NOVOCITI VOLT

INTRODUCTION AND USER'S GUIDE

ANADOLU ISUZU

Revision No: 05

Symbolic image of the Novociti Volt vehicle

PREFACE

This owner's manual has been prepared to provide general information about the efficient and most economical use of your Novociti Volt vehicle. We strongly recommend that you read the information provided carefully and follow all warnings. We would like you to know that our company will not be responsible for material and moral problems and damages that may occur in case of non-compliance withthe specified.
When you need more detailed information about your vehicle, you can contact the authorized dealer andauthorized service.
Keep the user manual in the vehicle at all times.
Due to our continuous effort to improve our vehicles, changes can be made in form, equipment and technique. The information, illustrations and specifications herein are based on the latest product information available at the time of publication of the manual and are provided by Anadolu Isuzu A.Ş.reserves the right to change without prior notice.
Thank you for choosing this product. We wish you good driving.

Anadolu Isuzu Automotive Industry and Trade Inc.

Center: Fatih Sultan Mehmet neighborhood, Balkan Street, No: 58 Buyaka E Block Tepeüstü 34771Ümraniye / İSTANBUL

Factory: Şekerpınar neighborhood, Otomotiv Street, No: 2 41435 Çayırova / KOCAELİ

Phone Number: 0850 200 1900

E-mail: isuzu@isuzu.com.tr

CONTENTS

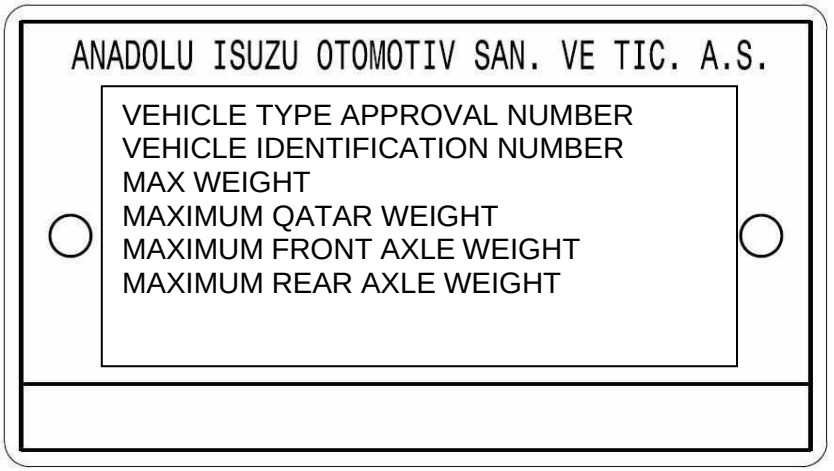
1. INTRODUCTION

Symbolic image of the Novociti Volt vehicle

CHASSIS NUMBER

The chassis number of the vehicle is located on the profile behind the right front wheel.

IDENTIFICATION PLATE



The identification plate is on the driver's seat platform at the front door entrance. It contains information on the identification plate such as VIN number, maximum axle load total, maximum front axle load and maximum rear axle load, vehicle model, engine type, drive system, wheelbase, manufacturing site.

VEHICLE IDENTIFICATION NUMBER SYSTEM																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
N	**N**	**A**	**M**	**0**	**B**	**F**	**L**	**A**	**G**	**B**	**0**	**0**	**0**	**0**	**0**	**1**
(SAMPLE)																

1 - 3	PRODUCER INTERNATIONAL IDENTITY CODE	NNA:	(AIOS) ANADOLU ISUZU AUTOMOTIVE INDUSTRY AND TRADE JOINT STOCK COMPANY
4	MODEL	M:	BUS GROUP
5	NUMBER OF SEATS	0:	INDEPENDENT OF THE NUMBER OF SEATS
		1:	17 PASSENGER SEAT
		2:	18 PASSENGER SEAT
		3:	19 PASSENGER SEAT
		4:	20 PASSENGER SEAT
		5:	21 PASSENGER SEAT
		6:	22 PASSENGER SEAT
		7:	23 PASSENGER SEAT
		8:	24 PASSENGER SEAT
		9:	25 PASSENGER SEAT
6	MODEL EXTENSION	B:	CITY MUNICIPAL TYPE
		U:	INTERCITY TYPE
7	ENGINE TYPE	F:	FPT - NEF4 (OBD-C)
		T:	FPT - NEF4 (OBD-D)
		U:	FPT (OBD-E)
		E:	ELECTRIC VEHICLE
8	DRIVE SYSTEM	L:	LEFT STEER
		R:	RIGHT STEER
9	WHEEL DISTANCE	A:	4259 mm
10 -11	PRODUCTION PLACE	GB:	AIOS GEBZE FACTORY
12 -17	PRODUCTION ORDER NO		

VEHICLE WARRANTY

The warranty period and conditions of the vehicle are specified in the "Warranty Certificate" supplied with the vehicle. For detailed information about the warranty conditions and situations out of warranty, please refer to the "Warranty Certificate".

OPTIONS

Apart from the standard features of the vehicle, the following options can also be applied to the vehicle at any time. These features may vary.

- Reversing camera
- Front view camera
- In-car camera
- Camera Monitor
- Recorder (DVR)
- Windshield roller blind (Electric control or Manual control)
- Driver's side roller blind
- Electrically controlled horn type mirrors
- Driver's cabin (Closed)
- Information panel for passengers
- USB Charging Socket for Passengers
- Radio&MP3 player
- Microphone (Swan&swan type) & Amplifier
- Multimedia Set (Torpedo)
- DVD player
- CD player
- Monitor / LCD

SUGGESTIONS / WARNINGS

- For the spare key or in cases where the key is lost, you must report the serial number information on the ignition key to the authorized service, so make a note of the serial number information.
- Do not load your vehicle above the passenger capacity, do not change the seats. Our factory is not responsible for the problems that may arise due to the change in the load balance in the vehicle.
- Check the tire pressures frequently, always make sure they are at the correct value.
- Check the high and low beam settings, do not travel at night with defective headlights.
- Check the brake, parking and license plate lights frequently, do not set off with defective or mud-covered brake, parking and license plate lights.
- In order to ensure maximum performance in your vehicle, take care to have all maintenance done on time and regularly at authorized services.
- Liquids such as waste oil, brake fluid, antifreeze, waste filters and scrap batteries that you use in your vehicle cause great harm to the environment when they are thrown away indiscriminately. Pay attention to the fact that such hazardous wastes can be disposed of in accordance with environmental regulations.
- It is extremely dangerous to have empty cans, empty bottles or other items rolling on the floor,make sure the floor is clean and tidy, especially around the driver's seat.
- Before starting the engine, make sure that there are no flammable materials under or aroundthe vehicle. The presence of similar materials may cause a fire.
- Before driving; Be sure to adjust the seat, steering wheel and mirrors to positions that providethe correct driving position for you.
- Make sure to wear your seat belt.
- Make sure that the windshield and side windows are clean. Keep the curtains in such a waythat they do not hinder your vision and driving.
- Drive your vehicle by paying attention to traffic rules and road condition.
- If you feel any abnormality in a tire while driving, stop immediately in a safe place. If you drivewith a flat tire, too much force can be applied to the wheel studs, causing the bolts to break andthe wheel to come off.
- Drive at a constant speed as much as possible.

- If a warning light comes on, do not ignore it and continue driving. Note that you must take corrective action by referring to the description of meters, warning lamps and indicator lights.
- When the vehicle malfunctions while driving, turn on the hazard warning flashers and immediately pull the vehicle to a safe place where it will not interfere with traffic. Install warning triangles to alert other vehicles of your presence. Get other passengers out of thevehicle and have them wait in a safe place. Inform the nearest authorized service.
- Do not use water to wash the rear compartment, side compartment and radiator directly.
- It is strictly forbidden to use high pressure water to wash the rear electrical component room.
- Only the outer part of the vehicle body can be washed with a low pressure water gun.
- High Voltage must be disconnected before working on high voltage components.
- Before working in high voltage systems, it is necessary to wear safety equipment against allkinds of situations.
- Safe isolation from high voltage must be verified before work.
- Always pay attention to high and low voltage cables during operation.
- The work area should be isolated from normal areas.
- Always follow instructions and labels to avoid undesirable results.

Electrical works in HV systems of vehicles

- Electrical work cannot be started without taking protective measures against electric shock, short circuit and fault arcs.
- Generally, electrical systems and moving parts of equipment may not be worked on. To this end, these systems and equipment must be rendered inactive before and during operation.

Before starting work in case of any malfunction:

-- Disconnect power from the system.

• Turn off the ignition.

• Remove the service/maintenance plug and/or turn off the main battery switch

• Remove the fuse.

-- Make sure the system cannot be reactivated.

• Keep the ignition key safe to prevent unauthorized access.

• Keep the service/maintenance plug secure to prevent unauthorized access and/or use a
lockable cover to ensure that the main battery switch cannot be reactivated.

-- Make sure the devices are de-energized using a suitable voltage tester (note the voltagerange!).

-- Ground and short-circuit the system.

-- Secure or insulate adjacent moving parts.

• These five rules are vital for safe working. The rules must be followed in the order usually specified.
• The five safety rules are general to all electrical power systems, regardless of the actual voltage level. Certain lower restrictions may apply for systems with rated voltages up to 1000 V. The first three rules must be followed when working on a high voltage system. Whether the fourth and fifth rules will also be applied should be determined on a case-by-case basis.

The following safety equipment must be used in cases where operations are to be carried out on the vehicle..

Safety equipments				
				
Protective Glasses	Protective Gloves	Protective Headphone	Protective shoes	Protective clothing

2. GENERAL INFORMATION

BEFORE DRIVING

Proper maintenance and driving are important not only in extending the service life of your vehicle, but also in the battery and electric motor.

Check Daily

For safe and comfortable driving, record the distances traveled and the condition of the vehicle while driving. Perform inspections at appropriate intervals and perform maintenance according to inspection findings. If an inspection reveals an abnormality or the vehicle has had an abnormality from previous driving, take the vehicle to the nearest Isuzu Dealer before being driven again.

Daily Control Checklist:

1. Checking components that showed abnormalities during previous driving
2. Electric motor coolant level
3. Power steering fluid level
4. Fan hydraulic fluid level
5. Brake system air pressure level
6. Brake pedal release
7. Exhaust noise from brake valve
8. Increase/decrease of air pressure level
9. Operation of meters, indicators and warning/indicator lights
10. Parking brake
11. Windshield washer fluid spray status and windshield wiper activity
12. Windshield washer fluid level
13. Steering wheel clearance and mounting condition
14. Operation of horn and turn signal lamps
15. Battery charge level
16. Lighting, flashing or damaged lights
17. Battery fluid level
18. Condensation in the air tank
19. Electric engine coolant, brake fluid, power steering fluid, fan hydraulic fluid leak
20. Air pressure
21. Cracks and other damage
22. Abnormal wear
23. Tread depth of tires
24. Disc wheel assembly status
25. Brake efficiency
26. Checking the engine at low speeds and accelerations

Keep The Floor Above The Driver's Seat Clean And Tidy

- It is extremely dangerous for empty cans, empty bottles or other items to roll on the floor, as they can get caught under the brake pedal and prevent the brake from being applied. It is also important to properly lay the mats for the pedal to work properly. Incorrectly installed mats prevent free movement of the pedals.
- Do not use the instrument panel pocket or top as a place to store items that could roll over or hinder your ride.

Choose Your Suitable Shoes for Driving

Choose shoes that allow the pedals to work properly while driving. The use of shoes suitable for riding may cause an accident.

Stop And Parking

• Choose a flat place where stopping and parking is allowed and the vehicle will not interfere with traffic. Firmly pull the handbrake and make sure the vehicle does not move.

• Remove any dirt from the vehicle's light lenses and reflectors to ensure the vehicle is visible from other vehicles.

Applying the Parking Brake

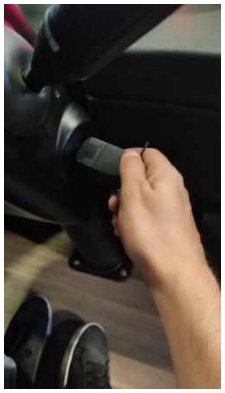
Do not apply the parking brake until the vehicle has come to a complete stop, except in an emergency. Applying the parking brake before the vehicle comes to a stop could cause the tires to lock or the vehicle to spin, resulting in an accident.

Parking Safely on a Slope

Avoid parking your vehicle on slopes as much as possible and choose a flat place. If it is unavoidable to park your vehicle on a slope, make sure that you apply the parking brake fully, that the vehicle does not move, and support the underside of the wheels with chocks for added safety. Release the steering wheel so that the vehicle is stopped by an obstacle (e.g. curb) in the event of movement.

Never take your hand off the steering wheel while driving.

STARTING THE ENGINE



The main switch must be in the “ON” position. Turn the ignition by turning the ignition key to the “M” position. There is no need for any starting command by turning the ignition key to the "D" positionas in diesel vehicles. The green “Drive Ready” text on the instrument screen indicates that the vehicle is ready for action. Afterwards, the desired gear is selected and action is taken.

If the green “Drive Ready” text does not appear on the display screen, the vehicle will not start, contact the authorized service.

STOPPING THE ENGINE

Turn off the engine by turning the ignition key to the "St" position.

Do not turn off the main switch within 70 seconds when the ignition switch is on and after the ignition switch is turned off.

If the vehicle will be parked for a long time (more than 2 days), turn the main switch off.

OPENING AND CLOSING THE DOORS

There are on/off switches on the front control panel for opening/closing thedoors from the inside. The doors close automatically when the vehicle speed exceeds 5 km/h. Front door opens/closes from outside with remote control.

Opening Doors in Emergency Situations

There are air release valves on the doors for emergencies. If necessary, evacuate the air by turning the valve clockwise and openthe doors by pulling inward.

There are air release valves on the sides of the doors for opening the doors from the outside when necessary. Turn the valve clockwiseand push inward to open the doors.

It also has a red on/off lock on the door to open the door when the vehicle is locked from the outside with the key or there are passengers inside. When necessary, this lock is turned in the direction of the arrow, the air release valve on the door is turned to release the air and the door is opened by pulling inward.

EMERGENCY EXIT

In emergency situations, an emergency exit can be provided by breaking the windows on the right and left sides of the vehicle with the help of the emergency hammer.

3. CONTROLS AND INDICATORS

FRONT CONTROL PANEL

KEYS ON THE LEFT SIDE

Exterior Mirror Heating Switch

The outside rear view mirror heating is activated when the lower part of the key is pressed. It is deactivated when pressed a second time. If the heating is not switched off by the driver, it is automatically switched off after 20 minutes.

Driver Side Window Heating Switch

The driver's side window heating is activated when the lower part of the key is pressed. Heating operates in the form of 8 minutes of operation and 4 minutes of standby. During this 4-minute waiting period, the driver cannot start the system again even if he wants to.

Line Plate Switch

The line plate is activated when the lower part of the switch is pressed, deactivated when the upper part is pressed.

LCD Display Switch (Option)

Pressing the lower part of the switch turns on the LCD screen. The LCD screen turns off when the top of the switch is pressed.

Emergency Key

To use the emergency switch, the red safety cover on it is opened by lifting upwards. When pushed forward, the electricity in the system is cut off, the engine stops, all interior lights and flashers are turned on, the door keys are in an active state. System returns to normal when pulled back.

Lighter

The lighter is pushed against the inner heat element and automatically pops out when heated.

Regenerative Key

Pressing the switch deactivates regenerative braking with the brake pedal. Pressing the switch again activates regenerative braking on the brake pedal.

Stall Brake Switch

If the automatic mode is active, the parking brake will be active in the following conditions;

- Vehicle speed must be below 3 km/h,
- If any door is open,
- If any tailgate is open,
- If the rear engine cover is open,
- If the key is active,
- If the lift is open, the stall brake is active.

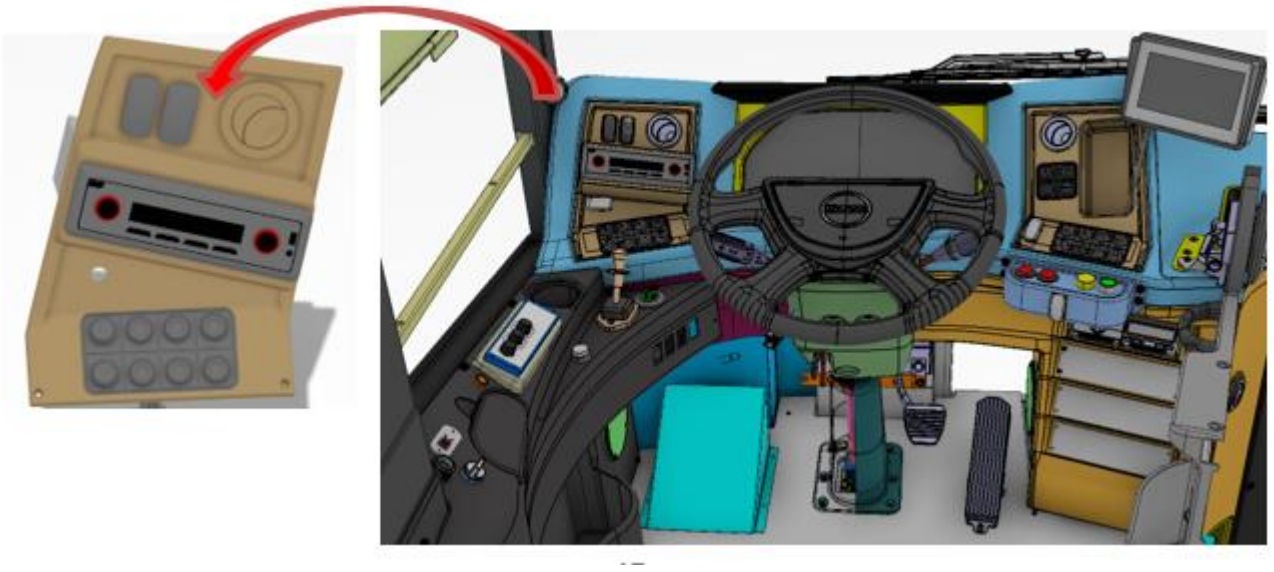
The parking brake is disengaged by pressing the accelerator pedal after alldoors and covers are closed.

If manual mode is active

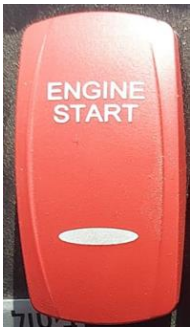
- If the key is active,
- If the lift is open and the vehicle speed is below 3 km/h, the parking brake is activated.
- Automatic or manual selection of the Stall Brake System can be made from the cluster.

Left Side Keypad

Left Side Keypad (Optional)



Switch, Starter (Option)

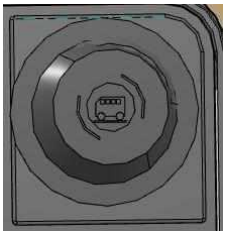


It serves to start the vehicle's engine when the lower part of the key is pressed. When pressed while the engine is running, it serves to stop the engine if there are suitable conditions.

Switch Contact (Option)

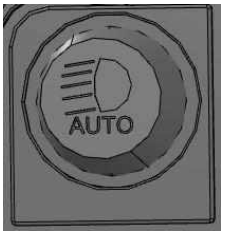
The ignition is turned on when the ON part of the switch is pressed. Units fed with KL15 in the vehicle are energized. When the OFF part is pressed, the contact is closed if suitable conditions exist.

Hill Start Assist Switch



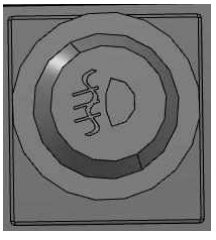
It activates or deactivates the hill start system when the key is pressed.

Auto Headlight Switch



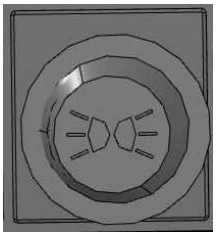
Automatically sends the command to activate / deactivate the dipped beams in dark / bright environments.

Front Fog Lamp Switch



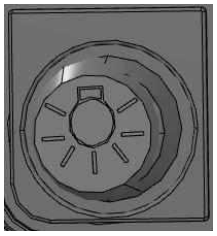
The front fog lights come on when the key is pressed. Once pressed it turns off.

Parking Light Switch



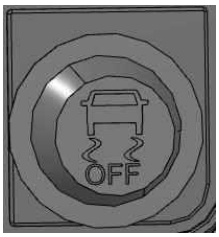
The parking lights come on when the key is pressed.

Main Lamp Switch



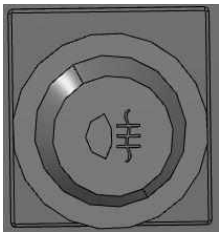
The key is for regulation and there is no function.

ASR (ESP/ESC) Revocation Key



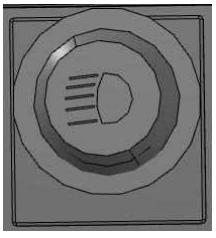
Used to cancel the ASR (ESP/ESC) system.

Rear Fog Lamp Switch



The rear fog lamps come on when the key is pressed.
Pressing once again turns it off.

Low Beam Switch



Used to activate the dipped beam headlights.

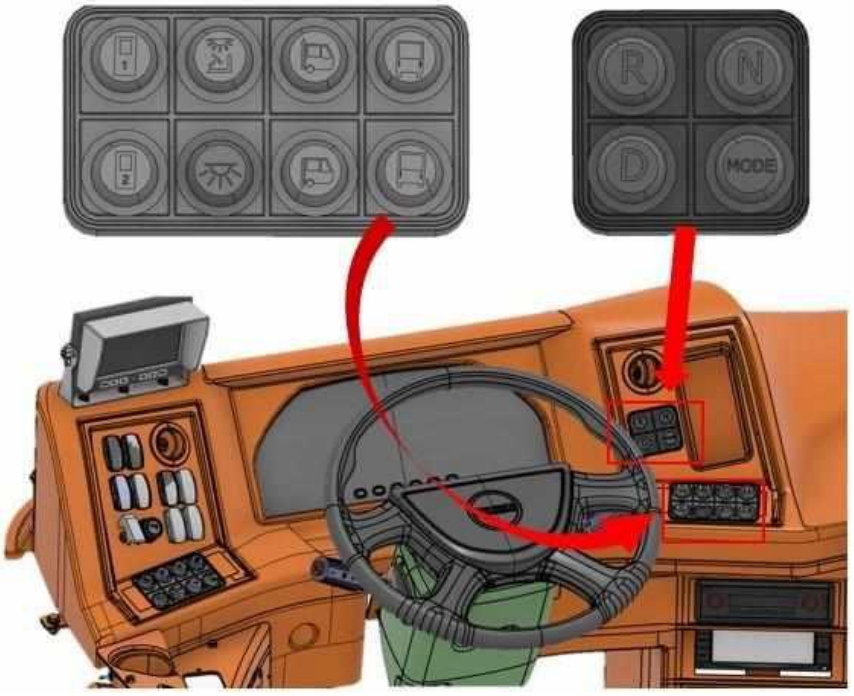
Motorized Curtain Switch (Option)

As long as the lower part of the switch is pressed, the driver's curtain goes down, as long as the upper part of the switch is pressed, the driver's curtain goes up.

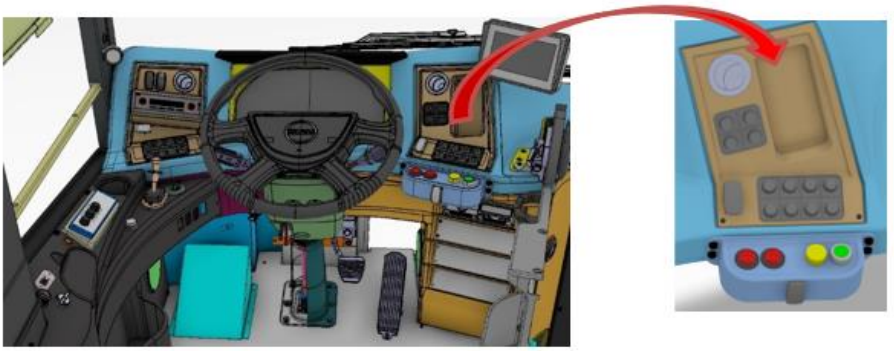
Pictogram Key (Option)

If any of the doors are open when the lower part of the switch is pressed, the pictogram plates will light up. Pictogram plates turn off when the top of the switch is pressed.

SWITCHES ON THE RIGHT SIDE



SWITCHES ON THE RIGHT SIDE (OPTIONAL)



Flasher Switch

Pressing the lower part of the switch turns on the flasher, pressing the upper part turns the flasher off. When the flasher is on, the indicator lamps on the instrument panel and the function lamp in the key come on and an audible warning is given along with all the vehicle's turn signal lamps.

Front Door Control Switch

The front door opens/closes when the key is pressed. The key is not activatedwhen the vehicle speed exceeds 5 km/h.

Rear Door Control Switch

The back door opens/closes when the key is pressed. The key is not activated when the vehicle speed exceeds 5 km/h.

Driver's Light Switch

Sends command to activate driver lamp.

ELC High Drive Switch

This switch is used to drive the vehicle at a higher than normal driving level.

ELC Normal Drive Switch

This key is used to drive the vehicle at normal driving level.

Interior Roof Light Switch

The vehicle sends a command to activate the interior lighting.

ELC Low Drive Switch

This switch is used to drive the vehicle at a lower driving level than normal.

ELC Right Tilt Switch

The vehicle tilts to the right when the key is pressed.

Gear Selector (Electric vehicles)

The vehicle can be used in automatic and manual mode.The gear selector features are as follows:
D: Forward gear N:
NeutralR: Reverse
gear
Mode: Performance/economy mode selection

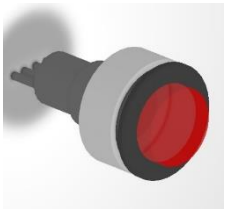
Yellow Warning Lens (Option)

Yellow warning lights up when stop buttons are pressed. The warning lamp becomes deactivated when the door is opened or the cancel button is pressed.

Button-Green (Option)

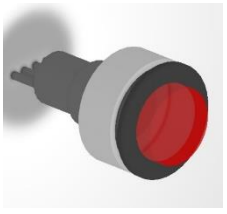
When the button is pressed while the ignition is off, the interior lights will turn on for 20 minutes and then turn off automatically.

Button, Door Opening 1 (Option)



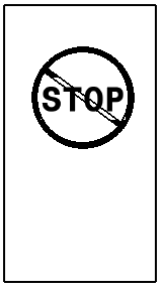
Pressing the button opens the front door. Pressing it again will close the front door.

Button, Door Opening 2 (Option)



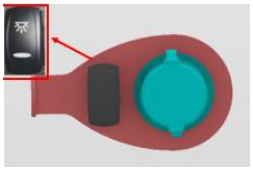
When the button is pressed, the back door opens. Pressing it again closes the back door.

Switch Stop Cancel (Option)



When the request to stop comes, it extinguishes the yellow warning lens.

Ceiling Lighting Lamp (Option)



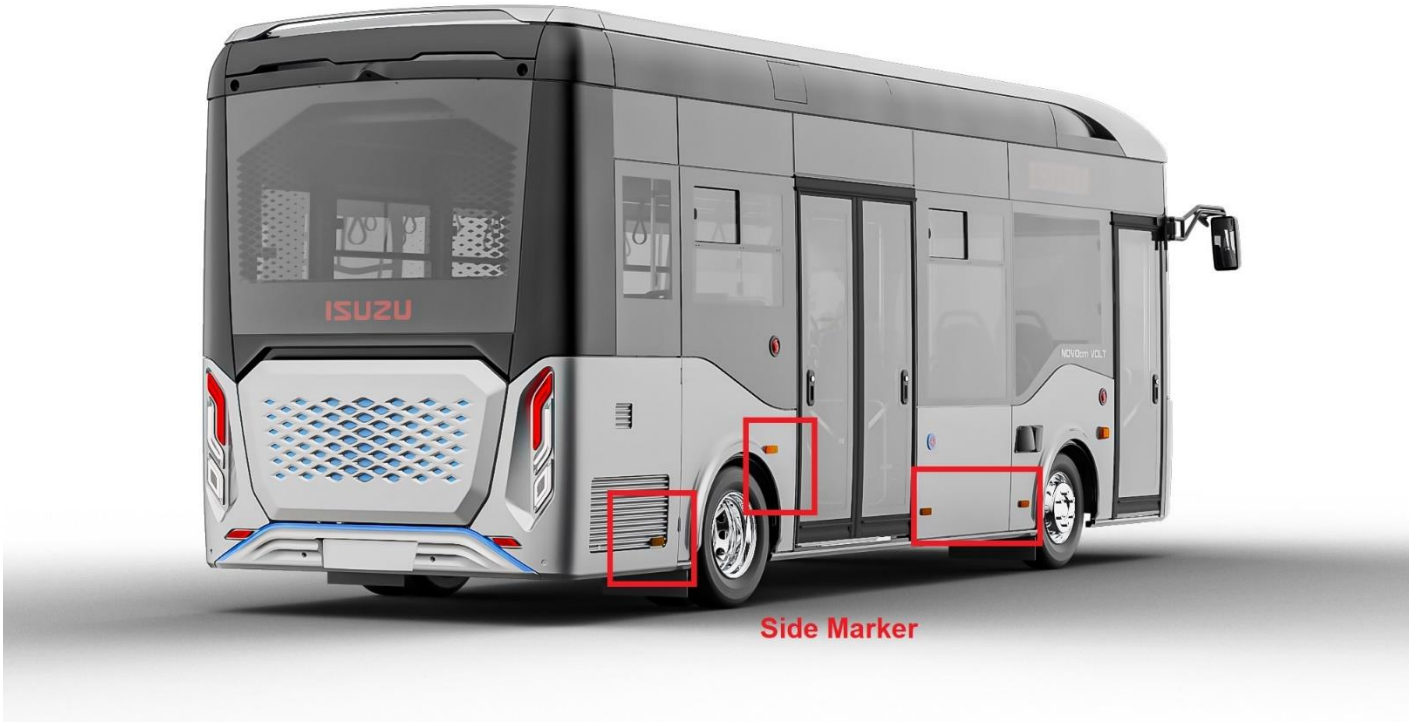
When the lower part of the switch is pressed, the spotlight located above the driver's compartment turns on, when the upper part is pressed, the lamp goes out.

Signal and Wiper Arm

The lever signals to the left when it is down and to the right when it is up. The first turn will activate the intermittent wipers, the second turn the wipers at normal speed, the third turn the high speed wipers. The sprinkler works when pushed towards the steering wheel. The horn is activated when the button on the end is pressed.

Signal functions:

1. For the lane change signal, the lever is moved slightly towards the relevant direction.
2. If the right or left signal lights are active and the quad button is pressed, the quads will be active.
3. If the right turn signal light is active and the quad button is pressed, the quads will be active (without turning the quads off), then the right turn signal arm will be active, then the right turn signal light and the right side marker lights will be active.
4. If the left signal lamp is active and the quad button is pressed, the quads will be active (without turning off the quads), then the left signal arm will be passive, then the right lamp and right side marker lamps will be active.
5. If the quads are active and then the right or left turn signal lever is activated, the right or left turn signal lights will be active.



Regenerative Brake Lever

This lever activates the Regenerative brake. The arm consists of 4 stages. You can adjust the braking amount by pulling the lever towards you.

SIDE CONTROL PANEL

Handbrake

The handbrake system must be air-type and spring-loaded. The handbrake lever is on the left side of the control panel. When the vehicle is stopped, the parking brake lever is pulled back, the lever must be locked in the lower position. To release the brake, the lever at the bottom of the lever is pulled slightly upwards and the lever is left forward. There is a warning light on the instrument panel that indicates whether the handbrake system is active.

When the parking brake system is activated, the gear shifts to the N position automatically and the gear selector on the LCD starts to flash. The gear will remain in the N position even when the parking brake is disengaged. The Drive/Reverse position must be selected again to drive the vehicle. For driving (vehicle active), if the brake air is insufficient (below 6 bar) when the parking brake is disengaged, the warning light turns red. Wait for this light to go out before moving.

Emergency Emergency Brake Release Valve

It is located on the side control console, to the left of the driver. In the event that the vehicle is left without air due to a breakdown on the road, it is held by turning it without releasing the valve with the left hand (it returns to its original position when the handle is released because it is spring loaded), and the vehicle is pulled to the safety lane by holding the steering wheel with the right hand. When the handle is turned, the air reserved in an additional tank is sent to the hand brake bellows, thus releasing the handbrake.

Usb Phone Charger

There is a USB socket charger on the side control panel where the driver can charge his mobile phone. There are two sockets, normal and fast charging.

INDICATOR AND WARNING LIGHTS PANEL

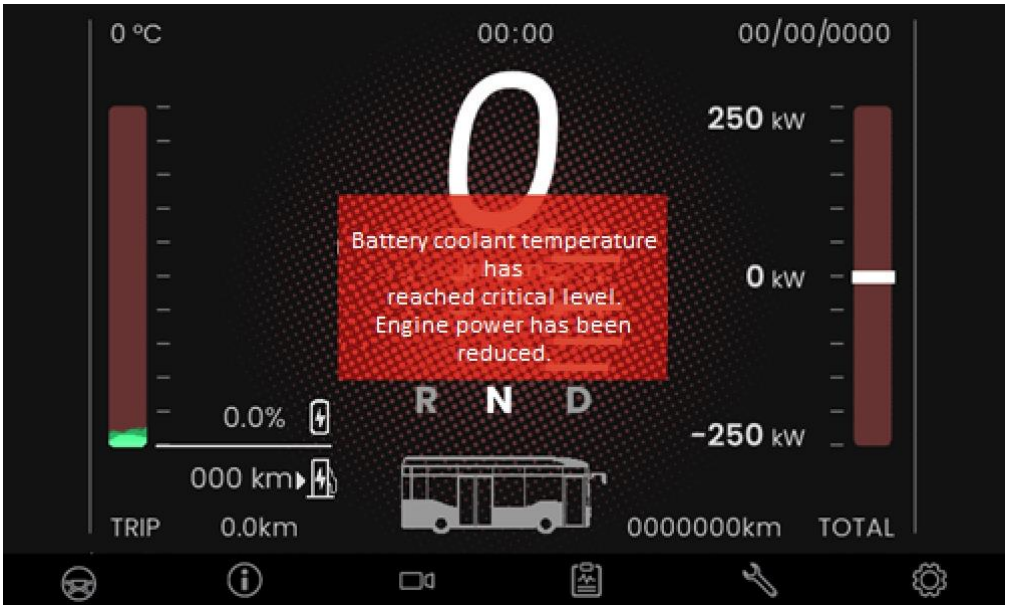
ANADOLU ISUZU

Icon	Icon Name	Color	Function
	ASR Off	Amber	If ASR system is deactivated, the warning is activated.
	ASR On	Amber	The warning is activated when the ASR system is activated.
	Brake Lining Warning	Amber	The warning is activated when either of the brake linings' thickness is insufficient.
ABC	Route Panel Activated	Amber	Indicates that the route panel is activated.
	CC Activated	Green	The warning is activated when Cruise Control is set and activated.
ELC	ELC Warning	Amber	Orange notice coming from the ELC is a warning. Errors need to be checked from ELC diagnostics. Besides it blinks when the ELC system moves, it is not a breakdown.
ELC	ELC Warning	Red	Red notice coming from the ELC is a warning. Errors need to be checked from ELC diagnostics.
	Hillholder Activated	Green	Warning is on if it is activated to use hill start assist system.
	Battery Management System Amber Warning	Amber	It indicates that there is an error in the battery management system.
	Battery Management System Warning	Red	It indicates that there is an error in the battery management system. The vehicle must be stopped.
	Wheelchair Ramp Open	Red	Shows up on the screen when the wheelchair ramp is opened.

	ABS Orange Warning	Amber	It's an amber warning which comes from the brake module. If the warning is activated, the engine must be stopped immediately and errors need to be checked from the ABS diagnostics.
	Electric Motor Warning	Red	Indicates a trouble in the electric motor. The vehicle must be stopped immediately.
	Fire Warning	Red	Warns if the fire detection system is activated. The engine must be stopped immediately if the warning is on.
	Seatbelt Warning	Red	It's a seatbelt warning. The warning is only visual if the speed is under 20 km/s, otherwise the warning is both visual and vocal.
	Door Valve Warning	Red	Warns if the door emergency valve is open or the air in the door air system isn't enough.
	Steering Wheel Pump Trouble	Red	This warning is activated when there is a steering wheel pump trouble.
	ECAS Red Warning	Red	It's activated when there's a trouble in ECAS system.
	Engine Lid is Open Warning	Amber	Notifies when the engine lid is open.
	EBS Orange Warning	Amber	It's an amber warning which comes from the EBS. Errors need to be checked from the EBS diagnostic.
	Air Conditioner is Open Warning	Blue	Gets activated when air conditioner is on.
	Retarder is Activated	Amber	This warning is activated when the retarder gets activated by hand or feet.
	Bus Stop Button	Red	It's for the passengers that wants to get off in the next station. If the back door is open, stop buttons do not work.

Tell-tale	Icon	Color	Function
1		Amber	It is active when there is a fault in the high voltage line.
2		Red	It is the red warning warning coming from the engine control unit.
3		Green	When the left signal is given, the warning is active.
4		Green	When the right signal is given, the warning is active.
5		Red	When the handbrake is active, the alert is active.
6		Blue	When the high beams are active, the warning is active.
7		Green	When the door brake (Station brake) is active, the warning is active.
8		Green	When the dipped beam headlights are active, the warning is active.
9		Amber	When the rear fog lights are active, the warning is active.
10		Green	When the front fog lights are active, the warning is active.
11		Red	It becomes active when the vehicle starts charging.
12		Red	It is a driver warning warning from the engine control unit. The faults should be checked from the engine diagnostics.
13		Red	It is the red warning warning coming from the brake module. If the warning is active, the engine should be stopped immediately and the errors should be checked from ABS diagnostics.
14		Red	The engine water temperature is a warning. If the warning is active, the engine should be stopped immediately and the errors should be checked from the engine diagnostics.
15		Amber	If the fuel level is low, the warning is active. Fuel should be filled as soon as possible.

Battery Coolant Temperature Warning



As soon as the statement that the battery coolant temperature has reached a critical level is seen in the cluster, the vehicle must be stopped immediately and the ignition must be turned off in order to prevent any damage to other parts of the vehicle. The liquid temperature should be expected to drop. It is necessary to wait until the error is cleared from the screen.

Engine Speed Indicator

The engine rev counter measures the engine revolutions per minute. Starts when the engine is started.

Speed (km/h) Indicator

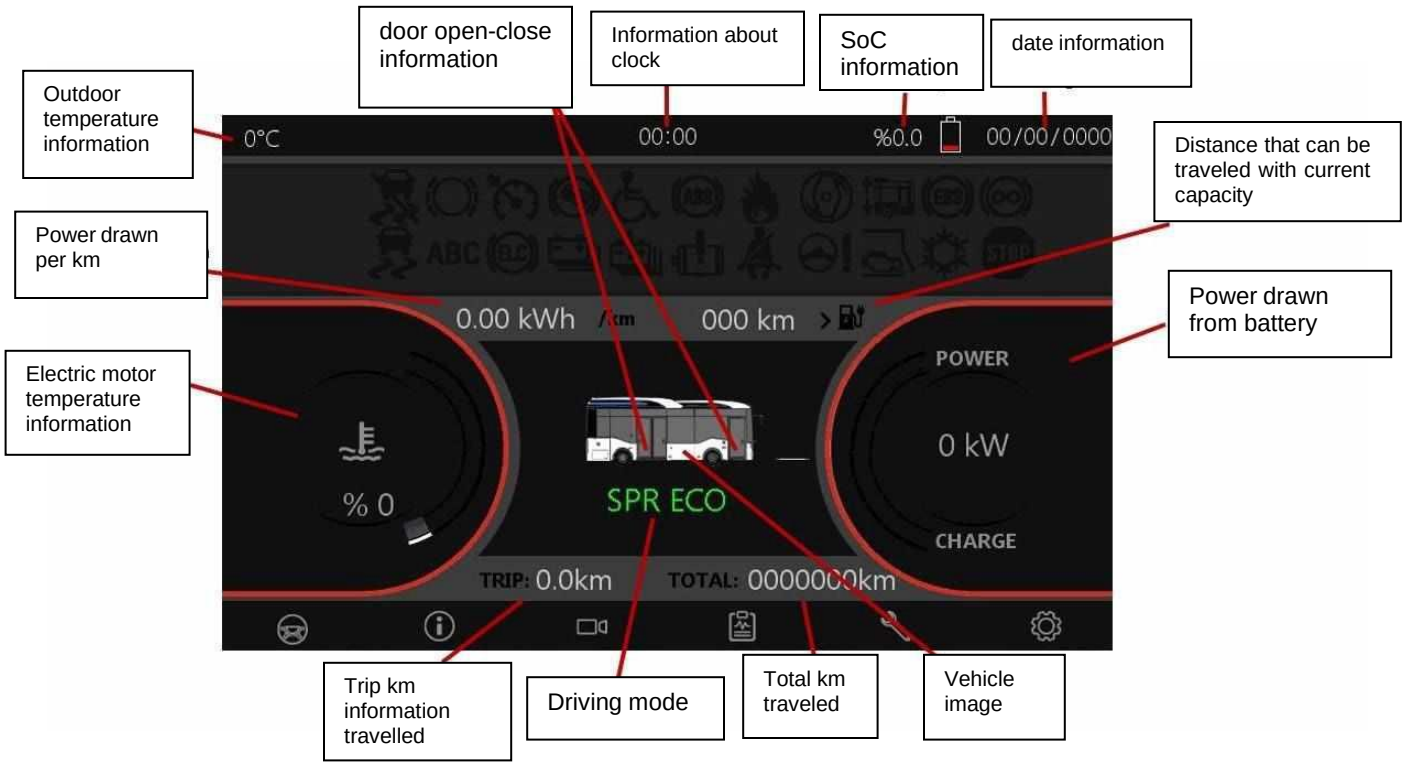
Shows the speed of the vehicle in kilometers / hour, startsto work after the vehicle moves

Brake Pressure Gauges: It shows the value of front brake and rear brake air pressures.

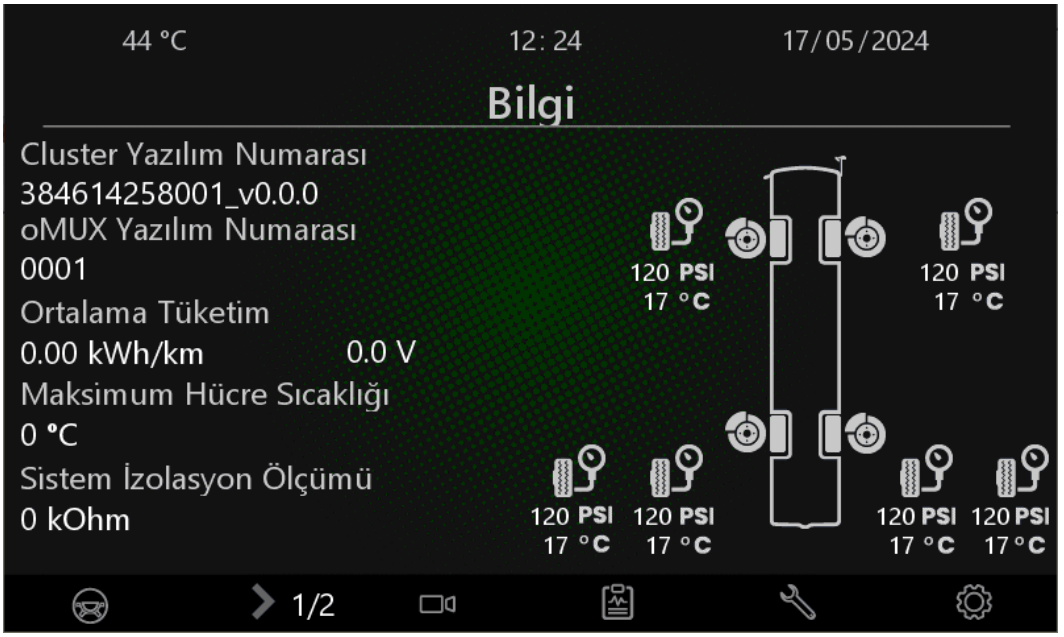
1- Front brake pressure indicator

2- Rear brake pressure indicator

Main Monitor



Information Display



Rear View Camera Screen

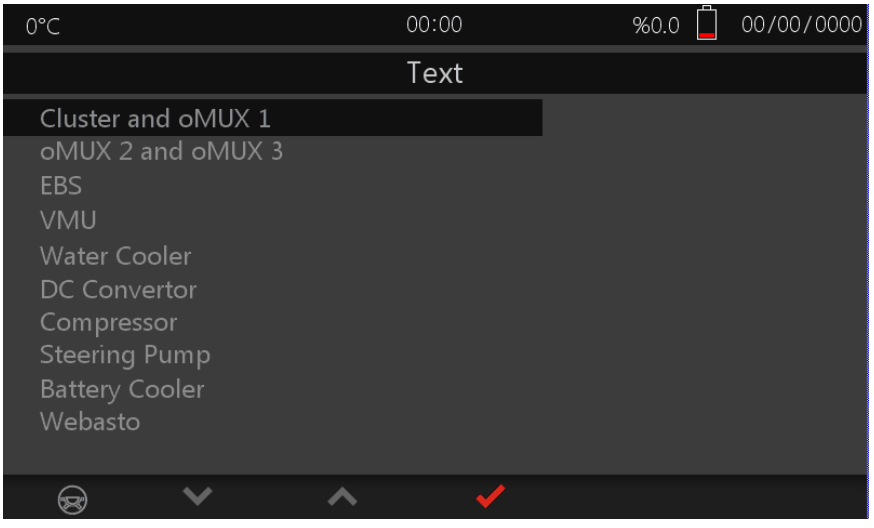
The backup camera screen will be on the cluster screen.

If the driver wishes, he can activate the rear view camera by pressing the button.

Timeouts Screen

If there is a problem in the canbus line with the systems specified in the vehicle, it gives a warning. (Systems that are not in the vehicle will not appear on the timeout page.)

Maintenance Screen



Cluster and oMUX 1
oMUX 2 and oMUX 3
EBS Error Codes
VMU Error Codes
Water Cooler Error Codes
DC Converter Error Codes
Compressor Error Codes
Steering Pump Error Codes
Battery Cooler Error Codes
Webasto Error Codes

Setting Screen

Time and date show manually adjusted values on all screens.

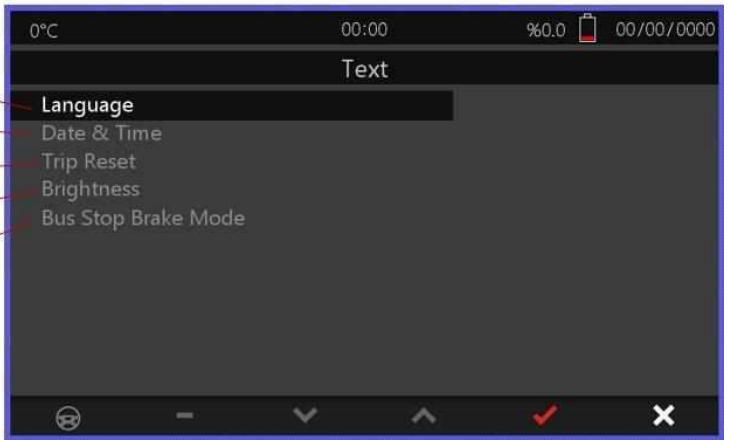
Language selection

Time/Date selection

Trip reset

Screen brightness selection

Stall brake mode selection



Language Selection (11 different languages) In order to add more languages, the infrastructure is ready in the software.

Date/Time selection

Trip reset

Screen brightness selection

Stall brake mode selection

LINE PLATE CONTROL PANEL

The line plate control panel is located in the driver's compartment upper console. The route information to be displayed on the line plate is selected/changed via the control panel.

DESTINATION INDICATOR) Optional)

NOTE

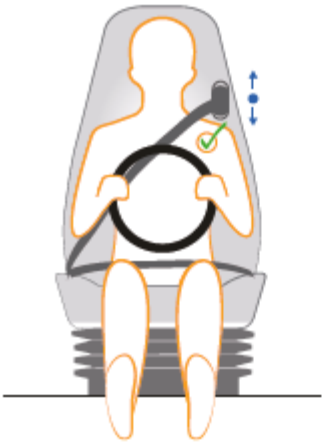
1. Auto-screen dimming to reduce driver glare and prolong unit life. The dimming feature activates automatically a few seconds after the unit has been left idle.
2. Highlighting of selected function helps the operator to select the required option with ease.
3. 8Mb internal flash memory ensuring it is capable of meeting the future requirements of the transport industry, with the ability to store large lists alongside complex firmware.
4. Internal piezo sounder.

4. VEHICLE EQUIPMENT

DRIVER SEAT

1- Seat Tilt Adjustment: Seat tilt can be adjusted between 2° and 12°.
2- Shock Absorber Adjustment: It can be adjusted in 4 steps from soft to hard with the damper adjustment button. It changes to hard position upwards and soft position downwards.
3- Height Adjustment: With the height adjustment button, it can be adjusted more or less steplessly with in 100 mm.
4- Horizontal Stretch setting: The button changes to “open” up and “locked” down.
5- Fast Download Setting: It provides ease of getting on and off.
6- Backrest Tilt Adjustment: Lean against the backrest. Pull the lever up and move the backrest tothe desired position and release the lever.
7- Air Lumbar Pillow: It can be adjusted to the desired position steplessly.
8- Kidney Side Pads: The kidney pad can be adjusted according to the user's request. With the (+) button, the pillow is filled with air. With (-) the air in the pillow is discharged.
9- Head Adjustment: Its height and inclination can be adjusted as desired.
10- Forward - Backward Adjustment: It can be adjusted back and forth within 210 mm with 10 mm intervals.
11- Seat Depth Adjustment: It provides 5-stage adjustment within 60 mm.
12- 3-Point Seat Belt: Always wear your seat belts.
13- Armrest (Right - Left) Tilt Adjustable: By turning the adjustment button, its inclination can be adjusted steplessly. It can be easily folded up when getting on and off.
14- Rotating Mechanism: Provides ease of getting on and off.

DRIVER SEAT (OPTIONAL)

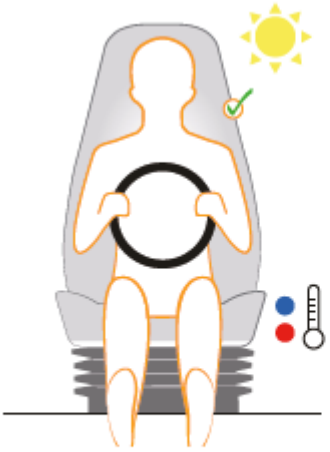


Belt height adjustment 60 mm

Ergonomically optimized armrests

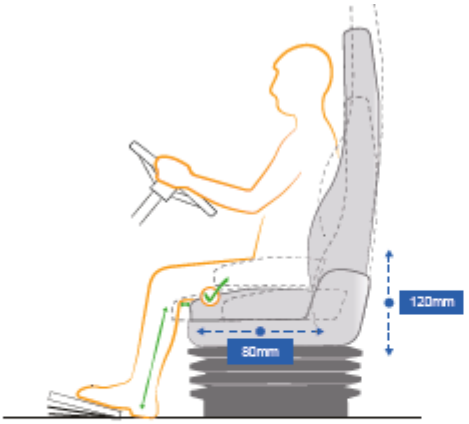
Pneumatically releasable shoulder adjustment

Integrated pneumatic system and lumbar support with side bolsters adaptation

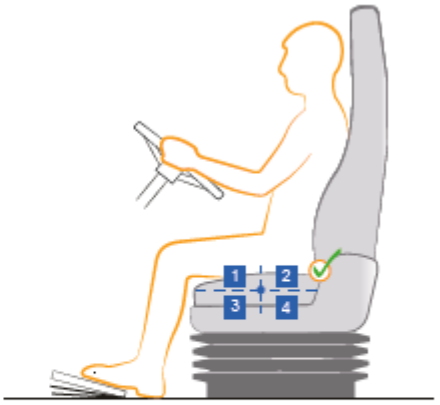


3-stage via NTC-controlled air conditioning / heating

Load capacity up to 150 kg



Advanced pneumatic height adjustment (120 mm) and seat cushion depth adjustment (80 mm)



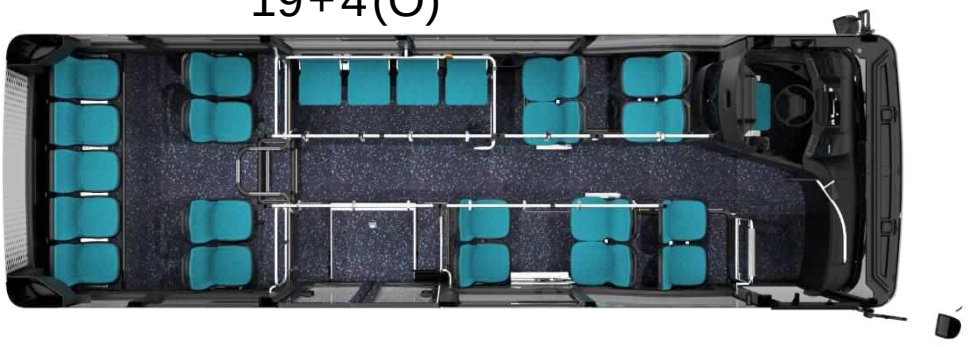
Seat cushions with multi-zone foam for maximum comfort

PASSENGER SEATS

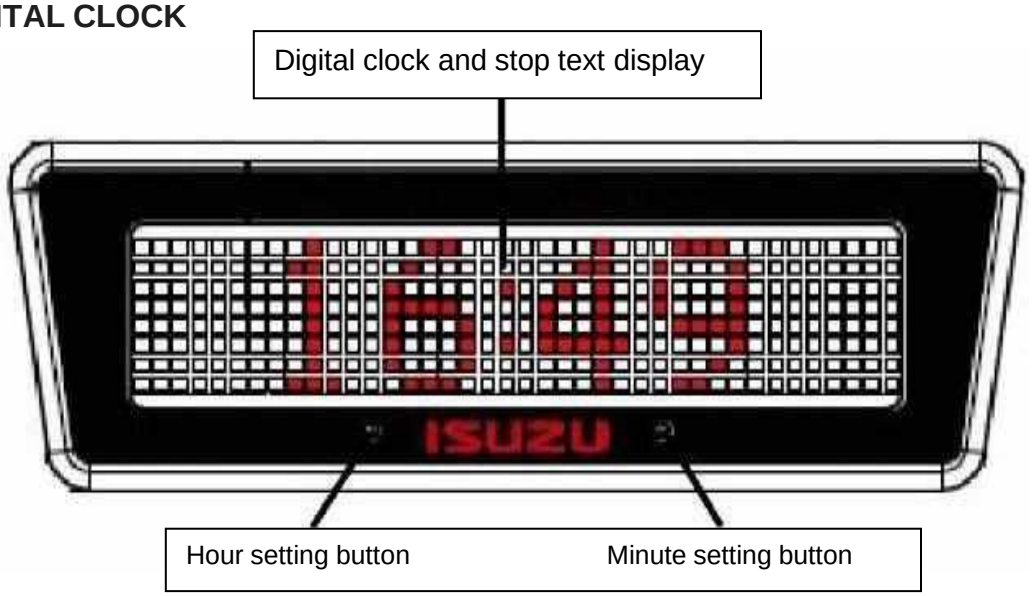
In the standard of the vehicle, there are 25 passenger seats, 4 of which are folding seats. Passenger seats must be upholstered in fabric. There is a wheelchair area opposite the back door for disabled passengers.

21 + 4 (S)

19+4(O)



DIGITAL CLOCK



There is a digital clock at the front of the vehicle. Time and air temperature are displayed alternately on the screen. In addition, when the stop button is pressed, the text “TO STOP” is displayed. Hour adjustment can be made from the left buttons, and minute adjustments can be made from the right buttons.

WINDSCREEN BLINDS (Electric Controlled) (Option)

On the windshield, there is an electrically controlled roller blind on the driver's side. There is an electrical connection cable on the left side of the roller blind. Upand down movement of the curtain is provided with the motorized curtain button on the left side of the driver'scabin.

DRIVER'S SIDE ROLLER BLINDS (Option)

There is 1 roller blind with manual control on the left window on the driver's side. Up and down movement of the curtain is provided with 1 rope on the roller blind.

RADIO & MP3 PLAYER (Option)

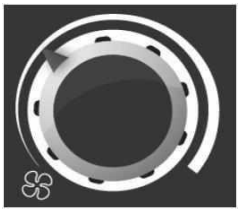
There is a radio & MP3 player in the vehicle, it has USB and AUX inputs. 30 radio channels can be stored in memory. There is an external remote control in the vehicle.

1) KEYPAD DEFINITIONS:

Rotary Switch K1

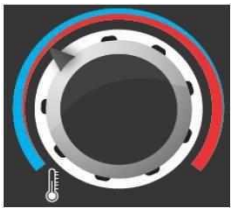
Rotary Switch	Definition of Function
Turning	When the ignition is on, the driver's side air routing is checked. The rightmost position is the defogging function for the windshield, the alternator must be running for this function.

Rotary Switch K2



Rotary Switch	Definition of Function
Turning	When the ignition comes on, the driver side fan speed is adjusted. Only min fan speed can be operated when the alternator is not running.

Rotary Switch K3



Rotary Switch	Definition of Function
Turning	When the ignition comes on, the driver's side temperature setting is made.

Button S1

Button	Definition of Function
Short Press	Driver side cooling is active. For this function to work
Long Press	---
Double Click	---
Button combination	---

Button S2

Button	Definition of Function
Short Press	The fresh damper flap on the driver's side opens and closes.
Long Press	---
Double Click	Driver and passenger close the fresh air flap for 10 minutes.
Button combination	+ (5 sec.) Display shows driver's side temperature.

Button S3

Button	Definition of Function
Press	After the device is turned on, the AUTO button must be pressed. When the AUTO button is pressed, the electric heater button will turn on automatically and the device will operate automatically in accordance with the given parameters. The driver cannot intervene in the SET value. The SET value should be adjusted automatically according to the table below.

Parameter values are as follows.

Case	Outside temp.	SETpoint-passenger cabin
1	x≤16	18
2	16<x≤18	19
3	18<x≤19	20
4	19<x≤22	21
5	x>22	22

While the device is heating, only the heating icon  is visible on the screen.

While the device is cooling, both heating  and cooling icons  appear on the screen at the same time. Seeing the heating icon in cooling mode means that the device is ready for heating.

Button S4

Button	Definition of Function
Short Press	The passenger side dehumidification function is active.
Long Press	---
Double Click	---
Button combination	---

Button S5

Button	Definition of Function
Short Press	The passenger side fresh air flap opens and closes.
Long Press	---
Double Click	Clock / room temperature / outside temperature display is selected on the screen.
Button combination	--- 

Button S6

Button	Definition of Function
Short Press	The backup heater is activated.
Long Press	---
Double Click	---
Button combination	 +  (Ignition OFF) Preheater initial setting is entered.

Button S7

Button	Definition of Function
Short Press	Passenger side fan speed is increased by 7 steps. In addition to automatic mode, manual fan control can be provided by the driver.
Long Press	---
Double Click	---
Button combination	---

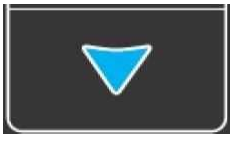
Button S8

Button	Definition of Function
Short Press	Passenger side fan speed is reduced by 7 steps. In addition to automatic mode, manual fan control can be provided by the driver.
Long Press	---
Double Click	---
Button combination	---

Button S9

Button	Definition of Function
Short Press	Passenger side SET value cannot be intervened. It gives LOC warning on the screen.
Long Press	---
Double Click	---
Button combination	---

Button S10



Button	Definition of Function
Short Press	Passenger side SET value cannot be intervened. It gives LOC warning on the screen.
Long Press	---
Double Click	---

AC Smart Special Functions:
The following button combinations and special functions are activated.

SMOG ACTIVATION:

2 X 

When the driver fresh air button is double clicked, the driver and passenger fresh air inlets are closed for 10 minutes.

DISPLAY:

2 X 

Double-clicking the driver's throttle button, the display will select CLOCK / ROOM TEMPERATURE / OUTDOOR TEMPERATURE.

CHANNEL TEMPERATURE:

5 sec + 

When the fan step down button is pressed for 5 seconds, the channel temperature is displayed on the screen.

FRONTBOX TEMPERATURE:

When the keys are pressed for 5 seconds, the frontbox temperature is displayed on the screen.

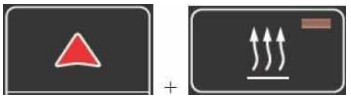
Air Conditioner Smart Settings:

It is possible to make the following settings with the Air conditioning Smart control panel.

SETTING THE CLOCK:

- The clock can be set with the ignition off.
- Press the keys together to enter the time setting.
- Clock setting is made using the button.
- After the clock setting is completed, if no button is pressed for 5 seconds, it returns to the main screen.

SETTING THE PREHEATER START TIME:



- Preheater start time can be set with ignition off.
- By pressing the keys together, the preheater start time setting is entered.
- or The preheater start time is set using the button.
- The preheater can be started manually with the key.
- After the preheater start time is completed, if no button is pressed for 5 seconds, the main screen is returned.

DISPLAYING ERROR MESSAGES:

- Error messages can be displayed with the ignition off.
- + By pressing the keys together, the current error codes are displayed on the screen.
- The error message can be cleared using the key.
- or other error codes can be seen using the keys.
- If there is no error in the system, "---" is displayed on the screen.

Error Codes:

Sensor errors:

E01	Outdoor temperature sensor short circuit error
E02	Outdoor temperature sensor open circuit error
E03	Suction sensor short circuit error
E04	Suction sensor open circuit error
E05	Convector front sensor short circuit error
E06	Convector front sensor open circuit error
E07	Convector back sensor short circuit error
E08	Convector back sensor open circuit error
E09	Channel sensor short circuit error
E10	Channel sensor open circuit fault
E19	Icing sensor short circuit error
E20	Icing sensor open circuit fault
E25	Water temperature sensor short circuit error
E26	Water temperature sensor open circuit error
E29	Driver sensor short circuit fault
E30	Driver sensor open circuit diagram

Feedback Errors:

E40	Compressor low pressure error
E41	Compressor high pressure error
E44	Preheater error
E50	Evaporator icing warning

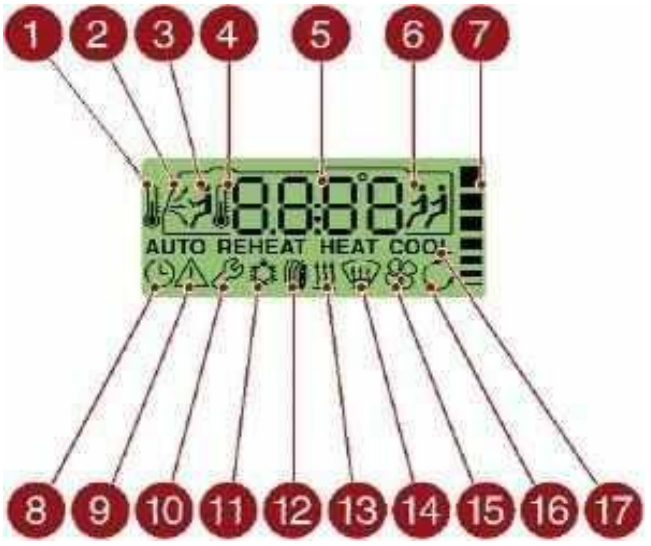
Valve Feedback Errors:

E65	Driver hot water valve feedback error
E68	Driver air guiding motor feedback error

Digital Output Errors:

E100	Evaporator blower step 1 output short circuit error
E101	Evaporator blower step 2 output short circuit error
E102	Evaporator blower step 3 output short circuit error
E103	Compressor output short circuit fault
E105	Condenser fan output short circuit error
E108	Water pump output short circuit error
E109	Passenger fresh air motor A output short circuit fault
E110	Passenger fresh air motor B output short circuit fault
E113	Ceiling hot water valve A output short circuit fault
E114	Ceiling hot water valve B outlet short circuit error
E117	Convector hot water valve A output short circuit error
E118	Convector hot water valve B output short circuit error
E121	Driver hot water valve A output short circuit fault
E122	Driver hot water valve B output short circuit fault
E123	Driver fresh air motor A output short circuit fault
E124	Driver fresh air motor B output short circuit fault
E125	Driver air guiding motor A output short circuit fault
E126	Driver air guiding motor B output short circuit fault
E134	Driver A/C solenoid output short circuit fault
E145	Underarm heater step 1 output short circuit error
E146	Underarm heater step 2 output short circuit error

Air Conditioner Led Panel:

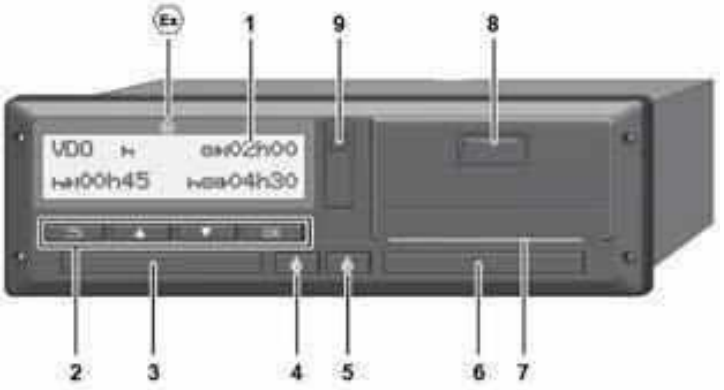


Button	Definition of Function
1	Outdoor Temperature Indicator
2	Air Distribution
3	Driver
4	Ambient temperature
5	LCD Display (Temperature, Fault Display..)
6	Traveller
7	Manual Fan Speed
8	No connection
9	No connection
10	System Failure
11	Compressor On
12	Convector Heater Ready
13	Pre-Heater
14	Drive Defogger
15	Manual Evaporator Fan Stage
16	Transition from Fresh Air to Indoor Air
17	Function in Operation (AUTO/HEAT/COOL)

DIGITAL TACHOGRAPH (Option)

The tachograph records the speed of the vehicle, the time traveled, the distance and other information. Tachograph can assist in achieving economical driving and optimal management of operations.

No.	Name
1	Screen
2	Menu buttons
3	Card slot 1
4	Driver combination button - 1
5	Driver combination switch-2
6	Card slot 2
7	Cutting edge
8	Printer slot
9	Front interface
Ex	Label for ADR version (old version-option)



Led Screen
The contrast and brightness of the screen cannot be changed.

Menu Buttons
Please use the buttons below to enter, view or print data;

▲ / ▼ Press the button of the desired direction several times. Scroll to the desired function at the menu level.

Düğmeye basılı tutun: Otomatik olarak kaydırın.

OK Press the button briefly. Confirm function / selection.
Press the button briefly. Return to the previous entry field, cancel the country entry or exit the menu levels step by step.

card slot 1
Driver 1 to drive the vehicle inserts the driver card into card slot 1.

Driver combination button - 1
Press the button briefly. Change the activity.Press and hold the button. (a least 2 seconds) Open the card slot.

Drive combination switch - 2

Press the button briefly. Change the activity.

Press and hold the button (at least 2 seconds). Open the card drawer.

Card slot 2

Driver 2, who is not currently driving, places the driver card in drawer 2 (crew operation).

Cutting edge

You can tear the printer's paper output from the tear-off edge.

Printer slot.

Printer drawer for placing the paper roll.

Front interface

Downloading of data and parameterization is done via the front interface (workshop). The front interface is located under a cover. Access rights to the functions of this interface depend on the inserted tachograph card.

DIAGNOSTIC SOCKET

The diagnostic socket is located in the cabin in the lower right of the glove box, in the front door entrance. This socket is used for parameter uploading, changing and diagnostics to the engine control unit.

MIRRORS

There is one interior rear view mirror inside the vehicle.

Outside, there are two outside rear view mirrors, one on the right and one on the left.

Left Outside Rear View Mirror

Right Outside Rear View Mirror

IN-CAR CAMERA (OPTION).

There are 2 cameras in the vehicle that show the front door and the back door. On the left side of the driver, there is a monitor (Option) on the front panel, thanks to this monitor, the driver can follow the passenger's entrance and exit with the images reflected from the cameras.

REAR VIEW CAMERA SYSTEM (OPTION)

There is a closed circuit camera system that monitors the rear of the vehicle when parking or reversing. Images from the camera can be viewed on the LCD screen on the front control panel.

MOBILE DVR (Digital Recorder-OPTION)

The DVR is top mounted in the driver's compartment. The DVR allows recording of audio and video captured with the camera. Mobile DVR (Digital Video Recorder) provides powerful monitoring functions, including audio and video encoding and decoding, 2G, 3G and Wi-Fi wireless network transmission, satellite positioning service. Safe data storage, hard disk vibration damping. It can workboth as a stand-alone recorder or collaborate with other devices to create a comprehensive surveillance system.

DIGITAL LINE PLATE

There is 1 digital line plate in the front, side and rear of the vehicle.

GRAB HANDLE

There are grab handles on the pipes for the passengers in the vehicle to hold on.

BUTTONS TO STOP

There are three types of stop buttons in the vehicle.

Standard

For disabled passengers

For priority passengers

(Optional)

Passengers who want to get out of the vehicle inform the driver by pressing these buttons.The relevant door Button will light up and “STOP” will be displayed on the digital clock. In addition, the audible warning is also activated. When the doors are opened, the word "STOP" and the warning lights on the door turn off.

WHEELCHAIR AREA

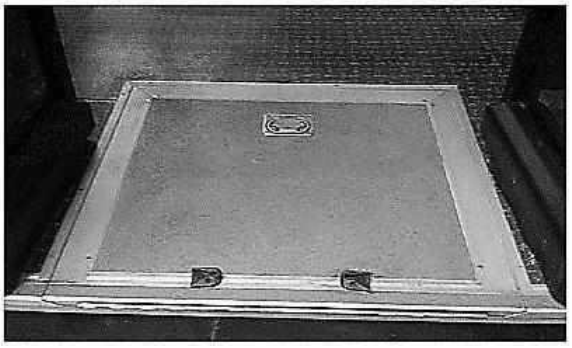
There is a special area opposite the rear door for the passenger in a wheelchair to travel safely.

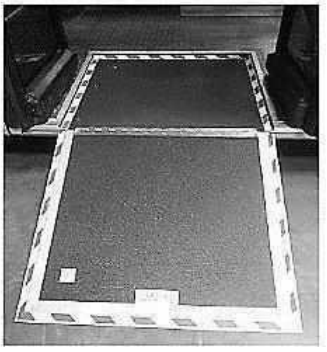
DISABLED PASSENGER RAMP
There is a manual opening/closing ramp at the rear door for comfortable vehicle entry/exit for disabled passengers in wheelchairs.

Using the Ramp
When a disabled passenger who wants to get into the vehicle

presses the  button, the  warning is given.
In this situation,

Stop the vehicle at a point where traffic is convenient.

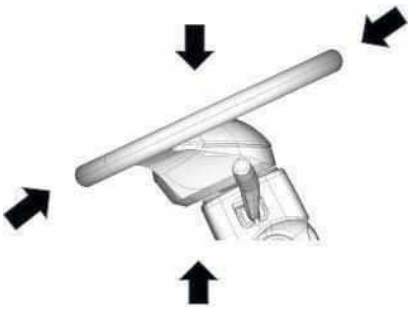




- Open the back door.
- Open the ramp by holding the handle and push it out of the vehicle.
- Have the disabled passenger get on/off.
- Close the ramp by folding it towards the inside of the vehicle.

When the ramp is open,  (back door open) warning light comes on. Disabled passenger symbol is seen on the information screen. In addition, an audible warning is heard.

STEERING ADJUSTMENT



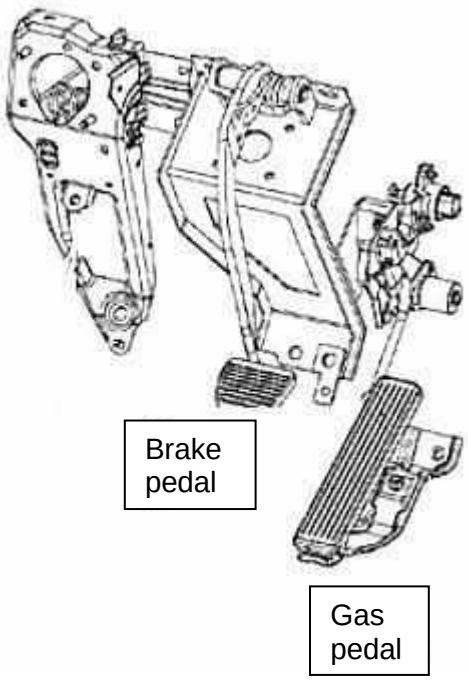
Steering is inclined and telescopic. For this adjustment, pull the lever on the left under the steering wheel towards you. When the desired position is reached, the lever is pushed back.

HORN

The horn sounds when the center of the steering wheel and the horn button onthe turn signal lever are pressed.

PEDALS

In electric motor vehicle;



Brake pedal

When the brake pedal is pressed, an electrical signal is given to the respective control units and air is distributed to the brake elements. Itis integrated into the vehicle's brake system and will operate when the brake pedal is pressed.

Gas Pedal

The pedal on the right is the accelerator pedal. The electronic signal sent by the position sensor connected to the accelerator pedal is evaluated by the ECU (Electronic Control Unit) and the signal going to the electric motor and the vehicle speed vary.

Passenger Counting System

Counts the number of passengers on the vehicle when the door is opened.

It depends on the SPM system.

First Aid kit (Option)

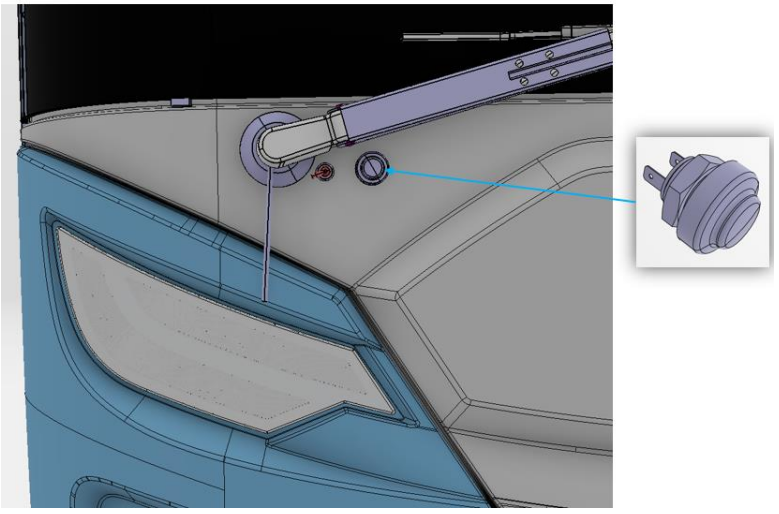
There is 1 first aid kit bag in the vehicle.

Button On-Off (Option)

Under the wiper is the front door open button.

When the button is pressed outside the vehicle with the ignition off,

the front door opens.

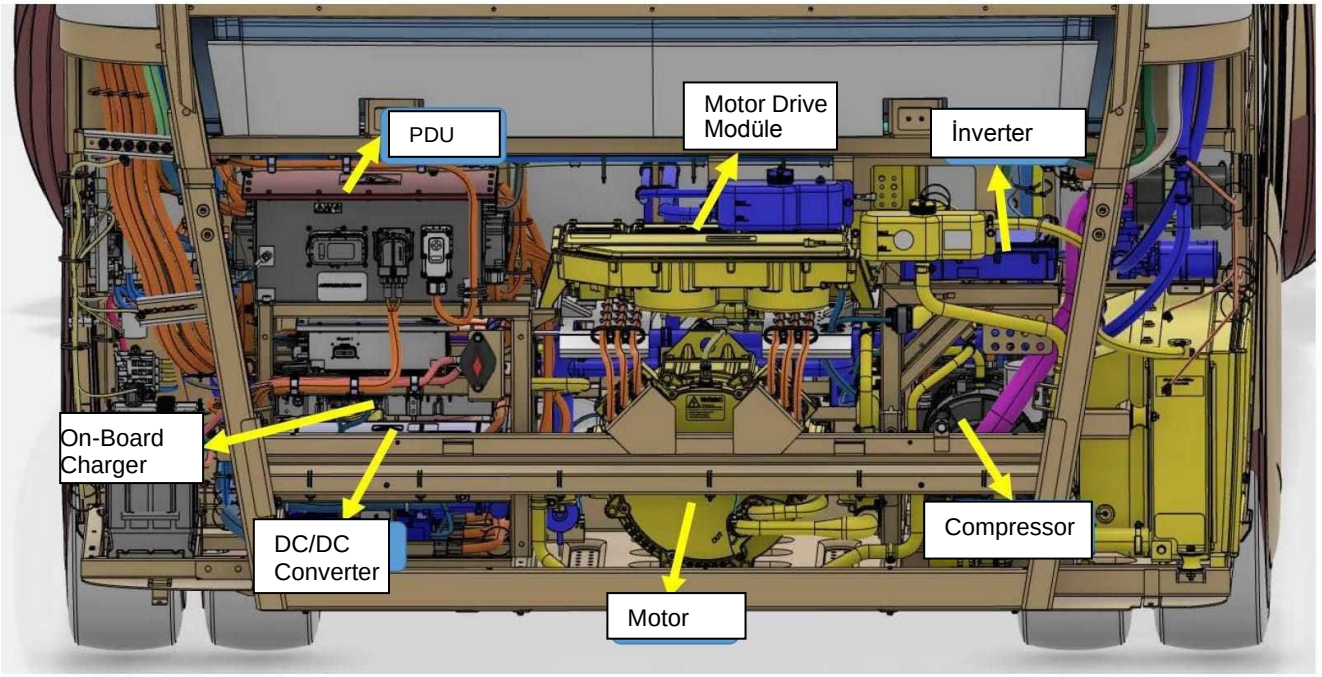


ELECTRICAL ELECTRONIC SYSTEM AND HIGH VOLTAGE COMPONENTS

The locations of the electronic and power group components on the vehicle are as follows. It can be easily accessed by opening the engine cover at the rear of the vehicle.

CAUTION!

Never touch the electrical electronic system and high voltage components. No intervention should be made by authorized personnel / service.



High voltage!

Vital danger!

• Never touch the HV cables or HV connections without first making sure that there is no voltage!

• The device may only be connected by a qualified electrician!

• Security installations should never be bypassed or bypassed! Any malfunction that occurs can lead to life-threatening consequences!

• Never connect the device to a socket without a protective earth conductor!

When working on an HV system, the following 5 safety rules must be strictly followed:

-- Disconnect the system from power.

• Turn off the ignition.

• Remove the service/maintenance plug and/or turn off the main battery switch.

• Remove the fuse.

-- Make sure that the system cannot be reactivated.

• Keep the ignition key safe to prevent unauthorized access.

• Keep the service/maintenance plug secure to prevent unauthorized access and/or use a lockable cover to ensure that the main battery switch cannot be reactivated.

-- Make sure the devices are de-energized using a suitable voltage tester (note the voltage range!).

-- Ground and short-circuit the system.

-- Secure or insulate adjacent moving parts.

ELECTRICAL SYSTEM (STANDARD VEHICLE)

Rated Voltage: 600 V

Battery Type: Lithium-ION - (LFP Hybrid).

Battery Capacity: 211 kWh

Range : up to 300 km (without AC) up to 200 km (wAC)

Battery Guarantee: 80% charge in 8 years with overnight charge.

ELECTRICAL SYSTEM (OPTION).

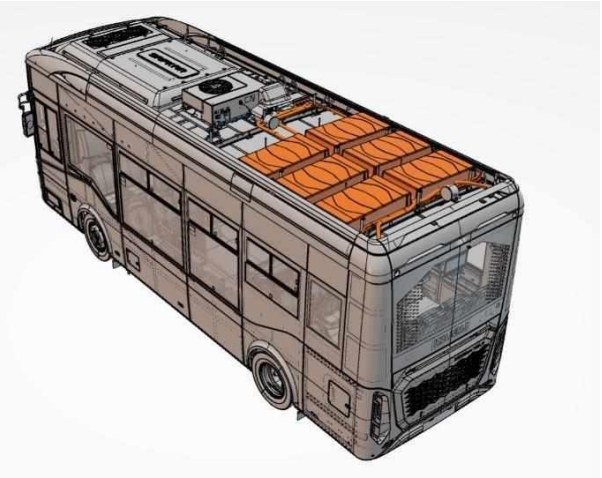
Rated Voltage: 600 V

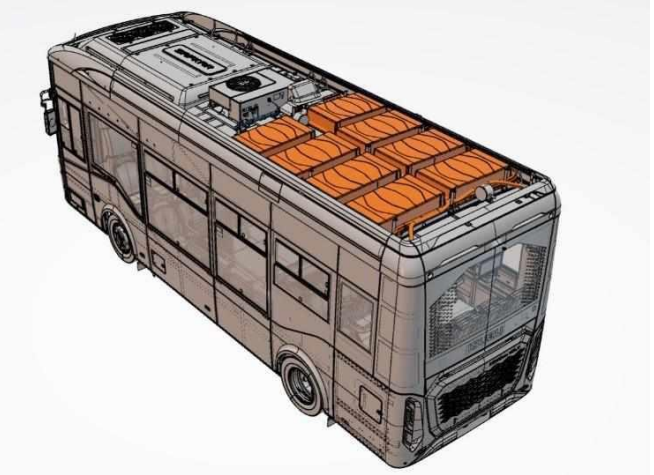
Battery Type: Lithium-ION - (LFP Hybrid).

Battery Capacity: 268 kWh

Range: Up to 380 km (without AC) Upto 250 km (w AC).

BATTERY SYSTEM





Battery Capacity: 211 kWh

Battery Capacity: 268 kWh

NovoCITI VOLT is extremely safe with its technological battery system.

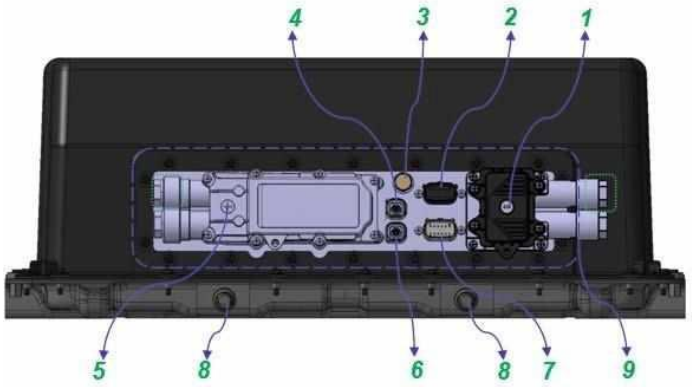
The high voltage battery unit is the energy storage device for the electric motor. The high voltage battery is charged when the electric machine is operated as an alternator. The high-voltage battery in the vehicle can also be partially charged during braking energy regeneration. However, it is mainly charged using energy from an external power grid. However, this is primarily used to maintain the state of charge when the high voltage battery is already extremely discharged. The range of the vehicle can be increased.

The high-voltage battery of an electric vehicle is equivalent to the fuel tank in an internal combustion engine vehicle. It is energy storage device for electric motor. The amount of energy to be stored in order for the vehicle to reach the desired range is accordingly high, so the volume and weight of the energy storage device are also high. However, some vehicle features were positively affected by the installation of the high-voltage battery pack in the vehicle's Drive modüle.

- The passenger compartment is not constrained by the high voltage battery pack.
- The high voltage battery pack is easily accessible in the Service, reducing repair costs.
- Insulated and professional tools, insulated gloves and shoes will be used for installationand maintenance.
- Please clean the tools after installation and maintenance, do not put metal objects insideor on the battery system components.
- Before connecting or disconnecting the cable, please make sure that all high and lowvoltage is disconnected.
- The battery system must be operated with professional tools and protective equipment.

- Maintenance should be performed by professionals with battery expertise and safetytraining.
- The connection between packages should be made with anti-loosening device to preventloosening, aging and jamming.
- Avoid any short circuit during the connection process.
- All connections must be made under clear instruction, any guesswork and vague attemptsare strictly prohibited.
- Important ports: Correct and reliable connection, good contact, no short circuit.
- All ports must be free of contact or short circuit with other package.
- Consult ISUZU authorized services for other uncertain factors.

Cable Connections



No.	Connector
1	BAT-
2	Low voltage input
3	balance valve
4	Heating input
5	BAT+
6	Heating output
7	low voltage output
8	cooler connector
9	Integrated panel

CAUTION!

For the High Energy type package, the power output is blocked only at one pipe, unused pipe molding stage. When installing cables, please make sure that the cable label corresponds to the individual package label.

CHARGING STATION SYSTEM AND FILLIN

Charge Type: AC Type 2 / DC Type 2.

Charging Power: AC Plug - 22 kW DC Plug - 150 kW.

	Standard tool	Option
Charging Time:	150 kW – up to 2 hours	up to 2.5 hours
	22 kW – up to 8.5 hours	up to 11 hours

NOTE:

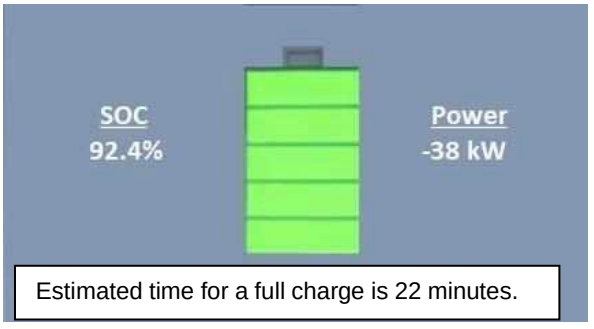
Both AC (Slow) and DC (Fast) charging can be done through a single socket. It provides a 10-minute fast charge, up to 30 km without damaging the battery life. Intelligent energy management provides remote control for charging.

CLUSTER CHARGE END WARNING

When the charge level drops to 10% and below, the Red warning appears on theside. In such a case, charge your vehicle atthe nearest charging station.

CHARGING TIME

Users can follow the estimated time remaining on the digital display screen during the charging period.



CHARGING THE VEHICLE

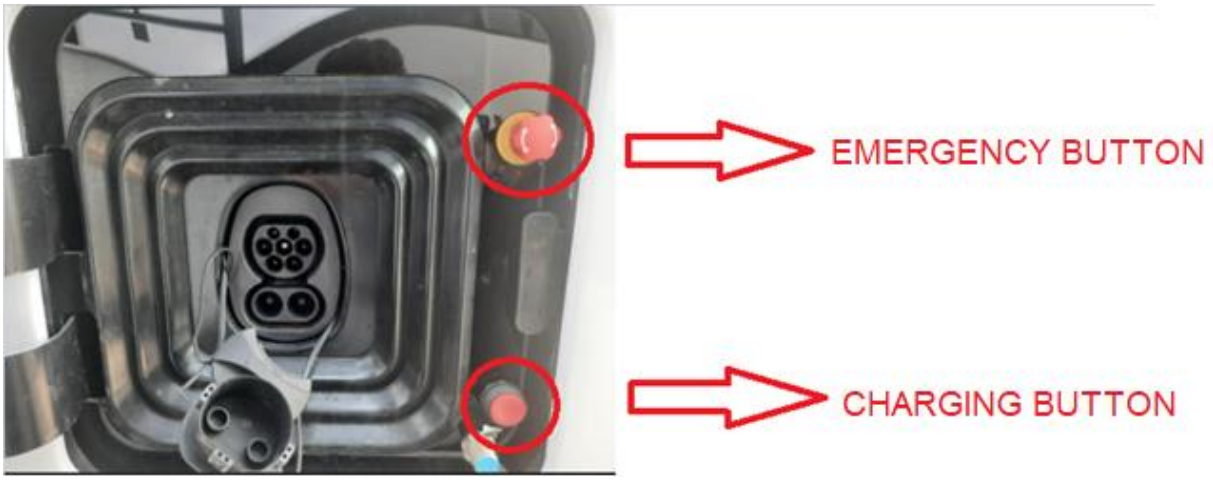
Position the vehicle so that it can charge near the charging station. The main switch should be in the "ON" position as in the photo. The ignition switch should be in the "OFF" position.

Open the cover on the left rear of the vehicle with the key and remove the socket covers for charging.

Plug the charger into the open charging socket. Both AC and DC charging sockets are common.

If the light on the charging socket is constantly on, the vehicle is ready for charging. Plug in the charger correctly. Once the vehicle starts to charge, there will be a sliding strip light at the top of the socket. If the light flashes periodically, there is a fault in the system. Contact the nearest authorized service.

If the plug symbol on the top right of the display screen lights up red, it means that the vehicle is plugged into the charger. If the red light is not on, the vehicle will not be charged, contact the nearest authorized service. You can monitor the vehicle's instantaneous charge power, battery charge speed, full charge time and occupancy rate while the vehicle is charging, from the display screen.



The button on the top right of the charging socket is the "EMERGENCY BUTTON". In case of an emergency during charging, press this button to turn off the high voltage of the vehicle. In this way, you will prevent major problems such as fire and explosion in your vehicle.

The button on the lower right side of the charging socket is "CHARGING BUTTON". While charging the vehicle, the charger plugged into the socket locks itself as soon as it starts charging. When you want to finish the charge in the vehicle, you can unlock it by pressing the button and you can finish the charging process.

USING CABLES AND SOCKETS FOR CHARGING

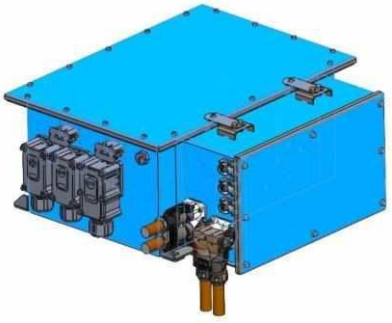
During the charging process, the CCS type 2 DC charging cables are locked in place electromechanically via a locking actuator integrated into the vehicle charging port. The charging cables comply with the IEC 62196-3 standard and are VDE certified. The charging cable you will use to charge your vehicle must comply with IEC 62196-3 and DIN EN 50620 standards.

DRIVER SCORING SYSTEM

The driver will be rated based on his fuel consumption performance.

- **1X Green:** Good
- **2X Green:** Very Good
- **1X Yellow:** Moderately good
- **2X Yellow:** Should be better
- **1X Red:** Bad
- **2X Red:** Awfull

PDU (POWER DISTRIBUTION UNIT)



PDU is a high voltage distribution unit for EV, hybrid power, commercial vehicle, low speed vehicles for current distribution and control of battery, electric motor, Fast charge, slow charge, air conditioner, heater, DC/DC converter, and more equipment.

Electrical properties	
Voltage measurement	850 V DC
Rated current	500A
Test voltage	2700 V / 60 sec.

Environmental features	
Temperature range	−40 to +90 °C (3000 h)
Protection mode	IP 67

FAST CHARGING CONTROL UNIT (VCCU)

It is the unit that not only controls the high speed charge in the vehicle but also manages the batteries.

Electrical properties	
voltage measurement	20-28 V DC
Rated current	20 A
Test voltage	1000 V / 60 sec.

Environmental features	
Temperature range	−40 to +90 °C (3000 h)
Protection mode	IP 67

BUILT-IN CHARGER (OBC).

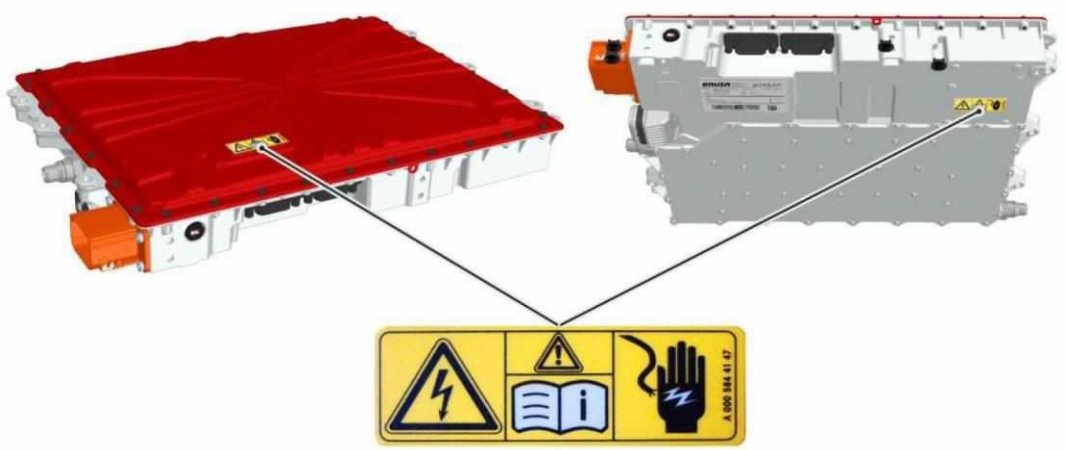
It is the on-board charging unit that allows the vehicle to be charged with AC (3 phase) voltage.

Below is a brief overview of the NLG6 charger's performance and versatility. As youread this guide, you will find details about individual properties.

- Manufactured and tested according to European automotive standards.
- This VDE certified charger complies with all applicable European legal requirements. EMCcompliance must be achieved with the vehicle.
- The galvanic isolation between the mains and the battery circuit guarantees optimumpersonnel protection.
- Touch and leakage current values remain within the required limits without any otherprecautions.
- The charger can be used in conjunction with a standard type A RCD.
- The power factor cos(phi) is approximately =1, so the available mains power is used to themaximum.
- The charging current contains a very low fluctuation.
- Charging from a single or three-phase outlet.
- It is possible to connect several chargers in parallel to achieve higher charging power.
- High efficiency (typically >94%).
- It is resistant to protect against dust, moisture, vibration, etc.

Alerts on the Device

Warning signs are placed on the device to warn the user against possible dangers. If one of these warning signs is lost or illegible due to wear and tear, it must be replaced immediately.

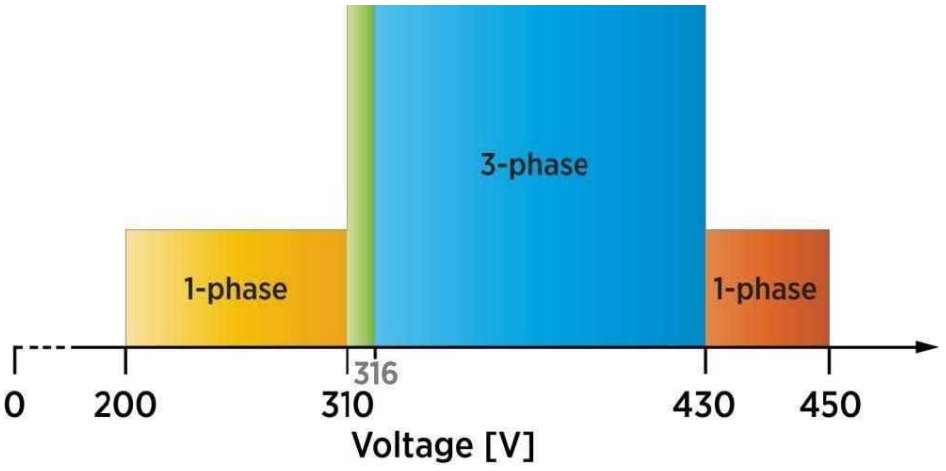


Basic Function

The NLG6 converts 1- or 3-phase alternating current to direct current and provides galvanic isolation between the public AC grid and the electric vehicle's HVDC system. This ensures, on the one hand, that the battery is charged, and on the other, the safety of both networks.

Battery charge is controlled by CAN, i.e. NLG6 limits current and voltage to values received by CAN. If such signals are not received for a certain time (approximately 0.5 sec), the unit will cut off charging to protect the battery. The NLG6 includes an interface for IEC-61851 / SAE-J1772 signals, i.e. related safety signals and protocols such as Control Pilot and Proximity are presented according to standards. In addition, there are protection measures (temperature detection and derating, fuses) integrated into the unit to protect the unit from overload and cut off the power flow in case of potentially dangerous situations and fault patterns.

Voltage dependent control of 1-phase and 3-phase charging



NLG6 provides 3-phase charging for battery voltage ≥ 310 V to ≤ 430 V at maximum. 22kW. Outside this range, single-phase charging max. 7kW. A delay is programmed for this transition threshold, which defines the following transition point.

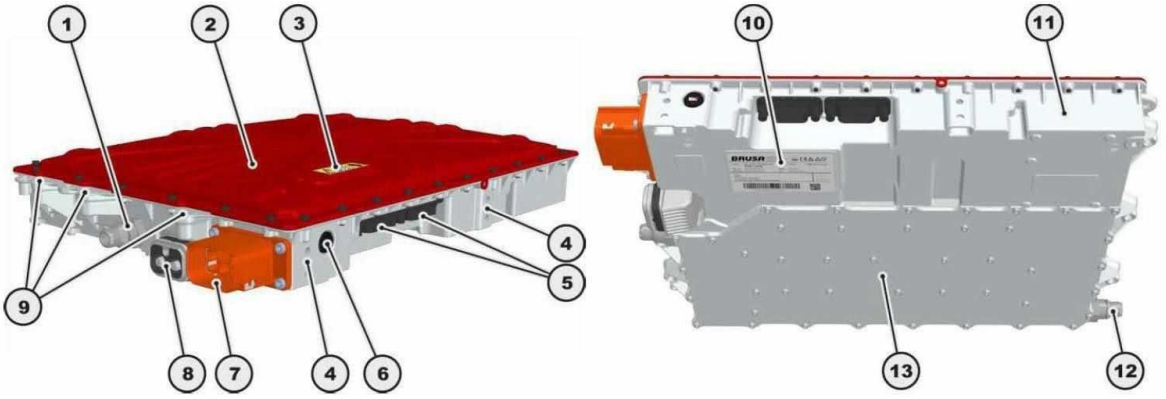
If the battery voltage is < 310 V when switching on the charger, 1-phase charging is automatically activated. Then, if the battery voltage reaches ≥ 316 V (delay dependent transition threshold), the charger automatically switches to 3-phase charging. If the battery voltage is ≥ 310 V when switching on the charger, 3-phase charging is automatically activated.

Charging Modes (Mode 2 and Mode 3 charging)

Mode 2: Alternating current (AC) charging at a local standard outlet or CEE outlet using an In-Cable Control Box (ICCB) integrated into the charging cable. ICCB provides an accurate charging procedure controlled by safety signals and equipment according to relevant standards.

Mode 3: Alternating current (AC) charging from a dedicated EV charger is provided either via a socket (usually type 1 or type 2) or via a fixed mode 3 charging cable attached to the installation. Safety signals and equipment are provided by the corresponding mode 3 charger.

Overview of Major Structural Components



1. **Coolant inlet connection**
2. **Body cover**
3. **HV warning label**
4. **Holes for attachment clips**
5. **LV plug**
6. **Pressure compensating membrane**
7. **Power plug**
8. **DC plug (code A)**
9. **Device mounting / Screw point**
10. **Type plate**
11. **Enclosure**
12. **Coolant outlet connection**
13. **Cooling circuit cover.**

DC/DC CONVERTER

It is the unit that converts high voltage (600V) to low voltage (24V) for the supply of 24 Volt batteries in the vehicle. DC/Dc charges the energy from the vehicle's HV battery pack by sending it to the vehicle's 24V battery pack. The DC/Dc will be controlled by the VMU by following the energy capacity of the vehicle's 24V battery pack.

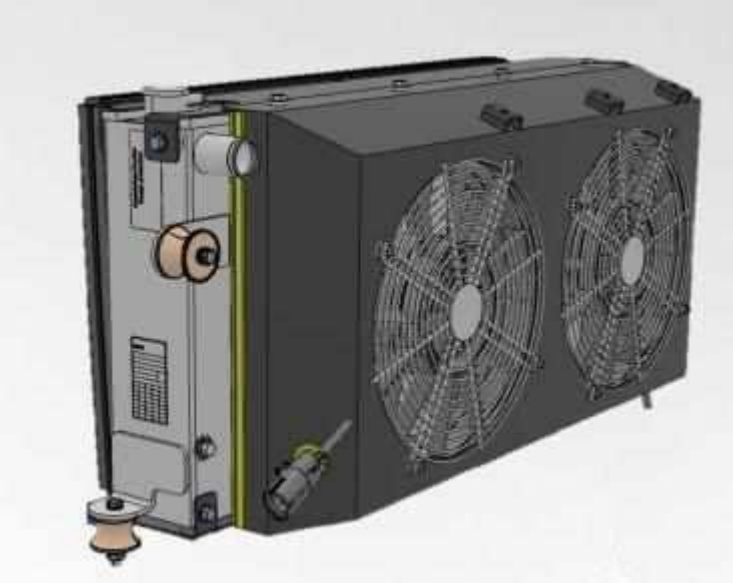
CHARGING SOCKET (CCS2) ON VEHICLE

Input that allows the vehicle to be charged with DC and AC power.

Vehicle Input for charging with alternating current (AC) and direct current (DC), for installation in electric vehicles (EV), CCS type 2, Combined Charging System, IEC 62196-3, 200 A / 1000 V (DC), 32 A / 1000 V (AC), 24 V Charging socket with locking actuator.

ELECTRIC RADIATOR

Radiator and radiator fans, motor on the vehicle, motor driver, Dc to Dc, On board charger etc. It is used for the cooling of liquid-cooled equipment.



HIGH VOLTAGE HEATERS (HV HEATER)

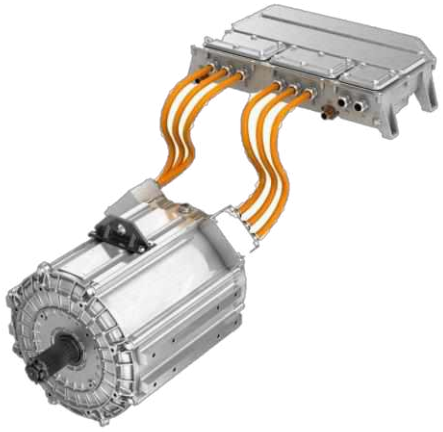
They are high voltage heaters that feed the heating system that heats the interior of the vehicle and there are 2 on the standard vehicle.

The HVH100 – High Voltage Heater – is an electrically operated heater integrated in the coolant circuit and directly heats the coolant. Depending on the circuit diagram, the HVH heat output will be used to heat the cabin and/or engine.

The HVH is powered by the vehicle's high voltage battery. It can be driven with voltages between 250 – 870 V DC. HVH from 870 V to 450 V, max. 10 kW heat output. Below 250 V, the HVH detects that the HV voltage is too low and stops working. Voltages greater than 895 V will cause the HVH to shut down and be temporarily locked.

Direct heat output: the tool delivers a clear target heat output value (within the specified range)

ELECTRIC MOTOR



Drive Type	Battery Electric Vehicle
Type	Electric Traction Motor
Model	TM4 HV2200
Max Power	255 kW
Max Torque	2355 Nm

TM4 LSMxxxC motor technology uses permanent magnets to deliver high efficiency. The motor topology is based on an inverted rotor technology that maximizes the use of magnets and reduces the amount of material. The system's high torque/low speed is designed to interface directly with standard axle differentials without the need for a transfer case.

The TM4 CO200 (6-phase) and CO150 (3-phase) MCU use the latest in automotive-grade insulated-gate bipolar transistors (IGBT) to provide the industry's highest specific power and current densities.

Safety instructions

This motor must be installed and operated by qualified personnel who are fully aware of the types of hazards involved in working with electrical circuits and are familiar with standard practices for preventing accidents.

General/Irritant/Operational: This warning symbol indicates that you are in a potentially hazardous situation which could result in damage to the product or in some cases, bodily harm or death.

Electrical: This warning symbol indicates that you are in a potentially hazardous situation which is electrical in nature and which could result in the product or, in some cases, bodily harm or death.

To remind you of the potential hazards involved, this manual and procedures contain appropriate safety warnings that, if done incorrectly, could cause harm to you or the product.

ENGINE CONTROL UNIT (MCU)

The electric motor system is operated via the CAN message exchange between the Motor Control Unit (MCU) and the Vehicle Management Unit (VMU). The VMU is responsible for the user interface and also interfaces with the Battery Management System (BMS) / Power Distribution Unit (PDU) and all other components involved in the vehicle architecture.

Typical VMU and BMS/PDU operations involved in the engine system include:

- Powering the system from the auxiliary battery.
- Acknowledgment of the activation signal (VMU or vehicle ignition).
- Performing high voltage battery precharge (BMS/PDU).
- Applying high voltage battery voltage to the system (BMS/PDU).
- Transmission of CAN messages (VMU) with the MCU:
    - Starting and stopping the system.
    - Application of a mechanical torque.
    - Safe shutdown of the system.
    - Verification of operational status.

Safety warnings on operating the system

Read these general safety warnings before operating the system.

Improper use of the motor control unit can damage the product and/or cause injury or death.

- Do not attempt to open or repair the MCU. Contact ISUZU in case of damaged chassis or suspected product malfunction.
- Use only recommended points for lifting and securing the system.

When disassembling and/or installing the MCU, you MUST NOT:

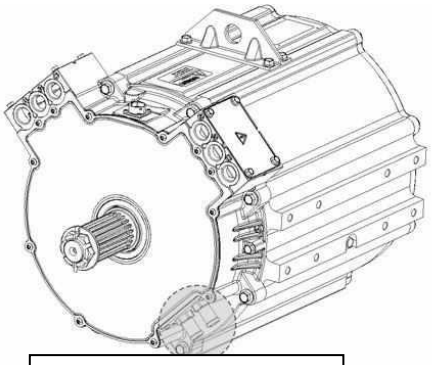
- Do not modify any part of the MCU.
- Do not apply any external load to the case of the MCU.

- Applying excessive torque or speed when the engine is cold can adversely affect component durability.
- When the engine is used in an environment where the ambient temperature is below 0
  °C, it is recommended to avoid excessive speed or torque and to follow a normal drivingcycle for the first few minutes until the engine has had a chance to warm up.
- Note: This is a widely applicable best practice for any mechanical equipment. The TM4 engine does not limit performance, full speed and torque is available after a cold start, butis not recommended. The engine can reach very high temperatures that can cause severe burns and/or other injury.
- Avoid contact with surfaces during and immediately after use.

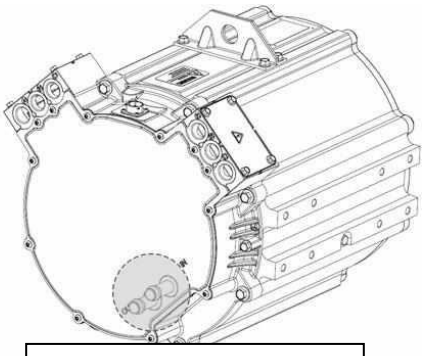
WARNING!

- Misuse of this product can damage the vehicle and/or cause injury or death.
- All limitations and specifications communicated by TM4 regarding the product must befollowed.
- Do not attempt to open, repair or modify the MCU. In case of damaged case orquestionable product malfunction, contact TM4 Customer Service.
- If you use chains, straps, or other means of lifting, make sure they do not touch or exertpressure on any part of the exterior of the product (surface, connectors and/or cables).

Coolant Input/Output Features



Coolant Input and Output 90 C



Coolant Input and Output Straight

Electric Motor Cooling

TM4 system cooling management algorithms are based on complex thermal modeling that optimizes system performance while maintaining system integrity and durability.
The cooling requirements of the engine and MCU are met by CAN signals. Working with themaximum coolant flow set for each component, these signals provide the information neededto maintain the required coolant flow and require no driver input or interaction.
The VMU relies on cooling demand messages to start/stop or modulate the cooling system pump(s) and fan(s), modulation is dependent on operating conditions as described in the tablebelow.
System coolant flow management rate and operating conditions:

Working conditions	Coolant flow rate management
Torque > 0 Nm	50%
Speed > 500 RPM	50%
Thermal protection	up to 100%

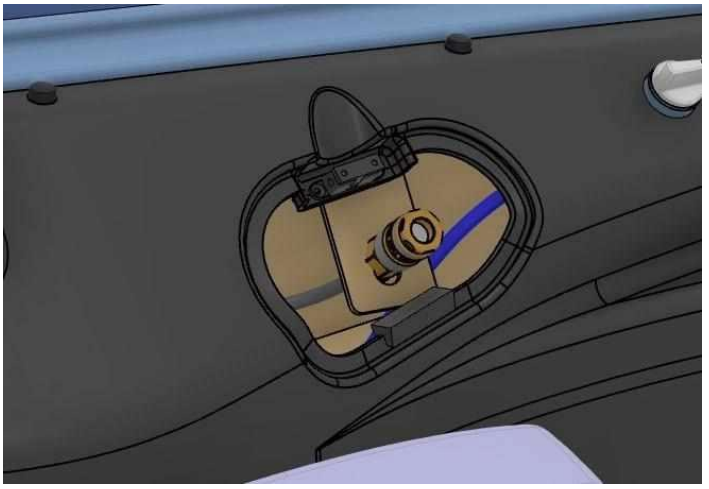
Note: For operating conditions where torque is 0 Nm and speed < 500 RPM, coolantflow rate management can be 0%.

BATTERIES

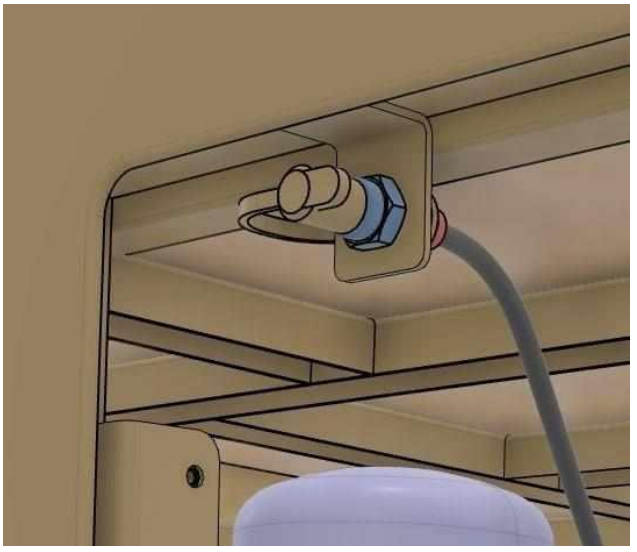
The batteries are located in the left rear partof the vehicle. There are 2 batteries in the vehicle. Each battery is 12V and 105 Ah.

TIRE INFLATOR SET

The tire inflation port is located in the side control console, to the left of the driver. The port isaccessed by manually removing the cover.



The vehicle air supply port is accessed through the maintenance cover located behind the left front wheel of the vehicle.



- If the air pressure in the vehicle tires is low, the tire inflation kit between the tool is used to adjust the tire pressure. To do this:
- Park the vehicle in such a way that it does not obstruct the traffic.
- Set the parking brake, shift the gear to neutral and start the engine. Get the tire inflation kit.
- Connect one end of the hose to the tire valve and the other end to the air outlet. Complete the inflation process by giving gas to the engine.

ELECTRONIC BRAKE SYSTEM (EBS)

EBS (Electronic Brake System) is a system that adds electronic signals to the brake air control system (sent when the brake pedal is pressed) to improve air brake response. EBS maintains the same brake feel regardless of whether the vehicle is loaded and is a device that increases driver operability and safety.

• EBS is not a device to counter unsafe driving practices. Always maintain a safe speed and a safe distance between yourself and other vehicles.

• All tires fitted to the vehicle must be of the specified size, make and tread design (this includes winter tires). Fitting different types of tires on the vehicle is dangerous and may result in reduced braking ability and unstable operation of the vehicle.

EBS Operation Check, Operation, Fault

When the starter switch is turned to the "ON" position, the brake warning lamp comes on before it goes off after about 3 seconds.If the warning light goes out, the EBS is normal. If the warning light does not come on even when the ignition switch is turned to the "ON" position, the bulb may be burnt out or there may be an EBS malfunction.

While the EBS is running, operating noises can be heard from the EBS components. If the brake warning light illuminates or flashes while driving, the EBS, ABS/ASR may be faulty. Please contact your nearest Isuzu Dealer.

NOTE: Even if the EBS is faulty, normal brakes will continue to operate normally. Since the EBS will be inoperable at this time, the brake pedal will have to be pressed harder than usual to obtain the required braking force.

Driving Precautions for EBS Equipped Vehicles

EBS is not versatile enough to allow driving in conditions that exceed safe limits. Always drive safely.

WARNING!

If the starter switch is turned to the "ON" position (start the engine) on a hill, etc., the EBS may be affected by a drop in battery voltage, causing the vehicle to roll downhill. After pulling the parking brake lever or fully depressing the brake pedal, turn the starter switch to the "ON" position (engine start).

CAUTION!

• Although models with EBS have improved braking response compared to models without EBS, EBS is not a device to prevent unsafe driving practices. Always drive at a safe speed.

• On models with EBS, the EBS is activated when the brake pedal is depressed, regardless of whether the starter switch is set to the "LOCK" position. Even if the starter switch is turned to the "ON" position with the brake pedal depressed, emissions from the EBS device are not vented. (In this case, the EBS system operation check will not be performed.) If exhaust sounds from the EBS system cannot be heard when the brake pedal is depressed and released, the EBS exhaust port may be frozen or blocked by snow or ice that needs to be removed.

• EBS operation may be affected if battery voltage drops. Periodically inspect the battery.

• On models equipped with EBS, the on-board computer detects the loading conditions, making it unnecessary for drivers to adjust how they depress the brake pedal, regardless of whether the vehicle is loaded or unloaded. However, as with vehicles without an EBS system, the braking distance will increase if the brake pedal is not sufficiently depressed when the vehicle is empty.

• If the driver depresses the brake pedal instead of fully depressing the brake pedal, the EBS will not operate at its full capacity. Pumping the brakes will also result in a decrease in brake performance due to the increase in air. ("Pumping the brakes" is defined as the continuous pressing of the brakes at a rate of one or more times per second.)

RECOMMENDATION

- When installing an electronic device such as a radio, pay attention to the installation location and orientation so that the EBS function is not affected. Also, please contact the nearest Isuzu Dealer during installation.

How to Make EBS Work Correctly?

EBS calculates the loading conditions and determines braking power using the amount of brake pedal stroke along with the vehicle deceleration rate. If the loading conditions change, the EBS recalculates the weight. This recalculation will only be completed after the vehicle has been completely stopped at 30 km/h (19 MPH) or more, a total of 3 to 4 times without pumping the brakes.

CAUTION!

- Lighting of the brake warning light indicates that an EBS fault has occurred. In this case, normal brakes will still work normally, although the feel of the brakes will change significantly due to the operation of the EBS. If the EBS fails, press the brake pedal firmly, stop the vehicle and contact your nearest Isuzu Dealer.

ELECTRONIC STABILITY CONTROL (ESC)

ESC improves safety and vehicle stability. ESC controls the engine power and applies the braking force to the wheels that need it, to prevent wheel spin during starting and accelerating on slippery roads, to protect the traction power, to prevent the vehicle from sliding sideways and to improve vehicle stability.
The ESC has various sensors that detect changes in the vehicle's operating conditions while cruising. The anti-slip regulator (ASR) prevents wheel spin when starting or accelerating. ASR is integrated into ESC. ESC is activated automatically when the vehicle is started. On models with EBS, the ESC OFF switch can be used to disable ESC and ASR. For models without EBS, the ESC OFF switch (if equipped) can be used to disable ESC or ASR only.

CAUTION

- The ESC warning lamp flashes when ESC works.
- The ESC warning lamp also flashes only when the ASR function is working.
- If the ESC warning lamp is flashing, the road surface is slippery or the acceleration is too fast. Depress the accelerator with less force and drive cautiously.
- The ESC warning light may also flash when the accelerator pedal is fully depressed on non-slippery roads such as dry asphalt roads. This is a normal condition that anticipates slipping and implements the command action.
- When driving on snowy or icy roads, wear snow chains or winter tires and drive carefully, even if the vehicle is equipped with ESC. ESC is not equipment that greatly improves vehicle stability when starting or driving, so drive carefully on snowy or icy roads.
- When snow chains are fitted, it may be easier to start the vehicle on an icy or sloping road when only the ASR is disabled. However, be careful as disabling theASR will cause the vehicle to lose stability.
- Install tires of the specified size, same make, same type and same tread design (including winter tires) on all wheels. Also, do not install or use tires with widely varying degrees of wear. The ESC may not function properly if tires of a differentsize, type, or degree of wear than specified are used.
- The ESC may not work properly if the tire diameter is different, such as when a chain or spare wheel is fitted.
- ESC may not work properly if suspension, brake or engine related parts are replaced or modified with non-Isuzu genuine parts.
- Be sure to contact your Isuzu dealer for replacement or repair of the steering wheel or steering-related parts. The steering wheel has a sensor that detects driving conditions, and the ESC may not function properly if the steering wheel center position misalignment.
- Do not tow a vehicle with only the front or rear wheels raised with the ignition switch in the "ON" position. ESC may work and cause crash.

NOTE:
[The following situations do not indicate that the ESC is faulty.]
• An electric motor noise may be heard from the engine compartment immediately after starting the engine. Buses originate from the self-control process implemented by the ESC. You may also feel a slight vibration if the brake pedal is depressed during this time.
• Vibration or tightness may be felt in the brake pedal movement while the ESC is operating. In addition, the vehicle body may vibrate or the operating sounds of the system may be heard. This is normal when ESC is running.
• After the vehicle has started, the ESC will not work until it reaches a speed of approximately 15 km/h (9 mph).

ESC OFF Switch

When you try to free the vehicle from mud or soft snow with the ESC and ASR operating, the engine power may not increase even though the accelerator pedal is pressed, and it may be difficult to free the vehicle. In such cases, using the ESC OFF switch makes it easier to recover the vehicle. ESC can be disabled using the ESC OFF switch, or only the ASR function of the ESC system (the anti-skid function during take-off or acceleration) can be disabled.

ASR OFF Indicator Lamp

ESC OFF warning lamp

Cancellation of ASR

When ESC is active after the vehicle is started, press and hold the ESC OFF switch for about 1 second to cancel the ASR function, the ASR OFF indicator lamp on the instrument panel will turn on. Pressing the key again for approx. 1 second reactivates the ASR function.

CAUTION

- When you turn ASR off, its function that assists you when driving on slippery surfaces is now deactivated. Always be careful when driving on slippery roads.
- Always operate the ASR during normal driving.
- Even when ASR is off, partial brake control is active. ESC warning lamp illuminates when operating in fog.

NOTE

• Automatically reactivates when the engine is stopped and restarted while ASR is deactivated.

ESC OFF indicator lamp

Cancellation of ESC

When ESC is active after the vehicle is started, press and hold the ESC OFF switch for about 5 seconds to cancel the ESC function, the ESC OFF indicator lamp on the instrument panel will turn on. The ESC function is reactivated when the key is pressed again for approximately 1 second.

CAUTION

• When you turn off the ESC, its function that assists you when driving on slippery surfaces is now disabled. Always be careful when driving on slippery roads.
• Always operate the ESC while driving under normal conditions.
• Be careful when driving on slippery roads, as ASR is turned off when ESC is turned off.

NOTE:

When the engine is stopped and restarted while ESC is disabled, ECS is automatically reactivated.

ESC Operation Control and Operation and Fault Conditions of ESC

ESC warning lamp

ASR OFF indicator lamp

ESC OFF indicator lamp

ESC OFF gösterge lambası

ESC Operation Control

On models equipped with the ESC OFF switch, when the ignition switch is turned to the "ON" position, the ESC warning lamp, ASR OFF indicator lamp (models without EBS), and ESC OFF indicator lamp come on for about 3 seconds and then turn off.

For models without the ESCOFF switch, the ESC warning lamp illuminates for 3 seconds and then turns off. If the warning and indicator lights go out, the ESC is normal.

ESC Working

ESC warning lamp flashes while ESC is running.

ESC Faulty

- The following states of the ESC warning lamp mean that the ESC may be faulty. Please contact the nearest Isuzu authorized service.

• ESC warning lamp comes on while driving.

• On models equipped with the ESC OFF switch, the ASR OFF indicator lamp (models without EBS) and the ESC OFF indicator lamp come on while driving (even if the ESC OFF switch is not pressed).

• On models equipped with the ESC OFF switch, the ESC warning lamp, ASR (ESP/ESC) OFF indicator lamp (models without EBS) and ESC OFF indicator lamp do not come on when the ignition switch is turned to the "ON" position.

• On models without ESC OFF switch, the ESC warning lamp does not come on when the ignition switch is turned to the "ON" position.

Driving Warnings for Vehicles with ESC

CAUTION

• The ESC is not a device that ensures that the vehicle can be used under conditions that exceed the limits of safe use. Always drive carefully.

• Always focus on safe driving and rely on the ESC-equipped vehicle with vigilance, don't drive too fast and don't turn the steering wheel too fast.

• ESC does not increase the grip of the tires, but unlike vehicles without ESC, it keeps the vehicle's slipping and skidding movements under control during take-off and acceleration on slippery surfaces and improves vehicle stability. On roads that become slippery due to icing, etc., tires fall out of grip, steering control weakens and the vehicle becomes unstable. Always drive at a safe speed perfectly suited to road surface conditions and the condition of the tyres, and avoid accelerating.

• ESC is a system for maintaining traction and vehicle stability. Operate this system even when not needed. When the system is turned off, drive the vehicle with caution and at a safe speed perfectly suited to road surface conditions.

• Even if the vehicle is ESC equipped, avoid depressing the accelerator and clutch (manual transmission models) pedals rapidly and avoid sudden steering movements. Especially when starting off on slippery roads, start the vehicle slowly, as in vehicles without ESC.

• The ESC warning lamp flashes when ESC works.

• The ESC warning lamp also flashes only when the ASR function is working.

• If the ESC warning light is flashing, the road surface is slippery or the acceleration is too fast. Depress the accelerator pedal with less force and drive cautiously.

• The ESC warning lamp may also flash when the accelerator pedal is fully depressed on non-slippery roads such as dry asphalt roads. This is a normal condition that anticipates slipping and implements the command action.

• When driving on snowy or icy roads, wear snow chains or winter tires and drive carefully, even if the vehicle is equipped with ESC.

• When snow chains are fitted, it may be easier to start the vehicle on an icy or sloping road when only the ASR is cancelled. However, be careful as disabling the ASR will cause the vehicle to lose stability.

- Do not install an ordinary commercially available limited slip differential (LSD) on the vehicle. ESC may not work properly

NOTE

• Vibration or tightness may be felt in the brake pedal movement while the ESC is operating. In addition, the vehicle body may vibrate or the operating sounds of the system may be heard. This is normal when ESC is running.

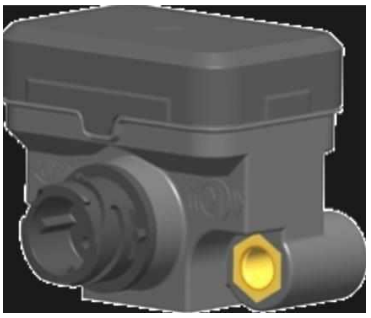
• Suspension, tires, brakes etc. The ESC-Warning lamp may illuminate if there is significant wear or deterioration in related parts. In such cases, ESC may not work properly.

• The ESC warning lamp may come on when the vehicle is on the turntable at a parking space entrance or any moving object, etc. In such cases, restart the engine after leaving the platform.

• The ESC warning lamp may come on while driving on extremely sloping roads (such as acceleration gradients on racetracks, etc.). Do not drive on such roads as the ESC will not function properly in such cases.

• The ESC warning lamp may come on when the battery cables are disconnected or the battery voltage is low. While the ESC warning lamp is on, the ESC function will turn off, but after the vehicle has been driven normally for a while, the ESC warning lamp will turn off, then the ESC function will continue. If the ESC warning lamp remains on even after driving the vehicle for a while, contact the nearest Isuzu authorized service.

Angular Speed Sensor



The speed sensor is located under the vehicle floor behind the front axle, close to the vehicle's center of gravity.
Axial deviation in the vehicle is detected as instantaneous angular acceleration and transmitted to the brake system control unit in the form of an electronic signal. In a critical situation, how much the vehicle deviates from the route is checked. It provides information on how to activate the stability control functions.

Steering Angle Sensor

The angle sensor, which passes through the steering column, is located under the signal group. It transmits the maneuver request from the driver to the brake system control unit according to the amount of steering wheel rotation. The transmitted information is sent as an electronic signal. Calibration is performed when the system is first installed to match the signal from the sensor with the vehicle's turning angle

The ESC system will be faulty if the steering wheel is pre-aligned and installed, replaced or renewed. In these cases, the installation should be done in authorized services.

ELECTRONIC BRAKE FORCE DISTRIBUTION (EBD)

EBD is a function that uses ABS to optimally distribute the braking force between the frontand rear wheels to compensate for changes in load conditions or load shifts due to acceleration or deceleration, thus preventing the rear wheels from locking up.

CAUTION

• In case of a problem with the EBD function, the ABS warning lamp and the brake warning
lamp come on at the same time.

• If there is a problem with the EBD function, the rear wheels will lock more easily. At the firstopportunity, go to the nearest Isuzu authorized service and ensure that the control and maintenance is carried out.

NOTE

• When the EBD is operating, the brake pedal may kick back slightly or you may hear a sound similar to the one you hear when ABS is operating. None of these situations indicatean abnormal situation.

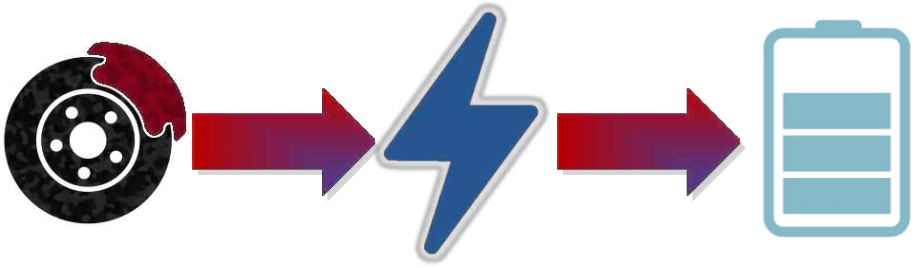
ACOUSTIC VEHICLE WARNING SYSTEM (AVAS)

Audible warning system for vehicles with silent engines for PEV (pure electric vehicle), HEV (hybrid electric vehicle) and FCV (fuel cell vehicles).

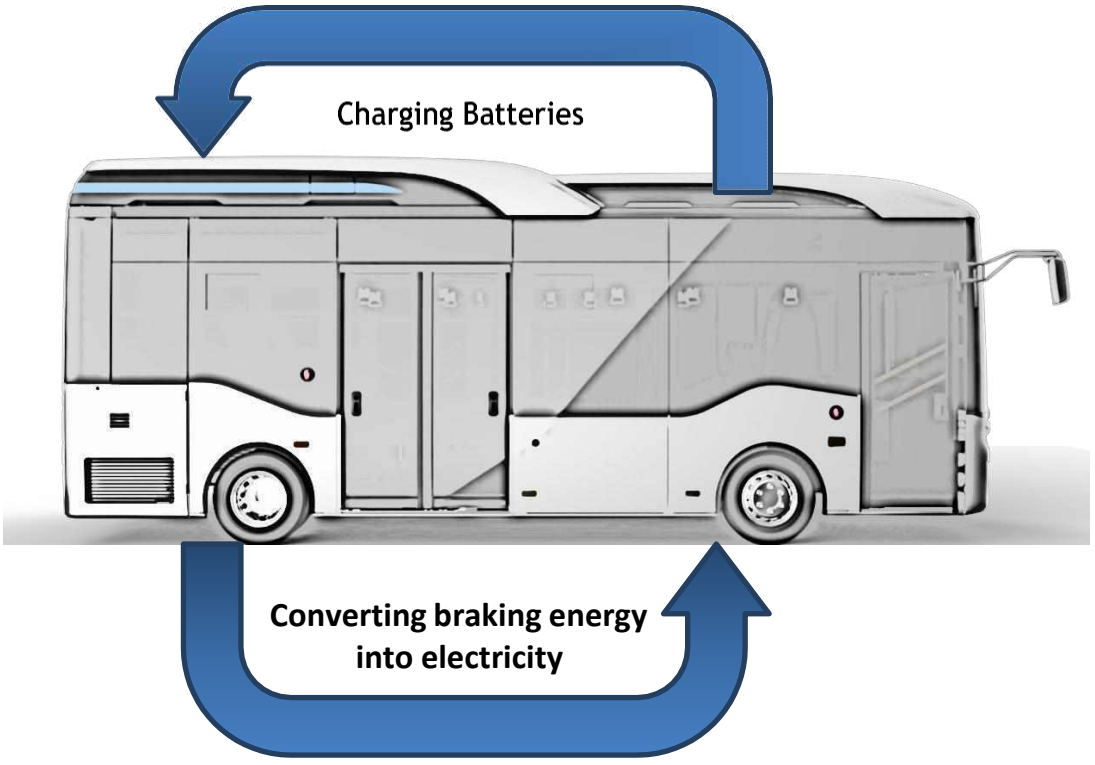
➔ Simple engine sound
➔ Space-saving and compact sensor
➔ Lightweight single box system
➔ Low power consumption

REGENERATIVE BRAKING

Regenerative braking system that acts as a retarder charges the battery at no additional cost,increasing vehicle range.

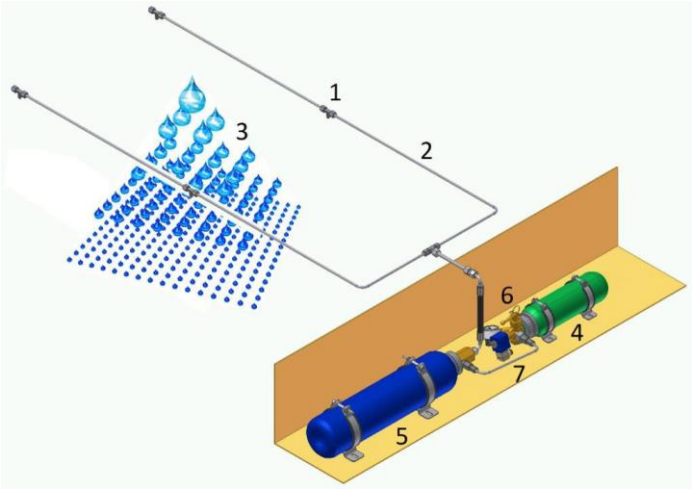


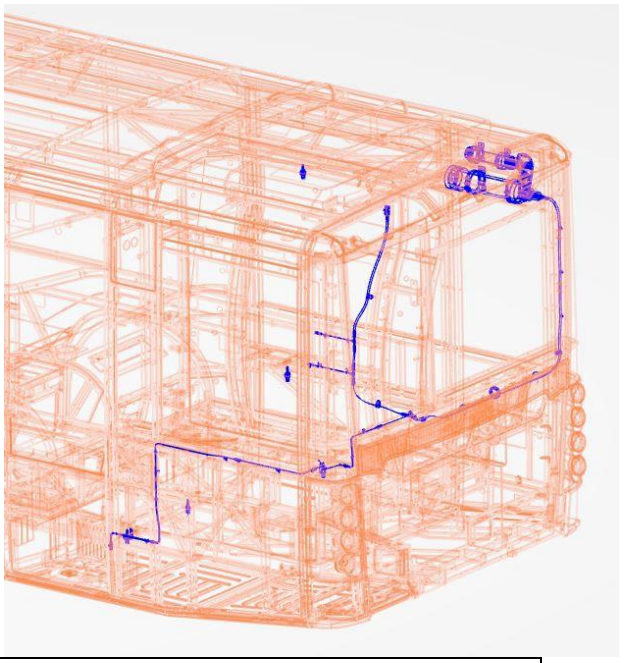
Up to 20% higher efficiency



ENGINE COMPARTMENT FIRE DETECTION AND AUTOMATIC FIRE SUPRESSION

SYSTEM (FIREDECT-OPTIONAL-1)





No	Name
1	High pressure (20MPascal/200bar) water mist nozzle
2	High-pressure stainless-steel pipe system
3	Extinguishing Agent (Temper S-30) as 50 µ droplets
4	Nitrogen pressure bottle
5	Temper S-30 Water + agent bottle
6	Mechanical pressure valve for manual actuation (optional / not all models)
7	Electric pressure valve (coil and solenoid valve), pressure gauge (optional)

This is a system which consists of a pressure fire detection hose and fire spout nozzles which pass from the areas where a fire may occur in the engine room.There are 2 tanks in the system, one is the nitrogen tank which provides the detection of fire, and the other one is the fighting tank in which there was fireextinguishing fluid. Illuminated and audible lights alert during the fire detection.

Fire suppression system uses water as the extinguishing agent. The water is atomized at a high pressure of at least 160 bars at the nozzles. The pressure energy is used to split the water into small droplets of 50µ with an extremely large surface area for cooling and provides these droplets with sufficient kinetic energy to bring them rapidly to the protected area. During fire extinguishing, the fire extinguisher is sprayed from nozzles which reduce the temperature, cut contact with air and convert them to columnar smoke clouds. The fire extinguisher is mainly antifreeze water based. Extinguishing time is between 3 - 5 seconds at normal but the effective time is50 - 75 seconds.

WARNING

In case of fire;

- Stop the engine.
- Empty the vehicle.
- Turn off the current.
- Keep the bonnet closed at least 5 minutes.
- Use a portable fire extinguisher if needed.
- Connect with the authorized Isuzu Dealer.

WARNING

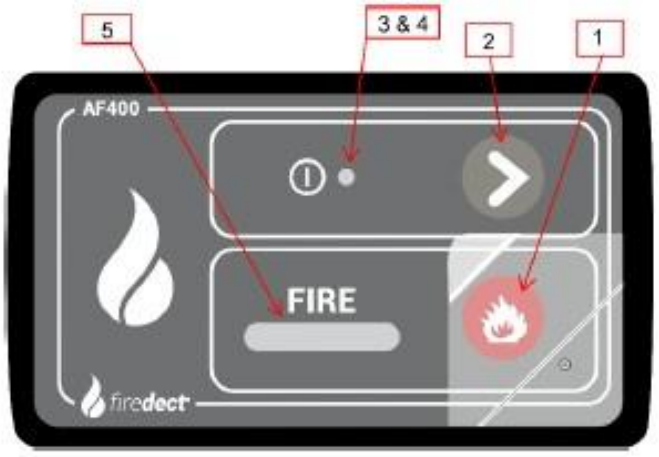
The following operations should be performed when the fire extinguishing system activated because of a reason other than fire and the tanks emptied:

- Wash all component surfaces with water in order for the parts in the engine room effected by the system not to corrode.
- Wash inside of the pipes and nozzles by giving water to the fire extinguishing piping system, but if it was too late for this, remove the nozzles and clean nozzles and pipeswith water. Replace the nozzles if required.
- Insert protection covers to nozzles again.
- Activate the system again by mounting filled tanks.

FIRE DETECTION THE CONTROL UNIT

It integrates the control unit and the display / HMI in one single device only.

No.	Name
1	Fire Button
2	Action Button
3	Green Led
4	Yellow Led
5	Red Zone Led



Fire Button

WARNING

- Press only in emergency.

Press the fire button to activate immediately the suppression system manually.

CAUTION

- The fire button is protected by a plastic cab which has to be replaced every time the firebutton is actuated.

Action Button

Normal operational mode:

- Short press has no functionality.
- Long press will start the LED & Alarm self-test.

Warning/diagnosis mode:

- Short press
  First press will silence/mute the warning signal.
  Every further press will show you the “Fault Display” (blink codes). If there is at lea stone error.
- Long press will reset the warnings. (The resets will only be reset if you are inthe “Fault Display”).

Alarm mode:

- Short press will delay the activation by 15 seconds.
- Long press will silence/mute the alarm

Green Led

Blinking:

- The control unit is booting.

Blinking slowly:

- The control unit is in the emergency current mode.

Constantly:

- The control unit is on normal operational mode.

Yellow Led

Warning/Diagnosis mode:

- Blinking

  There was a warning, but it has not yet been queried.

- Constantly

  There is currently a warning.

Red Zone Led

Fire in zone X detected. The suppression system is automatically activated.

- Blinking

Alarm countdown for activation.

- Constantly

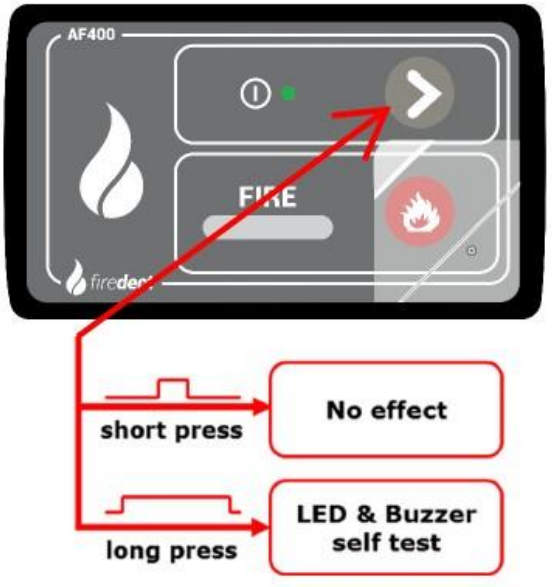
Alarm activated.

Starting The Control Unit

When the control unit is connected to the power source, the green led will flash for20 seconds, showing that the control unit is in boot loader. After leaving the boot loader, all leds will flash for 2 seconds and the buzzer will also become audible. The control unit will then go into operational mode recognizable by the glowing green led. If any of the monitored zones is not operational when the control unit is booted, the yellow alert led and zone led will flash and the buzzer will sound. In this event, the suppression system will not be activated. The zone can be checked, and if operational, the alerts will reset to normal state.

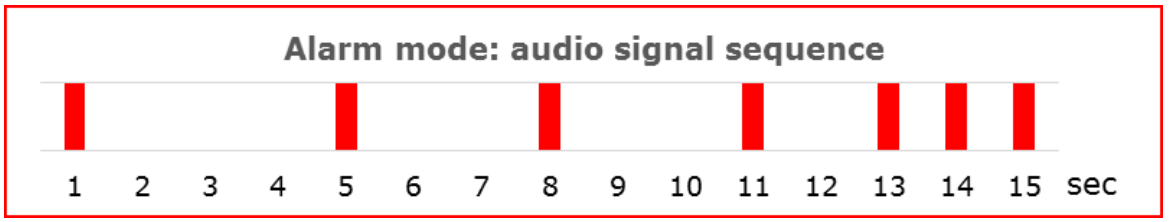
Normal Operational Mode

In normal operational mode, the control unit will monitor all three (3) zones for fire. A long press of the action button while the control unit is in normal operational mode will cause the buzzer to sound and all leds will light up.

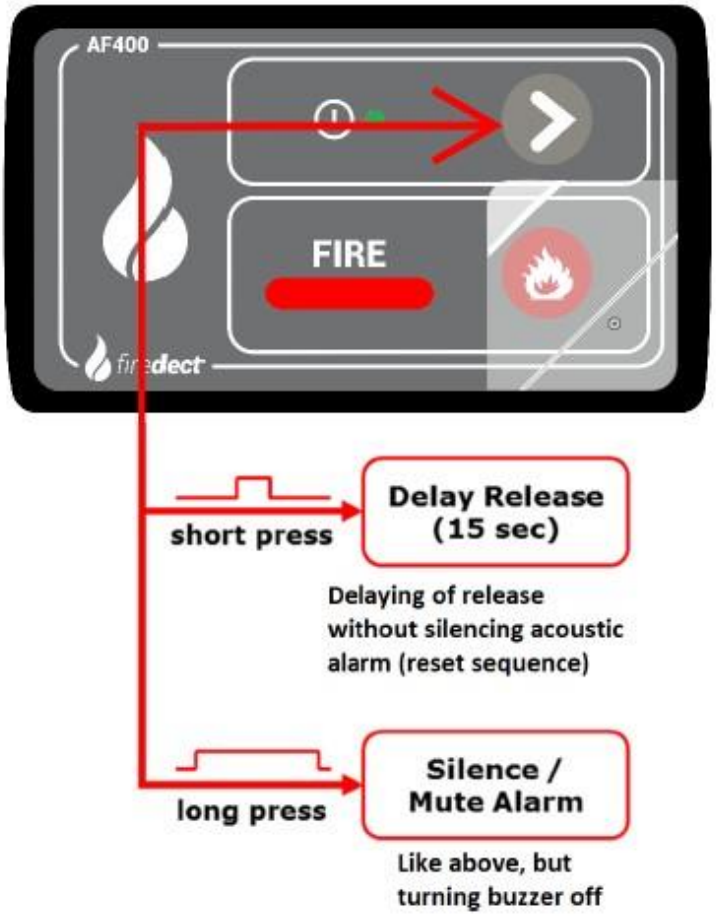


Alarm Mode

If a fire is detected in any of the zones, the zone led will start to flash and the buzzer will sound. The flashing and beeping will continue to get faster until the suppression system is activated.

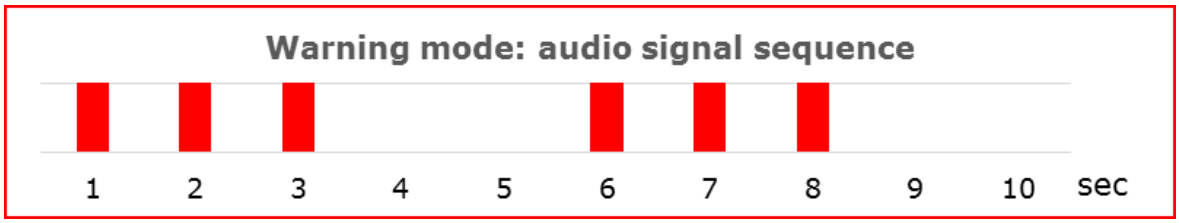


If the suppression system is active the led will flash constantly as well as the buzzer beeps constantly. There is a 15 second delay on activation, and the system is activated for 3 seconds. The alarm can be muted by pressing the action button for 0.8 seconds. Pressing the action button for less than 0.8 seconds will reset the delay in activation to 15 seconds. If a fire is detected in another zone, the timer will not be reset to 15 seconds. After the initial delay, the suppression system in Zone 1 willbe activated for 3 seconds, followed by Zone 2 for 3 seconds. If the fire button is pressed, the suppression system for the zones will be activated for 3 seconds one after another.



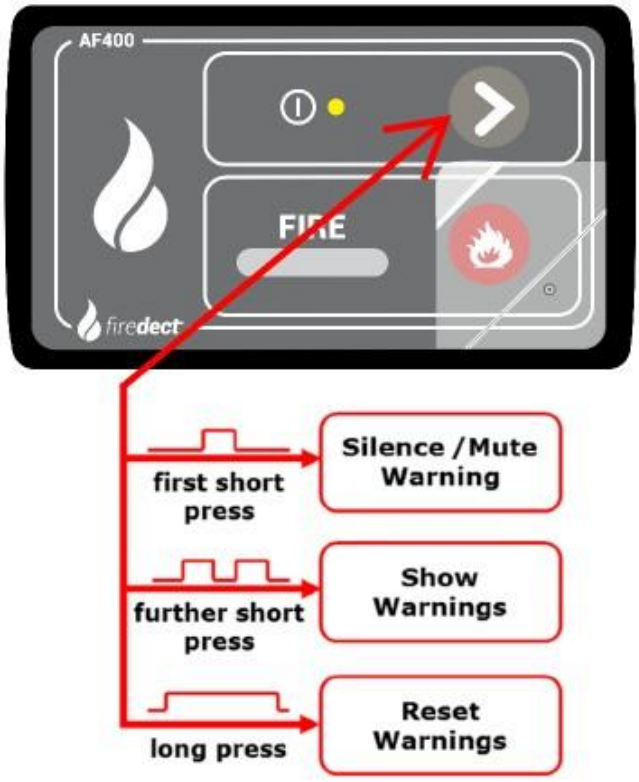
Warning / Diagnosis Mode

If any warning occurs, the yellow led will flash and the alarm will beep 3 timesevery 5 seconds (in the emergency current mode: 3 times every 10 seconds).



A short press on the action button will silence/mute the acoustic warning signal. Every further press of the action button for less than 0.8 seconds will cause the control interface to show an error codes this will not work in alarm mode. A long press on the action button while showing the error codes will reset all error codes.

#	Error - operational	Z1	Z2	Z3
1	Fire-Sensor/Terminating - Resistor -> bad value	0	1	0
2	Low-Pressure	0	2	0
3	Defect in Valve-Connection	0	3	0
4	Low Battery-Voltage	0	4	0
#	**Error – boot**	**Z1**	**Z2**	**Z3**
1	Fire-Sensor/Terminating - Resistor -> bad value/not connected	On	Off	Off
2	Low-Pressure/not connected	Off	On	Off
3	Defect in Valve-Connection	Off	Off	On
4	Fire Alarm	On	On	On
5	Wrong Battery	Off	Off	Off



Control Module

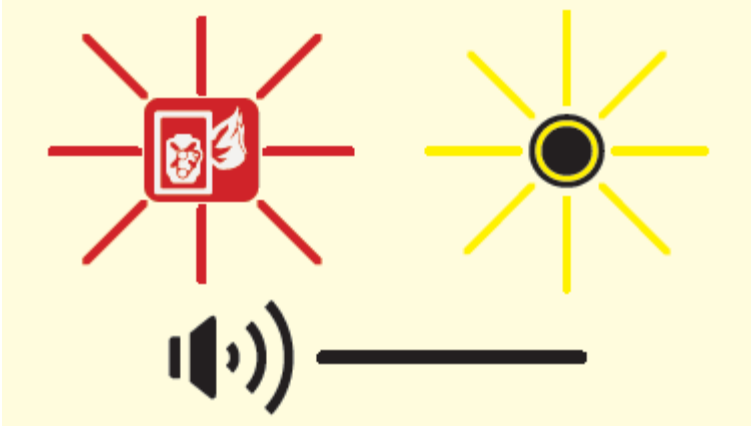
In Case Of Alarm - Fire

Red motor fire symbol/red lamp flashes red.
Alarm siren gives repeating acoustic signal.
Fire alarm signal – bus manufacturer's system:
See bus manufacturer's manual.
Do not start the vehicle until the cause of the fire has been established and rectified!

Clean up the engine compartment as soon as possible to prevent corrosion on metal parts and unwanted flash-overs in the electrical system. Hose down with water, preferably at high-pressure. Alkaline washing agents can be used. See also the manufacturer's recommendations for washing the engine compartment.

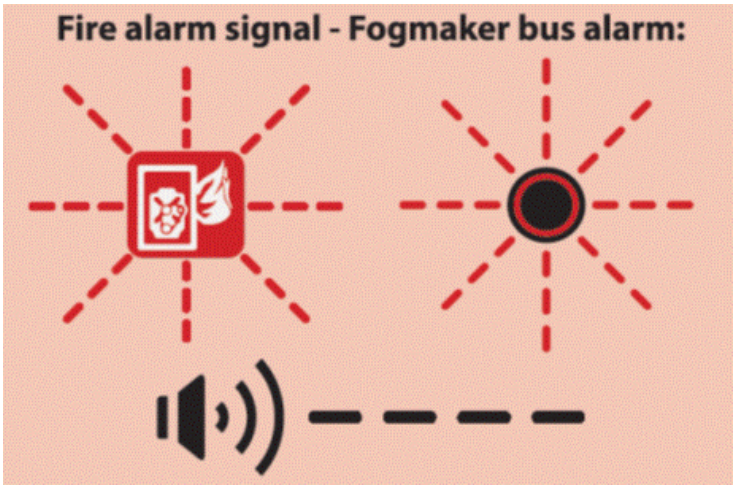
Engine wash after fire

Low pressure signal with fogmaker bus alarm:



- Red engine fire symbol/yellow lamp lights constantly
- Alarm siren sounds constantly.
- Low pressure signal- bus manufacturer's sysyem:
- See bus manufacturer's manual.
- Contact the nearest authorized service.

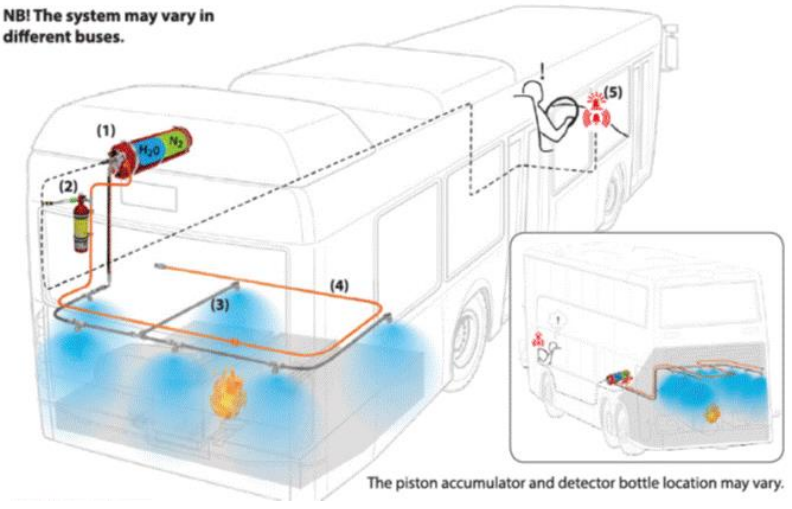
In Case Of Alarm – Fire



Overview, Fogmaker's Fire Protection System

This bus fitted with a fully automatic fire protection system for the engine compartment
The system comprises:

- Piston accumulator (1)
- Detector bottle (2)
- Pipe system with nozzles (3)
- Detector tube (4)
- Fogmaker bus alarm with acoustic and light signals or alternatively manufacturer-specific alarm panel (5)



Routine Maintenance

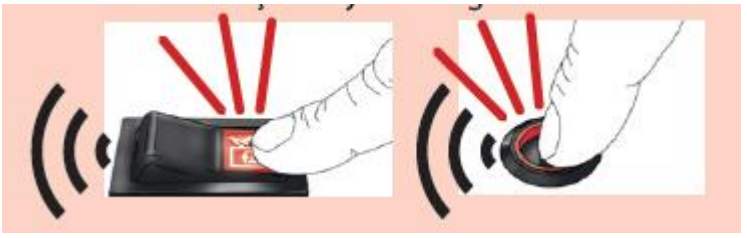
Pressure switch installed: Check that lamps indicating low pressure are not alight on the bus alarm button.

Pressure switch not installed: Make sure the pressure in the piston accumulator is within the green zone on the pressure gauge.

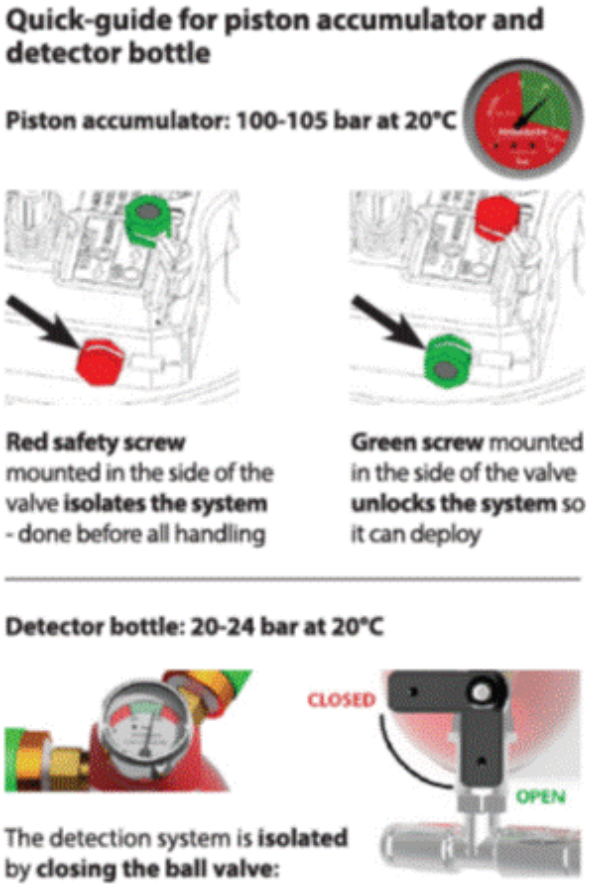
Test the alarm before starting the day's work..

Alarm test with the Fogmaker bus alarm:

- Press down the button- two variants,see below:
- Check that there are both a sound and light signal.



Alarm test – bus manufacturer's system:
See bus manufacturer's manual.



DRIVER SUPPORT SYSTEMS

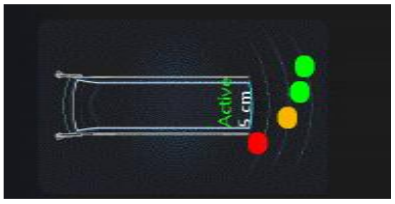
REVERSING DETECTION

When the vehicle is put into reverse gear and an object is detected near the rear of the vehicle across the width of the vehicle, the driver is informed about the detected objects thanks to the sensors built into the vehicle bumper.

Optical signal & Acoustic signal

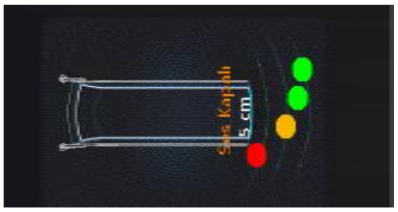
- The system is activated when the ignition key is turned on and is activated when the vehicle is put into reverse gear. When the sensors detectan object behind, the optical signal gives a warning as follows, accompanied by the acoustic signal.

Parking Sensor Active, Sound On



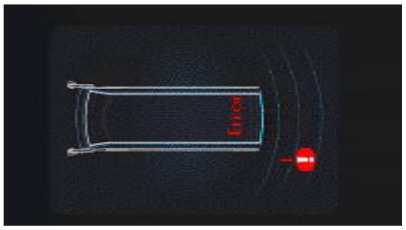
- Disabling the acoustic signal to avoid disturbing it is done via the menu. In this case, the following image will appear on the screen.

Parking Sensor Active, Sound Off

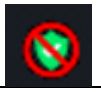


- The system will switch off automatically when there is a situation that prevents the system from working. When it switches off, the system isshown as off on the instrument panel. The system cannot be deactivated as there is no malfunction.

In case of parking sensor error;



ISA active	
ISA deactive	
ISA Faiure Warning Signal	
ISA Faiure Warning Signal no communication gps or camera & Mulfunction Warning -	
ISA Faiure Warning Signal communication with only camera or gps	
BSIS Collusion Warning Signal	
MOIS Information Signal	
MOIS Warning Signal	
BSIS/MOIS/PLCA Failure SignalBSIS Automatic Deactivation MOIS Manual & Automatic DeactivationBSIS/MOIS/PLCA Deactivation	
PLCA Warning Signal	

DDAW Warning	
DDAW Deactivated & Malfunction Warning	
Cyber gateway secure	
Cyber Gateway Not Secure	
Cyber Gateway Not available	

TPMS(Tire Pressure Monitoring System)

- Tyre pressure information is transmitted to the driver.

The TPMS warning should illuminate in the following situations.

- Amber if any tyre pressure is 10% below the nominal pressure, red if it is 20% below the nominal pressure,
- If any tyre pressure is more than 25% above the nominal pressure,
- When a tyre without a sensor is fitted,
- When the sensor battery level is low

ISA(Intellegent Speed Assistant)

- The function works in conjunction with GPS and the camera.
- The driver is informed of the speed limit on the route.
- When the specified speed limit is exceeded, the driver receives a visual and acoustic warning.

LDWS(Lane Departure Warning System-Option)

- At speeds above 60 km/h, the system provides visual and acoustic warning to the driver in case of lane violation.

MOIS

- The function only gives cyclist and pedestrian warnings.
- The function is active when the vehicle speed is between 0-15km/h.
- The functions do not work when the vehicle is in reverse gear.

When objects enter the radar scanning area;

- Parallel moving object speed 2-7km/h,
- The speed of the vertically moving object should be in the range of 0-12km/h.

BSIS

- The warnings are activated when the object and the vehicle are travelling in the same direction.
- The function is activated when the vehicle speed is between 0-30km/h.
- Collision warning is not activated when the vehicle is stationary.
- The functions do not work when the vehicle is in reverse gear.

When objects enter the radar scanning area;

- Cyclist speed 5-20km/h,
- Pedestrian speed should be between 2-20 km/h.

LCDA(Side Lane Vehicle Warning)

- The function warns of vehicles (car, motorbike, lorry, etc.) approaching from behind in the side lane.
- LCDA warning warns when the specified objects are travelling in the same direction as the vehicle.
- The minimum vehicle speed required for the function to be activated is 43 km/h.

The speed limits required at the target object for the function to be activated;

- Minimum target vehicle speed 21km/h,
- Minimum relative speed -22km/h (example: vehicle speed 43km/h, target vehicle speed 21km/h)
- The maximum relative speed should be 36km/h (example: vehicle speed 50km/h, target vehicle speed 86km/h).

5. SERVICE AND MAINTENANCE

CLEANING THE VEHICLE

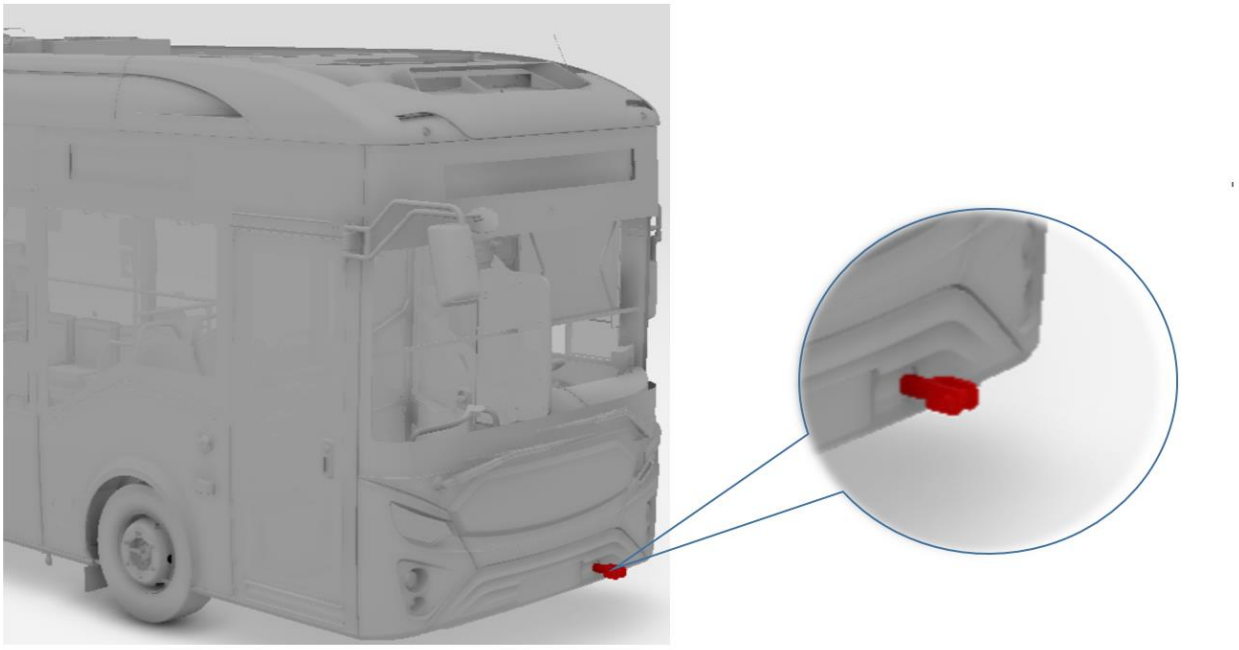
Exterior Cleaning

- Do not clean your vehicle with detergents and chemicals, do not wipe with gasoline.
- Use pressurized water for vehicle cleaning (except the engine compartment), make sure that there is no water on the vehicle after cleaning, remove excess water with a cloth or chamois.
- Do not wash your vehicle under direct sunlight.
- Keep the inner parts of the mudguards clean in winter.
- Use only soap and water when cleaning the air bellows.
- There are components operating with high voltage at the rear of the vehicle. Never use water for cleaning this part. There are battery packs in the upper part ofthe vehicle. Do not open the protection cover on the battery packs except for the technical service.

Internal Cleaning

- Clean the instrument panel with a wet cloth, do not use substances such as alcohol orthinner.
- Clean the seats with a wet cloth or foamed vinylex cleaner.
- Wipe the passenger floor with a wet mop and then dry it.

TOWING THE VEHICLE

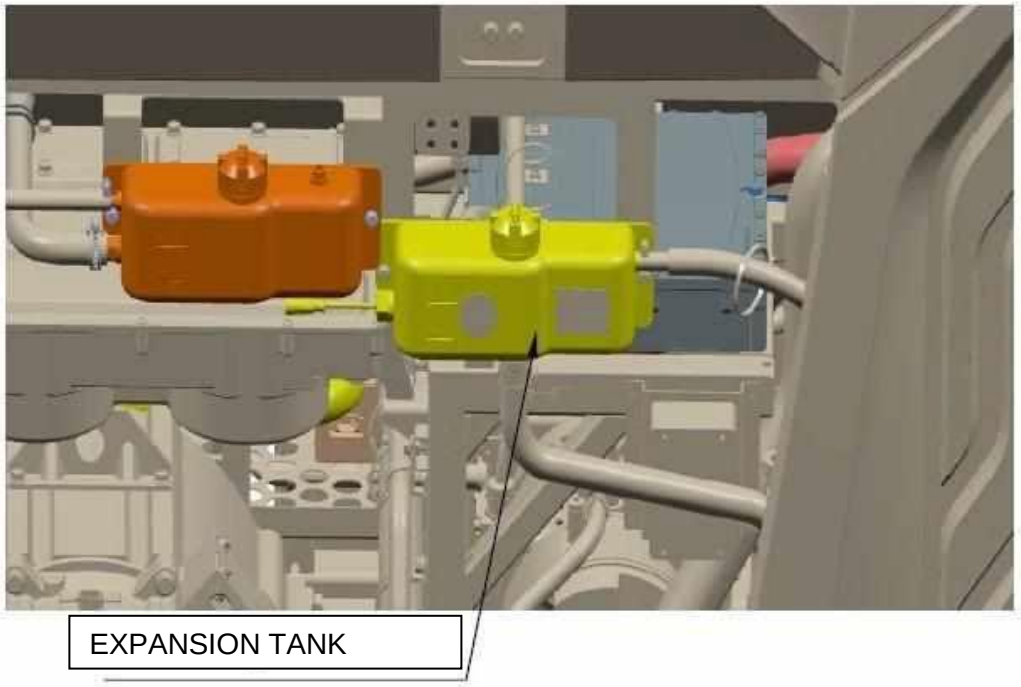


If there is air in the vehicle, the following operations are applied. If the vehicle does not have air, First of all, the vehicle is taken to the safety lane by using the parking brake release valve. Before towing the vehicle,the parking brake spring in the rear brake chamber must be released.

- Open the tow hook cover on the front bumper.
- Take the tow hook inside the tool box.
- Screw the tow hook well into the slot on the chassis and make sure it is seated.
- Turn on the vehicle's ignition.
- Make sure the transmission is in neutral.

Tow the vehicle at a maximum speed of 80 km/h.

ENGINE COOLING SYSTEM AND ANTIFREEZE FILLING



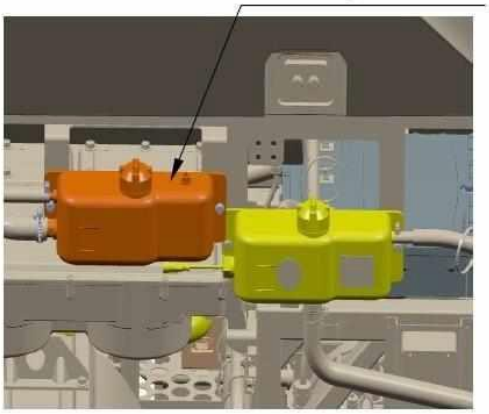
The engine cooling system keeps the engine in a suitable temperature range, ensuring efficient engine operation and preventing wear of engine parts.
The coolant used in the cooling system is a mixture of 50% water and 50% antifreeze. The freezing point of this mixture is -36°C, the boiling point is +175°C. No additives should be used in the coolant.

1. Park the vehicle on a flat area.
2. Open the cover of the expansion tank located on the right side of the engine room.
3. Start filling the expansion tank with Castrol Radiocool SF (Red) engine coolant with a 50/50 antifreeze-water mixture.
4. When the expansion tank is full, stop filling. Wait 1-2 minutes to allow the air entering the system to discharge naturally and the coolant level to stabilize. Then add water to the tank again.
5. Start the cooling line pump from the cluster.
6. Continue to add antifreeze to the expansion tank as the level in the expansion tank decreases.
7. Expansion tank max. After it is fixed at the level, close the expansion tank cover.
8. Stop the cooling system pump from the cluster.

HEATER AND AIR CONDITIONING LINE FILLING AND AIR BURING OPERATIONS

BUTTON S9

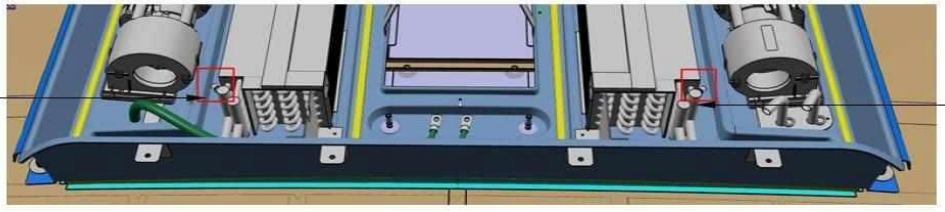
EXPANSION TANK



1. Park the vehicle on a flat area.
2. Open the cover of the expansion tank on the left side of the engine room.
3. Start filling the expansion tank with Castrol Radiocool SF (Red) engine coolant with a 50/50 antifreeze-water mixture.
4. When the expansion tank is full, stop filling. Wait 1-2 minutes to allow the air entering the system to discharge naturally and the coolant level to stabilize. Then add water to the tank again.
5. Press the S9 Button on the vehicle's air conditioning control repeatedly until the “-----” sign appears and start the 15-minute test mode of the heating system.
6. Heaters, heater main pump, heated air conditioner pump within 15 minutes test mode; The valves and fans that control the driver, passenger and heated air conditioning will open.
7. During the test mode of 5 minutes, the max. Keep adding antifreeze up to level.
8. In the test mode, open the side core and defroster vents for 1-2 minutes and perform the air bleed process in the relevant cores.
9. After the side core and defroster air removal processes are completed, start the air extraction process on the cores in the air conditioning unit.
10. Carry out the air purge operation from the vents of the heater cores in the air conditioning cabinet for 15 minutes in order for each core.
11. 15 minutes after the start of the test mode, the pump and valves will be turned off, so the expansion tank
12. Close the expansion vessel lid towards the end of the 15-minute period in order to prevent the antifreeze from overflowing.

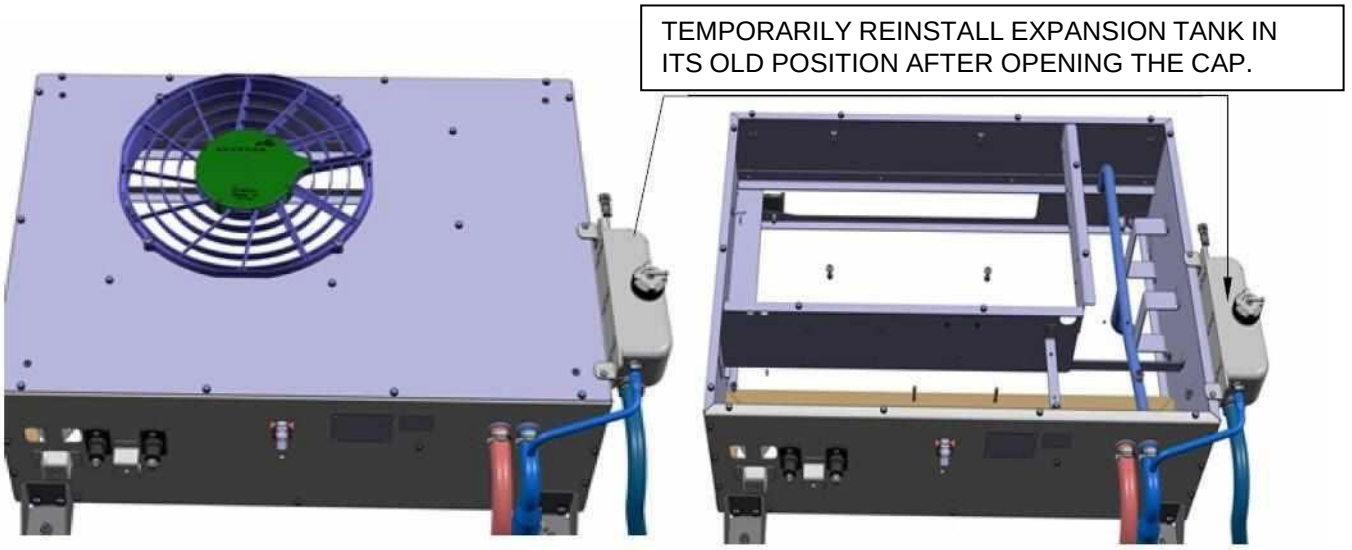
After the test mode is turned off, run the test mode again and continue to add antifreeze to continue the air intake process.

air vent

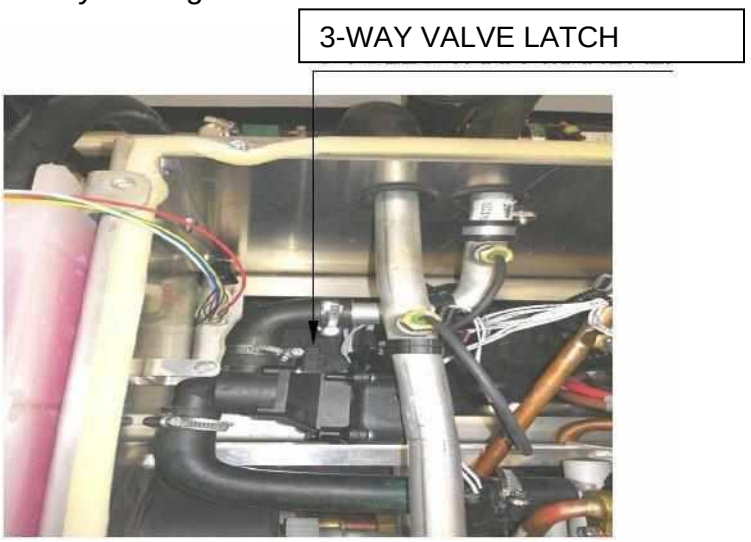


air vent

BATTERY COOLING SYSTEM ANTIFREEZE FILLING

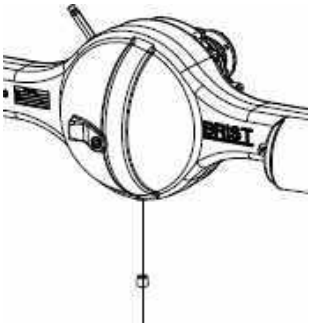


1. Park the vehicle on a flat area.
2. Remove the cover of the battery cooling unit located on the roof of the vehicle.
3. Position the expansion tank so that it remains above the battery cooling system.
4. Open the expansion tank cover.
5. Start filling the expansion tank with Castrol Radiocool SF (Red) engine coolant with a 50/50 antifreeze-water mixture.
6. When the expansion tank is full, stop filling. Wait 1-2 minutes to allow the air entering the system to discharge naturally and the coolant level to stabilize. Then add water to the tank again.
7. Start the battery cooling line pump from the cluster.
8. As the level in the expansion tank decreases, max. Continue to add antifreeze to the expansion tank up to the level.
9. After the expansion tank is fixed at the max level, turn the latch of the 3-way valve inside the coil cooling unit in the opposite direction.
10. As the level in the expansion tank decreases, max. Continue to add antifreeze to the expansion tank up to the level.
11. Close the cap when the expansion tank level is stabilized.
12. Stop the battery cooling system pump from the cluster.
13.Close the battery cooling unit cover.

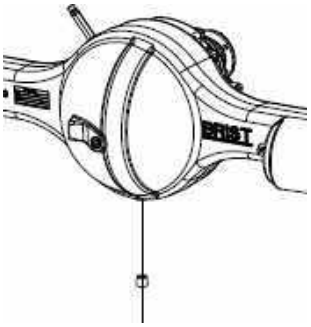


DIFFERENTIAL OIL CHANGE

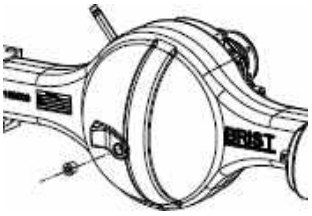
Place a bucket under the drain hole for used oil, as the oil will drain when the magnetic plug is removed.



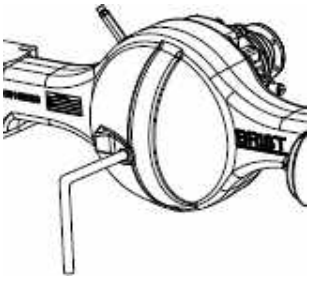
Remove the magnetic plug to drain the oil.



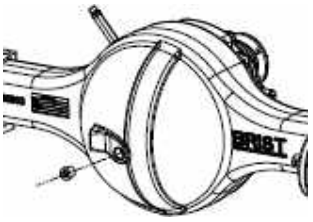
Reinstall the magnetic plug, tighten with a torque of 60 Nm.



Remove the plug.



Fill the oil. (Oil capacity: 5.7 lt)



Tighten the plug with a torque of 60 Nm.

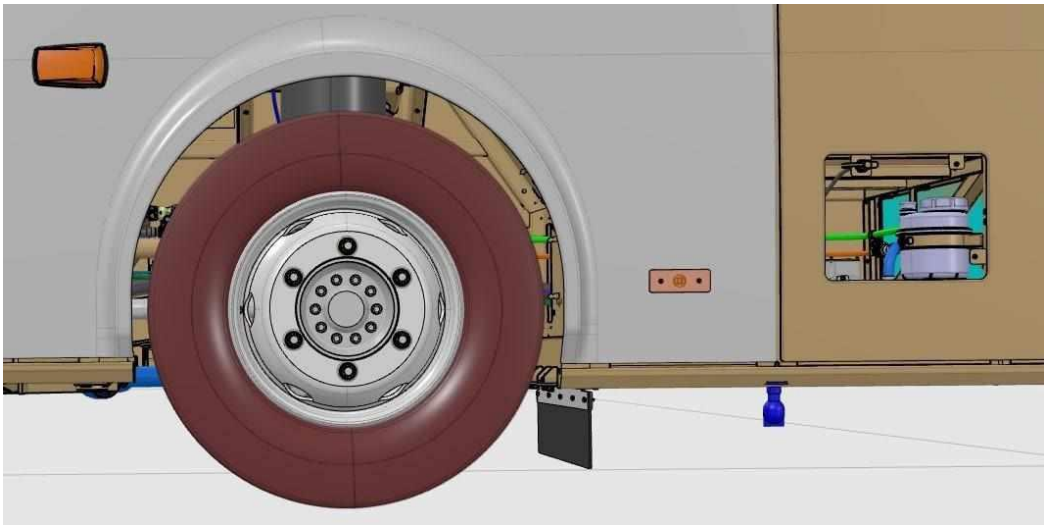
CHECKING BRAKE DISCS AND PADS

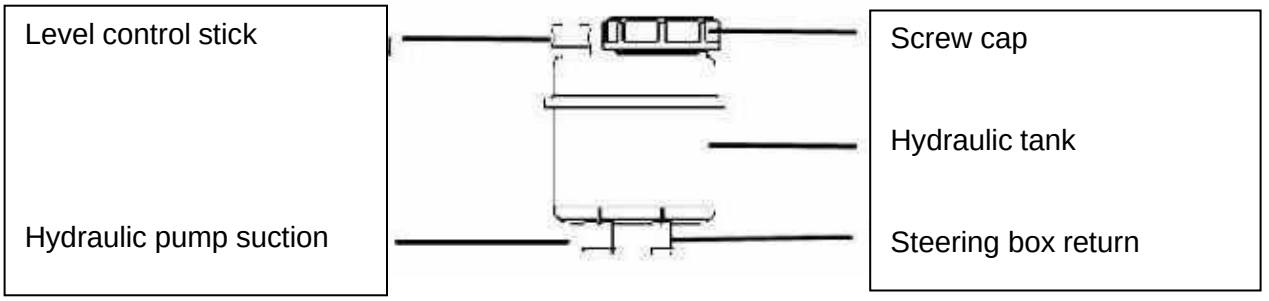
The pad wear indicator should be checked regularly. When the pad indicator reaches 10%, Isuzu service should be contacted for replacement.

Right and left brake pads on the same axle must be replaced together. The original brake part defined by the vehicle manufacturer must be used. Brake discs should also be checked during pad replacement and replaced if necessary. Otherwise, braking performance may be adversely affected.

STEERING HYDRAULIC TANK

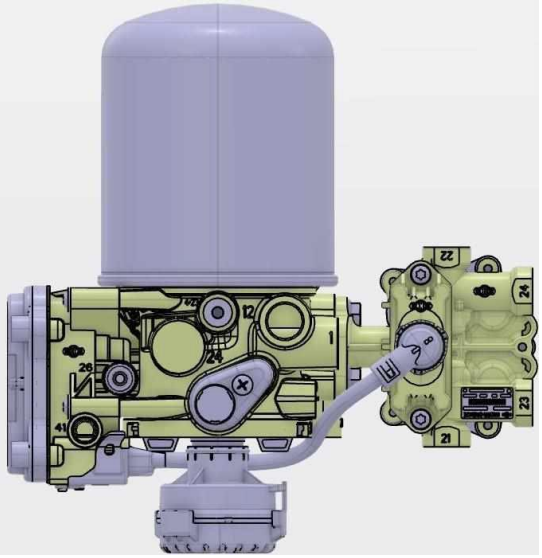
The steering oil tank is located behind the left front wheel, accessible through the maintenance hatch behind the left front wheel.





There is a screw cap and oil level dipstick on the tank. The oil level should be checked every 3000 km. To check the oil level, the rod is removed, there are minimum and maximum lines on the rod, the oil level should be between these two lines. For trouble-free operation of the power steering and pump, the oil specified by the vehicle manufacturer must be used.
If there is not enough oil in the steering system, the vehicle should not be started; otherwise the steering wheel may be damaged. If the amount of oil is low, oil must be filled up to the maximum line on the rod.

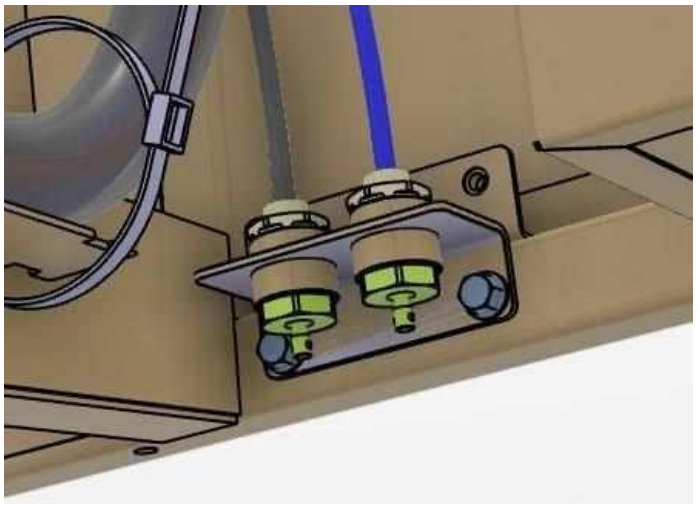
SMART AIR DRYER

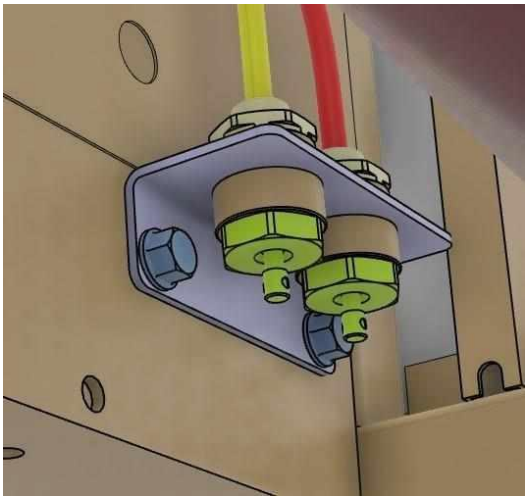


Air dryer + Four-way valve (IAPU) is located in the area behind the left front wheel of the vehicle. The task of the IAPU is to take the moisture and oil in the air pressed from the compressor, adjust the system pressure of the vehicle and send the air to the vehicle air tanks under appropriate conditions.
At the top of the IAPU is a cartridge with a maintenance interval. At the bottom, there is a silencer that reduces the sound while expelling the air.
When the air of the vehicle reaches the desired limit, it throws out the water and oil accumulated in the cartridge with some air. It stops the compressor from running by informing the compressor.

The smart air dryer activates the air compressor when the air system pressure drops to 8.3bar and turns off the air compressor when the air system pressure reaches 9.8bar

DRAINING THE ACCUMULATED WATER IN AIR TANKS





There are 2 water drains (front brake tank and hand brake release tank) in the front partof the left front wheel.

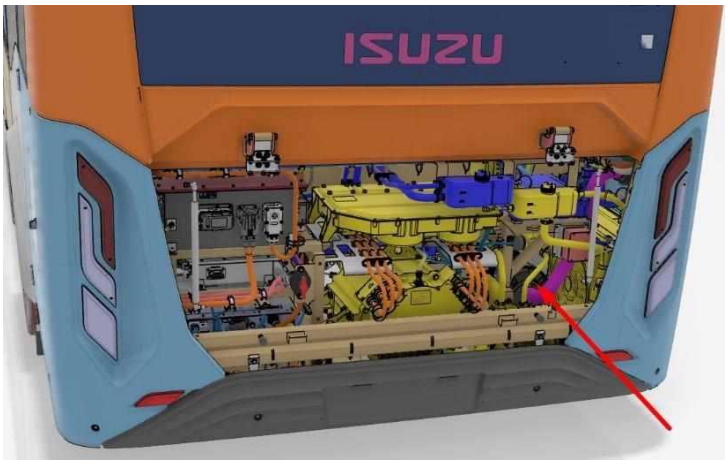
There are 2 water drains (rear brake tank and accessory tank) in the front part of the rightrear taker.

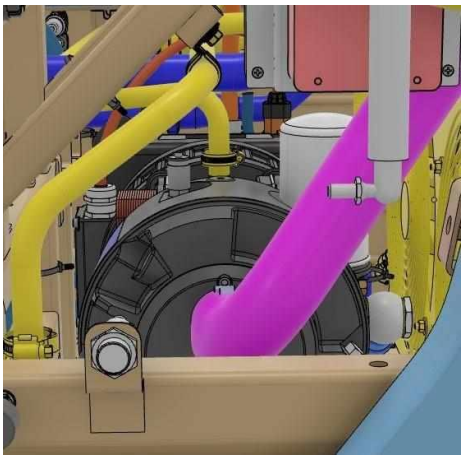
Daily, the water that accumulates by condensing in the air tanks should be discharged bypressing the pin under the drain.

ELECTRIC AIR COMPRESSOR

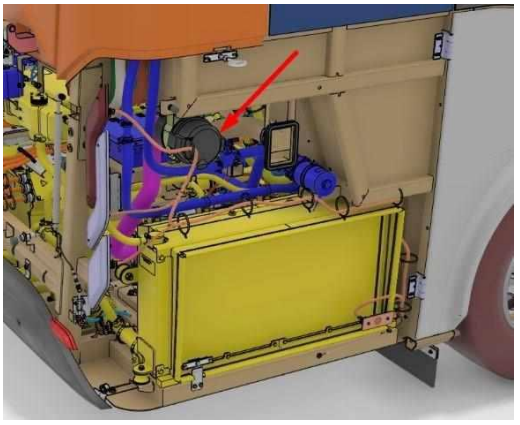
As seen in the pictures below, the air compressor is located in the rear engine room of the vehicle between the radiator and the engine.

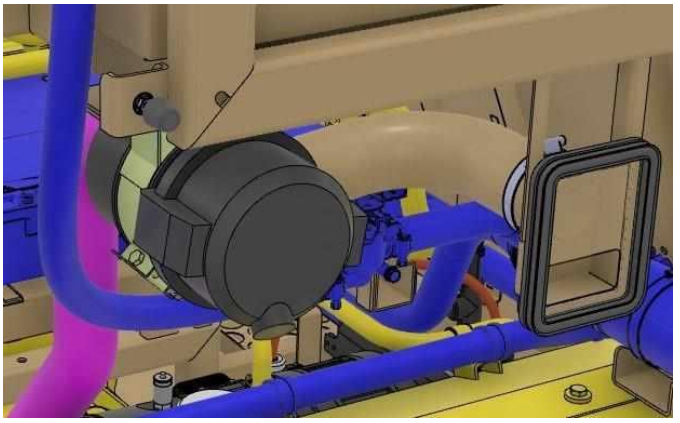
When the right side cover of the engine room is opened, the air compressor air filter is reached in the upper part of the radiator. Replace the cartridge here.





Position of air compressor





Location of air compressor air filter

GLASS SPRAY WATER TANK

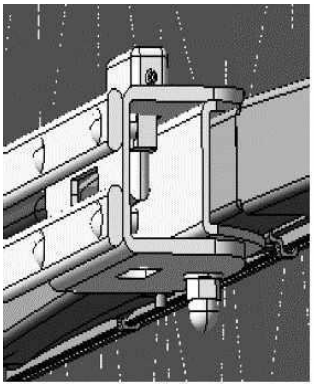
The glass fountain water tank can be accessed by opening the front left body cover. After opening the door, a maximum of 10 liters of washer fluid can be filled.

Antifreeze should be used to prevent the glass from freezing in cold weather.

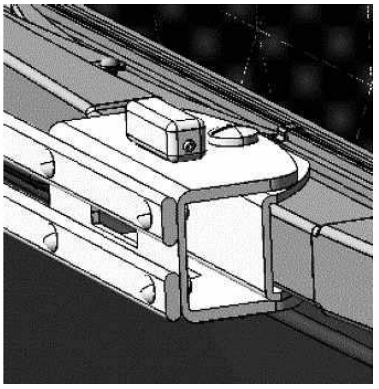
REPLACING THE WINDSCREEN WIPER

There are two outer wiper arms, right and left.

To replace the wiper blade, remove the bolt and ring nut in the middle of the blade (Picture 1 and Picture 2).

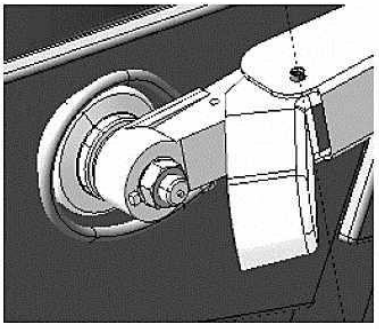


Picture 1

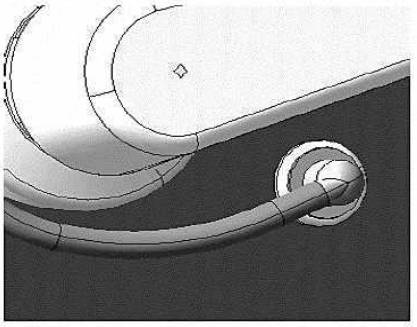


Picture 2

In order to replace the entire outer wiper arm, the plastic cover at the point where the arm is connected to the vehicle body is opened, the ring nut here is removed and the wiper arm is removed (Picture 3).



Picture 3



Picture 4

Wiper blades should be checked in winter and replaced if necessary. Changes in the internal mechanism of the wipers should be made by authorized services.

FUSE/RELAYS

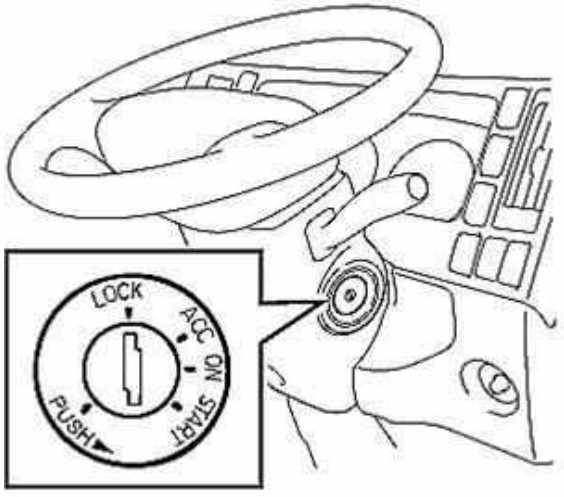
Fuse and relays are located in two different places in the vehicle. The fuses used in the vehicle are blade type. In the event of a short circuit or malfunction in the system, the relevant fuse blows to protect the electrical components. After the electrical fault is cleared, it is replaced with a fuse of the same amperage Value.

1- It is located in the cabin at the bottom right of the front door entrance of the vehicle. The fuse label is on the console cover.
2- It is located inside the left rear cover of the vehicle. The fuse label is visible when the cover is opened.

PRECAUTIONS FOR BATTERY USE

Keep the battery clean. If the battery is left dirty, contaminants can mix with the battery fluid, damage the battery plates, short-circuit the top of the battery and reduce the battery's service life.

When Performing Inspection or Maintenance Operations



Before checking and maintaining the battery and other parts of the electrical system, turn the ignition switch to the “LOCK” position, turn all other Buttons to the “OFF” position and disconnect the battery negative cables.

There is a danger of damage to electrical parts if inspection or maintenance is performed while the battery remains connected.

Battery Removal

When removing the battery, first disconnect the battery cable from the negative pole. If the battery cable remains connected to the negative terminal, if the tools come into contact with the positive terminal, a short circuit may occur in the vehicle and cause dangerous electric shocks. Also, the electrical system may be damaged.

If the battery switch is to be turned off, wait at least 70 seconds after the ignition is turned off.

Charging the Battery

• Before replacing the battery, remove the battery from the vehicle, place it in a well-ventilated area and remove the battery covers. If the battery is to be charged while insidethe vehicle, be sure to disconnect the battery cables first.

• Make sure it is turned off when the charger is connected to or disconnected from the battery.

• In case of fast charging, the battery cables must be disconnected. Failure to follow this precaution could result in the alternator running out of fuel.

Installing the Battery

1. When installing the battery in your vehicle, make sure it is correctly oriented and securelyinstalled without any looseness. If the battery is not installed correctly, the battery box and battery plates may be damaged as a result of jolts while driving.
2. When connecting the battery cables, start with the positive pole and then connect thenegative pole.

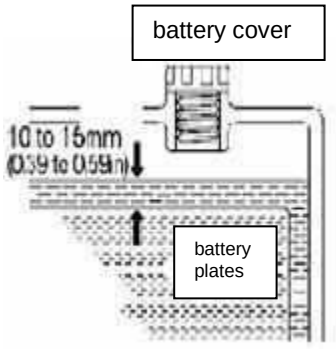
Using the Battery as a Direct Power Source

The battery should not be used directly as a 12 volt power source.
If your battery needs to be used as a direct power source, consult your Isuzu authorized service.

Checking the Battery Water LevelDaily Check

Open the battery cover and check if the liquid in the battery chamber is within the specifiedrange.
The battery fluid surface should be between “UPPER LEVEL” and “LOWER LEVEL.” If the
fluid surface cannot be seen clearly, gently shake the vehicle.
If there is no level mark on the case, a 10-15 mm gap from the top to the battery plates isconsidered appropriate.

Filling the Battery Water



If the amount of battery fluid in the battery is not sufficient, remove the caps, add distilled water until the surface is close to the "UPPER LEVEL" mark or 10-15 mm from the top to the battery plates. After you have finished checking the oil level, securely attach the cap and cap.

• Battery water should never be filled above the "UPPER LEVEL" line. Failure to observethis precaution may result in battery water spilling and corrosion of battery terminals andother parts. Spilled battery water should be cleaned immediately with water.

• After adding battery water, the battery must be recharged (by driving). If you do notrecharge the battery during the winter months, the battery water may freeze and thebattery box may be damaged.

• If the battery water level continues to drop rapidly, which may rarely occur, have a

service performed at the nearest Isuzu authorized service immediately.

JACK USE AND TIRE CHANGE

The jacking points on the vehicle are in front of the front wheels and behind the rearwheels. When using the jack;

• Make sure the drain screw is tight.

• Use your own jack handle to raise the jack

• Turn the drain screw counterclockwise two turns to lower the jack.

Tire change;

• Place a wedge on the tire diagonally opposite the tire you are lifting.

• Loosen the wheel nuts of the tire to be replaced, but do not remove them.

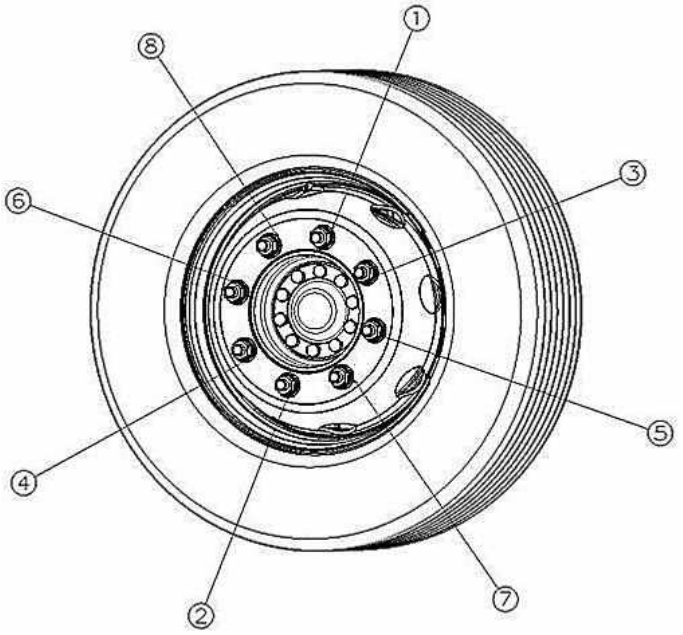
• Jack up the vehicle using the jack point on the back of the tire to be replaced until thetire is completely off the ground.

• Remove the wheel nuts and tire.

• Install the spare tire

• Make sure the tire is seated

• Tighten the diagonal opposing wheel nuts with a torque of 500 ± 50 Nm in three stages.

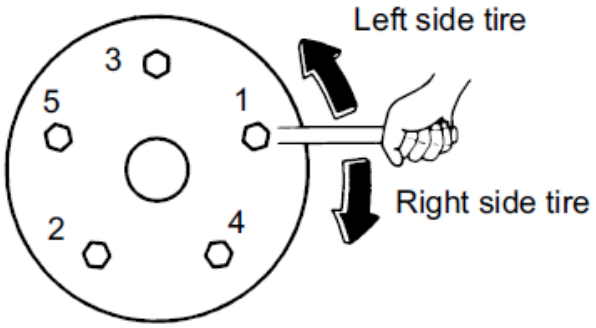


• Slightly loosen the evacuation screw on the jack to lower the vehicle.

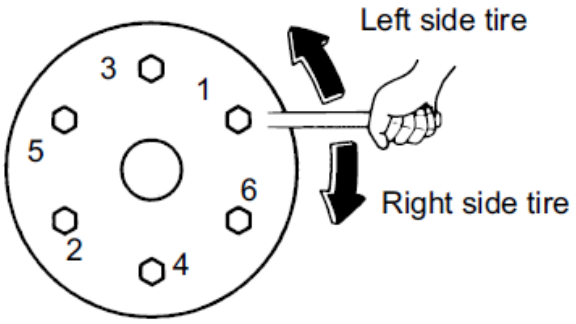
- Make sure the jack is placed on flat and solid ground.
- Do not start the engine while the vehicle is on the jack.
- Do not get into the vehicle while the jack is being used.
- Unload the passengers before starting the tire change.
- Make sure the gear is in the park position, set the parking brake and turn on the hazard warning flashers.
- If there is a high voltage line around during tire change, tire change should not be made.
- Equipment to be used must be insulated.
- When the vehicle is jacked up, it is necessary to enter between the wheel and the fender or under the vehicle. Getting under the vehicle and between the fenders can result in death.

NOTE: If the tire pressure is constantly decreasing, there may be an object stuck in the tire. Check whether there is an air leak in the tire or the valve.

Wheel nut tightening sequence
Wheel with 5 nuts



Wheel with 6 nuts



Model or specification	Front wheel nuts		Rear wheel nuts	
	Tightening torque	Quantity	Tightening torque	Quantity
Single tire	**500 N·m**	6	**-**	-
Dual tire	-	-	**500 N·m**	5 or 6

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 unclear about any of this, please contact the nearest Isuzu Dealer.

• The tightening torque of the wheel nuts may decrease after tire replacement due to their initial settlement. Upon driving 50 to 100 km after a tire change, retighten the wheel nuts to the specified torque according to the instructions in the "Retightening Wheel Nuts" section in this chapter.

EASY SERVICEABILITY

Easy access to the necessary components is provided by opening the rear cover and side covers for the modifications to be made on the vehicle in case of vehicle maintenance or breakdowns.

CORROSION & PREVENTIVE METHODS

What is Corrosion?

Corrosion is a state ofdeterioration in metals (steel, copper, zinc, aluminum and theircompounds) caused by oxidation or chemical action.

Observation

- Red rust on steel parts,
- White spotting on zinc parts,
- White spotting on Dacromet / Geomet coated parts,
- Green rust on copper parts,
- White spotting on aluminumparts.

Corrosion Causes

1- User Errors

Failure to comply with the rules specified in the user, workshop warranty and service manuals may cause corrosion.

2- Environmental Factors

Environmental and geographical factors determine corrosion factors.

Corrosion Zones

Anti-corrosion methods can be applied to three main areas on the vehicle;

• Not responding to the scratches on the painted parts of the vehicle in a timely manner,
• Failure to comply with preventive maintenance procedures,
• Failure to comply with preventive activities before the winter season
• Hot and humid areas (eg seaside)
• Cold and snowy areas (road defrosting)
• Cold and rainy regions,
• Industrial zones
• Additional applications (solid or liquid salt) to open public roads)

A SECTION A (Engine Compartment)

B SECTION B Chassis(including trunk component)

C SECTION C Side Panels and other vehicle

Corrosion Maintenance Procedure

Every vehicle should be checked every 6 months. If the vehicle is not checked, it will be out of warranty. If the vehicle is damaged, it must be repaired so that there is no rusting problem.

CAUTION

Internal profiles should be checked every year, if wax is removed, wax1 treatment is applied to the required structure of the body with service approval.

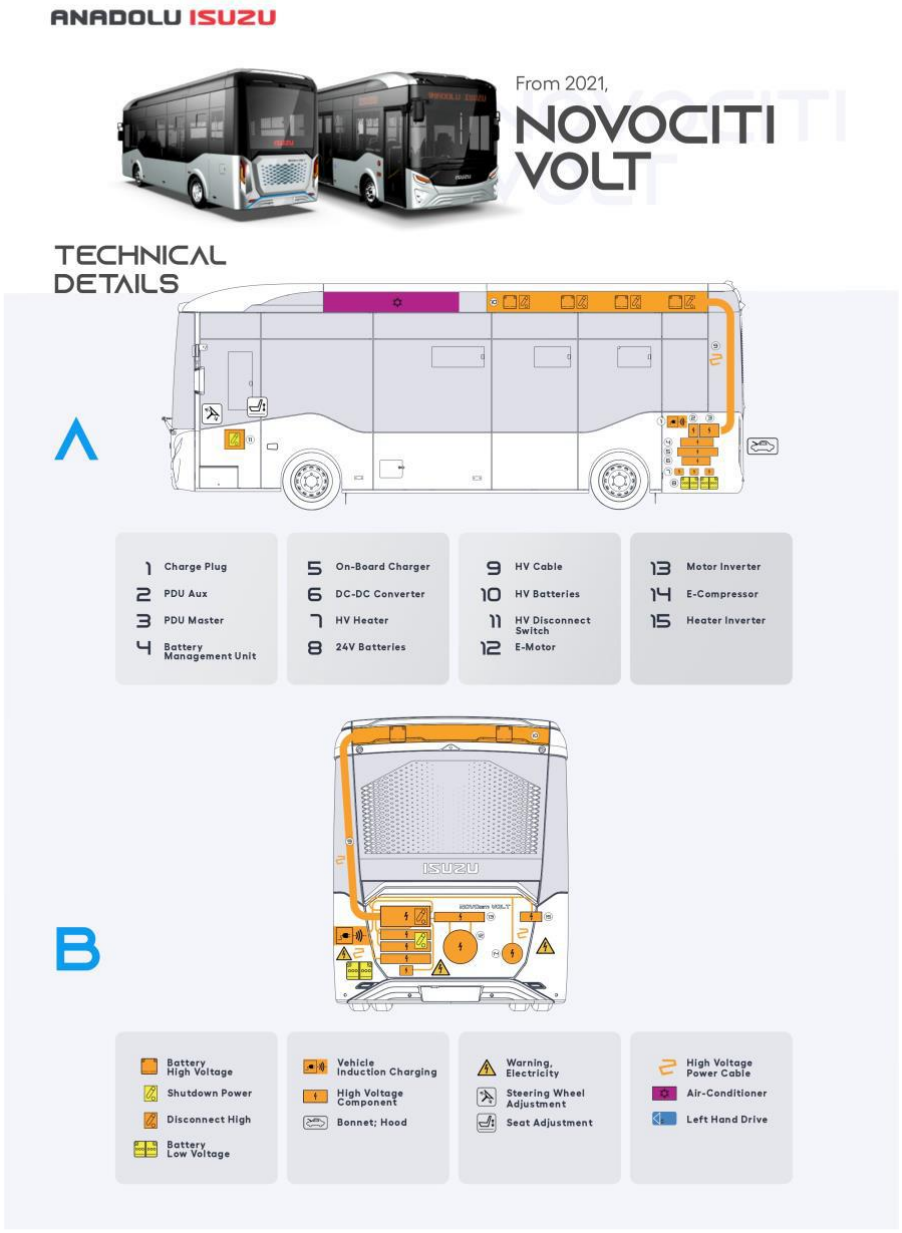
CAUTION

On the underbody coating, peeling and shedding should be checked 3 times during the winter season. Before the start of the winter season, the end of January (when the high winter season is theend of October), the end of the winter season If there is wear, the coating^2 should be renewed in the necessary areas

CAUTION

It is recommended to wash the vehicle with low-pressure water at least once a week andthe underbody at least once a month in order to prevent the contamination from damaging the chemicals. High pressure water causes wear on the underbody lining. If any signs of corrosion are confirmed, restart without delay.

VEHICLE RECOVERY INFORMATION



•CTIF (International Technical Committee for the Prevention and Suppression of Fire) and Euro NCAP (European New Car Assessment Programme) have concluded a collaboration to develop ISO standard 17840 "Rescue Information", which has been the international standard for the entire transport sector since 2019.

•The ISO 17840 standard defines a rescue document that provides necessary and useful information about the vehicle in order to support the rescue team in rescuing the vehicle occupants as quickly and safely as possible in the event of a possible accident.

•It is aimed to issue a recovery document for each vehicle, especially electric vehicles.

• QR codes have been added to various points on the vehicle to speed up the rescue team's access to information.

• The fastest and safest intervention is aimed with the QR code, which is engraved on the points of the vehicle that are least likely to be damaged.

• Currently, recovery documents have been prepared for the electric vehicle NOVOCITI VOLT, and the documents have been converted into QR codes and placed on the vehicle.

RESCUE CARD

PERIODIC MAINTENANCE

BEFORE DRIVING

Proper maintenance and driving is important not only in extending the service life of yourvehicle, but also in the battery and electric motor.

Check Daily

For safe and comfortable driving, record the distances traveled and the condition of the vehicle while driving. Perform inspections at appropriate intervals and perform maintenance according to inspection findings. If an inspection reveals an abnormality or ifthe vehicle has had an abnormality from previous driving, take the vehicle to the nearest Isuzu Dealer before being driven again.

Daily Checks Checklist:

1. Checking components that showed abnormalities during previous driving
2. Electric motor coolant level
3. Power steering fluid level
4. Fan hydraulic fluid level
5. Brake system air pressure level
6. Brake pedal release
7. Exhaust noise from brake valve
8. Increase/decrease of air pressure level
9. Operation of meters, indicators and warning/indicator lights
10. Parking brake
11. Windshield washer fluid spray status and windshield wiper activity
12. Windshield washer fluid level
13. Steering wheel clearance and mounting condition
14. Operation of horn and turn signal lamps
15. Battery charge level
16. Lighting, flashing or damaged lights
17. Battery fluid level
18. Drain the condensed water (especially in winter) in the air tanks.
19. Electric engine coolant, brake fluid, power steering fluid, fan hydraulic fluid leak
20. Air pressure
21. Cracks and other damage
22. Abnormal wear
23. Tread depth of tires
24. Disc wheel assembly status
25. Brake efficiency
26. Checking the engine at low speeds and accelerations
27. Wear and corrosion control of chassis and body parts
28. Check the bus crash and original part condition.

Weekly Maintenance

• Check the tire pressures with the weather clock.
• Check the steering fluid tank level.
• Check the air suspension bellows (holes, damage, etc.) while the engine is running.
• Check the air cleaner limit.
• Check the washer fluid level.
• Wear and corrosion control on chassis and body parts

CAUTION!

• Water jet cleaning machine should not be used inside the bus.
• Abrasive materials should not be used on the bus surface.
• The car should not be washed with a car wash brush.
• Informing the authorized service in case of accident
• Regular maintenance at authorized service

Periodic Maintenance Chart
The main periodical maintenance interval is 240000 km. Maintenance after 240000 km isthe same as maintenance intervals after 30000 km**.**
I: Inspect then clean, repair or replace as necessary
R: Replace
A: Adjust
L: Lubricate

NOTE: Change the filter/fluids before the recommended distance or month, whichever isearlier.

Electrical System Components

Maintenance Interval (x1000 km)	30	60	90	120	150	180	210	240
PDU electrical connections				I				I
DC/DC Converter electrical connections				I				I
High voltage system electrical connections				I				I
On-board charger electrical connections				I				I
Air conditioner inverter				I				I
Intelligent air dryer filter replacement	R: every 12 months							
Electric power steering pump	I: every 12 months							
Electric steering pump bearing replacement	R: every 200,000 km							
External cleaning of the electric radiator		I		I		I		I
Electric fan function check	I	I	I	I	I	I	I	I
Checking the socket connections on thebattery	I	I	I	I	I	I	I	I
Checking the connections of the battery to the chassis	I	I	I	I	I	I	I	I

Electric motor

Maintenance Interval (x1000 km)	30	60	90	120	150	180	210	240
High voltage cables wear check	I	I	I	I	I	I	I	I
High voltage and phase cable glands tightness (MCU and Motor)	I	I	I	I	I	I	I	I
Motor phase cables wear check	I	I	I	I	I	I	I	I
Checking the motor sensor cable and connectors	I	I	I	I	I	I	I	I
Checking the VMU interface connector	I	I	I	I	I	I	I	I
Coolant in/out MCU leak check	I	I	I	I	I	I	I	I
Coolant in/out engine leak check	I	I	I	I	I	I	I	I
Engine component check	I	I	I	I	I	I	I	I
MCU component control	I	I	I	I	I	I	I	I
MCU ventilation control	I	I	I	I	I	I	I	I
Coolant level control	I	I	I	I	I	I	I	I
Coolant change		R		R		R		R
Engine and MCU cleaning	I	I	I	I	I	I	I	I

Electric Air Compressor

Maintenance Interval (x1000 km)	30	60	90	120	150	180	210	240
Oil level control	I: Once a week							
Oil change		R		R		R		R
Oil filter change	R: 12 months or 60.000 km							
Air filter change	R: 12 months or 60.000 km							
Annual service check		I		I		I		I

Axles

Maintenance Interval (x1000 km)	30	60	90	120	150	180	210	240
Front axle king pin bearing grease	L	L	L	L	L	L	L	L
Front axle covers	I	I	I	I	I	I	I	I
Front axle bushings	I	I	I	I	I	I	I	I
Differential oil		R		R		R		R
Differential leak filter	I	I	I	I	I	I	I	I
Rear axle breather cleaning and changes	I	R	I	R	I	R	I	R
Rear axle and brake caliper link	I	I	I	I	I	I	I	I

Hydrolic wheel

Maintenance Interval (x1000 km)	30	60	90	120	150	180	210	240
Power steering oil	R: every 240,000 km or 24 months							
Power steering tank oil level check	I: every 3000 km							
Oil leak in the power steering system	I	I	I	I	I	I	I	I
Hydraulic steering linkage	I	I	I	I	I	I	I	I
Power steering hose	I	I	I	I	I	I	I	I

General Vehicle Care

Maintenance Interval (x1000 km)	30	60	90	120	150	180	210	240
Front suspension links	I	I	I	I	I	I	I	I
Rear suspension links	I	I	I	I	I	I	I	I
Wheel nuts	I	I	I	I	I	I	I	I
Tire pressures	I	I	I	I	I	I	I	I
hub bearing	I	I	I	I	I	I	I	I
Leakage in brake pipe and brake hose	I	I	I	I	I	I	I	I
Checking the brake pad and disc	I	I	I	I	I	I	I	I
Slack in shock absorbers and fasteners	I	I	I	I	I	I	I	I
Level valves	I	I	I	I	I	I	I	I
Air bellows	I	I	I	I	I	I	I	I
ESC system control	I	I	I	I	I	I	I	I
Rear and front brake system control	I	I	I	I	I	I	I	I
Brake, turn signal, parking and fog lamps	I	I	I	I	I	I	I	I
Interior lighting	I	I	I	I	I	I	I	I
Windshield wiper and washer system	I	I	I	I	I	I	I	I
Fuse panel wiring and socket connections	I	I	I	I	I	I	I	I
Battery connection cables	I	I	I	I	I	I	I	I
Battery electrolyte density	I	I	I	I	I	I	I	I
Air door adjustment	I	I	I	I	I	I	I	I
Safety gear function of all doors	I	I	I	I	I	I	I	I
Air leakage, damage, tightness and door function in door elements	I	I	I	I	I	I	I	I
Rearview mirrors parts	I	I	I	I	I	I	I	I
Gas and brake pedal	I	I	I	I	I	I	I	I
Underbody wax checking and repairing	I: once a week							
Washing the entire bus, making sure to remove all road chemicals	I: once a week							
Check bus accident and original parts situation.	I: daily							
Air condition compressor oil	K : every 24 months & D : whendecreasing							
A/C compressor oil	K : every 24 months & D : whendecreasing							
Change Antifreeze	D: Castrol Radicool SF: 5 Years D:Petrol Ofisi Extended Life Coolant: 3 Years							
Engine room fire detection system	I: every 12 months							

NOTE

- Cartridge (filter on the smart air dryer) needs to be changed at 1-year
- intervals or when the iAPU gives a warning (before the 1-year period expires).
- The differential leakage filter should be cleaned at every inspection.
- For the fire extinguishing system; Every 5 years, apply to the service for checking against damage and leakage situations.
- For the fire extinguishing system; A service has to be carried out every 10 years and should be in compliance with national requirements.
- In severe conditions (frequent short driving distances, dusty or bumpy roads, towing a trailer or mountain climbing), maintenance intervals should be halved.
- The air intake filters of the air conditioner should be removed and cleaned weekly. The time may be extended depending on the pollution situation.
- Since the air conditioner air intake filters can be reused, they are not easily deformed. It should be changed when it is excessively deformed and there is visible deformation in the filter.
- Suspension bushings (stabilizer and other) should be replaced if 30.000 km wear control is required.
- ISA MAP must be updated offline every year. Updating is required every year / for 7 years after the sale.

VEHICLE MODEL : VIN : PLATE NUMBER :		Long-Term Storage Inspection and Maintenance Checklist for Electric Buses												
No	List of Control	Discription of Control	Week 1 Date:..../...../.....	Week 2 Date:..../...../.....	Week 3 Date:..../...../.....	Week 4 Date:..../...../.....	Week 5 Date:..../...../.....	Week 6 Date:..../...../.....	Week 7 Date:..../...../.....	Week 8 Date:..../...../.....	Week 9 Date:..../...../.....	Week 10 Date:..../...../.....	Week 11 Date:..../...../.....	Week 12 Date:..../...../.....
1	*Charging system control// Charge flap and switch control*	Check charging procedure steps. If you find out abnormal situation contact with technical support team.				■				■				■
2	*SOC Control*	Check State of Charge, SOC should be between 40% - 60% during storage period. If you notice excessive discharge, contact technical support.	■	■	■	■	■	■	■	■	■	■	■	■
3	*Apply *battery maintanence procedure*	Execute the prescribed battery maintenance protocol in accordance with manufacturer guidelines.				■				■				■
4	*Wax application for underbody*	Inspect the underbody for damage or rust. Reapply wax coating if necessary.								■				
5	*Air Conditioning control (min.20 mins. operation)*	Operate the driver and passenger air conditioning systems for a minimum of 20 minutes. Evaluate cooling efficiency and verify blower functionality.				■				■				■
6	*Heating control (min. 20mins. Operation)*	Operate the driver and passenger heating systems for at least 20 minutes. Assess heating effectiveness and verify blower operation.				■				■				■
7	*Visual check*	Conduct a detailed visual inspection of the vehicle's exterior, including paintwork, windows, and								■				

		windshield, for scratches, dents, or other damage.												
8	*Warnings on Cluster*	Examine the instrument cluster for any active warning lights or error messages. Document and resolve as required.	■	■	■	■	■	■	■	■	■	■	■	■
9	*Parking brake function control (Please turn on HV system while checking parking brake system)*	Test the activation and deactivation of the parking brake while ensuring the HV system is operational. Confirm proper functionality.	■	■	■	■	■	■	■	■	■	■	■	■
10	*Oil, coolant or other fluid leakage visual check*	Inspect all fluid systems, including coolant, oil, and hydraulic systems, for signs of leakage.		■		■		■		■		■		■
11	*Oil, coolant or other fluid level check*	Confirm that all critical fluid levels, including coolant, compressor oil, and steering hydraulic fluid, are within specified limits.								■				
12	*Auxiliary 24V Battery Control*	Check Auxiliry 24V battery voltage and phisical conditions (damage, leakage etc.)	■	■	■	■	■	■	■	■	■	■	■	■
13	*Software and Firmware Updates*	Ensure that all vehicle software and firmware are up-to-date, and perform any required updates both prior to storage and during commissioning.								■				
14	*Tire Pressure and Condition Check*	Inflate tires to the recommended maximum pressure regarding user manual. Move the vehicle slightly forward and backward periodically to prevent flat-spotting.				■				■				■

General Storage Guidelines for All Battery Chemistries;

- **Temperature:** The storage environment should maintain a temperature between 15-20°C. Excessive temperatures can cause batteries to discharge faster, reducing their lifespan, while low temperatures may temporarily reduce their capacity. Keeping the temperature stable is key to ensuring longevity.
- **Charge State:** Batteries should be stored at a charge level of 40-60%. Storing batteries at full charge (100%) or fully discharged can cause capacity loss over time.
- **Humidity Control:** Vehicles should be stored in a dry, well-ventilated area with controlled temperature and humidity levels below 60%. Avoid exposure to direct sunlight or extreme weather conditions.
- **Packaging:** Batteries should be packaged in insulated boxes to prevent short-circuiting. Batteries should not be in direct physical contact with each other to avoid accidental damage or short circuits.

***Battery Maintanence Prodecure;**

1. Adjust the SOC in the range of 20% - 30%
2. Turn the key to the "OFF" position, then turn the key to "ON" position, and turn off the on-board electrical equipment.
3. The key remains "ON" and let it stand for more than 3 hours, during which no additional operations are required.
4. A full charge is required after standing.
5. Battery maintanence is completed, discharge the bus untill 40% - 60% SOC, and storage the bus.

NOTE: Long idle times and long-term vehicle storage;

!!! Regularly check SOC state. Otherwise, the high-voltage battery can be damaged when there is excessive discharge.
48 hours and more than 48 hours of storage the main power switch must be turned off.
Even if you do not use the buses much, you should have periodic maintenance done before the bus starts normal operation.

LONG-TERM STORAGE GUIDELINES FOR LFP, NMC, AND LTO ATTERIES

General Storage Guidelines for All Battery Chemistries

- **Temperature:** The storage environment should maintain a temperature between 15-20°C. Excessive temperatures can cause batteries to discharge faster, reducing their lifespan, while low temperatures may temporarily reduce their capacity. Keeping the temperature stable is key to ensuring longevity.
- **Charge State:** Batteries should be stored at a charge level of 40-60%. Storing batteries at full charge (100%) or fully discharged can cause capacity loss over time.
- **Humidity Control:** The storage area should maintain low humidity levels. High humidity can cause internal components to corrode.
- **Packaging:** Batteries should be packaged in insulated boxes to prevent short-circuiting. Batteries should not be in direct physical contact with each other to avoid accidental damage or short circuits.

Specific Chemistry Storage Guidelines

LFP (Lithium Iron Phosphate) Batteries

- **Charge State:** For LFP batteries, the ideal storage charge range is 40-60%. This will ensure the battery remains within a safe operating range and avoids issues caused by overcharging or deep discharge.
- **Voltage Considerations:** LFP batteries typically operate at lower voltages, usually around 3.2V per cell. It's important to maintain a balanced voltage during storage to prevent any imbalance in the cells.
- **Temperature Range:** LFP batteries should be stored at a temperature range between 0-25°C. High temperatures may lead to capacity degradation, while low temperatures can increase internal resistance, reducing efficiency.
- **Storage Time:** LFP batteries are highly suitable for long-term storage and can remain stable for up to 5 years or more. However, it is recommended to check the charge levels and, if necessary, recharge them every 6-12 months.
- **Notes:** LFP batteries are known for their stability and safety, but it is essential to ensure that the cells remain balanced during storage to avoid any potential degradation.

NMC (Nickel Manganese Cobalt) Batteries

- **Charge State:** NMC batteries should also be stored at a charge level of 40-60%. These batteries provide high energy density, but overcharging or deep discharging can significantly shorten their lifespan.
- **Voltage Considerations:** NMC batteries typically have a nominal voltage of 3.7V per cell. Due to their high energy density, careful attention should be paid to voltage balancing during storage.
- **Temperature Range:** NMC batteries should be stored in an environment between 15-20°C. Excessive heat can accelerate chemical reactions, causing loss of capacity.
- **Storage Time:** NMC batteries can remain stable during long-term storage, but it's recommended to check the charge levels once a year. Over extended periods, these batteries may lose some capacity, so regular monitoring is necessary.
- **Notes:** As these batteries are prone to capacity degradation over time, it is important to maintain proper voltage balancing and conduct periodic checks on their charge levels.

LTO (Lithium Titanate) Batteries

- **Charge State:** LTO batteries, known for their fast charging capabilities, are best stored at a charge level between 30-50%.
- **Voltage Considerations:** LTO batteries have a lower nominal voltage, typically around 2.4V per cell. These batteries perform well in a wide range of temperatures and support rapid charge/discharge cycles. High voltage levels typically don't pose issues for LTO batteries.
- **Temperature Range:** LTO batteries can be stored in a wider temperature range of 0-30°C. While cold temperatures can increase internal resistance, the overall stability of LTO batteries allows them to perform well in colder conditions.
- **Storage Time:** LTO batteries have a very long lifespan, often lasting between 10-15 years. However, it's still recommended to check the charge levels every 6 months to maintain optimal performance.

- **Notes:** LTO batteries offer great longevity and safety. However, low voltages during storage should be carefully managed to avoid imbalance. In cold temperatures, some capacity loss may occur, though LTO batteries tend to be more resilient than other chemistries.

Additional Tips for Long-Term Storage

- **Battery Management System (BMS):** A Battery Management System (BMS) is critical for high-voltage and high-capacity batteries. The BMS helps monitor voltage levels, cell balance, and overall battery health, preventing imbalances that could lead to capacity loss or failure.
- **Monitoring:** It is essential to regularly monitor the charge levels of the batteries. For LFP and LTO batteries, maintaining charge levels between 40-60% will prolong their lifespan. Use a system or software to track and alert for voltage issues or imbalances.
- **Safety:** For high-voltage batteries, safety precautions should be a priority. Batteries should be isolated to prevent short-circuiting, and storage areas should be designed with fire safety protocols in place.

Summary of Key Points

Battery Type	Ideal Charge Level	Ideal Temperature	Storage Duration	Voltage Considerations	Maintenance Frequency
LFP (Lithium Iron Phosphate)	40%-60%	0-25°C	5+ years	Maintain balanced voltage (3.2V)	Check every 6 months
NMC (Nickel Manganese Cobalt)	40%-60%	15-20°C	3-5 years	High energy density; watch voltage balance	Check every 6 months
LTO (Lithium Titanate)	30%-50%	0-30°C	10-15 years	Low voltage (2.4V); monitor cold temps	Check every 6 months

This document provides the essential guidelines for long-term storage of **LFP**, **NMC**, and **LTO** batteries. By adhering to these recommendations, you can ensure that your batteries remain in optimal condition and perform efficiently over an extended period. Always tailor storage conditions to the specific requirements of each battery chemistry to maximize longevity and safety.

Calibration of SOC for Long Term Storage System

When the time from shipping to installation is more than 6 months, the battery system SOC should be calibrated manually before putting it into test or use. Otherwise, it's not mandatory to conduct the calibration.

Method of Calibration

Step 1. Fully charge the battery system to 100% SOC until the charging station turn off automatically. (Note: First time it may take longer to fully charge the battery for SOC calibration on the top end)

Step 2. Discharge the battery system until the SOC ≤15%;

Step 3. Power off the vehicle and keep the battery system stand still for more than 1 hour,

Step 4. Power on and BMS will calibrate the SOC automatically,

Step 5. Fully charge the battery system to 100% SOC until the charging station turn off automatically

6. TECHNICAL INFORMATION

Dimensions (mm)	
Maximum length	7957
Max width	2463
Maximum height	3250
Wheelbase	4259
Front length	1947
Back length	1753
Front track width	2093
Rear track width	1900
Interior height	2463
Weights (kg)	
Max loaded weight	11600
Front axle capacity	4500
Rear axle capacity	7100
Engine	
Model	TM4 HV2200
Medicine	Electric Traction Motor - Direct Drive Resistorassisted permanent magnet
Drive type	Battery Electric Vehicle
Maximum Power (kW)	255 kW
Maximum Torque (kW)	2355Nm
Max Speed	100km/h
Climbing Ability (at Max Loaded Weight)	21%
Tires	245/70 R17.5
Suspensions	
Front	Rigid axle, Air Suspension, 2 Air Bellows, 2Hydraulic Shock Absorbers
Back	Air Suspension, 4 Air Bellows, 4 HydraulicShock Absorbers
Anti-roll bar	Front anti-roll bar (S) Rear anti-roll bar(O)
Brake system	
Front / Rear	Disc / Disc
Short description	ABS, ASR (ESP/ESC), EBS Dual Circuit, Electronic Actuated Full Air Brake System
Parking brake	Airy, effective on the rear axle
Auxiliary brake	Regenerative brake
Electrical System	
Rated voltage	24V
Accumulator	105 Ah (Happy)
Electrical System-Electric Vehicle	
Operating voltage	600 V
Compliance with ECE-100 r2	Yes
Battery Type	Lithium Ion (LFP Hybrid)
Battery Capacity	211 kWh (S); 268kWh (O)
Battery Position	Vehicle roof part
Range (km)	Option-1 (211 kWh) Up to 300 km (Non Air Conditioned) Up to 200 km (Air Conditioned)
Guarantee	8 years 80% charge in 8 years with overnight charge
Air conditioning	capacity: 18 kW + 3.5 kW

NOTE: Technical Values stated are approximate, may vary depending on vehicle type and options.

PRESSURE VALUES		
Four Way Protective Valve	Static Shutdown Pressure	> 5.5 Bar
Air Dryer	Minimum Opening Pressure	8.3 Bar
Air Dryer	Maximum Closing Pressure	9.8 Bar
tires	Cold Inflation Pressure	8.5 bar / 123 psi

OIL AND LIQUID PROPERTIES			
DEFINITION	CAPACITY	NORM	CLASS
Differential oil & rear axle	5.7 lt	SAE 75W 90	API GL 5
Power steering fluid	3.5 lt	GM Dexron – III	AUTRAN DX III
Electric air compressor oil	1 lt	Hydrovane HPO198-5N	-
Presuspension Greasing	0.3 lt	DIN51825: KP2K-20 ISO-L-XBCEB2	ZFTE-ML12G
A/C compressor oil	150 ml	FV68H (PVE)	IDEMİTSU KOSAN
Antifreeze (50%) + Water (50%)	55.3 lt	ASTM D4985, ASTM 6210 and ASTM D3306	-
A/C gas	4.4 kg	R407C	-

* The antifreeze to be used must meet ASTM D4985, ASTM 6210 and ASTM D3306 standards. Antifreeze must also contain “silicates and organic acids”.

In addition, if there is a kinematic viscosity value for which temperature in the table below on the antifreeze product to be used, and if it remains above the value in the table below, the flow rate of the line will decrease, and if there is a value below the value in the table, the flow rate of the line will increase.

Temperature (°C)	BASF Glysantin G48 (%50 mixed)
-30	50
-20	27
-10	14
0	8,8
10	5,9
20	4,1
30	3
40	2,2
50	1,6
60	1,4
80	1

7. AUTHORIZED SERVICES

COUNTRY	STORE NAME	STORE ADDRESS	CONTACT NUMBER
ALGERIA	Spa Elsecom	Rue Baha H'med, BP 200 Bab Ezzouar - Alger	+213 (0)23 85 30 86
AZERBAIJAN	AZ Auto LLC	2207 Nobel avenue AZ1006 - Bakü	+(994) 124964598
BOSNIA	Sejari d.o.o. Sarajevo	Blažuj 78, 71215 Blažuj - Sarajevo	+387 33 770 306
BULGARIA	Isubus Ltd.	Botevgradsko Shose Blvd. 1839 Sofia	+(359) 28182929
CROATIA	Presečki grupa d.o.o.	Frana Galoviča 15 49 000Krapina	+385 (0)49 328 000
CZECH REPUBLIC	Turancar CZ. s.r.o.	Bavorská 856/14 155 00 Praha 5	+420 776 111 113
FRANCE	Fast Concept Car	Z.I La Ribotiere 85170 Le Poire Sur Vie	+33 25 13 41 034
GERMANY	Omnicar Fahrzeughandel GmbH	Weinbrennerstrasse 10 77815 BÜHL	+49 (0)7223 8061930
GREECE	Petros Petropoulos S.A.	96-104 Iera Odos 122 10 Athens	+(30) 210349 92 00
HUNGARY	Anadolu Rom Hungary	1135 Budapest Robert Karoly Ket. 96-98	+36 703730637
ISRAEL	Universal Trucks Israel Ltd.	Industrial Area Segula, P.O. Box 4599 Petach-Tikva 49145	+972-3-9120010
ITALY	Midi Europe SRL	Via Crosaron, s.n. 37053 Cerea VR	+39 0442 328 212
LITHUANIA	UAB Saločiai Ir Partneriai	Mokyklos str. 1B, Bukiskės LT-14182 Vilniaus raj.	+370 5 2793000
MOROCCO	Maroc SDAMA	Route principale de Rabat 1, km 6,3 Ain Sebaa - Casablanca	+212 (0) 529 029 300
POLAND	Busimport PL Sp. z.o.o.	Gierłatowo 10A 62-330 Nekla Wielkopolskie	+48 61 43 86 905
ROMANIA	Anadolu Automobil Rom. Srl	Soseaua Bucuresti-Ploiesti Nr. 110 Comuna CiolPani	+4021-266 8300
SERBIA	Auto Cacak Komerc Doo	Bore Stankovica 16 11 030 Belgrade, Makiš	+381 32 376 228
SLOVAKIA	Turancar	Bratislavská 29 94901 Nitra	+421 37 6555 777