Smith Newton
Owner's Manual
Gen 1

North American Market

CD-0650-0015r1 September 7, 2012
(Supersedes Version 02 December 03 2009)

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1. Introduction

To ensure you are fully aware of safety and operational information, the following symbols are used throughout this manual.

NOTICE
Situations not related to personal injury.

WARNING
Indicates a hazardous situation which, if not avoided, could result in death or serious injury

CAUTION
Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice. No part of this publication may be reproduced or transmitted, in any form by any means; electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher. This includes text, pictures and tables.

This manual has been produced and is intended as a complement to the Avia Ashok Leyland Motors Original Owners Manual. To become familiar with the vehicle, it is necessary to read and understand this manual, the Avia Manual and all additional literature that is part of your vehicle's documentation pack (e.g. Owner's manuals for Tail lift, Radio and Back-Up camera, etc.).

It is your responsibility to ensure that all the documentation stays with the vehicle.

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2. Safety Notices and Instructions

WARNING
Never attempt to open a battery pack. This vehicle uses a battery pack that operates at 320 volts DC.

WARNING
Never attempt to remove, unplug or cut any of the ORANGE marked cables or conduit. Orange marked cables carry high voltage.

WARNING
Only authorized personnel are allowed to work on the electrical power and/or control systems.

CAUTION
DO NOT perform any welding work on the vehicle without permission from* Smith Electric Vehicles. *Serious damage can be caused to the drive train and the electronic control systems.

CAUTION
Hazardous Location Warning: It may not be appropriate to drive or operate this electric vehicle in special occupancies, classified locations, or hazardous locations as defined by the National Electrical Code, Section 1.

CAUTION
EMF/EMC WARNING: Potential electromagnetic field or electromagnetic charge around this electrical vehicle may impact medical electronic devices.

The vehicle is fitted with a High Voltage Isolator that removes the power to the controller. This isolator is located between the seats on the control panel (Figure 2.1).

Figure 2.1

Do not operate the High Voltage Isolator while vehicle is in motion! If the High Voltage Isolator is initiated when the vehicle is in motion, the steering will become stiff and the vehicle will continue to roll. The regenerative braking system will not assist braking. The service brake will operate until air is depleted, then the service brake will cease to work. The vehicle can then only be brought to rest with use of the parking brake lever. Use of the park brake will affect braking on the rear wheels only; this will be **uncontrolled and the brake will remain on until air system is charged.**
Do not reset the high voltage isolator until the emergency situation has passed. The high voltage isolator is 'reset' by returning the red switch cover to the RUN position i.e. covering the switch, and re-starting the vehicle in the normal manner.

CAUTION
Do not activate the isolator switch in the cabin while vehicle is in motion since this will result in total loss of power and significant increase in effort to control the vehicle when moving.

CAUTION
Always switch off ignition before operating High Voltage Isolator

The power from the **traction batteries** can be **isolated** by switches located on each of the battery pods by following this procedure:

1. Remove the ignition key.
2. Turn the 24V System Isolator Switch to the ISOLATED (VERTICAL) position. This switch is located on the driver's side of the vehicle behind the cabin on the 2x12V battery tray (Figure 2.2).

Figure 2.2

3. Turn the High Voltage Isolator switches on both battery pods to their ISOLATED (VERTICAL) positions.
    a. There is one High Voltage Isolator Switch on each of the battery pods for the 40kWh and 80kWh systems (Figure 2.3).
    b. There are 2 High Voltage Isolator Switches on each of the battery pods for the 120kWh system (Figure 2.4).

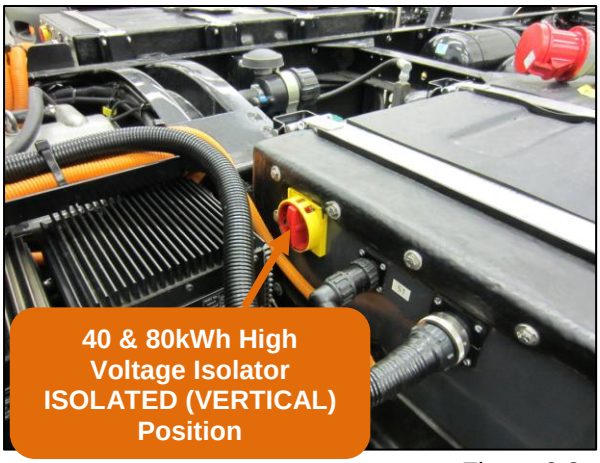

Figure 2.3

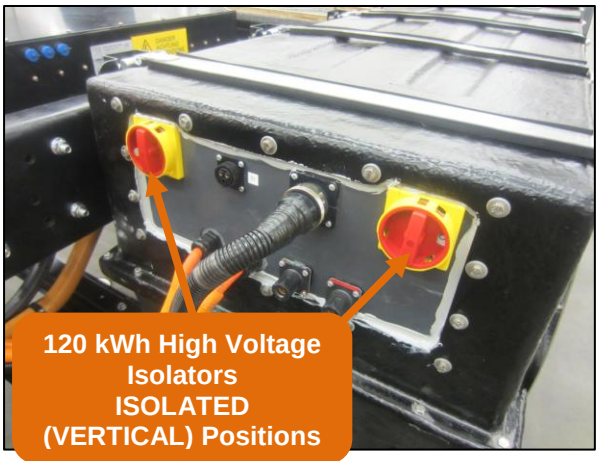

Figure 2.4

4. The High Voltage Isolator switches are equipped with aligning clearance holes designed for the ability to lock the switches in their ISOLATED (VERTICAL) positions. Follow normal "lock-out, tag-out" practices. (Figure 2.5).

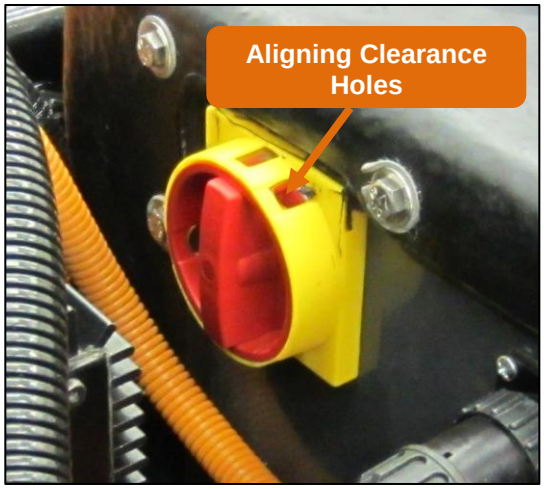

Figure 2.5

5. The High Voltage Battery system is now isolated.

CAUTION
The high voltage battery pods will remain live even when isolated. The leads and connectors on the pods will not be live if the pods are isolated.

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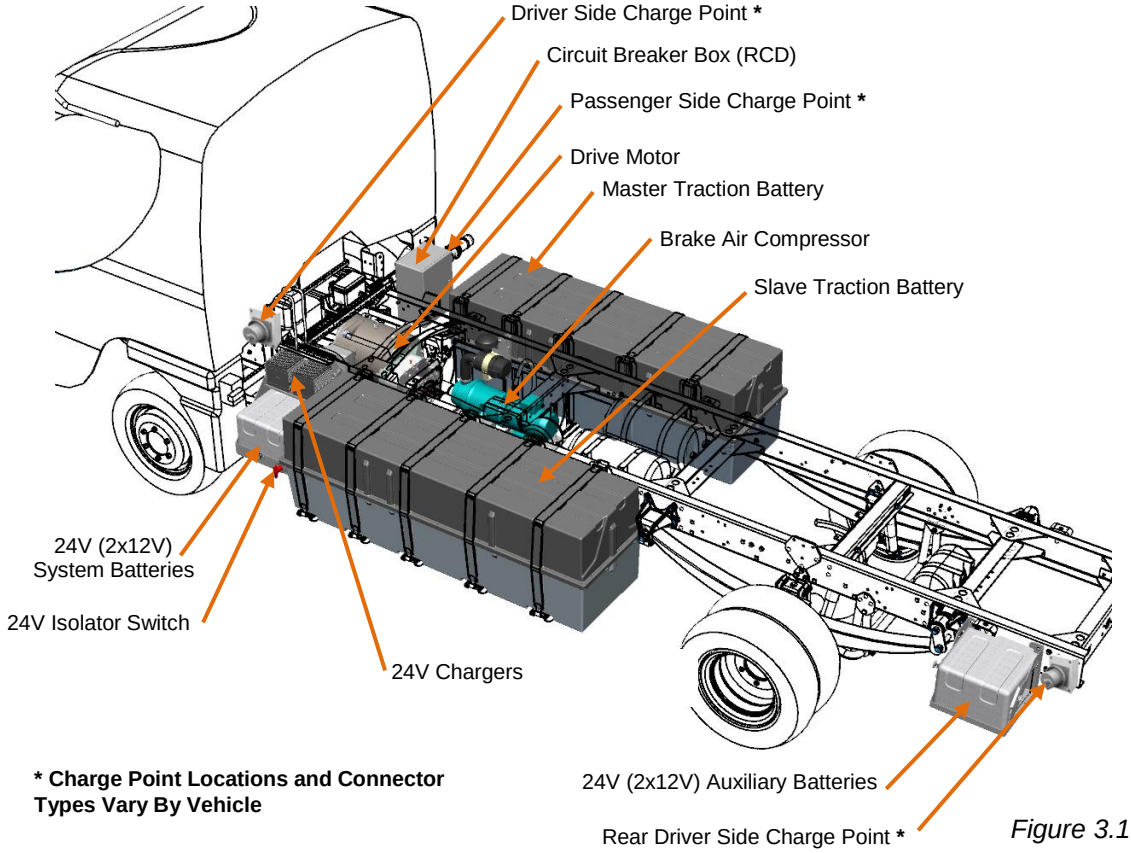
3. Vehicle Layout

Motor	120kW, AC Induction, Water Cooled
Controller	Vector control AC system providing variable speed regenerative braking.
Batteries	Lithium Ion Iron Phosphate (Li Fe PH_4)
Charger	Fully automatic, onboard 208v to 240v
Steering	Hydraulic, power-assisted mono-block type.
Suspension	Front & Rear: Parabolic springs with transverse torsion bar stabilizer, hydraulic double acting shock absorbers.
Brakes	4-Wheel ABS, Full air system with air dryer. Front Brakes: Disc brakes. Rear Brakes: Disc brakes with load sensing device. Parking Brake: Fail safe spring operated park brakes acting on rear axle.
Chassis	Ladder type, cold riveted and bolted construction with U-section side members and open profile cross members.
Wheels	17.5 x 6.0 steel rims (7.5t & 10t std.) 17.5 x 6.75 steel rims (12t std.) 19.5 x 6.75 steel rims (12t opt.)
Tires	Goodyear 225/75R 17.5 (7.5 & 10t std.) Goodyear 245/70R 17.5 (12t std.) Goodyear 245/70R 19.5 (12t opt.) All tire pressures should be maintained to pressure indicated on door frame placard.
Control Voltage	24 Volt negative ground system
Cab	All steel, forward control, two door cab with hydraulic tilt. Double zinc coated pressed steel panels with wax injected cavities. Plastic cladding panels on front. Noise and thermal insulation.
Cab Suspension	Front mounting points on rubber bushings. Two point rear cab system with coil springs and hydraulic shock absorbers and automatic hydraulic lock down device.
Interior	Adjustable driver seat, dual passenger seat Storage shelf above windshield Storage bin on rear wall Door pockets Hinge out document bin Cup holder Clock Stereo CD

Main Drive Components



*** Charge Point Locations and Connector Types Vary By Vehicle**

Figure 3.1

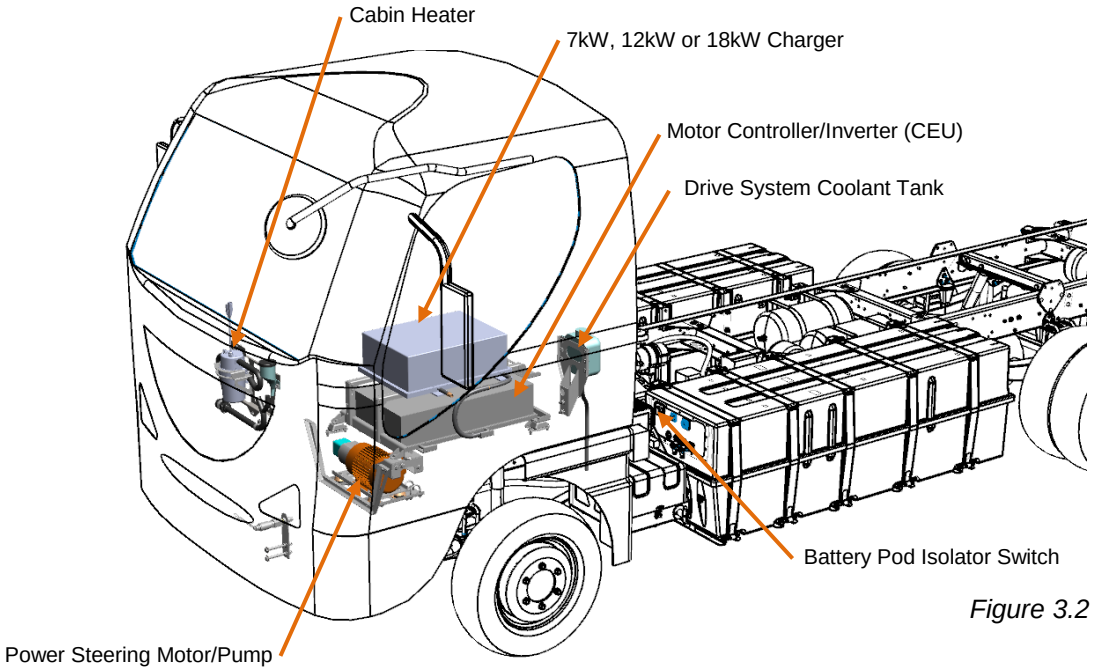


Figure 3.2

4. Controls and Display

The controls on the dashboard and steering column are outlined in the Avia Ashok Leyland owner's manual. Different to a conventional vehicle, this vehicle is equipped with an electric cabin heater. See **Section 8**.

The vehicle Drive Controls are located next to the driver's seat in the middle console (Figure 4.1).

High Voltage Isolator
Disconnects the high voltage supply to the drive system when switched.

Regenerative Braking Switch
Activate or deactivate regenerative braking.

Drive Selector
Drive, Neutral and Reverse

3 LEDs
Drive
Neutral
Reverse

Figure 4.1

The Vehicle Information Display (may be referred to as the OPUS Display) is mounted above the front windshield on the driver's side. (Figure 4.2)

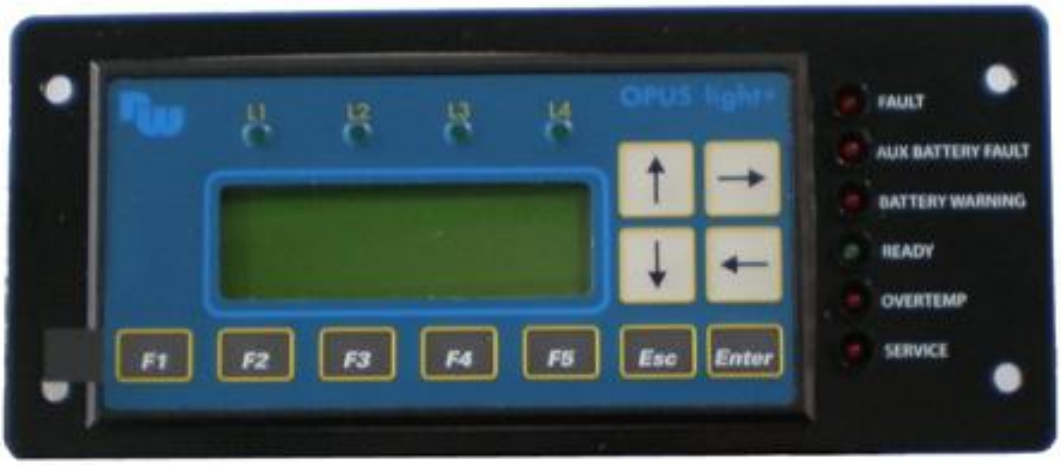


Figure 4.2

The LCD portion of the Vehicle Information Display provides information on the High Voltage Traction Battery System.

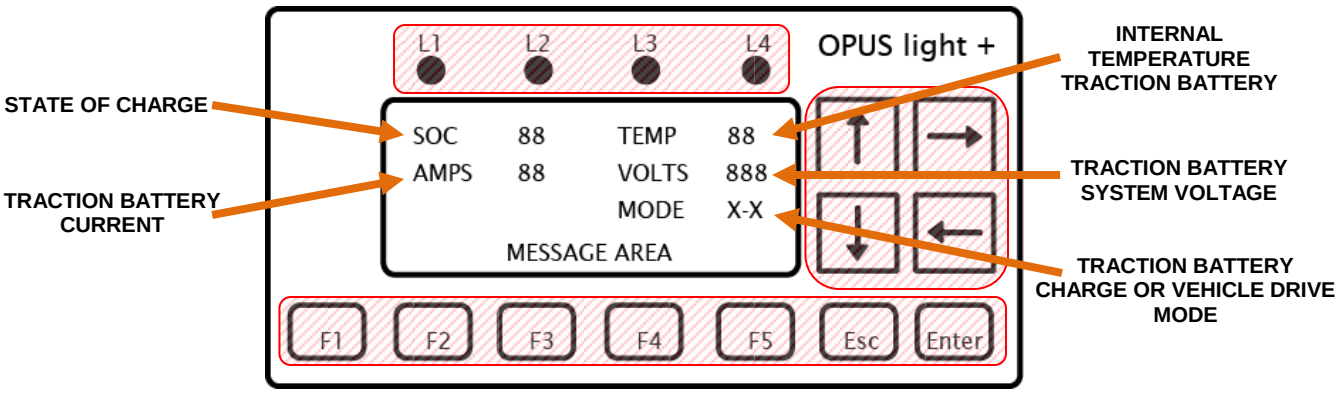


Figure 4.3

Red Shaded Areas - Programming and menu buttons. These buttons serve no purpose to the vehicle operator (Figure 4.3).

SOC - State Of Charge Indicator – Gives the actual charge as a percentage of fully charged traction batteries. This value is typically between 0 and 100.

AMPS - Current, into or out of the traction batteries. This is a negative number when being consumed by the vehicle and a positive number when the batteries are being charged or in regen.

TEMP – Traction Battery Module Temperature (°C) - Must be less than 55°C and greater than -10°C.

VOLTS – Traction Battery Voltage - Typically between 269V and 350V.

MODE – Vehicle Charge or Drive Mode – See table below. When the batteries reach full charge, "**END"** will be displayed.

Vehicle kWh	Charge Mode	Drive Mode
40	C1	D1
80	C2	D2
120	C3	D3

On the right hand side of the Vehicle Information Display, six LED Lights give the status of the vehicle (Figure 4.4)

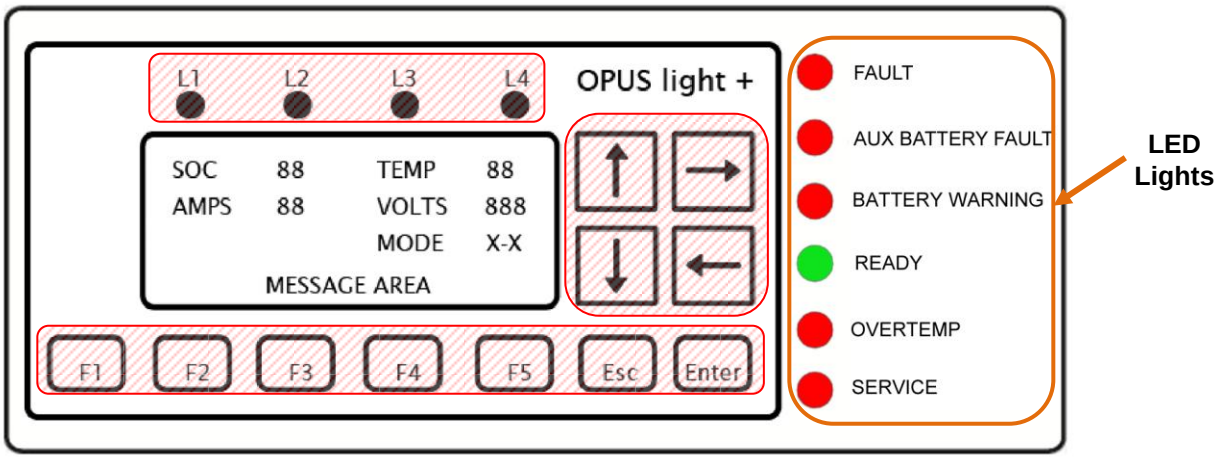


Figure 4.4

Fault - Indicates a fault with the drive control system.

Aux Battery Fault - Indicates a fault with the 24V System batteries or their charge system. These batteries and the chargers are mounted on the left side, just behind the cabin.

Battery Warning - Indicates that a fault has occurred with the traction batteries.

Ready - Vehicle is switched on and ready to drive when this is the only illuminated light.

Over Temp - Indicates drive control system over-temperature.

Service – Non functional.

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5. Charging HV and 24V Systems

	Specification of Charge Facility			
	A. AC Power service shall be in accordance with the latest edition of the National Electric Code. **B. Service requirement is dependent on vehicle configuration.** **C. Refer to the truck's configuration specification for battery pod and phase arrangement. See table below.**			
Phase	**40kWh**	**80kWh**	**120kWh**	**>120kWh**
Single (208 or 240VAC)	J1772,75A	J1772,75A	J1772,75A	N/A
3 (208VAC)	*Pin & Sleeve 63A	*Pin & Sleeve 63A	*Pin & Sleeve 63A	*Pin & Sleeve 100A
*Due to emerging EV market, fully UL listed components may not be available. However, components are available to meet the intent of the code. SMITH recommends user to consult with city inspector for deviation.				

- Locate and park the vehicle in a position that the charging point is within 20 feet of the AC charging facility, free of standing water and obstructions.
- Place the vehicle in **NEUTRAL**, set the parking brake, and turn the ignition key to the **LOCK** position.
- The High Voltage Isolator Switch in the truck cab must be in the **RUN** position with the red protective cover closed. (Figure 4.1)
- The 24V Isolator Switch, located immediately behind the driver side of the cab, must be in the **RUN** (HORIZONTAL) position. (Figure 5.1)
- The High Voltage Isolator Switch on the front of ***each battery pod*** must be in the **RUN** (HORIZONTAL) position. (Figure 5.2)

Figure 5.1 *Figure 5.2*

- Verify there is no damage to charging cable, cable ends, or charging connections. If any damaged is found, do not continue until replaced or repaired.
- Remove the protective cover or cap from the vehicle connection.
- Make cable connection to the vehicle end of the cable first (Figures 5.3 & 5.4).
- If applicable, lift the protective cover on the vehicle end of the cable and hold it open, connecting the cable by aligning the index slot and push straight into the plug.
- If applicable, re-engage the twist locking device.

Figure 5.3

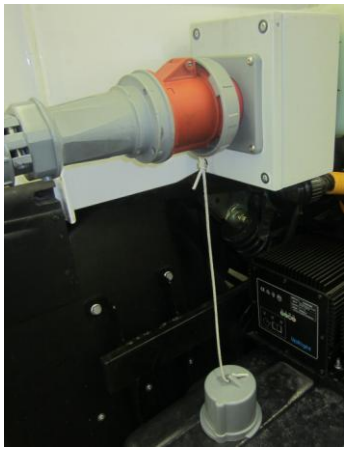

Figure 5.4

- Refer to charging station manufacturer's procedure to verify the AC power charging source OFF.
- If so equipped, remove protective cover from the AC power socket.
- Plug the cable into the AC power charging source.
- Refer to charging station manufacturer's procedure to switch the AC power charging source ON.
- The traction batteries are receiving charge if **MODE** on the Vehicle Information Display reads "**C-1"** for 40kWh vehicle, "**C-2**" for 80Kwh vehicle, or "**C-3**" for 120wKh (Figure 4.3)
- Charging progress of the 24V (2x12V) System batteries is displayed by the 50%, 75%, and 100% green LED lights on the 24V charger. (Figure 5.5)

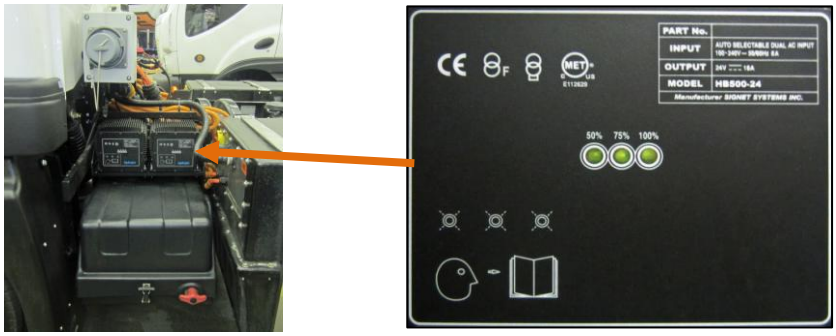

Figure 5.5

WARNING
Only authorized personnel are allowed to work on the electrical power and/or control systems.

- If there are any indications that the traction batteries or the 24V System batteries are not receiving charge, or if there are any lights not illuminated on the circuit breaker box panel, remove the circuit breaker box cover and check to make sure all of the circuit breakers are in the **ON** (UP) position. (Figure 5.6)

Figure 5.6

NOTE: The HV charger is liquid cooled, so after a short time, the coolant pump and fans under the cab will begin to run.

- ✓ The traction batteries are fully charged when the **MODE** on the Vehicle Information Display reads "**END**" (Figure 4.3).
- ✓ The 24V batteries are fully charged when the 50%, 75%, and 100% green LED lights on the chargers are all fully illuminated.(Figure 5.5)

After charging is complete:

- Refer to charging station manufacturer's procedure to switch the AC power charging source OFF.
- Remove the AC power cable plug from the AC power service socket.
- Disengage locking device and remove the AC power cable from the vehicle charging point.
- Inspect the charging cable, cable ends, and charging connections for damage and replace and/or repair as necessary.
- Coil AC power cable and store in an appropriate and dry location safe from damage.

EVERY MONTH the batteries MUST be run down below 20% SOC (State of Charge) and then fully recharged until Mode on the vehicle battery status display "END". (Figure 4.3)

Charging DOs and DON'Ts	
DOs	**DON'Ts**
Charge until **MODE** on the Vehicle Information Display reads "**END**".	Plug in and unplug with the vehicle switched ON.
Opportunistic Charging; charge if near a power point for a short period of time	Plug in and unplug with wall socket switched ON.
If vehicle will not be used for more than 3 days, remove from charge and isolate the 24V Battery System.	Leave vehicle on charge if not used for an indefinite period.
When in daily operation, leave vehicle connected to the charger until it is ready to be driven. This will ensure maximum battery power.	Use damaged charging cables or connectors.
The batteries *MUST* be run down below 20% State Of Charge (SOC) and then charged until **MODE** on the Vehicle Information Display shows "**END"** every month.	

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6. Pre-Start Checks

CAUTION
Before attempting to drive the vehicle, ensure you know how to bring the vehicle to a controlled stop.

CAUTION
Do not attempt to drive if defects are found during this initial inspection. Report any defects found to your supervisor / manager.

CAUTION
Before attempting to drive the vehicle, ensure that the charger cable is disconnected and stowed.

Before driving the vehicle, carry out the following service and safety checks:

- Take the vehicle off charge as described in **Section 5** and make sure the 24V System Isolator and the High Voltage Isolators are switched to their **RUN** (HORIZONTAL) positions.
- Check the **S**tate **O**f **C**harge (SOC) on the Vehicle Information Display (Figure 4.3) in relation to the planned journey.
- General vehicle checks:
  - ✓ Lock and secure cab tilting locks at behind passenger side cabin. (Early model cab tilting valve Figure 6.1, later model Figure 6.2). **NOTE:** Failure to position valve in **NEUTRAL** position will lock cab suspension.

Figure 6.1

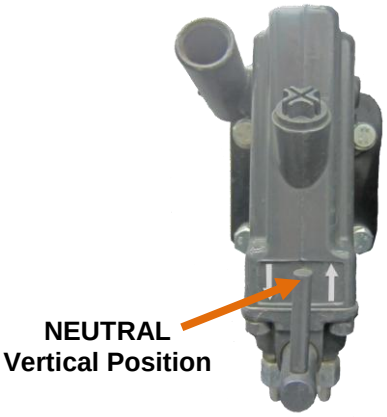

Figure 6.2

  - ✓ Latch and secure hood.
  - ✓ Check tire pressure in accordance with requirements printed on Vehicle Identification Placard located on the driver's side door post.
  - ✓ Check wheel nut torques:
    - → Class 5 & Light Duty Class 6: (6) M18 Lug Nuts 272 +/- 22 ft. lb.
    - → Heavy Duty Class 6 & 7: (8) M20 Lug Nuts 357 ± 26 ft. lb.
  - ✓ Check condition, operation and cleanliness of vehicle lights and mirrors.
  - ✓ Check security of removable body panels and cover.

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7. Driving the Vehicle

CAUTION
1. Switch or leave the drive selector in the neutral position
2. Do not depress the accelerator when attempting to start the vehicle
3. Never drive the vehicle with the park brake engaged

CAUTION
Switch off the regenerative braking when driving in potentially slippery road conditions.

- Turn the key from the **"LOCK"** to the **"ON"** position (second notch) (Figure 7.1)

  The dashboard indicator lamps will illuminate for a few seconds. Only the park brake indicator on the dashboard should remain illuminated.

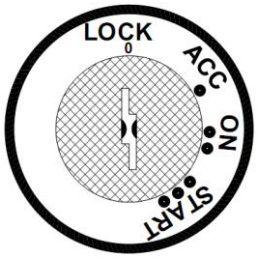

Figure 7.1

- Turn the key to the **"START"** position, and hold until the Vehicle Information Display illuminates.

- Let the key return to the **"ON"** position.

  All lights on the Vehicle Information Display illuminate. After a few seconds only the green **"READY"** light remains illuminated (Figure 7.2). Some models are equipped with a short and audible "BEEP" that notifies the operator that the vehicle is ready.

Typical Vehicle Information Display

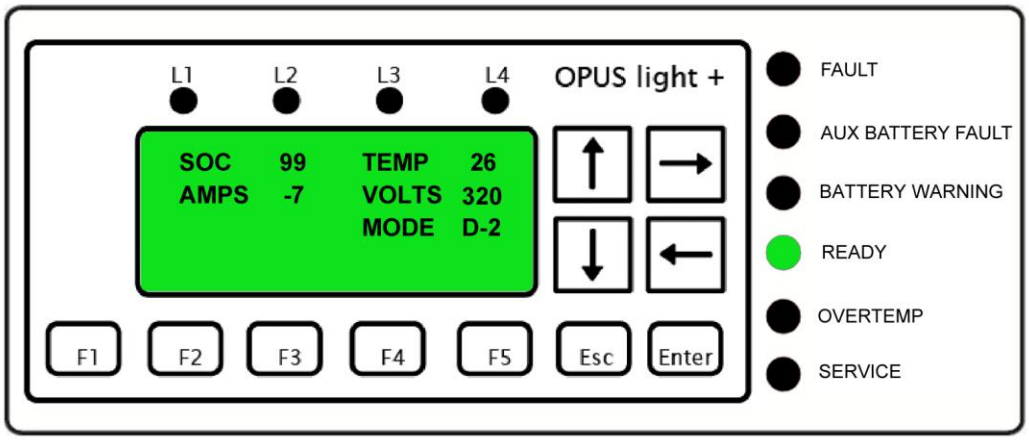

Figure 7.2

- Depress service brake (left) pedal.
- Set the Drive Selector to the desired drive direction (Figure 4.1).
- Release the park brake (Figure 7.3) and gently depress the accelerator pedal (right pedal).

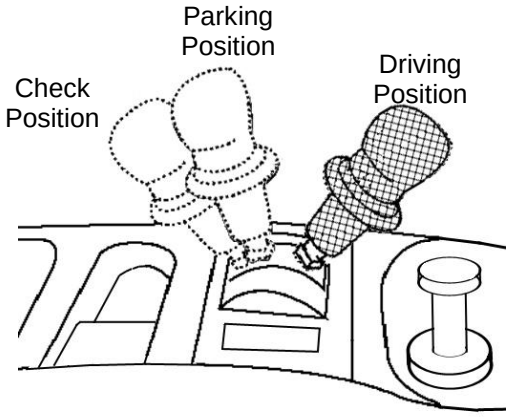

Figure 7.3

NOTE:
There is no need to change gears in this vehicle. The vehicle is equipped with a gear reduction box with one fixed ratio.

- Gently depress the brake pedal (left pedal) to slow down the vehicle.

NOTE:
Regenerative Braking recaptures energy that normally would be lost when only using friction brakes. This feature enhances the drive range of the vehicle. Regenerative Braking is applied first by releasing the accelerator pedal and then increases proportionately as the service brake is applied. The brake force is electronically adjusted.

- Deactivate Regenerative Braking when driving in potentially slippery road conditions using the switch next to the driver seat in the middle console (Figure 4.1).

8. Cabin Temperature Control

The electric cabin heater and optional air conditioner consume energy supplied by the traction batteries.
Minimizing the use of these functions maximizes the range.

This vehicle is equipped with an electric cabin heater and an optional electric cabin air conditioner. Both utilize the original vehicle vent system in the dashboard and consume electric energy supplied by the traction batteries. Be sure both the heater and air conditioner switches are in the OFF position before starting the vehicle. Once the green **READY** light (Figure 7.2) on the Vehicle Information Display illuminates, you may operate either system.

NOTE: If both the heater and the air conditioner switches are ON, neither system will function.

Cabin Heater (Figure 8.1)

1. Depress the **Heater Switch** (blank switch with LED next to the Air Conditioner switch) on the dash.
2. Set the **Fan Blower Speed** to the second position, the lowest fan setting. **NOTE:** It may take a few minutes for the heater to warm up. Heater will reach full operating temperature quicker if you do not increase the blower speed past the second position until warm air is felt coming through the vents.
3. Adjust **Mode Control** to regulate where the warm air is delivered.
4. To increase heater efficiency, push the **Recirculation** button so the warm cab air is re-circulated. When humidity is high, recirculating cab air may cause windows to fog, and **Recirculation** button should be off.
5. As the cab warms up, adjust **Fan Blower Speed**, **Temperature**, disable **Recirculation,** or turn Heater off with dash switch to control cab temperature. Turning the heater off is the preferred, most energy efficient method, to regulate the temperature.

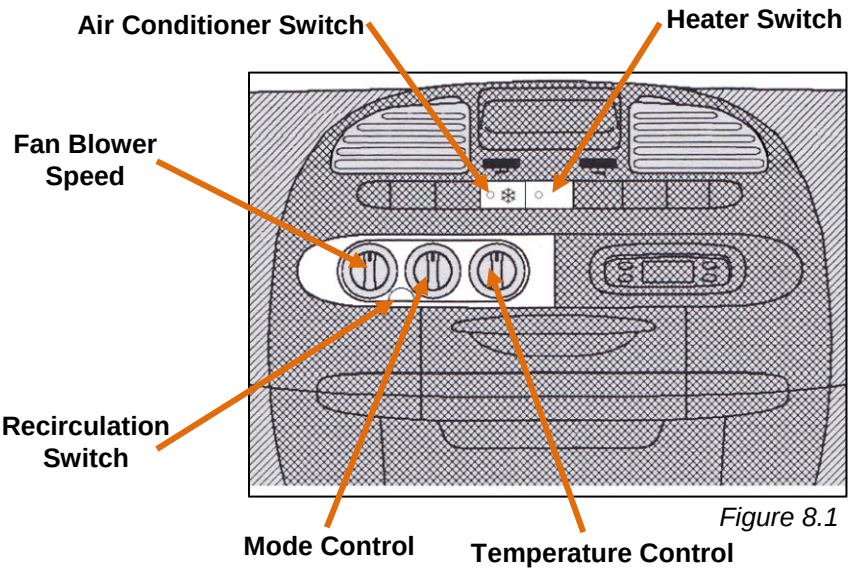

Figure 8.1

Cabin Air Conditioner (Figure 8.1)

1. Depress the **Air Conditioner Switch** (switch with snowflake and LED) on the dash.
2. Set the **Fan Blower Speed** to the desired position.
3. Adjust **Mode Control** to regulate where the cooled air is delivered.
4. To increase air conditioner efficiency, push the **Recirculation** button so the cooled cab air is re-circulated. When humidity is high, recirculating cab air may cause windows to fog, and **Recirculation** button should be off.
5. As the cab temperature cools, adjust **Fan Blower Speed**, **Temperature**, or disable **Recirculation,** to control cab temperature.

9. Parking the Vehicle

- Park the vehicle in a safe suitable area.
- Engage park brake, red lever next to seat (Figure 9.1). Some models are equipped with an alarm that will sound if parking brake is not engaged and the ignition is turned off.
- Select "**N**" (neutral) gear with the drive selector (Figure 4.1)
- Turn the ignition key to the "**LOCK**" position. (Figure 7.1)
- Switch off all lights and radio, when safe to do so.

Lights and radio will consume electric energy of the 12 V and 24V system. If the state of charge of the 24V (2x12V) system batteries is less than 23V, the vehicle **may not start.**

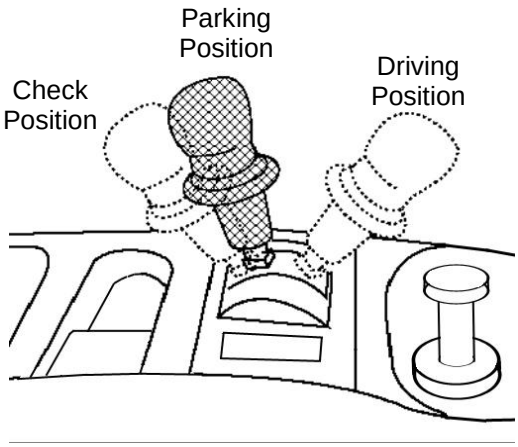

Figure 9.1

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10. Maintenance

In addition to the maintenance checks recommended by the base vehicle manufacturer (Avia Ashok Leyland Motors), the following additional checks should be carried out.

WEEKLY

- ***Motor / Charger /Inverter Coolant***
  - ✓ Check that the coolant level for the drive system meets the "Max Level" mark (Figure 10.1).
  - ✓ Top up if required with a 50/50 mix of ethylene glycol and distilled water.

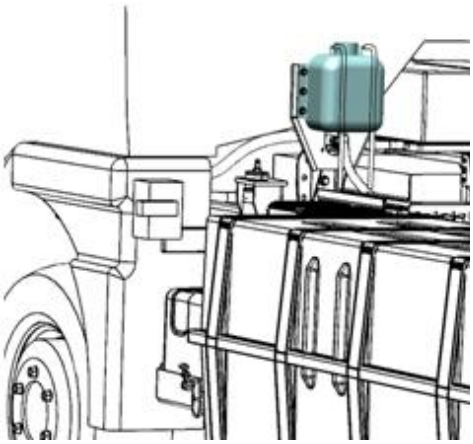

Figure 10.1

- ***24V System Batteries:*** The 24V system is powered with two (2) 12V lead acid batteries. These batteries provide the energy to start the vehicle. If the voltage in these batteries is **below 23V** the vehicle will not be able to start.
- ***24V Auxiliary Batteries (Optional):*** The vehicle may also be equipped with two (2) additional 12V batteries to power 24V auxiliary equipment such as a tail lift or a hydraulic power pack.

All 12V batteries need to be checked and, if necessary, topped off with distilled water.

- ✓ Remove protective covers on all system and auxiliary batteries (Figure 10.2).
- ✓ Remove filler caps from all 12V batteries.
- ✓ Fill batteries with distilled water until level of electrolyte stands minimal ¼ " above the plates.
- ✓ Re-fit filler caps on all 12V batteries
- ✓ Re-fit the protective covers over the batteries.
- ✓ Check connections for looseness or corrosion.

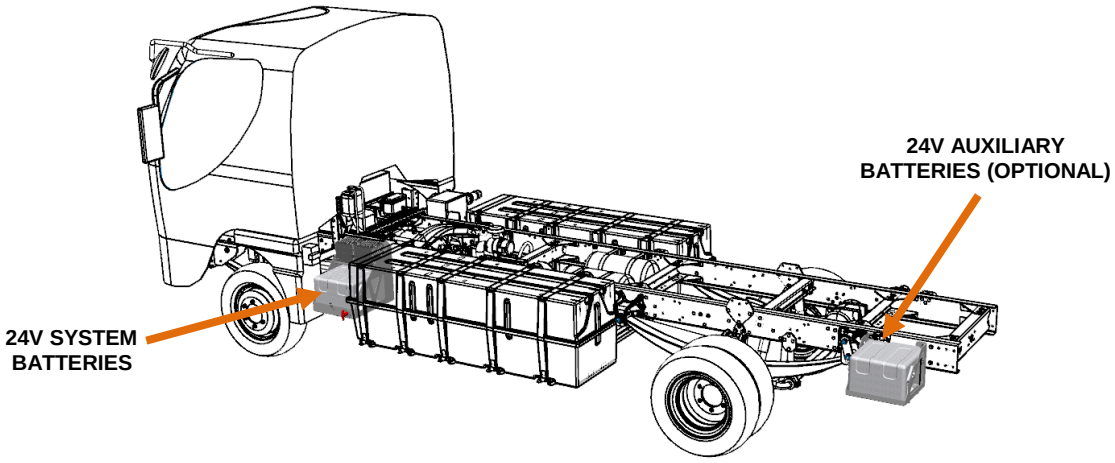

Figure 10.2

- ***Cabin Heater***

  - ✓ Open the hood as outlined in this section.
  - ✓ Check fluid level in reservoir (Figure 10.3).
  - ✓ If the level in the reservoir is low, unscrew the cap of the reservoir.
  - ✓ Fill the reservoir with a 50/50 mixture of ethylene glycol and distilled water up to the "MINIMAL LEVEL" mark.

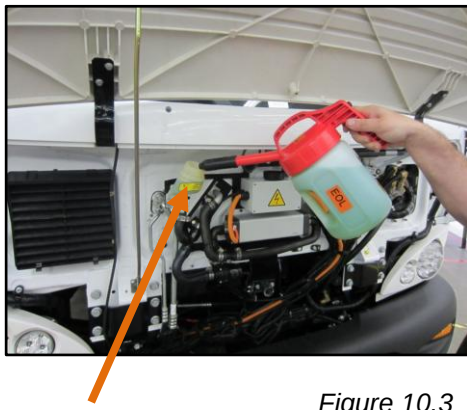

Figure 10.3

CAUTION
Running the heater with an empty reservoir will damage the heater.

CAUTION
The liquid inside the heater will get hot. Allow the heating system to cool down before attempting any maintenance on it.

- ***Air Brake Storage Tanks***

  - ✓ Pull laterally on the drain valve tethers on the (3) air brake storage tanks (Figures 10.4 & 10.5) to check for excessive moisture and replace air brake system filter/dryer if necessary (Figure 10.7).

Figure 10.4

Figure 10.5

MONTHLY

- ***Traction Batteries***

  ✓ The Li-Ion traction batteries need to be discharged to 20% or below state of charge once a month, followed by a complete recharge until the MODE reads "**END"** on the Vehicle Information Display (Figure 4.3). This ensures that the voltage has fallen enough to calculate a correct State Of Charge (SOC).

Discharge the traction batteries 20% or below monthly.

- ***Power Steering***

  ✓ Check fluid level in power steering reservoir and maintain level to **FULL** mark with Dexron/Mercon. Accessible under cab (Figure 10.6).

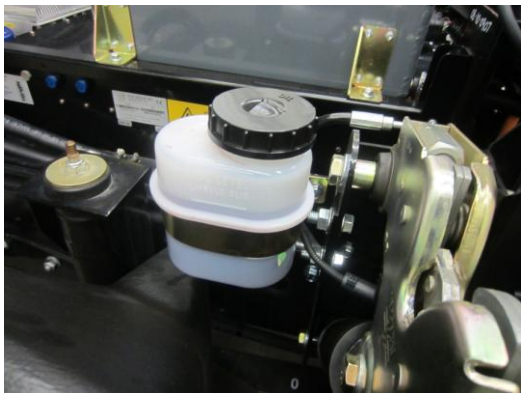

Figure 10.6

- ***Air Brake Compressor***

  ✓ Check Air Intake Filter Monitor mounted on compressor. If monitor indicates GREEN, Air Intake Filter is functioning correctly. If monitor indicates RED, replace Air Intake Filter, accessible through hatch in body floor (Figures 10.7 & 10.8).

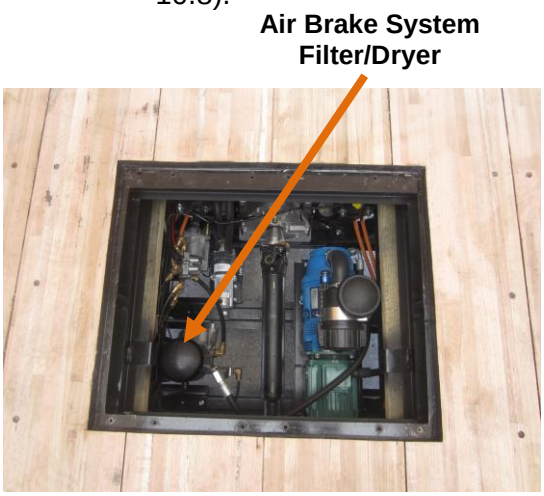

Figure10.7

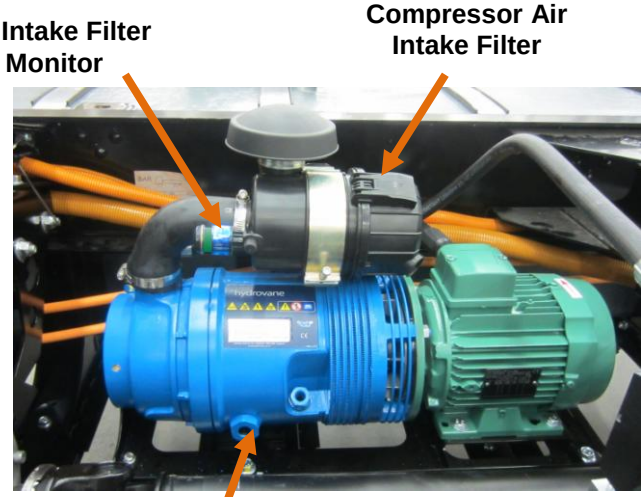

Figure10.8

90 DAYS

- ***Air Brake Compressor Oil***
  - ✓ Check Oil Level through sight glass in brake compressor. Fill to show level at least ½ full if needed (Figure 10.8).
- ***Air Brake System Filter/Dryer and Compressor Air Intake Filter***
  - ✓ Replace compressor Air Intake Filter and Air Brake System Filter/Dryer (Figures 10.7 & 10.8). **NOTE:** May need to replace either filter more frequently if weekly or monthly maintenance checks warrant.
- ***Traction Motor Gear Box***
  - ✓ Check oil level in Traction Motor Gear box. Oil level should be approximately ½ inch below bottom of fill plug (Figure 10.9).

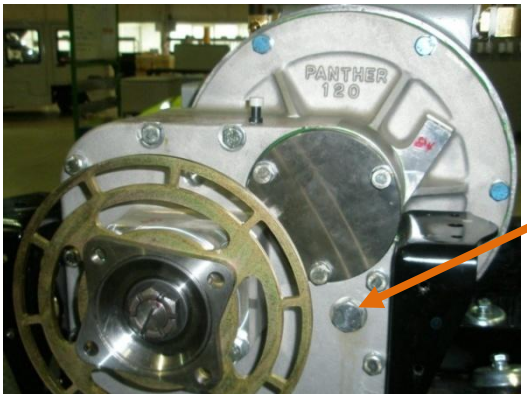

Figure10.9

EXTENDED MAINTENANCE

- ***Power Steering***
  - ✓ *Change filter in Power Steering reservoir every 12 months.*
  - ✓ *Grease (do not over lubricate) fitting on Power Steering Pump every 12 months.*
- ***Air Brake Compressor***
  - ✓ *Change oil in Air Brake Compressor every 12 months.*
  - ✓ *Replace Air Brake System Filter/Dryer and Air Intake Filter every 12 months or more frequently if weekly, monthly, or 90 day maintenance checks warrant.*
- ***Traction Motor Gear Box***
  - ✓ *Change oil in Traction Motor Gear Box every 24 months or 50,000 miles.*
- ***Differential***
  - ✓ *Consult AVIA Manual*

FLUID SPECIFICATIONS

- ***Antifreeze:*** 50/50 mix ethylene glycol and distilled water
- ***Gearbox Oil:*** SHB150 Synthetic Gear Oil (1.7 liter dry, 1.6 liter for change)
- ***Power Steering Fluid:*** Dexron/Mercon
- ***Air Brake Compressor:*** HPOUSA-1 Hydrovane (approx. 1.1 qt.)
- ***Differential:*** GL-5 rated 85-140

Hood Opening/Closing

- The hood Release Lever is located behind the bottom edge center of the hood. Lightly push in on the bottom edge of the hood and press the Release Lever to the left. The hood will rise slightly and stop as the Secondary Safety Latch engages.
- Release the Secondary Safety Latch by reaching up under the hood and press the secondary latch to the right. (Figure 10.10)

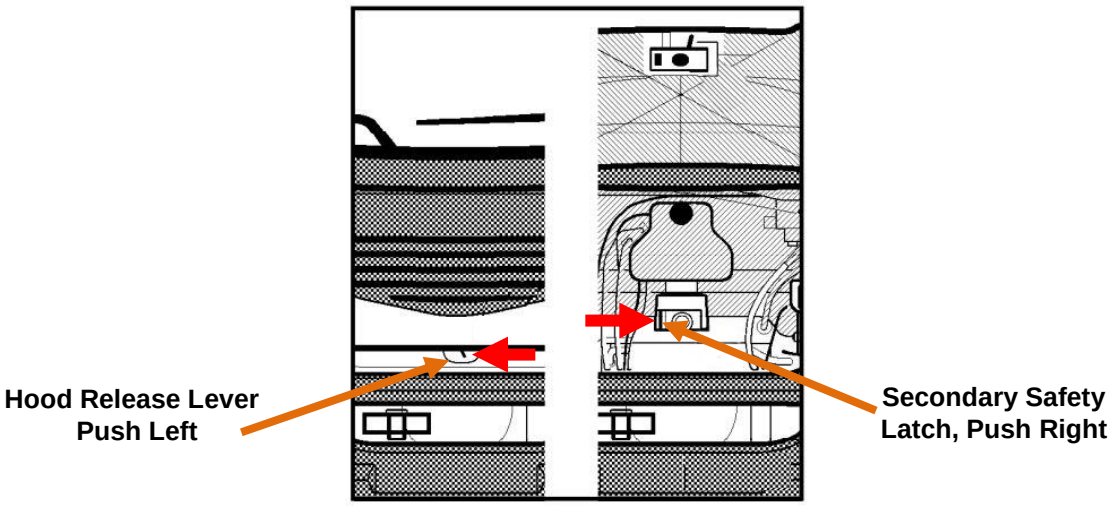

Figure 10.10

- Raise the hood completely.
- Remove the Support Rod from the holding clip and insert the free end into the Support Rod hole in the frame of the hood. Check to make sure Rod is secure. (Figure 10.11)

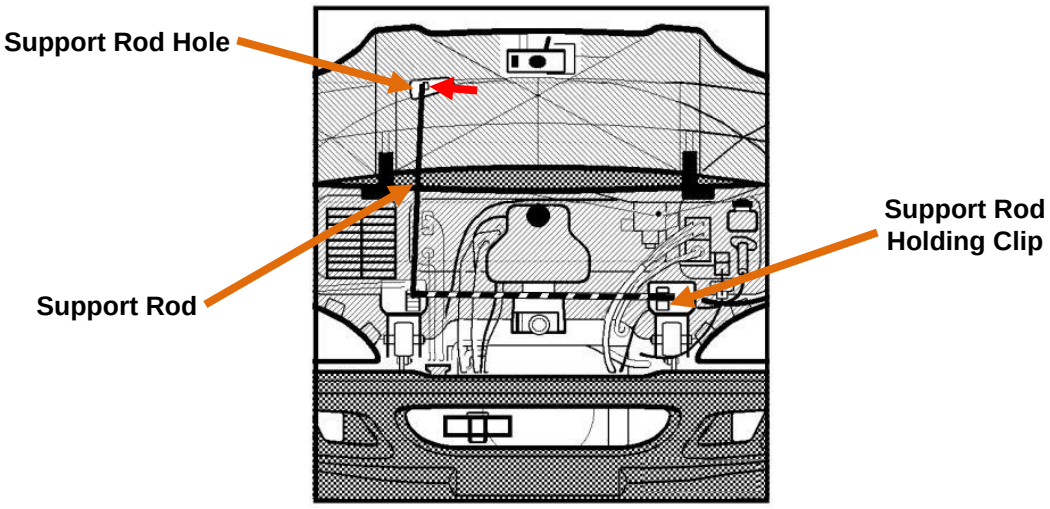

Figure 10.11

- To close hood, replace Support Rod into the Holding Clip
- Lower hood and push closed. Make sure both the secondary and main latches engage.

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11. Towing Procedure

REAR LIFT (Preferred Method)

- Rear lift (rear wheels up), with the steering wheel locked, is the preferred method of recovery.

FRONT LIFT (Alternate)

- The drive shaft ***must be disconnected from the differential and removed*** if the vehicle is towed or pushed by front lift (rear wheels down). Failure to remove the drive shaft could also result in severe electrical damage.
  - ✓ Removing an axle shaft, while keeping the drive shaft from turning, can cause damage to the differential assembly, as well as allow fluid to leak from the hub, and **is not acceptable**

BRAKES

- The vehicle will not have air brakes when not powered up.
- To enable the air brakes, air can be supplied through the air line coupling in the front bumper, commonly referred to as a "gladhand".
- The brake cylinders on the rear wheels can be released by turning the center release bolts to cage the brake springs. Ensure appropriate measures are taken to prevent the vehicle from rolling prior to releasing the brakes.

CAUTION
Use wheel chocks to prevent vehicle from rolling when brakes are inoperable.

CAUTION
The vehicle's power steering is disabled when vehicle is not powered up.

WARNING
If towing is a result of an accident that may have compromised the high voltage battery pods or any orange high voltage cabling, the high voltage system must be isolated prior to towing as described in Section 2, Safety Notices and Instructions.

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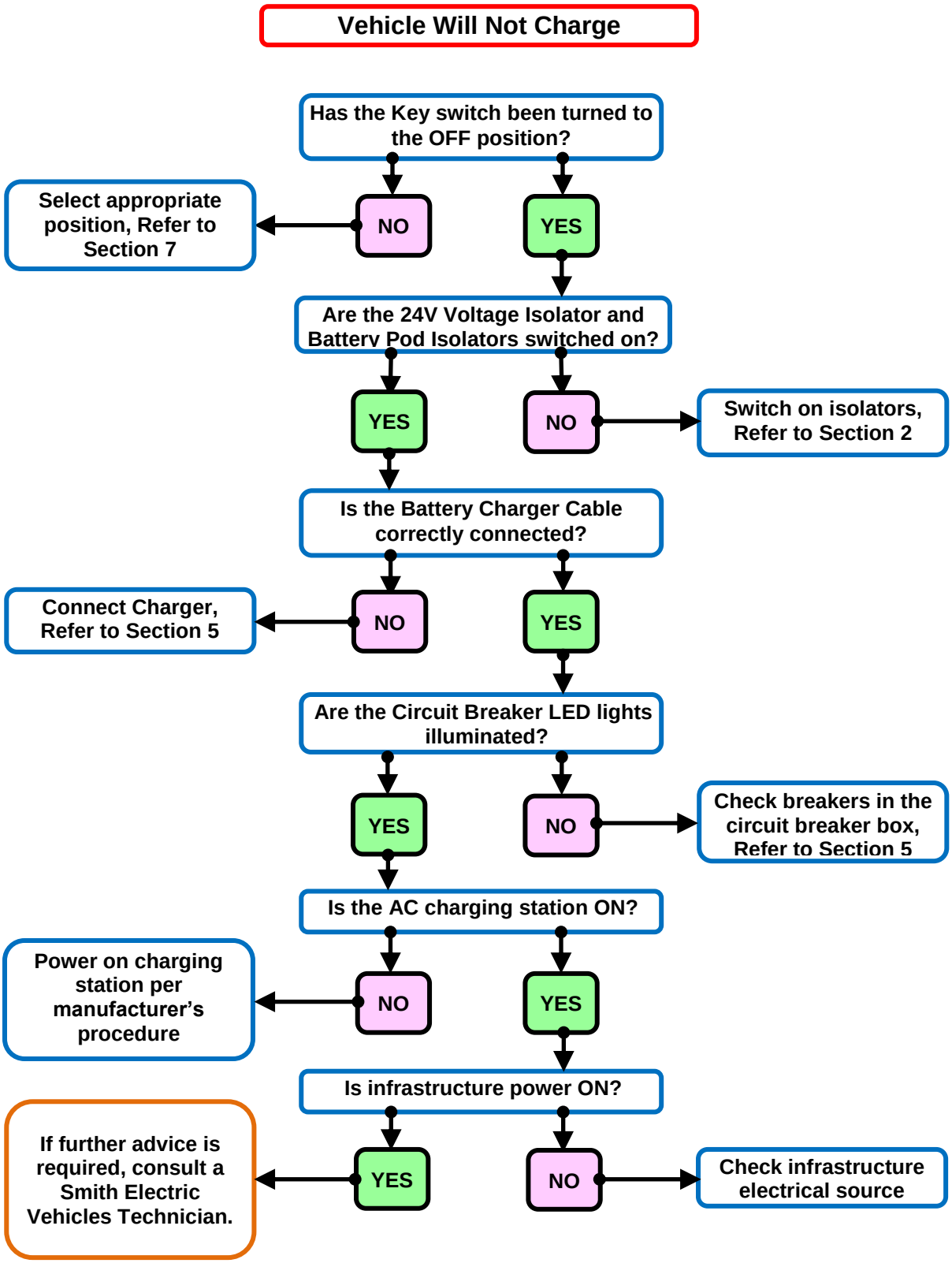
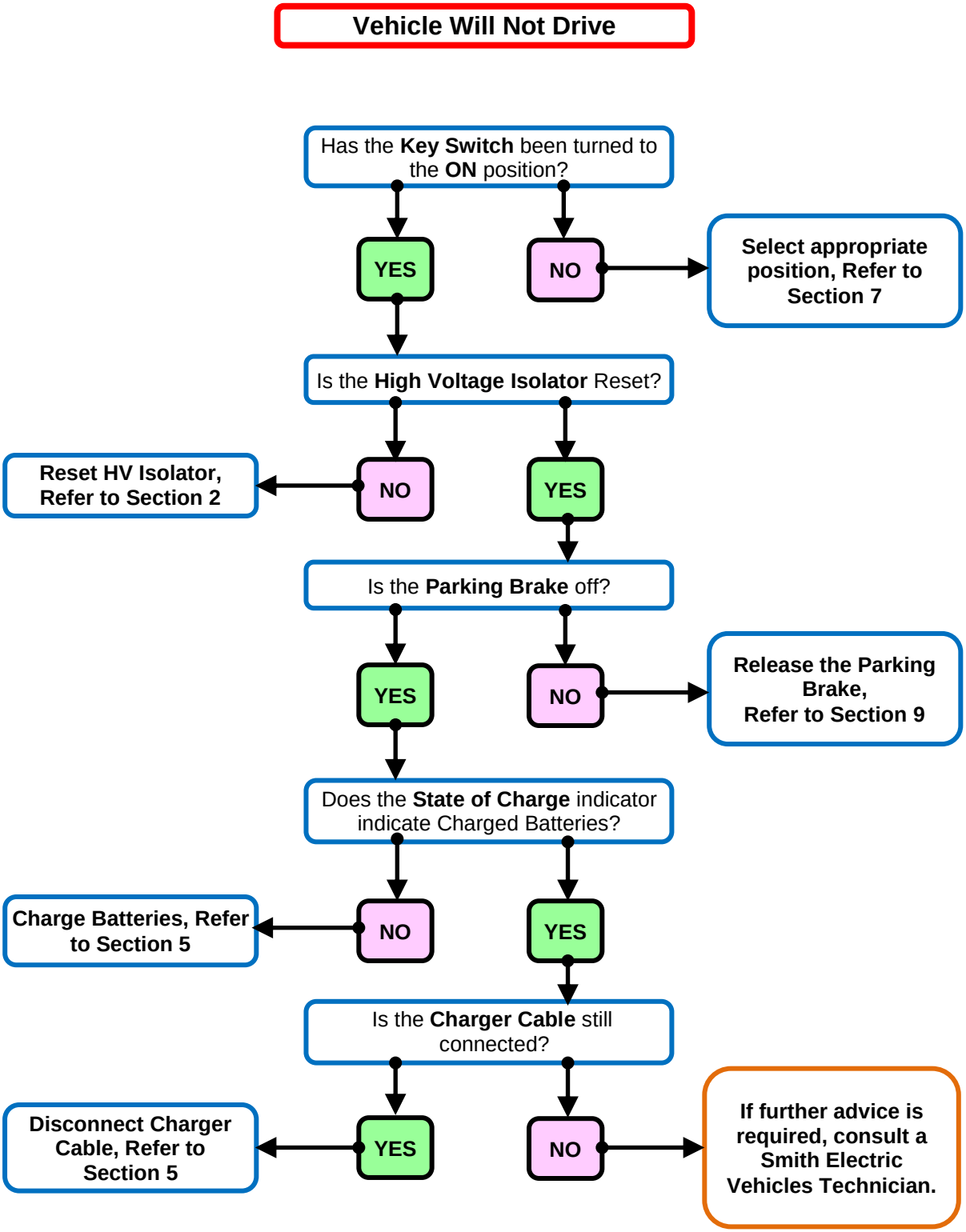
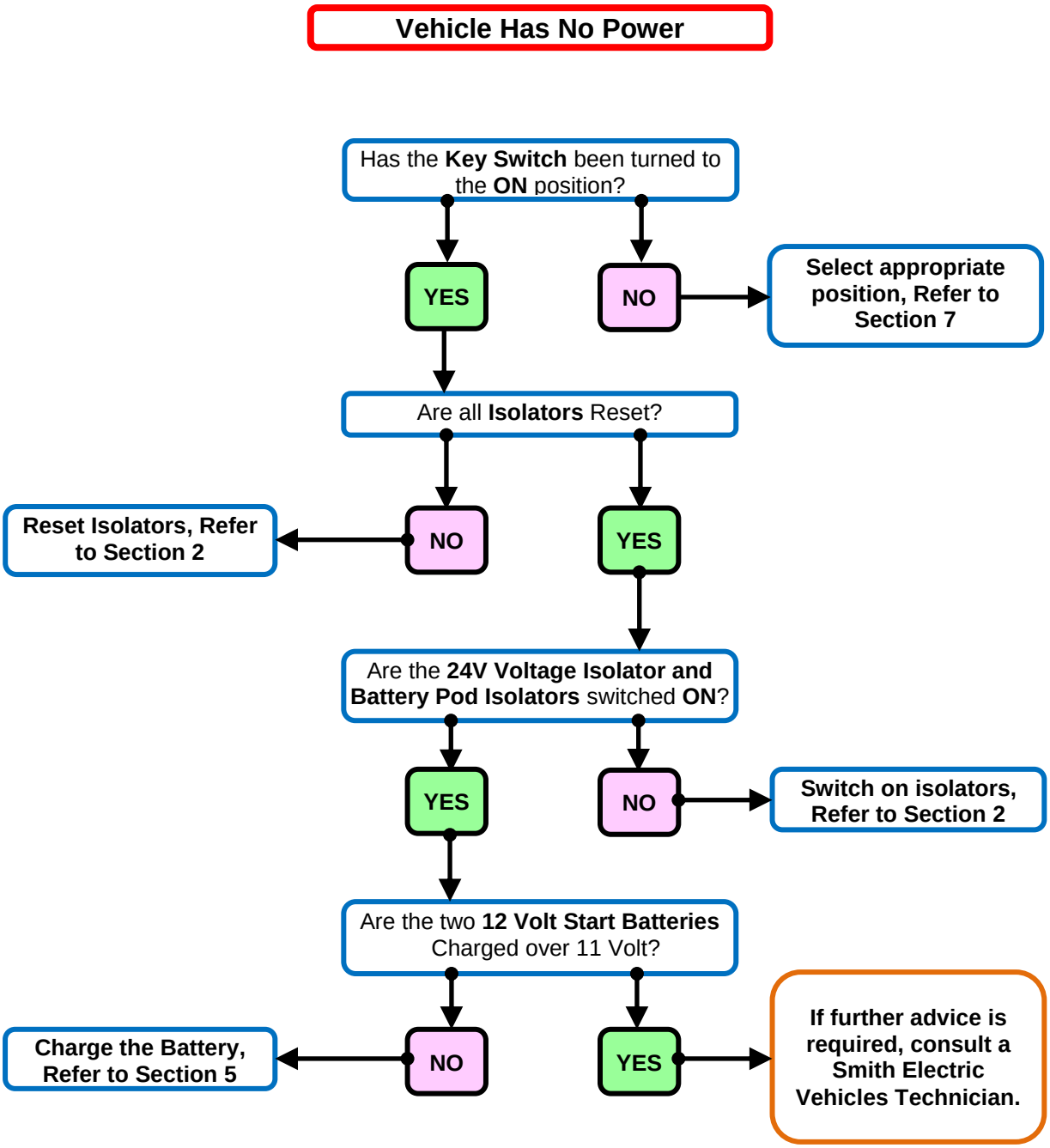
12. Fault Finding Matrix




Vehicle Will Not Drive
Has the Key Switch been turned to the ON position?
YES
NO
Select appropriate position, Refer to Section 7
Is the High Voltage Isolator Reset?
Reset HV Isolator, Refer to Section 2
NO
YES
Is the Parking Brake off?
YES
NO
Release the Parking Brake, Refer to Section 9
Does the State of Charge indicator indicate Charged Batteries?
Charge Batteries, Refer to Section 5
NO
YES
Is the Charger Cable still connected?
Disconnect Charger Cable, Refer to Section 5
YES
NO
If further advice is required, consult a Smith Electric Vehicles Technician.


Vehicle Has No Power
Has the Key Switch been turned to the ON position?
YES
NO
Select appropriate position, Refer to Section 7
Are all Isolators Reset?
NO
YES
Reset Isolators, Refer to Section 2
Are the 24V Voltage Isolator and Battery Pod Isolators switched ON?
YES
NO
Switch on isolators, Refer to Section 2
Are the two 12 Volt Start Batteries Charged over 11 Volt?
NO
YES
Charge the Battery, Refer to Section 5
If further advice is required, consult a Smith Electric Vehicles Technician.

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