

The Citirider E **OWNER'S BOOK**



Bus and Coach International Pty Ltd

Preface

Dear Customer,

We would firstly like to thank you for selecting to purchase one of our Bus and Coach International vehicles and congratulate you on your wise choice. We believe that you will be impressed by the excellent performance of our products.

The BCI FBC6120BRS5 (Citirider E), is well-known for good value, safety and comfortable performance, its advantages are stable smooth handling, and quiet operation. All models of buses and coaches are produced to meet the needs of public transport, touring and commercial use.

In this Owner's Book, we will be introducing you to all the features and tips on how to best operate and maintain your new BCI vehicle. Please ensure you read the instructions carefully before putting the vehicle into operation. It is a requirement for the driver of this vehicle to strictly observe all laws and regulations concerning the operation of vehicles.

We believe our product will provide you with a more comfortable and safe service which will add value to your business.

Please ensure you operate and maintain the vehicle with care and attention. BCI will not be responsible for any loss caused by improper use of the product. Should you have any doubts about the operating or maintenance of the vehicle, please do not hesitate to make contact with your Service Agent or Dealer in your area to discuss it.

BCI is always striving for excellence and continues to improve its products and services as a means of offering the best value for our customers in a very competitive market place. Bus and Coach International Pty Ltd. Reserves the right to make changes in design and specifications and / or to make additions to, or improvements to this product without obligation to install them on products previously manufactured.

Bus and Coach International Pty Ltd

November 2022

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Note: The content of this Owner's Book is to provide as much relevant information to the Driver as possible. It will also contain information on factory optional equipment, which may or may not be included in your vehicle.

Note: Important safety advice – Please refer to Appendices A & B before driving the vehicle.

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Section 1 - Important Items

1A - Name Plate Introduction:

1A.1 - Vehicle Name & Tyre Plates:

The vehicle name plate and the tyre plate are mounted on the left of the front passenger area (figure 1), the name plate includes: bus model, the VIN, the date of manufacture and the manufacturer; the tyre plate includes: tyre type, rim type, standard tyre pressure and the maximum load.

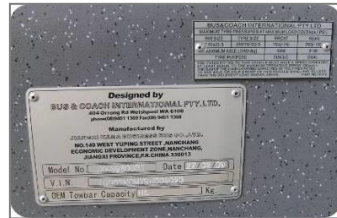


Figure 1

1.A.1 – Electric Motor Name Plate:

The motor name plate is attached to the rear of the motor, in addition, the model number and serial number are engraved at the bottom of the motor cover plate.

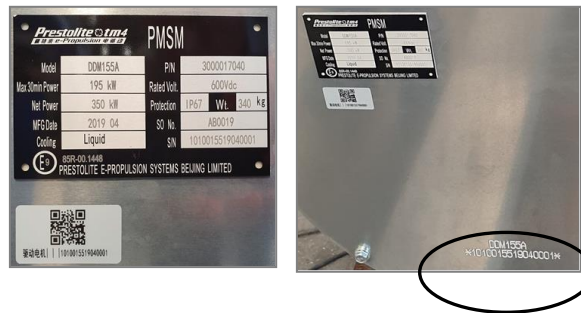


Figure 1a

1A.2 - Chassis VIN Number:

The Chassis Vehicle Identification Number (VIN) is located on the off-side surface of the chassis-structure, in front of the offside front wheel. (see sample figure 2).

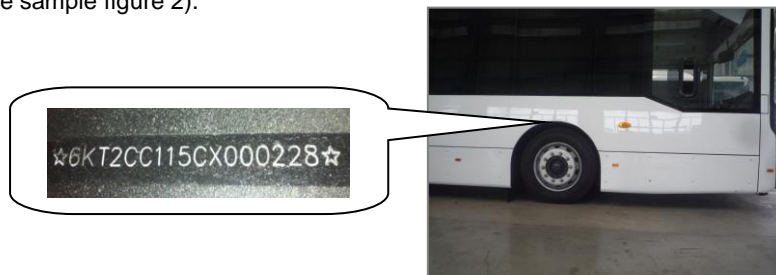


Figure 2

1B - Product Warranty: (Please refer to the BCI Warranty Guide Booklet for further details)

Please ensure all users STRICTLY follow the Operating Instructions of the vehicle so that it is used and maintained correctly. The BCI body warranty is limited to 100,000km or two years, whichever comes first. Other Supplier Warranties such as electric drive motor, batteries, air conditioning etc. will be covered directly by the Supplier's Warranty and can be taken to a Supplier's outlet for rectification.

Please ensure any warranty repairs required are communicated with your selling Dealer. Should a warranty repair not be able to be carried out at an official BCI Dealership, please ensure an official order number is obtained for the repairs from your selling Dealership, prior to them being carried out at another service center?

1C - Technical Documents:

Please use this Vehicle Owner's Book together with the any appropriate operator / maintenance manuals: (For further vehicle technical reference documents please go to the BCI Dealer website: bcibus.com.hk)

Section 2 - Main Technical Specifications

2A - Main Technical Specifications of the Vehicle (All figures quoted are approximate):

2A.1 - Body Dimensions (mm):

Overall L x W x H	12453 * 2495 * 3310
Wheelbase	6450
Front overhang	2824
Rear overhang	3179
Approach angle / departure angle (full load) (°)	8°/8°

2A.2 - Vehicle Mass (kg):

Body Mass (approx) (Vehicle with 45 seats)	12,900
Gross Vehicle Mass (GVM)	18000
Maximum axle laden mass (front / rear)	7,500 / 13,000

2A.3 - Performance Parameters:

Maximum Speed (km/h)	≥100 (electronically speed limited)
Maximum angle of grade ability (%)	18% at 18,000 kg laden mass
Maximum diameter of turning (m)	20.8 m (kerb to kerb) 24 m (wall to wall excl. mirrors)

Section 2 - Main Technical Specifications (continued)

2B - Main Technical Specifications of the Chassis:

2B.1 – Electric Drive Motor:

Model	Voith VEDS HD
Manufacturer	Voith
Mode and type	Electric PMSM PMSM (Permanent Magnet Synchronous Motor)
Maximum net output power	410 kW
Maximum net output power (30 min)	310 kW
Maximum torque	3100 Nm
Nominal rated voltage	618 V DC
Ingress protection	IP6K9K

2B.2 - Tail Shaft Model: Exposed, two universal joints; Universal joint: Rigid cross-shaft needle bearing

2B.3 - Front Axle Model : Hande IFS with Knorr disc brakes 7,500 kg rating.

2B.4 - Rear Axle Model:

Type: Hande with Knorr disc brakes, 13,000 kg rating.

Final gear ratio: 6.19

Brake type: Pneumatic control braking system; Knorr disc brakes.

2B.5 - Steering System Type : Bosch 8098 steering gear

Redirector type: Recirculation ball-type, power steering system

Steering wheel diameter: 450mm, adjustable height and rake

2B.6 - Suspension Type: Wabco ECAS Air suspension with 2 + 4 air bellows.

Front suspension: Equipped with two airbags, two telescopic shock absorbers and transversal stabilizer.

Rear suspension: Equipped with four airbags, four telescopic shock absorbers and transversal stabilizer.

2B.7 - Wheels and Tyres:

Wheel type: 8.25 x 22.5 polished alloy rims

Tyre specification (front / rear): Michelin X coach energy Z 295/80R22.5 tyre (rolling resistance 4.9).

Tyre inflation pressure (front / rear): 825 / 825Kpa (maximum – ADR limit)

Section 2 - Main Technical Specifications (continued)**2B.8 - Braking:**

Service braking type: Wabco series 3 electronic braking system (EBS3) including electronic stability control (ESC) and hill start aid; Automatic slack adjusters.

Park brake type: Spring actuated on drive axle

2B.9 - Electric equipment (Low Voltage System):

Circuit system: Single wire system, Negative earth

Circuit voltage: 24V

Power supply: Solid state inverter 28V 140A

Low voltage batteries: sealed 12V 100Ah x 2

Instrument Panel: Instrument cluster with high resolution 12.3 inch colour TFT display screen.

Lighting: LED type for all exterior and interior lighting

2B.10 – Batteries (High Voltage System):

Energy Storage System (ESS)

Type: Lithium Ferro Phosphate (LFP) Chemistry

Rated Capacity: 422 Kwh

Nominal Voltage: 589V

Configuration: 12 packs in total, 6 located on the roof and 6 at the rear below floor level

2C - Body Structure:

2C.1 - Structure type: Monocoque Body Frame

2C.2 - Structure of the Vehicle Body:

The structure of the vehicle body is fully welded and made with Australian Standard high tensile stainless steel tube. The main components of the framework have been treated after welding to ensure their antirust properties.

2C.3 - Interior finish:

The interior of the bus has a light airy feel with a glossy light grey formica for easy clean and durable finish for City Bus applications. The sides are also a glossy light grey formica for easy clean and durable finish. Option dimple finish stainless steel. The floor is covered with a heavy duty vinyl.

2C.4 - Vehicle doors:

Front passenger door: Twin leaf inward gliding type, electrically powered

Centre passenger door: Single leaf plug-slider type, electrically powered.

2C.5 - Vehicle windows:

The front windscreen is laminated glass; the side windows are 4mm thick toughened glass with a dark grey tint. All glass is fully bonded to the body. Option: rubbered in glass with flush fitting frames bonded to the body frame.

Section 2 - Main Technical Specifications (continued)

2C.6 - Seats:

Driver seat: ISRI NTS 6860/875 air suspension driver's seat with air lumbar support + 3-point restraint

Passenger seats: Various options for up to 45 seated passengers. All seats are approved for public transportation and

2C.7 - Interior trim:

The following items can be found inside the vehicle:

Driver's side sun visor, electric front windshield sun visor, interior rear view mirror

Electrical devices: Audiobus;, USB points

2C.8 - Air Conditioning System:

Type: Coachair EX32 air conditioner with additional heat exchangers for battery cooling system

Demister: Domestic 6kw electric demister

Section 3 - Operating Guide

3A – ISRI 6860-875 Driver's seat (figure 3):
(Extract from ISRI Seat Brochure)

- 1) Belt adjustment
- 2) Armrest adjustment
- 3) Backrest adjustment
- 4) Shoulder adjustment
- 5) Seat climate control
- 6) Integrated pneumatic system (IPS)
- 7) Height adjustment (+ memory)
- 8) Vertical shock absorber (adjustable)
- 9) Quick release

Figure 3



Attention: For safety reasons, NEVER attempt to adjust the Driver's Seat whilst the vehicle is in motion.

3B-Steering wheel / column adjustment (figure 3b):

With vehicle at normal pressure, momentarily press switch and adjust steering wheel/column position to suit.

Note: there is a 3 second window to adjust the steering column, before the steering lock engages automatically.

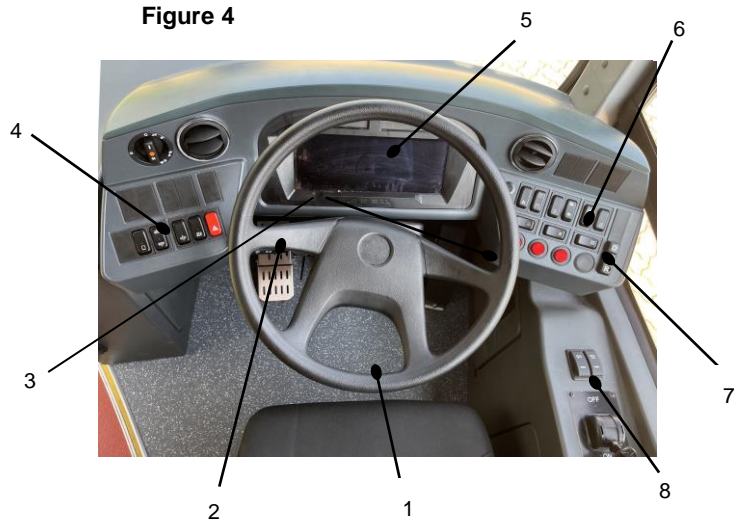


Figure 3b

3C - Driver's controls (figure 4)

- 1) Steering wheel / horn buttons
- 2) Headlight & direction indicator stalk
- 3) Windscreen wiper & retarder stalk
- 4) Nearside switches
- 5) Combination instrument panel (CAN)
- 6) Offside switches
- 7) Transmission control
- 8) Driver side console

Figure 4



Section 3 - Operating Guide (continued)

3C1.1 - Ignition switch (figure 5):

The photo on the right shows the Ignition key position.

- "LOCK" : This is the place to insert and draw out key. Power off
- "ACC" : Accessory power on, power on
- "ON" : Instrument and Control power on
- "START" : Puts the power train into ready to drive mode,
Hold the key in start position for approx. 3 seconds after the 'READY' message
Appears in the dash display screen.The vehicle is now ready to drive.



Figure 5

3C.2 – Wiper & direction indicator control stalk (figure 6):

This is located on the left side of the steering column.

Figure 6



Horn switch: Push the button on the end of the indicator stalk to activate the horn, release to turn off.



To spray water on the screen, press the stalk inwards, the wipers will automatically start in the low speed and will automatically turn off a few seconds after the button is released. Rotate the stalk to operate the wiper:

- OFF: Stop wiping
- : Intermittent wiping
- I: Wiping at a low speed
- II: Wiping at a high speed



This is the turn signal indicator sign. Move the lever upwards to engage right-turn signal; move the lever downwards to engage left-turn signal.



This function is for turning on high beam by pulling stalk upwards, or intermittent high beam by briefly holding and releasing the stalk.

Section 3 - Operating Guide (continued)

3C.3 – Nearside switch, button and indicator functions (figure 7):

- 1) Light switch
- 2) Hazard warning light switch
- 3) Hill hold switch
- 4) Height reset switch
- 5) Vehicle raise / lower switch
- 6) Kneeling switch

Figure 7



Nearside switch, button and indicator functions:

3C.3.1



Vehicle lights (figure 8):

Turn to desired position for vehicle lights. 'O' = off position

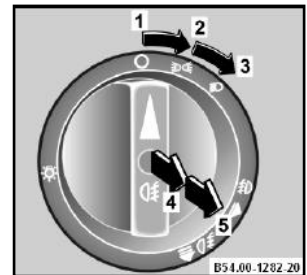
1° - position 1 lights off

2° - position 2 lamp activation (standing lights).

3° - position 3 main headlight activation.

Push-button

Figure 8



3C.3.2



Hazard warning lights:

Press down to activate the vehicle hazard warning lights. Press again to switch off lights.

3C.3.3



Hill hold:

When stationary on an incline, press switch to assist with maintaining a stable position.

3C.3.4



Normal height switch:

Press down to active height reset, going back to normal height, no matter raised or knelt down.

Press down when kneeling, stop kneeling; once more, go back to normal height.

3C.3.5



Vehicle raise / lower switch:

Keep pressing the top, raise vehicle up. Release switch, stop raising and vehicle stay at this height.

Press the bottom, kneeling down.

Section 3 - Operating Guide (continued)

Nearside switch, button and indicator functions (continued):

3C.3.6



Kneeling mode switch:

Before pressed down, it's in Manual mode: press kneeling switch to kneel.

Pressed down, it's in Auto mode: door open, kneel automatically.

3C.4 - Instrument panel map (figure 9):

MultiViu Professional 12 - Please refer to your company's technical department for instructions on the use of this vehicle management system.



Figure 9

3C5 – Offside switch, button and indicator functions (figure 10):

- 1) School light switch
- 2) Saloon lights switch
- 3) Driver's light switch
- 4) Drivers fan switch
- 5) Lane departure switch
- 6) Rearview mirror heater switch
- 7) Defrost switch
- 8) Middle door button
- 9) Front door button
- 10) Open / Close both Door Button
- 11) Stop request – bell reset
- 12) Steering column adjustment

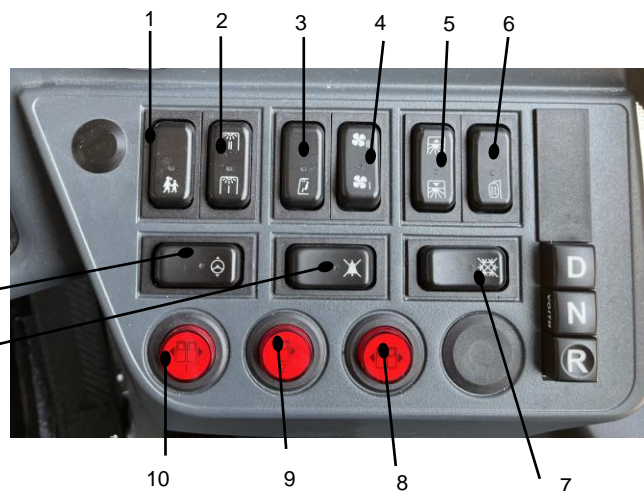


Figure 10

3C.5.1



School bus lights switch:

Press down to activate school lights, press again to stop.

Note: When active, a light will appear in the middle of the switch. This applies to all switches.

3C.5.2



Saloon lights switch (white – 2 stage):

Press down the lower end to turn the lamps on low, press the upper end to turn the lamps on high.

3C.5.3





Driver's reading light switch:


Press down the lower end to connect the power, press down the upper end to turn off the power.


Section 3 - Operating Guide (continued)



Offside switch, button and functions (continued):


3C5.4  **Driver's fan switch:**
Press down the lower end to switch the driver fan on low, press again for high. Press down the upper end to switch the fan off.

3C.5.5  **Electric blind switch:**
Press down the upper end, the blind moves up; press down the lower end, the blind moves down.


3C.5.6  **Rearview mirror heater switch:**
Press down to turn on the rearview heater switch, press up to turn the heater off.

3C.5.7  **Defrost switch:**
Press to activate defroster, press again to stop.

3C.5.8  **Passenger Doors Open / Close (internally):**
&  Either door 1 (front) or door 2 (middle) - Press the red button to open/close door.
3C.5.9 **Note:** button will be illuminated whilst door is in open position

3C.5.10  **Both Passenger Doors Open / Close (internally):**
Press the red button to open both doors simultaneously.

3C.5.11  **Bus stop request bell reset:**
Press to reset bell

3C.5.12  **Steering column adjustment:**
With vehicle at normal pressure, momentarily press switch and adjust steering wheel/column position to suit.
Note; there is a 3 second window to adjust the steering column, before the steering lock engages automatically.

3C6 - Voith - Drive mode selector (figure 11):

- 'D' – Drive
- 'N' – Neutral
- 'R' - Reverse

Figure 11

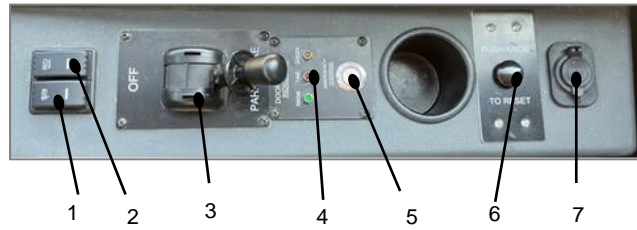


Section 3 - Operating Guide (continued)

3C.7. - Driver's side console (figure 12):

- 1) Wipers – auto switch mode
- 2) Headlights – auto switch mode
- 3) Park brake
- 4) Doors status
- 5) Emergency override switch – door
- 6) Broms brake valve
- 7) USB

Figure 12



Driver's side console controls:

3C.8.1 Wipers – auto switch mode:



Press to activate auto mode for wipers.

3C.8.2. Headlights – auto switch mode:



Press to activate auto mode for headlights. Press again to deactivate.

3C.8.3 - Park Brake Control (figure 13):

The Park Brake control is located within easy reach on the driver's side console.

3C.8.3.1 - To release the park brake, lift the round collar and move the lever forward (both are spring loaded).

3C.8.3.2 - To apply the park brake, pull the lever back until it locks into position (if the lever springs forward it is not locked in position and the brakes are not applied). Try again until the lever is locked in the rear position.



Figure 13

3C.8.4 Door status indicators (figure 14):

- a) Normal
- b) Fault indicator
- c) Override (re: 3C8.5.)

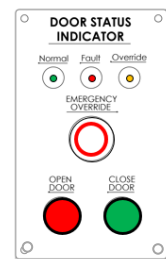


Figure 14

3C.8.5 Emergency Override Passenger door – emergency override button:



Press to release door.

3C.8.6 Park Brake Reset:



A "Broms Brake Valve" is fitted into the park brake circuit. This is to prevent a bus runaway while the air system is charging. The knob is to be pushed to reset the Broms valve & park brake system after use.

Section 3 - Operating Guide (continued)

Driver's side console controls (continued):

3C.8.7 USB Port:



For electrical items requiring a USB connection

3D - Overhead console (above driver) (figure 15):

1) Demister



Figure 15

3D.1 – Demister (figure 15a)



Figure 15a

Air flow direction

3E – Rearview Mounted OS Windscreen (figure 16):

Display screen for OS camera mirror, please refer to Dealer's Website document:

24B - Rearview Camera Mirror VD1237 - User Manual & Installation Sept 2020



Figure 16

3F- Vehicle inlet for AC / DC charging (figure 17 & 17a):

Note: Please refer to charging station operating manual for charging procedure.

It is a CCS2 charging socket for DC charging using an external charger, compliant to **IEC 61851-23: DC electric vehicle charging station** using the PLC (power line communications) protocol.

The vehicle is charged via the vehicle inlet, located via the rear bay door (figure 17) on the center of the rear bay (figure 17a). Remove plug cover and insert charge connector (figure 17b).

Figure 17

Rear bay door closed. Open flap to



Figure 17a

Rear bay door open



Figure 17b

Insert charger into inlet socket



3G – Low voltage isolator (figure 18): Rotate the red handle to isolate low voltage battery power.

Figure 18



Section 3 - Operating Guide (continued)

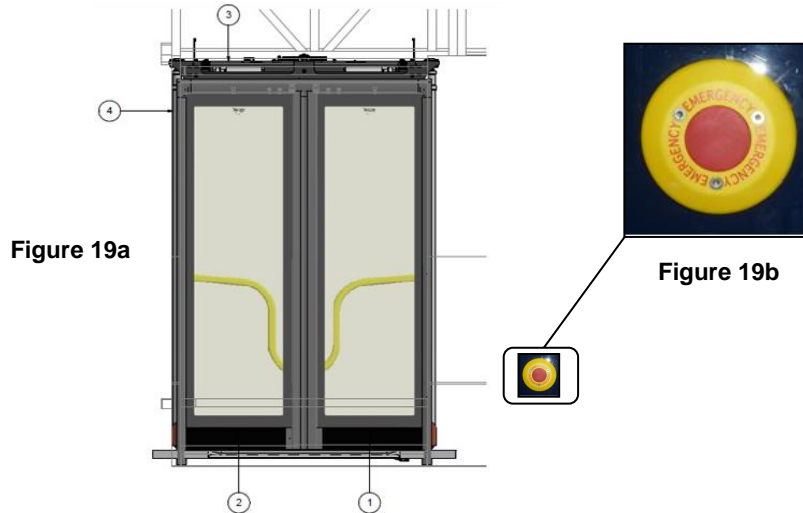
3H- Passenger Door Operating Instructions:

3H.1 - Open and closing the passenger doors, while the driver is *INSIDE* the vehicle

The driver can operate the passenger doors (**All Doors**) via the passenger door control buttons located on the dashboard – offside (**Refer to 3C5.8 to 3C.5.10 page 14 above**).

3H.2 - Open and closing the passenger doors, while the driver is *OUTSIDE* the vehicle

The driver can operate the passenger doors (figure 19a) by pressing the open/close buttons (figure 19b) which are located outside the vehicle on the right-hand side of each door.



3H.3 - Passengers with wheelchairs / prams– There is a button (figure 19c) located on the right-hand side of the front door. Passengers press this button to alert the driver; the wheelchair loader is then manually opened by the driver to assist passengers entering the vehicle.



3H.4 - Passenger door **EMERGENCY operation:**

3H.4.1 – Internally: Use the emergency exit buttons (figure 19d) – These are located above the front & middle passenger doors; lift cover, press red button to release the door and then pull / push the door open. Press the green button (figure 19e) to close.



3H.4.2 – Externally: Use the emergency exit buttons (figure 19f) – These are located which outside the vehicle on the right-hand side of front doors and left-hand side of center doors. Press red button to release the chosen doors and then pull / push the doors open.



Section 3 - Operating Guide (continued)

3J – Emergency exits (figures 20a – 20d):

3J.1 - One window (offside, marked with an emergency exit label) see figure 20a.

There is one emergency window on the offside of the vehicle. This has an emergency hammer (figure 20b) attached near to the window along with signage. **In the event of an emergency the window should be struck with the emergency hammer in order to break the window**



Figure 20a



Figure 20b

The emergency window can be broken using the hammer, located inside the vehicle. NB: All windows can be broken with the hammer.

3J.2 - One roof hatch marked with an emergency exit label (see figure 20c). The roof hatch can be used in an emergency as follows: Pull plastic cover (see figure 20d) to access the red release lever, then rotate the lever left or right, to unlock and then push the hatch up to open.



Figure 20c



Figure 20d

Pull plastic cover – to remove

3J.3 - The passenger doors (see figure 20e). Refer to passenger door operation instructions on page 17.

Figure 20e



Section 4 - Startup and Driving

4A - Routine checks before and after driving:

The vehicle should be parked on level ground before carrying out the pre-driving checks.

4A.1 - Check electrical appliances:

- Check whether the power supply is ready: Switch on the power master switch (red one) on side console, then turn ignition key to ON. Instrument panel will be activated and all information is shown in it.
- Check whether there are fault warnings in the instrument panel. If there are any faults, call service.
- Check whether various instruments operate normally, especially the front headlights, the indicator lamps, the braking lamps, the reversing lamp and the emergency hazard lamp.
- Check for damage to any lights, light bulbs and switches.
- Regularly clean the outside of the various lights and indicators to maintain clarity.

4A.2 - Check the driver's seat safety belt:

Check the seat belt buckle of the driver's seat safety belt operates normally or not and ensure that the safety belt is tightly locked when buttoned up in the following cases:

- the body moves abruptly forward;
- the vehicle brakes abruptly or accelerates suddenly

4A.3 - Check, adjust and clean the rear-view mirror regularly

4A.4 - Check various emergency apparatus: Such as the fire extinguisher, emergency exits

4A.5 - Check whether the speedometer and dash mileage display function normally or not

4A.6 - Discharge any water in the air tanks (figure 21):

Toggle the drain valve to dispel any grease, dirt and water thoroughly from the air tanks. If there is too much grease, dirt, or water in the air tanks; check the air dryer cartridge as it may require replacement. As such, it is recommended that the air tanks be checked for excess water every two weeks. Pay particular attention to the tank nearest the engine.

Note: The air drier cartridge MUST be replaced at least once each year.

Figure 21



Pull ring downwards to dispel any residue from air tank

4A.7 - Check whether the foot brake and the hand brake operate normally and if there are any leaks.

4A.8 - Check the steering box free-play. Steering box free-play allowance should be in the range of $\pm 10^\circ$. If the free-play is larger than these values, please drive to the nearest after-sales service center for adjustment. (The steering has a pneumatic steering box, push the steering wheel adjustment switch to reduce free-play, try to adjust within 5 seconds)

4B - Checks before / after every one-week driving:

4B.1 - Check the wheels & tyres. Before driving the vehicle, please check the air pressure (**760Kpa**) in the tyres, as well as for any damage to the tyres. Also, carefully check whether the wheel-nuts are securely fastened or not.

Note: After a new vehicle has been operated for about 50 km, re-check the wheel-nuts according to the specified torque (600Nm for steel rims and 550Nm for alloy rims). The sequence for fastening the wheel-nuts should conform to the cross-symmetrical one.

Section 4 - Startup and Driving (continued)

Checks before / after every one-week driving (continued):

4B.2 - Check the windscreen washer fluid. Stop the vehicle on a level roadway and by pulling a lever located inside the front lower panel (figure 22a); release the lower panel at the front of the vehicle (figure 22b) where the fluid container is situated. The fluid level can be seen through the container (figure 22c). Fig 22d shows the filler port for the windscreen washer fluid



Figure 22a
Lower front panel

Figure 22b
Lever for front lower panel. (Lift top panel first to access lever)



Figure 22c
Windscreen washer fluid container



Figure 22d
Filler port for windscreen washer fluid

4B.3 - Inspect: the motor, the drive axle, the steering system and the cooling system as well as the pipelines for any oil and or air leakage. Repair as required.

4C - Checks before / after every two-weeks driving:

4C.1 - Check the oil level in the power steering oil tank, if insufficient, refill as required

- Park the vehicle on a smooth flat roadway, apply brakes, open the door of the rear compartment and inspect the level of the power steering liquid from the viewable window on the oil tank (figure 23)
- To fill with oil: start the vehicle. slowly add oil through the top of the reservoir, until the oil level reaches midway in the reservoir viewing mirror.
- Some air may be drawn in during the pouring process; it is important to turn the steering wheel to the two full lock positions several times so as to exhaust any air bubbles from the oil storage tank.



Figure 23

4C.2 - Check the level of the battery fluid: **Low voltage system**

Contact service department, if the level is lower than the height shown on the sealed batteries.

4D - Vehicle Start-Up (figure 24a to 24h):

4D.1 – ON

4D.1.1 - Ensure vehicle is not being charged. Turn the low voltage battery disconnect switch in rear O/S compartment to ON position.



Figure 24a

Section 4 - Startup and Driving (continued)

4D - Vehicle Start-Up (figure 24a to 24h) (continued) :

4D.1.2 - Ensure park brake is applied and vehicle is in Neutral prior to turning ignition key to ON (figure 24b). Check dash instrument display, there should be no warning symbols (figure 24c), if so, refer to Appendix C.

Figure 24b



Figure 24c



4D2 - Start/ Ready:

4D2.1 - Turn ignition key further to start up the vehicle, check dash instrument display READY (figure 24d).



Figure 24d

4E - Moving / driving the vehicle:

4E.1 - Prepare to drive:

- Close doors (figure 24e).
- Then hit brake pedal while pressing gear D or R (figure 24f).
- Then release handbrake to OFF position (figure 24g).
- Check and ensure broms valve is pushed down (figure 24g), gear position should displayed in dash (figure 24h).



Figure 24e



Figure 24f

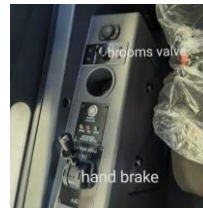


Figure 24g



Figure 24h

- Hit accelerator pedal gently twice. (First hit is to cancel door brake function, second hit to enable vehicle to move).
- After starting the vehicle, the pressure in the braking system should be above 6.5bar, a buzzer will sound until the air pressure reaches this level. The various instruments and indicators should be normal.
- DO NOT move out with the vehicle until the brakes have been fully released.
- **When driving the vehicle normally:** The indicator for the air pressure gauge should be within the range of 6.5-10 bar. The alarm will engage if the pressures are incorrect.

Section 4 - Startup and Driving (continued)

4E - Moving / driving the vehicle (continued):

4E.2 - Please pay attention to the following while driving a vehicle:

- Stop the vehicle and check should some abnormal sound be heard, or some abnormal odour can be smelt.
- Abrupt acceleration or emergency braking should be avoided as much as possible whilst you are driving.
- DO NOT switch off the vehicle while the vehicle is going downhill, since this will cause insufficient air pressure in the braking system and malfunction of the power steering.
- **DO NOT** select neutral when coasting down hills, as this is not only dangerous, but can cause extensive damage to the motor.

4E.3 - Please note the following points for driving in winter conditions:

- DO maintain the level of and only add recommended coolant, as specified by the manufacturer to the cooling system.
- DO remove the accumulated water in the air tanks after stopping.
- DO check the fluid levels, the specific gravity and the voltage of the electrolyte in the battery. *Low voltage system*
- The vehicle should not be driven before releasing all the brakes.

4F - Shutting down the vehicle (figure 25):

4F.1 - After parking, select the "N" position on the shift range selector, engage the park brake and then turn off the power (ignition key to OFF). Wait for 10 seconds, and then turn the low-voltage power main switch in the rear compartment of the vehicle to the OFF position.

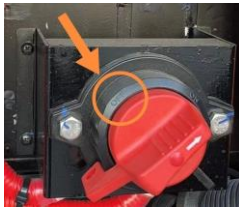


Figure 25

4F.2 - If abnormal conditions such as speed limit are found during driving, stop the vehicle, turn the ignition key to OFF position, wait 10 seconds, and then turn the low voltage main power switch (shown in above picture) in the rear compartment to OFF position. Wait 30 seconds, and then restart (repeat steps 4D to 4E above in Start-Up Instruction).

WARNING: If you leave the vehicle running, the vehicle could move unexpectedly and people could be injured. If you must leave the vehicle in 'ready mode', DO NOT LEAVE the vehicle until you have completed all of the following:

- Put the shift range selector in **N** (Neutral).
- Apply the park brake and emergency brake and ensure they are properly engaged.
- Chock the wheels and take any other appropriate action to prevent the vehicle from moving.

NOTE: If the passenger door is open while the vehicle is in 'ready mode' and without the park brake applied; a buzzer will sound. Apply the park brake and the buzzer will turn off.

Section 5 - General Maintenance

5A - General Knowledge:

The vehicle will remain in good operating condition as long as the correct maintenance and operating procedures are followed. During maintenance, the vehicle should be parked on a level dry surface with the park-brake in the 'ON' position; this is to ensure the vehicle does not move. **Note:** If the vehicle operates under extreme conditions, (such as bad roads, thick dust condition and frequent stop start operations), the maintenance interval should be reduced accordingly. Carefully clean all surrounding areas before adding fluids or changing parts.

5B - Cleaning the vehicle:

- Be careful not to pollute or damage the environment when washing the vehicle.
- Ensure the correct concentrations of cleaning detergents are used.
- DO NOT wash the vehicle in direct sunlight.
- ENSURE water is not directed onto or into the air intake system or batteries, as this can cause extensive damage.
- DO NOT spray high pressure water onto the radiator fins; or any Electronic Control Unit (ECU).

5C - Maintaining the CATL batteries:

For up to date and correct battery maintenance information, please refer to the battery Supplier's Operation Handbook.

NOTE: If the vehicle is parked for a long period, more than a month, the batteries should be fully charged. It is recommended batteries are recharged every two months. This is to balance the voltage of each cell.

5D – Motor and Inverter cooling system:

Keep the outside of the radiator clean to enable a good air flow to pass through it.

Use compressed air or water to clean the outside of the radiator. If there is hard scale on the radiator, steam can be used to blow and clean both sides. DO NOT USE HIGH PRESSURE CLEANERS ON THE RADIATOR FINS, WHICH MAY CAUSE DAMAGE.

5E – Coolant:

Note: ONLY the coolant recommended by the battery manufacturer MUST be used in the cooling system.

5F - Rotation of the tyres (figure 26):

To assist with tyre life, it is suggested to periodically rotate the RADIAL tyres according to the diagram below:

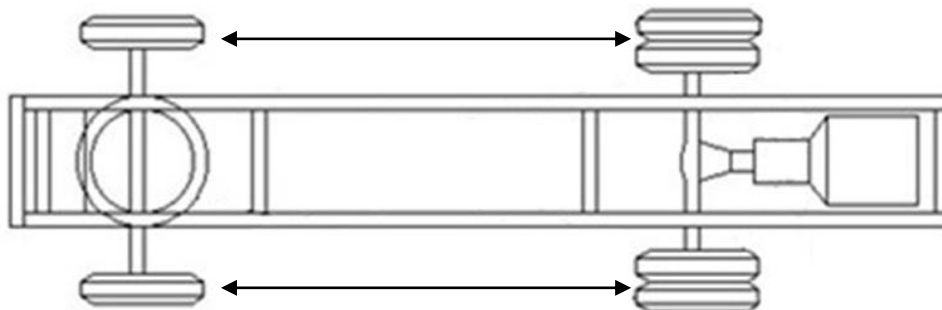


Figure 26

ROTATION OF THE RADIAL TYRES

Section 6 - Vehicle Maintenance

Notice: The service intervals and items that Bus and Coach International Pty Ltd suggest are only a guide for general maintenance. Please refer to component suppliers service guides such as engine and transmission for correct service intervals and instructions. Vehicles operating under arduous conditions require the service intervals to be reduced accordingly to suit.

Note: The very first maintenance service is to be carried out when the vehicle first reaches 5000km or before 6 months from delivery to the customer. Complete all checks as per the 15000km service schedule in this handbook under section 6 and at this time ensure the differential oil is replaced.

Note: These service intervals are to be used as a guide only and may change from time to time. Therefore, it is important to confirm details from the Supplier's maintenance instruction booklet prior to commencement. Oil change intervals are based on mineral oil being used. Other checks such as draining condensation from air tanks, greasing and checking of the fluid levels etc.; MUST be done in between these recommended services. For buses operating under arduous conditions, these service intervals must be reduced. Confirm details from the Supplier's maintenance booklet prior to commencement.

Note: Sections A & B are pending

6C - Recommendations for lubricants:

6C.1 - Choosing the lubricant according to the Supplier's Manual:

During the vehicle use, some oil will have been used to lubricate and will be burnt (consumed) due to the high temperatures. This 'burning' causes the oil to deteriorate and the 'burnt' oil contaminates the lubricant. It is therefore important that the oil is replaced after a certain period. Such deterioration depends on the operating conditions as well as the quality of the oil used. So, the time interval for replacing the oil is dependent upon usage and environment.

6C.2 - Hydraulic oil for power steering:

Applied standard: The Genera Allison C-3; The DEXRON-II hydraulic transmission oil should be chosen when the power steering mechanism operates under a temperature lower than 10°C; If above 10°C then choose C-3 / 10W. The C-3/10W grade oil is all-purpose oil used in a variety of conditions; The C-3 / 30 grade oil is all-purpose oil for above freezing environments.

6C.3 - Lubricant for the chassis:

Lithium based Extreme Pressure 2" grease "LX EP-2" should be applied to the various components

Section 7 - Trouble Shooting

NOTE – HV Batteries: Please refer to OEM Battery Manuals

NOTE – Driving System: Please check error messages in dash (Appendix C)

Note: Sections A, B & C are pending

Appendix A

Isolation of High-Voltage Supply for Maintenance Purposes

Power supply to devices powered by high-voltage DC and AC on the bus can be isolated by removing two MSD (manual safety disconnects) located at the BMS (battery management system) S-Box. Removing these two MSD isolates the high-voltage power supply to:

- 4 in 1 power distribution box
- Propulsion motor and motor inverter
- Power steering pump motor
- Roof mounted HVAC
- PTC heater front box
- Air compressor motor



Important Safety Warning:

Removal of the two MSDs at the S-Box only isolates the high-voltage outputs from the S-Box and all items powered from the S-Box (as listed above).

High-voltage cables running between battery packs, and from battery packs to the S-Box inputs remain powered and **carry lethal DC voltage until the special MSD integrated into each battery pack is removed from all the battery packs on the bus.**

Removal and reinstallation of the special MSDs on the battery packs and any maintenance repair work on the battery packs, or wiring between battery packs and S-Box, or the internals of the S-Box is not covered in this document. It must only be carried out by specially trained personnel (CATL level 1 and level 2 service technician). Contact the CATL service agent for assistance if required.

Isolation of High-Voltage Supply via S-Box MSDs:

1. Preparation
2. If the bus is connected to a battery charging station wait for the charging process to finish and then disconnect the charging gun from the bus. Close the access flap to the charging socket at the back of the bus.
3. Move the bus in a secure work area protected from rain and any other water spray (bus wash or high pressure water cleaners etc.)
4. Apply the park brake.
5. Turn the ignition key off and remove it.
6. Use Hazard tape or other suitable barriers to create an exclusion zone around the bus and place warning signs to indicate that high voltage maintenance work is in progress. An example of a warning sign is shown in figure 1 below.
7. If the bus is equipped with a master isolation switch adjacent to the 24volt battery (isolator for 24V vehicle electrical system) turn the master isolation switch off and secure it in the off position. If the bus is not equipped with a battery isolation switch, then isolate the 24V system by removing the battery cables from the battery terminal.

Appendix A (continued)
Isolation of High-Voltage Supply via S-Box MSDs (continued)



Figure 1 – Warning Sign

Removal of S-Box MSDs:

1. Open the large access door at the rear of the bus. The S-Box with the two MSDs is located in the LH top area of the rear compartment (refer to figure 2).

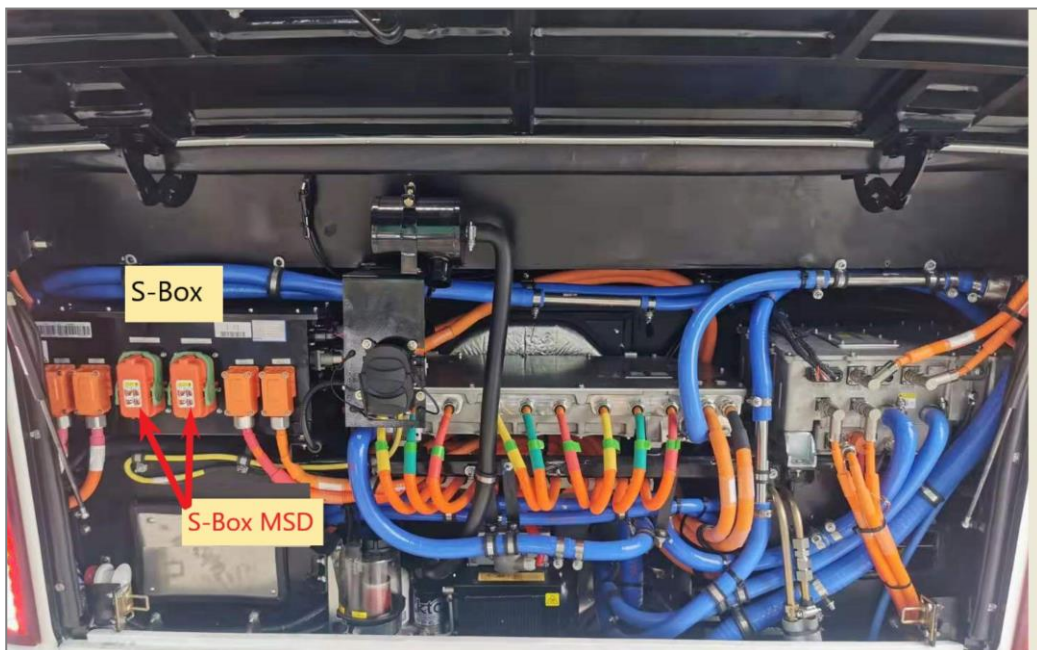


Figure 2 – Location of S-Box and Manual Safety Disconnects (MSD)

Appendix A (continued)**Removal of S-Box MSDs (continued):**

2. To free the MSD from its socket in the S-Box release the secondary locking tab at the top MSD to free the green retaining lever (refer to figure 3).



Figure 3 – S-Box MSD locking tabs and levers

3. Swing out the green lever approximately 90 degrees and pull out the MSD plug.
4. Remove the other adjacent MSD the same way.
5. Keep both MSD plugs in a secure, clean and dry place (away from any metal filings or water)
6. Removal of both MSDs disconnects power supply to the following high-voltage units:
 - 4 in 1 power distribution box
 - Propulsion motor and motor inverter
 - Power steering pump motor
 - Roof mounted HVAC
 - PTC heater front box
 - Air compressor motor

Appendix A (continued)

Precautions before Accessing High-Voltage Units after Removal of S-Box MSDs:



1. Risk of lethal electric shock – capacitors store hazardous energy.

To allow time for capacitors to discharge, wait for at least 10 minutes after removal of both MSDs before removing of any covers and accessing of high-voltage units or cables.



- 2.** Some high-voltage units (for example the motor control unit MCU) use common mode capacitors between the high-voltage DC bus and the chassis. Some apparatuses can cause dangerous frame current to pass through these capacitors if they are connected to a high-voltage DC bus. Always measure the voltage between the high-voltage DC bus and the chassis using appropriate protection and insulation before manipulating the product.



- 3.** Most high-voltage units use differential mode capacitors between the positive high-voltage DC bus (+) and the negative high-voltage DC bus (-). Even when the item is disconnected from the high-voltage source by removal of the MSDs, these capacitors can hold a voltage high enough to cause a severe electric shock resulting in death. Always measure the voltage between the positive high-voltage DC bus(+) and the negative high-voltage DC bus (-) using appropriate protection and insulation before manipulating the product.



- 4.** The operating voltage exceeds 600V DC depending on the SOC of the batteries. All test equipment (for example multimeters, test leads and test probes) used must have at least a CAT III 1000 V safety rating. Personnel must be suitably trained and use PPE for high voltage work, insulating safety boots, insulating gloves, insulated hand tools etc. all rated for 1000 V.

Re-installation of S-Box MSDs:

1. Re-install the S-Box MSDs only after the work on any high voltage units has been fully completed and checked.
2. Insert the MSD plugs into their sockets with the locking lever in the open position.
3. Ensure the MSDs are correctly seated and then swing the locking levers into their original closed position.
4. Check that the secondary locking tabs are engaged correctly to secure the locking levers.

Appendix B

Vehicle Recovery and Towing Instructions

In case of a road accident or vehicle breakdown, the bus may need to be recovered and transported to a repair facility.

In such an event proceed as follows:

1. Stop the bus safely and apply the park brake.
2. Open the passenger doors and safely evacuate all passengers from the vehicle.
3. Turn off the ignition key and remove it.
4. Call emergency services immediately if required.
5. When it is safe to access the rearmost side access hatch on the vehicle, open the hatch and turn off the 24V battery main isolation switch by turning the large red knob anti-clockwise to the lockable OFF position.
6. Call for assistance to recover the vehicle and transport to a repair facility.

If serious malfunction or physical damage to any of the following high voltage devices is suspected then the Master Safety Disconnects (MSD) located on the power distribution S-Box needs to be removed to cut power supply from the high voltage batteries to these devices:

- 4 in 1 power distribution box
- Propulsion motor and motor inverter
- Power steering pump motor
- Roof mounted HVAC system
- PTC heater front demister box
- air compressor motor

Refer to Appendix A below for important safety warnings and instructions on how to remove the two MSDs on the S-Box.



Important Safety Warnings!

Do not open any high voltage devices or touch any damaged high voltage wiring. High voltage wiring can be identified by bright orange insulation. High voltage wiring carries **lethal levels** of electricity.

The bus must never be towed at any significant speed with its rear wheels on the ground.

The electric main drive motor is a high efficiency permanent magnet motor connected by direct drive to the rear wheels. The motor will generate very high voltage if the rear wheels are rotated even when the bus is shut down. Spinning the rear wheels at significant speed by towing with wheels on the ground can damage the electric drive system and in extreme cases cause a fire.

To transport a broken down bus always use a low-level flat-top recovery truck – not a tow truck.

Note: In the event no low level flat top recovery available - There is an alternative to remove the drive shaft between the diff and the motor, the vehicle can then be towed safely. It is recommended vehicles are towed at speeds between 1-5 km/hr.

Appendix B (continued)

Vehicle Recovery and Towing Instructions (continued)

The bus chassis is equipped with attachment points at the front and rear to facilitate winching of the bus onto a flat-top recovery truck. Refer to illustrations below showing the front recovery point.



Front Recovery Point Attachment

The front recovery point is located behind the centre section of the front bumper bar. Flip out the bumper bar centre section and unclip it to get clear access to the recovery point attachment.

To access the rear recovery point remove the rear bumper bar. Unscrew the attachment from the front recovery point and screw it into the recovery boss at the rear.

Note: If the air pressure in braking system is too low and brings park brake **ON**, there will be a need to either; charge air, or, screw out the bolt on the brake chambers for a certain distance, so wheels can turn when loaded to a truck.































Brake chamber bolt

Appendix C - instrument panel operating guide

CAN instrument panel: Please note – ICONS & DTC numbers may vary and may not be applicable to all models

MultiViu Professional 12 - Please refer to your company's technical department for instructions on the use of this vehicle management system.

Icons:

Item	Name	Icon	Comments
1	Right indicator		
2	Left indicator		
3	Safety belt		
4	ASR		
5	Air suspension warning		
6	Air suspension error		
7	Air Pressure 2 alarm		
8	Stop Lamp		
9	Park brake lamp		
10	High beam		
11	Low beam		
12	STOP		
13	Clearance light		
14	Side kneeling		(前跪)
15	ESC		
16	Motor/battery cooling water level low alarm		
17	Request the customer icon		
18	Disabled request on/off icon		
19	Low level in wiper bottle		
20	Safety hammer remove alarm		
21	Hill hold		
22	Halt brake		
23	EBS common faults		
24	EBS serious faults		
25	Brake shoe wear alarm		
26	Power system failure		
27	Power system major failure		
28	Passenger door alarm		
29	Start indicator light		
30	Disable indicator light		
31	READY status		
32	Charging status		

Appendix C - *instrument panel operating guide (continued)*

DTC (DIAGNOSTIC TROUBLE CODES) LIST

The lists of standard DTC codes used by vehicle manufacturers to identify problems are extensive.

These are **generic diagnostic codes**, which may not apply to all vehicles and we strongly recommend you **confirm with authorized service personnel, the status of a fault code or fault codes, before taking any action.**