VISIGO

USER'S MANUAL

ANADOLU ISUZU

Revision No:01

FOREWORD

This user's manual is prepared to give general information about the efficient and most economical use of **E6 Visigo HP** vehicle. We strongly recommend you to read the information carefully and to abide by all warnings. We would like to inform you that our company will not be responsible for any financial, spiritual problems and losses that you may suffer unless you follow the instructions.

You may apply to authorized dealers and authorized services when you need more detailed information about your vehicle.

Keep the user's manual in the vehicle continuously.

There may be modifications in the shape, equipment and technical specifications as a result of our continuous efforts to improve our vehicles. The information, pictures and technical specifications here are based on the last product information available at the publication of the user's manual and Anadolu Otomotiv Sanayi A.Ş. reserves the right to change without any prior notification.

Thank you for choosing this product.

We wish you a nice drive.

Anadolu Otomotiv Sanayi ve Ticaret A.Ş.

Headquarters : Fatih Sultan Mehmet Mah. Balkan Cad. No : 58 Buyaka E Blok Tepeüstü 34771 Ümraniye / İSTANBUL

Factory : Şekerpınar Mah. Otomotiv Cad. No : 2 41435 Çayırova / KOCAELİ

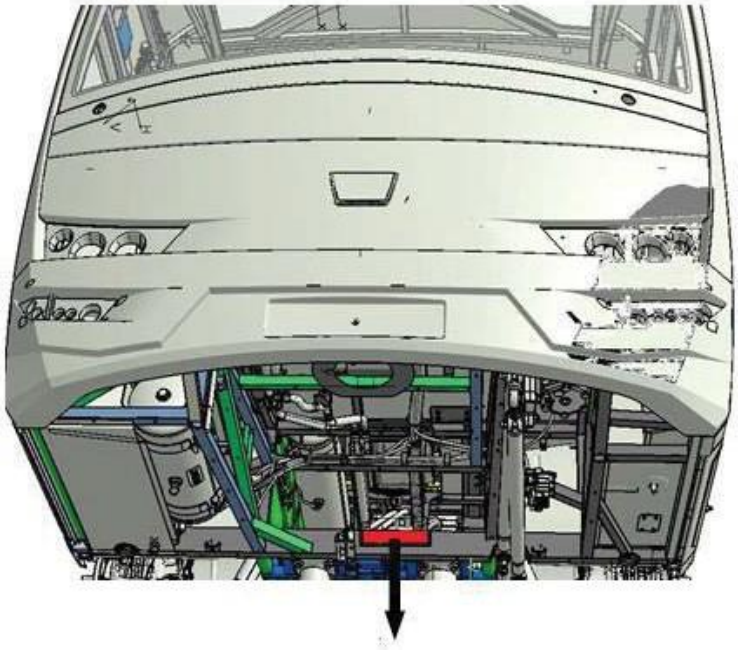
Phone : +90 850 200 1900

TABLE OF CONTENTS

PAGE

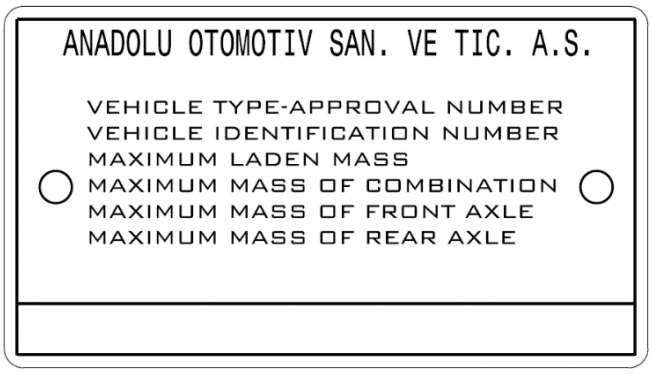
1.INTRODUCTION

CHASSIS NUMBER



Chassis number is located in the front part of the vehicle, as shown in the picture.

IDENTIFICATION PLATE



Identification plate is at the front door entry, at the step level on the side of hostess seat. There are VIN number, sum of maximum axle load, maximum front axle load, and maximum rear axle load on the identification plate.

VIN number includes the vehicle's chassis number info along with vehicle model, maximum loaded weight, engine type, driving system, wheel base, and production place codes.

A detailed description of the composition of the VIN

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
N	**N**	**A**	**M**	**0**	**A**	**E**	**R**	**S**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**

(SAMPLE)

1 - 3	INTERNATIONAL WMI NO:	NNA:	(AIOS) ANADOLU ISUZU OTOMOTIV SANAYI VE TICARET ANONIM SIRKETI
4	MODEL LINE	M:	BUS GROUP
5	GVW OR CAPACITY RATING	N:	14 PASSENGER SEATS
		H:	17 PASSENGER SEATS
		8:	18 PASSENGER SEATS
		F:	19 PASSENGER SEATS
		G:	20 PASSENGER SEATS
		L:	21 PASSENGER SEATS
		B:	22 PASSENGER SEATS
		C:	23 PASSENGER SEATS
		4:	24 PASSENGER SEATS
		E:	25 PASSENGER SEATS
		M:	26 PASSENGER SEATS
		D:	27 PASSENGER SEATS
		R:	28 PASSENGER SEATS
		P:	29 PASSENGER SEATS
		T:	30 PASSENGER SEATS
		K:	31 PASSENGER SEATS
		S:	32 PASSENGER SEATS
		U	33 PASSENGER SEATS
		V	34 PASSENGER SEATS
		5	35 PASSENGER SEATS
		6	36 PASSENGER SEATS
		7	37 PASSENGER SEATS
		Z:	38 PASSENGER SEATS
		9	39 PASSENGER SEATS
		A:	43 PASSENGER SEATS
		0	INDEPENDENT FROM SEAT NUMBER
6	MODEL EXTENSION	S:	STANDARD TYPE
		A:	DELUXE TYPE WITH AIR SUSPENSION
		Z:	DELUXE TYPE WITH AIR SUSPENSION (EURO EXPORT)
		L:	DELUXE TYPE WITH MECHANICAL SPRINGS
		B:	PUBLIC TRANSPORT TYPE
		H:	STANDARD TYPE WITH ACTUATED DOORS
		E:	PUBLIC TRANSPORT (ALGERIAN EXPORT TYPE)
		2	INTERURBAN TYPE
7	ENGINE MODEL	9	ISUZU - 4BD1
		1:	ISUZU - 4HF1
		2:	ISUZU - 4HF1-DE-RATED
		3:	ISUZU - 4HE1-T
		4:	ISUZU - 4HE1-XS
		5:	ISUZU - 4HG1-T
		7:	ISUZU - 4HK1-XS
		A:	ISUZU - 4HK1E4C
		S:	ISUZU - 4HK1E4S
		N:	ISUZU - 4HK1E4N
		T:	ISUZU - 4HK1E5C
		U:	ISUZU - 4HK1E5S
		V	ISUZU - 4HK1E5N
		B:	ISUZU - 4HK1-TCC EURO2 175HP
		P:	CUMMINS - ISB6.7E6C320
		6:	CUMMINS - ISB6.7E6250B
		8:	CUMMINS - ISB6.7E6C250B
		Z:	CUMMINS - B6.7E6D320C
		Y:	CUMMINS - B6.7E6D250B
		E:	CUMMINS - B6.7E6E320C
8	DRIVING SYSTEM	L:	LEFT HAND DRIVE
		R:	RIGHT HAND DRIVE
9	WHEEL BASE	G:	2765mm
		L:	3365mm
		M:	3065mm
		E:	3815mm
		F:	4150mm
		N:	3385mm
		S:	4660mm
10-11	MANUFACTURING PLANT	01:	AIOS KARTAL PLANT
		02:	AIOS GEBZE PLANT
12-17	PRODUCTION SEQUENCE NO		

ENGINE NUMBER

Engine number is stated on two places:

On engine introduction tag located on rocker cover

On oil cooler body located on engine block

VEHICLE GUARANTEE

Vehicle's warranty term and conditions are stated in the "Warranty Certificate" provided along with the vehicle. Please see info provided in "Warranty Certificate" for warranty conditions and details of operations not covered by warranty.

OPTIONS

Options indicated below may be applied upon request apart from the standard features of vehicle.

- Ski box and extra luggage
- Trailer towing system
- Central locking system
- Leather passenger seats
- Footrest
- Armrest (window side) for passenger seats (if requested, seats will be of narrow type)
- 7'' LCD for seat back
- Rear combi
- WC
- GPS antenna
- TV tuner
- Engine room automatic fire extinguishing system

RECOMMENDATIONS / WARNINGS

- For spare keys or lost keys, the serial number on ignition key is required to notify authorized service, so please note the serial number.
- Only use the fuel (DIN EN 590 compatible sulphur rate max 10 ppm) with the stated characteristics for your vehicle.
- Diesel exhaust emission liquid must be compatible with ISO 22241-1 or DIN 70070 standards. These two standards are equivalent of each other.
- Do not load your vehicle over the passenger capacity, do not change the seat places. Our factory is not responsible for possible problems that may arise from change of load balance in the vehicle.
- Inspect the exhaust pipe occassionally. If you see any damage (for example, a damaged connection component or hole or crack caused by wear), have your vehicle checked and maintained at the closest authorized service.
- Check the tyre pressures frequently and always make sure that they are at accurate level.
- Check the main and dipped beam adjustments, do not travel at night with faulty lights.
- Frequently check brake, parking and plate lights. Do not travel with faulty or muddy brake, parking and plate lights.
- Be careful to have your vehicle maintained timely and regularly at authorized services to ensure maximum performance.
- When liquids such as waste oil, brake hydraulic or antifreeze, waste filters and scrap batteries that you used in your vehicle are disposed randomly, they damage the environment to a great extent. Be careful for such hazardous wastes to be disposed in accordance with environmental regulations.
- It is very hazardous to have rolling empty boxes, empty bottles or other goods on the floor, pay particular attention to keep the floor around driver's seat neat and tidy.
- Make sure that there are no inflammable materials under or around the vehicle before you start the engine. Such materials may start fire if they are around.
- Before driving, make sure that you adjusted the seat, steering wheel and mirrors to the positions which provide the correct driving position for you.
- Always fasten your seatbelt.
- Make sure that front window and side windows are clean. Keep the shades in a way not to prevent your view and driving.
- Do not increase the engine speed before it is heated enough.
- Drive your vehicle paying attention to traffic rules and road conditions.
- If you feel any abnormality in relation to the tyres when driving, stop at a safe place immediately. If you continue driving with a deflated tyre, this may lead to the breaking of the bolts and to the dislocation of the tyre due to excessive force on the wheel studs.
- Please drive with a constant speed as much as possible. Warming the engine longer than it is necessary and revving up the engine to high speeds lead to fuel wastage.
- If a warning lamp works or lights, please do not disregard it and do not keep on driving. Remember that you must conduct corrective actions by referring to the description of the counters, warning lamps and indicator lights.

- Start hazard flasher system and pull over to a safe place that will not prevent traffic if your vehicle malfunctions when driving. Place warning triangles to let other vehicles know about your presence. Let the other passengers get off and keep them waiting in a safe place. Inform the closest authorized service.
- Field of vision is reduced under adverse weather conditions and the slippery road surfaces increase the braking distances. Drive at a lower speed than your speed under fair weather conditions. Moreover, do not turn the steering wheel suddenly and do not brake abruptly. Use tyre chain and winter tyres on snowy and icy roads.
- Paraffinic fuels to be used (including hydrogen-treated vegetable oils (HVO) fuels) must meet the ASTM D975 standard together with the DIN EN15940 standard.
- If a biodiesel fuel mixture is to be used, the rate of biodiesel can be 20% at most.
- Fuel other than the above-mentioned fuels should not be used without consulting the relevant authorized service.

2. GENERAL INFORMATION

ENGINE START

Set the main switch “ON” and transmission “N”. Set ignition key “M", turn the ignition key and press the starter ("D" position).

- Do not run the starter for longer than 30 sec and do not step on the accelerator pedal when starting. Wait for two minutes between each starting trial.
- If engine oil warning lamp has not been deflated within 15 sec, stop the engine in order to prevent it from damage. Contact authorized service.
- Run the engine in idle mode for 3-5 minutes once you have started it. Gradually increase the engine speed. Do not run the engine in a way to exceed maximum engine speed, it may seriously damage the engine.

Starting the Engine in Cold Weather

Set the main switch “ON” and transmission “N”. Set ignition key “M ", turn the ignition key and press the starter ("D" position) when ignition light goes off.

If the vehicle is to be parked for a long time (more than 1 days), turn off the main switch.

ENGINE STOP

Set the ignition key “St” and stop the engine.

Do not turn off the main switch before 70 sec have passed when ignition key is open and after it has been closed.

OPENING AND CLOSING DOORS

Front door is opened /closed through remote control from outside.

There are door opening/closing switches on front control panel to open/close the doors from the inside. Front and rear doors are automatically closed when the vehicle speed exceeds 5 km/h.

Opening the Doors in Emergency

There are air cocks on the upper side of doors for emergencies. Turn the tap clockwise to discharge the air and push the door towards outside to open.

There are also air cocks on sides of the doors to open the doors from outside when necessary. Turn the tap clockwise and pull the door towards outside to open the door.

There is a red lock opening/closing control on the door to open the door if there is any passenger in the vehicle when it is locked from the outside with the key. Turn it in clockwise direction when necessary and air is discharged by turning the air cock on the upper side of the door, door is pushed towards outside to open.

EMERGENCY EXITS

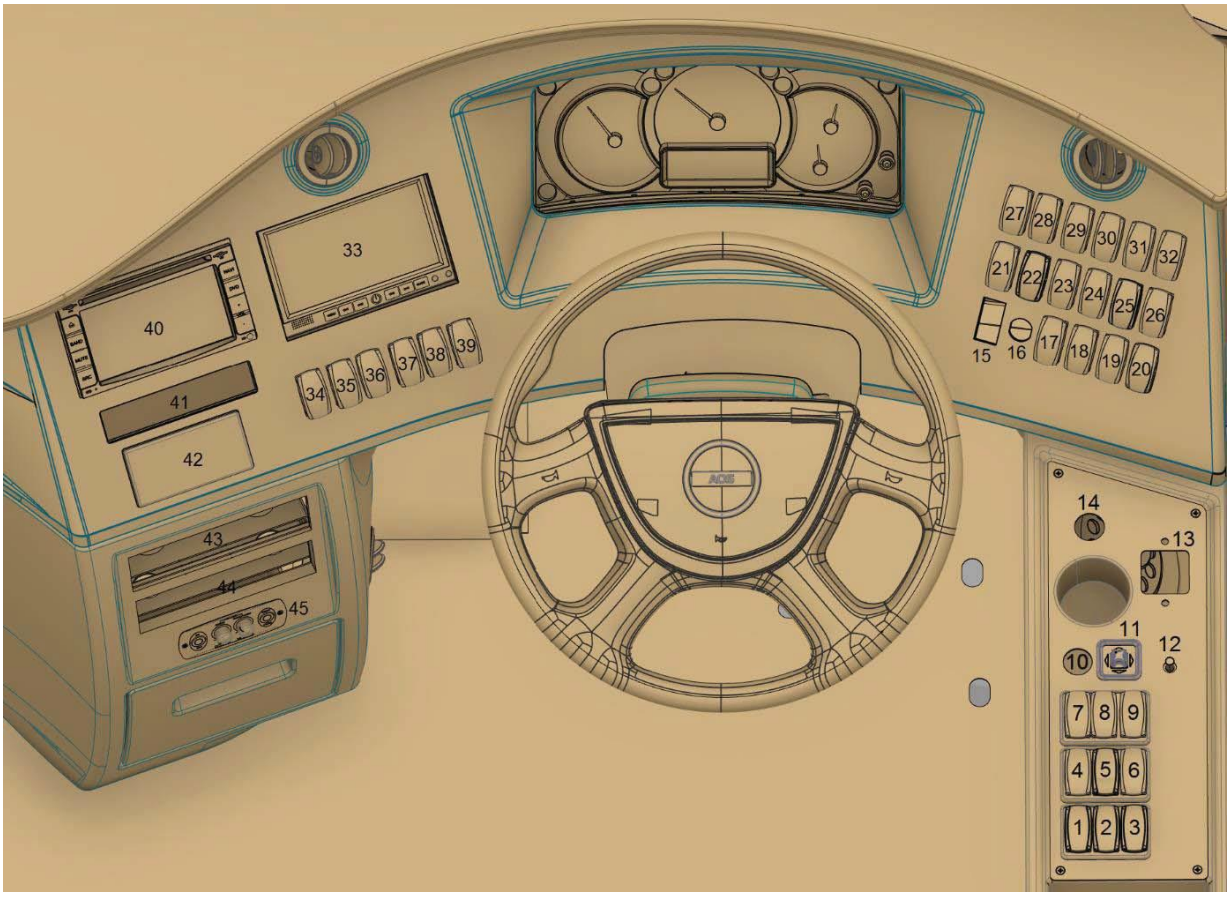
Emergency exit is enabled by breaking the window on the right and left side of the vehicle and window on the trapdoor using the emergency hammer.
To release the emergency door (optional), pull down the emergency door release lever.

STEERING WHEEL ADJUSTMENT

Steering wheel is adjustable upwards, downwards, frontwards and backwards according to the driver's position of easy driving. The lever located below the steering wheel on the right side is pulled upwards for this adjustment. Lever is pushed back when the desired position is reached.
Horn sounds when pressed the center of steering wheel.

3. CONTROLLERS AND INDICATORS

CONTROL PANEL



1. **Optional**
2. **Optional**
3. **Optional**
4. **Driver Window Switch**

Driver window moves downwards when pressed the lower edge of the switch. It stops when pressed once. It moves upwards as long as pressed on the upper edge.

5. **Cruise Control On/Off Switch**

Cruise control is turned on when pressed the lower edge of the switch.
Cruise control is turned off when pressed the upper edge of the switch.

6. Cruise Control Fixing and Speed Increasing Switch

After turning cruise control on, if you press the lower edge of the switch to fix the vehicle at the current speed. Vehicle speed increases as you press the upper edge. To cancel the system, the on/off switch is turned off or the brake pedal is stepped on or the retarder lever is pulled. When cruise control is activated, a green warning light appears on the instrument panel and constant speed value is shown on the information screen.

7. Retarder Switch

System is opened by pressing the lower edge of switch for retarder to activate.The system operates when the engine water temperature is over 80°C. When the switch is on, if the brake pedal is pressed, retarder will be activated automatically. The system is closed when pressed the upper edge of switch.

8. LCD Screen Switch

LCD screen is turned on when pressed the lower edge of the switch.
LCD screen is turned off when pressed the upper edge of the switch.

9. AEBS Switch

This switch is used to deactivate the AEBS system. When pressed the switch, warning letter “AEBS” lights on the information screen. If you press the switch again, AEBS system activates. Also, if there is a fault in the system, “AEBS” warning lights.

10. Lighter

Lighter is pushed towards the heat element inside and it goes out automatically when heated.

11. Mirror Control Switch

This switch is used for the driver to adjust the directions of rear view mirror according to himself. Mirror is turned towards the desired direction by turning the arrow mark on the switch towards the mirror to be adjusted and directing the switch (right, left, upwards, downwards).

12. Emergency Switch

Red security cap is opened by moving upwards to use the emergency switch. Electricity in the system is cut off, engine stops, all inner lighting and flasher are turned on and door switches become activated when it is pushed forward. System becomes normal when it is pulled back.

13. Handbrake

Handbrake system is air-driven and spring wound. Handbrake lever is on the left side control panel. When the vehicle is stopped, handbrake is pulled backwards and lever must be locked at the lower position. Lock latch on the lower part of the lever is slightly pulled upwards and lever is released frontwards to disengage the brake. There is a warning light on the instrument panel to indicate whether handbrake system is enabled. For driving (vehicle activated), if brake air is insufficient when handbrake is disengaged (below 6 bars), warning light turns red. One must wait for this light to go off before moving

14. USB Connection

Used for connecting USB devices.

15. LDWS Switch

You can disable the system for a period of 10 minutes on roads with no clear lane markings to avoid false alarms. Press the switch to disable the system.
If you want to reactivate the system sooner, press the switch again.

And also automatic activation;

- After 10 minutes since deactivation
- After the ignition is turned on again

		Amber	
		Off	On
Green	Off	No fault. LDWS is not active. The vehicle is moving below 60 km/h. No clear lane markings.	LDWS is passive. System disabled for a period to avoid false alarms.
	On	No fault. LDWS is active. System is ready to warn.	Fault is present.The sequence of green flashing signals is counted for reading out the fault code. LDWS is passive.

16. Retarder Control Lever

Retarder is a brake support system which helps the vehicle to slow down with less wear on the braking system. Retarder, which is activated by depressing the brake pedal extends the service brake life. To activate the retarder, simply move the lever to one of the three powered positions:

Position 0 : Retarder Power OFF
Position 1 : 25% Retarder Power
Position 2 : 50% Retarder Power
Position 3 : 100% Retarder Power

The hand control does not automatically turn off at low speeds. Do not forget to reset the lever to Position 0 when the vehicle is stationary or when the retarder is no longer required.

17. Front Fog Lamp

When ignition key and park lamps are turned on, if you press the lower edge of the switch, front fog lamps are activated. They are deactivated when pressed once more. When ignition key is turned off, fog lamps are deactivated.

18. Trunk Lid Switch

Lights in the trunk are turned on when pressed the lower edge of the switch. Lights go off when pressed the upper edge of the switch.

19. Hillholder Switch

System is switched on by pressing the lower edge of the switch. Brake system is kept activated to prevent the vehicle from slipping backwards on a hill. It locks the system if you remove your foot from the brake pedal. Brake systemis turned on if you step on the accelerator pedal. System is turned off when pressed the upper edge of the switch.

20. Combi/Water Heater Switch

It has two levels. It gives energy to combi when pressed the lower edge of the switch once, and to water heater when pressed once more. The energy is cut off if you press the upper edge of the switch.

21. Spot Light Switch

Spot light on the front door is turned on when pressed the lower edge of the switch. The light is turned off if you press the upper edge of the switch.

22. Driver Side Window Resistance Switch

Driver's side window is activated when pressed the lower edge of the switch.It is deactivated when pressed for the second time. If heater is not turned off by the driver, it is automatically deactivated after 20 minutes.

23. Outside Mirror Resistance Switch

Outside mirror heater is activated when pressed the lower edge of the switch. It is deactivated when pressed for the second time. If the heater is not turned off by the driver, it is automatically deactivated after 20 minutes.

24. Regeneration Switch

Regeneration is started by pressing the switch, warning light appears on the indicator.

25. Central Lock Key

The trunk is unlocked when pressed the lower edge of the switch. The trunk is locked when pressed the upper edge of the switch.

26. Driver Side Spot Light Switch

Spot light on the upper driver's compartment is turned on when pressed the lower edge of the switch. The light is turned off when pressed the upper edge of the switch.

27. Roof Light Switch 1

Roof lights are turned on when pressed the lower edge of the switch. Roof lights are turned off when pressed the upper edge of the switch.

28. Roof Light Switch 2

It is used to turn on/off the lights at night. Lights are turned on when pressed the lower edge of the switch. Lights are turned off if you press the upper edge of the switch.

29. Reading Lamp Switch

Switch works as two levels. It is opened on the first level when pressed the lower edge and if reading lamp switch on the service set is turned onby the passenger, the lamp is on. It goes off if turned off. Reading lampsare turned on the second level when pressed the lower edge for the second time, it may not be controlled by the passenger.

30. Sunroof Switch

It is used to open/close the sunroof. When pressed and released the lower edge of the switch, sunroof is opened automatically. If you press the switch once more to stop the movement when the desired level of space is reached. When pressed the switch once more to stop the movement when the desired level of closure is reached.

31. Roller Blind Switch 1

There is electrical roller blind in parts of front window of driver compartment. The blind moves downwards when pressed the lower edge of the switch. It moves upwards when pressed the upper edge of the switch. Upwards and downwards motions continue as long as the switch is pressed.

32. Roller Blind Switch 2

There is electrical roller blind in parts of front window by the front door. The blind moves downwards when pressed the lower edge of the switch. It moves upwards when pressed the upper edge of the switch. Upwards and downwards motions continue as long as the switch is pressed.

33. Closed Circuit Camera System

Displays the in-vehicle camera video footage.

34. Front Door Control Switch

When pressed the lower edge of the switch, front door is opened/closed. The switch does not get activated when the vehicle speed exceeds 5 km.

35. Back Door Control Switch

When pressed the lower edge of the switch, back door is opened/closed. The switch does not get activated when the vehicle speed exceeds 5 km.

36. Suspension Control Switch

This switch is used for a higher driving level than the normal one. When pressed the lower edge of the switch, the vehicle gets a higher level and if you press the higher edge of the switch, the vehicle gets the normal driving level. When the switch is turned on, intermittent warning sound is activated.

37. Flasher

When pressed the lower edge of the switch, flasher is opened. Flasher is closed if you press the upper edge of the switch. When flasher is open, signal warning lamps on the instrument panel and function lamp on the switch flash and give audio warning along with all signal lamps of the vehicle.

38. Trunk Opening/Closing Switch 2

When pressed the lower edge of the switch, trunk 2 at the left side opens if it is closed and closes if it is opened.

39. Trunk Opening/Closing Switch 1

When pressed the lower edge of the switch, trunk 1 at the left side opens if it is closed and closes if it is opened.

40. Multimedia Set

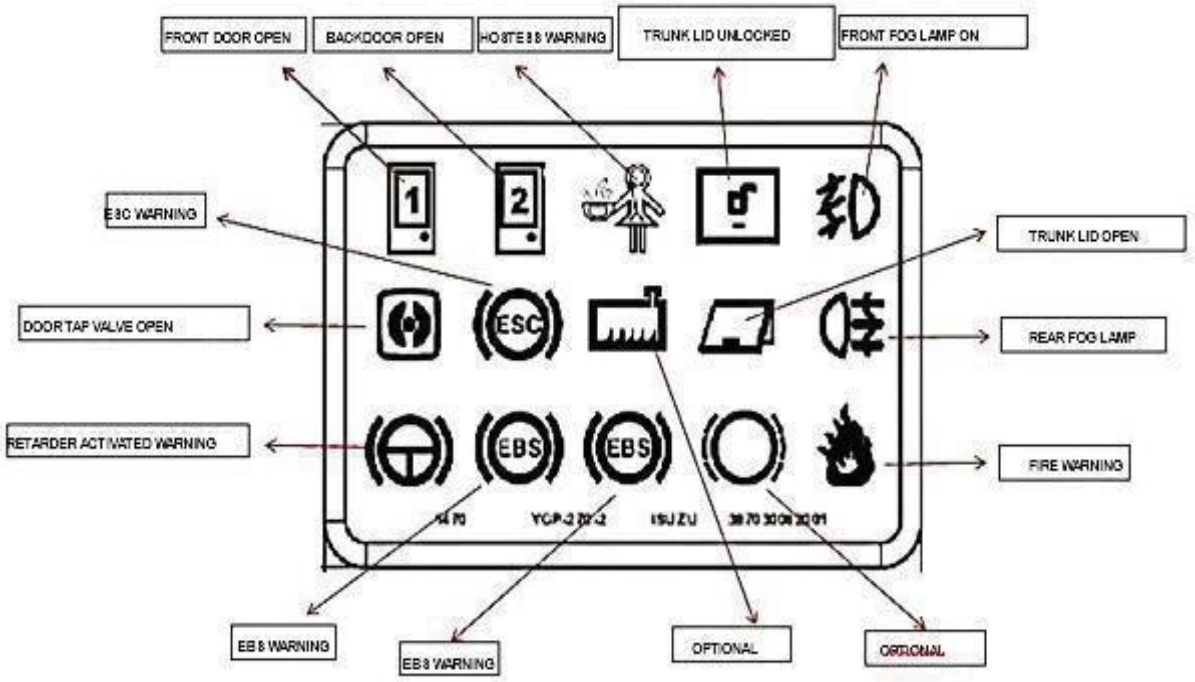
The vehicle has a multimedia set which includes radio, CD player, DVD player, TV and navigation.

41. Gear Selector

There is a gear selector with 6 buttons in the vehicle.

42. Warning Lens Panel

It indicates the status in which functions or malfunctions are active.

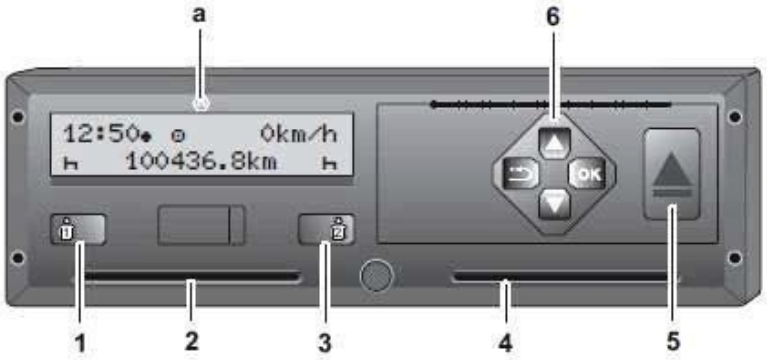


43. A/C Control Panel

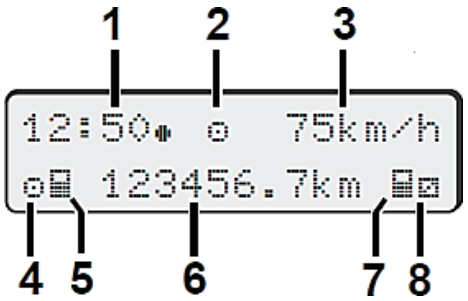
It is described in detail under the heating and cooling system.

44. Tachograph

The tachograph records vehicle speeds, time, distance travelled and other information. It can be useful in achieving economic driving and optimum management of operations.



1 Driver 1	Activity button and ejection button
2 Card slot 1	
3 Driver 2	Activity button and ejection button
4 Card slot 2	
5 Unlock button	
6 Menu buttons	Select desired function Acknowledge function or confirm actions Leave menu



1	Time
2	Operating mode
3	Speed
4	Driver 1 active
5	Driver 1 card symbol
6	Total kilometer
7	Driver 2 card symbol
8	Driver 2 active

45. Amplifier

Amplifier enables one to turn the volume of speaker and microphone up/down.

NOTE: Switch places may vary according to vehicles.

Wiper lever

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

Lever position	O		–	=
Wiper state	Stopped	Intermittent (Light rain)	Slow (Moderate rain)	Fast (Heavy rain)

When pressed the button on the right side of lever, windshield washer fluid is sprayed over the windshield and wiper levers are automatically activated, then stop after a while.

Signal Lever

The lever gives signal to the right when it is directed upwards and to the left when directed downwards. Park lamps are turned on when it is turned for the first time and dipped beams are turned on when it is turned for the second time. If the lever is pushed downwards when dipped beams are on, main beams are continuously on.

Selector: Main beams are on as long as the lever is pulled if the signal lever is pulled upwards. It goes off when it is released

.

INSTRUMENT AND WARNING LIGHTS PANEL

Brake System Pressure Warning: Red and audio warning light is on when brake system pressure falls below 6 bars.

Battery Warning: Red warning light is on when ignition switch is on and is offwhen engine is started and passes idle speed. It indicates a malfunction in charging system if it is on when driving.

Transmission Malfunction Warning: Yellow warning light indicates a malfunction in transmission.

Engine Coolant Temperature Warning: Red warning light is on when engine coolant temperature is 113 °C.

Lining Wear Warning: Red warning light is on when lining thickness percentage falls below 10%.

Driver Warning: Yellow warning light is on for the driver to identify the problems on NOx control system and their causes.

Driver warning is on;

If diesel exhaust emission fluid level is below warning level,
If diesel exhaust emission fluid of incompatible quality is used,
If diesel exhaust emission fluid of incompatible amount is used,
When diesel exhaust emission fluid is sprayed in an intermittent way,
When EGR valve or system sensors do not work compatibly.

Engine STOP Warning: Red warning light is on when ignition switch is on and goes off when engine is started. If warning is on when engine is on, vehicle must be stopped safely to stop the engine.

Motor STOP warning will be on;

If there is an important error in the vehicle,
If automatic engine will be protected and stopped,
If there is a malfunction in SCR system,
If there is diagnostic error code in the system.

Engine Oil Warning: Red warning light is on when there is an error detection in engine grease system.

Engine must be stopped when warning light is on;

-If oil level is low,
-If oil's viscosity is not compatible,
-If oil filter is blocked,
-If oil pressure sensor is faulty,
-If oil pump is faulty.

Malfunction Indication Warning: Yellow warning light is on in the case of a malfunction related to emission control system. When the warning is on, the vehicle must be taken to the closest authorized service.

Engine Warning: When an error, which does not prevent the vehicle from moving and is not active or critical, is identified, yellow warning light is on. If warning light is on when the engine is running, the vehicle must be taken to the closest authorized service.

If it will be closed in the idle mode,
If it flashes when the ignition is turned on,
If there are maintenance errors and a diagnostic error code on the system,
Engine warning light is on.

DPF Warning: Yellow warning light is on when DPF (diesel particle filter) is full. Warning light is constantly on when the filter is full, regeneration must be started. When the particle amount reaches the critical level, warning flashes, at the same time malfunction indicating warning light is also on and engine power decreases. The vehicle must be parked to start regeneration. Red engine warning light is on if regeneration is not conducted, the vehicle must be stopped in a safe way and you must contact authorized service.

Exhaust System High Temperature Warning: When active regeneration starts in the vehicle or exhaust temperature exceeds a programmable limit, a yellow warning light is on. When exhaust temperature decreases to suitable temperatures, warning light goes off. There must not be any inflammable materials at the exit of exhaust pipe when warning light is on while the vehicleis parked.

Diesel Exhaust Emission Fluid Low Level Warning: Yellow warning light is on when the diesel exhaust emission fluid level is low.

Signal Warnings: Green audio warnings that flash when hazard flasher switch or signal lever on the steering wheel indicating turns to the left and right are used.

Cruise Control Warning: Green warning light is on when cruise control is active.

Front Fog Warning: Green warning light is on when front fog lamps are used.

Glow Plug Warning: Yellow warning light is on when the ignition is turned on and goes off after a while. You need to wait for the lamp to go off to press the starter.

Warning for Water in Fuel System: Yellow warning light is on when there is water in the fuel. Fuel quality control must be made if the warning light is constantly on.

Fuel Level Warning: Yellow warning light is on when fuel level decreases. The vehicle may go 50 km more after the warning light is on.

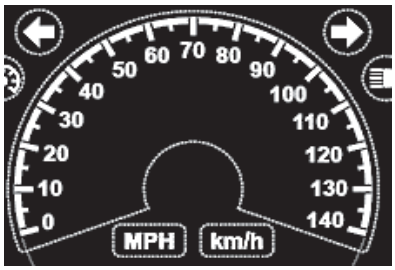
Main Beam Warning: Blue warning light is on when main beams are used or headlights are flashed.

Speed Unit: Unit of the value in the speed indicator.

Engine Speed Indicator

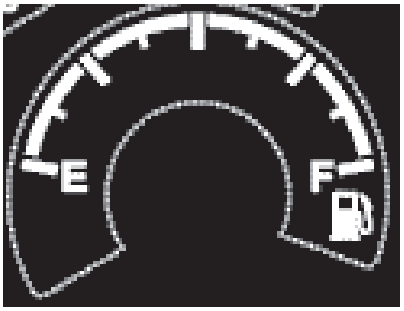
Engine speed indicator measures the engine speed per minute. It starts working when the engine is started.

Speed (km/h) Indicator



It shows the vehicle speed as km/h, it starts working after the vehicle has started.

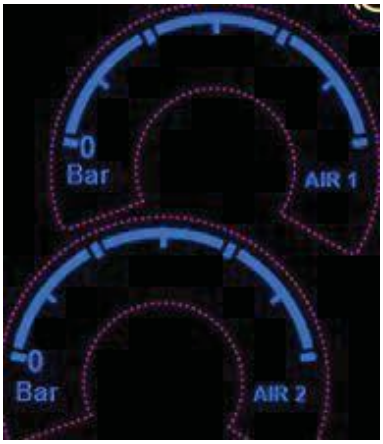
Fuel Indicator



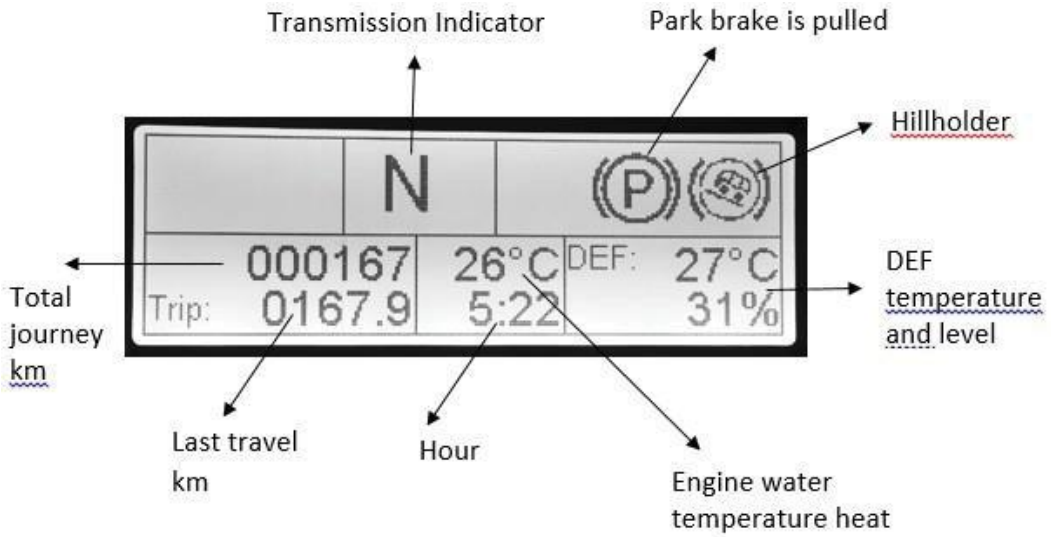
Fuel indicators show the fuel level in fuel tank. When pointer gets close to “E”, yellow light at the bottom right part of the indicator is on, this means that fuel has decreased. Fuel must be added before the fuel in the tank is completely used up, or else the system draws air.

Brake Pressure Indicators

It shows the front brake and rear brake air pressure values.



Information Screen



Sub-menus may be displayed using the MODE and TRIPkeys on the indicator.

When MODE key is pressed;
Driving info,
Vehicle info,
Alarms/warnings,
Settings menus are displayed.

Sub-menus are displayed when MODE key is pressed on the selected title.

DRIVING INFO:
Range
Average Fuel Consumption
Instant Fuel
Average Speed

VEHICLE INFO:
Engine Time Hour
Engine Speed
Heat
Oil Pressure
Air Pressure 1
Air Pressure 2
Total Journey
Last Travel km
Brake Lining Status

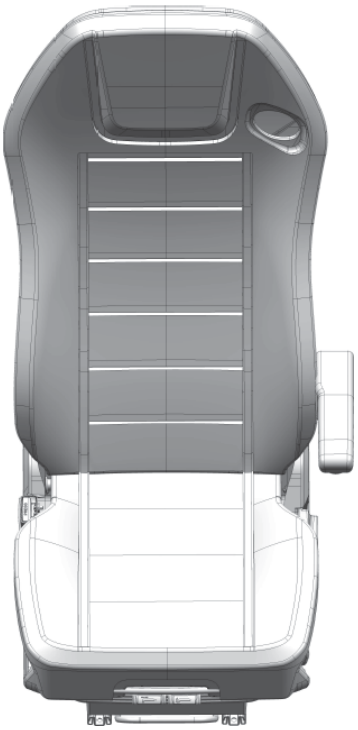
ALARMS/WARNINGS
Engine Error Codes
Transmission Error Codes

SETTINGS
Date/Hour
Language
Screen

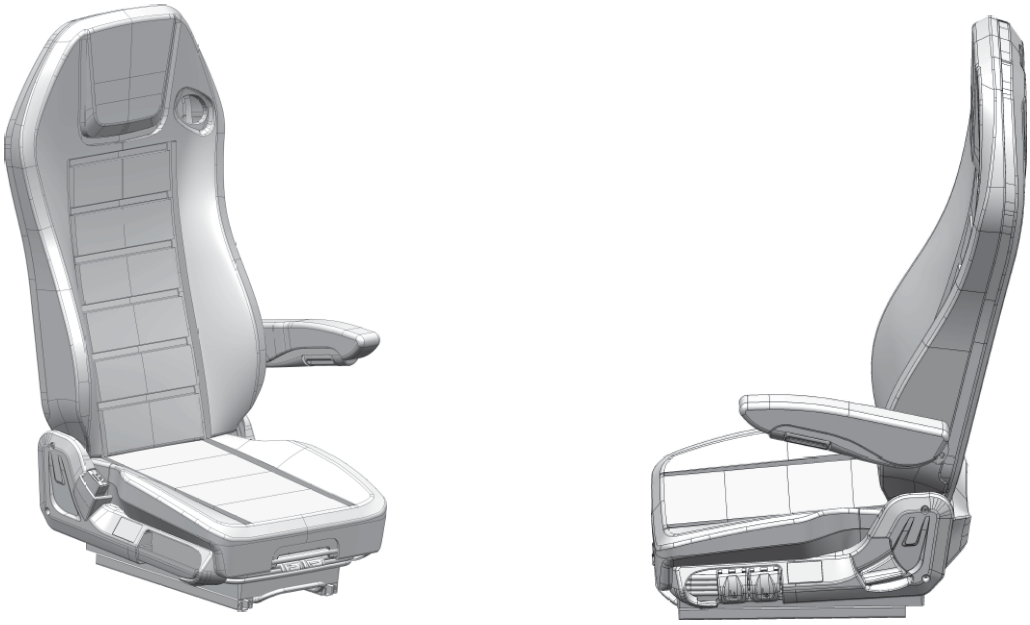
Press MODE and TRIP keys at a time to go back to the main screen.

4.VEHICLE EQUIPMENT

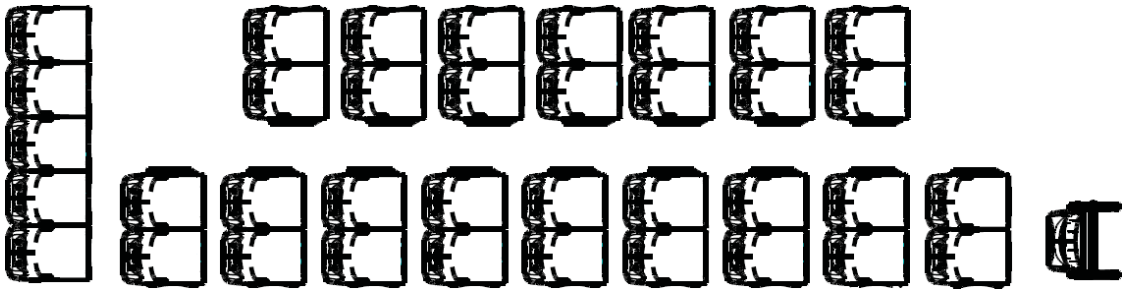
DRIVER SEAT



1. **Seat inclination adjustment:** Button on the left is pulled upwards to adjust the inclination of the seat. The seat inclination is brought to the desired position by giving the weight frontwards or backwards.
2. **Backrest inclination adjustment:** It is adjusted by unlocking the backrest (lock lever is lifted up) and backrest is laid by pressing backwards.
3. **Height adjustment:** Seat height is changed by lifting or pressing down the adjustment latch.
4. **Armrest:** There are armrests, which can be lifted up and down, on two sides of the seat.
5. **Armrest inclination adjustment:** Armrest inclination can be changed by turning the button.
6. **Shock absorber rigidity adjustment:** Flexibility rigidity of seat can be adjusted as 3 levels.
7. **Seat depth adjustment:** Button on the right is pulled upwards to adjust the width of seat to come frontwards. At the same time, seat is pulled frontwards and backwards to adjust the desired position.
8. **Forward and backward adjustment:** Seat lock lever is pulled to move frontwards or backwards.
9. **Quick lift down:** Seat may be lifted down to the bottom by pressing the button to fix. Seat rises to the driving position when button is pressed again.



PASSENGER SEATS



Passenger seats are covered in cloth. Leather upholstery is offered as an option. There is 1 hostess seat at the front door entrance. Passenger seats are reclining seats, seats by the aisle may spread to the side. The front right and left double seats and middle seat of the back five seats have 3 points seat belt while the other passenger seats have two points seat belt. Right and left double seats have armrests by the aisle. There are treat table and net (for newspapers, magazines, and small goods) behind the seats.

RESISTANCE DRIVER SIDE WINDOW

It is placed on the left of driver. It may be actuated by electrical engine and controlled by the driver through a switch on the front control panel.
When the moving glass is broken or electrical engine malfunctions, you must apply to authorized service.

ROLLER BLINDS

There are two electrical roller blinds on the front window. Blinds may be controlled through separate switches on the front control panel. There is also a roller blind opened and closed manually on the left of the driver.

SUNROOF

There is sunroof in the vehicle to make sure that inside of the vehicle is more illuminated and panoramic view chance is given to the passengers during journey. It may be controlled through the switch on the driver control panel.

LANE DEPARTURE WARNING SYSTEM (LDWS)

A camera in the windscreen watches the lane markings and warns the driver with a warning sound.

There is a switch on the front control panel. By pressing this switch the system can be disabled for a period of 10 minutes on roads with no clear lane markings to avoid false alarms. The yellow LED is lit until the automatic reset occurs. The system is inactive when the yellow LED on the switch is lit. It is error position if both, green and yellow LEDs on the switch are lit.

The system is active and the green LED on the switch is lit:

- the vehicle is moving on roads with clear lane markings
- the vehicle is moving above a configured speed (60 km/h)

The system is not active and the green LED on the switch is off:

- the vehicle is moving on roads with no clear lane markings
- the vehicle is moving below the configured speed

The function of the system can be disabled by the following conditions:

- Dirty or damaged windscreen
- Poor light conditions, such as insufficient illumination of the lane
- Poor weather conditions, such as snow, ice, heavy fog / rain
- Missing, worn, damaged or covered lane markings
- Ignition off

WATER HEATER

There is 5 lt. capacity water heater at the front door entrance, it has got the power of 24V and 500 W.

DIAGNOSTIC SOCKET

Diagnostic sockets are used to load and change parameters on engine control unit and fault diagnosis. Diagnostic socket for engine is in the cabinet on the front- right side. Diagnostic socket for transmission is on the gear selector.

PASSENGER INFORMATION PANEL

This image may be different in your vehicle according to the number of seats.

There is passenger information panel at the top of front window. There are seat belt warning, inner and outer ambient temperature, watch and sitting passenger capacity information on the information panel. Also if there is toiler (optional) in the vehicle, it may be viewed on the passenger information panel that it is occupied.

MIRRORS

There is one inside mirror in the vehicle.

There are two outside mirrors, 1 each on right and left. Formation of vapor and ice on the outside mirrors are prevented with resistance heater and outside mirror view may be controlled by the driver.

RIGHT OUTSIDEMIRROR

LEFT OUTSIDEMIRROR

LCD SCREEN

There is 19” LCD screen under the passenger information panel. There is a magnetic protective frame which is easily demountable on the screen. Image (TV, film, music) may be transmitted to the screen from the multimedia set on the front control panel.

SERVICE SET

There are service sets on the overhead of seats. There are 2 air discharge nozzles, 1 speaker and speaker on/off button, 1 stop button and buttons to activate reading lamps on service sets.
Nozzles are opened by pressing the wings on air discharge nozzles to enable air discharge. Wings may be moved backwards and forwards to adjust the amount of air. The direction may be changed by turning.

WC (OPTIONAL)

Functions

Hand Wash Button:

When this button is pushed water flows for a certain period of time from the faucet. After water flow stops, flow is provided by pushing this button again.

Flush Button

Pushing this button opens the flap, ensures the flow of water for a certain period of time, toilet content in toilet bowl is transferred to sewage tank. After the cessation of water flow, flow is provided by pushing the button again.

Filling The Clean Water Tank

- Open the cover which is under the sink of WC. Connect a ½ inch* size hose to the check valve which is shown in the picture and provide water flow through the hoses. Do not leave the WC until it is full.

* : A hose has same outer diameter size with the hose which has been connected to check valve.

Emptying The Sewage Tank

A warning message appears on front console when the sewage tank is full. After this declaration the booster  does not work and tilet bowl flap prevents overflow of tank by getting deactivated.

After declaration, deactivate the WC and take the bus for emptying the sewage tank to a suitable place where is arranged for this type of operations.

After taking the vehicle to a suitable place, open the appropriate cover on the vehicle, turn the valve handle and wait until it is completely empty.

It is recommended that to clean the sewage tank after three emptying processes.

TRAPDOOR

There is one manually opened and closed trapdoor in the middle of the vehicle. Trapdoor is designed in a way to allow use for emergency exit in addition to use for ventilation purposes. Exit is possible by breaking the glass with the emergency hammerin the cover. There is a tag on the side indicating what to do in emergencies.

REAR - VIEW SYSTEM

There is a closed circuit camera system to display the area behind the vehicle when vehicle is parked or reversed. Image in the camera is displayed on the multimedia set screen on the front control panel.
When the vehicle is reversed, the screen is turned on automatically and image is reflected on the screen.

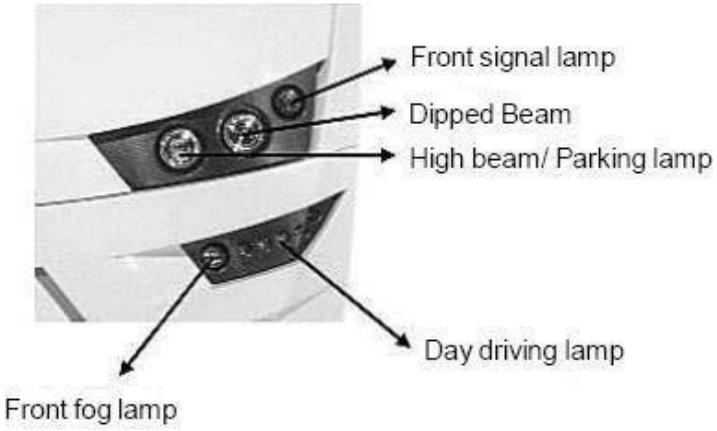
PARKING SENSORS

There are 4 parking sensors mounted on the rear bumper. When the vehicle is reversed, sensors are activated. It gives audible warning to the driver according to the distance between the obstacle and bumper when maneuvering back.

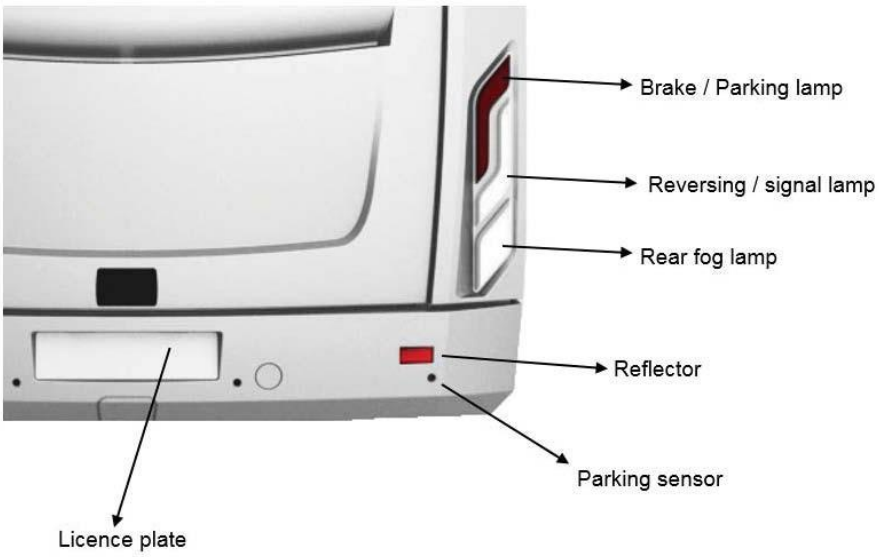
OUTSIDE WARNING AND ILLUMINATION LAMPS

Lamps	Number on the vehicle
Main beam/park	2 items
Dipped Beam	2 items
Front fog lamp	2 items
Front signal lamp (LED)	2 items
Front positioning lamp (LED)	2 items
Side signal lamp (LED)	2 items
Sidemarker (LED)	6 items
Rear signal lamp (LED)	2 items
Brake/parking lamp (LED)	2 items
Extra parking lamp (LED)	8 items
Reverse gear lamp (LED)	2 items
Rear fog lamp (LED)	2 items
Rear license plate lamp	2 items
Rear positioning lamp (LED)	2 items
Day driving lamp (LED)	1 set
Reflector	2 items
3. Security brake lamp (LED)	1 item
Engine illumination lamp (LED)	2 items

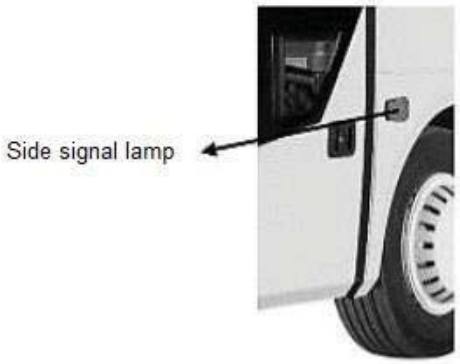
Front Headlights Group



Rear Lamp Group

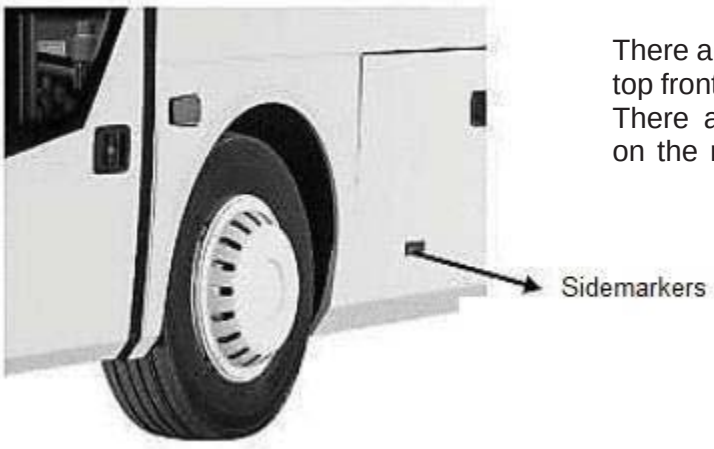


Side Signal Lamps

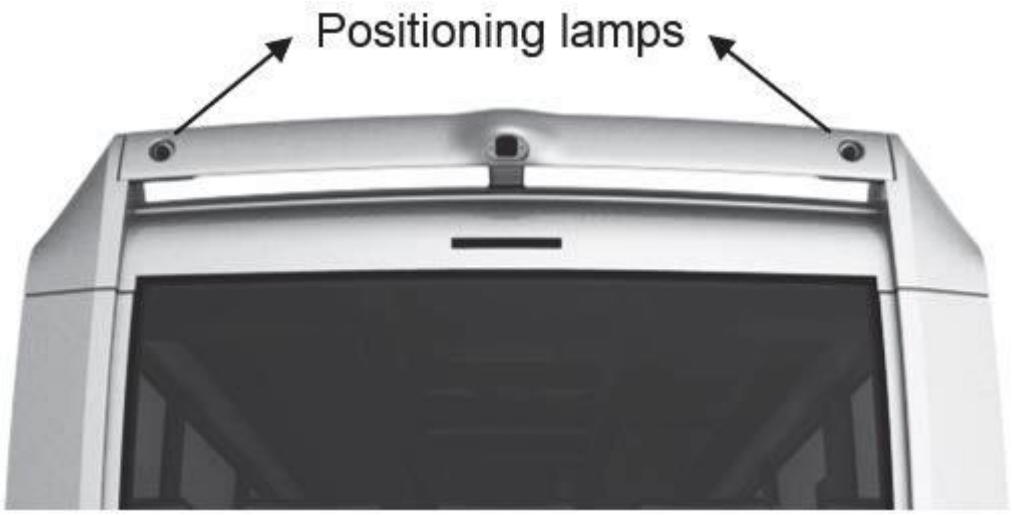


There are total 2 side signal lamps on the right and left of the vehicle. Front and rear signal lamps work together.

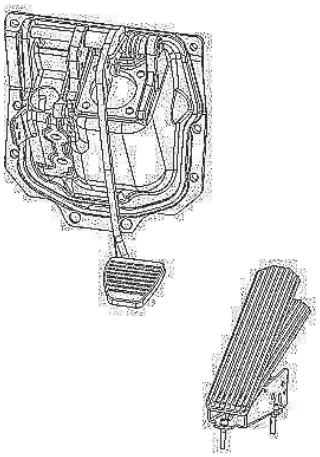
Sidemarkers and Positioning Lamps



There are total 4 positioning lamps, 2 on the top front and 2 on the top back of the vehicle. There are also total 6 sidemarkers, 3 each on the right and left.



PEDALS



Brake Pedal

Pedal on the left (hanging type) is the brake pedal, which is a part of electronic braking system (EBS). Electrical signal is sent to the central control unit and air is distributed to brake elements once the brake pedal is stepped on. Retarder activates automatically when the brake pedal is applied. It is integrated intothe vehicle braking system and will function as the brake pedal is depressed. Slight pressure on the brake pedal gradually applies the retarder. Retarder activates before the service brakes are applied.

Accelerator Pedal

Pedal on the right is the accelerator pedal. Electronic signal sent by the position sensor tied to accelerator pedal is assessed by ECU (Electronic Control Unit) and the amount of fuel going to the engine is adjusted. There is a switch (kickdown) at the end of accelerator pedal to increase the acceleration.
Off-throttle control allows the retarder to be automatically engaged when the driver lets off the accelerator pedal. Retarder control lever can be used to select the number of retarder stages that will activate when the accelerator pedal is released.

TRANSMISSION

There is a gear selector with 6 buttons in the vehicle. These buttons are:

1, 2, 3 buttons : They are used for limiting the maximum gear value that the transmission can raise.

D button **:** Automatically Forward

N button **:** Idle Gear

R button **:** Reverse Gear

The transmission should be at “N” position while the engine was running. When the ignition switch is turned on first of all all the buttons light for 1 - 2 seconds, then only the selected button lights. If the selected button flashes, it means that the selected gear was not accepted by the transmission control unit since the suitable conditions could not provided for the shift of the gear. If all the lights are flashing, it means that the gear selector was malfunctioning or there is a problem in the wirings of the vehicle data communication system (CAN). When pressed on more than one button by fault, the transmission performs the lowest gear selected. For example when it is pressed on D and 3 buttons at the same time, the transmission shall consider the 3 button.

While shifting the gear;

- Do not press on the gas pedal
- The speed of the engine should be less than 900 rpm
- The vehicle must be in stop position
- It should be pressed on the brake pedal
- It should be pressed on the gear which shall be selected

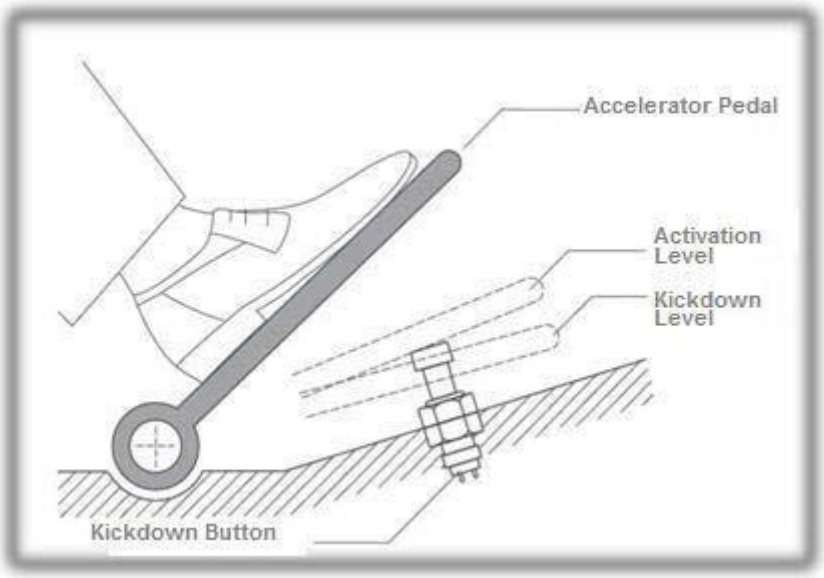
The transmission does not allow to select the gear in the following cases and its light flashes when pressed on the button.

- If pressed on the gas pedal
- If the engine speed is over 900 rpm
- If the vehicle is moving at the speed of more than 3 km/h and if it is moving in the opposite direction of the desired
- If the transmission oil heat is less than - 20 °C

Pull your foot from the brake pedal after 1 - 2 seconds of gear selection, the vehicle shall move. When the foot is pulled from the brake pedal while the vehicle is uphill, the transmission brakes so as to prevent the vehicle from rolling back.

Downhill

While driving downhill, in order to limit the gear when needed it is to be limited the gear increase by selecting 1, 2 or 3 numbered gears.



Kickdown Specification

When high engine power is needed, the gear is reduced with the specification of kickdown. To do so, it is to be pressed on the gas pedal until passing the kickdown activation point. The usage of kickdown specification increases the fuel consumption.

Retarder Specification

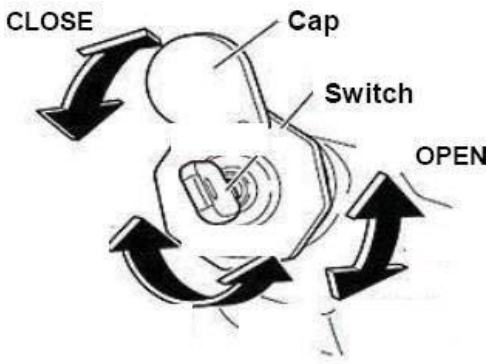
The vehicle has a hydraulically controlled retarder system which is equipped on transmission. Because of the hydraulic system, retarder operation will increase the oil temperature, so be careful if the oil temperature indicator is activated on dashboard. Retarder, which is activated by depressing the brake pedal extends the service brake life. It can be disabled via the retarder switch on dashboard if required.

FUEL TANK

Fuel tank cap is on the left side of the vehicle over the front wheel. Fuel tank is on the front axle. Tank capacity is 250 lt.
Open the protective cap before reaching the fuel tank cap. Cap is opened with fuel tank key. After filling, tank cap is locked by turning clockwise.
Below the front axle of the vehicle and just above the casing structure is the fuel tank's discharge cork. Cork is turned open and residues in the fuel tank are discharged.

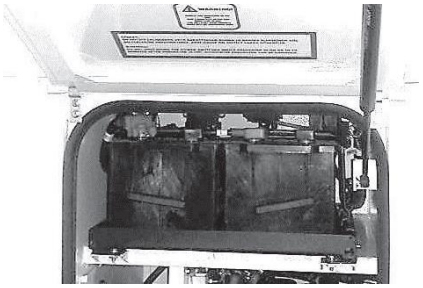
Fuel must not be delivered when the engine runs. Do not smoke when fuel is being delivered. Or else, a fire may start in the fire. Fuel tank filler cap must be tightly closed after the fuel delivery. If not, fuel leakage may start a fire when driving.

Opening and Closing the Fuel Tank



- Before opening the fuel tank filler cap, get rid of the static electricity on your body.
- Open the cap and insert the key fully and turn it to the “OPEN” position.
- Turn the cap counter clockwise in order to open it.
- Fill the tank.
- Fix the fuel tank filler cap on the fuel tank safely.
- Turn the key to the “CLOSE” position in order to lock the fuel tank filler cap.
- Pull and remove the key and then, make sure that the fuel tank filler cap is closed safely.

BATTERY



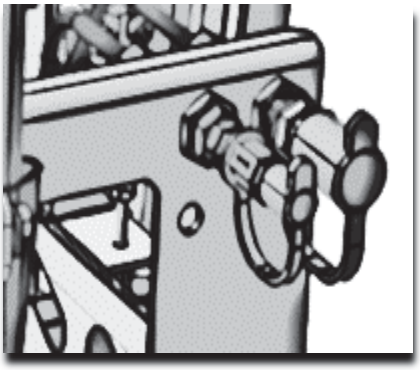
Batteries are located in the cabinet on the backside of the left rear wheel and positioned on sliding rails in a way to allow easy mounting and dismounting. There are 2 batteries on the vehicle. Each battery is 12 V and 150 Ah.

ECAS Control

This switch is used in the vehicle for higher or lower driving level than normal. The vehicle comes to higher driving level when pressed the upper edge of the switch, and it comes to lower driving level when pressed the lower edge.

The vehicle comes to normal driving level when pressed the upper edge of the Tilting / Normal Level Switch.

TYRE INFLATION SET

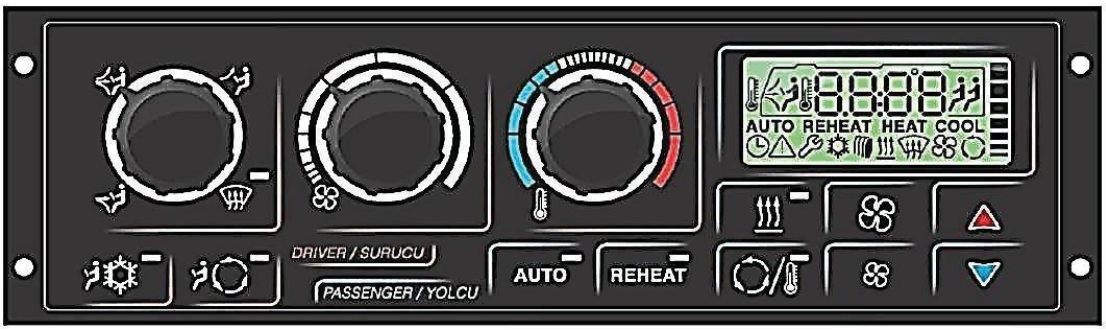


If the air pressure in vehicle tyres are low, tyre inflation set among the tools are used to adjust tyre pressures. In order to do that:

- Park the vehicle in a way not to block the traffic.
- Pull the parking brake and shift the gear to neutral and start the engine.
- Take the tyre inflation set.
- Attach one end of the hose to the tyre valve to be inflated and the other end to the air discharge end on the right in the rear engine inspection hatch.
- Complete tyre inflation by accelerating the engine.

HEATING AND COOLING SYSTEM

Control Panel



Rotary Switch K1

Driver side air direction is checked. Rightmost position is defrosting function for windshield, alternator must run for this function.

Rotary Switch K2

Driver side fan speed is adjusted. While alternator is not running, only minimum fan speed can be run.

Rotary Switch K3

Driver side temperature adjustment is made.

Button S1

Cooling of driver side is activated. Passenger side cooling must be active in order for this function to run.

Button S2

Short Pressing Driver side fresh air choke flap is opened and closed.
Double Click Closes driver and passenger fresh air valve for 10 minutes.
Button Combination  +  (5 sec.) Driver side temperature is displayed on the screen.

Button S3

Short Pressing Automatic mode ON/OFF
Double Click AUTO/HEAT/COOL functions are chosen.

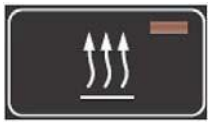
Button S4

Passenger side dehumidification function is activated.

Button S5

Short Pressing Passenger side fresh air choke flap is opened and closed. Double Click Time/room temperature/outside temperature display is selected on the screen.

Button S6



Preheater is activated.

Button S7

Passenger side fan speed is increased (7 grade).

Button S8

Passenger side fan speed is decreased (7 grade).

Button S9

It increases passenger side SET temperature. When 6x is pressed once maximum temperature value is reached, MAX HEATING becomes active.

Button S10

It decreases passenger side SET temperature. When 6x is pressed once minimum temperature value is reached, MAX COOLING becomes active.

SPECIAL FUNCTIONS

Special functions are activated with the button combinations below.

Smog Activation:

2 X 

When fresh air button is double clicked, driver and passenger fresh air valves get closed for 10 minutes.

Mod Function:

2 X 

When AUTO button is double clicked, AUTO / HEAT / COOL / AUTO functions are selected.

FUNCTION	HEATING	VENTILATION	COOLING
AUTO	X	X	X
HEAT	X	X	-
COOL	-	X	X

Display:

2 X 

When driver side valve button is double clicked, displayed TIME / ROOM TEMPERATURE / OUTSIDE TEMPERATURE display is selected.

Channel Temperature:

5 sec + 

When pressed the fan level decreasing key for 5 seconds, channel temperature is indicated on the display.

Frontbox Temperature:

Frontbox temperature is displayed on the screen when keys are pressed for 5 seconds.

Keylock:

Key lock is activated and “Loc” appears on the screen when keys are pressed for 10 seconds. Passenger side fan and temperature adjustment are locked with key lock.

Time Setting:

-Time setting can be adjusted when IGNITION is off.

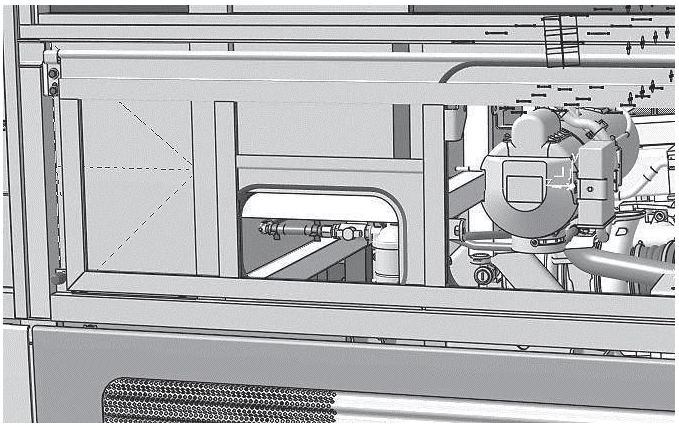
-Time setting is entered by pressing  keys together. By using the  or  key, time setting is adjusted.

After time setting is completed, you return main display when you do not press any key for 5 seconds.

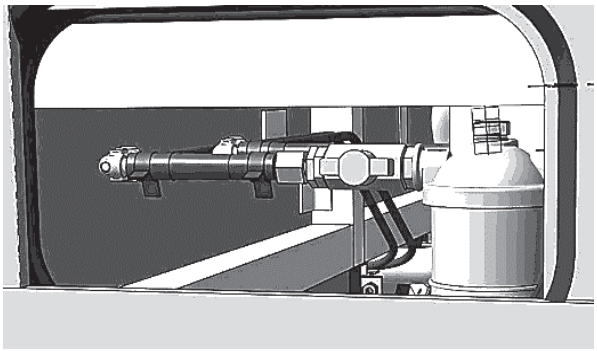
Error Messages Display:

- Current error codes are shown on the display by pressing  keys together.
- Error message may be deleted using  key.
- Other error codes may be viewed using and  keys.
- If there is no error in the system, “---” is shown on the display.

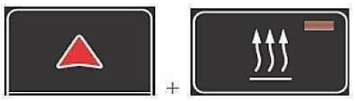
PREHEATER



Preheater is behind the upper inspection hatch at the left rear section of the vehicle. Filter valve must be open when preheater is run. Filter must be cleaned through periodical maintenances.



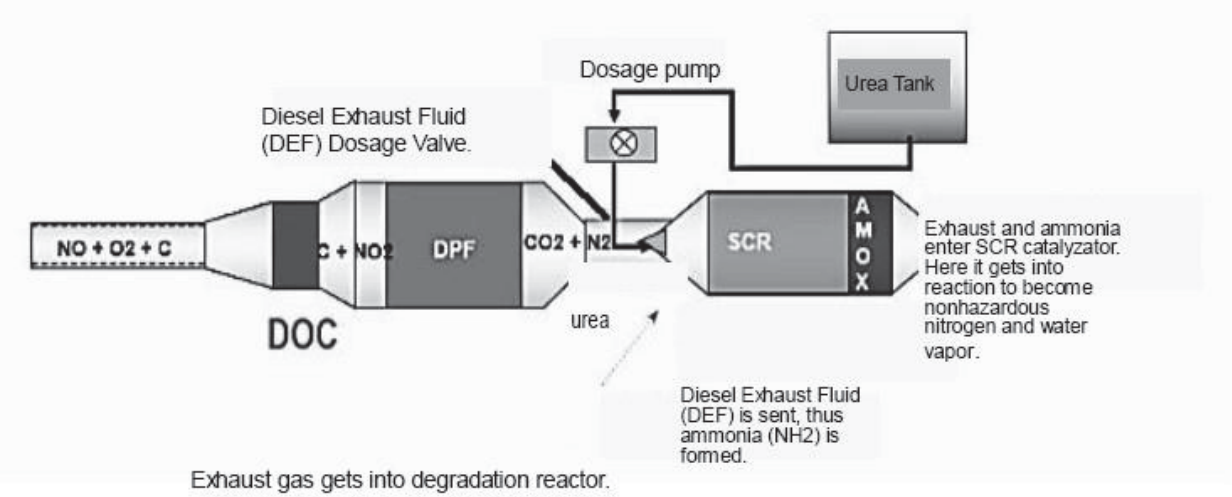
Preheater Starting Time Adjustment

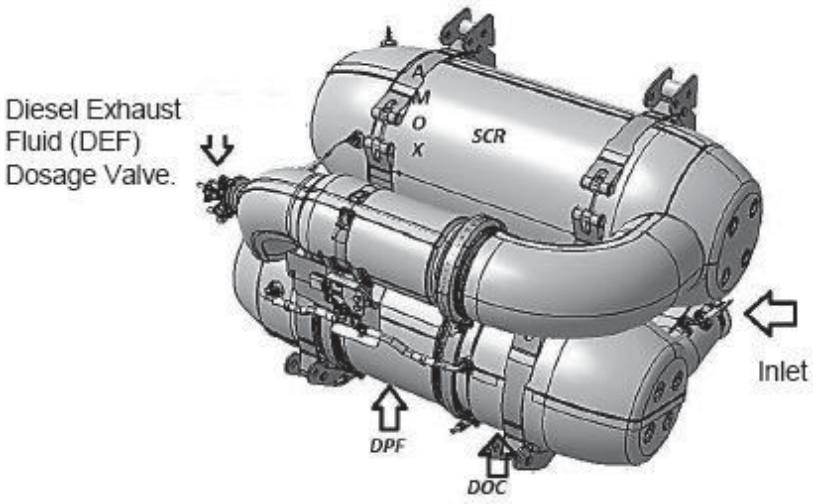


- Preheater start time adjustment is entered by pressing  keys together.
- Using  or  key, preheater start time is adjusted.
- Heater may be started manually with  key.
- After preheater start time is completed, you return main display when you do not press any key for 5 seconds.

EXHAUST EMISSION SYSTEM

There is EGR (Exhaust Gas Treatment Unit) system in the vehicle for the engine to allow Euro 6 emission. EGR system allows NOx level to decrease by cooling burnt exhaust gases and sending them back to the system, consequently reducing combustion temperatures. Because this is not sufficient on its own in Euro 6 applications, there is exhaust gas treatment unit in the features below.





Diesel exhaust emission fluid is solution of urea at the rate of 32,5% in demineralized water. It is a fluid consumed to decrease the engine emission rates.
Diesel exhaust emission fluid is sprayed into the exhaust gases by dosage pump. It gets into reaction with nitrogen-oxide gases formed when burning and discharged to make such gases pure nitrogen and water. This process is called “Selective Catalytic Reduction” (SCR).
Diesel exhaust emission fluid tank filler cap is located behind the left rear wheel. Diesel exhaust emission fluid tank’s capacity is 19 lt. Fluid level on the tank is continuously controlled, if the level falls below a certain value, warning light on the indicator becomes yellow. In such case, it is necessary to complete the fluid level in the shortest time. There mustbe minimum 18% fluid in the tank all the time for the vehicle to run properly. Engine will turn on the warning light under it. Engine gives malfunction code and cuts off the power when diesel exhaust emission fluid level falls below 6% value. For SCR system to run efficiently and be durable, it must be certificated that the purchased diesel exhaust emission fluid is compatible with DIN 70700 or ISO 22241-1 standards. Compatibility to these standards guarantees the fluid having the appropriate purity and concentration (32.5%). No addition agent must be added in the diesel exhaust emission fluid.

REGENERATION

Regeneration is the burning process of particles, accumulated in the DPF (diesel particle filter) system in the exhaust treatment system, carried out by the system according to blocking amount or a certain time interval. System may conduct passive and active regeneration.
Passive regeneration: The particle burning process when exhaust gases reach high temperatures under normal use conditions.
Active regeneration: The particle burning process conducted by increasing the exhaust temperature by spraying fuel into the system. Temperature reaches 550 – 700 °C.If the system does not reach regeneration temperatures, DPF warning light on the instrument panel is turned on according to the blocking level. 2 different types of regeneration must be started when DPF warning light is on.

1. Drive the vehicle at a high speed (for example on highway) for minimum 20 minutes to increase exhaust temperatures. If the light is not off or there are no road conditions to increase the vehicle to a high speed,
2. Conduct stable regeneration on the system. For stable regeneration:

- Stop the vehicle in a suitable place, do not pass before the exhaust stack because exhaust gas temperatures will rise to very high levels and stay away from inflammable materials.
- Switch the gear to neutral and step on the brake.
- Do not step on the accelerator pedal.
- There must not be an engine fault in the vehicle.
- Press the exhaust system cleaning switch for regeneration.

When system blocking level reaches upper points, DPF warning will start to flash and engine warning light is on, in which case stable regeneration must be conducted. If regeneration is not conducted, the vehicle starts power take-off. If the blocking continues, engine stop warning and fault indication warning light becomes on in the instrument panel. The engine will not exceed 1200 rpm cycle.
The vehicle must be taken to an authorized service as soon as possible.

DIESEL EXHAUST EMISSION FLUID HEATING SYSTEM

Diesel exhaust emission fluid used in the vehicle starts to freeze at -11°C. Engine starts spraying urea to the exhaust system when the temperature rises. If the fluid in the tank has remained frozen when the engine heated, engine will have power turn-off because urea will not be sprayed. So the engine heats the diesel exhaust emission fluid tank with hot water and diesel exhaust emission fluid line going from tank to injector with electrical heater in cold climate conditions (-7°C and below).

ELECTRONIC BRAKING SYSTEM (EBS)

Electronic braking system has an infrastructure both electronic and pneumatic. Brake system is controlled electronically in normal conditions. Brake request from the driver is treated by the control unit and the most suitable braking is created in that condition. This system has a higher performance than conventional systems. In the case of electronic fault, the system does not shut down itself, it keeps running pneumatically. EBS system includes the functions below:

1) **ABS (Anti Blockage Brake System):** It prevents the vehicle from slipping by preventing the wheels from locking when braking. It ensures steering wheel stability in sudden braking.

2) **ASR (Anti Skating System):** ASR becomes activated and increases driving safety by minimizing skating when drive wheels skate on ramps, slippery grounds and when accelerating.

3) **Drift Torque Control (DTC):** Wheels may get locked due to inertia of transmission organs on slippery grounds, this system gets activated and increase engine torque and tries to ensure road handling.)

4) **Electronic Brake Equalising (EBD):** It distributes the brake force necessary according to the load status and lining wear to the wheels.

5) Lining wear is controllable, lining thickness is continuously followed on the instrument panel.

6) Hillholder: It prevents the vehicle from slipping backwards when setting off by keeping the vehicle stable for 3 seconds when the vehicle stopped on a ramp starts to move. It is controlled with a switch on the driver control panel. Switch is turned on, step on the brake on the ramp, in the meantime brakes get activated to keep the vehicle waiting on the ramp, the system gives driver time until he steps on the accelerator pedal from the brake pedal. Brakes get deactivated when accelerator pedal is stepped on or time is exceeded.

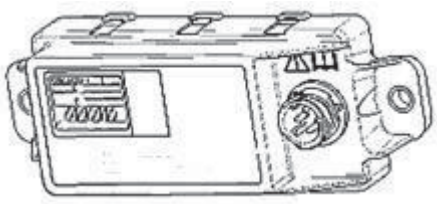
7) Retarder Integration: System is in a continuous interaction with retarder. Retarder gets activated in slight brakes to prevent the linings from wearing. It also reinforces the braking system under normal conditions. Retarder system is deactivated when ABS function operates.

Safety functions do not operate, brake performance decreases in the case of an electronic fault. The driver must contact the closest authorized service carefully in such case. Safety functions such as ABS, ASR and DTC are effective to decrease accident risk; however the actual important issue is to drive the vehicle in a way suitable for traffic and road conditions.

ESC (Electronic Stability Control)

It is possible to intervene in the wheel brakes independently in sudden maneuverings in vehicles which carry load and passengers with electronic control. The purpose is to prevent possible accidents such as vehicle skidding or rolling over. So a more determined driving dynamic is guaranteed.

Angular acceleration sensor



Acceleration sensor is positioned on the floor casing in the trunk space close to the center of gravity of vehicle. Axial deviation in the vehicle is perceived as instant angular acceleration and conveyed to braking system control unit as electronic signal. It is controlled how much the vehicle has deviated from the route in a criticalstate. It gives information about how stability controlfunctions must be activated.

Steering Wheel angle sensor

Angle sensor passes through steering Wheel column and positioned below the signal group. It conveys the maneuvering request of the driver to the braking system control unit according to the rotation amount of steering wheel. Conveyed information is sent as electronic signal. Calibration is performed when the system is first installed to match the signals from sensor and direction angle of the vehicle.

ESC system will be faulty in the event that steering wheel is dismounted and mounted, changed or renewed in front alignment adjustment. In such cases, installation must be made in authorized services.

ADVANCED EMERGENCY BRAKING SYSTEM (AEBS)

Advanced Emergency Braking System means a system which can automatically detect an emergency situation and activate the vehicle braking system to decelerate the vehicle with the purpose of avoiding or mitigating a collision.
AEB function automatically applies the wheel brakes on objects detected as moving, stopped or stationary in the event of an imminent rear end collision. It does not react on oncoming traffic. For moving and stopped objects AEB aims for a reduction of the host vehicle speed by up to 70km/h with the purpose to prevent an accident. For stationary objects AEB intends to reduce the host vehicle speed by 20km/h before the crash with the purpose to mitigate the accident. Nevertheless depending on various influencing factors like the road friction, accident prevention even for moving objects cannot be guaranteed.

The AEBS is specified for a speed range of 15 - 125km/h. It will disable itself at low speed and at high speed as described afterwards.

- AEBS will be switched to “temporarily not available” if the host vehicle speeds exceeds 125 km/h
- AEBS will enable itself again if the host vehicle speed falls below 124 km/h
- AEBS will be switched to “temporarily not available” if the host vehicle speed falls below 14 km/h
- AEBS will enable itself again if the host vehicle speed exceeds 15 km/h

For AEBS system performance;

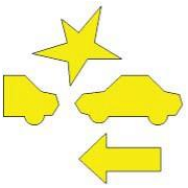
- Do not change radar position and radar cover positon.
- Do not paint the sensor cover.
- Do not change the radar cover.
- Do not place any objects (plates, labels, etc.) on or in front of the radar cover.

If there is any change, AEBS system won’t work properly.

AEBS warnings in information screen:

Normal position

Moment of collision



Collision warning (flashing)

After danger passes, information screen displays normal position again.

If AEBS system is deactivated or if there is a fault in AEBS system, AEBS warning lights.

After 5 seconds, information screen display is as below.

AEB (Advanced Emergency Braking)

In 2009 the European Union issued the General Safety Regulation which mandates a so called AEBS (Advanced Emergency Braking System) for medium duty and heavy duty trucks and coaches.

According to this regulation “Advanced Emergency Braking System means a system which can automatically detect an emergency situation and activate the vehicle braking system to decelerate the vehicle with the purpose of avoiding or mitigating a collision”.

The AEB function includes the sub-functions described in the following chapters.

1. FCW function - Forward Collision Warning

Warning levels

VISIGO’s HMI support visual, audible warnings.

HCW (Haptic warning)

Besides the warning signal described in the chapter before, FCW gives a haptic feedback to driver by applying the wheel brakes for a short period of time (i.e. brake jerk) to intensify the collision warning. The so called haptic collision warning (HCW) will be applied during an active FCW with different parameters for each collision warning level. In standard parameterization the HCW starts 0.6s after the FCW and requests a deceleration of - 2.5 m/s² for 0.5 s.

2. AEB function

The AEB function automatically applies the wheel brakes on objects detected as moving, stopped or stationary in the event of an imminent rear end collision. It does not react on oncoming traffic.

For moving and stopped objects AEB aims for a reduction of the host vehicle speed by up to 70 km/h with the purpose to prevent an accident. For stationary objects AEB intends to reducethe host vehicle speed by 20 km/h before the crash with the purpose to mitigate the accident. Nevertheless, depending on various influencing factors like the road friction, accident prevention even for moving objects cannot be guaranteed.

3. Warning and Braking cascade

This chapter shows the sequence in which FCW, HCW and AEB will perform its warning and braking activities.
The standard sequence (e.g. during type approval) of a complete AEBS reaction looks like this:

- start of FCW
- 0.6 s after start of FCW, the HCW is executed with a duration of 0.5 s
- thereafter FCW is active during a short brake pause of roundabout 0.5 s
- finally initiation of automatic emergency braking

4. Reaction on objects cutting into host vehicle lane

The AEB sequence can differ if the FCW cannot start early enough. This situation might occur if the criteria to start the warning are fulfilled too late – e.g. if an object cuts into thehost vehicle's traveling path at a low distance.
As a consequence the warning starts too late because the object was not relevant for the warning before it started its cut-in maneuver. After issuing the collision warning the situation is so critical that the AEB starts its brake application shortly after the FCW . The HCW is being skipped but the AEB will be limited in its deceleration as long as a minimum warning time (1.4 s) has not been achieved. After the minimum pre-warn time has lapsed AEB will request for its full braking level. In this situation collision avoidance is not possible because ofthe limited AEB deceleration at the beginning of the event.

5. Limitations of AEBS

The following subchapters show different limitations of the AEBS which can lead to an unexpected reaction and a degraded system performance.

False and unwanted warnings

There are conflicting targets in the FCW. One aim is to react very early at critical situations so that it is possible even for a distracted driver to resolve a critical situation on his own. On the other hand, unnecessary or false warnings should be prevented as much as possible.An unnecessary warning is not the result of wrong object detection. Instead it occurs in a situation where the driver is aware of the situation, has already planned his reaction to resolve the situation and is just initiating his counteractions. In contrast to this the collision warning needs to consider the driver's reaction time and does not know the current intention of the driver. Thus the warning occurs shortly before the reaction of the driver will be executed and as a consequence is rated as being an unnecessary warning by the driver. Unnecessary warnings therefore are not a failure of the system but are caused by the conflicting targets described before. Nevertheless, under normal conditions an "aggressive" way of driving is necessary to generate such warnings.
Unnecessary warnings can also occur if the object ahead abruptly changes its current moving status. As the AEB algorithms need to forecast the movement of the preceding object and is not having any further information about the intention of the object's driver it will assume the object's current dynamic state (e.g. acceleration or lateral speed) as being constant. Any abrupt changes of this state which would resolve a critical situation and have already been recognized by the host vehicle's driver before might result in a warning perceived as unnecessary by the driver.
An exemplary situation for this behavior is when the object ahead decelerates or drives with lower speed and has the turn lights are activated. The host vehicle's driver does not reactas he assumes that the target wants to leave the road. But as there is still no or only minor lateral movement of the object the system rates the situation as collision critical and initiatesa respective warning. Nevertheless, the assumption of the host vehicle's driver must notbe correct in this situation – e.g. if the object unexpectedly does not take the turn or comesto full stop because the other road is blocked by a crossing pedestrian.
In addition to unnecessary warnings also false warnings might occur. False warnings are caused by wrong measurement or classification of detected objects.

General limitation of the algorithms

The AEBS shall react before the crash occurs. As a consequence, the AEB function needs to forecast the current traffic situation for the near future. This forecast is done by longitudinal and lateral movement predictions of the detected objects and the host vehicle. Lacking further information about the preceding vehicles' drivers' intention any abrupt change in their movement during the prediction time will affect the performance of the AEBS. In these situations, a delayed system reaction is possible because the system might detect an imminent collision too late. Thus the collision could no more be avoided.

A system reaction can also be delayed if the system concludes that an upcoming collision would still be avoidable by evasive steering of the driver. This behavior typically happens if the object ahead is only partially overlapping with the host vehicle's travelling path or the objects shows tendencies to leave the host path. Also in high speed situations a crash might not be prevented by the system as the driver is much longer able to still swerve around an object while he would have had to start braking already before to prevent an accident.

Limitations because of the environment

For its calculations AEB always assumes best case braking conditions (high-μ ground). In the standard setup the system expects that a deceleration of at least - 5.5 m/s² is possible. If this deceleration cannot be achieved by the vehicle because of weather conditions or the road surface collision avoidance by the AEBS is not possible.

Limitation because of the sensor detection performance

The system uses a single radar sensor for object detection. State of the art radar sensors are limited especially in the measurement precision of objects' lateral offsets and speeds. Due to this fact the system uses tolerances to prevent false warning and braking. Those tolerances might lead to a situation where a crash can occur without any system reaction before. Mostly stationary objects are affected by this issue.

In urban areas a lot of roadside objects are detected as stationary objects (e.g. parked cars at the side of a curve or traffic signs on a traffic island) and the host vehicle's driver does a lot of steering maneuvers near to this targets. To compensate for this the AEBS;

- uses an avoidance trajectory for stationary objects with different parameters at low speeds resulting in later reactions
- uses an avoidance trajectory for stationary objects with different parameters while driving in curves resulting in later reactions

In addition, the following limitations are present for all kinds of objects:

- to start any brake actuation the center of the object must be detected in the host's travelling path (and not just predicted). There will be no system reaction on this object ifthis is not fulfilled.
- In narrow curves (R < 300 m) the object must be nearly positioned in the center of the host's travelling path (and not just predicted) as the sensor's detection performance is limited in such curves.

Additional safety limitations of the system

The risk and hazard analysis done for this system rates a crash of the traffic following the host vehicle caused by emergency braking as critical. Furthermore, the risk to destabilize the host vehicle by emergency braking is also rated critical.

To minimize those risks different safety functions are used to reduce the requested acceleration to a safe value. By default, the requested deceleration will be limited to - 3.5 m/s² if any of the following function becomes active.

Limitation to guarantee the pre-warn time
To ensure that the trailing traffic has enough time to react on an emergency braking of the host vehicle the brake lights shall be illuminated for a minimum time before an unlimited emergency braking is initiated by the AEBS. Per default this duration is set to 1.4 s in accordance to. As long as this time is not fulfilled the requested deceleration will be limited to - 3.5m/s². The warning time will be counted with the start of FCW.

Limitation at high speed
Currently the AEBS is validated for host vehicle speeds up to 90km/h. As a consequence, the deceleration level of the AEB function is reduced at higher speeds. The speed takeninto account for this limitation is the host velocity at the start of the collision warning. There will be no deceleration adaptation once the speed is decreased by braking.

Limitation in in tight curves
If the host vehicle drives in a tight curve it is necessary to limit the deceleration to prevent a loss of cornering forces. Due to this the deceleration requested by the AEBS will be limited with a characteristics depending from the radius of the host vehicle's travelling path.

Limitation during high lateral acceleration
AEBS brake requests will be limited while driving curves with high lateral acceleration. Based on the lateral acceleration the brake request is limited in a way that the resulting deceleration is below a critical level.

Limitation due to driving in a tunnel
If the AEBS recognizes that it is being driven in a tunnel it limits its maximum deceleration to - 3.5 m/s² as radar detection might be affected by tunnel wall reflections resulting in a higher risk of wrong detections.

Limitation due to active vehicle stability control events
AEBS brake requests will be limited to - 3.5 m/s² if vehicle stability control functions have been active before FCW became active.
It can be expected that the host vehicle's dynamics are affected already if any of these vehicle stability control functions are actively intervening. That might result in signals likethe host speed being wrong because of extensive slip or similar effects.

AEB limited sensitivity mode
AEBS will be in an operation mode of limited sensitivity after ignition on which basically means to use more conservative parameters than in normal operation. This mode is necessary for functional safety of the system as after startup various plausibility checks of the sensor are executed which need a certain duration before delivering a result. The limited sensitivity mode is active:

- at least during the first 10 km
- if the variance of the result of the in-operation alignment is too large
- if the yaw rate plausibility check has not yet delivered a successful result

If the AEBS is in limited sensitivity mode only a limited AEB function will be executed. Full AEB performance is given only if all of the conditions listed below are fulfilled:

- straight roads (|curve radius| > 1000 m)
- no urban traffic or high speed driving (host vehicle speed being in the range 60 - 90 km/h)
- AEBS relevant objects do not have noticeable relative lateral velocity

In case such conditions are not fulfilled the AEB function will request only a reduced deceleration level of - 3.5 m/s². The conditions for a limited emergency braking deceleration will be checked with start of the FCW – there will be no adaptation of the deceleration level during the warning cascade. Type approval tests according to are not affected by the limited sensitivity mode. Due to this fact a potentially active limited sensitivity mode is not communicated by the AEBS system.

Speed range of AEBS

The AEBS is specified for a speed range of 15 - 125 km/h. It will disable itself at low speed and at high speed as described afterwards.

- AEBS will be switched to “temporarily not available” if the host vehicle speeds exceeds 125 km/h
- AEBS will enable itself again if the host vehicle speed falls below 124 km/h
- AEBS will be switched to “temporarily not available” if the host vehicle speed falls below 14 km/h
- AEBS will enable itself again if the host vehicle speed exceeds 15 km/h

If the AEBS is in state “temporarily not available” no warning and no emergency braking will occur. During an active FCW or AEB event the speed will not be checked until both functions become passive again. If only the FCW was active at host speed higher than deactivation speed the AEB will also be activated if the FCW has not become passive before.

6. AEB event counter

The AEB event counter counts the number of unlimited emergency braking events initiated by the AEBS. If this counter exceeds a predefined threshold (currently 3 events) the system will enter a fault state as this number is higher as can be expected in the vehicle’s lifetime. This is necessary because such a high rate of emergency brakes indicates that there may besome undetected fault of the AEBS. The AEB event counter has a selfhealing process depending from the driven vehicle distance. If the event counter has still not exceeded its maximum and a predefined minimum distance was driven without seeing the counter increasing it will be reset.

7. Driver deactivation conditions

In addition, the driver has the possibility to deactivate the AEBS. Once deactivated the system will stay in that mode until the driver has manually activated it again or an ignition reset has occurred. The hazard light switch and the AEBS switch are being used as driver inputs for AEBS deactivation. If the driver has deactivated the system all brake actuations of HCW , AEB and EBA functions are suppressed but only the collision warning is still available. Depending on the OEM’s HMI implementation also the collision warning is not shown to the driver while AEBS is deactivated.

EBA (Extended Brake Assist) incl. either standalone FCW or full AEB

The extended brake assist function supports the driver by reinforcing his manual brake request in case of a collision critical situation with the aim to prevent an upcoming crash. In case of an active collision warning the EBA will send a request for the necessary deceleration to prevent the crash to the braking system if the driver at least slightly starts to depress the brake pedal.

This deceleration request is not a constant value like asked by the AEB or HCW functions but is constantly being adapted to the current situation. The EBA is reacting on moving, stopped and stationary objects. It does not react on oncoming objects.

The EBA will not become active if there is no active collision warning while the driver depresses the brake pedal. After EBA has become active the state of the FCW is no longer relevant – it will continue supporting the driver until the host vehicles comes to a standstill or the driver releases the brake pedal. If the object is lost during an active EBA event, itslast deceleration request will be maintained as long as the EBA is active.

EBA safety limitation

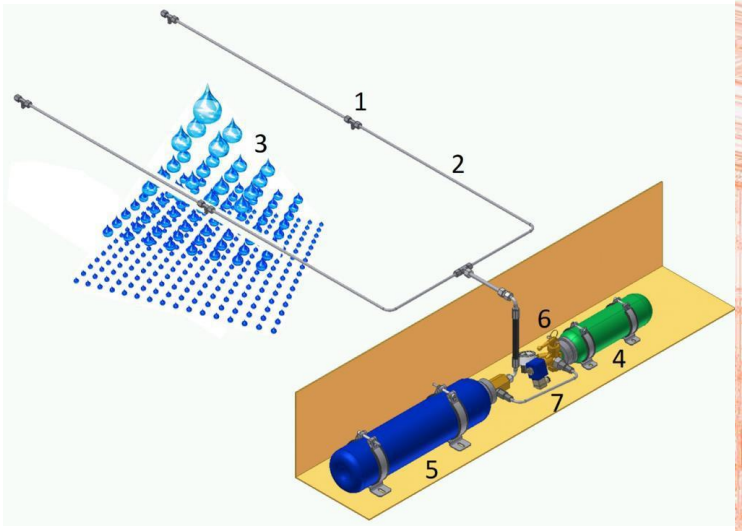
For functional safety reasons the max. level of the EBA's deceleration request is linked to the current brake pedal position, to prevent too high decelerations if the brake pedal is only touched. If the position of the brake pedal is lower than 10% the EBA will not request for any deceleration. Having 30% or more the maximum allowed EBA request is possible. Independent of this limitation the EBA will always only request the deceleration necessaryto prevent an upcoming crash.

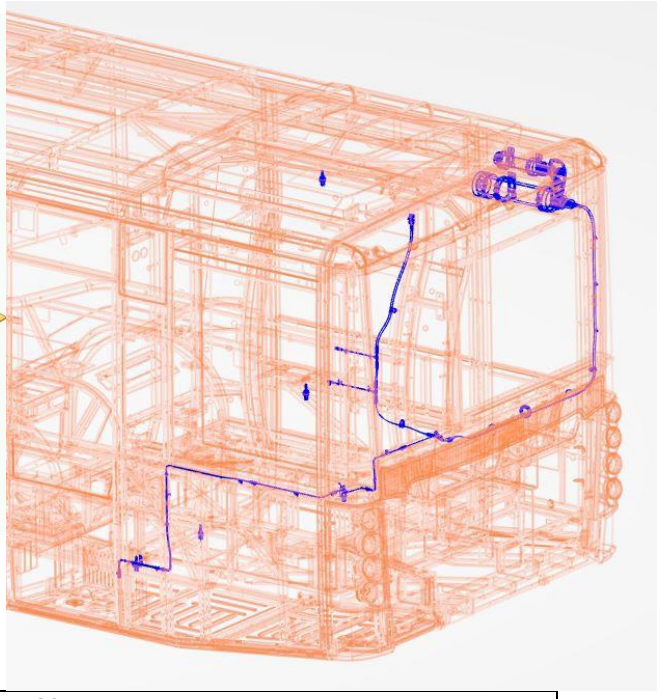
Important: For AEBS system performance;

- Do not change radar position and radar cover positon.
- Do not paint the sensor cover.
- Do not change the radar cover.
- Do not use sticker on the radar cover.

If there is any change, AEBS system won't work properly.

ENGINE COMPARTMENT FIRE DETECTION AND AUTOMATIC FIRE SUPPRESSION 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 systemactivated 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). Ifthere 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

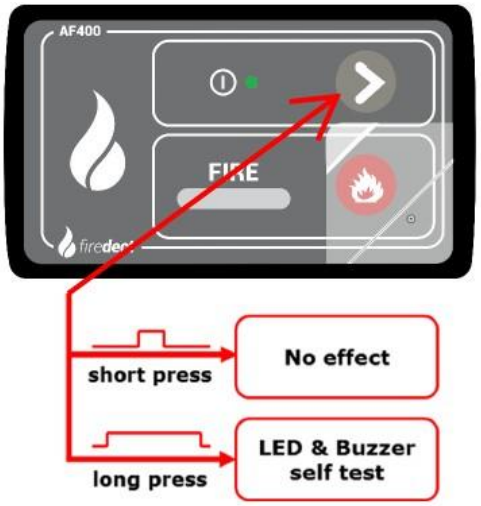
Alarm activated.

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.

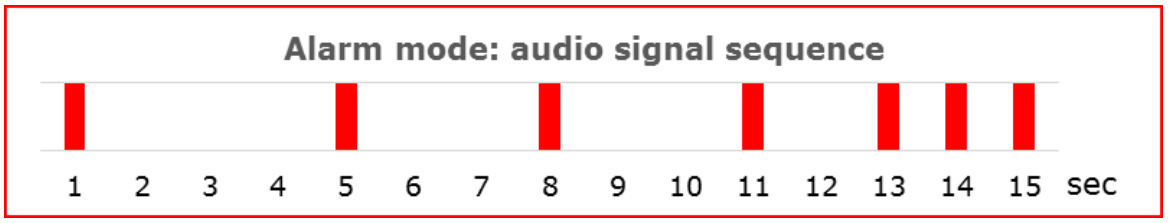
Normal Operational Mode

In normal operational mode, the control unit will monitor all three (3) zones for fire. Along 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.

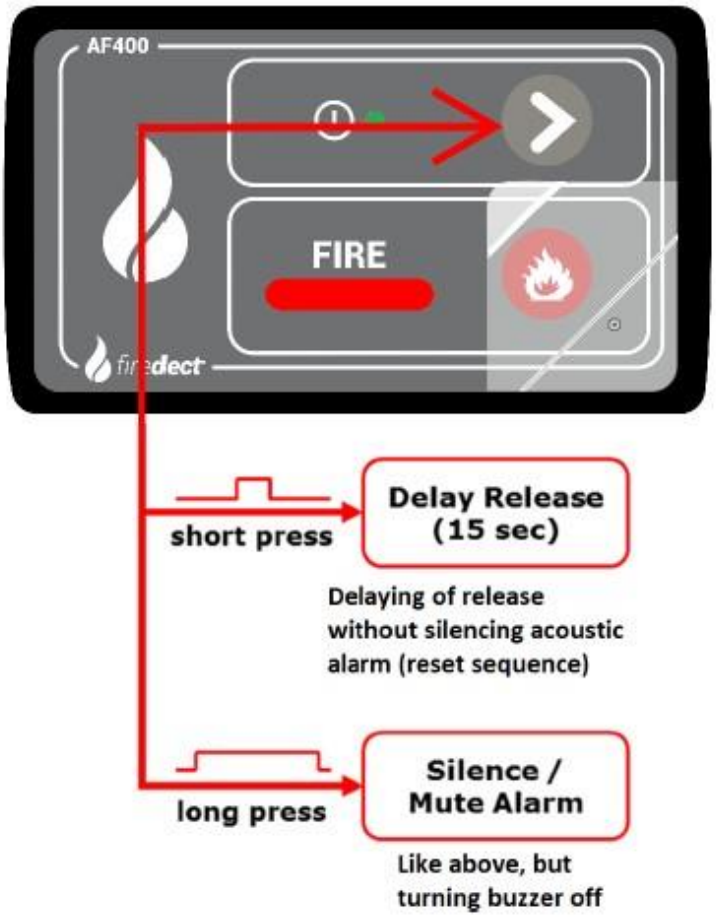


Alarm Mode

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

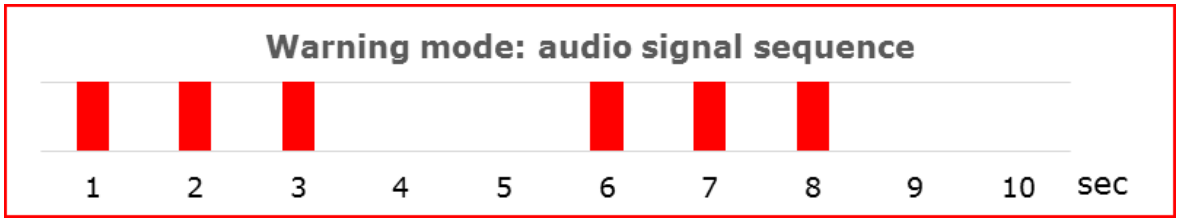


If the suppression system is active the led will flash constantly as well as the buzzer beeps constantly. There is a 15 second delay on activation, and the system is activated for 3 seconds. The alarm can be muted by pressing the action button for
0.8 seconds. Pressing the action button for less than 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.



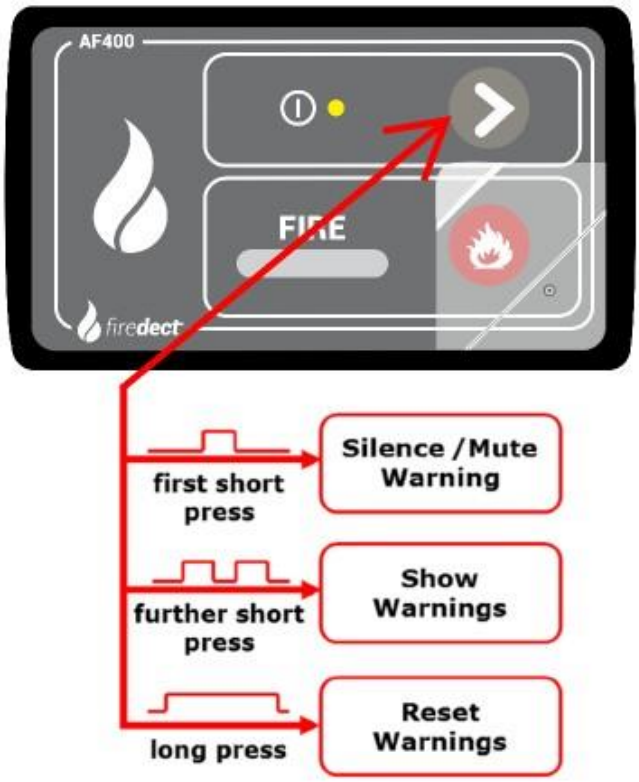
Warning / Diagnosis Mode

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



ENGINE ROOM FIRE DETECTION SYSTEM AND CONTROL UNIT (FOGMAKER-OPTIONAL-2)

Control Module

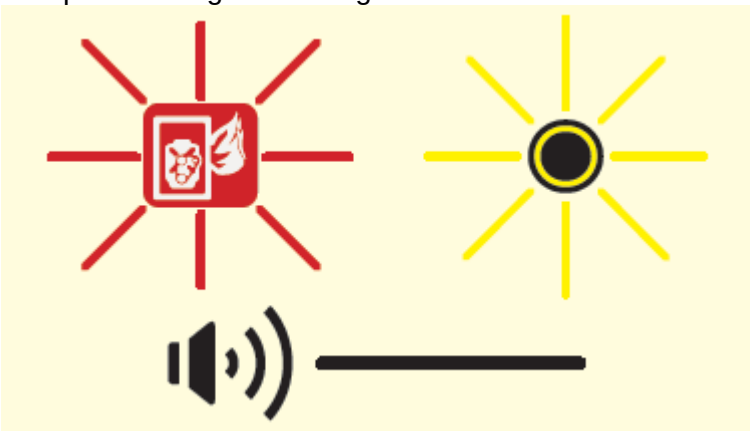
In Case Of Alarm - Fire

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.

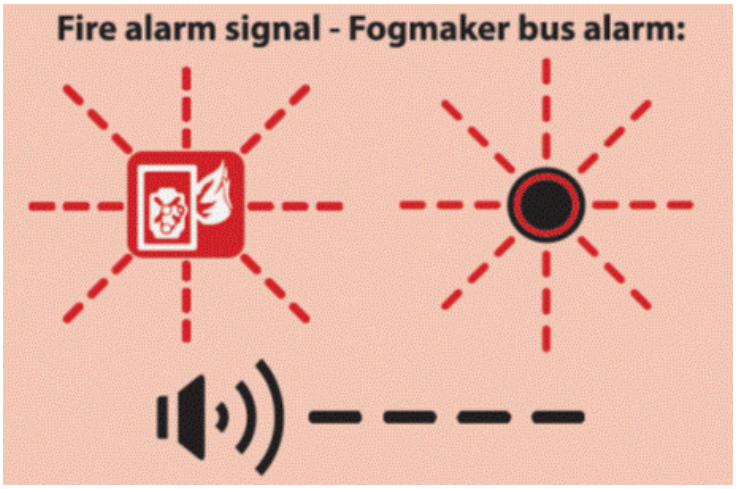
Engine wash after fire

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.

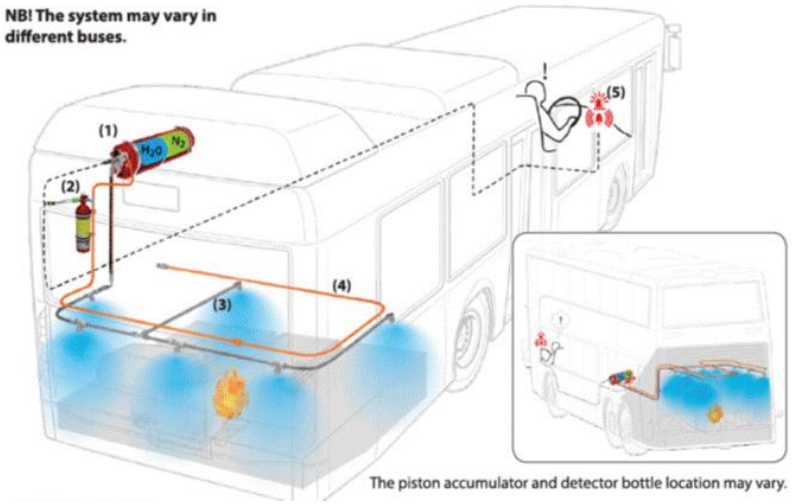
In Case Of Alarm – Fire



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.

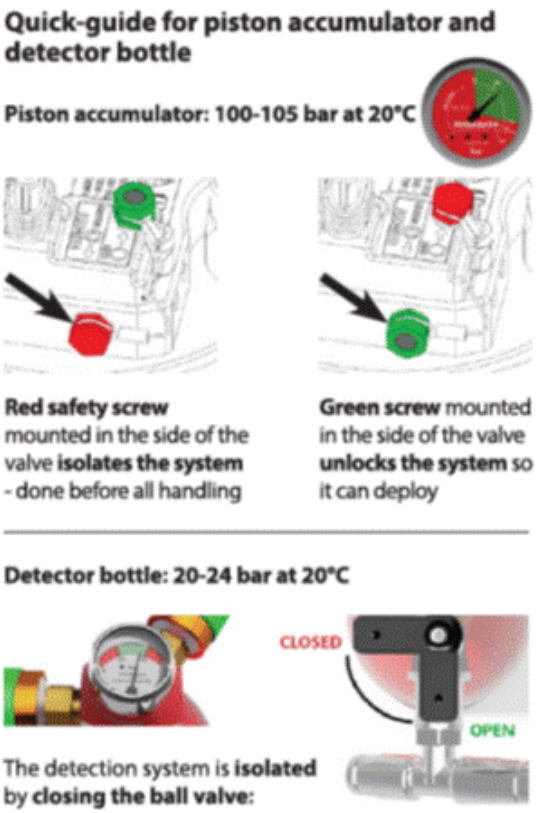
Pressure switch not installed: Make sure the pressure in the piston accumulator is within the green zone on the pressure gauge.

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.



AUTOMATIC GREASING SYSTEM (OPTIONAL)

Automatic Greasing System is a system which sends oil to 12 grease points on the front axle at certain periods. The pumping and greasing unit of the system is located on the front part of the vehicle. Depend ng on the operat ng t me set to the front ax e, the front ax e prov des 2 m nute o de very per per od.

Warn ng ght on the nformat on d sp ay nd cates that:
- The system s act ve f the warn ng ght s green.
- There s a fau t or grease s nsuff c ent f the warn ng ght s red.

1.SERVICE AND MAINTENANCE

CLEANING THE VEHICLE

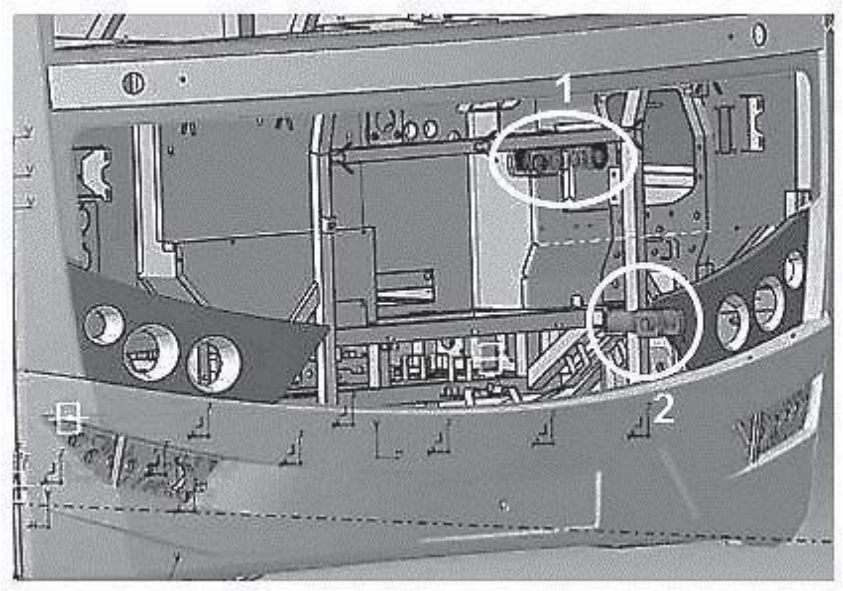
Outside Cleaning

- Do not clean your vehicle with detergent and chemical materials, do not wipe with gas.
- Use pressurized water for vehicle cleaning (except for engine area), do not leave the extra water on the vehicle after cleaning, remove the extra water with a cloth or wash leather.
- Do not wash your vehicle under hot sunlight.
- Keep the inside of mudguards clean during winter.
- Use only soap and water to clean the air bellows on the vehicle.

Inside Cleaning

- Clean the instrument panel with wet cloth, do not use substances such as alcohol and thinner.
- Clean the seats with wet cloth or foamy vinylex cleaners.
- Wipe the passenger floor with wet mop and then dry the floor.

PULLING THE VEHICLE



- Open the front inspection hatch.
- Take the hitch hook from the casing behind the front inspection hatch (1)
- Screw the hitch hook to the hole on the casing and make sure that it fits (2)
- Bring the front inspection hitch to a half-open position.

ENGINE MAINTENANCE

It is possible to reach the vehicle engine from 4 parts.
It is possible to reach the engine behind, sides and inside and under the vehicle.

Rear cap

It is possible to reach alternators, A/C compressor, V belts, circulation pump, fuel water seperator, hydraulic fan oil tank, oil level stick, steering wheel tank, hydraulic fan engine and pump, fire extinguishing tubes (optional), expansion tank by opening the rear cap.

Right side cap

It is possible to reach water radiator, intercooler radiator and hydraulic cooling system radiator by opening the right side cap.

Left side front cap (1)
It is possible to reach diesel exhaust emission fluid tank, dosage pump, batteries, fuse box, dosage pump water valve by opening the left side front cap.

Left side rear cap (2)
It is possible to reach exhaust gas treatment unit, temperature and NOX sensor on exhaust gas treatment unit, urea injector by opening the left side rear cap.

Left side filter cap (3)
It is possible to reach air filter, preheater, pumps, cocks, valves of cabin heater by opening the left side filter cap.

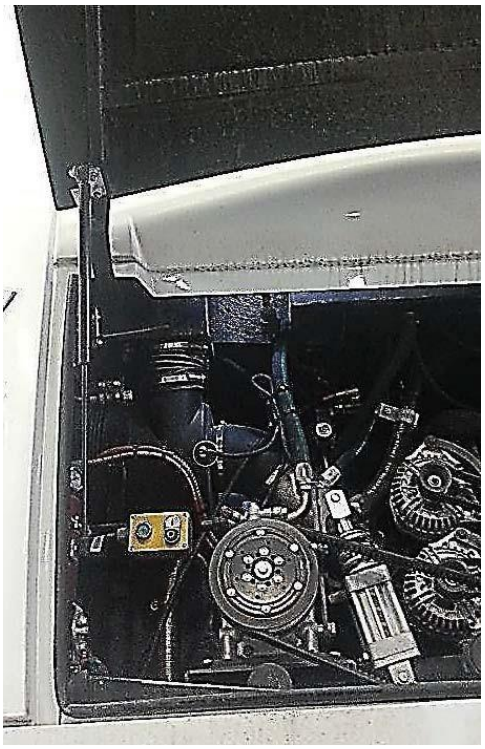
Caps inside the vehicle

It is possible to reach air compressor, turbo, rocker cap, transmission oil filling and level measurement channel by opening the 2 caps on the floor in front of the back five seats.

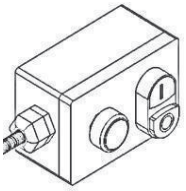
Bottom cap

It is possible to reach crankcase, ECM (Electronic Control Module), fuel filter by opening the cap under the vehicle.

Start / Stop Button Group



If it is required to start the engine during a maintenance/repair activity related to engine, vehicle's rear cap is open to use the start/stop button group here.



In order to start the engine: hand brake is pulled, ignition key is on, gear is shifted to "N" position and this button is pressed.

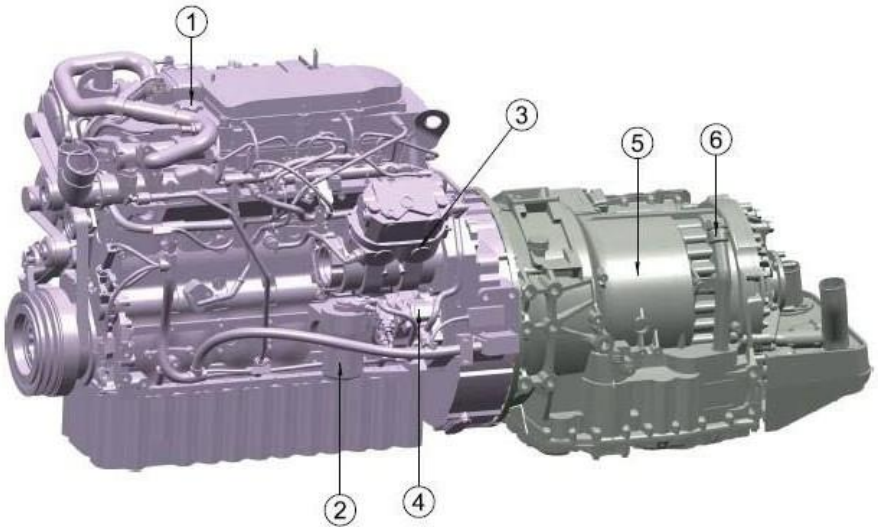
This button is pressed to stop the engine.

This (green) button is pressed to illuminate the engine.

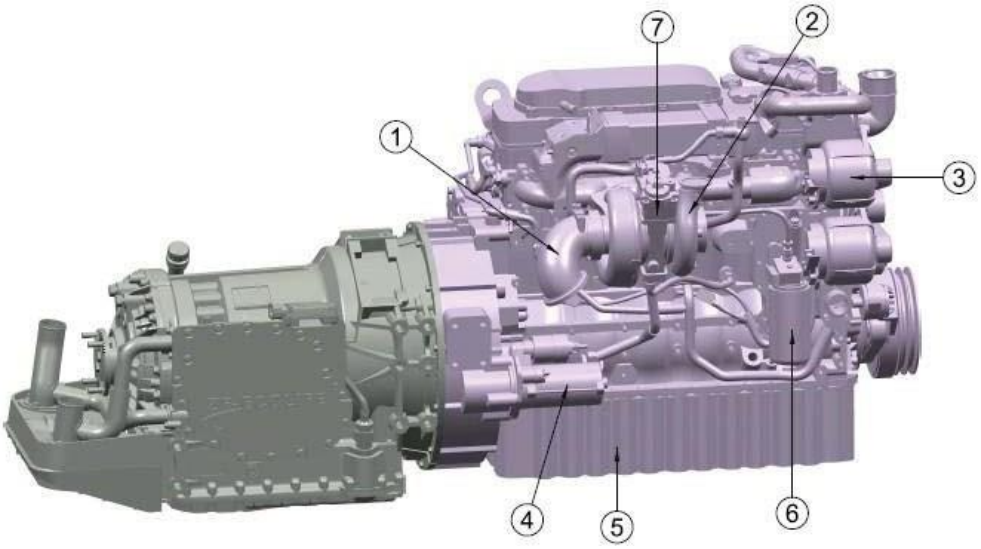
When the rear cap is open, there is a safety switch to prevent starting the engine from the driver area.

If it is required to stop the engine during an emergency, engine stop button is at the right end of the vehicle.

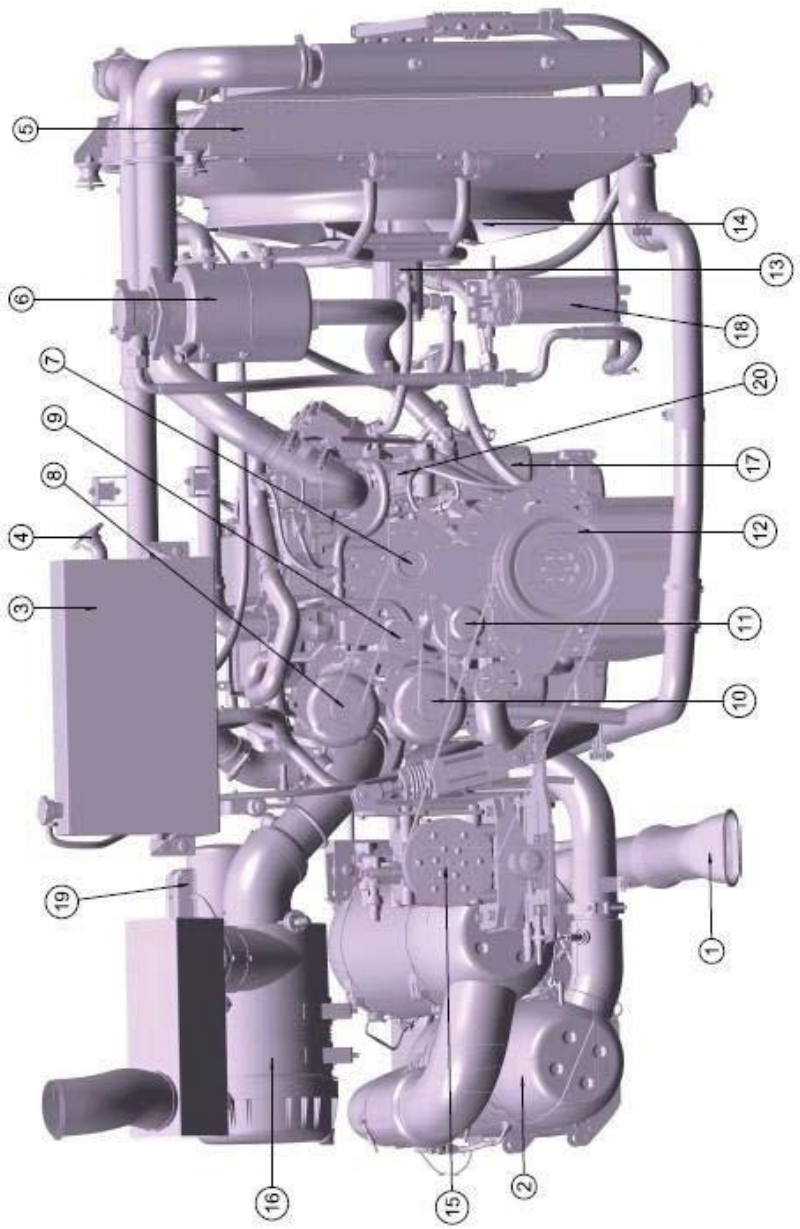
Engine



1. Engine Oil Filter Cap
2. Fuel Filter
3. Air Compressor
4. Fuel Pump
5. Transmission
6. Transmission Oil Filler Cap



1. Exhaust Manifold
2. Air Intake
3. Alternator
4. Starter
5. Crankcase
6. Oil filter
7. Turbo Unit



1. Tail Pipe
2. Aftertreatment
3. Expansion Tank
4. Water Filler Cap
5. Cooling Unit
6. Hydrofan Oil Reservoir
7. Idle Pulley
8. Alternator
9. Idle Pulley
10. Alternator
11. Circulation Pump
12. Crankshaft Pulley
13. Hydrofan Engine
14. Fan Propeller
15. A/C Compressor
16. Air Filter
17. Fuel Filter
18. Fuel Water Separator Filter
19. Preheater
20. Fan Pump

ENGINE COOLING SYSTEM

Engine cooling system keeps the engine temperature in the suitable temperature range, which lets the engine run efficiently and prevents the engine parts from wearing by preserving the suitable oil viscosity.
System also cools the transmission. It also covers the hot water need of cabin heater system and heats the diesel exhaust emission fluid tank in very low temperatures. Cooling fluid used in the cooling system is a mixture of 50% water and 50% antifreeze. Antifreeze must be compatible with ASTM D6210 standards. This mixture has a freezing point of - 36 °C and boiling point of +108 °C. No additional agents must be used in the cooling fluid.

ENGINE COOLING, CABIN HEATER and A/C SYSTEMS LINE FILLING AND AIR RELIEF

1. Position the vehicle on a flat ground.

2. When there is a situation in which it is not necessary to run the cabin heater and A/C system, service maintenance is required, and the vehicle must be transferred to a place tostart immediately, processes stated in the 12th and following articles must be applied.

3. Open the manual valves and air relief valves on the waterlines tied to cabin heater and A/C units (in the engine water Inlet and outlet).

4. Open the top and side caps of expansion tank.

5. Start filling the engine cooling system fluid with the mixture of 50% antifreeze and 50% diluted water from the cap on the side surface of expansion tank.

6. When the expansion tank is full, stop filling. Wait for 1-2 minutes before starting the engine to make sure that air which entered in the system from natural ways is discharged and cooling fluid level is balanced. Then add water to the tank again.

7. Start the engine and open the entire heating system in the maximum position. Take the controller to manual maximum heating mode, quickly press the degree increasing key on the control panel to take to shocking mode and make sure that electronic threeway valve is open. System pump and heated A/C pump will be operating thus and there will be an “operating” signal on the A/C controller screen.

8. As the vehicle runs, keep adding engine cooling system fluid up to the maximum level of the expansion tank.

9. After starting a cold engine, gradually increase the engine speed to make sure that sufficient amount of oil goes to engine bearings and oil pressure is balanced.

10. For air relief, start the engine in high idle speed and release the air from air relief valves on the cabin heaters (System's air must also be relieved from the air relief valves on the heated cabin heater)

11. Check whether the cabin heater temperatures have risen. Total air relief for cabin heater and A/C system lasts for about 15 minutes. Make sure that air relief is completed.

12. Close the manual valves on the waterlines tied to cabin heater and A/C units (engine water inlet and outlet).

13. Restart the engine and run the engine at high idle speed until cooling water temperature has reached the thermostat opening temperature values. Radiator frille may be covered with a cloth (linoleum etc.) to reach the high temperature quicker.

14. It must be continued to run the engine at high idle speed for 5 minutes, by keeping the engine cooling water thermostat opening temperature (90-95°C) range once these temperatures have been reached.

15. Run the engine in low idle speed for 1 minute before shutting off, which enables components such as piston, cylinder, bearings and turbocharge to cool adequately.

16. Shut off the engine and keep adding cooling fluid up to the maximum level of the expansion tank.

17. Restart the engine at high idling speed and increase the engine cooling water temperatures to thermostat opening temperature values 90 - 95°C range and keep this temperature level for 1 minute.

18. Run the engine in low idle for 1 minute before shutting off, which enables components such as piston, cylinder, bearings and turbocharge to cool adequately.

19. Shut off the engine and fill the cooling fluid if it is possible to fill from expansion tank. If 1 lt or more cooling fluid can be added to the system, repeat the operations from the 17th article.

20. Check whether there is cooling fluid leakage in layout and main components during filling and air relief processes.

21. It is the customer's responsibility to daily check the cooling fluid level and fill if required.

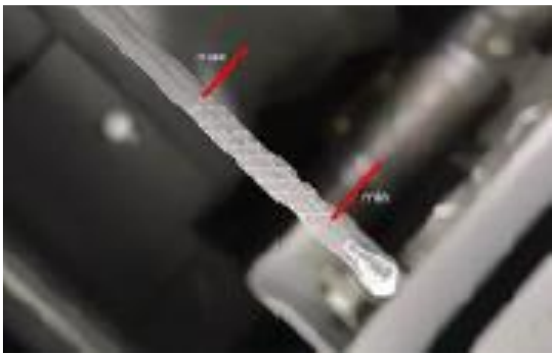
CHANGING ENGINE OIL AND OIL FILTER

To change engine oil and oil filter:

- Run the engine until engine water temperature reaches 60 °C
- Shut off the engine
- Remove the crankcase plug, pour the oil to oil collection tank.
- Clean the oil filter head and dismount the filter using filter dismounting tool.
- Fill the new filter with clean engine oil.
- Lay a thin layer of engine oil to oil filter o-ring.
- Tighten the oil filter by hand until the rubber contacts with the gasket surface, and then tighten the filter with filter tool for another round.
- Mount the crankcase plug with a new seal washer and tighten with 24 Nm torque.
- Fill the engine oil until H level.
- Start the engine in idle and check for leakage.
- After waiting for the oil to percolate for 5 minutes, remeasure the engine oil level and refill until H level if it has decreased.

Use an engine oil compatible with the fluid specifications.

Oil Level Control



You may reach the oil level control stick by opening the rear engine cap. For oil level control:

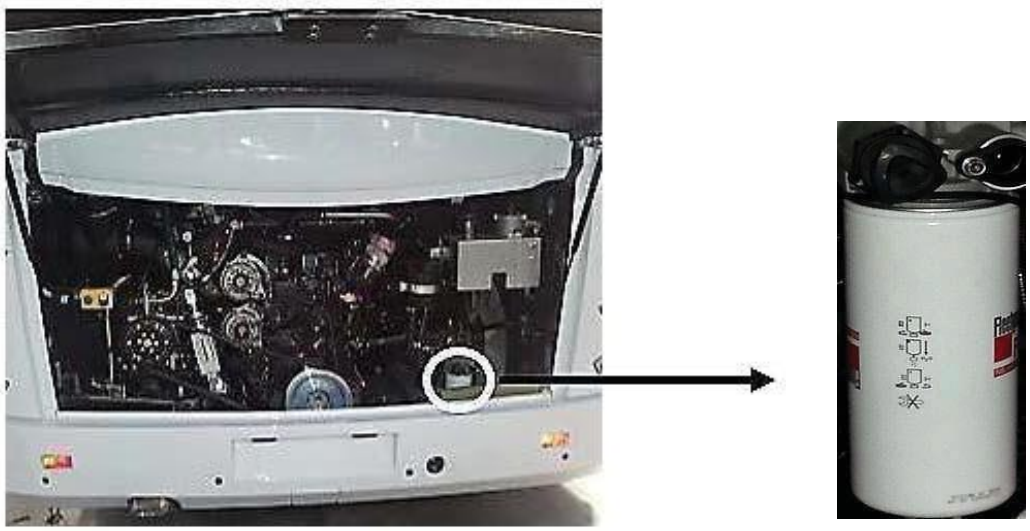
- Pull the oil level stick
- Wipe with a clean cloth
- Mount the stick and then pull again
- Check the oil level.
- Fill until H level.

CHANGING FUEL FILTER

It is possible to reach fuel filter under the vehicle and from the rear cap. For fuel filter change:

- Dismount the fuel filter
- Remove the paper filter element in the filter.
- Remove the o-ring in the filter.
- Properly mount the new filter element in the filter.
- Mount the new o-ring to the filter.
- Oil the fuel filter o-ring with clean lubrication oil.
- Fill the fuel filter with fuel.
- Mount the oil filter to fuel filter hear in a way to allow one gear to hold.
- Tighten the filter with 32 Nm torque.

FUEL WATER SEPARATOR



Fuel water separator is mounted on the body on the right side when rear cap is opened. Its function is to ensure that fuel is efficiently used by distilling the water in the fuel.

Changing the Fuel Water Separator Filter:

It is possible to reach the fuel water separator filter from vehicle's rear cap. For fuel water separator filter change:

- Remove the connecting cable of fuel water control indicator.
- Dismount the fuel filter
- Empty the fuel filter, dismount the fuel water control indicator from the fuel filter.
- Check whether there is any damage or crack on the indicator.
- Mount the fuel water control indicator to the new filter
- Oil the fuel filter o-ring with clean engine oil.
- Mount the filter.

CONTROL OF BRAKE DISC AND LININGS

Lining wear indicator must be regularly controlled. When lining indicator value is 10%, contact an authorized service to change it.

Left and right brake linings on the same axle must be changed together. Original brake part defined by the vehicle manufacturer must be used.
Brake discs must be controlled when changing linings and they must also be changed if necessary. Or else brake performance may be affected negatively.

TRANSMISSION MAINTENANCE

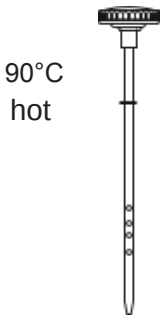
The transmission contains 38 lt oil at first filling. While replacing the oil, it has to be waited approximately 10 minutes for the oil to discharge and then 24 lt oil must be added.

Oil Level Control

Oil level control when the transmission is cold (30°C):

- Park the vehicle on a flat area
- Bring the transmission to "N" position
- Operate the engine at 1200–1500 rpm for 10-20 seconds
- Take the engine to idle
- Oil level should be 30 °C (cold) level on the oil dipstick.

Oil level control when the transmission is hot (90 °C)



- Park the vehicle on a flat area
- Bring the transmission to “N” position
- Operate the engine at 1200–1500 rpm for 10-20 seconds
- Take the engine to idle
- Oil level should be 90 °C (hot) level on the oil dipstick.

Oil Replacing Interval

The transmission oil should be replaced every **180000 km**. The transmission pressure filter should also be replaced in every oil replacement.

Discharging Oil

- Discharge the transmission oil during 10 minutes when the transmission was hot
- Stop the engine
- Remove the oil plug
- Discharge the oil in filter chamber by removing the plug on the filter cap
- Remove the filter cap
- Replace the cartridge filter (pressure filter) and o-ring on the filter cap plug.

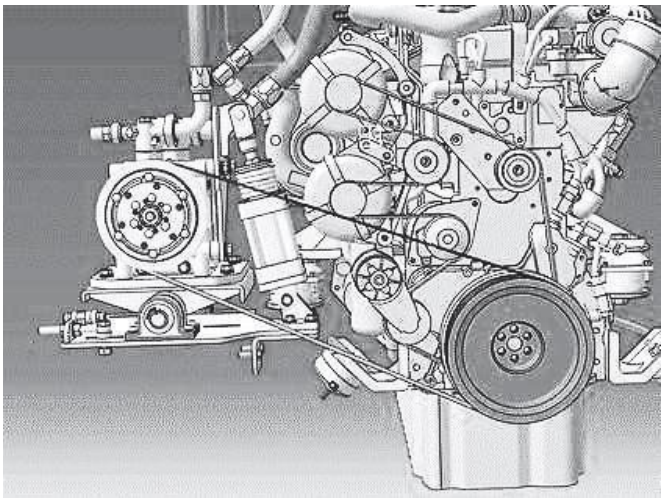
Filling Oil

- Tighten the bolts with 29 Nm torque while inserting the filter cap, take care of the bolt lengths
- Insert the plug on the the filter cap (tightening torque is 25 Nm)
- Tighten the oil plug with 35 Nm torque
- Supply oil from oil filling collar
- Control the oil level with dipstick.

DIFFERENTIAL OIL CHANGE

- Put an oil discharge tank under the differential cage for oil discharge.
- Dismount the oil discharge plug under the cage and pour the oil into the tank.
- Mount the oil discharge plug again after discharging and tighten with 54 ~ 81 Nm torque.
- Dismount the filler plug and fill the oil (differential oil capacity 9.5 lt)
- Wait 15 minutes after filling for oil to spread on axles.
- Mount the filler plug back and tighten with 54 ~ 81 Nm torque.

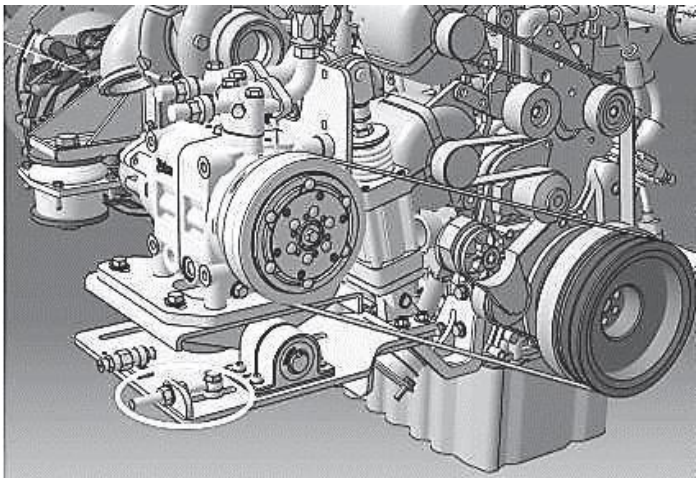
AIR CONDITIONER COMPRESSOR BELT



A/C compressor belt is banded 17 V belt. Codes on the belt are indicated below.

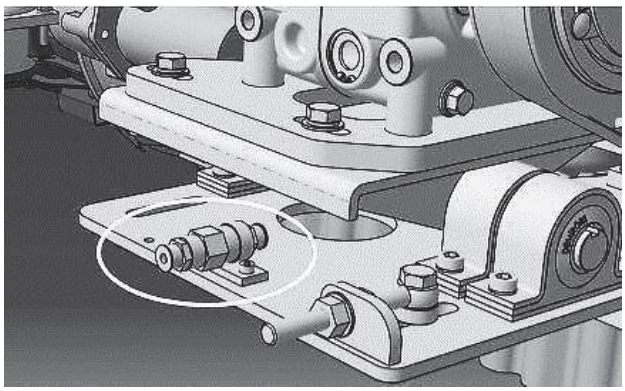
BANDO RPF-J 2-5750P 2X17X1870Li

Contact authorized service to change the belt when it get damaged or severed.



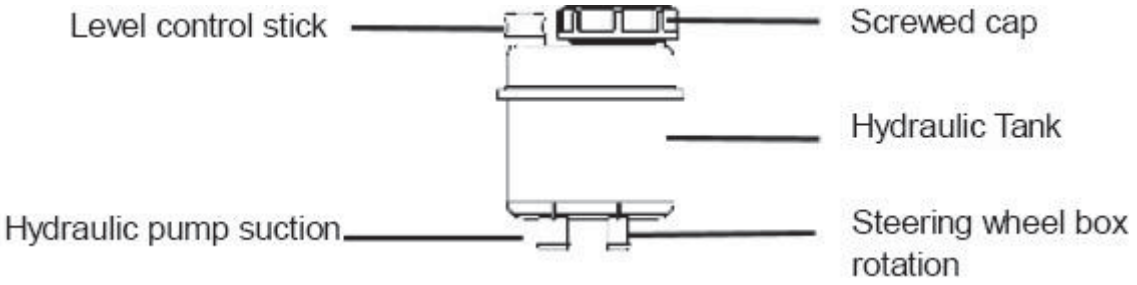
Compressor belt must be stretched by tightening the ring nuts on the indicated point (must be performed by authorized service)

Also stretching system always stretches the belt actively with a pneumatic piston. It must be checked whether air cock belowis open before the first start. Air cock must be open. It stretches the compressor along with 6 bar pneumatic piston.



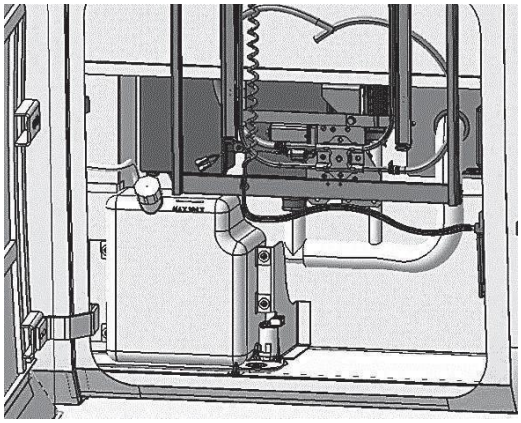
If the cock is closed, do not start the engine. There is a risk of dartingand snapping because the belt is not tight. Do not come close and donot touch the belt when the engine runs and belt rotates.

STEERING WHEEL HYDRAULIC TANK



It is located on the right side of engine when the engine rear inspection hatch is opened. There is a screwed cap and oil level control stick on the tank. Oil level control must be performed once in every 3000 km. Level stick of tank is dismounted for oil level control, there is minimum and maximum line on the stick, oil level must be between these two lines. For hydraulic steering wheel and pump to run problem-free, the oil defined by the vehicle manufacturer must be used.
Vehicle must not be started if there is not sufficient oil in the steering wheel system, steering wheel may get damaged. If oil has decreased, oil is filled until the maximum line of stick.

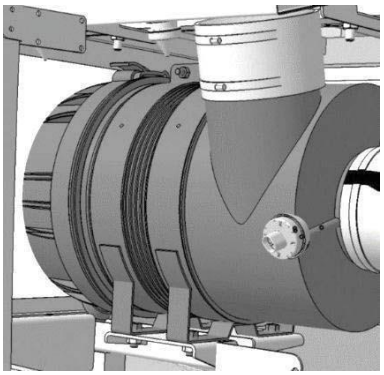
WINDOW SPRINKLER WATER TANK



It is possible to reach window sprinkler water tank by opening front trunk cap.
Window washing water up to maximum 10 lt may be filled to the tank after the cap has been opened.

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

AIR FILTER



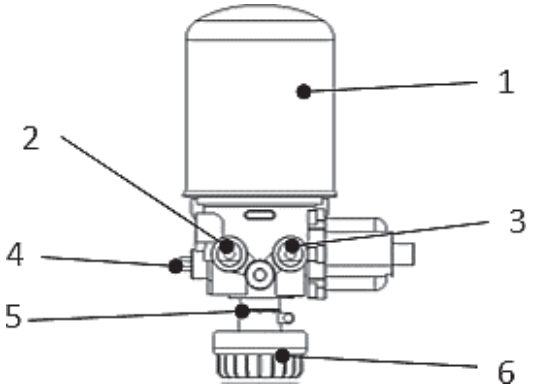
It is possible to reach air filter by opening the rear left side filter cap.
In order to clean the air filter, rubber dust valve in the bottom part is tightened from the edges to empty the accumulated dust.

Air filter element

Air filter element change must be made in every 30000 km. Follow the steps below to change:

1. Unlock the lock on the cover
2. Turn the cover counterclockwise
3. Remove the cover from the housing
4. Remove primary filter, secondary filter is replaced at each third replacement of primary filter
5. Clean the housing and cover from dust
6. Install secondary filter (if replaced) and then primary filter
7. Install the cover; dust ejection valve on the cover must be on the bottom position when cover locked.

AIR DRYER

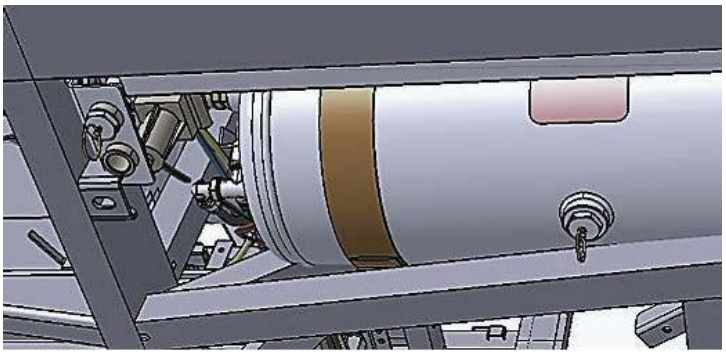


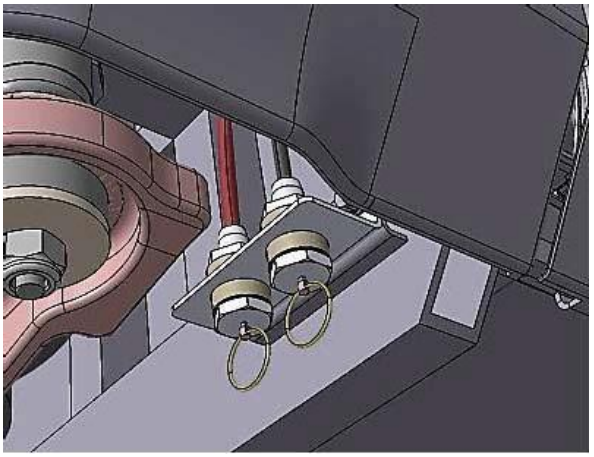
1. Cartridge
2. Compressor connection
3. Four-way valve connection
4. Heater
5. Air discharge
6. Muffler

Air dryer is under the rear door step. Function of air dryer is to adjust the air system pressure and decrease the moisture and air in the air pressed from the compressor. Dryer has a heater that prevents freezing in cold weather, which is activated in low temperatures in particular and deactivated in high temperatures. Air dryer fills air into the system until the circuit cutting discharge at 9.8 bar. When filling is completed, dryer discharges the water and oil accumulated from the muffler in the bottom part with pressure, thus cleaning itself.

DRAINING WATER IN AIR TANKS

There are 2 air tank drain valves (one of them is under the air tank) under front stair and 2 air tank drain valves in the lower part, at front region of right rear wheel.





Drain water in air tanks daily, by pressing on the valves.

CHANGING WINDSCREEN WIPERS

There are 2 outside wiper arms, right and left.

To change wiper blade, the bolt and ring nut in the center of blade are dismounted (Image 1 and Image 2)

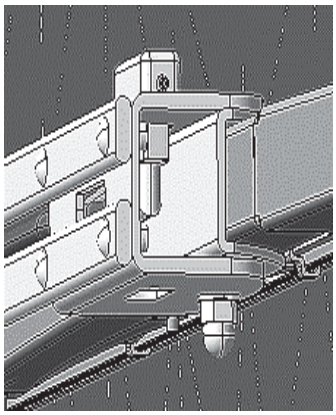


Image 1

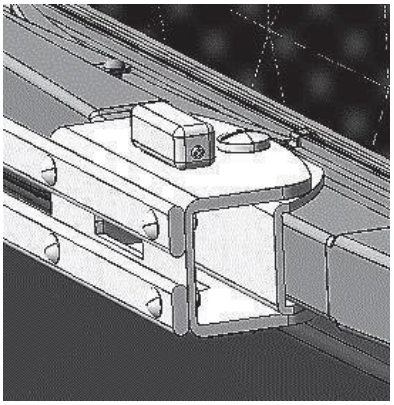


Image 2

For complete change of outside wiper arm, plastic cap at the point where it is connected to the vehicle body is open, ring nut here is dismounted to remove the wiper arm (Image 3). When removing the wiper arm, sprinkler hose connected to the arm must be pulled and removed from the point where it is connected to the vehicle body.

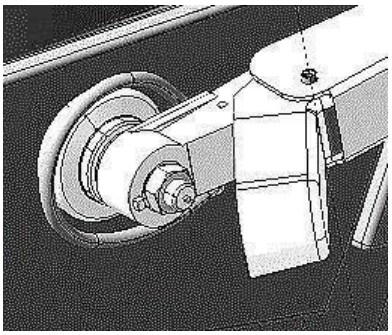


Image 3

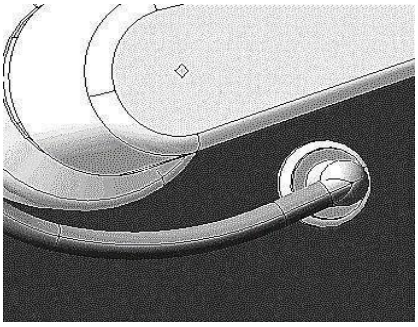


Image4

Wiper blades must be controlled definitely and renewed if necessary during winter. Change of inner mechanism of vipers must be performed by authorized services.

FUSES / RELAYS

Board of fuses and relays is in a cabinet on the front left side of the vehicle. Fuses and relays are in a closed box and fuse location and values are in the fuse tag under the cap. Fuses used in the vehicle are blade type. Relevant fuse trips as open circuit to protect electrical components when a short circuit or fault current occurs in the system. Fuse is replaced with a fuse of the same ampere equivalence once the electrical fault has been removed.

CHANGING THE LAMPS

Changing Dipped Beam Bulb

- Open the front bonnet.
- Pull and remove the rubber protector behind the light unit.
- Press the wired clips towards inside and remove the bulb.
- Change with an equivalent bulb.
- Mount in a way to allow rubber protector water hole to look downwards.

Changing Main Beam / Parking Bulb

Changing main beam bulb

- Open the front bonnet.
- Pull and remove the rubber protector behind the light unit.
- Press the wired clips towards inside and remove the bulb.
- Change with an equivalent bulb.
- Mount in a way to allow rubber protector water hole to look downwards.

Changing parking bulb

- Open the front bonnet.
- Pull the socket which has a bulb on the edge and is located under the light unit.
- Change with an equivalent bulb.
- Mount the socket back.

Changing Half Signal Lamps

- Remove the lens from the case
- Screw off the case and pull the lamp towards outside.
- Remove the socket
- Change with an equivalent lamp
- Fit the lens by screwing the case on its place.

Changing Rear Signal, Rear Brake/Park, Reverse Gear, Rear Fog Lamps

- Screw off and remove the lamp
- Remove from the socket
- Change with an equivalent lamp
- Screw and mount the lamp.

Changing the Additional Parking Lamp

- Dismount the lamp
- Pull towards the outside and remove from the socket
- Change with an equivalent lamp
- Mount the lamp with gasket

Changing the Front Signal Lamp

- Open the front bonnet
- Dismount the complete headlamp cover
- Screw off and remove the front signal lamp
- Remove from the socket
- Change with an equivalent lamp
- Screw and mount the front signal lamp

Changing the Day Driving Lamp

- Open the bonnet
- Dismount the headlamp cover
- Screw off and remove the brackets on the cover that prevents lamps from displacing
- Remove the lamps from their holes
- Dismount the adaptor (driver)
- Change with an equivalent lamp set
- Screw the brackets and mount the headlamp cover
- Screw and mount the adaptor (driver)

Changing the Front Fog Lamp Bulb

- Pull and remove the rubber protector behind the light unit
- Press the wired clips towards inside and remove the bulb
- Change with an equivalent bulb
- Mount in a way to allow rubber protector water hole to look downwards

Changing Roof Illumination Fluorescent Lamps

Roof illumination is ensured through fluorescent in the aluminum by the aisle side of air channel. To change fluorescent lamps, remove the polycarbonate lens on the aluminum body and replace the fluorescent.

Changing the Rear Reflector

- Remove the rear reflector
- Clean the glue residuals on the bumper
- Separate the glue protector on the rear reflector
- Attach the rear reflector to its place.

Changing Front and Rear Positioning Lamps

- Dismount the lamp
- Pull towards the outside and remove from the socket
- Change with an equivalent lamp
- Mount the lamp with gasket

Changing Sidemarker Lamp

- Screw off and remove the sidemarker lamp
- Pull the lamp towards outside and remove from the socket
- Change with an equivalent lamp
- Screw the lamp with rubber gaskets and mount.

Changing Engine Illumination Lamp

- Open the engine hood
- Screw off and remove the engine illumination lamp
- Remove from the socket
- Change with an equivalent lamp
- Screw and mount the engine illumination lamp.

Changing Rear Plate Lamp

- Screw off and remove the lamp
- Remove from the socket
- Change with an equivalent lamp
- Screw and mount the lamp.

Changing the 3. Security Brake Lamp

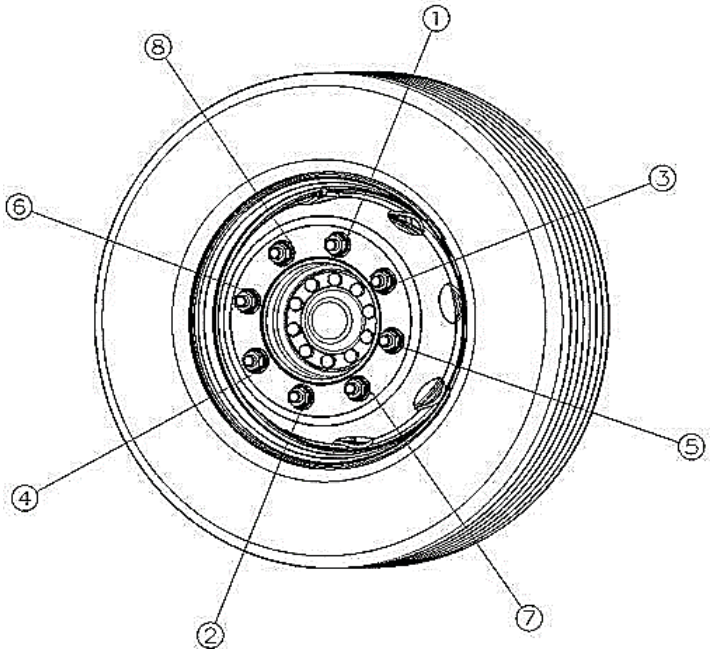
- Screw off and remove the lamp
- Remove from the socket
- Change with an equivalent lamp
- Screw and mount the lamp.

USING JACK AND CHANGING TYRES

Jack points of the vehicle are located behind the front and rear wheels on the body.

Using jack
- Make sure relief screw is tight
- Use its own jack lever to lift the jack
- Rotate the relief screw two rounds to the left to lower the jack.

Changing tyres
- Place a wedge to the wheel which is diagonally opposite of the wheel you are jacking up
- Loosen but do not remove the wheel nuts by the tyre to be changed
- Lift the vehicle with jack until the tyre is completely lifted off the ground from the jack point behind the tyre to be changed
- Dismount the wheel nuts, remove the tyre
- Mount the spare tyre
- Take the space of wheel nuts to make sure that the tyre fits
- Tighten the wheel nuts in diagonal opposite and in three phases with 385 ~ 430 Nm torque



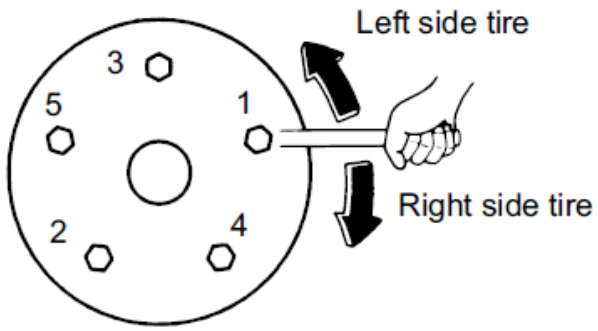
- Slightly loosen the relief screw of the jack to lift down the vehicle

Make sure that the jack is placed on a flat and firm ground. Do not start the engine when the vehicle is on the jack. Do not enter the vehicle when using the jack.

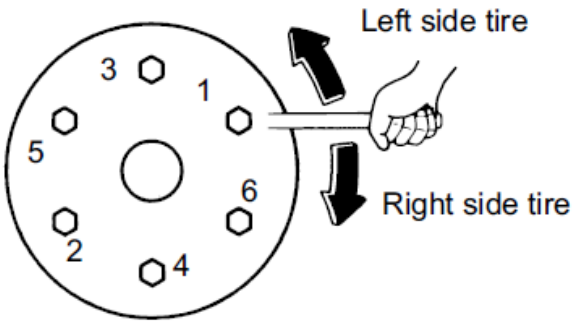
Let the passengers get off during tyre change. Make sure that gear is in the parking position, pull the hand brake and turn on the hazard flashers.

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	**430 N·m**	6	**-**	-
Dual tire	-	-	**430 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.

NOTE: If tyre pressure is continuously decreasing, there may be an object sticking into the tyre. Check whether there is air leak from the wheel or valve.

PERIODICAL MAINTENANCE

DAILY MAINTENANCE

- Check the tyres
- Check the brakes operation
- Check the engine cooling water level
- Check engine oil level.
- Discharge the water which condenses in air tanks particularly during winter
- Check diesel exhaust emission fluid level
- Check the outside illumination lamps operation compatible with safe driving
- Check the air suction hoses, exhaust pipes, and belts
- Check whether there is a hydraulic leakage in fan system
- Discharge the water accumulated in fuel water separator
- Check bus accident and original parts situation.
- Check corrosion chassis and parts of body

WEEKLY MAINTENANCE

- Check the tyre pressures with air watch
- Check the level of direction hydraulic tank
- Check the air suspension bellows (holes, damage etc.) when the engine is running
- Check the dirtiness of air filter
- Check the window cleaning water level
- Check washing the entire bus weekly, making sure to remove all road chemicals
- Check corrosion chassis and parts of body

CAUTION

- Should not use water jet cleaning machine inside of the bus
- Should not use corrosive material on the bus surface
- Should not use wash the vehicle with car wash brush
- Informing the authorized service in case of accident
- Regular maintenance in authorized service

Maintenance Schedule

Main periodical maintenance range of the vehicle is 20000 km. Transactions to be performed in every 20000 km are in the periodical maintenance table.

I: Inspect then clean, repair or replace as necessary

R: Replace

A: Adjust

L: Lubricate

Maintenance Range(* 1000 km)	20	40	60	80	100	120	140	160	180	200	220	240	260
Diagnostic Controlof Engine Faults	I	I	I	I	I	I	I	I	I	I	I	I	I
Engine Oil	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I
Valve space adjustment				A				A				A (or 4 years)	
Oil filter	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I
Fuel filter	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I
Fuel water separator filter	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I	R (or 6 months)	I
Fuel water separator filter water discharge	daily												
Air filter element	I	R	I	R	I	R	I	R	I	R	I	R	I
Fuel pipes andhoses	I	I	I	I	I	I	I	I	I	I	I	I	I
Cooling systemleakage	I	I	I	I	I	I	I	I	I	I	I	I	I
Hydrostatic fan drive system oil	I	I	I	I	I	R (or 1 year)	I	I	I	I	I	I	I
Hydrostatic fan drive system oilfilter (with oil change)						R							
Hydrostatic, fandrive oil level, leakage and function control	I	I	I	I	I	I	I	I	I	I	I	I	I
DEF systemleakage	I	I	I	I	I	I	I	I	I	I	I	I	I
Exhaust treatment – Particle filtercleaning	I: 300000 km												
Urea pump filter	R: 300000 km												
Outside cleaningof radiator (cooling liquid, air and oil) cores		I		I		I		I		I		I	
Cooling waterchange	I	I	I	I	R	I	I	I	I	R	I	I	I
Crankcase ventilation filter						R						R	
Crankcase ventilation hoses and radiator pressure cap			I			I			I			I	
Belt tightnessand damage	I	I	I	I	R	I	I	I	I	R	I	I	I
Intercooler, Pipes and AirCompressor	I	I	I	I	I	I	I	I	I	I	I	I	I
Vibration Dumper					I					I			
Transmission oiland filter									R (or 3 years)				

Maintenance Range (* 1000 km)	**20**	**40**	**60**	**80**	**100**	**120**	**140**	**160**	**180**	**200**	**220**	**240**	**260**
Cleaning transmission ventilation valve	I	I	I	I	I	I	I	I	I	I	I	I	I
Transmission oilleakage control	I	I	I	I	I	I	I	I	I	I	I	I	I
Transmission connecting boltstorque control	I	I	I	I	I	I	I	I	I	I	I	I	I
Front axle pins andbushes	I	I	I	I	I	I	I	I	I	I	I	I	I
Differential oil	**R: 65000 km or 1 year**												
Rear axle and brake caliper connecting bolts	I	I	I	I	I	I	I	I	I	I	I	I	I
Hydraulic steeringwheel oil	I	I	I	I	I	I	I	**R (or 2 years)**	I	I	I	I	I
Fluid leakage at power steeringsystem	I	I	I	I	I	I	I	I	I	I	I	I	I
Hydraulic power steering connections	I	I	I	I	I	I	I	I	I	I	I	I	I
Power steeringhose	I	I	I	I	I	I	I	I	I	I	I	I	I
Wheel nuts	I	I	I	I	I	I	I	I	I	I	I	I	I
Tyre air pressure	I	I	I	I	I	I	I	I	I	I	I	I	I
Wheel hub bearing	I	I	I	I	I	I	I	I	I	I	I	I	I
Brake pipe and hoses, leakages	I	I	I	I	I	I	I	I	I	I	I	I	I
Brake lining anddisc visual inspection	I	I	I	I	I	I	I	I	I	I	I	I	I
Draining of condensation tank	I	I	I	I	I	I	I	I	I	I	I	I	I
Air dryer filter				**R (or 1 year)**				**R (or 1 year)**				**R (or 1 year)**	
Looseness in shock absorber and connection	I	I	I	I	I	I	I	I	I	I	I	I	I
Leveling valves	I	I	I	I	I	I	I	I	I	I	I	I	I
Air bellows	I	I	I	I	I	I	I	I	I	I	I	I	I

Maintenance Range (* 1000 km)	**20**	**40**	**60**	**80**	**100**	**120**	**140**	**160**	**180**	**200**	**220**	**240**	**260**
Cable terminations and tightening torques	I	I	I	I	I	I	I	I	I	I	I	I	I
Function control of brake, signal, parking, fog andbrake lamps	I	I	I	I	I	I	I	I	I	I	I	I	I
Inside illuminationcontrol	I	I	I	I	I	I	I	I	I	I	I	I	I
Windshield wiper and washing system function	I	I	I	I	I	I	I	I	I	I	I	I	I
General control of fuse panel electric cable and sockets	I	I	I	I	I	I	I	I	I	I	I	I	I
Gas, brake and clutch pedal control	I	I	I	I	I	I	I	I	I	I	I	I	I
Battery connectingcables	I	I	I	I	I	I	I	I	I	I	I	I	I
Battery electrolit density	I	I	I	I	I	I	I	I	I	I	I	I	I
Starter electric connections			I			I			I			I	
Air door adjustment	I	I	I	I	I	I	I	I	I	I	I	I	I
Function control of safety installationsof all doors	I	I	I	I	I	I	I	I	I	I	I	I	I
Air leakage, damage tightness of door elements and doorfunction	I	I	I	I	I	I	I	I	I	I	I	I	I
Rear mirrors (including mirror heating system) connectors	I	I	I	I	I	I	I	I	I	I	I	I	I
Corrosion control of chassis and bodyparts			I			I			I			I	
Changing extraheater fuel filter(change earlier when necessary)		R		R		R		R		R		R	
Hoses of closed crankcase ventilation			I			I			I			I	
Filter of crankcaseventilation						R						R	
DEF pump filter	**R: 300000 km**												
Underbody wax checking and repairing	**I: weekly**												
Washing the entire bus, making sure to remove all road chemicals	**I: weekly**												
Check bus accident and original parts situation.	**I: daily**												
Greasing splinedjoint							L (or 2 years)						
Cardan shaft			I (or 1 year)			I (or 1 year)			I (or 1 year)			I (or 1 year)	
Greasing pinionshaft			L (or 6 months)			L (or 6 months)			L (or 6 months)			L (or 6 months)	

A/C compressor oil and A/C gas and oil must be controlled once every 2 years and replaced if decreased.

- A/C air suction filters must be cleaned with air once every 6 months and replaced with a new filter once a year.
- For fire extinguishing system; extinguishing fluid must be replaced every 5 years, tanks must be replaced every 10 years.
- Real time clock battery must be replaced every 2 years.

Periodical maintenance range is for 260000 km. Maintenances after 260000 km are the same as maintenance ranges which continue again starting from 20000 km.

6. TECHNICAL INFORMATION

Dimensions (mm)	
Maximum length	9560
Maximum width	2454
Maximum height	3368 (including A/C unit)
Wheelbase	4660
Front overhang	1890
Rear overhang	3010
Front track width	2012
Rear track width	1751
Inner height	max. 1950
Masses (kg)	
Gross vehicle mass	12700
Empty mass	9150 (including full tank full, driver and assistant)
Front axle capacity	4500
Rear axle capacity	8500
Engine	
Model	CUMMINS B6.7E6D320C EURO VI
Type	Commonrail Turbo Diesel Intercooler
Number of cylinders	6
Engine volume (cm3)	6700
Maximum power (HP/rpm)	320 / 2100
Maximum torque (Nm/rpm)	1200 / 2300
Exhaust gas emission class	Euro VI
Clutch	Dry type
Gearbox	Automated
Model	ZF ECOLIFE 6AP1200
Number of gears, type	6 forward, 1 reverse, overdrive
Final gear ratio	4,1
Steering system	Hydraulic
Tyres	265/70 R19,5
Minimum turning radius (mm)	7100
Gradeability % (at GVW)	49,20%
Suspensions	
Front	Air suspension - 2 bellows Independent suspension
Rear	Air suspension - 4 bellows
Brake system	
Front / Rear	Disc / Disc
Brake Structure	EBS - electonic brake system
Service	full air system dual circuit electronical actuated
Parking brake	acting on rear axle spring actuated
Auxiliary brake	Retarder
Fuel tank (lt)	250
Diesel exhaust fluid tank (lt)	30
Luggage compartment	
Volume (m3)	5,5
Generator	28V-90A X 2
Nominal voltage	24V
Battery	24V (2X12V) -150 Ah
Starter motor	24V-5,0 kW

PRESSURE VALUES		
Four Way Protective Valve	Static Closing Pressure	≥ 5.5 Bar
Air Dryer	Minimum Opening Pressure	8.1 Bar
Air Dryer	Maximum Closing Pressure	10.45 Bar
Tyres	Cold Inflation Pressure	7.75 bar / 112 psi

VISIGO E6 FLUID SPECIFICATIONS			
DEFINITION	CAPACITY	NORM	CLASS
Engine Oil	27 lt	SAE 15W 40	CES-20086, API CK-4 or CES-20081, ACEA E-9
Transmission Oil and Filter	24 lt (38 liters in the first filling	TE-ML20.105	20G according to TE-ML20.105
Differential oil & Rear axle	9,5 lt		API GL5
Power Steering Fluid	5,5 lt	GM Dexron-III	AUTRAN DX III
Hydrostatic fan oil	8 lt	GM Dexron-III	AUTRAN DX III
A/C compressor oil	1050 cc	Viscosity ISO 46	ZXL 100PG POE oil
Antifreeze (50%) +Water (50%)	46 lt	ASTM D6210	CUMMINS FLEETGUARD COMPLEAT
A/C gas	6,5 kg	1,1,1,2-Tetrafloretan (Cooler gas R134a)	LINDE
Shaft grease	0,8 kg	ASTM 4950 SAE J306 NLGI LB-GC	NLGI 2 – High Performance Lithium Complex Grease

7. LIST OF FOREIGN DISTRIBUTORS

COUNTRY	STORE NAME	STORE ADDRESS	CONTACT NUMBER
ANDORRA	GARATGE NOGREDA	Cra. De la Comella, 24, AD500 - Andorra La Vella	+376 805 582
AZERBAIJAN	AZ AVTOBUS	Yusif Safarov St., 37A, Khatai Districtkhatai District, Baku	+994 50 220 5279
BOSNIA HERZEGOVINA	SEJARI	Blazuj 78, 71215, Blazuj - Sarajevo	+387 65 140 900
BULGARIA	ISUBUS	459, Botevgradsko Shose Blvd.,1839, Sofia	+359 2 892 11 45
CROTIA	PRESECKI	Frana Galovića 15, 49000 Krapina	+385 913 378 292
CZECH REPUBLIC	TURANCAR	Bavorská 856/14, 155 00, Praha 5, areál Mototechny	+420 776 111 113
DENMARK	VBI	Kongensgade 38, 6070 Christiansfeld	+45 40 35 62 52
ENGLAND	HARRIS AUTO	Naas Road, Dublin 12, Ireland	+353 1 419 4500
FRANCE	FAST CONCEPT CAR	33 Rue de Bocage, 85170 Le Poiré Sur Vie	+336 035 39690
GEORGIA	GT GROUP	216, David Agmashenebeli Alley, 0131 Tbilisi	+995 32 274 0740
GREECE	PETROS PETROPOULOS	Iera Odos 96 - 104, 104 47 Athens	+306 94 961 6142
IRELAND	HARRIS	Naas Road, Dublin 12	+353 1 419 4500
ISRAEL	UTI	9 Ha'Rakevet St., Petach-Tikva 49145	+972 5 42349002
ITALY	OFFICINE MIRANDOLA	San Pietro di Morubio (VR) Via Europea, 12 - 37050	+39 0442 328.111
IVORY COAST	SOCIDA	Rue Pierre & Marie Curie, 01 BP 1865 - Abidjan	+225 21 21 40 00
JORDAN	QUDRA AUTOMOTIVE	214 Mecca St., P.O. Box 1535, Amman, 11821	+962 7 780 00341
KAZAKSTAN	AYTA TRADING	Celil Memmedquluzade Kuc., Altes Park, B Blok, Mertebe 4, Menzil 9-10, Baku - Azerbaijan	+994 50 315 1525
KIRGHIZSTAN	AYTA TRADING	Celil Memmedquluzade Kuc., Altes Park, B Blok, Mertebe 4, Menzil 9-10, Baku - Azerbaijan	+994 50 315 1525
LEBANON	AS TRADING	Tripoli Baddawi St., Tripoli, 31100	+1 787 955 9391
LITHUANIA	UAB SALOCIAI	Mokyklos g. 23, Bukiškio k. LT14182 Vilniaus raj. sav.	+370 5 279 3000
MACEDONIA	AUTOMAKEDONIJA	Boulevard 2, 16-ta Makedonska Brigada, Skopje 1000	+389 7 035 8806
MOROCCO	SDAMA	Route principale de Rabat 1, km 6,3 Ain Sebaa - Casablanca	+212 601 861 256

COUNTRY	STORE NAME	STORE ADDRESS	CONTACT NUMBER
NIGERIA	KONCEPT AUTO	Plot 122/132, Oshodi-Apapa Expressway, Isolo, Lagos	+234 0 701 655 5555
PALESTINE	TOWER MECHANICAL EQ.	Ramallah- Betunia Industrial Zone, P.O. Box 1221, Al-Bireh	+970 597 590267
POLAND	VBI	Gierłatowo 10 A, 62-330 Nekla woj. Wielkopolskie	+48 500 135 072
ROMANIA	S.C. ANADOLU AUTOMOBIL	Șos. București-Ploiești, 110, Comuna Ciolpani, Județ Ilfov	+40 72 177 64 80
SERBIA	SEJARI	Autoput za Zagreb 15, Beograd 11199	+381 63 367227
SLOVAKIA	TURANCAR	Bratislavská 29 949 01 Nitra	+421 901 755 705
SWITZERLAND	BUSHANDEL	Sagenfeldstrasse 2, 6252 Dagmersellen	+41 79 208 40 93
TAIWAN	TAPEI TRIANGLE MOTOR	NO.188, Yongbao St., Neihu Dist., Taipei City, 11484	+886 2 8792 1818
TAJIKISTAN	AYTA TRADING	Celil Memmedquluzade Kuc., Altes Park, B Blok, Mertebe 4, Menzil 9-10, Baku - Azerbaijan	+994 50 315 1525
TOGO	DIWA GROUP	Boulevard de la Paix - Zone Aéroportuaire, 08 BP 8535 Lomé	+228 22 518 969
TUNISIA	SAA (Societe Afrique Auto)	Tunis Cedex, BP 189 - 1080, ZI Carthage 1080	+216 71 940 514
UKRAINE	CHERKASY BUS	292, Rizdviana St., Cherkasy, 18036	+380 444 28 97 15

SEPTEMBER 2019