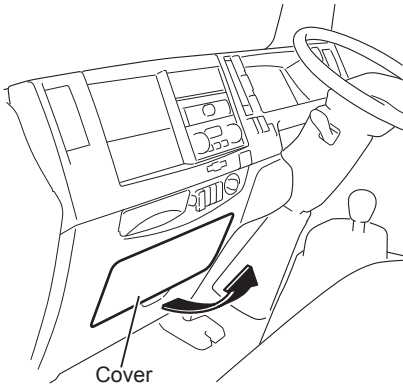


1. Remove the lens and pull out the bulb.
2. To install, follow the removal procedure in reverse.

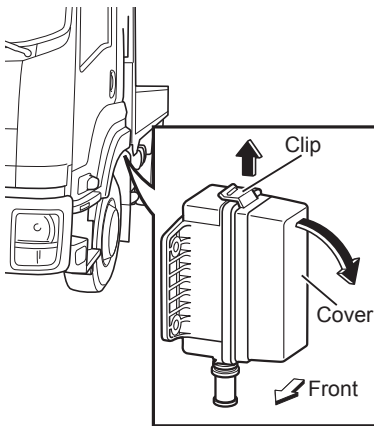
Replacing the Fuses and Relays

When the lights won't come on or flash, or the equipment in the electrical system does not operate, check to see if a fuse has blown.

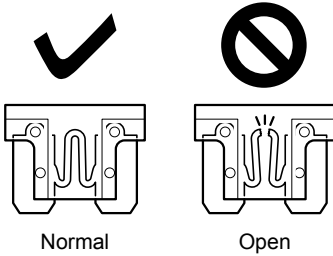
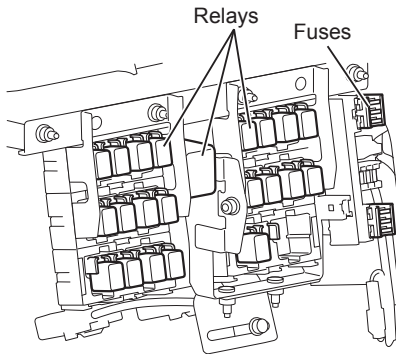
The Location of Fuses and Relays



The fuses and relays are located in the lower part of the instrument panel in the center and in the left rear of the cab. The cover must be opened in order to carry out inspection and replacement. In addition, the cover of the relay box at the left rear of the cab must also be opened at this time.



Open the cover of the relay box located to the rear left of the cab by pulling it towards you while pulling up on the clips.



Normal

Open

Replacing the Fuses

1. Before replacing fuses, be sure to place the starter switch in the "LOCK" position and pull back on the parking brake lever.
2. Place the fuse puller on the fuse and pull it out. (The fuse puller is stored in the fuse box in the cab.)
3. If the fuse appears as shown in the right hand side of the diagram at left, the fuse is blown. Replace with a spare fuse. (The spare fuses are stored in the fuse box in the cab.)

WARNING

- Always use fuses specified by Isuzu. Using fuses with a rating other than that specified, or using wire or tin foil, etc., could result in fire or damage.
- If the new fuses blow right away and the cause is unknown, contact the nearest Isuzu Dealer.
- Do not inspect or replace fuses when the starter switch is in the "ON" position. Doing so may lead to an accident.
- When inspecting fuses, be sure to park the vehicle on flat, level ground and apply chocks to the wheels.

Replacing Relays

When replacing the relays, contact the nearest Isuzu Dealer.

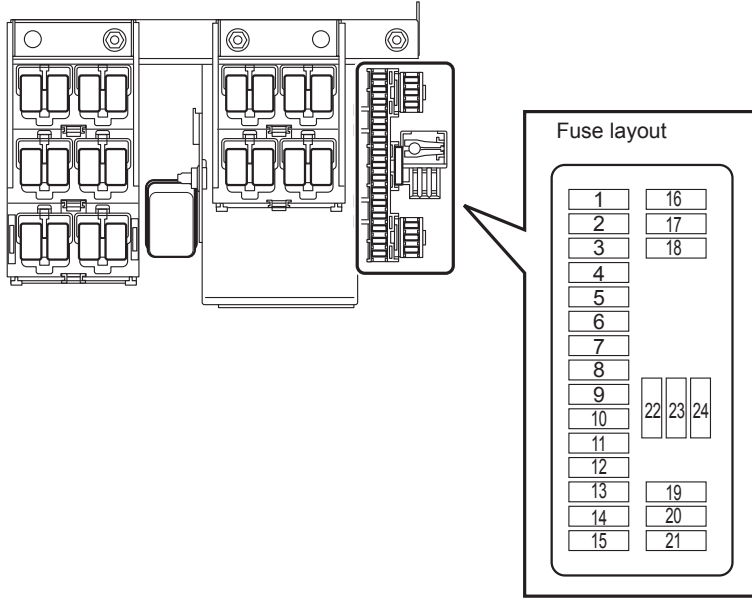


ADVICE

- It is not necessary to open or close the cover unless trouble is found.
- The relay box structure makes it difficult for water to enter. If you should spill water or a beverage on the cover, however, wipe it off before opening the cover.
- The area around the cover will get warm when the vehicle is being driven, but this is not abnormal.

Fuse and Relay Location

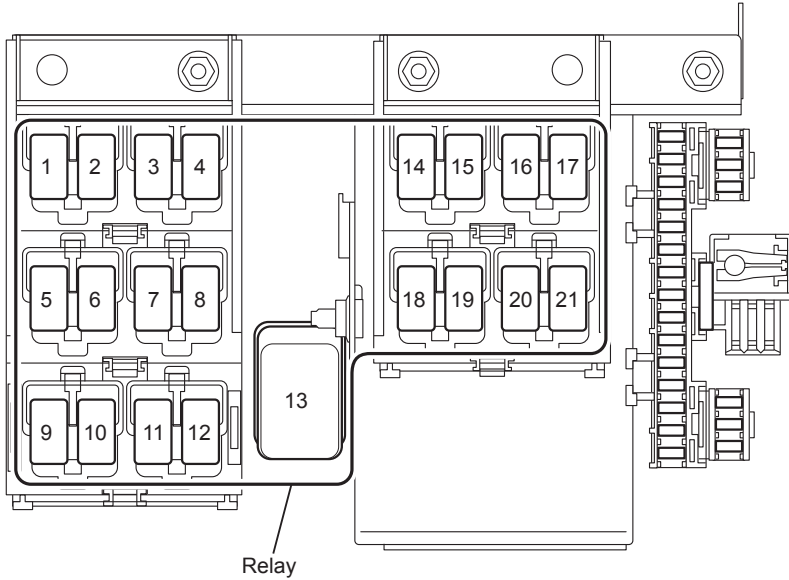
Fuse Locations



No.	Description	Rating
1	ABS	10A
2	POWER WINDOW	20A
3	HEAD LAMP HIGH BEAM RH	10A
4	HEAD LAMP HIGH BEAM LH	10A
5	HEAD LAMP LOW BEAM RH	10A
6	HEAD LAMP LOW BEAM LH	10A
7	TURN & STOP	15A
8	TAIL & HORN	15A
9	CIGER LIGHTER	10A
10	WIPER	20A
11	BACK LAMP	10A
12	ECM	15A

No.	Description	Rating
13	IGN1 & METER & ECU	15A
14	DOOR LOCK	15A
15	IGN2 & BLOWER & STARTER	15A
16	RADIO & ROOM LAMP	10A
17	HVAC	20A
18	ABS	20A
19	TRAILER BACK LAMP	15A
20	TRAILER TAIL LAMP	20A
21	TRAILER	15A
22	SPAER	10A
23	SPAER	15A
24	SPAER	20A

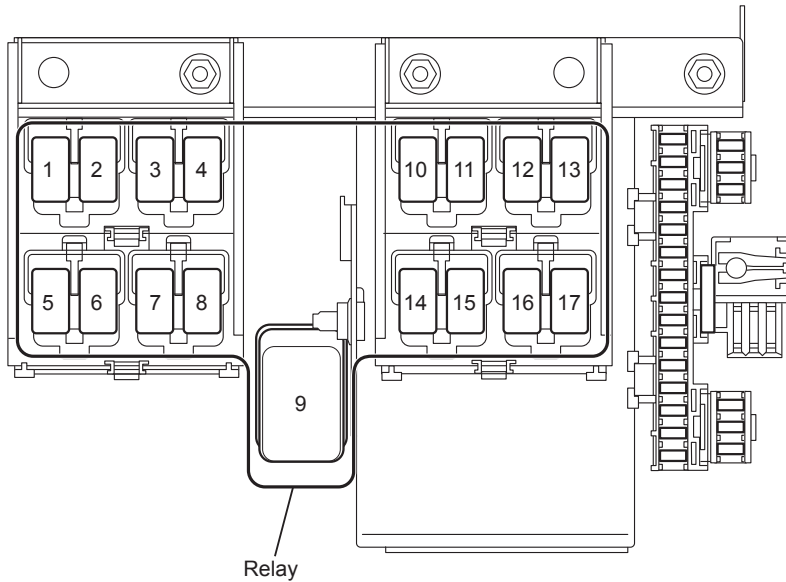
Relay Locations (Type 1)



No.	Description
1	SIDE PTO
2	SIDE PTO
3	FRT FOG LAMP
4	HORN
5	TRAILER
6	TRAILER STOP LAMP
7	TRAILER BACK LAMP
8	TRAILER TAIL LAMP
9	WIPER
10	WIPER
11	POWER WINDOW

No.	Description
12	ABS
13	ENG CONT
14	HVAC COOLER COMP & COND FAN
15	HVAC BLOWER
16	KEY ON POWER SUPPLY
17	STARTER CUT
18	HEAD LAMP HIGH BEAM
19	HEAD LAMP LOW BEAM
20	STOP LAMP
21	TAIL LAMP

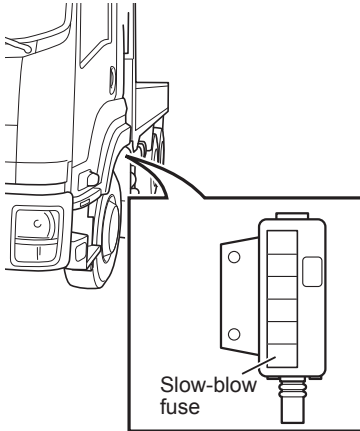
Relay Locations (Type 2)



No.	Description
1	SIDE PTO
2	SIDE PTO
3	FRT FOG LAMP
4	HORN
5	WIPER
6	WIPER
7	POWER WINDOW
8	ABS
9	ENG CONT

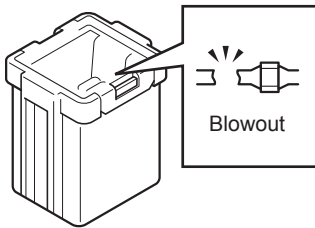
No.	Description
10	HVAC COOLER COMP & COND FAN
11	HVAC BLOWER
12	KEY ON POWER SUPPLY
13	STARTER CUT
14	HEAD LAMP HIGH BEAM
15	HEAD LAMP LOW BEAM
16	STOP LAMP
17	TAIL LAMP

When Slow-blow Fuses Blow Out



Slow-blow fuses protect the electrical circuits, and they are installed so that they can be quickly replaced if there is a malfunction.

If an overload exists in the circuit from the battery, the slow-blow fuse will blow out before the wiring harness is damaged to protect the electrical circuitry.



Inspection

When the headlights and other devices in the electrical system do not work, but there is no problem with the fuses, check the slow-blow fuse.

The slow-blow fuse is blown if it looks like the illustration to the left.

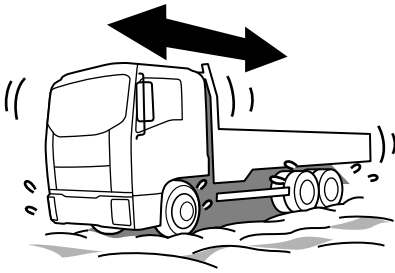
Immediately contact the nearest Isuzu Dealer.

WARNING

- Always use fuses specified by Isuzu when replacing the slow-blow fuse. Using fuses with a rating other than that specified, or using wire or tin foil, etc., could result in fire or damage.
- If the new fuses blow right away and the cause is unknown, contact the nearest Isuzu Dealer.
- Do not inspect or replace fuses when the starter switch is in the "ON" position. Doing so may lead to an accident.
- When inspecting fuses, be sure to park the vehicle on flat, level ground and apply chocks to the wheels.

**ADVICE**

- It is not necessary to open or close the cover unless trouble is found.
- The relay box structure makes it difficult for water to enter. If you should spill water or a beverage on the cover, however, wipe it off before opening the cover.
- The area around the cover will get warm when the vehicle is being driven, but this is not abnormal.

When Driving on Bad Roads

Pressing the accelerator pedal will simply dig the vehicle deeper into the mud and make it harder to extricate.

Either put stones, tree branches or blankets under the tires to gain traction, or repeatedly drive forward and in reverse and use the vehicle's momentum to extricate it.

When Towing

To move a disabled vehicle, it is best to rely on someone in the wrecker or tow truck business. If that is not possible, follow these procedures.

When towing, use appropriate equipment and comply with local legal requirements. Do not try to start the engine by towing or pushing the vehicle.

WARNING

- Be sure to chock the wheels when disconnecting the propeller shaft. The vehicle could start to move and cause a serious accident.

CAUTION

- For MZW manual transmission model, place the gearshift lever in the "N" position, and tow for a maximum distance of 10 km (6.2 miles) at speeds less than 40 km/h (25 MPH). Other than the above, disconnect the propeller shaft when towing to avoid damage to the transmission.
- Whenever possible, tow a vehicle with the engine started.
If the engine is not started:
 - The brakes will not be as effective;
 - The steering wheel will be hard to turn;
 - The steering wheel could lock, making it impossible to move. This is extremely dangerous. (When the ignition key is removed.)

**Towing Vehicles with ES11109 Model
Transmissions V**

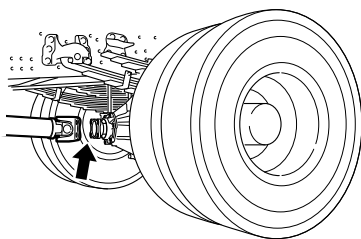
→ Refer to page 8-44

Towing Forward (All Wheels on the Ground, or the Front Wheels are off the Ground)

When it is possible to operate the steering wheel, the vehicle can be towed with all wheels on the ground.

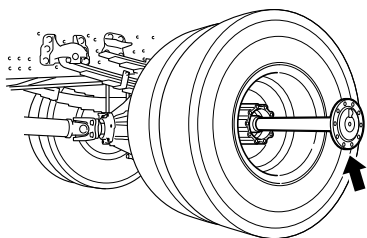
If the engine cannot be started, the power steering system does not work, making steering difficult. In addition, when air pressure is low, the brakes will not work. Either install a tow bar between the towing vehicle and the disabled vehicle, or use a tow truck to move the disabled vehicle.

For vehicles with a wheel parking brake, release the spring brake manually. Disconnect the propeller shaft from the rear axle, and fix the propeller shaft to the frame.

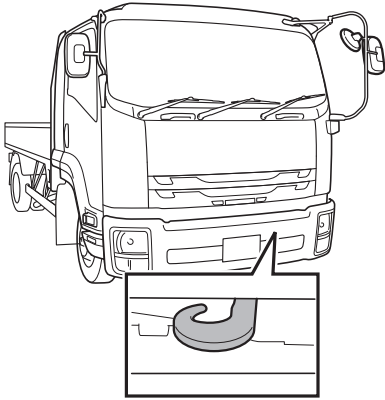


WARNING

- Be sure to block the wheels with chocks before disconnecting the propeller shaft. Failure to do so could cause a serious accident. The vehicle will start moving upon disconnecting the propeller shaft.

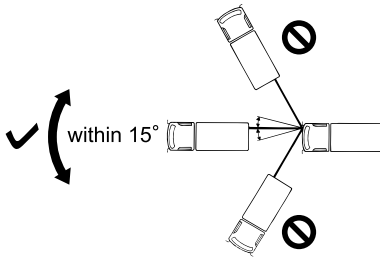
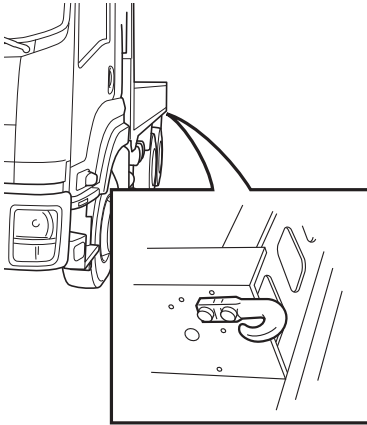


If the rear axle fails or rear axle failure is suspected, remove the axle shaft and plug up the opening of the hub to prevent differential gear oil from leaking, or to prevent dirt or foreign objects from entering the axle.

Front

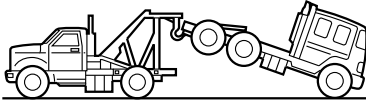
1. If the vehicle is towing or is towed, firmly attach a rope to the front or rear towing hook on the same side.
2. During towing, carefully watch the stop lights of the towing vehicle in order to prevent slack in the rope. Ensure that there are no strong shocks or lateral force applied to the vehicle. Excessive towing load can damage the towing hook.

Rear

**CAUTION**

- Do not tow a vehicle at an angle of greater than 15°. This could exert too much stress on the vehicle and damage it.
- Attach a rope to the towing hook only. Attaching a rope to any other part of the vehicle could damage it.
- Make sure there are no people near the towing rope and hook before towing a vehicle. If the rope snaps, people nearby could be injured.
- The towing hook is for use to tow a vehicle with about the same weight as the towing vehicle on good roads.
- When coming to channels or muddy areas, unload the vehicle. Do not use the towing hook to tow, but tow with a rope attached to the axle.

When the Parking Brake Cannot be Released → Refer to page 8-19

**When Towing from the Rear (Rear Wheels off the Ground)**

Fix the steering wheel in a straight-ahead position.

**ADVICE**

[Contact a tow truck at these times]

- When the vehicle will descend long hills (The brakes could overheat and become ineffective)
- When the transmission or differential fails
- When the vehicle breaks down on an expressway

Towing Vehicles with ES11109 Model Transmissions V

Towing

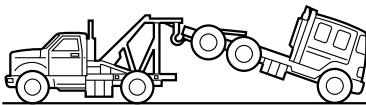
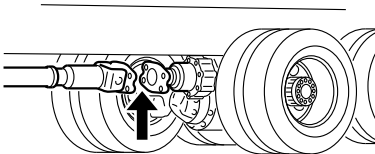
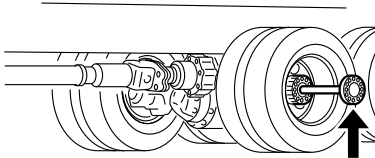
Cut off the drive force from the rear axle to the transmission. If the vehicle is towed without cutting off the drive force, insufficient lubrication will occur inside the transmission and will result in damage such as mechanical seizure due to friction.

Coasting Driving (Driving with Shift Lever in Neutral)

Insufficient lubrication will occur inside the transmission and will result in damage such as mechanical seizure due to friction.

To Avoid This Damage

1. Under no circumstances coast with the transmission in neutral.
2. Do not coast with the clutch disengaged.
3. Tow the vehicle with the axle shaft removed, the propeller shaft disconnected or the drive wheels off the ground.



WARNING

- Be sure to block the wheels with chocks before disconnecting the propeller shaft. Failure to do so could cause a serious accident as the vehicle will start moving upon disconnecting the propeller shaft.

CAUTION

- If your vehicle must be towed, use a tow truck that holds the rear wheels of your vehicle off the ground, or remove the propeller shaft from your vehicle. Failure to do so will result in transmission breakage.

MAIN DATA

9

• Main Data and Specifications	9-2
• Others	9-12

Main Data and Specifications

Engine

6HK1 Model

Specifications		
Water-cooled, overhead camshaft, direct injection engine with an inter-cooled turbocharger		
Compression ratio	(to 1)	17.5
Displacement	cc (cu. in)	7,790 (475.3)
Firing order		1-5-3-6-2-4
Fuel injection timing	(static) degree	0°
Valve clearance	mm (in)	Both intake and exhaust valves: 0.4 (0.016) in cold engine
Idling speed	r/min	500 - 550
Fan belt tension	mm (in)/Hz	New belt: 4 - 5 (0.16 - 0.20) / 191 - 209 When reused: 6 - 7 (0.24 - 0.28) / 162 - 172
Air conditioning compressor belt tension	mm (in)/Hz	New belt: 10 - 13 (0.39 - 0.51) / 115 - 141 When reused: 13 - 15 (0.51 - 0.59) / 101 - 115
Oil filter		Cartridge type
Engine oil capacity [Reference value] liters (US gal./Imp gal.)		18.5 (4.89 / 4.07) including 2.0 (0.53 / 0.44) in filter & 16.5 (4.36 / 3.63) in oil pan.
Engine coolant capacity [Reference value] liters (US gal./Imp gal.)	EuroIII	6HK1-TCN : 29.0 (7.66 / 6.38) 6HK1-TCS : 29.6 (7.82 / 6.51)
	EuroIV	6HK1-TCN : 29.6 (7.82 / 6.51) 6HK1-TCS : 30.2 (7.98 / 6.64)
Preheating system		<input type="checkbox"/> V Glow plugs

Transmission

MZW6P Model

Specifications		
Six-speed transmission (overdrive gear for 6th), synchronesh for 2nd to 6th		
Gear ratio (to 1)	1st	6.615
	2nd	4.095
	3rd	2.358
	4th	1.531
	5th	1.000
	6th	0.722
	Rev.	6.615
Transmission oil capacity [Reference value] liters (US gal./Imp gal.)	Model without PTO: 5.3 (1.40 / 1.17)	
	Model with PTO: 6.0 (1.59 / 1.32)	

ES11109 Model

Specifications		
Nine-speed transmission (direct drive gear for 8th), synchronesh for 1st to 8th		
Gear ratio (to 1)	Crawler	12.638
	1st	8.807
	2nd	6.550
	3rd	4.768
	4th	3.548
	5th	2.482
	6th	1.846
	7th	1.344
	8th	1.000
Rev.	13.210	
Transmission oil capacity [Reference value] liters (US gal./Imp gal.)	Model without PTO: 8.5 (2.25 / 1.87)	
	Model with PTO: 9.0 (2.38 / 1.98)	

Service Specifications

FVR Model

Engine	
Model	6HK1-TCN
Engine oil capacity [Reference value] liters (US gal./Imp gal.)	Refer to page 9-2
Engine coolant capacity [Reference value] liters (US gal./Imp gal.)	Refer to page 9-2

Transmission	
Model	MZW6P
Transmission oil capacity [Reference value] liters (US gal./Imp gal.)	Refer to page 9-3

Clutch	
Clutch pedal free play mm (in)	40 - 60 (1.57 - 2.36)
The distance from the fully pressed position to the position just before the clutch engages mm (in)	60 (2.36) or more

Front axle	
Type	***
Wheel alignment: Toe-in mm (in)	***
: Camber degree	***
: Caster degree	***
: King pin degree	***
Front wheel hub bearing grease capacity [Reference value] kg (lb)	ISO 10-bolt wheels: 0.805 × 2 (1.77 × 2)

Rear axle	
Type	<input type="checkbox"/> R105 <input type="checkbox"/> R130
Differential gear oil capacity [Reference value] liters (US gal./Imp gal.)	14.0 (3.70 / 3.08)
Rear wheel hub bearing grease capacity [Reference value] kg (lb)	ISO 10-bolt wheels: 1.820 × 2 (4.013 × 2)

Steering		
Steering wheel free play	mm (in)	10 - 60 (0.39 - 2.36)
Power steering fluid capacity [Reference value] liters (US gal./Imp gal.)		3.0 (0.79 / 0.66)

Service brakes		
Type		Full air dual circuit
Brake pedal free play	mm (in)	10 - 18 (0.39 - 0.71)

Parking brake	
Type	Spring actuator at rear wheels

Fuel	
Fuel tank capacity [Reference value] liters (US gal./Imp gal.)	200 (52.8 / 44.0)

Electrical system		
Battery type		<input type="checkbox"/> V 65D23L, <input type="checkbox"/> V 80D26L
Generator	volt/amp.	<input type="checkbox"/> V 24 / 60, <input type="checkbox"/> V 24 / 90

FTR Model

Engine	
Model	6HK1-TCN
Engine oil capacity [Reference value] liters (US gal./Imp gal.)	Refer to page 9-2
Engine coolant capacity [Reference value] liters (US gal./Imp gal.)	Refer to page 9-2

Transmission	
Model	MZW6P
Transmission oil capacity [Reference value] liters (US gal./Imp gal.)	Refer to page 9-3

Clutch	
Clutch pedal free play mm (in)	40 - 60 (1.57 - 2.36)
The distance from the fully pressed position to the position just before the clutch engages mm (in)	60 (2.36) or more

Front axle	
Type	F075
Wheel alignment: Toe-in mm (in)	-1 to 1 (-0.04 to 0.04)
: Camber degree	0°30'
: Caster degree	2°
: King pin degree	7°30'
Front wheel hub bearing grease capacity [Reference value] kg (lb)	ISO 10-bolt wheels: 0.805 × 2 (1.77 × 2)

Rear axle	
Type	R092
Differential gear oil capacity [Reference value] liters (US gal./Imp gal.)	9.0 (2.38 / 1.98)
Rear wheel hub bearing grease capacity [Reference value] kg (lb)	ISO 10-bolt wheels: 1.820 × 2 (4.013 × 2)

Steering		
Steering wheel free play	mm (in)	10 - 60 (0.39 - 2.36)
Power steering fluid capacity [Reference value]	liters (US gal./Imp gal.)	3.0 (0.79 / 0.66)

Service brakes		
Type		Full air dual circuit
Brake pedal free play	mm (in)	10 - 18 (0.39 - 0.71)

Parking brake	
Type	Spring actuator at rear wheels

Fuel	
Fuel tank capacity [Reference value]	liters (US gal./Imp gal.)
	200 (52.8 / 44.0)

Electrical system		
Battery type		65D31L
Generator	volt/amp.	<input type="checkbox"/> V 24 / 60, <input type="checkbox"/> V 24 / 90

FVM Model

Engine	
Model	<input type="checkbox"/> 6HK1-TCS <input type="checkbox"/> 6HK1-TCN
Engine oil capacity [Reference value] liters (US gal./Imp gal.)	Refer to page 9-2
Engine coolant capacity [Reference value] liters (US gal./Imp gal.)	Refer to page 9-2

Transmission	
Model	ES11109
Transmission oil capacity [Reference value] liters (US gal./Imp gal.)	Refer to page 9-3

Clutch	
Clutch pedal free play mm (in)	40 - 60 (1.57 - 2.36)
The distance from the fully pressed position to the position just before the clutch engages mm (in)	60 (2.36) or more

Front axle	
Type	F075
Wheel alignment: Toe-in mm (in)	-1 to 1 (-0.04 to 0.04)
: Camber degree	0°30'
: Caster degree	2°
: King pin degree	7°30'
Front wheel hub bearing grease capacity [Reference value] kg (lb)	ISO 10-bolt wheels: 0.805 × 2 (1.77 × 2)

Rear axle	
Type	R130 + D108
Differential gear oil capacity [Reference value] liters (US gal./Imp gal.)	14.0 (3.70 / 3.08)
Rear wheel hub bearing grease capacity [Reference value] kg (lb)	ISO 10-bolt wheels: 1.820 × 2 (4.013 × 2)

Steering		
Steering wheel free play	mm (in)	10 - 60 (0.39 - 2.36)
Power steering fluid capacity [Reference value] liters (US gal./Imp gal.)		3.0 (0.79 / 0.66)

Service brakes		
Type		Full air dual circuit
Brake pedal free play	mm (in)	10 - 18 (0.39 - 0.71)

Parking brake	
Type	Spring actuator at rear wheels

Fuel		
Fuel tank capacity [Reference value] liters (US gal./Imp gal.)	<input type="checkbox"/> V	200 (52.8 / 44.0)
	<input type="checkbox"/> V	370 (97.8 / 81.4)

Electrical system		
Battery type		65D31L
Generator	volt/amp.	<input type="checkbox"/> V 24 / 60, <input type="checkbox"/> V 24 / 90

FVZ Model

Engine	
Model	6HK1-TCN
Engine oil capacity [Reference value] liters (US gal./Imp gal.)	Refer to page 9-2
Engine coolant capacity [Reference value] liters (US gal./Imp gal.)	Refer to page 9-2

Transmission	
Model	ES11109
Transmission oil capacity [Reference value] liters (US gal./Imp gal.)	Refer to page 9-3

Clutch	
Clutch pedal free play mm (in)	40 - 60 (1.57 - 2.36)
The distance from the fully pressed position to the position just before the clutch engages mm (in)	60 (2.36) or more

Front axle	
Type	F075
Wheel alignment: Toe-in mm (in)	-1 to 1 (-0.04 to 0.04)
: Camber degree	0°30'
: Caster degree	2°
: King pin degree	7°30'
Front wheel hub bearing grease capacity [Reference value] kg (lb)	ISO 10-bolt wheels: 0.805 × 2 (1.77 × 2)

Rear axle	
Type	RT210
Differential gear oil capacity [Reference value] liters (US gal./Imp gal.)	Forward rear axle: 18.0 (4.76 / 3.96) Rearward rear axle: 12.0 (3.17 / 2.64)
Rear wheel hub bearing grease capacity [Reference value] kg (lb)	ISO 10-bolt wheels: 1.820 × 2 (4.013 × 2)

Steering		
Steering wheel free play	mm (in)	10 - 60 (0.39 - 2.36)
Power steering fluid capacity [Reference value] liters (US gal./Imp gal.)		3.0 (0.79 / 0.66)

Service brakes		
Type		Full air dual circuit
Brake pedal free play	mm (in)	10 - 18 (0.39 - 0.71)

Parking brake		
Type		Spring actuator at rear wheels

Fuel		
Fuel tank capacity [Reference value] liters (US gal./Imp gal.)	<input type="checkbox"/> V	200 (52.8 / 44.0)
	<input type="checkbox"/> V	370 (97.8 / 81.4)

Electrical system		
Battery type		65D31L
Generator	volt/amp.	<input type="checkbox"/> V 24 / 60, <input type="checkbox"/> V 24 / 90

Others**Guidelines for Installation of Aftermarket Radio Frequency Transmitting Equipment****Purpose**

This installation guidelines give requirement and recommendations for the installation in vehicles of

- radio frequency (RF) transmitting equipment.
- ancillary equipment associated with these.

**NOTE**

- These guidelines are intended to supplement, but not to be used in place of, detailed instructions for such installations which are the sole responsibility of the manufacturer of the involved radio telephone or land mobile radio.

General

1. Only the RF-transmitting equipment and ancillary equipment (microphone, converter, booster, etc.) with 'CE' mark or 'e' may be installed in vehicle.
2. Installation of RF-transmitting equipment shall be performed by competent personal permitted by the country regulation. The vehicle and RF-transmitting equipment manufacturer's instruction manuals and installation notes shall be followed.

**NOTE**

- Vehicle manufacturer's instructions take priority in case of conflict.
- Installation of RF-transmitting equipment to any part of the vehicle, other than an authorized connection or mounting location, may invalidate the vehicle warranty.
- If a problem is found and can not be rectified, and it is suspected that the RF-transmitting equipment is out of specification, the appropriate manufacturer, agent or supplier shall be consulted.
- Expenses incurred from any adverse effect of any such installation are not the responsibility of vehicle manufacturer.

3. The installation shall comply with national legal requirements for the installation and use of RF-transmitting equipment in vehicles.
4. Full consideration shall be given to the positioning of RF-transmitting equipment such that electromagnetic interference (EMI) and radio frequency interference (RFI) is minimized between the RF-transmitting equipment being installed and the vehicle electrical and electronic systems.
5. Care shall be taken when planning the installation that any additional equipment used does not constitute a safety hazard and does not contravene safety regulations.
6. Care shall be taken to ensure that any microphone/handset lead is not such that the lead can interfere with the vehicle controls or driver.
7. Where a hand portable or transportable unit is installed in road vehicles, the correct car adapter kit specified for the product shall be used.

Installation

Care shall be taken in

- choosing the antenna,
- sitting it in a recommended location,
- installing it correctly,
- ensuring that all connection in the antenna feeder are sealed to prevent dirt and water from entering the feeder and affecting its performance,
- ensuring that all connection are electrically tested after installation, and
- ensuring that a satisfactory VSWR reading is obtained.

Antenna

1. For RF-transmitting equipments with output power levels above 100mW (peak), an external antenna is strongly recommended.
2. The external antenna and feeder cable shall be impedance matched with a VSWR < 2.0.
3. The antenna should be a permanent-mount type located in the roof or the rear trunk lid. If a magnet-mount antenna is used, care should be taken to mount the antenna in the same location as a permanent-mount type.



NOTE

- Each vehicle model and body style reacts to radio frequency energy differently. When dealing with an unfamiliar vehicle, it is suggested that a magnetic-mount antenna be used to check the proposed antenna location for unwanted effects on the vehicle. An antenna location is a major factor in these effects.
- The best position for an antenna is on the metallic roof, preferably towards the center, but where possible with a distance of $> \lambda/4$ (λ = wavelength) from any opening, such as a sunroof or windows.

- Care shall be taken when sitting an antenna next to an existing one or when mounting antennas with magnetic bases, as this could affect the accuracy or operation of the compass on vehicles so equipped.

[Radiation patterns and ground planes]

- In order to create a symmetrical, non-directional radiation pattern, an antenna needs to be mounted vertically on a horizontal ground plane with – ideally – a radius of $> \lambda/4$ at the lowest frequency band used (see Table 1).
- The antenna should not be located close to any electrically resonant structure.
- Care shall be taken when sitting the antenna close to another, existing antenna. It is necessary to separate them by $> \lambda/4$ for transmit frequency $f < 600$ MHz and $> \lambda$ for transmit frequency $f > 600$ MHz (see Table 1).

Table 1. Approximate frequency-to-wavelength conversion

Frequency f MHz	Wavelength λ cm	$\lambda/4$ cm
50	600	150
80	375	94
150	200	50
450	66	17
600	49.5	12
900	33	8
1800	16.5	4

[Ground-plane provision]

When the antenna installation is to be carried out on a non-metallic surface

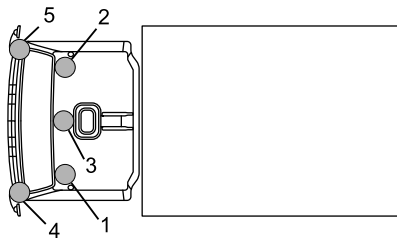
- a ground-plane-independent antenna can be fitted directly to any surface (glass-fiber etc.) or onto a mounting bracket which may be supplied by the manufacturer,
- a standard antenna can be used with a ground plane fitted to the underside of the panel, for example a metallic plate complying with dimensions Table 1.

[Antenna position at vehicle]

Installation and use of RF transmitters with antenna outside the vehicle is shown by Table 2.

Table 2. Installation and use of RF transmitters with antenna outside the vehicle

Frequency bands (MHz)	Max. output power (W)	Antenna position at vehicle	Specific conditions for installation and/or use
1. 1.8-30	50	1.2.3.4.5.	Ham Radio
2. 50-54	50	1.2.3.	Ham Radio
3. 142-176	50	1.2.3.	Ham Radio / General Service Radio
4. 380-470	50	1.2.3.	Ham Radio / General Service Radio
5. 870-915	5	1.2.3.	General Service Radio / Mobile Telephone
6. 1200-1300	10	1.2.3.	Ham Radio
7. 1710-1785	2	1.2.3.	Mobile Telephone
8. 1885-2025	1	1.2.3.	Mobile Telephone



- Antenna location;
- 0: all location (vehicle exterior)
 - 1: front left of roof
 - 2: front right of roof
 - 3: center of roof
 - 4: left of bumper
 - 5: right of bumper

Figure 1. Drawing showing antenna installation points in the vehicle

[Case of "On-glass" antennas]

Glass mounted antennas should be kept as high as possible in the center of the rear window or windshield.



NOTE

- Care shall be taken to ensure that the glass is within the specified temperature range when fixing the antenna mount in order to obtain a good bond.

Antenna Cable

1. Use a high quality, one piece coaxial cable (at least 95% shield coverage) that is impedance matched for the RF-transmitting equipment (VSWR < 2.0).
2. Excess coaxial cable shall not be coiled, as this may affect the tuning of the antenna as well as producing electrical interference.
3. If possible, the antenna cable should be cut to the correct length.
4. The cable should be routed so as to avoid sharp bends.
5. Safety-sensitive electronic unit (e.g. airbag and ABS systems), circuits and harnesses shall not be used for parallel wiring.
6. If it is necessary to cross other wiring, cross at right angles.
7. If an extension feeder cable is required, suitable coaxial cable shall be used and correctly terminated with good quality, low-loss connectors.



NOTE

- Fit the correct antenna connectors at each end of the feeder cable to match the equipment using either crimp or soldered connectors as appropriate.

8. If the antenna cable provided is too short, wherever possible the cable should be replaced by a suitable feeder cable of correct length.



NOTE

- Extending the length of the feeder cable will result in additional losses, particularly at frequencies > 800 MHz.

9. Ensure that the feeder cable is not strained or distorted by, for example, excessive tightening of cable ties.
10. When vehicle trim is replaced, make sure that the panels do not trap the feeder cable.
11. Additional care should be taken when installing a glass mount to the rear screen of a hatch-back type vehicle to allow opening and to prevent damage to the feeder cable.

RF-transmitting Equipment

[Mounting of RF-transmitting equipment]

1. Location of a RF-transmitting equipment should be selected that provides a solid mounting point which does not interfere with the vehicle operator controls and provides adequate ventilation.
2. RF-transmitting equipment shall not be able to be damaged or its ventilation restricted. Special care should be taken to ensure that RF-transmitting equipment can not be damaged by ingress of water.
3. Access to vehicle equipment in the load storage area shall not be barred, e.g. by wheel jack, fire extinguishers or spare wheel.
4. The connections to the RF-transmitting equipment should be easily accessible in order that the equipment may be removed for operation in transportable mode, or for repairs and servicing.
5. It shall not hinder the operation of airbags or other safety equipment.



NOTE

- Great care should be taken not to mount any RF-transmitting equipment, microphones or any other item in the deployment path of a Supplemental Inflatable Restraint or "Air Bag".

[Routing of RF-transmitting equipment's cables]

1. Where possible, all cables should pass inside or underneath trim and through moldings in such a way as to afford maximum protection. If necessary, use sleeving, a proprietary protector and/or cable ties where required.
2. Select a route for the cable, ideally on the opposite side of the vehicle to the fuel pipe, clear of brake pipes, cables, controls, vehicle wiring and any hot components. Under no circumstances shall any cables be attached to the foregoing.
3. Cable shall be routed so that they avoid
 - sharp edges,
 - continual bending,
 - stress or strain,
 - abrasion,
 - extreme temperature, and
 - becoming a hazard to the occupants of the car.

Power Supply for RF-transmitting Equipment

[General]

1. A dedicated supply cable should be used for the RF-transmitting equipment installation which should be as short as possible to the battery positive and negative connections. Do not connect directly to the battery pillars, but use the battery terminals provided.



NOTE

- Connections shall not be made to any electronic control unit feeds under any circumstances. For example, avoid using cigar lighter as power sources for a RF-transmitting equipment.

2. It is also recommended that, unless a molded twin supply cable is used, the two supply lines be twisted together along their length in order to reduce radiated noise or induce noise.



NOTE

- The supply cable from the RF-transmitting equipment should approach the battery in such a way that, when terminated, the two wires can not be inadvertently reversed, e.g. one wire is shorter than the other.

3. If ignition switch control is desired, the handset or control unit positive lead may be connected through an appropriate in-line fuse to an available accessory circuit or ignition circuit not powered during cranking.

[Supply cable and routing]

1. Heavy-duty cable of a low electrical resistance should be used on long cable runs to minimize voltage drop.
2. The cable shall be of a higher current capacity than the protection fuse, and the correct fuse shall be fitted.
3. The cable should be as short as possible.
4. The cable shall be secured well clear of moving parts, (shock absorbers, steering, drive shaft, control pedals, etc.).
5. The cable shall be secured well clear of the engine, exhaust system or other hot items.
6. The supply cable run should, where possible, be separate from that of the in-car entertainment equipment control cables, although they may pass through the same holes in the chassis and body for ease of fitting; suitable grommets should be fitted if additional holes are drilled.
7. The cable shall be supported, avoiding sharp bends, and shall not be subjected to strain.
8. The cable shall be sited away from ignition coil, the high voltage circuits of the ignition systems and electronic control units and, where possible, other vehicle wiring.

[Vehicle Electrical Supply Systems with Voltages 24 V]

1. A 12 V tap shall not be taken from 24 V vehicle batteries.



NOTE

- Most mobile RF-transmitting equipment operates from a 12 V supply. ISUZU FVR34/FTR34/FVM34/FVZ34 have a 24 V, so it is essential that a suitable regulator or converter be used which will provide the nominal supply voltage and current for which the RF-transmitting equipment is designed.

2. The supply cable to the regulator or converter shall be as practicable and suitable fuses should be fitted as close as possible to the supply.



NOTE

- The installation of the RF-transmitting equipment shall be carried out such that the integrity of the vehicle isolated power supply is not impaired.

3. The unit shall be mounted in accordance with the manufacturer's instructions. Unless environmentally protected, it should be located in a dry and well-ventilated position.



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MEMO

MEMO