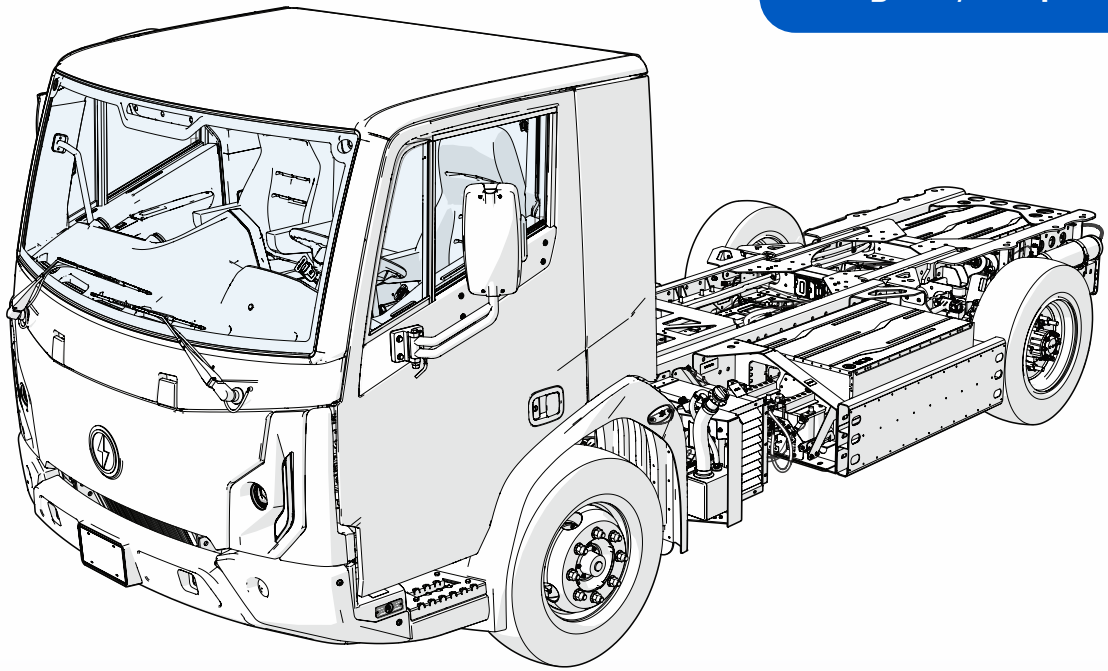
LION ELECTRIC

Emergency **Response Guide**



THIS GUIDE IS INTENDED FOR FIRST RESPONDERS AND CERTIFIED RESCUERS.
High-voltage batteries are the only energy source for the propulsion of the Lion5. Always act as if the high-voltage system is activated. The high-voltage system might be active even when no sound is emitted from the vehicle.

LION5

Legal Notice

The information contained in this document is subject to change without notice. This document is intended for customers of The Lion Electric Company. No part of this document may be reproduced or transmitted in any form without the prior written permission of The Lion Electric Company.

The Lion Electric Company cannot be held liable for any errors in this document, or for any damages that may result from the use of this document or the information contained.

Lion5 Emergency Response Guide— 2024/05/17

CONTENT

VEHICLE IDENTIFICATION 5
Identification 5
Logo 5

TURNING OFF THE VEHICLE 6
Shutting down the vehicle 6
High-voltage hold switch (optional) 7

VEHICLE BATTERIES 8
About the batteries 8
Low voltage AGM batteries 8
High-voltage battery locations 9

DISABLING THE HIGH-VOLTAGE BATTERIES . . . 10
Orange high-voltage cables 10
High-voltage equipment warnings 10
Warning labels 11
Electrical safety disconnect 12
Vehicle deactivation in case of an emergency 14

CRASH SENSORS 16

IN CASE OF FIRE OR WATER IMMERSION 18
Fire extinguishment of high-voltage batteries 18
Submerged vehicle 18

FLUID RESERVOIRS 19
Opening the hood 19
Fluid reservoir locations 20
Battery coolant reservoir access 21
Windshield washer fluid reservoir access 22

LIFTING THE VEHICLE 23
Lift points 23

CONTENT

TOWING THE VEHICLE 25
General Towing Guidelines 25
Towing by lifting the front axle: 31

HYDRAULIC SUSPENSION 34
LiquidSpring suspension 34
Vehicle ride height for towing 34
Switch LED color 34

RECOVERY 36
Front anchoring equipment capacity 36
Safe recovery recommendations: 37
Rear anchoring points 38

Identification

The Lion5 can be identified by the Lion Electric logo located at the center of the hood.

The logo can also be found on the body of the vehicle and on several chassis components.

Figure 1 – Front view

Logo

The following logos can be used to identify the Lion5.

LION ELECTRIC

Figure 2 – Lion Electric logo

LION5

Figure 3 – Logo Lion5

TURNING OFF THE VEHICLE

Shutting down the vehicle

1. Bring the vehicle to a stop.
2. Apply the parking brake;
   - Use the lever on the right side of the seat **(Figure 4)**

     or, (depending on equipped options)
   - Press the (optional) Parking Brake button on the dashboard **(Figure 5)**.

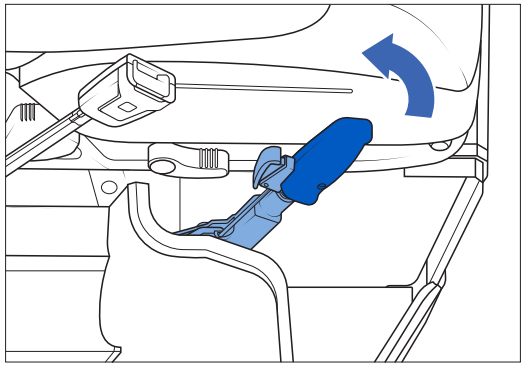


Figure 4 - Parking brake

3. Turn the start switch to the "**OFF**" position **(Figure 6)**.

The high-voltage system should now be turned off. If this is not the case, see **High-voltage hold switch** on next page.

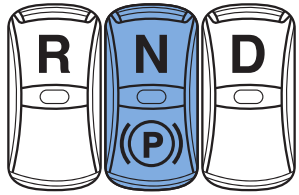


Figure 5 - Drive selector and Parking brake button

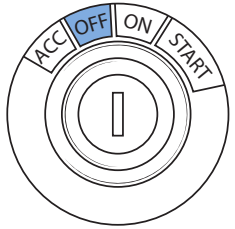


Figure 6 - Start switch

High-voltage hold switch (optional)

If equipped, the high-voltage hold function allows the driver to remove the key from the starter switch and exit the vehicle while leaving the high-voltage system active.

To turn off the high-voltage hold, press the top part of the switch shown in **Figure 7**. When the LED on the switch is unlit, high-voltage circuit is off

Figure 7 - High-voltage hold switch (if equipped)

VEHICLE BATTERIES

About the batteries

The Lion5 uses two types of batteries that provide low and high voltage.

Low voltage	High voltage
Two 12 V AGM batteries connected in series supply power to various systems operating at 12 V and 24 V.	Three 60 kWh **Lion MD** batteries supply power to the electric motor and to various systems, and recharge the two 12 V batteries.

Table 1 – Battery types

Low voltage AGM batteries

WARNING

Only AGM-compatible chargers must be used to recharge the Lion5's low voltage (12 V) batteries.

However, in the case of an emergency, it is possible to provide external power to the low voltage circuit to start the vehicle using battery booster cables or a battery booster pack.

High-voltage battery locations

The Lion5 is equipped with three high-voltage batteries. Two batteries are located between the front and rear axle and the third one is installed behind the rear axle, as illustrated in **(Figures 8 and 9)**.

The Lion5 truck (**Figure 8**, with double rear wheels) right side battery is located close to the rear axle.

The Lion5 ambulance (**Figure 9**, with single rear wheels) right side battery is located close to the cabin.

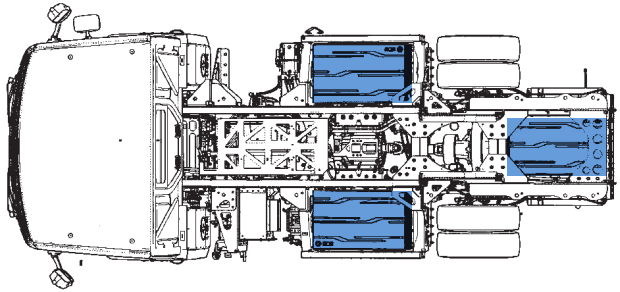


Figure 8 – High-voltage battery locations - Truck

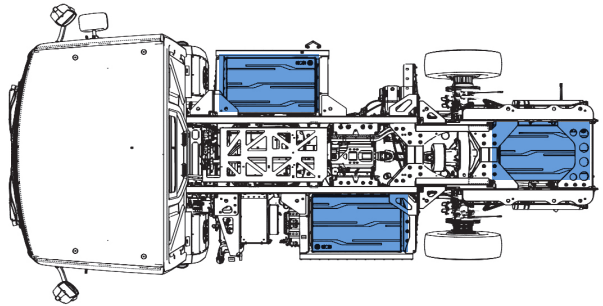


Figure 9 – High-voltage battery locations - Ambulance

DISABLING THE HIGH-VOLTAGE BATTERIES

Orange high-voltage cables

HAZARD WARNING

High-voltage cables are orange. If an accident occurs, do not touch any high-voltage wiring, connectors or connected components. In case of an emergency, never cut any of the orange high-voltage cables.

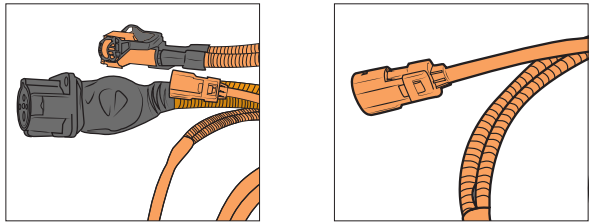
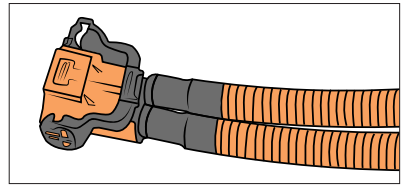


Figure 10 – Examples of orange high-voltage cables

High-voltage equipment warnings

Vehicles containing high-voltage equipment are equipped with warning labels. Pay extra attention to the special characteristics of high-voltage technology.



Warning labels

Label	Meaning
	DO NOT turn on the start switch. Work on high-voltage systems in progress.
	CAUTION! Hazardous voltage
	CAUTION! High-voltage parts Before working on the vehicle, follow the procedure in the *High-voltage safety disconnect* section of this document.
	HAZARDOUS VOLTAGE! Risk of electrocution. Shut off high-voltage equipment.

Label	Meaning
	CAUTION! High-voltage battery Incorrect handling may cause injury. High voltage Risk of explosion Risk of chemical burns and eye injuries
	CAUTION! High voltage The voltage behind this panel is potentially fatal. Access is restricted to qualified personnel.
	Battery specifications
	Danger! High voltage Disconnect certain components before servicing. Please see the *High-voltage safety disconnect* section in this manual.

Table 2 – High-voltage equipment labels

DISABLING THE HIGH-VOLTAGE BATTERIES

Electrical safety disconnect

The simplest way to deactivate High-Voltage is by turning off the low-voltage circuit by using the low-voltage disconnect switch.

1. Make sure the vehicle is not connected to a charging station.
2. Apply the parking brake.
3. Open the passenger side door.
4. Locate the handle at the bottom of the accessory compartment access panel **(Figure 11)**.
5. Pull the handle and open the accessory compartment access panel located at the back of the cabin, on the right side of the truck **(Figure 12)**.
6. Turn the low-voltage disconnect switch to the "**OFF**" position **(Figure 13)**.

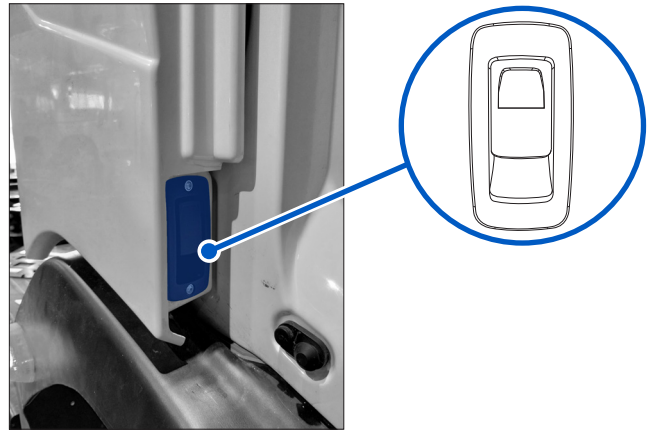


Figure 11 – Accessory compartment access panel handle

DISABLING THE HIGH-VOLTAGE BATTERIES

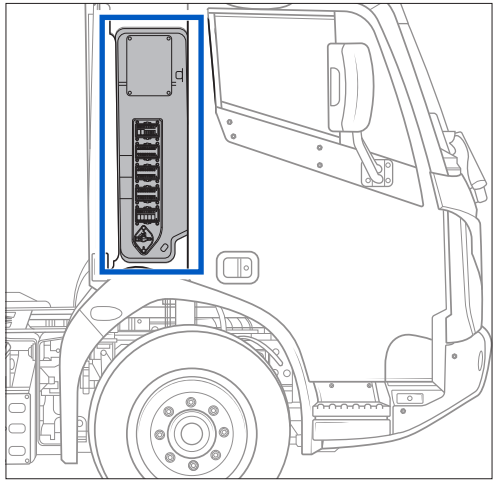


Figure 12 – Accessory compartment

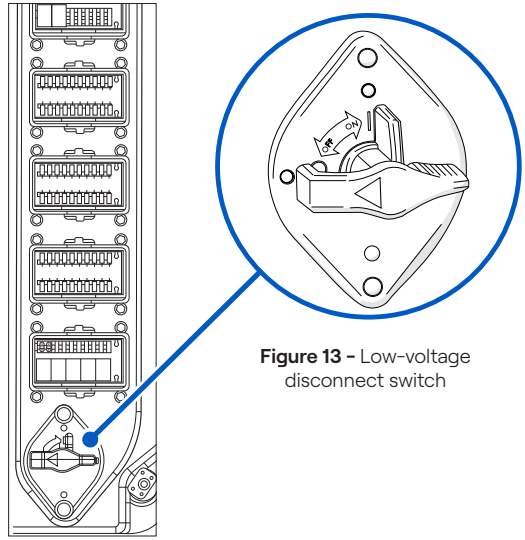


Figure 13 – Low-voltage disconnect switch

DISABLING THE HIGH-VOLTAGE BATTERIES

Vehicle deactivation in case of an emergency

The vehicle is equipped with two safety loops **(Figure 14)** that deactivates the high voltage. They are a safety feature that should be used for emergency purposes only.

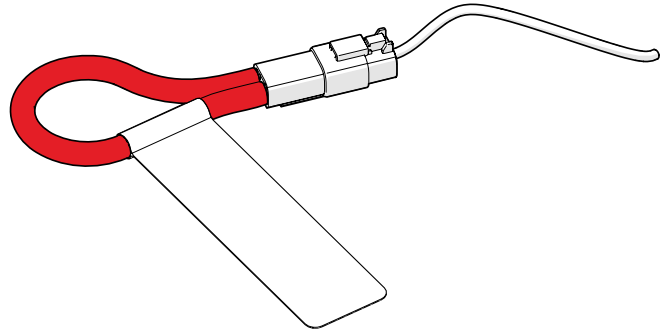


Figure 14 - Safety loop

Safety loops locations

One safety loop is located at the front of the vehicle, under the hood **(Figure 15)**. The second one is located at the rear of the vehicle's left side rail **(Figure 16)**.

To remove a safety loop in an emergency, disconnect it or cut the wire twice.

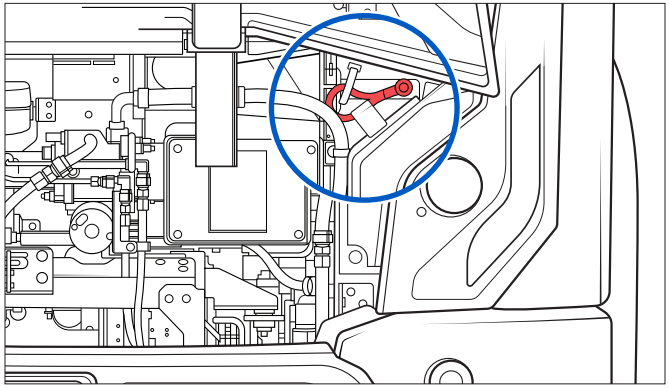


Figure 15 – Front safety loop

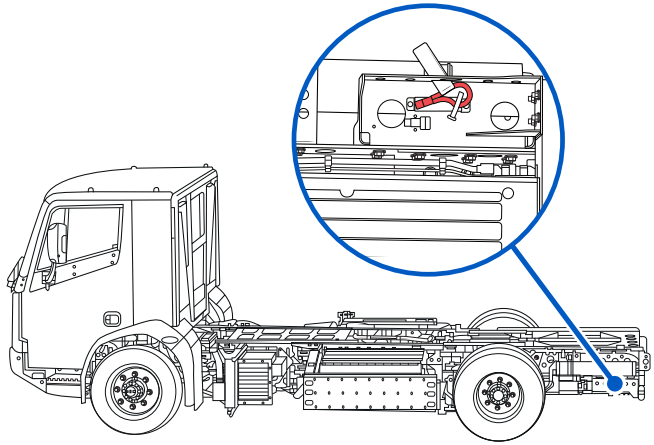


Figure 16 – Rear safety loop

CRASH SENSORS

The vehicle is equipped with three crash sensors, also known as impact detectors, that instantly shut down high-voltage circuits in case of an impact.

If one of the crash sensors is triggered, the high voltage circuit is deactivated and locked out. It cannot be re-activated without using the proper equipment to reset the crash detection circuit of the high voltage batteries.

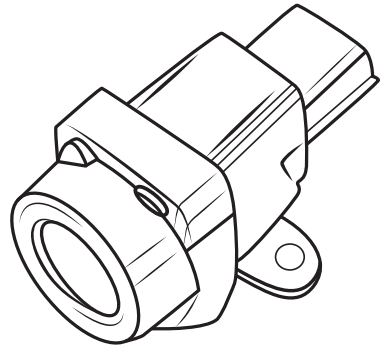


Figure 17 - Crash sensor

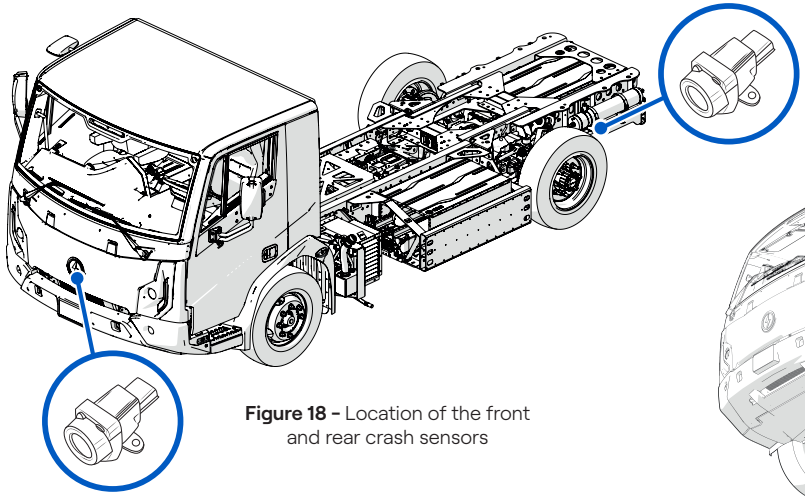


Figure 18 – Location of the front and rear crash sensors

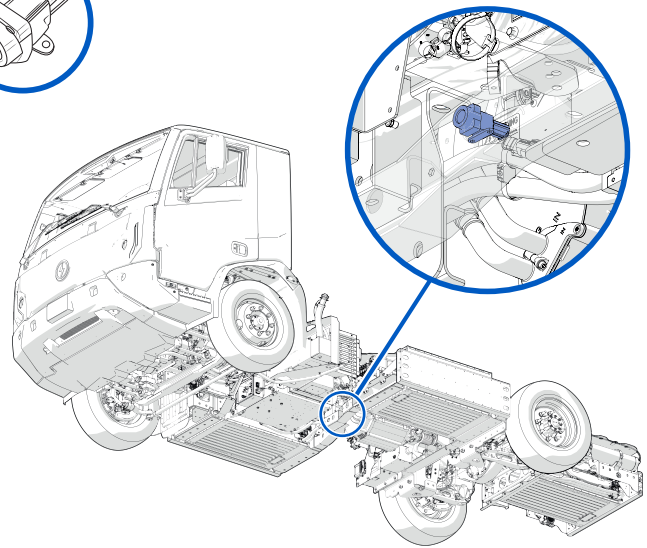


Figure 19 – Location of the middle crash sensors

IN CASE OF FIRE OR WATER IMMERSION

Fire extinguishment of high-voltage batteries

If there is a crack in the batteries due to an impact, an inflammable and corrosive electrolyte solution may leak.

If there is a fire in the batteries, use a lot of water (or CO_2) to cool down the batteries. The batteries will not explode.

Depending on the availability, other extinguishing agents (fire extinguishing foam or powder) may also be used.

As common in firefighting, complete personal protective equipment (PPE) including self-contained breathing apparatus (SCBA) must be used.

If there is a fire that is not emerging from the high-voltage batteries, it can be treated using typical vehicle firefighting procedures.

Submerged vehicle

A Lion5 that is submerged in water will not present the risk of electrocution since the high-voltage batteries are isolated from the vehicle chassis.

Treat a partially or fully submerged Lion5 as any other vehicle and use the appropriate personal protective equipment (PPE).

Once the vehicle is removed from water, disable the high voltage using the procedure listed in this manual **(See Electrical safety disconnect section)**.

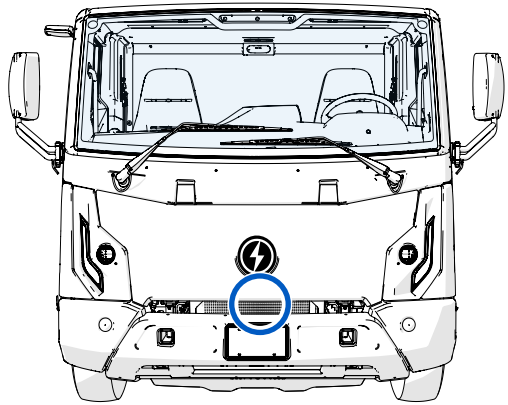
Opening the hood

Some components and fluid reservoirs are accessible under the hood

To open the hood:

1. Stand in front of the vehicle and locate the release latch, under the front edge of the hood.
2. Pull the lever.
3. Slowly lift the hood until fully open.

The hood will remain open.



FLUID RESERVOIRS

Fluid reservoir locations

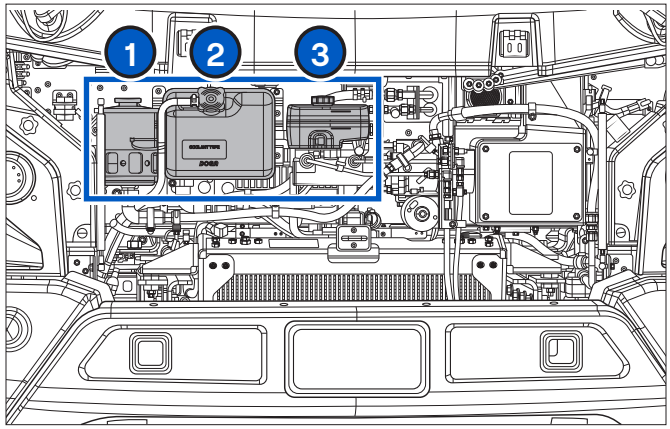


Figure 20 – Fluid reservoirs

N°	Description
1	Power steering fluid reservoir (flammable)
2	Powertrain coolant fluid reservoir (hot liquid)
3	Brake fluid reservoir (flammable)

Table 3 – Fluid reservoir locations

Battery coolant reservoir access

1. Open the driver's door and locate the black door handle at the bottom of the access panel **(Figure 21)**.
2. Pull the handle to open the access panel.
3. Pull the panel to access the battery coolant reservoir **(Figure 22)**. This coolant is a special low-conductivity fluid (type LCF-50).

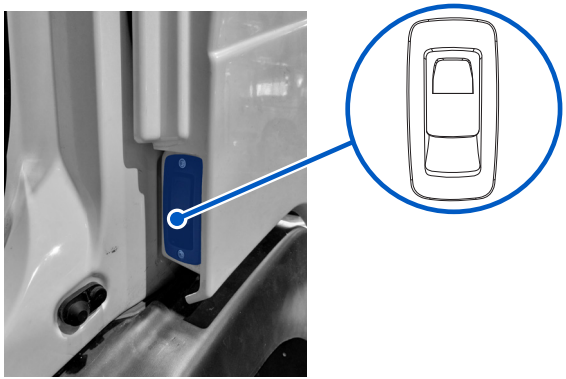


Figure 21 – Accessory compartment access panel handle

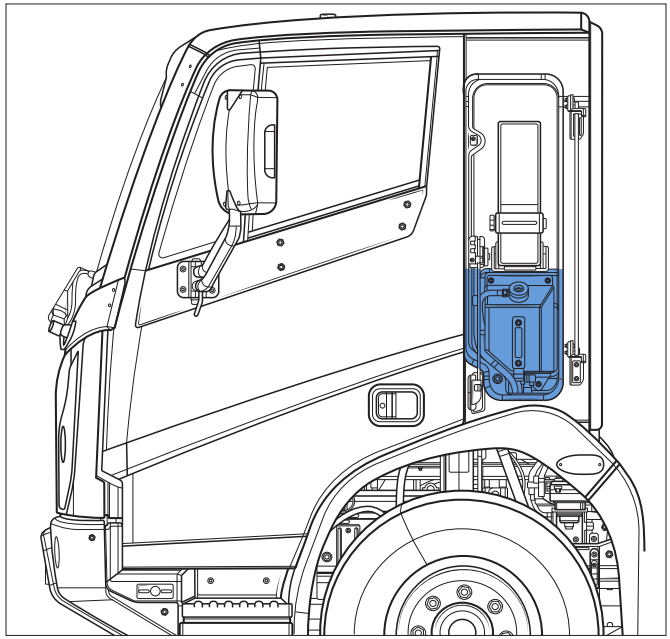


Figure 22 – Battery coolant reservoir

FLUID RESERVOIRS

Windshield washer fluid reservoir access

- The windshield washer fluid reservoir is located behind the bottom of the driver's side door, next to the cab step **(Figure 23)**.

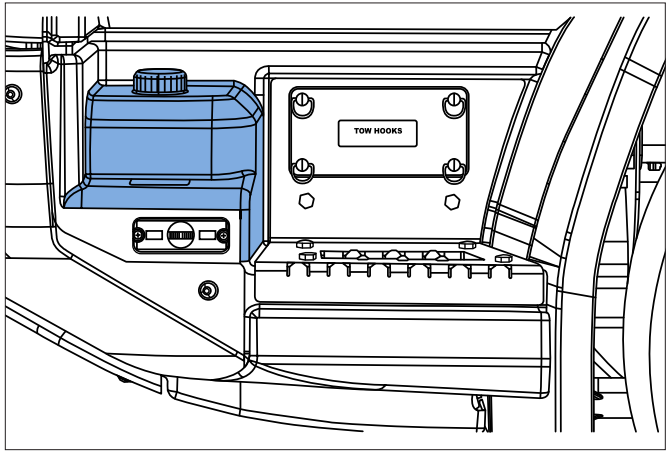


Figure 23 – Windshield washer fluid reservoir

Lifting the vehicle

Lift points

Proper lifting procedures and basic safety measures must be followed to ensure the safety of personnel while working under the vehicle. Always check the conformity of any lifting equipment prior to use.

Ensure that the lifting equipment is of sufficient strength to handle the vehicle, and that the surface beneath the lifting equipment provides the necessary support to bear the weight of the vehicle concentrated on the footprint of the jack. Never move under a vehicle supported only by a hydraulic jack.

1. Park the vehicle on a flat, level surface capable to bear the load of the lifting equipment.
2. Chock the wheels in both directions.
3. Use only certified jacks and stands of sufficient capacity to support the vehicle. Following the jack manufacturer's recommendations, place the jack securely at the lifting points illustrated in **Figures 24, 25 and 26**.
4. Lift the vehicle only to the height necessary to service.

⚠ WARNING ⚠

The Lion5 hydraulic suspension system can modify the truck ride height, creating potential pinch points between suspension components and chassis. Always support the chassis on proper stands.

Before performing any work beneath the vehicle, always deactivate the vehicle's hydraulic suspension system by disconnecting the suspension's safety interlock connector behind the passenger seat (see Figure 35).

LIFTING THE VEHICLE

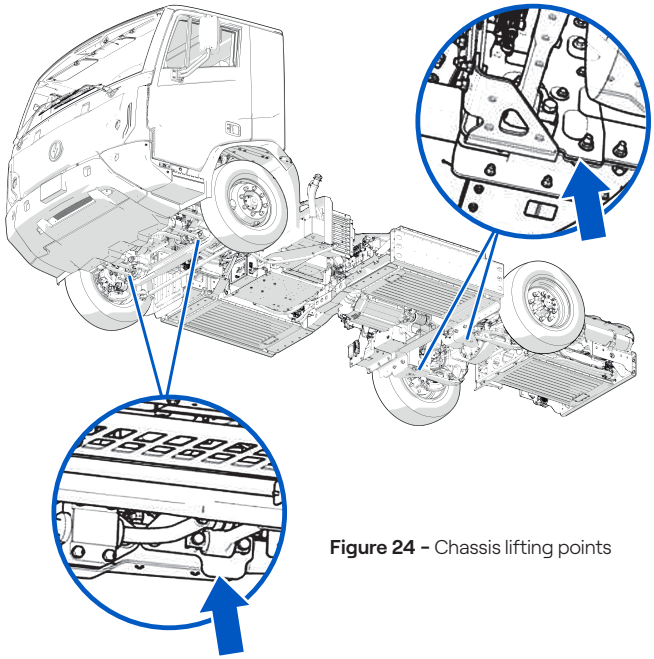


Figure 24 - Chassis lifting points

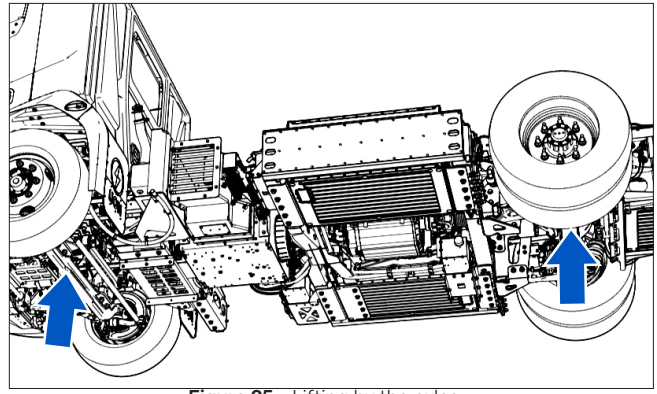


Figure 25 - Lifting by the axles

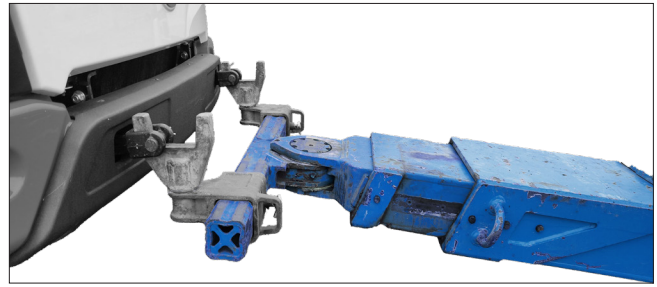


Figure 26 - Lifting by the front tow hooks

General Towing Guidelines

- If the hydraulic suspension is non-functional and the distance between the front tire and fender is less than 5 inch **(Figure 27)**, flatbed platform towing is required.
- If the hydraulic suspension is non-functional and the distance between tire and fender is 5 inch or more **(Figure 27)**, towing by the front axle is allowed **(follow procedure - Towing the vehicle)**.
- If the low-voltage circuit (12V/24V) is available and the hydraulic suspension system if functionnal, raise the vehicle to its normal or highest setting, and proceed to tow by the front axle **(follow procedure - Towing the vehicle**.
- If need be, an auxiliary 24V supply can be applied to the two electrical terminals (optional equipment) located at the top of the accessory compartment **(Figure 28)** on the passenger side of the truck.

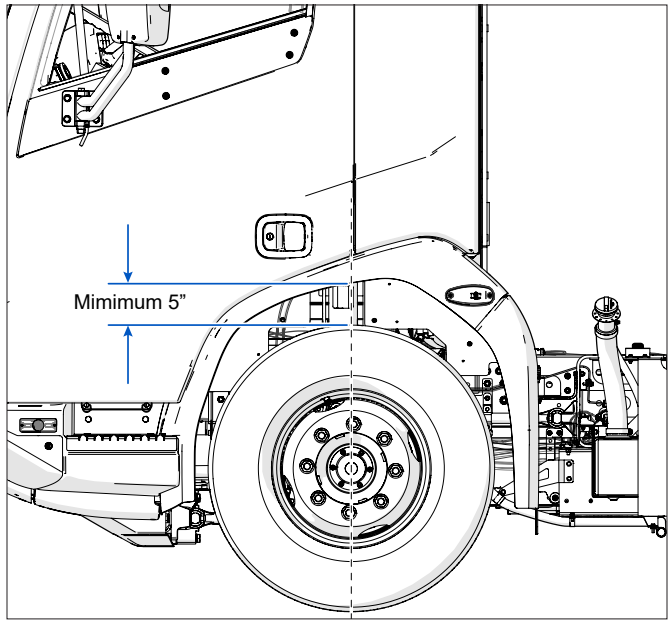


Figure 27 - Minimum ride height for towing

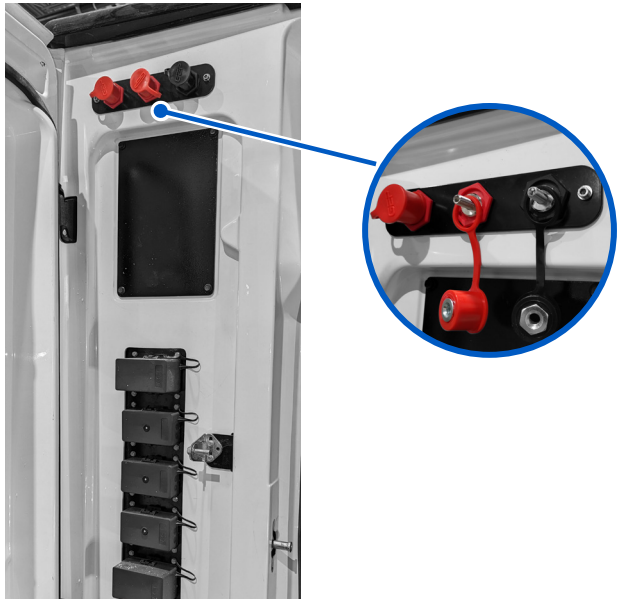


Figure 28 - Right side accessory compartment

Towing the vehicle

⚠ WARNING ⚠

The Lion5 preferred method of towing is by placing the truck on a platform trailer (Figure 29).

It can also be towed by lifting the front axle with the rear wheels on the ground and the rear axle half shafts removed.

As a last resort, in the case of an emergency, the Lion5 can also be towed with the rear half shafts in place, but speed shall not exceed 15 mph (20 km/h) and distance shall not exceed 6 miles (10 km). Failing to follow the limits stated above may result in high voltage hazards suchs as electrocution or electrical fire.

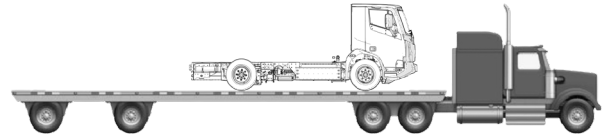


Figure 29 - Flatbed platform towing

Front tow hooks

Two Lion5 removable front tow hooks are stored in a compartment located above the step on the operator's side. Open this compartment to retreive the tow hooks **(Figure 30).**

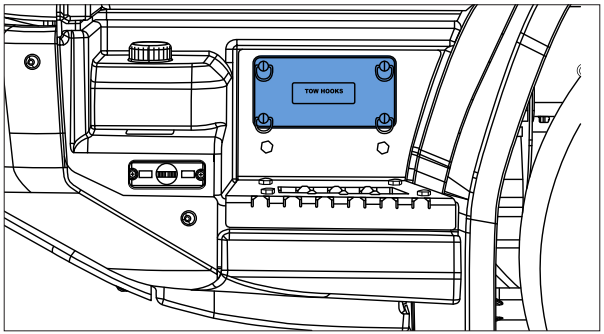


Figure 30 - Tow hooks compartment

TOWING THE VEHICLE

Installing front tow hooks:

1. Open the hood and remove the lock pins that hold the locking dowels in their receptacles **(Figure 31 no. 1)**.
2. Lift the locking dowels **(Figure 31 no. 2)**.

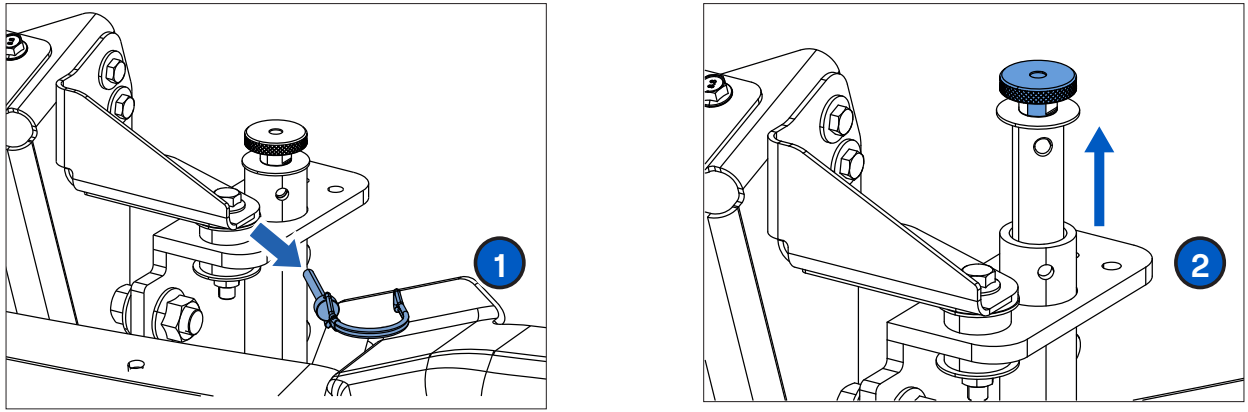


Figure 31 – Tow hook locking dowel with lock pin

3. Insert the tow hooks into the openings of the bumper cover **(Figure 32)**.

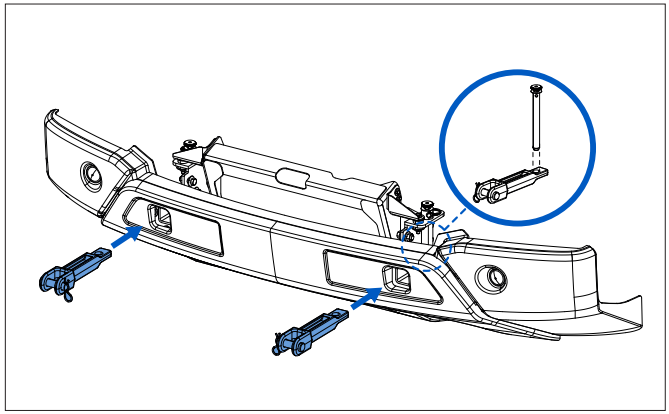


Figure 32 – Tow hooks and locking dowel

4. Lower the locking dowels in their receptacle **(Figure 33)**.

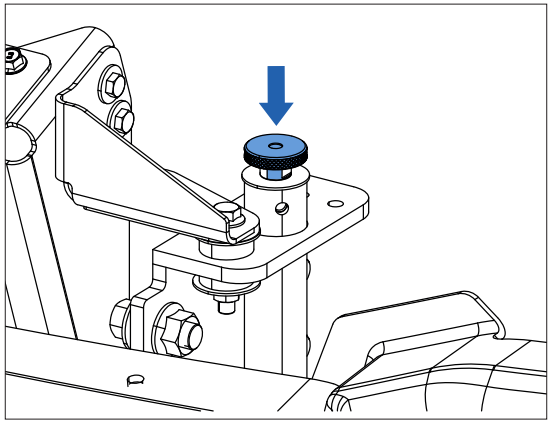


Figure 33 – Tow hook locking dowel

5. Replace the lock pins on the locking dowels **(Figure 34)**.

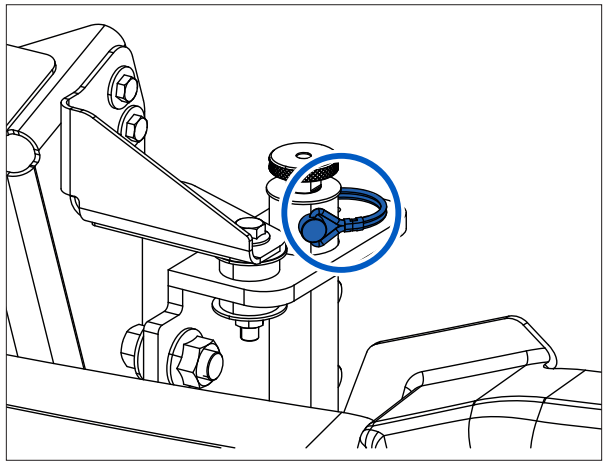


Figure 34 - Locking pins

Towing by lifting the front axle:

1. Chock the rear wheels.
2. Release the parking brake.
3. Turn on the vehicle and set the vehicle ride height to Normal or High using the suspension height control switches (see section on **Hydraulic Suspension**). Provide an auxilairy 24V supply if need be **(Figure 28)**.
4. Remove the hydraulic suspension system safety connector, which is located under an access panel behind the passenger seat **(Figure 35).**

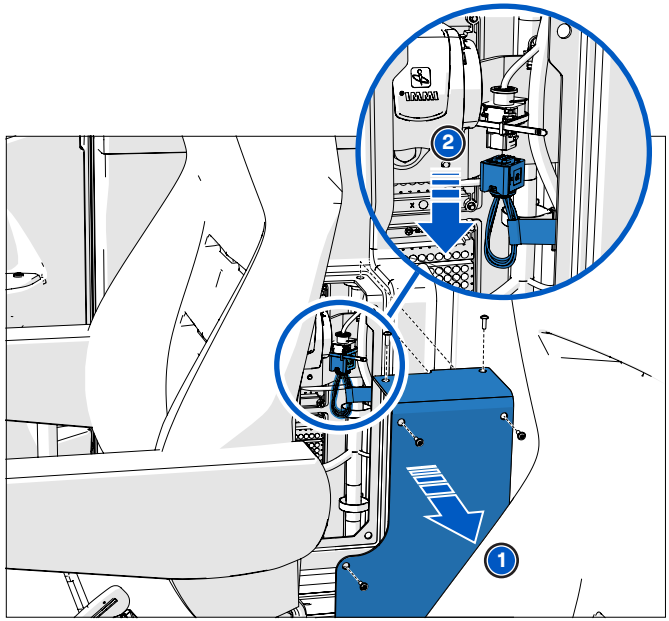


Figure 35 - Liquid Spring Safety conectors

5. Raise the vehicle by the front two hooks until the front wheels are at least 5.5 inch off the ground **(Figure 36)**.
6. Drop the front wheels on blocks (or place stands under the jacking points on the chassis). You can now insert the tow boom under the front bumper.

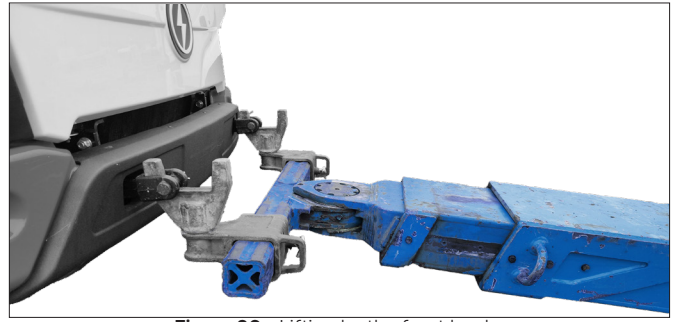


Figure 36 - Lifting by the front hooks

7. Raise the vehicle by lifting the front axle **(Figure 37)**.

Figure 37 – Raising the front axle

8. Remove the rear wheel half-shafts **(Figure 38)**.

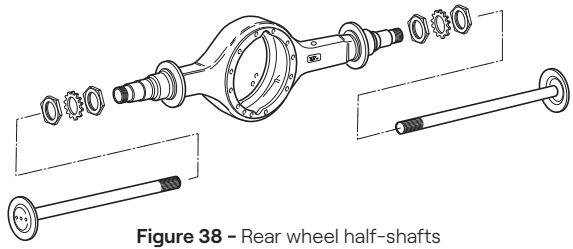


Figure 38 – Rear wheel half-shafts

9. Turn the Battery Disconnect Switch to "OFF" **(Figure 39)**.

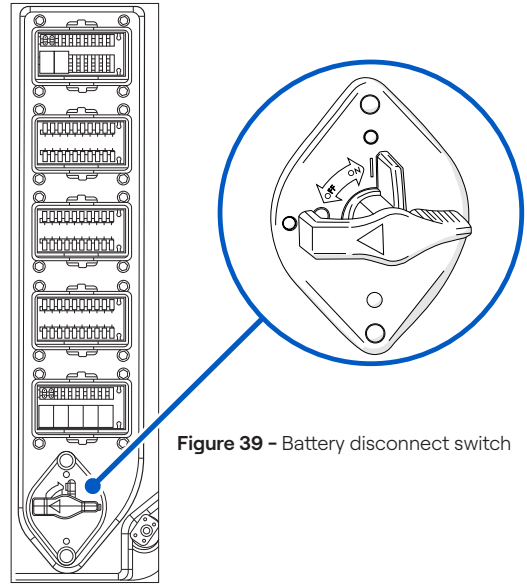


Figure 39 – Battery disconnect switch

LiquidSpring suspension

The Lion5 is equipped with a hydraulic suspension system. Vehicle ride height is adjustable and controlled by switches located on the dashboard. Three vehicle ride heights can be set: Normal, Low and High.

To raise the front of the vehicle, ensure the vehicle is turned on and use the front suspension control switch **(Figure 40)**.

To raise the rear of the vehicle, ensure the vehicle is turned on and use the rear suspension control switch **(Figure 41)**.

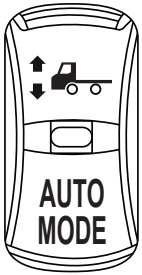


Figure 40 - Front suspension height control

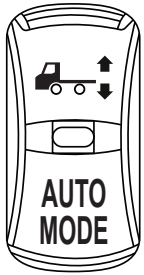


Figure 41 - Rear suspension height control

Vehicle ride height for towing

The ride height must be set to Normal or High before front axle towing can take place.

Switch LED color

The LED light in the center of the switches **(Figure 42)** indicates the actual vehicle ride height or if the Auto mode is activated.

Off : Suspension is at its **Normal** ride height. Towing is permitted.

Red : Suspension is at its **High** ride height. Towing is permitted.

Green : Suspension is at its **Low** ride height. Towing is prohibited. Raise the suspension or use a flatbed.

Amber : Auto mode is active. Towing is prohibited. Return ride height to Normal or High.

HYDRAULIC SUSPENSION

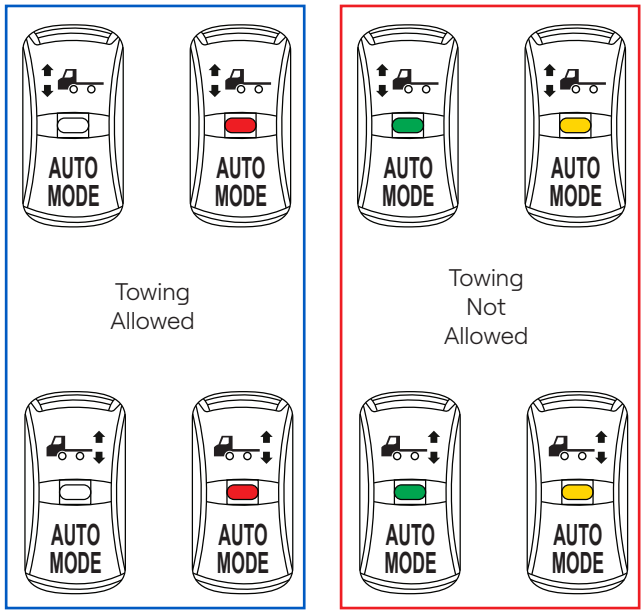


Figure 42 - Switches DEL Light Color

To select the **Normal** vehicle ride height when the LED is green or amber:

- Press the top part of the switch once. The LED on the switch will not be illuminated.

To select the **High** vehicle ride height:

- Press and hold the top part of the switch for 5 seconds. The LED on the switch will illuminate in RED and the vehicle will rise to the maximum ride height.

The automatic mode (Amber LED) lowers the vehicle ride height when a door is opened. Once that door is closed, the vehicle returns to its normal ride height.

To deactivate the automatic mode, press the top part of the switch once.

Front anchoring equipment capacity

The maximum pulling capacity depends on the direction of the pulling force. These are listed in **Table 4** and are calculated for two pulling points working simultaneously

⚠ WARNING ⚠

The data in the table above assumes that the constraints are shared equally between the two towing points. Severe damage to the vehicle can occur if the assembly isn't properly secured.

If the vehicle gets stuck or goes off the road, use the towing equipment with extreme caution and respect capacity limits. Damage to axles, suspension or chassis can occur, even if the force at the pulling points is less than the maximum capacity.

Direction of the traction exerted	Maximum capacity	
	kg	lb
Straight towards the front or the rear	11,600	25,500
Up front in a V	not allowed	
Vertical straight (front only)	7,484	16,500
20 degrees towards the side (front or rear)	11,600	25,500
20 degrees upward or downward (front or rear)	11,600	25,500

Table 4 - Towing capacity by direction of pull

RECOVERY

Safe recovery recommendations:

- Use double chains or cables to distribute the load evenly between both tow hooks.
- Never run a single chain or cable passing through both two hooks.
- Use a spreader or stabilizer bar to distribute the load between the tow hooks **(Figure 43 no. 1)**.
- Secure the recovered vehicle with two additional chains or cables.

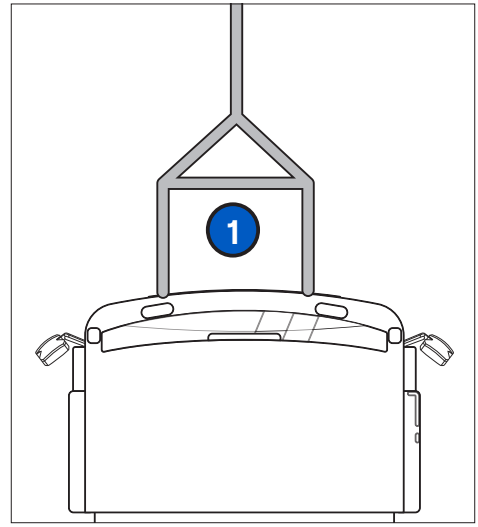


Figure 43 - Spreader bar for recovery

Rear anchoring points

The truck is equipped with two anchoring lugs at the rear end of the chassis **(Figure 44)**. These are to be used only to pull or recover the vehicle. They are not lifting points.

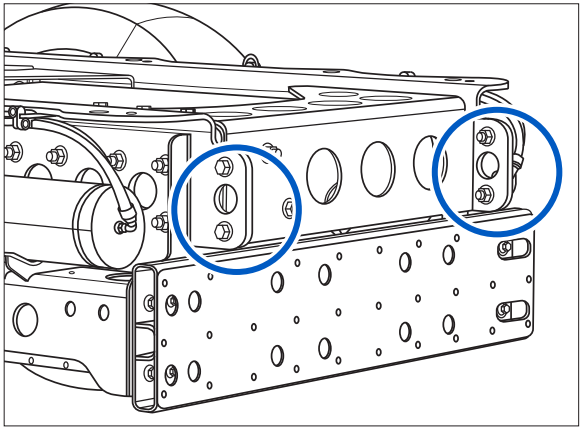


Figure 44 - Rear anchoring lugs

NOTES

NOTES

NOTES

THE LION ELECTRIC COMPANY

921 Rivière-du-Nord Road
Saint-Jérôme, Quebec, CANADA J7Y 5G2
855-546-6706
Info@thelionelectric.com