Falcon 45
OPERATOR'S MANUAL

VERSION 1

LZ Busline, LLC

OPERATION AND MAINTENANCE MANUAL

for

FALCON 45 MOTOR COACH

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Every effort has been made to insure accuracy and quality in publication of this document. At the time of printing, content is the most current available.

Due to technological advancements and continuous improvement of our products and the products of our component suppliers, LZ Busline, LLC reserves the right to change specifications without notification.

PREFACE

Please allow us to express our thanks for your choosing our new LZ Falcon 45 Motor Coach. We would like to congratulate you for your choice as well, as we believe you will be impressed by the excellent performance of this product.

- Our LZ Falcon 45 Motor Coach is economical, safe and comfortable. This manual will introduce you to some important how-to's about driving, operating, and maintaining your new LZ Falcon 45 Motor Coach. Please read it carefully. Please operate and maintain your LZ Falcon 45 Motor Coach in accordance with this manual, which will help you keep your LZ Falcon 45 Motor Coach in optimal condition and maximize its service life.
- If any questions, comments or concerns arise in your operation or maintenance of your new LZ Falcon 45 Motor Coach, please contact our National Service Group at (314) 45BYLZ or access our dedicated support website at www.lzbusline.com. We strive to provide optimal customer service as well as parts availability and maintenance support. LZ Busline, LLC strives to continuously improve and adapt in order to provide you with the highest quality product, service and support.
- Consider this manual a permanent part of this LZ Falcon 45 Motor Coach. If the LZ Falcon 45 Motor Coach is sold or traded, also include this manual to provide the next owner with important operating, safety, and maintenance information.

NOTES

INTRODUCTION

SAFETY

CONTROLS

OPERATING

DAILY INSPECTIONS

MAINTENANCE

SCHEDULED MAINTENANCE

WARRANTY/CUSTOMER ASSISTANCE

PRODUCT WARRANTY

INTRODUCTION

This manual contains information on systems operation, component location, and scheduled maintenance procedures, which pertain to standard and optional equipment on LZ Falcon 45 Motor Coaches.The service procedures described and/or recommended in this manual are effective methods for performing scheduled service or replacement of components. Other information, which may be needed to supplement this manual is contained in separate component manufacturer's manuals. Specific information about the engine and transmission can be found in the applicable manufacturer's operator, service, and troubleshooting manuals. These manuals can be found at www.lzbusline.com.

SAFETY INSTRUCTIONS

Safety instructions are noted throughout this manual. Each safety instruction is given as a WARNING or a CAUTION and is accompanied by a safety symbol as shown below:

WARNING

Failure to observe a safety instruction noted by WARNING could result in severe injury or death.

CAUTION

Failure to observe a safety instruction noted by CAUTION could result in injury or damage to the equipment.

NOTE: Used throughout this manual, **NOTES** provide useful data, but are never used to communicate safety hazards.

HOW TO USE THIS MANUAL

This manual is divided into nine major sections:

SECTION 1 - FOREWORD

SECTION 2 - INTRODUCTION

SECTION 3 - INSPECTION

SECTION 4 - SAFETY

SECTION 5 - CONTROLS

SECTION 6 - OPERATING

SECTION 7 - MAINTENANCE

SECTION 8 - SCHEDULED MAINTENANCE

SECTION 9 - WARRANTY/CUSTOMER ASSISTANCE

Some of these major sections may be divided into smaller subsections dealing with specific components and/or operating systems.

NOTE: Some illustrations in this manual were provided courtesy of the appropriate vendor. Typical illustrations may be used, therefore minor illustration differences may exist when compared to actual parts or other publications.

VEHICLE IDENTIFICATION NUMBER (VIN) PLATES

Motor Coach VIN Plate

The motor coach VIN plate is mounted inside the motor coach to the driver's left and on the passenger deck wall. The motor coach plate has the following information on it: motor coach model, motor coach overall weight, motor coach code, rated passenger capacity, VIN, chassis code, engine model, rated power, manufacturing date and manufacturer.

Secondary Plate

The secondary plate is located in the upper left engine compartment on the cross member. The secondary plate has the following information on it: VIN, vehicle type, LZ model number, date of manufacture, and manufacturer name. The VIN has also been stamped on the body understructure.

Engine Plate

The engine plate is located on the center of the engine and to the right side of the fuel filter. The engine plate has the following information on it: engine model, engine serial number, and arrangement numbers.

Motor Coach SPECIFICATIONS

Overall Length	45 ft (13.7 m)
Overall Height	12 ft 4 in. (3.7 m)
Overall Width	8 ft 6 in. (2.5 m)
Wheelbase	22 ft 11.5 in. (7 m)
Under-floor Storage Capacity	377 cu ft (10.6 m^3)
Parcel Rack Storage Capacity	60 cu ft (1.7 m^3)
Front Overhang (to front of bumper)	8 ft 2.4 in. (2.5 m)
Rear Overhang (to rear of bumper)	8 ft 10.3 in. (2.7 m)
Turning Radius	37 ft (11.3 m)
Fuel Tank Capacity	211 gal. (799 L)
Interior Height (average)	6 ft 2 in. (1.8 m)
GVWR	49,000 lb (22,226 kg)
Front Axle	17,080 lb (7,747 kg)
Drive Axle	26,400 lb (11,975 kg)
Tag Axle	17,080 lb (7,747 kg)
Approach/Departure angle (degrees)	7.5/8.5

BODY STRUCTURE

The semi-monocoque body truss structure is closed by U-shaped body assemblies. A skeleton is formed by welded rectangular galvanized square tubing, made from Australian SupaGal dual galvanized steel, giving rigidity, stiffness, and torsional resistance. Welded segments are anti-corrosion treated before final assembly.

ELECTRICAL SYSTEM

Controller Area Network (CAN) system architecture with MultIC and four IOUs. TFT Multifunction display / instrument panel.

Voltage	24VDC
Alternator (dual)	24V 140A Prestolite®
Batteries	24V 200Ah H2

Combination instrument panel includes: odometer, tachometer, intelligent signal processor, voltage meter, water thermometer, oil-pressure gauge, fuel-level gauge, air-pressure gauge together with the indicators such as steering indicator and high beam indicator.

ENGINE SPECIFICATION

Caterpillar® C13 12.5 Liter Heavy Duty Engine

Cylinders	6 inline
Bore	5.12 in. (130 mm)
Stroke	6.18 in. (157 mm)
Displacement	12.5 L (763 cu in)
Weight	2,270 lb (1,030 kg)
Horsepower	410 @ 2100 rpm
Torque	1450-1650 lb ft @ 1200 rpm

Standard Equipment

- Caterpillar® Regeneration System
- Cooling: gear-driven water pump, oil cooler
- Diesel particulate filter
- Electronic Control Module (ECM)
- Electronic Data Link, SAE/ATA, SAE/J1939
- Electronically Controlled Unit Injection Fuel System
- Fuel: spin-on secondary filter, transfer pump
- Gear-driven water pump
- Governor: full-range, electronically controlled
- Hydraulic steering pump drive, SAE A
- Lifting eyes
- Lubrication: gear-driven pump, front or rear sump pan, full flow spin-on filter, oil filler, oil level gauge (dipstick)
- Open crankcase ventilation
- Pad mount air conditioner compressor
- Pad mount alternator
- SAE No. 1 Flywheel Housing
- Series-turbochargers
- Vibration damper

TRANSMISSION SPECIFICATIONS

Eaton® RTO-16910B-DM3

Fully Automated Heavy-Duty Transmission (no clutch pedal) for On-Highway application. Full automation (no clutch pedal) provides greater driver comfort and less stress than manual shifting which increases satisfaction and safety. Allows for less time and expense to train new drivers.

- Manual mode allows the driver to initiate and control shifts for flexibility during changing conditions or hold a gear as appropriate.
- Low mode boosts the rpm point at which downshifts occur to maximize engine braking.

Type:. . . . . AutoShift 10-speed

Operating mode:. . . . . Electronically controlled

Gear Ratios

1st gear 10.99

2nd gear 8.18

3rd gear 6.07

4th gear 4.46

5th gear 3.32

6th gear 2.46

7th gear 1.83

8th gear 1.36

9th gear 1.00

10th gear 0.74

Reverse gears . . . . . 11.23 and 2.52

Optional Cat® CX31 Transmission

The Cat® CX31 transmission combines the proven performance of a Cat Engine coupled to the CX31 Transmission provides users with the most advanced power train package available today. Cat Transmission users will further benefit from single-source product support for the power train package.

CX31 Features and Benefits:

- Six forward speeds, one reverse.
- Two standard side PTO locations and an optional high-output rear PTO, for full-time uninterrupted driveline power - all live, all of the time.
- Lock-up torque converter couples the engine directly to the driveline for better fuel economy.
- Optional remote-mounted oil filters for quick replacement. Exterior-mounted Electronic Clutch Pressure Control (ECPC) valves for easy access.
- Adaptive shift control logic utilizes information from the driver's operating style to balance performance and economy.
- Optional integral hydraulic retarder can be used as a quieter secondary braking alternative.
- Industry standard J1939 communication facilitates information transfer between the transmission and engine, making diagnostic codes available for efficient servicing of both components.

Transmission Shaft

Open-type, one universal joint in each shaft (see serial number). Rigid universal joint pin with needle roller bearings.

SUSPENSION

Front Axle

ZF RL85E

Double A-shaped beam axle, airbag suspension, two leveling valves with two airbags, two telescopic shock absorbers and lateral stabilizer.

Front wheel orientation: Wheel camber 0.5º - 1º. Approaching 1º is recommended. The angle difference should not exceed 0.3º on both sides.

Kingpin inclination . . . . . .7.5º+/- 0.5º

Castor 2.30º

Toe-in . . . . . .0mm +/-1mm

Driving Axle

ZF A132

Integrated press-welding axle housing, full-floating axle shaft, single reduction final drive hyperbolic gear.

Final gear ratio 3.54/1

All airbag suspension, two leveling valves with six airbags, six telescopic shock absorbers and lateral stabilizer.

Tag Axle

ZF RL85A TAP

Integrated I-shaped beam, with adapted steering control. Airbag suspension, two airbags, two telescopic shock absorbers and air pressed control braking system disc brake.

STEERING SYSYTEM

Power Steering

ZF8098

Recirculating ball-type power steering system.

WHEELS AND TIRES

Wheel type Hub Pilot Alcoa® wheels.

Tire specifications (front and rear) . . . . . Michelin 315/80R22.5

BRAKING SYSTEM

Dual-circuit air braking ABS and self-correcting adjusting arm. Air pressure servo assist with identical disc brakes at all wheels. Manual valve operated parking brake, energy storage spring works on rear brake. Emergency brake effected with parking brake.

SAFETY

OPERATOR PRECAUTIONS

The following precautions have been prepared for your safety and the safety of your passengers and fellow motorists. Read and understand this information before operating the motor coach.

The safe and reliable operation of this vehicle includes a thorough working knowledge of all its components. When checking the vehicle over or driving it, you should be able to recognize problems when they exist and determine if your motor coach can be driven without affecting its safe operation or causing more serious mechanical problems. When work is required, you should be able to report accurately on the problem.

WARNING
Before starting engine, ensure the transmission is in neutral and the parking brake is engaged.

WARNING
Prior to performing any checks, maintenance or repair procedures, ensure that motor coach is disabled to avoid serious injury or death. When conducting checks, remember to keep a safe distance away from moving parts.

WARNING
Do not unnecessarily idle the engine. Do not operate the engine without an efficient exhaust removal system. Carbon monoxide gas is toxic. Breathing it can cause unconsciousness and even death.

WARNING
Use extreme caution while under motor coach, as motor coach can suddenly drop when air is intentionally or unintentionally removed from the suspension. Ensure parking brakes have been applied and the wheels remaining on the ground are secured with wheel chocks. Use properly sized jacks with the appropriate lifting power. Always use proper chassis stands under a jacked up motor coach.

WARNING
Never open the engine cooling system or the interior heating system while the system is hot. Never add cold coolant to an overheated engine. Do not place unprotected hands on a hot engine, transmission, or exhaust.

WARNING
Safely depressurize systems containing compressed air or liquid under pressure prior to opening system.

WARNING
Refuel outdoors and use extreme caution while refueling.

WARNING
Batteries contain highly corrosive acid. Battery vapors are explosive. To avoid short circuits, always disconnect the negative cable first. Reconnect the negative cable last.

PASSENGER SEATBELTS

Each passenger seat is equipped with a lap belt. Designed to comfortably keep each passenger safely in the seat.

Why wear seat belts

- Seat belts are the single most effective safety device for adults and larger children (infants and smaller children must be properly restrained in child seats.
- Not wearing a seat belt properly increases the chance of serious injury or death in a crash.
- When properly worn, seat belts:
- Keep you connected to the vehicle so you can take advantage of the motor coaches built-in safety features.
- Help protect you in almost every type of crash; including side, rear impacts, and rollovers. In a rollover crash, an unbelted person is more likely to die than a person wearing a seat belt.
- Help keep you from being thrown against the inside of the motor coach and against other passengers.
- Keep you and your passengers from being thrown out of the motor coach.

Of course, seat belts cannot completely protect you or your passengers in every crash. But in most cases, seat belts can reduce your risk of serious injury.

What should you do:

- Always wear your seat belt properly and make sure your passengers do as well.

⚠ WARNING

If a seat belt does not seem to work as it should, it may not protect the occupant in a crash. No one should sit in a seat with an inoperative seat belt. Anyone using a seat belt that is not working properly can be seriously injured or killed.

Contact LZ Busline, LLC as soon as possible for parts or repairs.

WARNING LABELS

Warning labels warn you of potential hazards that could cause serious injury. Read all warning labels carefully and follow instructions on them. Learn and watch for labels.

If a label comes off or becomes hard to read, contact LZ Busline, LLC as soon as possible

ROAD SAFETY

The motor coach has been equipped with an three reflective roadside emergency safety triangles that are to be deployed while motor coach is disabled. After opening the kit, unfold the triangle and ensure it locks into place.

FIRE EXTINGUISHER

WARNING

Inspect the fire extinguisher monthly to make sure it has a sufficient charge. Look at the gauge at the top of the extinguisher to verify proper charge.

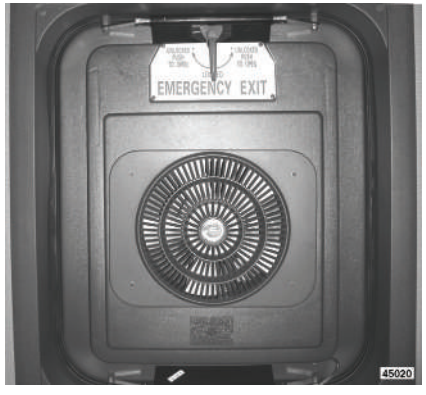
WARNING

Safely evacuate motor coach prior to fire extinguisher use.

A fire extinguisher is installed next to the tour guide seat. To remove, release latch and lift. Follow instructions on fire extinguisher.

EMERGENCY EXITS

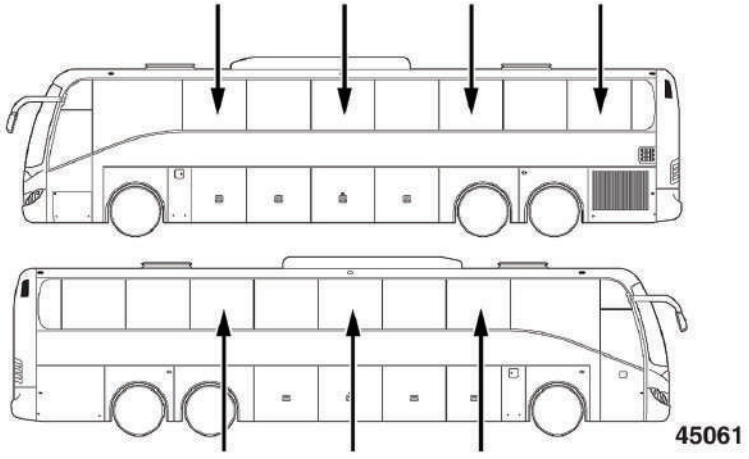
Emergency Roof Escape Hatch

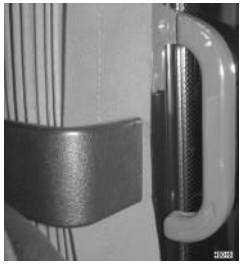


There are two escape hatches located in the roof for emergency exit of the motor coach. The hatch is also a ventilation fan for the passenger compartment.

In case of emergency, rotate red handle left or right and push hatch open fully. Proceed to exit the motor coach safely.

Emergency Escape Window





The motor coach is equipped with four emergency exit windows on the left side and three on the right side. The emergency window can be opened by lifting the red handle and pushing the window out. Proceed to exit the motor coach safely. Instruction labels are on each escape window. Regularly inspect all emergency windows to ensure latch is secure.

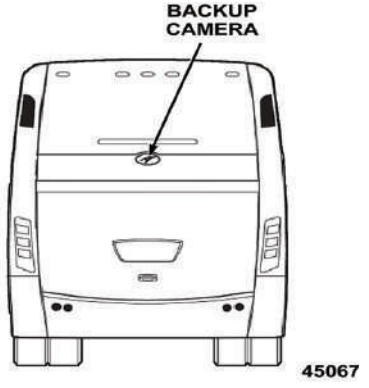
COLLISION WARNING SYSTEM

This driver warning system uses doppler radar to sense when vehicles get too close. It will also alert a driver if the motor coach is veering into traffic in another lane, and can track the position and movement of up to 20 vehicles at a time. With the Eaton Vorad warning system, drivers have more time to assess and correct dangerous situations. The doppler radar is also able to alert the driver to traffic that he may not be able to see due to inclement weather, such as fog.

SmartCruise

This safety feature is integrated with the Vorad anti-collision system and will alter the speed of the motor coach to match the speed of traffic when the cruise control is activated. It will also alert the driver when the motor coach is dangerously close to the vehicles in front of it, or when the motor coach is approaching slower moving traffic.

Integrated Backup Camera



This backup camera and radar sees not only what is behind the motor coach, but also gives an estimated distance to the nearest object.

CONTROLS

INSTRUMENT PANEL

The instrument panel and controls are designed to provide the driver with the ability to monitor and control the operation of the motor coach.

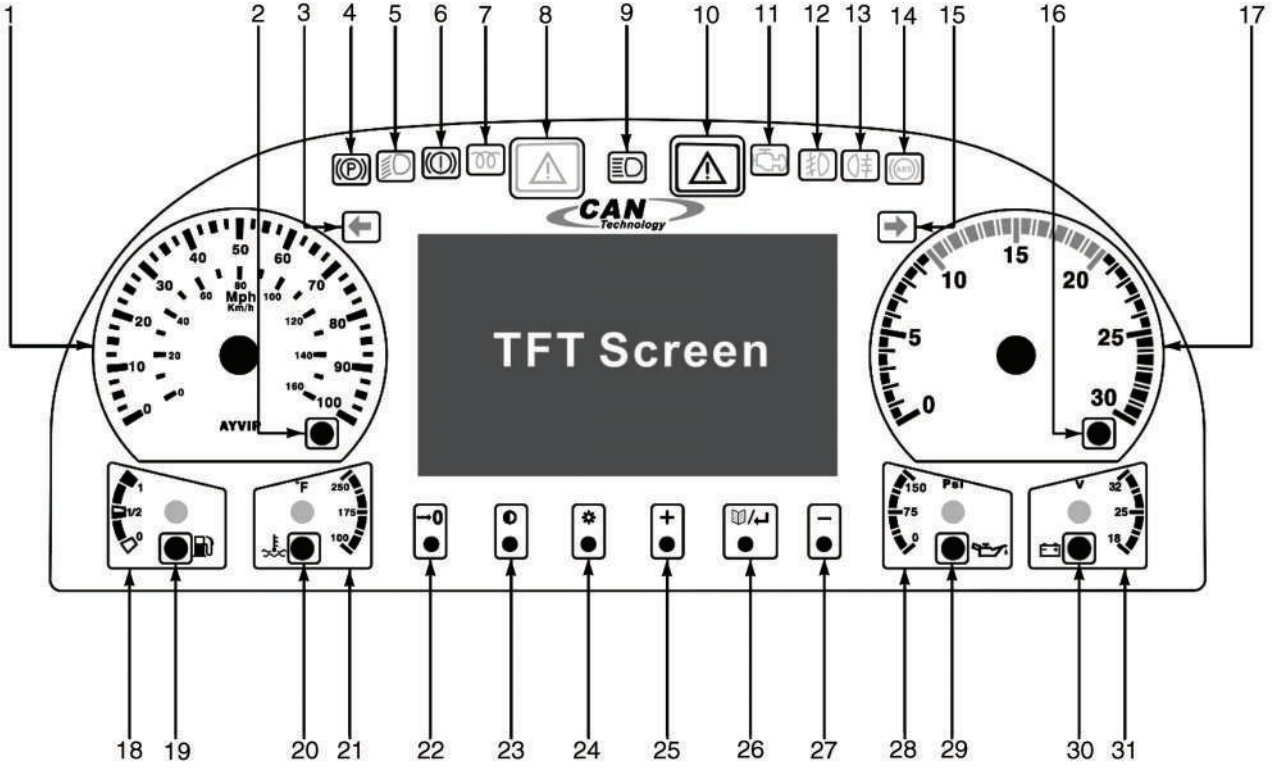


Table 1: Instrument Panel Face

Number	Item
1	**Speedometer** Outside Mph Inside Km/h
2	**Over Speed Indicator** (75 Mph - 120 Km/h) When the vehicle speed is more than 75 mph - 120 Km/h, the red LED (Light Emitting Diode) inside will turn on and at the same time the buzzer will beep for 1 second.
3	**Left Turn Indicator** The green LED will flash and the buzzer will beep with left turn indicator.
4	**Hand Brake Indicator** When hand brake is on, the red LED inside will turn on.
5	**Low Beam Indicator** When the low beam is on, the green LED inside will turn on.
6	**Low Air Pressure Alarm Indicator** If air pressure is too low, the red LED inside will turn on and at the same time, the buzzer will sound.
7	**Engine Preheat Indicator** When the engine is preheating, the yellow LED inside will turn on.

Table 1: Instrument Panel Face

Number	Item
8	**Service Needed Indicator** If any faults are detected, the yellow LED inside will turn on and at the same time the fault message will be displayed on the TFT screen. For example, if the low beams encounter a fault, the service light will turn on and a fault message will display on the TFT screen.
9	**High Beam Indicator** When the high beam is on, the blue LED inside will turn on.
10	**Stop Indicator** If any of the following faults are detected, the red LED inside will turn on and at the same time, the buzzer will beep for 3 seconds. If the driver finds this light is on, he must stop the coach and resolve the problem. Low Air Pressure High Coolant Temperature Low Oil Pressure Low Coolant Level Disc Brake pad wear indicator
11	**Engine Fault Code Indicator** This yellow LED will flash according to the engine fault code. **NOTE:** For more information, please visit www.lzbusline.com for manufacturer's manual.
12	**Front Fog Light On Indicator** When the front fog light is on, the yellow LED inside will turn on.

Table 1: Instrument Panel Face

Number	Item
13	**Rear Fog Light On Indicator** When the rear fog light is on, the yellow LED inside will turn on.
14	**ABS Warning Indicator** When ABS encounters a fault, the yellow LED inside will turn on.
15	**Right Turn Indicator** The green LED will flash and the buzzer will beep with right turn indicator.
16	**Maximum RPM Indicator** When the engine RPM is more than 3000 RPM, the red LED inside will turn on.
17	**Tachometer** The tachometer shows the engine speed in revolutions per minute.
18	**Fuel Gauge** This shows how much fuel you have. It is most accurate when the coach is on level ground.
19	**Low Fuel Level Alarm Indicator** If the fuel level is less than 10%, the red LED inside will turn on.
20	**High Coolant Temperature Alarm Indicator** When the coolant temperature is high, the red LED inside will turn on.
21	**Coolant Temperature Gauge** Displays the engine coolant temperature.

Table 1: Instrument Panel Face

Number	Item
22	**Reset Button** This button has two functions: In normal screen: press this button for 3 seconds, the trip can be reset to zero; In diagnostic screen: press this button for 3 seconds, the fault count can be reset to zero.
23	**Brightness Button** When the TFT screen is used for reverse monitor, this button is used to turn on the Brightness Function.
24	**Contrast Button** When the TFT screen is used for reverse monitor, this button is used to turn on the Contrast Function.
25	**Adjust Button** (+) This button has four functions: When the TFT screen is in monitor state and the Brightness Function is turned on, each press will make the TFT brighter, until the TFT reaches it's brightest. When the TFT screen is in monitor state and the Contrast Function is turned on, each press will make the TFT's contrast lighter until the TFT is at its highest contrast. When the position light is turned on, each press will adjust the backlight. When the TFT screen is in it's diagnostic screen state, each press will shift the screen page.

Table 1: Instrument Panel Face

Number	Item
26	**Menu Button** This button is used for shifting the normal screen and diagnostic screen, press this button for 3 seconds and the screen will shift to the diagnostic screen. Because the diagnostic screen has multiple pages, use the Adjust + Button or Adjust – Button to scroll through the pages of the diagnostic screen.
27	**Adjust Button** (-) This button has four functions and all of the functions are opposite functions of the Adjust + Button.
28	**Oil Pressure Gauge** - Displays the oil pressure.
29	**Low Oil Pressure Warning Indicator** If the oil pressure is less than 15 psi, the red LED inside will turn on.
30	**Low/High Voltage Warning Indicator** If the voltage is lower than 23V or higher than 30V, the red LED inside will turn on.
31	**Voltage Gauge** - Displays the current battery voltage.

WARNING

When the Stop Light is on, you must stop the motor coach and solve the problem.

CAUTION

When you are welding on the motor coach, you must disconnect the MultIC and IOUs from the power supply and disconnect the batteries. Do not directly spill or spray any liquid on the MultIC and IOUs. Do not allow objects to touch lens of MultIC.

Normal TFT Screen

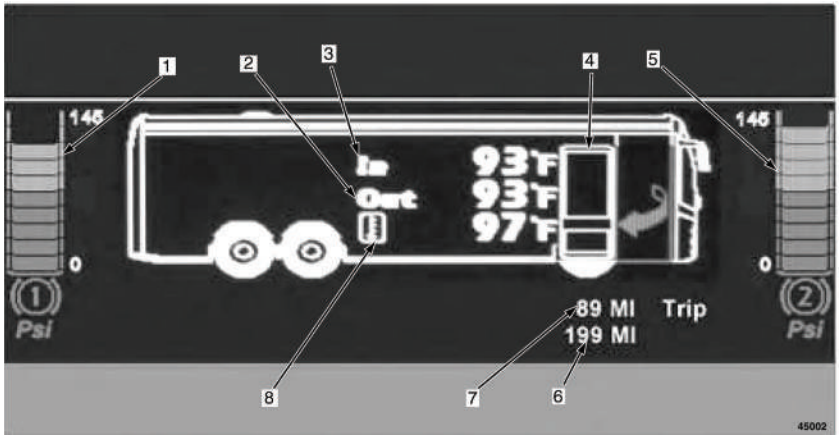


Table 2: Normal TFT Screen

Number	Item
1	Displays Left Air Pressure Gauge
2	Displays Outside Motor Coach Temperature
3	Displays Inside Motor Coach Temperature
4	The Front Door On Motor Coach Is Open Display
5	Displays Right Air Pressure Gauge
6	Odometer Display (in miles)
7	Trip Odometer Display (in miles)
8	Displays Engine Compartment Temperature

TFT Screen Indicator Symbols

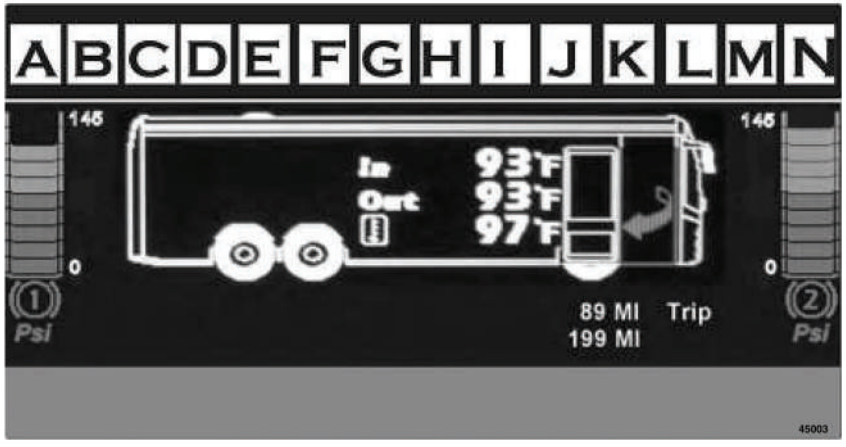


Table 3: TFT Screen Indicator Symbols

Letter	Item
A	**Low Coolant Level Warning** - Red Color
B	**Reverse**
C	**ASR Working Indicator** - Yellow Color
D	**Position Light Working Indicator** - Yellow Color
E	**Charging Indicator** - Red Color
F	**Engine Compartment Open Indicator** - Red Color
G	**Gear Selection Indicator** Only the neutral gear is green color, other gears are white color.

Table 3: TFT Screen Indicator Symbols

Letter	Item
H	**Low Air Pressure Warning** (Air Pressure 1 Warning and Air Pressure 2 Warning) - Red Color. If both system pressures are in the red on the Bar Graph Display, an exclamation (!) mark is shown until one of the system pressures goes into the green on the Bar Graph Display.
I	**Disc Brake Warning Indicator** - Red Color. They are shown in the same place, the theory is the same as the Air Pressure Warning symbols. FL: Front Left Brake Disc Warning FR: Front Right Brake Disc Warning ML: Middle Left Brake Disc Warning MR: Middle Right Brake Disc Warning RL: Rear Left Brake Disc Warning RR: Rear Right Brake Disc Warning
J	**Air Filter Warning** - Red Color
K	**Low Level Freshwater Tank Alarm** - Green Color
L	**Kneeling Indicator** Body Up Indication - Yellow Color Body Down Indication - Yellow Color Engine Retarder Working Indication - Red Color They are shown in the same place on TFT screen.
M	**Reverse**
N	**Alternator Fault Indicator** - Green Color

SWITCH PANELS

Upper Left Switch Panel

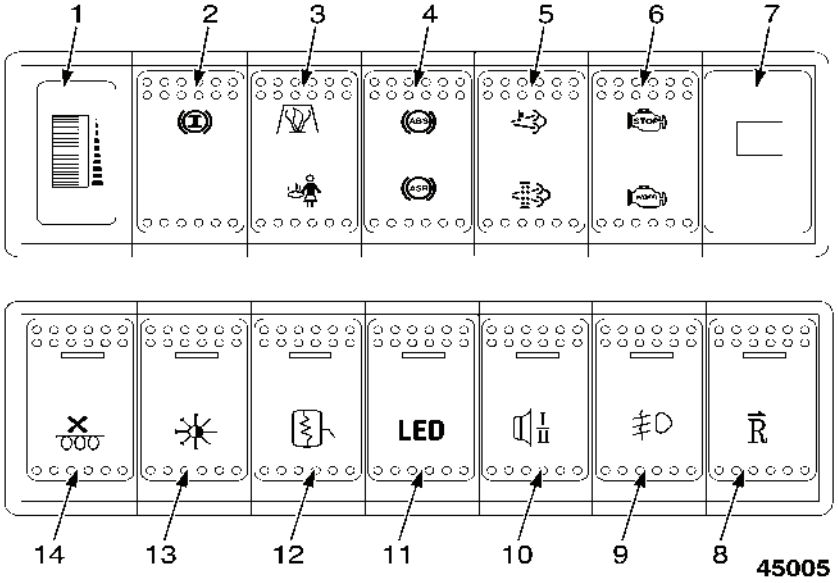


Table 4: Upper Left Switch Panel

Number	Item
1	Dash Dimmer Switch
2	Engine Brake Indicator
3	TOP-Webasto Heater On/Bottom-Toilet Emergency Button Activated
4	Top-Service ABS Light/Bottom-Anti-Skid Activated

Table 4: Upper Left Switch Panel

Number	Item
5	Top-Hest Lamp/Bottom-DPF Lamp
6	Top-Stop Engine For Service Lamp/Bottom-Check Engine Lamp
7	Transmission Gear Indicator
8	Manual Back-up Camera Switch
9	Fog Lights Switch
10	Wireless Microphone Transmitter Switch
11	Blue LED Aisle Strip Lights Switch
12	Heated Mirrors Switch
13	Blank
14	Blank

LOWER LEFT SWITCH PANEL

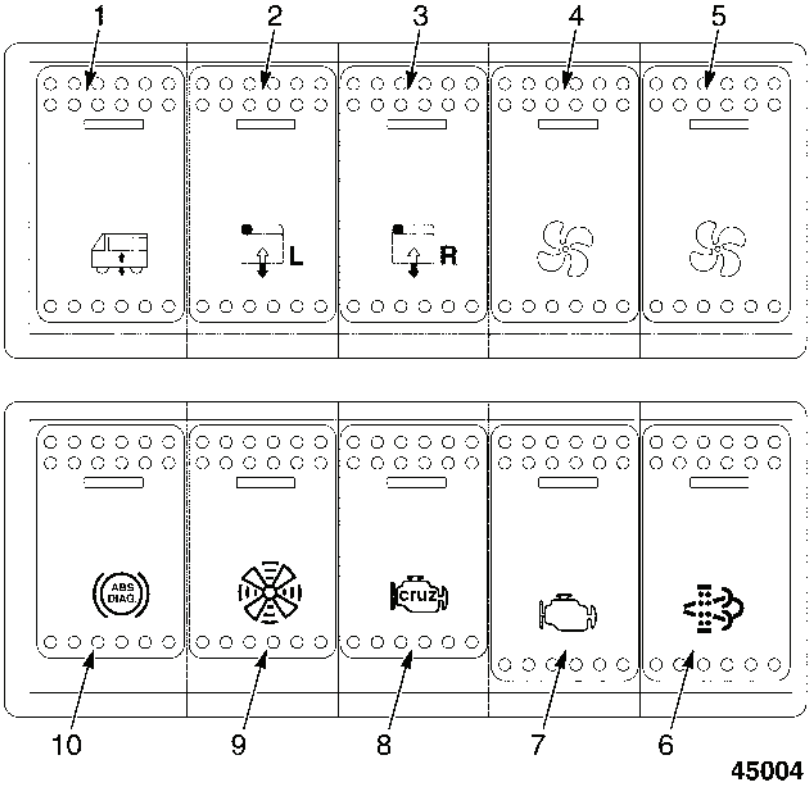


Table 5: Lower Left Side Switch Panel

Number	Item
1	**Kneeling System Switch** Allows the coach to kneel, providing a lower step well height at the passenger door.
2	**Left Sun Shade Switch** To raise and lower left sun shade.
3	**Right Sun Shade Switch** To raise and lower right sun shade.
4	**Front Ventilator Fan Switch**
5	**Rear Ventilator Fan Switch**
6	**Diesel Particulate Filter Manual Regeneration Switch**
7	**Cruise Control Set Switch**
8	**Activate Cruise Control Switch**
9	**High Speed Radiator Fan Switch**
10	**Engine Diagnostics Switch**

CLIMATE CONTROLLER

Driver Climate Controller

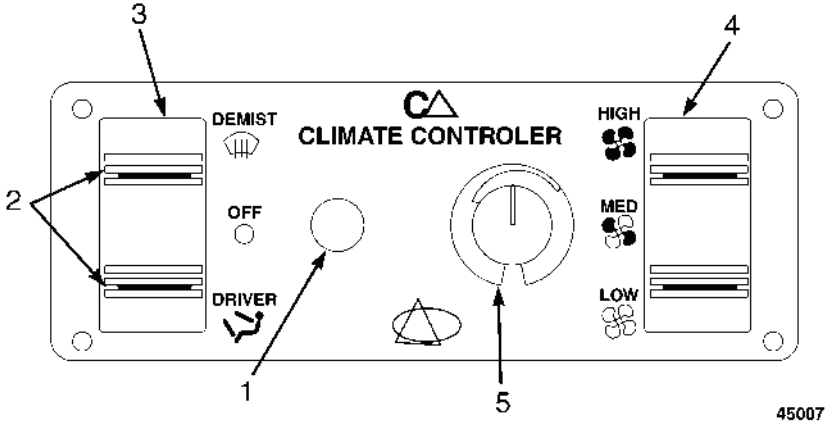


Table 6: Driver Climate Controller

Number	Item
1	**A/C ON/OFF Switch** Illuminates when the A/C system is providing cooling operation. When switched on, the compressor clutch engages, regardless of ambient conditions.
2	**Mode Lights** Illuminates when the switch is set to DEMIST or A/C to indicate operation.

Table 6: Driver Climate Controller

Number	Item
3	**Mode Switch** Selects the A/C system operating mode between: OFF - Set switch to middle position. DEMIST - Set switch to upper position. A/C - Set switch to lower position. In DRIVER mode, the unit provides ventilation / cooling / heating operation depending on the temperature control setting and the return air temperature. Fans operate at the selected speed. In DEMIST mode, the unit operates at the heating level selected, with or without cooling, depending on the temperature control setting and the return air temperature. Fans operate at the selected speed. An output signal for an external damper motor is also provided.
4	**Fan Speed Switch** Selects the operating speed of the fan blowers during DEMIST and A/C modes.
5	**Temperature Control** Provides for adjustment of the set point temperature.

NOTE: For more information, please visit www.lzbusline.com for manufacturer's manual.

Motor Coach Climate Controller

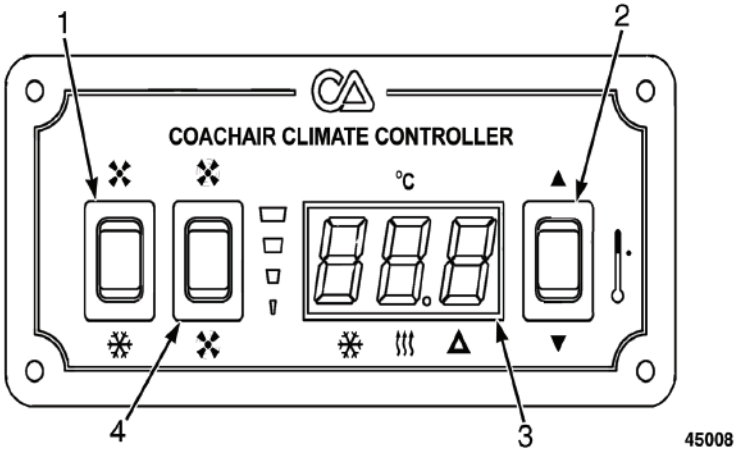


Table 7: Motor Coach Climate Controller

Number	Item
1	FAN-OFF-A/C Switch
2	WARM-COOL Temperature Setting Switch
3	Temperature Display
4	LOW-AUTO-HIGH Fan Speed Switch

The FAN-OFF-A/C and LOW-HIGH switches and the WARM-COOL temperature rocker potentiometer on the dash panel are the only three external controls to operate the system.

FAN-OFF-A/C Switch Positions (three-position)

FAN:

- Evaporator blowers are on.
- Air conditioning is off.
- Dash temperature display and set point is on.

OFF:

- Air conditioning system is off.
- Dash temperature display and set point is on.

A/C:

- Air conditioning system is on.
- Dash temperature display and set point is on.

LOW-AUTO-HIGH Switch Positions (three-position)

Only functional if FAN-OFF-A/C switch is in FAN or A/C positions.

LOW:

- Evaporator blowers are on low speed, 60%.

AUTO:

- Evaporator blowers are on variable speed, 60% to 100%.

HIGH:

- Evaporator blowers are on high speed, 100%.

WARM-COOL Rocker Potentiometer Function

Only functional if ignition is activated.

WARM:

- Increases the set point temperature in 0.5°C intervals when held.

COOL:

- Decreases the set point temperature in 0.5°C intervals when held.

Pressing the switch on either WARM or COOL momentarily will cause the temperature set point for 30 seconds only. The display will then revert to the default return air temperature display.

NOTE: For more information, please visit www.lzbusline.com for manufacturer's manual.

WEBASTO® HEATER

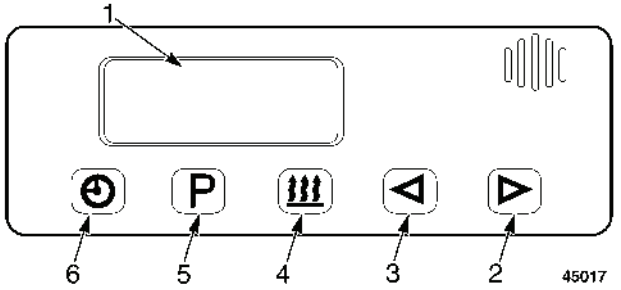


Table 8: Webasto Timer Controls

Number	Item
1	7-Day Digital Timer Display
2	Day/Time Advance Button
3	Day/Time Reverse Button
4	Heater On/Off Button
5	Program Selection Button
6	Clock Button

⚠ WARNING

Due to the danger of poisoning and suffocation, the heater must not be operated in enclosed areas, such as garages or workshops, without an exhaust-venting system, not even if the start-up is activated by the timer or remote start device.

WARNING

At filling stations and fuel depots, the heater must be switched off as there is a potential danger of explosions.

WARNING

Where flammable fumes or dust may build up (e.g. in the vicinity of fuel, coal, wood, cereal grain deposits, or similar situations), the heater must be switched off to prevent explosions.

CAUTION

Before switching the Webasto heater on, open any shutoff valves and set vehicle heater controls to the HOT position.

The digital timer with three time settings permits the Webasto heater to be switched on and off instantly, or automatically at 3 programmable starting times.

The operating time of the heater can be pre-selected. It is possible to program three different heating times according to your individual needs.

Only one preset starting time can be activated at any one time. When the ignition is switched on, the current time of the day and the day of the week are displayed.

When the heater is in operation, the display and the buttons of the timer are illuminated.

Programmed Heater Operation

Three memory locations numbered 1 to 3 are available. Each memory location can be assigned a given time together with the day of the week.

Pre-selected Starting Times

The pre-selected starting time is the time at which the heater will be switched on automatically.

NOTE: Recommended that memory locations 1 and 2 be used for pre-setting starting times within a 24-hour period of setting the timer. Memory location 3 can be reserved for a starting time within the next seven days of setting the timer. Location 3 is useful for occasional weekend or field trip operations outside of the normal schedule. By repeatedly pressing the program selection button on the timer, starting time program 1, 2 or 3 can be viewed and preset.

Operating Time

The period of time during which the heater is in operation is referred to as the operating time. The heater remains in operation for as long as the operating time has been preset. Heater operation can be pre-selected for any time from a minimum of 1 minute (a minimum of 10 minutes is recommended) to a maximum of 120 minutes (factory preset is 60 minutes).

Remaining Operating Time

The remaining operating time refers to the period of time the heater still continues to remain in operation. It can only be changed while heater is in operation.

Setting the Digital Timer

After the power has been connected, all symbols on the digital display are flashing. The time of the day and the day of the week must be set.

All flashing displays and symbols of the timer can be set by means of the reverse and advance buttons. If the reverse and advance buttons are not pressed within five seconds, the currently displayed time or function will be stored. When the reverse and advance buttons are pressed for more than 2 seconds, the quick digit advance mode is activated.

Heater Start-up Sequence

Upon switching on, an operating indicator light will illuminate. The combustion air fan, fuel pump and circulation pump start operation. After approximately 15 seconds the fuel solenoid valve opens allowing fuel to flow to the nozzle where it is atomized and sprayed into the combustion chamber. At the same time, a high voltage ignition spark is generated at the electrode tips simultaneously igniting the fuel air mixture. A photo control device detects a flame in the combustion chamber and deactivates the ignition system (combustion process is self-sustaining). At this point the heater is working and producing heat. The Webasto heater will cycle on and off until:

- System coolant reaches operating temperature.
- The Webasto heater is switched off.
- Time has elapsed on the timer.
- The vehicle battery voltage drops below 10.5V for 12 volt systems or 20.0V for 24 volt systems.
- The Webasto heater runs out of fuel.
- A fault lock out occurs, indicated by the operating indicator light being off during the cool down cycle (as would happen during an overheat situation.

NOTE: The engine coolant temperature must fall below 140° F (60° C) or 155° F (68° C) at the heater before the heater will begin heating operation.

Switching Off

When heating is no longer required, switch the Webasto heater off. The fuel solenoid valve interrupts the fuel supply and combustion stops. The indicator light turns off. The Combustion air fan and the water pump continue operation for approximately 150 seconds (after-run cycle) purging the combustion chamber of any fumes and cooling the heater.

NOTE: Switching the Webasto heater on during the cool-down (after-run cycle) period is allowed. The heater will revert to normal operational mode.

Engine Preheating

Engine preheating procedure:

1. Set the timer 10 minutes to 120 minutes before you want to start the engine. The heater will start up at the set time (see timer operating instructions). Or switch the toggle switch or instant on switch on your timer in the vehicle dash to on. The heater will start up.

2. When the run time has elapsed on your timer or engine preheating is no longer required, switch the Webasto heater off. The heater will begin the after-run (cool-down) cycle.

CAUTION

Make sure all coolant and cab heater valves are open before operating the heater in the preheat mode.

Seven-Day Digital Timer Programming and Operating Instructions

Table 9: Programming and Operating Instructions

Setting the time and day of the week	Press the Clock button for more than 2 seconds. Time display flashes. Press the Advance/Reverse button to set time of day. Wait five seconds. Time is now stored. Day of week flashes. Press the Advance/Reverse button to set day of week. Wait five seconds. Day of week is now stored.
Viewing the time	With ignition on: Continuous display of current time and day of the week. With ignition off: Briefly press Clock button. Display of current time and weekday appears for five seconds.
Switching heater on for instant heater operation	With ignition on: Press button. Heater is switched on (continuous heating) and continues to operate until button is pressed again or ignition is switched off. With ignition off: Press button. Heater is switched on for the preset operating time (the factory-set heater operating duration is 60 minutes).
Switching the heater off	Press On/Off button. Heater begins cool-down (after-run) cycle and is switched off thereafter.
Programming heater starting time	Press Program Selection button. Memory location number flashes. Press Advance/Reverse button to preset starting time. Wait five seconds. Starting time is now stored. Day of week flashes. Press Advance/Reverse button to set day of week. Wait five seconds. Day of week is now stored. The number of memory location remains on the display. The timer is now in the programmed mode and switches heater on at the preset time.

Table 9: Programming and Operating Instructions

Recalling/canceling pre-selected times	To recall: Press Program Selection button until the desired memory location number is displayed. Read off preset time. To cancel: Press Program Selection button repeatedly until the memory location numbers are no longer visible on the display.
Programming duration of operating time	The heater must be switched off. Press the Reverse button. Operating time flashes. Press Advance/Reverse button to set operating duration time between 1 and 120 minutes (minimum 10 minutes recommended).
Setting the remaining operating time	Heater must be in operation. Press button. Remaining operating time flashes. Press Advance/Reverse button to set remaining operating time. Wait five seconds. The remaining operating time is now stored.

NOTE: For more information, please visit www.lzbusline.com for manufacturer's manual.

Right Side Switch Panel

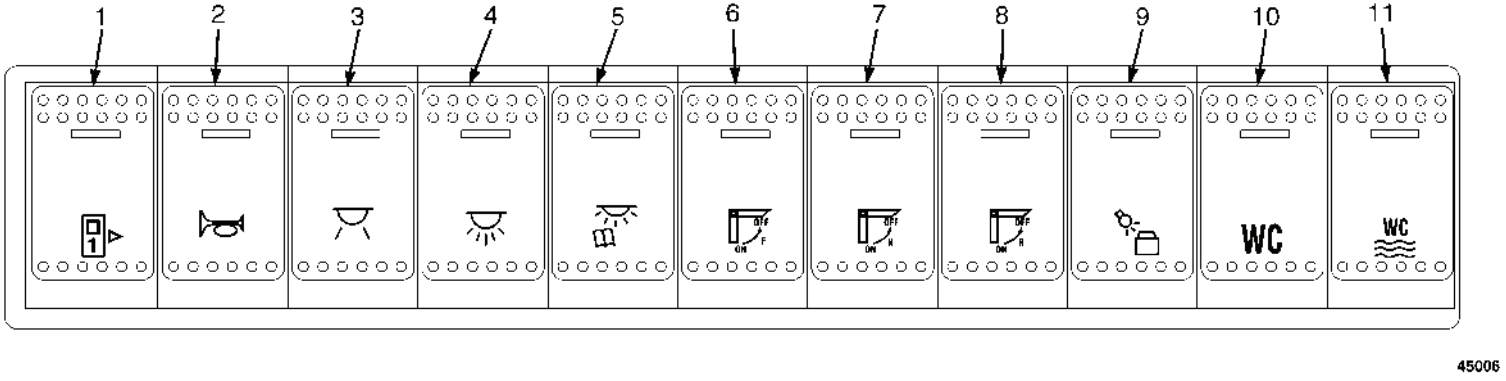


Table 10: Right Side Switch Panel

Number	Item
1	Entrance door open and close switch
2	Electric Horn/Air Horn
3	Interior Light - low
4	Interior Light - high
5	Passenger Reading Lamp switch
6	Front Video Display drop down switch

Table 10: Right Side Switch Panel

Number	Item
7	Mid-Coach Video Display drop down switch
8	Rear Video Display drop down switch
9	Luggage Compartment light switch
10	Toilet Flush switch
11	Wastewater Tank dump switch

STEERING WHEEL AND COLUMN

The two levers on the steering column contain controls for driving features you use most often.The left lever controls the turn signals, headlights, and hazard warning lights. The right lever controls the windshield washer and wipers.

Headlights

The rotating switch on the left lever controls the lights. Turning this switch to the first position turns on the parking lights, taillights, instrument panel lights, side marker lights, and rear license plate light. Turning the switch to the second position, turns on the headlights.

To change from low beams to high beams, lift the turn signal lever up until you hear a click. The blue high beam indicator will light on instrument panel.

To return to low beams, push the turn signal lever down.

Turn Signals

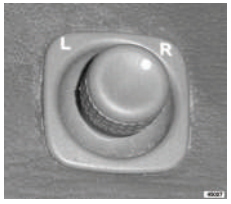
To signal a lane change, push lightly on the turn signal lever in the proper direction. The turn signal lever will return to the center position upon completion of turn.

Hazard Warning Flashers

The left lever controls the hazard warning flashers. Push the button on the end of the lever to turn on the hazard warning lights (four-way flashers). This causes all four exterior turn signals and both indicators in the instrument panel to flash.

Use the hazard warning lights if you need to park in a dangerous area near heavy traffic, or if your motor coach is disabled.

EXTERIOR MIRRORS SELECT/CONTROL KNOB



Exterior mirrors have separate upper and lower segments. The convex lower portion is for wide angle view. Adjust the exterior mirrors so that you can see the side of the coach in part of the mirror. This helps determine the relationship of the coach to objects seen in the mirror. The left side and right side mirror control is on the upper left hand console switch panel . Use the mirror select/control knob to select which mirror is to be adjusted. Adjust the mirror using the same control knob. Move the knob to the left to adjust the mirror to the left and to the right to adjust the mirror to the right. Defrost the mirrors using the mirror heat switch located below the mirror controls on the upper left switch panel.

Windshield Wiper Controls

Windshield Wipers

CAUTION

Do not operate wiper in dry conditions. Activate the washers for proper lubrication before wiper operation.

The rotating switch on the right lever controls the windshield wipers, including the intermittent wiper control. The rotating switch has four positions:

- OFF-Wiper is off.
- INT-Wiper on intermittent setting.
- LO-Wiper on low speed setting.
- HI-Wiper on high speed setting.

Turning this switch to the first position turns on the wiper intermittently, frequency of the wiper blades depends upon the setting of the delay switch. In intermittent, the wipers operate every few seconds.

Turning this switch to the second position turns the wiper on a low speed. In low speed, wipers run continuously.

Turning this switch to the third position turns the wiper on a high speed. In high speed, wipers run continuously.

Windshield Washer

The right lever controls the windshield washer. To clean the windshield, push the button on the end of the lever to turn on the windshield washer. The washer will spray until you release the button.

Steering Wheel Height Control

WARNING

Adjusting the steering wheel position while driving may cause you to lose control of the motor coach, and to seriously injure you and your passengers. Adjust the steering wheel only when the motor coach is stopped.

Turn lock-handle located on left side of steering column counterclockwise to adjust steering wheel height. Tighten by turning lock-handle clockwise.

WARNING

Make sure you have securely locked the steering wheel in place by trying to move it.

Steering Wheel Angle Control

Turn lock-handle located on right side of steering column counterclockwise to adjust steering wheel angle, then tighten by turning lock-handle clockwise.

WARNING

Make sure you have securely locked the steering wheel in place by trying to move it.

Ignition Switch

WARNING

Do not turn the ignition key to the OFF position while the motor coach is moving.

NOTE: In the event of failed start, wait 2 minutes before attempting to re-start.

NOTE: If a re-start fails, check the fuel supply before any further attempts.

The ignition switch is located on the right side of steering column. The ignition switch has five positions. The following is an explanation of those ignition switch positions:

- LOCK - This position is used for inserting the key into the ignition and for withdrawing the key from the ignition. This position is also used for turning off the engine.
- ACC - This position is used for powering only the radio and other accessories.
- ON - This position is used for the continuous period of engine operation.
- START - This position is used for engine startup only. Key will automatically return to the ON position when released.

Horn

To use the horn, press either horn button located on the top of the steering wheel center pad. The horn should sound while pressing down on either button. The horn can be an electric or air horn, the electric/air horn switch is located on the right switch panel.

PARKING BRAKE

The parking brake knob is located on the left console of the driver seat. When the vehicle is stopped, pull out knob to set the parking brake. When ready to start moving with engine running and primary air supply at 90 psi, beeper and low air pressure light off. Place foot on brake pedal and push in knob to release the brake.

EMERGENCY BRAKE

CAUTION

Motor coach must be stopped prior to activating emergency brake.

Pull the handle up to engage the emergency brake. Press the handle down to release emergency brake. In case of parking brake malfunction, the emergency brake will return to the original position automatically.

Grammer® Driver's Seat

The dFriver's seat can be moved forward and backward. The backrest angle can be fully adjusted.

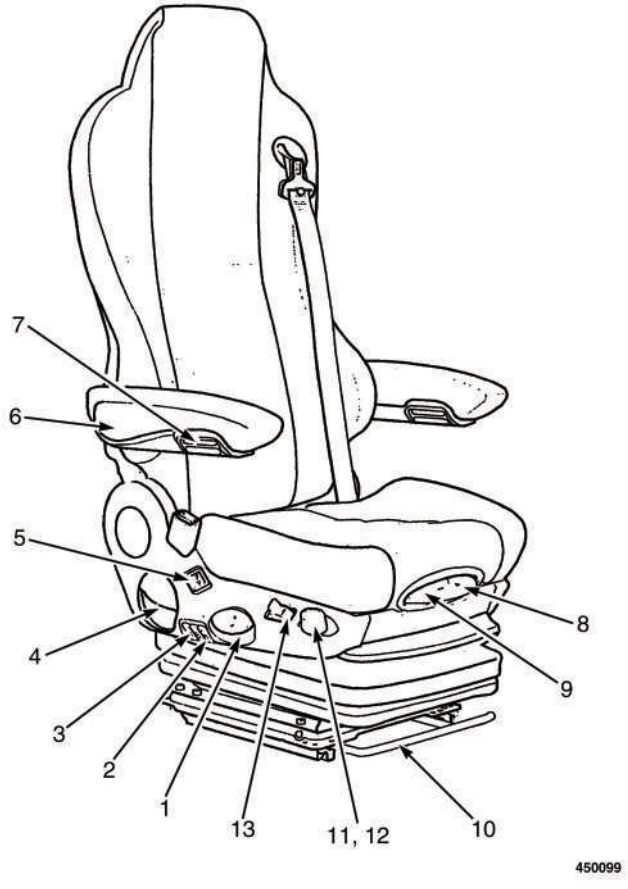


Table 11: Grammer Driver's Seat

Number	Item	Number	Item
1	Height Adjuster	8	Seat Angle Adjuster
2	Lumbar Support	9	Seat Depth Adjuster
3	Lateral Support Adjuster	10	Fore/Aft Adjuster
4	Backrest Adjuster	11	Swivel
5	Seat Heater	12	Quick Lowering
6	Armrests	13	Shock Absorber Adjuster
7	Armrest Adjuster		

WARNING

Do not adjust the driver's seat while the motor coach is moving. The seat could suddenly and unexpectedly move, causing the driver to lose control of the vehicle.

CAUTION

After making a seat adjustment, always test to ensure that the adjusters have latched. An improperly latched mechanism could impair driver abilities.

General Information

WARNING

No objects should be placed within the moving area of the driver's seat to prevent injury.

WARNING

Settings must be checked to ensure they are correctly engaged before the motor coach is driven. Adjustments must not be made while driving.

A correctly functioning and individually adjusted driver's seat is essential to good health. Seat is maintenance free. Take adequate care of your seat to ensure that it functions properly.

CAUTION

Dirt can impair the function of the seat. Keep the seat clean.

Upholstery does not need to be removed from the seat frame for cleaning.

NOTE: Do not soak through upholstery during cleaning. Do not use pressure washer to clean seat.

CAUTION

Use standard commercially available upholstery or plastics cleaning agent. Test for compatibility on a small, concealed area.

Check seat frequently to ensure proper function. Regularly check that seat is tight. If seat wobbles, check for loose bolts or other faults. To ensure proper function of the driver's seat and to prevent damage of pneumatic spring, adjust the loaded driver's seat to the highest height position.

Seat Operation

Height Adjustment

The seat height can be adjusted continuously within a range of 3.9 in. (99 mm). Pull or press the handle for height adjustment to move the seat upwards or downwards.

NOTE: Always release the handle after reaching the upper or lower stop.

Lumbar Support

With front and back switch, the curvature in the upper and lower area of the backseat upholstery can be adjusted individually.

The air compartments will be filled by setting the respective switch to "+" and emptied by setting it to "-".

Lateral Support Adjustment

By actuating the switch, the curvature of the lateral guide right and left of the backrest can be adjusted individually by means of compressed air.

By setting the switch to "+", the air compartments will be filled. By setting it to "-", they will be emptied.

Backrest Adjustment

Pull up the locking lever to release the backrest catch. The backrest is brought into the desired position by simultaneously exerting or relieving pressure. Release the locking lever to lock the backrest.

NOTE: It should not be possible to move the backrest into another position after it has been locked.

Seat Heater

By operating the seat heater switch, the heating mats in the backrest and seat cushion can be heated in two steps.

- 0 = Heater Off
- 1 = Heating step 1 ON
- 2 = Heating step 2 ON

Armrests

The armrests can be folded up if required.

Armrest Adjuster

The inclination of he armrests can be modified by turning the adjustment knob. When turning the knob to the outside “+”, the front part of the armrest will be tilted. When turning the knob to the inside “-”, it will be lowered.

Seat Pan Angle Adjustment

Adjust the angle of the seat pan by pulling the left handle upwards. The seat pan can be moved to the desired position by pressing or relieving the seat to the front or to the rear.

NOTE: The adjustment range can be made between minus 6º and 10º.

Seat Depth Adjustment

Pull the right handle upwards to adjust the depth of the seat cushion. Move the seat cushion backwards or forwards so the desired seating position can be reached.

NOTE: Adjustment range of 2.3 in. (58 mm) is in six increments.

Fore/aft Adjustment

The forward/aft adjustment can be made by pulling the locking handle, while simultaneously sliding the seat forwards or backwards to the desired position.

WARNING
The seat must lock into place with an audible click when the lever is released.

NOTE: The adjustment range can be made in ten steps of 0.78 in. (20 mm) each.

Swivel

Press the key while simultaneously turning the seat left or right until stop is reached. Release key during swiveling.

NOTE: The seat will automatically lock into driving position.

Quick Lowering

The seat can be lowered to lowest position by pressing the key and locking it.

Vertical Shock Absorber Adjustment

The vertical vibration behavior of the seat can be adjusted continuously from soft to hard by using the turning knob.

- 1 = Soft shock absorption
- 2 = Medium shock absorption
- 3 = Hard shock absorption

DELUXE TOUR GUIDE SEAT

The deluxe tour guide seat is a folding seat located at the entrance door. The tour guide seat is conveniently located near the audio/video controls and next to the fire extinguisher for safety, guide seat is standard leather-covered. Seat is equipped with retracting armrests and a lap belt for safety.

Push the seat downwards and sit on the seat. When folding up the seat cushion, the seat automatically slides back as far as possible.

PASSENGER SEATS

Table 12: Passenger Seat Controls

Number	Item
1	Seat Recline Handle
2	Lap Safety Belt
3	Retracting Armrest

The passenger seats are self-righting, adjustable recline, high back seats. These seats are equipped with folding footrests. Passenger seats are outfitted with retractable armrests and reclining handles. Each seat back is equipped with a convenient magazine holder.

Fasten and position the seat belts

Insert the latch plate into the buckle, then tug on the belt to ensure belt is securely fastened. Also check that the belt is not twisted, because a twisted belt can cause serious injuries in a crash.

WARNING

Not wearing a seat belt properly increases the chance of serious injury or death in a crash. Be sure you and your passengers always wear seat belts and wear them properly.

CAUTION

In case of malfunction with parking brake, the emergency brake knob will return to original position automatically.

GEAR SELECTOR

WARNING
Before starting a vehicle always be seated in the driver's seat, select N on the shift control, and set the parking brakes.

WARNING
If engine cranks in any gear other than neutral, service your vehicle immediately!

WARNING
Before working on a vehicle, parking the vehicle, or leaving the cab with the engine running, place the transmission in neutral, set the parking brakes, and block the wheels.

WARNING
For safety reasons, always engage the service brakes prior to selecting gear positions from neutral.

WARNING
It is a requirement that the driver of a commercial vehicle specified under paragraph A sections 1-6 of FMCSA regulation 392.10 need only cross railroad grade crossings in a gear that permits the vehicle to complete the crossing without a change of gears. This can only be achieved by utilizing the Manual M mode.

CAUTION
Do not release the parking brake or attempt to select a gear until the air pressure is at the correct level.

CAUTION
Battery (+) and (-) must be disconnected prior to any type of welding on any UltraShift™ equipped vehicle.

Gear selector lever has a five position operating panel.

- R - Reverse. Selects reverse gear once vehicle is less than 2 Mph.
- N - Neutral. Selects neutral.
- D - Drive. Selects the default starting gear and automatically selects gears between the starting gear and the top gear.
- M - Manual. Allows the driver to hold the current gear and manually select the appropriate gear for road conditions using the up/down buttons on the gearshift handle. Manual mode should be used whenever the driver wants to select the shifts instead of letting UltraShift™ select them automatically. For example, when the driver is moving over railroad tracks or steep grades.
- L - Low. Transmission downshifts at the earliest opportunity for maximum engine braking.

Start-up

1. Turn the ignition key to ON and allow the UltraShift to power-up.

- Engine cranking is delayed until the transmission power-up is complete.

2. Start the engine.

3. Apply service brake.

- If the service brake is not applied while selecting a starting gear, the initial start gear will not be found and the driver will have to re-select Neutral and press the brake while re-selecting the desired mode.

4. Select the desired mode and starting gear on the shift console.

5. Release the vehicle parking brakes.

6. Release service brake and apply accelerator.

- The transmission is not intended to provide hill-hold capability. The service brakes should be used to stop and hold the vehicle on an incline. To prevent the vehicle from rolling when starting on an incline, place both feet on the brake pedal before sliding the right foot to the throttle pedal. Gradually back off the brake while applying as little throttle as necessary to move along the incline.

Power Down

1. Select N on the shift control.

NOTE: Neutral should always be reached before UltraShift power down is performed except in cases of emergency.

2. Set the vehicle parking brakes.

3. Turn off the ignition key and allow the engine to shut down.

Driving Tips

Proper Starting Gear

Choose a starting gear appropriate for the load and grade conditions while at a stop in either D or M mode by using the up/down buttons. Refer to D mode for detailed information.

Optimal Engine Braking

The L mode can be selected while moving. This initiates downshifts as soon as possible at a higher rpm. Refer to the L mode section for detailed information.

Skid Conditions

If a skid condition occurs, the UltraShift senses the vehicle speed dropping rapidly. In this case, the UltraShift delays downshifting.

Cruise Control

The UltraShift is totally compatible with cruise control. If a shift is required while cruise control is active, cruise is temporarily interrupted while the shift is performed and then automatically resumed after the shift.

Manual Mode

In Manual mode, UltraShift allows the driver to hold current gear and manually select the appropriate gear for road conditions using the up/down buttons. Manual mode should be used whenever the driver wants to select the shifts instead of letting UltraShift select them automatically. Examples include when the driver is moving around the yard, over railroad tracks, or on steep grades.

Coast Mode

When coasting to a stop in lower gears with your foot off the throttle, UltraShift may not finish downshifting until the driver gets back on the throttle. The system will automatically track vehicle and engine speed during this time and engage the appropriate gear when the throttle is reapplied. This is normal operation for the UltraShift when in drive “D” mode only.

CAUTION

Clutch Protection: Even though this motor coach does not have a clutch pedal, it still has a mechanical clutch. As the driver slowly increases and decreases engine rpm from a stop, the clutch is engaging and disengaging, just like slipping the clutch with an AutoShift or a manual transmission.

CAUTION

If the vehicle is operated for long periods between engine idle and 1000 rpm during take off, the driver is slipping the clutch which gets the clutch HOT. This is an indication that the driver is abusing the clutch and it is getting too hot to operate, potentially resulting in a failure.

Repeated incidents of clutch abuse may cause the clutch to fail and render the truck immobile, resulting in extended down time.

Below is an example of a situation that may initiate clutch abuse, and instructions on how to avoid them:

Example	How To Avoid
Holding on hills using the throttle rather than the service brake	Use the service brakes to hold on the hill. To start moving, apply the throttle and release the brakes as you feel the truck start to pull.

Clutch Calibration

The ASW system automatically adjusts for clutch wear. An automatic calibration occurs each time the unit is powered up when the following conditions are reached: the engine is at normal operating temperature, the vehicle must be stopped, the engine is at idle, N is selected on the shift console. Calibration may take up to 2 minutes to complete. You may notice the engine slows and returns to normal idle several times during calibration. It is acceptable to stop calibration by selecting a driving mode.

Reverse Mode

The vehicle should be stopped before R is selected. If the driver requests R above 2 Mph, the shift is not performed until the speed has dropped below 2 Mph.

Each time R is selected from N, the default R gear is engaged.

Drive Mode

Depending on the transmission model and shift configuration there may be alternate forward starting gears available. While the vehicle is stopped in D, the up/down buttons are used to change the starting gear. This selection becomes the default starting gear until it is changed by the driver again, or the UltraShift is powered down.

In D mode, all upshifts and downshifts are performed automatically based on vehicle and transmission conditions.

The driver can advance a shift (by about 75 rpm) by pressing the proper up/down button (up for upshifts, down for downshifts) when the transmission is within 75 rpm of the load based shift point.

Manual Mode

M mode should be used whenever the driver wants to select the shifts instead of letting UltraShift select them automatically. For example, when the driver is moving around the yard, over railroad tracks, or on steep grades.

Selecting Manual from Neutral:

- As described in D mode, the starting gear can be changed in exactly the same way in M mode.
- If M mode is selected from a stop, the starting gear is maintained. No automatic shifts are performed, except for conditions noted below.
- The driver can request shifts using the proper up/down button (up for upshifts, down for downshifts). The upshift or downshift is performed by the UltraShift provided the resulting engine speed is not outside of defined limits. For upshifts, the resulting engine speed must be greater than 900 rpm; for downshifts, the resulting engine speed must be less than engine rated speed.

Selecting Manual from Drive or Low while moving:

- If M mode is selected while moving, the current gear is maintained. No shifts are performed, except for conditions noted below.
- As described above, the driver can request shifts using the proper up/down button (up for upshifts, down for downshifts) within the same limits described.

Transmission Manual Override:

- If the vehicle is being back driven (vehicle coasting and being pushed by the load) and the engine is approaching a higher than normal level (approximately 300 rpm above rated speed), the UltraShift overrides the M position and performs an upshift to prevent engine damage.
- If the gear being maintained is higher than the starting gear, and the driver depresses the throttle pedal, the UltraShift system will override the M mode and shift to the best available gear if the engine lugs excessively.

Low Mode

L mode should be used any time you want to maximize engine braking and minimize the use of the brake pedal. For example, when driving down long grades or when coming to a stop.

Selecting Low from Neutral:

- If L mode is selected from N while stopped, the starting gear is always the lowest available gear. The starting gear cannot be changed in L mode.
- If L mode is selected from N while stopped, the lowest available gear is maintained - no shifts are performed, except for conditions noted below.

NOTE: L mode can be used while climbing steep grades to achieve higher downshift points (transmission will downshift sooner).

Selecting L from D or M while moving:

- If L mode is selected while moving, no upshifts are performed, except for override conditions noted below.
- Downshifts are performed at higher rpm's than normal to enhance engine braking. The downshift point is chosen so engine speed after the shift is about 50 rpm below engine rated speed.

Transmission Low Override

- If the vehicle is being back driven (vehicle coasting and being pushed by the load) and the engine is approaching a higher than normal level (approximately 300 rpm above rated speed), the UltraShift overrides the L position and performs an upshift to prevent engine damage.
- If the gear being maintained is higher than the starting gear, and the driver depresses the throttle pedal, the UltraShift system will override the L mode and shift to the best available gear if the engine lugs excessively.

Troubleshooting

Diagnostics

In the event there is a problem with the UltraShift, there are three primary tasks the driver should perform:

1. Note the driving condition under which the problem occurred.

2. Note the condition of the UltraShift under which the problem occurred (i.e. operation mode (D, M, L), current gear, engine speed, etc.).

3. Reset system.

Transmission Reset Procedure

In some cases, proper transmission operation can be restored by "resetting" the transmission Electronic Control Unit (ECU). Use the following procedure to reset the ECU.

1. When it is safe to do so, stop the vehicle.

2. Place the transmission shift lever in N and turn the ignition key to the OFF position.

3. Wait at least 2 minutes.

4. Restart the engine.

5. If the problem continues, contact a service facility to have the vehicle and transmission system evaluated.

Locked in Gear

If the motor coach is shut down or stalls in gear, the UltraShift may become locked in gear. The transmission will attempt to get to N during the next power up if the shifter is in Neutral. If N cannot be achieved, the engine will not start. Try the following:

1. Select N. Turn the key OFF and let the transmission power down for at least 2 minutes.

2. Depress the brake pedal.

3. Release the parking brake.

4. Select N.

5. Turn the key to the ON position.

6. The transmission will attempt to shift into N once you turn the key ON, but you may have to slightly release the brake pedal to help let the torque off the drive line.

7. If N is not achieved after this procedure, take the vehicle to a local service center.

NOTE: For more detailed information, please visit www.lzbusline.com for manufacturer's manual.

PASSENGER INTERIOR CONTROLS

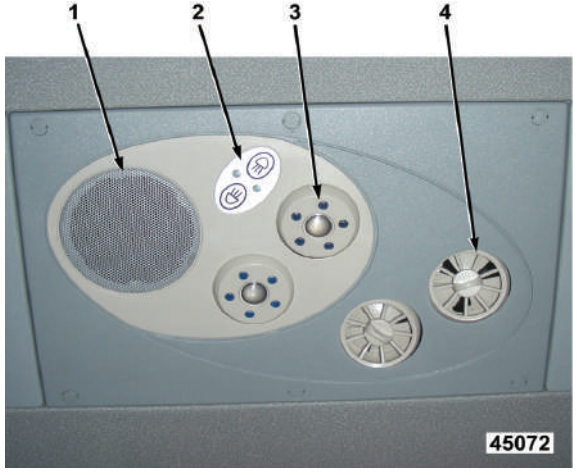


Table 13: Passenger Controls

Number	Item
1	**Speaker**
2	**Individual Reading Lamp Switches** Push button to turn On/Off
3	**Omni-directional Individual Reading Lamps** Push in any direction to direct light
4	**Omni-directional Individual Ventilation Ports** Push in any direction to direct air flow

OPERATING

GENERAL INSTRUCTIONS

After performing the daily inspection and safety checks, you are ready to operate the motor coach. Safety on the road also depends on you. Observe weather and road conditions, then drive accordingly. Be physically and mentally alert.

WARNING
Do not run engine for long periods of time in a closed or poorly ventilated building, where exhaust gases can accumulate.

If, while driving the motor coach, any of the items below are noticed, correct condition immediately.

- STEERING ACTION - Binding, wander, shimmy, excessive steering wheel play, and pulling to one side.
- BRAKING ACTION - Increased pedal travel, slow response, chatter, grabbing, weak, pulling to one side, and excessive air pressure drop for brake application.
- VIBRATION - From engine, driveline, accessories, and wheel imbalance. Scan the instrument panel frequently and be alert for any changes from normal gauge readings.

Refer to appropriate subject in troubleshooting section of this manual for detailed data.

ENGINE STARTUP

Engage parking brake. Put the gearshift in the neutral position, making sure that the rear compartment doors are closed (or engine is prevented from starting). Insert the key into the ignition start switch and turn clockwise to the start position. The engine should start within 30 seconds. If starting fails, wait 2 minutes for starter motor to cool down. Repeat start procedure until the engine starts.

Do not run a cold engine at high rpm. Idling too fast during warm-up will cause too rapid and uneven expansion, resulting in premature engine wear. The rpm should be increased gradually after starting a cold engine.

Do not operate the motor coach at high rpm until the engine water temperature reaches 158°F (70°C).

CAUTION
Damage may occur if engine idles for more then 10 minutes at low rpm. Idling the engine too slowly does not allow sufficient splash lubrication of cylinder walls and may result in excessive wearing of pistons and liners.

There must be a display of the oil pressure on the instrument panel within 15 seconds after starting the engine, otherwise stop the engine and correct problem immediately.

If the parking brake indicator on the instrument panel is illuminated, the parking break is engaged.

Engine

After starting the engine, but before operation, be sure the indicator lights and all gauges work. The braking system air pressure should read at least 71 psi (490 kPa) or above. Coolant temperature should be 158° F (70° C) or above, and the parking brake released. You can now operate the motor coach in a safe manner.

Normal Driving Conditions

Ensure the following are with in their acceptable limits.

- Oil pressure should be within the range of 42 to 71 psi (290 to 490 kPa).
- Water temperature should be within the range of 176 to 194° F (79 to 90° C).
- The indicator of the air pressure gauge should be within the green range of 78 to 113 psi (538 to 779 kPa).

If you encounter any abnormal sounds or smells, stop and check the motor coach. Avoid any abrupt acceleration or braking if possible. Avoid engine over-speed.

Before Stopping Engine

CAUTION

Do not shut off the engine while vehicle is in motion. This will cause eventual brake and immediate power steering failure.

A hot engine has a great deal of heat stored up in its iron mass. Let the engine idle for no more than 10 minutes before shutting down the engine.

This will allow circulating coolant and lubricating oil to carry heat away from cylinder head, valves, pistons, cylinder liners, and bearings, thus preventing warping of valve stems or distortion of other parts resulting from uneven cooling.

NOTE: Refuel before final shutdown. The less air space in the fuel tank means that there is less opportunity there will be for water to condense in the tank.

Stopping The Engine

CAUTION

Do not shift into neutral until vehicle is stopped!

Perform the following procedures:

1. Bring the motor coach to a complete stop using the service brakes.
2. Shift transmission into neutral. The transmission should be set to the neutral position before shutting off the engine to prevent an error report display.
3. Set parking brake by pulling out control knob.
4. Allow the engine to cool below 194° F (90º C). Do so by letting the engine idle no more then 10 minutes.
5. Shut engine down by turning the ignition key to the ACC position. The accessory position cuts off the fuel supply and shuts down the engine.

WINTER DRIVING TIPS

Perform the following winter driving tips for enhanced motor coach performance needed during cold weather

- Add long life coolant into the cooling system.
- Check the fluid level, specific gravity, and voltage output of the battery.
- Use soft water in engine cooling system.
- Do not operate the vehicle until the engine has had time to warm up.
- Do not operate if any malfunctions are present.

DPF REGENERATION

A diesel particulate filter, sometimes called a DPF, is a device designed to remove diesel particulate matter or soot from the exhaust gas of a diesel engine.

In addition to collecting the particulate, a method exists to clean the filter.This is known as filter regeneration. Regeneration is the process of removing the accumulated soot from the filter.

WARNING
To avoid serious personal injury or property damage, ensure that no persons or objects are at or within 2 feet of the exhaust outlet at any time during a regeneration.

WARNING
Ensure that exhaust and outlet are clear of any trash, grasses, or other vegetation or debris.

WARNING
Use extreme caution during a stationary regeneration, as exhaust gas tail pipe outlet temperatures can exceed 900° F (482° C).

WARNING
Stationary regenerations are to be performed outdoors only.

WARNING
DO NOT perform inside a garage or maintenance facility. DO NOT attach an exhaust extraction hose to the exhaust outlet.

ACERT™ TECHNOLOGY FOR 2007

The DPF Regeneration Lamps, Switches and Driver Tips

Regeneration Methods

The Caterpillar CRS system is designed to operate in automatic mode and perform regeneration as required without any driver action. Manual regeneration is a backup to the automatic mode.

Automatic Regeneration
To complete an automatic regeneration, the dash switch (if equipped) must be in the automatic regeneration position. The Inhibit or Disable Switch (if equipped) must NOT be enabled or "on." Caterpillar recommends automatic regeneration for most applications.

If the DPF soot loading reaches level 3, the DPF Lamp starts to flash and the Check Engine Lamp comes on. At this point, Caterpillar recommends a manual regeneration (or parked regeneration). If the DPF Lamp and Check Engine Lamp do not go out after a complete manual regeneration, contact your authorized Caterpillar dealer.

Manual Regeneration (or Parked Regeneration)
For a manual regeneration, all of the following conditions must be met.

a. The DPF Lamp must be on or is flashing with the Inhibit (or Disable) Switch "off."
b. The Manual Regeneration (or Parked Regeneration) switch must be enabled or "on."
c. The throttle, clutch and service brake must be released.
d. Vehicle speed must be zero.
e. The automatic transmission must be in neutral.
f. The parking brake must be set, if programmed.

When these conditions are met and the switch is on (for some OEMs the switch is depressed for four seconds), the DPF Lamp turns off and the engine speed automatically increases to between 1200 rpm and 1400 rpm. Once the DPF reaches approximately 840° F (450° C), the High Exhaust System Temperature (HEST) Lamp illuminates. When regeneration is complete, the engine returns to idle.

If any of the above conditions change, manual regeneration deactivates and the engine returns to idle. If the DPF Lamp illuminates again, manual regeneration must be restarted.

High Exhaust System Temperature Lamp

The HEST Lamp comes on when the vehicle speed is less than 5 mph and the DPF outlet temperature is more than approximately 840° F (450° C). This condition can occur under normal operation. No action is required.

Driver Tips

Engine Noise: If the truck shuts down during a regeneration, the CRS purge air pump will run for approximately 10 minutes. When key is on at truck startup, the air pump will run for approximately five minutes. This is normal operation of the pump.

HEST (High Exhaust System Temperature) Lamp	
DPF (Diesel Particulate Filter) Lamp	
Check Engine Lamp	
Stop Engine Lamp	

Note: This information is for reference only. Consult the Caterpillar Engine Operation and Maintenance Manual or your OEM truck manufacturer's manual for a complete description of exhaust aftertreatment.

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Soot Loading Warnings

Soot loading is an accumulation of particulate matter in the DPF. During normal operation, the lamps should not come on, but there may be circumstances when they do. Following is a brief summary of what the lamps mean and what to do if they should light up. If the lamps remain on after the recommended actions, contact your Caterpillar authorized dealer.

Soot Loading

1. If the DPF Lamp begins to flash, check to ensure the two position Inhibit (or Disable) switch is "off" or the three position switch is in the automatic regeneration position. The DPF Lamp will stop flashing when the Inhibit (or Disable) function is "off." If the DPF Lamp continues to flash, proceed to step 3.
2. The DPF Lamp comes on when the DPF reaches Level 1 of soot loading.
3. If the vehicle continues to be driven, the DPF will reach Level 2 of soot loading and the DPF Lamp will begin to flash or turn red. A regeneration must be performed as soon as safely possible.
4. The DPF Lamp continues to flash and the Check Engine Lamp comes on when soot loading reaches Level 3. Regeneration is required.

Soot Loading Warnings

(Continued)

5. If the vehicle continues to be driven without regeneration, the engine progressively derates down to a reduced horsepower level which will limit maximum vehicle speed.
6. At Level 4 of soot loading, the Stop Engine Lamp comes on. If regeneration is not started immediately the Stop Engine Lamp will begin to flash and the engine will shut off in 30 seconds.
7. The engine may be restarted and the driver must initiate regeneration. If the vehicle continues to be driven without regeneration, the engine shuts down for a second time.
8. After a second shutdown, regeneration may not be initiated and the engine will run for only 60 seconds at a time.

Dash Switch Functions

(If Equipped)

The dash switch allows the driver to control the regeneration process.

1. Automatic (Preferred Position): A regeneration cycle starts automatically when engine conditions warrant. The driver does not need to take any action.
2. Disabled or Inhibit: Engaging this switch stops the regeneration process.

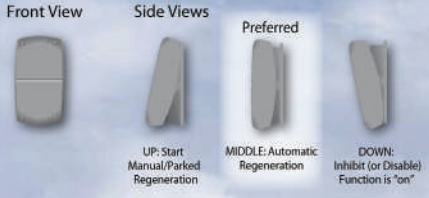
   CAUTION: The DPF and regeneration system may be damaged if this switch remains in this position for an extended time.
3. Manual Regeneration (or Parked Regeneration) Start: The driver can initiate regeneration by moving the switch to the "on" position. Some OEM switches require the switch to be held for four seconds. The DPF Lamp must be on or flashing for manual regeneration to occur.

DPF Switch

(If Equipped)

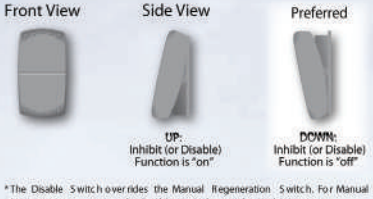
The switches pictured are for example only. They may or may not appear on your vehicle's dashboard; every truck manufacturer uses a different arrangement. For specific instruction, consult your OEM truck manufacturer's manual.

Three Position Switch



Two Position Manual/Parked Regeneration Switch

Two Position Switch - Inhibit or Disable Regeneration*



*The Disable Switch overrides the Manual Regeneration Switch. For Manual Regeneration to occur, the Disable Switch must be in the Automatic Regeneration position (OFF). For automatic regeneration to occur both the Disable and Manual Regeneration switches must be in the off position.

PURE POWER

CATERPILLAR®

AUDIO/VISUAL SYSTEM

JVC™ DVD/CD

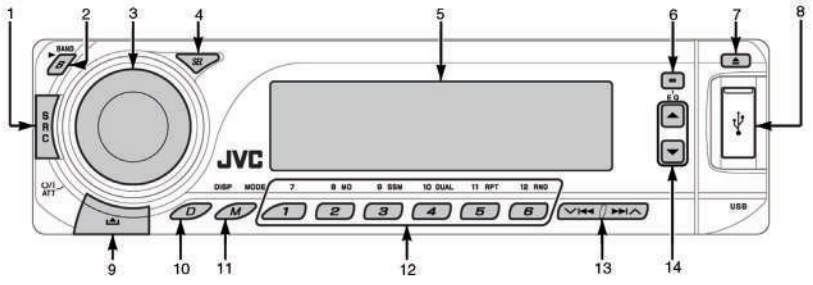


Table 1: JVC™ Audio/Video Player Basic Controls

Number	Item	Number	Item
1	Select source	8	USB Input
2	Select band	9	Panel detach
3	Power	10	Display information
4	Adjust sound mode	11	Function mode
5	Display window	12	Station preset
6	Select sound mode	13	Station search
7	Eject disc	14	Station preset

JVC™ KD-DV7300 DVD/VCD/CD/MP3/USB Receiver features:

- DVD/VCD/CD/MP3 Player
- GIGA MP3 multi-play MP3
- WMA
- WAV Files Burned on DVD
- MOS-FET Power Amp
- iPod™ Ready
- Satellite Radio Ready
- Optional Bluetooth with KS-BTA200
- DivX™ Compatible.

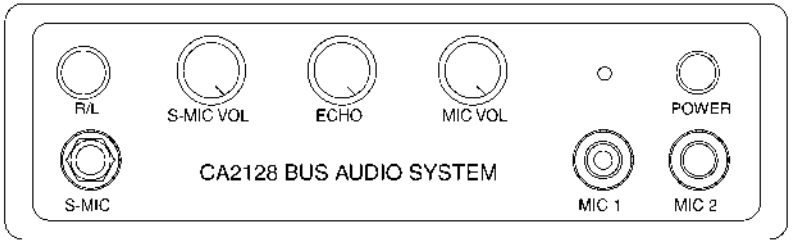
NOTE: See manufacturer's manual at www.lzbusline.com for additional information

Microphone

The Falcon 45 audio system comes with a state of the art wireless microphone. The microphone is located on motor coach dash in a convenient holder. In conjunction with public address system, the wireless microphone will allow mobile announcing. Microphone requires a 9V battery.

NOTE: See manufacturer's manual at www.lzbusline.com for additional information

Public Address System



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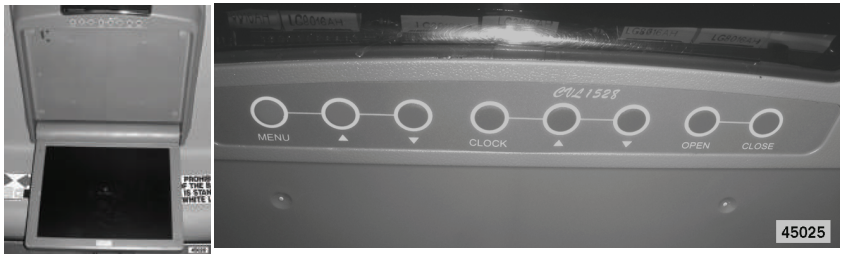
NOTE: See manufacturer's manual at www.lzbusline.com for additional information.

LCD Monitors



The coach is equipped with three strategically placed drop down LCD monitors that are controlled by the JVC audio/video remote. Each monitor is raised and lowered by an individual switch on the right dash panel.

NOTE: See manufacturer's manual at www.lzbusline.com for additional information.

LAVATORY

General Information

For safety and convenience, the toilet module has been installed with safety handles inside and out of the module.

The dashboard contains an indicator for the following:

- When The module is vacant or occupied.
- For The status of the wastewater holding tank.
- To alert the driver that the alarm button in the toilet module has been activated.
- Then The wastewater holding tank is full.

NOTE: If wastewater holding tank indicator is on, stop using toilet immediately and ensure door is properly locked.

The toilet module door has a seal strip which prevents odors from entering the motor coach. The toilet module is equipped with dual fans. Low fan speed will vent constantly when the module is vacant. The fan will change to high speed when the module is occupied. The outer fan works to keep fresh air moving automatically.

The power to the toilet is controlled by the driver at the dashboard. If the toilet is not functioning properly, the driver can turn off power and temporarily put the toilet out of order.

NOTE: If the toilet is to be out of service for an extended time, turn off the main power to the toilet.

Pre-Trip Procedures

Ensure that the freshwater tank is full.

Freshwater tank is positioned in behind the right side wheel skirt. Fill freshwater tank by attaching water hose and opening valve. Fill full and close fill valve. Fold wheel skirt down and securely latch.

Check that wastewater tank is completely drained and drain valve closed prior to trip. Make certain trash bin is empty prior to trip.

Check that toilet paper, paper towels, and other supplies are fully stocked prior to trip. Toilet module needs to be cleaned and maintenance regularly.

Toilet Module Operation

Ensure the toilet system is functioning properly by locking the door. The occupied light is controlled by the door lock. The occupied light will make other passengers aware of the toilet status. Toilet is unoccupied if the occupied light is off. If the toilet is occupied, the occupied light will be on.

The dome light inside the toilet module has a dual status. The low light level is on as long as the power to the module is on. The high light level is on whenever a passenger enters the toilet module, closes, and locks the door. The door lock triggers a switch that activates the high level light.

Sensor will automatically produce a flush that will go through the drain valve into the wastewater holding tank.

Post Trip Procedures

After motor coach arrives at wastewater evacuation area, flip switch of evacuation valve to drain holding tank.

WARNING
Do not spray water at the electrical junction box, fans, or other electrical equipment. Doing so could damage equipment and seriously injure personnel.

Remove all trash and restock supplies. Use a damp cloth to wipe the surfaces. Sliding valve on holding tank should be cleaned regularly to ensure smooth operation.

Wastewater Holding Tank

Wastewater holding tank is located in the right rear access panel of the motor coach.

Flip switch back after evacuation.

When cleaning inside of toilet module, remove the cover of the floor drain. The water then can be drained directly out of the motor coach through the floor drain.

WARNING
Refer to local health regulations for proper disposal procedures and equipment.

Cold Weather Procedures

Shut down toilet module for sub-freezing temperatures. Drain all water from freshwater and wastewater holding tanks. Ensure toilet flushes several times to drain water from bowl. Toilet module cannot be put back in service until sliding valve and all components are thawed.

CAUTION

Never try to open a frozen valve by force. Use warm water to defrost valve before use.

ELECTRIC DRIVER SUN SHADES

Sun shades have been installed at the left and right behind the windshield. Each shade has its own control switch on the lower left switch panel console.

CAUTION

Do not try to operate manually, this could cause gears to break.

ENTRANCE DOOR EMERGENCY RELEASE

Interior Emergency Release

In case of emergency or door power failure, locate emergency release handle in entry way next to tour guide seat. Rotate handle clockwise and push door outwards.

Exterior Emergency Release

In case of emergency or door power failure, locate emergency air dump valve located on right side behind front bumper. Turn valve handle one-quarter of a turn clockwise to release door. Two second delay will follow before door opens. Once door is open, turn the interior emergency release handle in entry way open before closing exterior emergency air dump valve. Passenger door will now stay open.

REMOTE CONTROLLED ENTRANCE DOOR

WARNING

Always apply the parking brake before having the passengers embark/disembark.

CAUTION

Entrance door must be shut prior to turning steering wheel. Leaving door open and turning wheels can severely damage motor coach entrance door or right tire.

The entrance door can be operated by the dash panel switch or a by remote control. The remote control feature only functions when parking brake is applied.

NOTE: Ensure outside mechanical lock is in the unlocked position before attempting to open door.

You can open the passenger door from the outside by means of the push button located on the body wall inside the right side fuel access door.

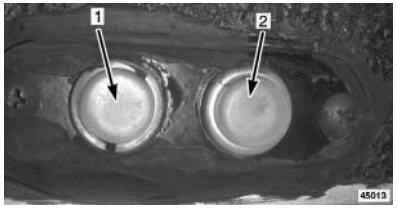
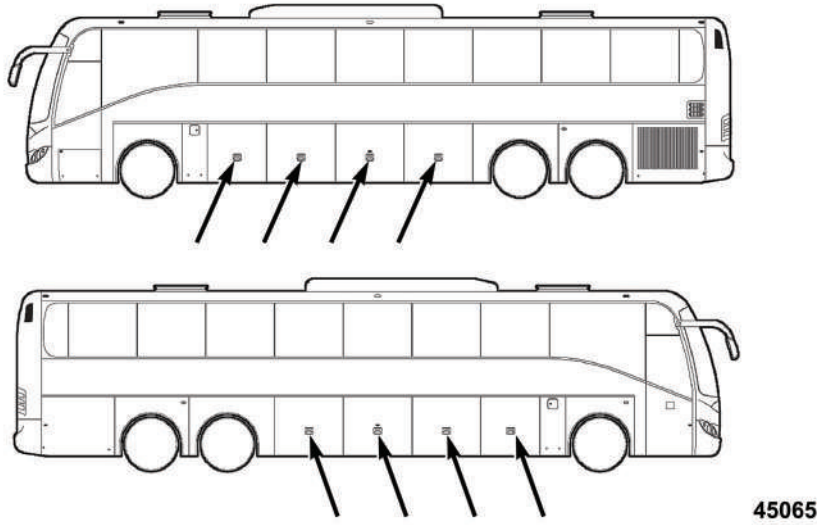


Table 2: Entrance Door Exterior Switch

Number	Item
1	Open Entrance Door Switch
2	Close Entrance Door Switch

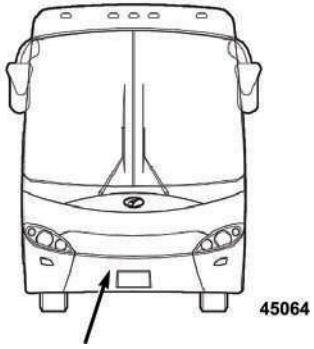
LUGGAGE COMPARTMENT



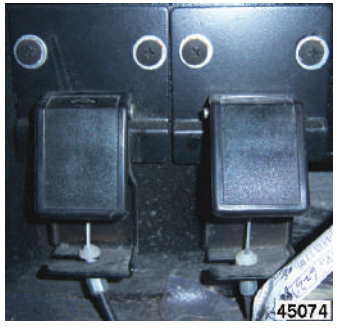
The transverse luggage compartment may be accessed through eight aluminum luggage bay doors. There are four luggage bay doors per side. Each luggage bay has an overhead light for safety and convenience. Luggage compartment overhead lights are controlled by the switch on the driver's right switch panel.

The luggage compartment contains three emergency road reflectors for roadside emergencies. The compartment also includes a tool kit for minor repairs.

SPARE TIRE COMPARTMENT



The Falcon 45 has an easily accessible spare tire compartment located behind the front motor coach body panel. The spare tire compartment latch can be released by lifting both spare tire compartment release handles.



The spare tire compartment release handles are located inside the motor coach dash and behind an access panel. The access panel is on the far right side of dash. Push the two access panel release latches and remove panel.

To remove the spare tire, perform the following:

1. Fold bottom door completely down.

2. Loosen ratchet straps, allowing excessive slack for strap to be placed above tire as it is being removed.

3. Pull the tire forward so it slides along the rollers, using caution as the tire exits the support rollers.

To place the spare tire back, perform the following:

1. Place tire flat on first roller.

2. Lift straps over tire while lifting and pushing tire back into the compartment.

3. Pull down ratchet straps to tire tread face.

4. Tighten ratchet straps against tire tread face.

5. Close spare tire compartment doors, closing the bottom door first.

DAILY INSPECTIONS

To make sure your motor coach is ready for service, make the following daily inspections.

NOTE: Inspection check sheet is available at the end of this section, and can be copied for reuse.

NOTE: Please become aware of all SAFETY PRECAUTIONS and additional information stated in component manufacturers' Operation and Maintenance manuals at www.lzbusline.com.

WARNING
Before checking, park the motor coach on a flat roadway.

Before starting each day, check or inspect the following to ensure trouble-free performance:

- Make visual inspection of entire unit.
- Check under motor coach for signs of leaks. If any are noted, correct condition causing leaks.
- Check all fluid levels on chassis: engine and transmission oil, coolant level, power steering fluid, and all other oil and liquid levels. Also check engine belts, hoses, and wiring for condition and adjust as needed.

NOTE: For more details, read the following:

ENGINE OIL LEVEL

CAUTION
Do not overfill the crankcase. NEVER operate the engine if oil quantity is below the add mark.

With the engine stopped, pull out the oil level dip stick and clean it with a clean cloth. Insert the dipstick into the crankcase completely, then pull it out again. The fluid level should be between the add and full marks. If engine had been running recently, allow at least ten minutes for oil to drain into crankcase. Use only recommended engine oil.

ENGINE OIL PRESSURE

The oil pressure will be high soon after cool-starting the motor coach; oil temperature will be increasing, and engine rotation speed will be normalizing. The oil pressure should be in the range of 25-55 psi. If the indicator is low or does not register within 15 seconds, stop and check oil level/condition and for any needed repair.

DRIVE BELTS AND BELT TENSION

Check condition and tension of the belts on the engine, fan, and compressor. If any relaxation, tighten belts. If there is any belt damage is present, replace belt.

Check for intersecting cracks on belts. Cracks are acceptable along the width of the belt, but if these transversal cracks intersect with longitudinal (belt length) cracks, replace belt. Also replace if the belt shows extensive wear.

CAUTION
Over-tight or excessive slack in belt tension can be harmful to the engine.

BATTERY

WARNING
Do not start the engine when adding liquid to the battery.

Open the lid of the battery; liquid should be added when the level is lower than the height sign on the battery box.

WASHER FLUID

Park on a flat, level surface. Open the outside hatch at left, front side of motor coach where the washer fluid reservoir is located. Add washer fluid if low.

NOTE: Washer fluid tank location may vary.

WINDSHIELD WIPER

Check that wiper arms and blades are secure, not damaged, and operate smoothly.

AIR CLEANER

Wipe away the dust that may have accumulated over the air intake and outlet once a weak. Check that all hose connections are tight to prevent dust from being sucked into the intake system and reducing engine life.

NOTE: Replace air cleaner filter when air filter warning light indicates.

AIR STORAGE TANK PURGE

Open the discharging valve at each tank to relieve water from tanks. Push finger up into black rubber diaphragm releasing trapped moisture.

If too much water is in the tank, check the dryer and pre-dryer for proper operation and service if needed.

Air storage tanks are located on left side, inside the access panel and behind wheel skirts.

NOTE: The core of the air dryer must be replaced at least once a year.

RADIATOR COOLANT

Check Radiator fan inlet for debris. Check fan blade condition.

WARNING
Scalding Hazard - Do Not Open Lid Of Expansion Tank When Engine Coolant Is Hot!

CAUTION
Check the coolant level only when the engine is off and cool.

Add coolant when below full. Be sure to check coolant temperature gauge.

FUEL TANK

CAUTION

Use recommended diesel only.

Check fuel gauge while ignition key is in “on” position or engine is running. Add clean diesel when needed. If the motor coach operates in a humid area, keep the fuel level full to prevent moisture on the inside surface of the fuel tank. Ensure filters are clear of water deposits. Ensure there are no leaks in the fuel line and the fuel cap remains tightly closed. Ensure fuel cap is clean before opening or closing.

PRIMARY FILTER-WATER SEPARATOR

Drain the primary filter-water separator system.

EXTERIOR LAMPS

Check that all external lights and reflective equipment are clean and functional.

ELECTRICAL SYSTEM

Check functioning of all instruments and indicators, including headlights, steering lamps, braking lamps, reversing lamps and emergency blinkers.

NOTE: Clean instrument panel cover to ensure indicators can be seen clearly.

POWER STEERING

With motor coach on level ground, open the engine compartment door and inspect the oil level from the viewable window on the power steering system reservoir. If low, add power steering fluid.

After adding power steering fluid, start the engine. The fluid will be driven throughout the entire system and some air may be present. Turn the steering wheel to the left and right limiting positions several times. This will extract the air from the system. Shut down engine to allow air to rise and escape the fluid in reservoir. Repeat bleed procedure if needed.

BITZER COMPRESSOR

WARNING

Use extreme caution near compressor; hair, hands, or clothing can be caught in drive belt. Serious injuries are possible.

Check oil level on sight glass. Oil level should be one-fourth to three-fourths the height of sight glass.

TIRES AND WHEELS

WARNING

Always maintain your tires in good condition. Frequently check and maintain correct inflation pressures as specified by the tire manufacturers. Inspect periodically for abnormal wear patterns and replace/repair cut or broken tire casing. Always use experienced, trained personnel with proper equipment and correct procedures to mount or remove tires. Failure to adhere to these warnings could result in tire malfunction, damage to the motor coach, personal injury, and possibly death.

NOTE: Correct inflation pressure should be:

- Front axle 115 psi.
- Drive axle 90 psi.
- Tag axle 95 psi.
- Spare 115 psi.

Check and maintain the correct inflation pressure for each tire every morning or when tires are cool. Check tire pressures ONLY when the tires are cool. Warm or hot tires cause pressure buildup. Do not deflate a warm tire to specified pressure. Tire thumping during the walk around inspection will tell you if a tire is deflated, but the only way to check tire pressure is with an accurate gauge. If any tires are found to be considerably under inflated, the motor coach should not be driven until cause of the leak is determined and repairs have been made.

Regular and frequent inspection and proper care will give you the assurance of safe, reliable tire operation. Most tire wear problems are caused by under inflation such as a slow leak. Low pressure is a tire's worst enemy. It allows tires to flex badly and this causes high temperatures to build up. Heat causes early tire damage, such as flex breaks, radial cracks, and ply separation. Furthermore, low tire pressures can affect control of your motor coach, particularly at the front wheels.

Look for bumps, blisters, cuts, punctures, cracks, uneven wearing, and tread depth. Verify that lug nuts are tight. Adjust to specifications if loose.

NOTE: After driving a new motor coach approximately 31 miles (50 Km), an adjustment of the lug nuts should be performed according to torque specifications. The fastening sequence should be cross symmetrical. The fastening sequence and torque specifications can be found in the maintenance section.

INSPECTION SHEET

- ☐ Check engine oil level.
- ☐ Check for fluid leaks. Engine oil, power steering, transmission, axle oil, and coolant.
- ☐ Check power steering fluid.
- ☐ Check coolant system level.
- ☐ Inspect drive belts.
- ☐ Check belt tensions.
- ☐ Check cooling fan.
- ☐ Inspect coolant hose condition.
- ☐ Inspect condenser fan inlet for debris.
- ☐ Check transmission fluid level, if applicable.
- ☐ Visually check battery .
- ☐ Check washer fluid.
- ☐ Check windshield wipers.
- ☐ Check air cleaner restriction indicator.
- ☐ Check fuel tank.
- ☐ Check primary filter-water separator.
- ☐ Check mirrors.
- ☐ Check headlights (high and low beams).
- ☐ Check taillights.
- ☐ Check brake lights.
- ☐ Check turn signals.
- ☐ Check 4-way flashers.
- ☐ Check clearance lights (red on rear, amber elsewhere).
- ☐ Check red reflectors on rear and amber reflectors elsewhere.
- ☐ Check wheel nuts.
- ☐ Check tire inflation.
- ☐ Check tire condition.
- ☐ Check A/C compressor oil level at sight glass.
- ☐ Check that all compartment doors are shut tight.
- ☐ Drain air tank.

☐ Check that all equipment is secured.

☐ Check steering system free play.

☐ Check all emergency equipment.

☐ Check driver’s and passenger seat belts.

☐ Check horn.

☐ Check foot and hand brakes (parking and emergency) for proper operation.

☐ Visually inspect motor coach ride height.

☐ Check instrument lamps.

☐ Check voltmeter reading with engine running.

☐ Check brake air pressure.

MAINTENANCE

Please read all safety precautions and additional maintenance information outlined by all component-specific operation and maintenance manuals at www.lzbusline.com.

WARNING
To avoid property damage, personal injury, or death when servicing the motor coach, park on a flat level surface, set the parking brake, turn off the engine, and chock the wheels.

GENERAL INFORMATION

This manual contains information on systems operation, component location, and periodic maintenance procedures which pertain to standard and optional equipment on LZ Falcon 45 series motor coaches. Proper maintenance is important to the safe and reliable operation of all LZ motor coaches. The service procedures described and/or recommended in this manual are effective methods for performing routine service or replacement of components. Other information, which may be needed to supplement this manual, is contained in separate parts of the operator's manual.

Specific information about the engine and transmission can be found in the applicable manufacturer's service and troubleshooting manuals.

NOTE: Check www.lzbusline.com for additional operation and maintenance services that may apply.

WARNING
Failure to perform proper maintenance and service could result in property damage, personal injury, or death.

Your motor coach has been engineered and manufactured to provide economical service. However, it is the responsibility of the owner to see that the motor coach receives proper care and maintenance to assure high performance.

WARNING
To avoid property damage, personal injury, or death; take care when performing maintenance, making any inspections, or repair. Some of the materials in this motor coach may also be hazardous if used, serviced, or handled improperly. If you have any questions pertaining to service, have the work done by a skilled technician.

Check the motor coach periodically as recommended by this Operators Manual and by the component-specific Operation and Maintenance manuals. Perform function checks as well as a test run after performing maintenance.

NOTE: See manufacturer's manual at www.lzbusline.com for additional information.

Shorten maintenance intervals if motor coach use is severe or under severe conditions. Keep all fluid reservoirs full and clean as needed.

MAINTENANCE RECORDS

It is the responsibility of the owner to keep accurate maintenance and repair records; including receipts. Should the lack of required maintenance be the reason for repair, a warranty claim may not be accepted. LZ Busline, LLC reserve the right to request your maintenance and repair records for verification of compliance with required maintenance practices and intervals.

LZ Busline, LLC recommends that the maintenance and repair records/receipts be maintained as permanent records. All records must state the date service was performed, mileage, vehicle identification number, and service performed.

⚠ WARNING

Always use floor stands to support the motor coach before working under it. Using only a jack could allow the motor coach to fall, resulting in property damage, personal injury, or death.

⚠ WARNING

When welding on the motor coach is required, always disconnect the ground battery terminal first. Then disconnect the positive cable prior to electric welding. Attach the welder ground cable as close to the part being welded as possible. If welding close to an electronic component, temporarily remove that component. Failure to follow this warning will result in a fire or explosion hazard which could result in property damage, personal injury, or death.

When servicing your motor coach always perform the following:

1. Turn off the ignition switch unless the procedure calls for a running engine.
2. Set the parking brake and chock the wheels.
3. Use support stands, never a jack, whenever you must be under a raised vehicle.
4. Do not smoke.
5. Wear safety glasses for eye protection.
6. Operate engine in a well-ventilated area.
7. Do not work on brakes unless proper precautions are taken to avoid inhaling friction material dust.
8. Do not wear loose clothing, hanging jewelry, watches, or rings. Tie up long hair and avoid rotating components.
9. Avoid contact with hot surfaces. Allow hot components to cool before working near or working on components.
10. Correct any problems that were revealed during inspection, prior to operating motor coach.

SEAT BELT MAINTENANCE

For safety, you should check the condition of your seat belts regularly.

Pull each belt out fully and look for frays, cuts, burns, and wear. Check that the latches work smoothly and that the belts retract easily. Any belt not in good condition or not working properly will not provide good protection and should be replaced as soon as possible.

CLEANING MOTOR COACH

The coach body should always be kept clean. Wash the coach at the end of every driving day. Do not use any type of harsh chemicals or utensils to prevent damage to the body and paint.

- Keep the seal strips of the doors and windows in good condition. Inspect for damage and replace if needed.
- Do not wash or rinse the painted surface of the bus with hot water, alkaline water, kerosene or any type of oil. These types of products could damage or ruin the paint.
- Check the connecting portions between the chassis and the body and repair any abnormal conditions that may be discovered.
- Check the fasteners within the interior components of the coach and tighten them as needed.
- Check the condition of the passenger doors and make adjustments as needed.
- Check the lights and lamp conditions of the coach. If any damage is discovered, replace it immediately.

Interior

Sweep or vacuum cabin daily. Clean up spills as soon as possible to prevent injury and to prevent permanent stains. If necessary, hand-wash belts in warm water with neutral soap. Keep buckles dry! Rinse thoroughly and allow to dry.

Exterior

Please clean your motor coach at approved washing sites. Do not wash motor coach in direct sunlight. Use clean water to rinse motor coach from top to bottom. Ensure that water does not pass through the air filter into the engine. Do not spray water on the radiator grilles on the right or left sides of the motor coach.

Wash the motor coach as needed. To remove light dust, wipe off with a clean damp cotton towel or chamois. Always use a separate cloth or sponge when washing the painted surfaces. The other areas, such as steps, bumpers, and tread plate; could leave abrasive materials on the cloth or sponge that could scratch the painted surfaces. Never use shop rags.

Wash off all salts, highway deicers, petroleum, industrial fallout, and chemicals as soon as possible. All exterior surfaces should be washed (top, sides, and underbody).

To wash, use warm water and mild soap. Use caution when pressure washing. Always use a wide fan, and care must be taken not to get too close to the vehicle or any striping, lettering, labels, or vinyl overlay.

After washing, rinse the body thoroughly with water. Soap residues can damage the finish.

ENGINE AND CHASSIS MAINTENANCE

WARNING

NOTE: Engine will not start while engine compartment access panel is open. The engine access panel safety switch will disable the ignition switch to prevent serious injury or death.

Engine access panel safety switch.

Clean engine and transmission every 10,000 miles. After every 50,000 miles, the following items of the intake manifold and the exhaust manifold should be checked:

- Check the nuts and bolts at various positions to determine if they are loose. The torque should be even and uniform while fastening the nuts and bolts. Otherwise, leakage may occur.
- Check for cracks or holes on the intake manifold and the exhaust manifold. If there is any damage or washout at the washers, replace the parts as needed.

NOTE: See manufacturer's manual at www.lzbusline.com for additional information.

REMOTE START SWITCH/MASTER DISCONNECT

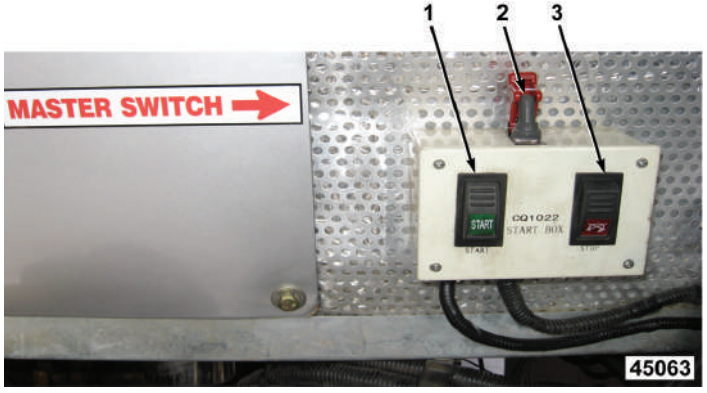
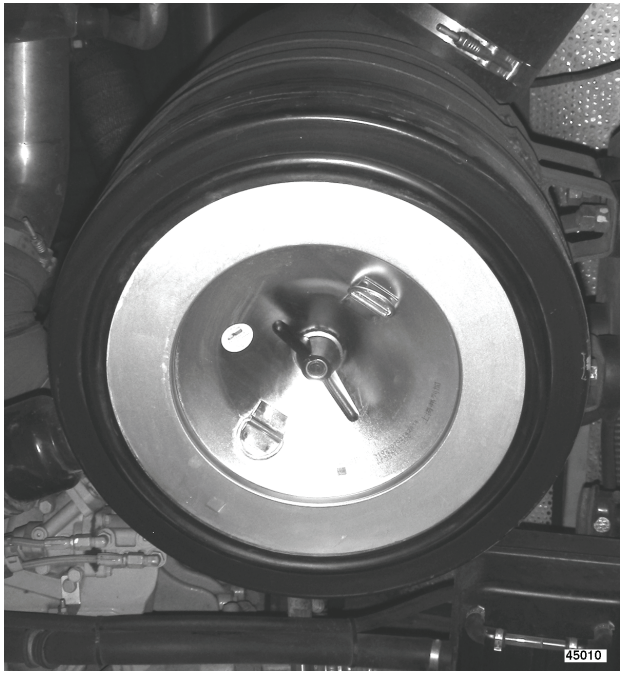


Table 1: Remote Start and Master Disconnect Switches

Number	Item
1	**Remote Engine Start Button** Transmission must be in "N", parking brake applied, and ignition key must be in the "On" position to remote start the engine. If area is safe, push start button to start engine.
2	**Master Disconnect Switch** Flip switch to disengage all power circuits.
3	**Remote Engine Stop Button** Push stop button to shut off engine.

AIR FILTER



NOTE: Replace the filter if damaged.

When the filter indicator lamp is activated on the instrument panel, it means that the filter should be cleaned or replaced. A dirty filter will cause insufficient power and wear of the engine. In order to ensure the service life and normal operation of the engine, the air filter must be maintained carefully and periodically.

The air filter should be checked and maintained after each 5,000 mile increment. When the vehicle runs in a heavy dust environment, the replacement cycle of the filter should be shortened. The engine must be off when the intake system is being serviced. Do not start the engine once the filter has been removed. Restart only after the filter has been replaced.

Take off the butterfly-nut, remove the outer filter and lid. Remove the dust in the unloading valve. Clean the filter by tapping lightly with hand, wooden tool, or by blowing air into the filter with an air compressor. Remove C-clip holding inner filter to lid. Clean the lid and the inside surface of the shell with a dry, clean cloth. When replacing outer filter, remove rubber lid gasket to put on new filter.

Remove cotter-pin holding the inner filter butterfly-nut. Remove butterfly-nut. Take out inner filter. Clean the filter by tapping lightly with hand, wooden tool, or by blowing air into the filter with an air compressor.

CAUTION

Do not blow air on the outside surface of the filter core.

When using compressed air, be sure the air pressure is lower than 72 psi (496 kPa). Blow the air from inside the filter to the outside, until the dust is no longer visible.

Clean the surface using a clean, dry cloth. The filter should be checked by using an examining lamp to make sure there is no damage before installing it. Check for damage or cracks on the sealing ring.

NOTE: Do not start the engine without the air filter in place.

RADIATOR

Keep the outside of the radiator clean by using compressed air or a water hose. This will ensure proper air circulation and cooling of the engine.

For the vehicles equipped with the inter-cooling device, keep the fins of the radiator clean at all times. Normally compressed air or water is used to clean the radiator. When there is hard scale on the radiator, steam should be used. In order to avoid damaging the radiator fins, the flow of air, water, or steam should be vertical to the surface of the radiator.

NOTE: It is essential to keep the radiator system clean and clear of any obstructions, so the engine will cool adequately.

In areas, where there may be numerous flying insects, clean the radiator fins more often.

CAUTION

Not abiding by this operating requirement could cause poor engine cooling, and possibly severe damage to engine components.

ENGINE COOLANT

WARNING

Never open filler cap if coolant is hot. When opening filler cap, first turn it carefully counterclockwise to the first stop and let the pressure escape. Then turn it to the second stop and remove the cap.

Coolant tank.

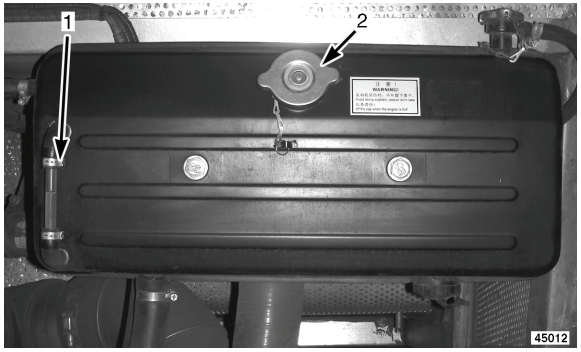


Table 2: Coolant Reservoir

Number	Item
1	Coolant Reservoir Level Window.
2	Coolant Reservoir Fill Cap.

Add the long-life anti freeze and anti rust liquid into the radiator. The coolant is all-purpose and need not be charged/discharged in the winter. When selecting the freezing point of the coolant, it should be 5° C lower than the minimum ambient temperature. Different types of coolants should not be mixed.

NOTE: The coolant should be replaced every 2 years.

An antifreeze and a rust inhibitant solution (a mixture of the glycol and water) should be added to the cooling system to prevent settling, freezing, and oxidizing as well as to raise the boiling point.

CAUTION

Add the same type of coolant to prevent settling. If the coolant is substandard or the freezing point is too high, replace it immediately.

Long term operation of the engine may cause lime scale to build up in the cooling system. Cooling system must be cleaned by the following method:

- Blend the causticity sodium of 24/28 oz (700/800 gm) with kerosene of 5.25 oz (150 gm)
- Pour the liquid mixture into the radiator.
- Let the engine run for 5 to 10 minutes at a middle rate.
- Let the engine rest for 10 to 12 hours.
- Restart and run the engine for 10 to 15 minutes.
- Drain the solution.
- Once this is complete, flush the radiator with clean water.

Table 3: Coolant Mixture Chart

Temperature	Maximum Boiling Point	Glycol Content	Water Content	Additive Content
-49° F (-45° C)	226.4° F (108° C)	58%	32%	10%
-40° F (-40° C)	225.5° F (107.5° C)	54%	36%	10%
-31° F (-35° C)	224.6° F (107° C)	50%	40%	10%
-22° F (-30° C)	223.7° F (106.5° C)	46%	44%	10%
-13° F (-25° C)	222.8° F (106° C)	42%	48%	10%
-4° F (-20° C)	221.9° F (105.5° C)	38%	52%	10%
5° F (-15° C)	221° F (105° C)	34%	56%	10%
14° F (-10° C)	220.1° F (104.5° C)	30%	60%	10%

NOTE: You may also choose to use the coolant that is recommended in the engine manufacturer's manual located at www.lzbusline.com.

BRAKE PEDAL

Adjust brake pedal clearance by loosening the locking nut of the brake pedal and adjust the adjustable nut. Measure the vertical distance with a steel strip ruler. The distance between the pedal free play position and the position at which the pressing pressure would distinctly increase should be 0.32 to 0.48 in. (8 to 12 mm). Tighten the locking nut securely after adjusting.

TIRE ROTATION

To extend the use and life of the tires, they should be rotated every 4,800 to 6,000 miles (8,000 to 10,000 km), depending on driving conditions. If there is unusual or irregular wear, the tires should be rotated immediately, as well as checking the orientation of the wheels and the dynamic balance.

The rear axles wheel skirt can be easily lifted out of the way, allowing for clear access to jack up the axles and wheel replacement.

- To lift wheel skirt, pull on each bottom skirt corner to release skirt from latch. Lift wheel skirt out of the way.
- To reposition wheel skirt, pull skirt all the way down. Push on each bottom skirt corner to secure into latch.

WINDSHIELD WASHER RESERVOIR

Maintain windshield washer reservoir level with a high quality washer fluid. Washer reservoir is located in the first left access panel under the driver's window.

NEW MOTOR COACH BREAK-IN

CAUTION

The engine must not be run at its maximum output power during the break-in period.

In order to maintain the excellent performance and efficiency of the motor coach, as well as ensure an extended service life.

Pay attention to any unusual noises, vibrations, or handling characteristics, at all times during break-in period. The mileage for the break-in period is usually 1,500 miles (2,500 km).

New Motor Coach Preparations

It is advisable to perform the following procedures:

1. Clean the motor coach.
2. Check the connections and fasteners of various components.
3. Check the coolant storage of the cooling system and look for any leakage.
4. Check the fluid levels in the engine, the gearbox, the driving axle and the steering system. If fluids are low, add the appropriate fluid being careful to not overfill.
5. Check for any leakage in each system.
6. Check to see if the brake system is normal and look for any leakage among the valves and the various pipeline connections.
7. Check the steering system for loose or blocking parts.
8. Check the electric appliances, lamps, and instruments as well as the electrolyte level in the battery.
9. Check tire pressure to ensure proper inflation.

New Motor Coach Break-in Maintenance

Perform the following procedures.

NOTE: The vehicle should be driven on well-maintained roadways during this period.

- Drive the motor coach appropriately for a new vehicle and accelerate smoothly. Do not place the motor coach in neutral when coasting. As much as possible; do not brake in an urgent manner during the break-in period.
- The speed limit during this time is less than 30 Mph. (50 Km/h). Drive the bus empty for the first 150 miles (250 km). Do not overload the bus after the 150 mile (250 km) break-in period.
- Check the fluid levels in the engine, the gearbox, the driving axle, and the steering system. If fluids are low, add the appropriate fluid, but do not overfill. Check for any leakage in each system.
- Check to see if the brake system is normal. Look for any leakage among the valves and the various pipeline connections.
- Check the steering system for loose or blocking parts
- Check the electric appliances, lamps, and instruments. Check the electrolyte level in the battery.
- Pay attention to the temperatures on the gearbox, the driving axle, the wheel hubs, and the brake discs frequently. If there is any overheating problems, find the cause and correct immediately.
- Pay special attention to the oil pressure and engine coolant temperature. They should remain in the normal range.
- Replace the engine lubricant according to the engine manufacturer's manual. The engine lubricant should be drained while the engine is hot.

NOTE: Replace the lubricant according to the recommendations in the engine manufacturer's manual located at www.lzbusline.com.

⚠ WARNING

Take extreme precautions to drain engine oil while engine is hot. The hot components or hot oil can cause severe burns which can lead to permanent injury or death.

Post New Motor Coach Break-in Maintenance

Perform the following procedures.

- Ensure proper nut and bolt torque on cylinder head, valve cover, manifold bolts, etc.
- Check the valve lash.
- Replace the lubricant in the engine, the gearbox, and the reduction final drive, as well as the filter core in the oil reservoir.
- Check the connecting positions in the steering system for any loosening or damage.
- Tighten the bolts and nuts in the front and rear suspension systems according to the specified torques.
- Check the installation and fastening of the various components in the hydraulic system of the steering mechanism. Lubricate and maintain the motor coach according to the this basic maintenance check list.
- Check for any oil, water, or air leakage within the various portions of the motor coach.

NOTE: Refer to component manufacturer's manuals for detailed information. Manuals located at www.lzbusline.com.

ENGINE COMPARTMENT

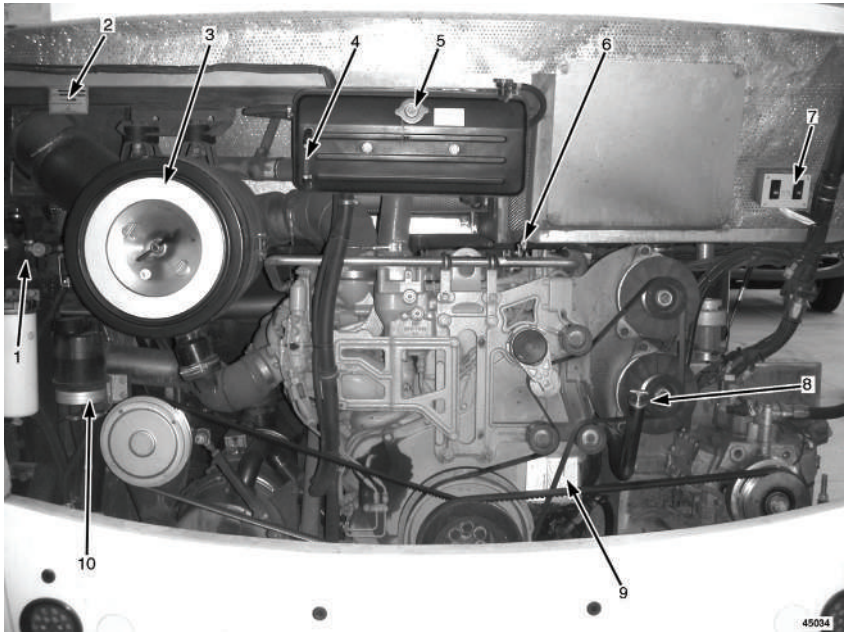


Table 4: Engine Compartment Components

Number	Item
1	Fuel/Water Separator
2	Motor Coach Chassis Plate
3	Air Filter (Inner/Outer)
4	Coolant Sight Glass
5	Coolant Fill Cap
6	Engine Oil Dipstick
7	Master Disconnect Switch/Remote Start Switch
8	Engine Oil Fill Tube
9	Engine Plate
10	Power Steering Reservoir

ENGINE OIL

The preferred engine oil is an equivalent of the American Petroleum Institute API CI-4 15W-40.

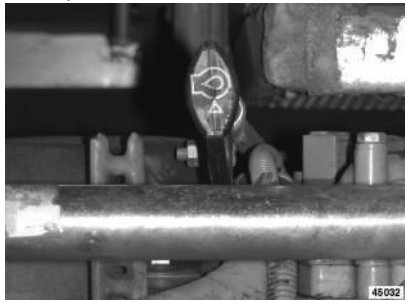
The engine oil will need to be replaced at specified intervals due to oil consumption, contamination of the oil as it flows through the engine, and the break down of chemical additives. The recommended frequency for changing the oil is approximately every 15,000 to 20,000 miles (24,000 to 32,000 km). Based on the driving conditions, quality of fuel and environmental conditions the frequency may increase or decrease based on the individual use of each motor coach.

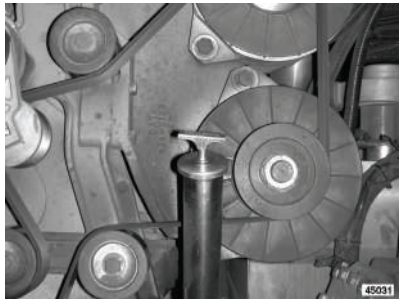
Engine Oil level

CAUTION

Never operate the engine with oil level below the ADD mark or above the FULL mark on the dipstick.

Oil dipstick and oil filler tube.





Place motor coach on level surface. Pull out dipstick and wipe it clean with a clean cloth. Insert dipstick and pull out again. The oil level should be between the ADD and the FULL marks on the dipstick.

If the oil level is too low, add oil through the oil filler tube. Bring level up to FULL mark.

Engine Oil Viscosity

Since the viscosity of the engine oil changes with the temperature, the average ambient temperature at the operating site of the engine is very important for us to choose oil viscosity grade. Occasionally, if temperature drops below the lower limit, it may reduce the cold staring capability of the engine but not cause any damage to the engine.

The engine oil with an excessively high viscosity would cause engine starting difficultly. Therefore, the ambient temperature while the engine starts is the main basis on which to choose an engine oil. You may also avoid replacement of the engine oil due to the temperature changes provided the multi-functional engine oil is used.

NOTE: Adding any additive into above-mentioned engine is unnecessary. Avoid mixing and using different types of engine oil. Performing oil changes on time is crucial.

GEAR LUBRICANT

Always use synthetic gear lubricant that conforms to the API GL5 SAE 80W-90 grade. Using the recommended brands from EATON is acceptable.

POWER STEERING LUBRICANT

Allison C-3, DEXRON-II hydraulic transmission oil should be chosen when the power steering mechanism operates under temperatures lower than 50° F (10° C); If above 50° F (10° C) then choose C-3/10W; the C-3/10W grade oil is an all-season oil in freezing zones; The C-3/30 grade oil is all-season oil in non-freezing areas.

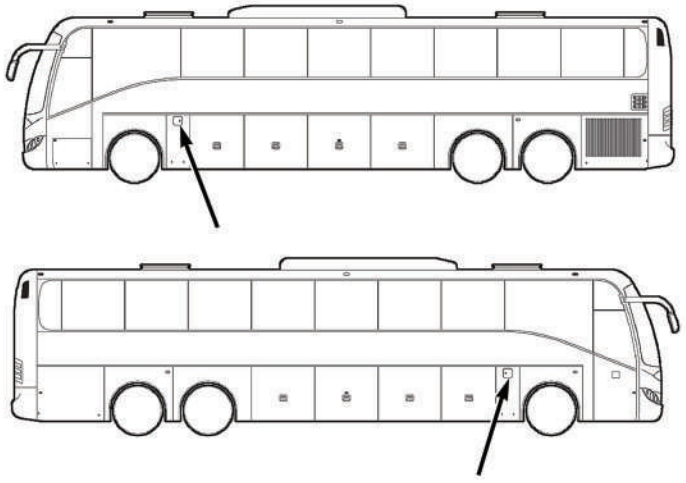
FINAL DRIVE UNIT LUBRICANT

The lubricant for reduction final drive should meet the applied conditions of the GL-5(SAE90) grade of API for the heavy load, the hyperbolic surface gear as well as meet the applied ambient temperature conditions.

CHASSIS LUBRICANT

The #2 lithium-based lubricant grease (suitable for ambient temperature of -22° to 248° F (-30° to 120° C) should be applied to the various components.

DIESEL FUEL



Fuel tank fill caps are located behind small locked panels. The small locked panels are located on both sides of motor coach. Use only high purity diesel, with a content of sulphur that is not more than 0.3 percent.

CAUTION

Avoid driving with an extremely low fuel level. Running extremely low or out of fuel could cause engine damage.

TROUBLESHOOTING

Engine

Please refer to the engine manufacturer's manual located at www.lzbusline.com.

Chassis Transmission Shaft

Table 5: Chassis Transmission Shaft

Problem	Possible Cause	Possible Solution
The transmission shaft shakes (vehicle vibrating during travel).	The sliding–fork of the transmission shaft has been improperly assembled.	Disassemble and make both the sliding–fork and fixing-fork the same level
	The transmission shaft is twisted or bent	Adjust or replace the transmission shaft
	The universal joint journal or the needle bearings have been worn down or damaged.	Replace the bearings.
	The transmission shaft is loose.	Fasten the transmission shaft according to the specified torque.

Table 5: Chassis Transmission Shaft

Problem	Possible Cause	Possible Solution
Abnormal sound from transmission shaft (There is abnormal noise during vehicle starting and traveling).	The universal coupling has been worn down or damaged.	Replace the universal coupling.
	The sliding–fork has been worn down or damaged.	Replace the sliding–fork.
	The transmission shaft has loosened.	Fasten the transmission shaft according to the specified torque.
	The needle bearings, the sliding–fork and the middle supporting bearings are not lubricated.	Lubricate.
	The obliquity of engine or rear axle changed. Technically the obliquity remains 40.	Re-adjust the obliquity of engine or rear axle.

Rear Axle

Table 6: Rear Axle

Problem	Possible Cause	Possible Solution
There is unusual noise at the rear axle (abnormal sound), when starting the engine.	The clearance between differential gears is too large.	Adjust the clearance.
	The teeth clearance between the drive and driven gear is too large.	Adjust the clearance.
	The connection between the flange and the transmission shaft is loose.	Fasten connection according to the specified torque.
	The pre-tension at the bearings of the drive gear is too small.	Adjust the pre-tension.
	The fixing bolts and nuts on the active gear wheel are loose.	Fasten them according to the specified torque.
There is unusual noise at the rear axle (abnormal sound), when steering the vehicle.	There is wear and tear or damage on the half-axle gear, the drive gear, the crossing shaft, the thrust washer, and the half-axle bearings.	Adjust or replace.
	The oil level is low.	Add lubricant.

Table 6: Rear Axle

Problem	Possible Cause	Possible Solution
There is unusual noise at the rear axle (abnormal sound), when the vehicle is moving.	The clearance between the drive and driven gear is too large.	Adjust the clearance.
	The bearings have been worn down or damaged.	Replace the bearings.
	The gears have been worn down or damaged.	Adjust or replace them.
	The oil level is too low.	Add lubricant.
There is unusual noise at the rear axle (abnormal sound), while the vehicle is on cruise.	The clearance between the drive and driven gear is too small.	Adjust the clearance.
	The bearings have been worn down or damaged.	Replace the bearings.
	The contacting position of the gear wheels is incorrect.	Adjust or replace the parts.
	The oil level is too low.	Add lubricant.

Table 6: Rear Axle

Problem	Possible Cause	Possible Solution
The lubricant in the rear axle leaks out.	The oil seal has been worn down, loosened, or damaged.	Replace the oil seal.
	The locking bolts in the differential are loose or the pad has been damaged.	Fasten them according to the specified torque. Replace the pad.
	There is damage at differential interface.	Repair it, or replace the differential housing if necessary.
	The drain screws are loose or the liner has been damaged.	Replace the liner. Fasten the drain screw according to the specified torque.
	The venting plug has been blocked or damaged.	Clean or replace the venting plug.
	There are cracks on the rear axle housing.	Repair or replace the rear axle housing.
	The sealing surface of the flange is damaged or deformed.	Adjust or replace the flange.
	The flange Radial run-outs are due to a problem with the bearings.	Replace the bearings.
	The rear-axle housing has deformed due to overload.	Adjust or replace the rear-axle housing.

Table 6: Rear Axle

Problem	Possible Cause	Possible Solution
Wheel hub bearings have been jammed.	The pre-tension at the wheel hub bearings is too tight.	Adjust the pre-tension.
	The bearings are short of lubricant, or the applied lubricant grease is incorrect.	Lubricate frequently, or replace the lubricant grease.
	The bearings have been stained by dust.	Clean and lubricate frequently.
	Water leaked in due to seal ring problem.	Replace the sealing ring.

Front Axle and Steering System

Table 7: Front Axle and Steering System

Problem	Possible Cause	Possible Solution
Steering wheel shimmy.	The bolts of the steering gear case or the steering column support are loose.	Fasten them according to the specified torque.
	The connection of the steering system has loosened.	Adjust the connection position.
	The clearance of the steering gears is too large.	Adjust the clearance.
	The wheel rim, wheel rib, and wheel are not balanced or worn out.	Balance all the parts, or replace the worn parts.
	The front wheel bearings are worn.	Replace the bearings.
	The kingpin and liner are worn out.	Adjust or replace the wrong parts.
	The steering knuckle has deformed.	Replace the steering knuckle.
	The orientation of the wheels is improper.	Check and adjust the orientation of the wheels.
	The front leaf spring fatigued, the U-bolts are loose, or the central bolts are damaged.	Replace the defective parts.

Table 7: Front Axle and Steering System

Problem	Possible Cause	Possible Solution
Steering wheel return ability failure.	Difficult to engage gear.	Adjust the gear engaging.
	The power steering system malfunctioned.	Disassemble, check, and fix the malfunction.
	The contacting of the dynamic piston is improper.	Adjust or replace the dynamic piston.
	The reaction spring is worn.	Replace the spring.
	The sliding valve has malfunctioned.	Check the diameters of the sliding valve and the shell. Replace the sliding valve or the shell if necessary.
	Caster angle is wrong.	Check and adjust the orientation of the front wheels.
	Adjusting of the front wheel orientation is incorrect.	Check and adjust the orientation of the front wheels.
Steering wheel deviation.	The front leaf spring is worn or damaged.	Replace the spring.
	The front axle is bent.	Adjust or replace the front axle.
	Braking is not smooth.	Please see brake manufacturer’s manual located at www.lzbusline.com.
	The bearing nuts at the front wheel hub are loose.	Fasten bearing nuts according to the specified torque.
	The tire air pressure is over-inflated or under-inflated.	Test and adjust pressure.
	A tire is the wrong size.	Replace the tires with correct size.

Table 7: Front Axle and Steering System

Problem	Possible Cause	Possible Solution
The wheels have been worn down unevenly or untimely.	The orientation of the front wheels is incorrect.	Check and adjust the orientation of the front wheels.
	The bearings at the wheel hub have been worn down or broken. The bearing nuts have loosened.	Replace the bearings or fasten the nuts according to the specified torque.
	The ball-head pin, the kingpin, and the bush are too loose or too tight.	Adjust or replace the faulty parts if necessary.
	The wheel inflation pressure is not correct.	Test and adjust pressure.
	The tires and the wheels are not concentric.	Replace the tires or the wheels.
	The vehicle has been suddenly accelerated or urgently braked.	Correct the driving manner.
	Overloaded	Load according to the specified capacity.

Table 7: Front Axle and Steering System

Problem	Possible Cause	Possible Solution
The steering wheel is feels heavy (resistant).	The oil level is low.	Add the lubricant to the specified level.
	The lubricant has gone bad, or there are impurities in the lubricant.	Replace the lubricant.
	The connecting joint for the steering system has worn.	Replace ball-head pin.
	The power steering system is wrong.	Disassemble, check, and eliminate the faults.
	The resistance of the lubricant flow is too high due to hollowing of the pipe route.	Measure the back pressure. If the back pressure exceeds the specified value, repair or replace the pipe. The oil pressure is low due to the hydraulic pump not working. Measure the oil pressure and branch-flow amount. If the oil pressure and branch-flow amount inclines the specified value, disassemble or repair the hydraulic pump.
	There is air in the lines.	Exhaust air and add oil.
	The rotating valve does not work.	Disassemble and repair the rotating valve.
	The dynamic oil cylinder has been worn down or damaged. The O-shaped sealing ring of the piston is damaged.	Disassemble and repair them.
	The oil-leaking amount in the steering gear shell is too large.	Disassemble and repair the steering gear shell.
	The orientation of the wheels has been improperly adjusted (caster angle too big).	Check and adjust the orientation of the wheels.

Table 7: Front Axle and Steering System

Problem	Possible Cause	Possible Solution
The steering wheel is feels heavy (resistant). (cont).	The clearance between the kingpin and the sleeve is too small.	Check and adjust the clearance.
	The thrust bearing has been oppositely installed.	Adjust the assembly.
	The parts at the front axle are short of lubricant.	Lubricate the front axle.
	The ball-connection is too tight or too loose.	Check and lubricate the ball-head pin.
	The tire inflation pressure is too low.	Increase to specified pressure.
	The wear and tear of the wheel is excessive.	Replace the wheels.
There is some overflowed oil on the steering tank.	The filter screen or the filter core has been blocked.	Clean the filter screen or replace the filter core.
	There is air in the system.	Add oil and exhaust the air.

Braking System

Table 8: Braking System

Problem	Possible Cause	Possible Solution
Brakes feel hesitant.	There is air in the breaking system.	Check and adjust the exhausting valve of the quick-release valve.
	The camshaft has been poorly lubricated or the regulating arm has been improperly position.	Adjust and lubricate necessary parts.
	The brake shoes or the reaction spring of the brake chamber have been damaged.	Replace the damaged parts.
	The spring-braking takes effect.	Eliminate the cause for the springbrake release failure.
	The exhausting outlet of the quick release valve has been blocked.	Disassemble and clean.
	The primary piston or the secondary piston of the braking valve failed to return.	Disassemble and clean the braking valve. Replace defective parts if necessary.

Table 8: Braking System

Problem	Possible Cause	Possible Solution
There is unusual noise while the brake pedal is stepped down.	The brake lining is worn/broken causing the rivets or the bolts to break.	Replace the brake lining.
	The surface of the brake lining is hard.	Replace the brake lining.
	The surface of the brake lining has gone bad.	Replace the brake lining.
	The contact between the braking shoes and the brake lining is improper.	Fasten accordingly.
	There is uneven wear and tear on the inner surface of the braking drum or the installation of the inner surface is not secure.	Adjust and fasten the brake drum.
	The anchor pins of the brake shoes are loose.	Adjust the clearance of the brake shoes and tighten the locking nuts.
	The bearings of the wheel hub have been worn down.	Replace the bearings in the wheel hub.
	The braking drum is deformed.	Check or replace the brake drum.

Table 8: Braking System

Problem	Possible Cause	Possible Solution
The braking is not stable.	The tire inflation pressure is uneven or the size of the tires is not uniform.	Operate according to the regulations. Make changes if necessary.
	The brake shoes have been improperly installed, or the reaction spring has been damaged.	Fasten the screw nuts of the anchor pins on the brake shoes and replace the reaction spring.
	The brake line has been improperly connected.	Adjust the connection of the brake line.
	The left and right brakes have been improperly adjusted.	Adjust the brakes.
	The brake line is damaged.	Replace the brake line.
	There is oil on the brake line.	Clean and inspect for leaks.
	The soleplate of the brake has been damaged.	Replace the soleplate of the brake.
	The U-shaped bolt on leaf spring is loose.	Fasten the U-shaped screw nuts.

Table 8: Braking System

Problem	Possible Cause	Possible Solution
Braking cannot be completely executed in all situations.	The air line leaks.	Repair the air line.
	The air compressor does not work.	Disassemble and repair the air compressor.
	The air pressure regulator has been improperly adjusted, or does not work due to impurities.	Adjust and clean it.
	The brake valve leaks air.	Disassemble and repair the brake valve.
	The stroke of the brake valve is too short.	Check and replace the braking valve, if necessary.
	The camshaft cannot rotate. The sleeve is short on lubricant.	Check the operating condition of the camshaft. Replace the camshaft, if necessary.
	The stroke of the thrust-rod in the brake chamber has been improperly adjusted.	Adjust the stroke.
	The sliding connection of the relay valve is improper.	Disassemble and repair it.
	The brake line is overheating or has gone bad.	Replace the friction disc.
	The engaging of the brake line is improper.	Adjust the engaging position of the friction disc.
	There would be oil on the friction disk or the brake drum.	To clean the oil stains with a suitable detergent and replace the friction disc.
	Water has gotten into the brake drum.	Apply brakes gently while driving the vehicle.

Electric Equipment

Table 9: Electric Equipment

Problem	Possible Cause	Possible Solution
The power-charging indicator lamp does not go out. Vehicle is hard to start.	Generator has been damaged.	Replace the generator.
	Short in power-charging indicator circuit.	Check the circuit.
	Belt is slipping.	Adjust the belt.
Battery power is insufficient and is not charging while vehicle runs at a low speed.	Battery has been damaged.	Service or replace the battery.
	Generator has been damaged.	Replace the generator.
	Belt is slipping.	Adjust the belt.
There is abnormal noise when the generator rotates.	The belt is too loose, needs replacing, or shakes when operating.	Adjust belt.
	The bearings have been damaged or the clearance in the bearings is too much.	Replace the bearings, or replace the generator.
Vehicle is hard to start.	The battery has no charge, an insufficient charge, or the terminals may be dirty or loosely connected.	Charge battery; ensure battery terminal connections are clean and securely fastened.
	The starter switch contacts may be dirty, there could be a short, or the starter solenoid could need replacing.	Clean, repair or replace the switch or solenoid.

Table 9: Electric Equipment

Problem	Possible Cause	Possible Solution
Engine turns over very slowly while starting.	Battery power is insufficient, terminals are loose or dirty.	Charge battery; clean, fasten, or replace terminals.
	Connecting points of the switch on the engine have been burned out and eroded. The armature shaft has bent or the copper sleeve has been burned out.	Replace switch.
	Electric brush has been worn down or elasticity of the electric brush is insufficient.	Replace brush.
	Engine has not been preheated before starting when weather is too cold/lubricant viscosity is too high.	Preheat engine or replace lubricant suitable to ambient temperature.
Starting gear and starter ring gear do not engage.	Igniting switch contact is bad or loose.	Clean/refasten the contact.
	Relay wiring and the electromagnetic switch is loose.	Secure wiring.
	Starter solenoid winding is broken.	Replace solenoid winding.
	Starter starting gear or starter ring gear has been damaged.	Repair teeth, replace gear.
	Synchromesh gear damaged.	Repair/replace gear.
	Starter armature shaft is bent.	Replace armature shaft.

Table 9: Electric Equipment

Problem	Possible Cause	Possible Solution
The starting gear of the starter remains engaged.	The shaft sleeve of the starting gear is too tight/jammed.	Replace, clean, and correct the shaft sleeve.
	Too little clearance between the starting gear and the flywheel tooth ring, or starter gears have been damaged.	Adjust the clearance or replace the starting gear.
	The solenoid winding is dirty.	Clean winding.
	The transmission fork-shaft has been jammed.	Clean/adjust the transmission fork shaft.
	The synchromesh gear has been jammed.	Replace synchromesh gear.

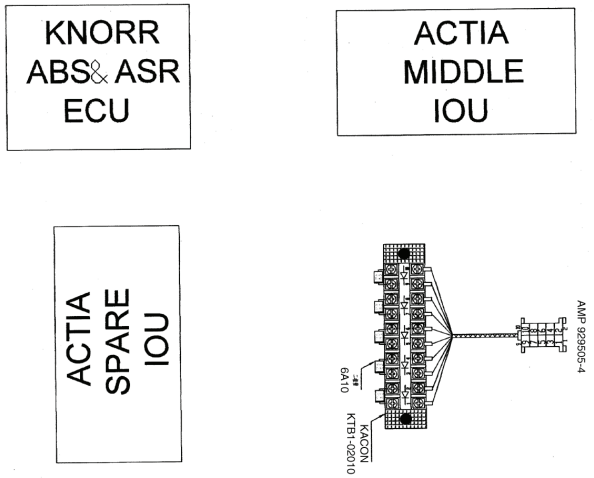
EMERGENCY STARTING USING JUMPER CABLES

WARNING

The following procedures must be performed exactly as outlined, otherwise a fire or a battery explosion could result in property damage, personal injury, or death.

1. Do not allow metal tools to contact positive terminal of battery to prevent shorting of the electrical system.
2. Place transmission in Neutral and set parking brake in both vehicles.
3. Shut off lights, heater, air conditioner and any other electrical loads in both vehicles.
4. Wear eye protection.
5. Make sure vehicle bodies are not touching.
6. Connect one of the first jumper cables to the positive terminal of the dead battery and then other end to the positive terminal of the booster battery.
7. Connect one of the second jumper cables to the negative terminal of the booster battery and then other end to the chassis of the dead battery vehicle.
8. Reverse above procedure when removing the jumper cables.

FUSE PANEL



DVD Player 1	TV 1	Actia Dash	Ignition Key	Actia Front IOU 1	Actia Middle IOU 1	Acita Rear IOU 1	Water Heater 1	Water Heater 2	Water Heater 3
308	315	DA	1b	FB	MB	RB	H11	H13	H14
10A	15A	10A	10A	20A	20A	15A	5A	25A	25A
300	300	300	300	300	300	300	300	300	300
300	300	300	300	300	300				
30A	10A	10A	10A	10A	20A	15A	15A	20A	20A
A16	E55	E52	E53	E48	E77				
KNORR ABS 1	Engine ECM 1	Engine ECM 2	Engine ECM 3	Engine ECM 4	Engine ECM 5	Spare Fuse 1	Spare Fuse 2	Spare Fuse 3	Spare Fuse 4

TV 2	Interior Light	W/S Wiper	Sun Visor	Reading Light	Head Light	DVD Player 2	Toilet	Driver Light	Radiator Fan Clutch
301	302	303	304	305	306	307	309	312	FS
15A	15A	10A	10A	10A	30A	10A	20A	5A	10A
150	150	150	150	150	150	150	150	150	150
150	150	150	150	150	150	150	150	27a	
5A	10A	10A	5A	5A	30A	20A	25A	5A	5A
A3	313	314	319	322	FA	MA	RA	27c	
KNORR ABS 2	Back View Mirror	Venti-lation	Back View Mirror	Eaton VORAD	Actia Front IOU 2	Actia Middle IOU 2	Acita Rear IOU 2	Engine Ignition Power	Spare Fuse 6

Engine Brake Relay 1	Engine Brake Relay 2	Engine Brake Relay 3	Engine Coolant Level Relay	ABS Interlock Relay	Fan Clutch Relay 1	Fan Clutch Relay 2	Brake Input Relay	Engine Starter Relay	Ignition Relay	Door Power Relay	Toilet Power Relay

45011

WARNING

Electrical circuits are designed with a particular wire gauge to meet the fuse and circuit breaker current rating. Do not increase the size of fuse or circuit breaker, or change type of breaker supplied with your motor coach. To do so could cause wiring to overheat and possibly burn, resulting in a fire which could cause property damage, personal injury or death.

CAUTION

No modification should be made to any motor coach control system without first contacting your LZ dealer.

Fuse panel can be found on wall at the rear of the luggage bay. Refer to the schematic located on the fuse panel cover.

SCHEDULED MAINTENANCE

GENERAL INFORMATION

Maintenance must be performed to keep your motorcoach in good operating condition. It is necessary to perform maintenance checks, inspections, lubrication, cleaning, or other types of service. Regular maintenance helps avoid potential problems and may help correct problems before they become serious.

The following maintenance schedule is arranged into mileage intervals. The intervals listed are the maximum mileage intervals and should not be exceeded. If your motorcoach is operated in a hilly terrain, or in a dusty or sandy environment, you may need to reduce the time between scheduled maintenance intervals. The maintenance schedule may be copied and used as a checkoff sheet.

NOTE: Perform maintenance at whichever interval occurs first. When reaching a particular level, inspect and perform all previous maintenance items that may be due.

COMPONENT MANUFACTURER REFERRAL

The following maintenance schedule is supplied as a guideline. Refer to each Original Equipment Manufacturers (OEM) maintenance manual for the most updated and accurate information. This information is readily available at www.lzbusline.com. Check www.lzbusline.com for additional operation and maintenance services that may apply.

OEM List

- CATERPILLAR® C13 ENGINE
- EATON ULTRASHIFT® TRANSMISSION
- BENDIX® DISC BRAKES
- ZF AXLES
- MERITOR® ABS/ATC
- PRESTLITE® ALTERNATORS
- AIT HVAC
- ACTIA® MULTIPLEX
- ALCOA® RIMS
- MICHELIN® TIRES
- JVC® DVD/CD/RADIO
- PUBLIC ADDRESS SYSTEM

2,400 MILE (4,000 km) MAINTENANCE INTERVAL

This maintenance interval includes the 2,400 mile (4,000 km) maintenance items.

Table 1: 2,400 Mile (4,000 km) Maintenance Interval

Item	Check	Clean	Lubricate	Replace
Accelerating and decelerating performances.	X			
Engine exhaust system.	X			
Leakage of air, fuel, lubricants, and coolant.	X			
Lubricant levels and cleanliness.	X			
Clean out the sediment in the fuel pre-filter.		X		
Check belts for damage and tension.	X			
Free play in the brake pedal.	X			
Oil leakage in the steering mechanism and all power steering hydraulic lines. Power steering fluid/filter change intervals every 70,000 miles (112,655 km) is acceptable.	X			
Oil leakage in the reduction final drive unit.	X			
Clean the front and rear axles as well as the wheel assembly.		X		
Check axle oil levels.	X			
Torque of the various nuts/bolts in the steering system.	X			
Free play of the steering wheel.	X			
Torque of the steering gear.	X			
Braking efficiency and the parking springs.	X			

Table 1: 2,400 Mile (4,000 km) Maintenance Interval

Item	Check	Clean	Lubricate	Replace
Air leakage, damage, and connection condition in the soft and hard lines of the brake system.	X			
Torque of the connecting bolts on the flange of the transmission crossing shaft.	X			
Torque of the half-axle bolts.	X			
Air pressure of the tires. Front axle 115 psi. Drive axle 90 psi. Tag axle 95 psi. Spare 115 psi.	X			
Torque of the bolts and nuts on the wheels. 410 to 480 lb ft (550 to 650 Nm)	X			
Unusual wear and tear on the tires.	X			
Torque of the battery terminals and add distilled water to batteries as needed.	X			
Torque of the connecting bolts on the chassis frame.	X			

4,800 MILE (8,000 km) MAINTENANCE INTERVAL

This maintenance interval includes the 4,800 mile (8,000 km) maintenance items.

Table 2: 4,800 Mile (8,000 km) Maintenance Interval

Item	Check	Clean	Lubricate	Replace
Clean/replace the core of the air cleaner/filter. After initial service, 5,000 mile (8,047 km) intervals is acceptable.		X		X
Inspect complete brake system operation.	X			
Lubricate slack adjusters, if applicable.			X	
Transmission and wet clutch service. See manufacturer's manual at www.lzbusline.com for additional information.	X			

7,200 MILE (12,000 km) MAINTENANCE INTERVAL

This maintenance interval includes the 7,200 mile (12,000 km) maintenance items.

Table 3: 7,200 Mile (12,000 km) Maintenance Interval

Items	Check	Clean	Lubricate	Replace
Fuel filter and the oil-water separator.				X
Lubricant level of the reduction final drive and clean the ventilation plug.	X	X		
Driveshaft U-joint and slip-joint every 10,000 miles (16,093 km).	X			
Check for any loosening, or damage with the connecting components of the steering gear.	X			
Check the tightness of the various components in the hydraulic system.	X			
Check tightness and operation of the cross-shaft bearings on the transmission shaft and on the flange nuts.	X			
Check tires for irregular wear.	X			
Lubricate the various lubricating points of the coach. After initial lubrication, 50,000 mile (80,467 km) intervals is acceptable.			X	
First Aid kit should be replenished every 10,000 miles (16,093 km).				X

14,400 MILE (24,000 km) MAINTENANCE INTERVAL

This maintenance interval includes the 14,400 mile (24,000 km) maintenance items.

Table 4: 14,400 Mile (24,000 km) Maintenance Interval

Item	Check	Clean	Lubricate	Replace
Check final drive unit fluid level and condition. After initial check; 250,000 mile (402,337 km) interval fluid change is acceptable.	X			
Inspect the hydraulic oil in the power steering system as well as the filter core in the oil reservoir. 70,000 mile (112,654 km) intervals to change filter & fluid is acceptable.	X			
Check the wear of the brake disc and the brake pad lining.	X			
Check air compressor operation.	X			

21,600 MILE (36,000 km) MAINTENANCE INTERVAL

This maintenance interval includes the 21,600 mile (36,000 km) maintenance items.

Table 5: 21,600 Mile (36,000 km) Maintenance Interval

Item	Check	Clean	Lubricate	Replace
Check the condition of shock absorbers.	X			
Inspect engine belt tensioner operation. After initial inspection, 25,000 mile (40,233 km) intervals is acceptable. Daily belt tension check is required.	X			
Check the operation & condition of the oil-feed pump.	X			
Check the operating condition of the temperature regulator.	X			
Check the operating conditions of the various bearings of the steering gear, the reduction final drive, and the bearings of the rear axle.	X			
Check the steering gear clearance and inspect for leakage.	X			
Check for any wear or damage in the connecting portion of the tie rod and the steering knuckle arm.	X			
Check for any cracks on the steering knuckle, steering knuckle arm, and the connecting portion between them.	X			
Check the clearance between the steering knuckle and front axle.	X			
Check tires for abnormal wear.	X			
Check the steering angles of the front wheels.	X			
Check the hydraulic oil pump.	X			
Check the sealing efficiency of the brake valve as well as all other valves.	X			

Table 5: 21,600 Mile (36,000 km) Maintenance Interval

Item	Check	Clean	Lubricate	Replace
Check the wheel braking chambers. After initial inspection, 100,000 mile (160,935 km) interval inspection is acceptable.	X			
Check the operating condition of the air dryer.	X			
Check for any cracks on the welding seams of the chassis frame, body structure and all other welded components. Check the tightness of the connecting bolts and the rivets.	X			
Check oil cooler flow and temperature every 25,000 miles (40,233 km).	X			

48,000 MILE (80,000 km) MAINTENANCE INTERVAL

This maintenance interval includes the 48,000 mile (80,000 km) maintenance items.

Table 6: 48,000 Mile (80,000 km) Maintenance Interval

Item	Check	Clean	Lubricate	Replace
Disassemble, clean and lubricate parking brake control valves.		X	X	
Inspect accelerator pedal assembly every 48,000 mile (80,000 km).	X			
Check function of shock absorbers.	X			
Disassemble and check the parking and service brakes.	X			
Grease axle bearings.			X	

WARRANTY/CUSTOMER ASSISTANCE

CUSTOMER ASSISTANCE

Users should strictly adhere to operating manual recommendations. Detailed warranty information is contained in the warranty supplements delivered with the vehicle. Also see the Vehicle Identification Number (VIN) specific warranty information for your motor coach available at www.lzbusline.com.

LZ Busline, LLC

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MO 63017
Tel:314-579-9649
Fax: 314-878-6668

www.lzbusline.com

PRODUCT WARRANTY

LZ Busline, LLC
WARRANTY POLICY

Limited Warranty

We encourage owners and operators of coaches sold by LZ Busline, LLC. (hereinafter shown as “LZ”) to review this Limited Warranty. Buyers submitting claims to LZ should have a clear knowledge of the Limited Warranty coverage. The Buyer expressly accepts this warranty as the sole warranty applicable to any new LZ coach sold. PRODUCT IMPROVEMENT, SERVICE INFORMATION, FIELD CHANGE, or CAMPAIGN PROGRAMS.

LZ publishes Product Improvement, Service Information Bulletins, and Field Change Programs. When published, these bulletins and programs will be posted online at www.lzbusline.com and also distributed to the buyer on file with LZ.

Limited Warranty Statement

THIS LIMITED WARRANTY IS FINAL, COMPLETE AND EXCLUSIVE. THIS LIMITED WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, WHICH ARE HEREBY DISCLAIMED AND EXCLUDED BY LZ, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, INCLUDING BUT NOT LIMITED TO ANY AND ALL OBLIGATIONS OR LIABILITIES ON THE PART OF LZ FOR DAMAGES ARISING OUT OF, OR IN CONNECTION WITH THE USE, REPAIR, OR PERFORMANCE OF THE COACHES, TO THE EXTENT ALLOWED BY LAW. LZ SHALL NOT BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES. IN ADDITION, THE CUSTOMER WAIVES ALL LIABILITY OF LZ FOR COMMERCIAL OR PERSONAL CONSEQUENTIAL AND INCIDENTAL DAMAGES ARISING FROM CONTRACT, NEGLIGENCE, OR STRICT LIABILITY IN TORT. LZ NEITHER ASSUMES, NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT, ANY OTHER OBLIGATION, OR LIABILITY IN CONNECTION WITH SUCH COACHES.

This limited warranty is issued to the original buyer and will be transferred to subsequent owners only following an inspection of the coach by a qualified LZ Technician and the payment of a three hundred-fifty dollar ($350.00) transfer fee. The inspection must be done within 60 days of the sale of the coach. Subsequent owners will be charged for this inspection. Coaches receiving a transferred limited warranty will carry the remaining time of the original Limited Warranty.

Limited Warranty Coverage

LZ Bus' sole obligation and Customer's EXCLUSIVE REMEDY is limited to reimbursing Customer for the part(s) found to be defective in items manufactured by LZ Bus. LZ Bus may at its option, furnish replacement part(s) for any such defective part(s) to Customer and/or to reimburse Customer for reasonable direct labor cost involved in removing and repairing or replacing any such part(s) which after examination disclose to LZ Bus's reasonable judgment to be thus defective within the time period or mileage, whichever comes first, as specified in the Coverage Schedule. LZ Bus will reimburse the Customer for costs incurred in the removal and replacement of defective part(s) based on the number of labor hours designated in an industry standard Labor Time Guide. Guidelines for such work at the Current warranty labor rate of $75/hr. All parts will be paid for prior to shipment. Upon receipt of the Warranty cliam form and defective parts at the Chesterfield, MO location all approved claims will be reimbursed.

Note:
Valid warranty claims must be filed and sent to LZ Bus within 30 days of the failure date.

No labor will be reimbursed unless the failed part is returned to LZ Bus within 30 days

Limited Warranty Coverage Schedule

Table 1: Limited Warranty Coverage Schedule

Item	Limited Warranty	Period (Months)	Mileage (MI)	Parts	Labor
General Coach	X	24	200,000	100%	100%
Structural Integrity	X	24	200,000	100%	100%
HVAC Systems	X	24	200,000	100%	100%

NOTES:

- Limited Warranty is for the time (Months) or mileage (MI), whichever occurs first from the in-service date, as evidenced on the new coach acceptance form completed at time of delivery to Owner.
- Repairs under warranty are to be performed by a pre-authorized facility at LZ's sole discretion or by an authorized dealer of the failed part manufacturer. Owner is entitled to perform the warranty repair/replacement when qualified through appropriate training, service literature and service tools, as authorized by LZ at its sole discretion.
- If a LZ Service Center makes repairs, a reasonable time is to be allowed.
- Limited Warranty Coverage does not apply to outside manufacturer- or dealer-installed options.
- Warranty on the replacement part is limited to the remaining period/mileage of the original part.
- Add on options are subject to the original warranty from the Supplier.

Limited Engine And Transmission Coverage

Engine/Transmission Warranties are provided by Engine/Transmission Manufacturers ONLY.

Engine and transmission warranty service should be obtained directly from the appropriate engine- or transmission-authorized dealer or distributor, which may be a LZ location. Refer to their Engine/Transmission manuals for the proper procedures.

- For CATERPILLAR engine and transmission information and assistance 24 hours a day, 7 days a week, call 1-800-447-4986 and have your engine serial number available when you call.
- For CUMMINS engine information and assistance 24 hours a day, 7 days a week, call 1-800-DIESELS (1-800-343-7357).
- For EATON transmission information and assistance 24 hours a day, 7 days a week, call 1-800-826-HELP (4357).

Extended Coverage

If not obtained at time of purchase, engine and transmission extended coverage may be purchased through the manufacturer's dealer or distributor within the following time frame:

Table 2: Extended Coverage Schedule

Manufacturer	Duration
Cummins Engine	Within the first 90 days
Caterpillar Engine and Transmission	Within the first 12 months

Paint

- If paint repairs are to be made, and the cost estimate exceeds $300, pre-authorization from LZ is required.
- For such repairs, submit a complete estimate with pictures and a completed Warranty Claim Form to LZ Busline, LLC, 167 Lamp and Lantern Village,No. 125, St. Louis,MO 63017.
- Upon approval, LZ reserves the right to examine the repair or send a technician to observe the repair.

Limited Warranty Shall Not Apply To:

- Failures to observe or follow applicable manuals and directives, including engine operation and maintenance manuals, transmission operation and service manuals, and any other manuals or manufacturer's directives, including normal maintenance schedules and/or intervals or lack of maintenance.
- Any misuse, negligence, alteration(s), accident, etc., other than normal commercial use, over-speeding or loading beyond the applicable weight ratings, or any other conditions that, in LZ's sole discretion, affect adversely the coach's performance and reliability.
- Any aftermarket or other part or modification not supplied to Customer with the coach or resulting from conversion or installation of non-LZ equipment and part(s).
- Normal maintenance services (such as engine tune-up, fuel and cooling system, cleaning, brake adjustments and wheel alignment and balancing) or any replacement parts specified in the maintenance manual or instructions, such as hoses, belts, seals and filter elements and lubricants (used in connection with normal maintenance services) or lubricants, anti-freeze or all maintenance items used in the repairs or replacements of defective parts.
- The normal wear and tear of parts such as, but not limited to, tires, batteries, clutches, brake linings, brake rotors, shock absorbers, voltage regulators, wiper blades, and air cushions.
- Glass breakage.
- Any parts which are modified or rebuilt without prior written approval by LZ.
- Damage to another part or parts of the vehicle or greater damage to the defective part, resulting from a non-remedied defect or continued driving.
- Damage as a result of the use of unapproved lubricants and/or cooling mixture (antifreeze and anti corrosion additives) or the release of lubricants.
- A repeated repair job as a consequence of wrong diagnosis or poor workmanship.
- Any indirect costs and expenses such as, but not limited to, towing, overtime premium, call-out and hire-in, mileage, downtime expenses, replacement vehicles, diagnosis, test rides, cleaning material, travel expenses, bills for hotels, meals, fax and phone, delivery of the defective part or coach to the repair facility, loss of time, inconvenience, loss of use of the coach, or lost profits or revenues.
- Any coach on which odometer mileage has been changed.
- Damage from the environment, including airborne fallout (chemicals, tree sap, etc.) salt, hail, windstorm, lightening, etc.
- Normal deterioration of soft trim and appearance items due to wear and exposure.
- Paint deterioration or damage due to the use of aggressive cleaning detergents, chemicals, and agents derived from petroleum products not released for motor vehicles.
- Any coach registered and normally operated outside the United States of America or Canada.

Limited Warranty is offered in accordance with the applicable manufacturer's standard engine and transmission procedures in the USA and Canada.

Contact your nearest engine and transmission dealer for additional detailed information on their Limited Warranty.

Customer's Responsibility

- Maintain the coach properly (observing maintenance schedules/ intervals) using all appropriate manuals and bulletins, such as engine, transmission, A/C, and accessory operating, service and maintenance manuals (and any other pertinent manuals or manufacturer communications).
- Carry out normal service tasks such as (but not limited to) headlight adjustment, wheel balance and alignment, brake adjustment, door adjustment/alignment, and all normal fitting, bolt and nut tightening and securing.
- Furnish all normal consumable and service items such as (but not limited to) filters, hoses, belts, seals, fluids, fuses, bulbs, wipers and blades, brake and clutch linings, diaphragms, shocks and other normal wear items.
- Insure that all wiring, lines and hoses are properly maintained and routed.
- Pay all costs required for tasks such as (but not limited to) temporary or minor repairs, repairs required by poor installation or lack of proper care, misdiagnosis, consequent damage to other parts, increased damage because of repair delay, use of improper or unapproved fluids, or improper repair and diagnosis.
- Pay all costs required for normal maintenance and service such as (but not limited to) meals/lodging/travel time, towing, vehicle rental, lost operating time and profit/revenue, and any other such costs incurred.
- Record and preserve repair, service and maintenance records to be able to provide documentation of any submitted warranty claim.

Return all parts to

LZ Busline, LLC
167 Lamp and Lantern Village,
No. 125, St. Louis,MO 63017

or as instructed by LZ. No warranty claim will be approved unless failed parts are received by LZ within thirty (30) days from the claim date. If a failed part is not returned, customer will be billed for the new part and no repair labor cost will be reimbursed.

This list is not intended to be complete nor to represent all customer responsibilities. Customers should use good judgement in all warranty matters.

Obtaining Warranty Service

Any time you may think you have a warranty issue with a LZ motor coach,

1.Have your coach's VIN, in-service date, actual mileage and customer name handy.

2.Go online to "lzbusline.com" using your customer log-in and fill out a warranty claim form, OR

3.Call 314-45BYLZ (314-579-9649) during business hours, ask for "warranty," and speak directly to a qualified LZ warranty specialist.

4.If parts are shipped to you, a warranty claim form tag and return shipping label will accompany each part. You must complete this warranty claim form tag for each part and return it with each warranted part to LZ within 30 days.

Warranty Parts Handling

LZ shall provide the replacement parts at "No Charge" to the OWNER PENDING THE SETTLEMENT OF THE CLAIM. Accompanying each part will be a (1) warranty claim form tag and a (2) return shipping label. Any and all parts replaced in warranty must be tagged with a completed warranty claim form tag and returned within 30 days after filing a claim with LZ, using that shipping label. In the event the failed part is not returned within 30 days, the Buyer will be billed for the new part that was originally supplied at "No Charge." Parts that are replaced at "No Charge" in warranty that prove not to be defective will be returned and CHARGED BACK TO THE OWNER.

Shipping Charges For Warranty Parts

All warranty replacement parts will be shipped by prepaid ground freight. If requested from the customer and authorized by LZ Customer Care Representative, the part(s) may be expedited with special delivery from a LZ location to a repair facility if the coach is in an Emergency Coach Down situation, as determined by LZ in its sole discretion, and in need of emergency warranty parts to make it drivable. This is covered by warranty only when authorized by a LZ Customer Care Representative.

Product Improvement, Service Information, Field Change Or Campaign Programs

LZ publishes Product Improvement, Service Information Bulletins, and Field Change Programs. When published, these bulletins and programs will be posted online at www.lzbusline.com and also distributed to the Buyer on file with LZ.

Product Improvement Bulletins go to the registered Owner and will detail the new improvements made to coaches in production. Should the Owner wish to update its coaches, sufficient information will be available to accomplish the improvement. Product improvements are to be applied to the coach at the Owner's option and expense.

Service Information Bulletins go to the registered Owner. They will cover a variety of topics that will help the Owner better maintain the coach with the most up-to-date information available.

Field Change or Campaign Programs. These may be necessary to make corrections or improvements to the coaches to ensure maintenance of satisfactory standards and compliance with applicable laws. When this occurs, the LZ Service Department will notify the Owner. The Field Changes should be made as soon as possible after receiving this notice. Instructions for claiming repair expenses shall be set forth in the applicable bulletins of the Field Change or Campaign Programs.

FALCON 45 MOTOR COACH

167 Lamp and Lantern Village,

No. 125, St. Louis, MO 63017

Tel.: 314-579-9649

Fax: 314-878-6668