



# LD-1: GEN 2 Operator Manual

Rev.2



**[www.tcburton.com](http://www.tcburton.com)**

PO Box 483, Greenfield, IN 46140

# WARNING

## FAILURE TO FOLLOW SAFE OPERATING PRACTICES MAY RESULT IN SERIOUS INJURY OR DEATH

- Read this manual completely as well as the other manuals that came with your LD-1.
- Read the manual for your Polaris Sportsman 850 Premium ATV.
- **DO NOT OPERATE the LD-1 if any part of the LD-1 that has been damaged from a gunshot! Damaged components must be replaced immediately. Any other severe damage should be addressed immediately. Contact TC Burton Enterprises at [TCBurton.com](http://TCBurton.com).**
- Do not operate the LD-1 if any ballistic panel, ballistic glass, or any part of the frame becomes bent, broken or has been shot in any way.
- Do not remove any ballistic panels unless replacing after being damaged.
- Do not operate the LD-1 if any bolts are missing from the original assembly.
- DO not operate on steep slopes.
- Do not exceed the recommended maximum slope noted by Polaris in the operator manual provided by Polaris.
- Under no circumstances should the LD-1 be operated on slopes greater than 25 degrees.
- Allow for longer braking distances while operating the LD-1.
- Take extra caution on wet or slippery surfaces. This may reduce steering control and further increase braking distance.

## REMEMBER – YOUR LD-1 IS ONLY AS SAFE AS THE OPERATOR

HAZARD CONTROL AND ACCIDENT PREVENTION ARE DEPENDENT UPON THE AWARENESS, CONCERN, PRUDENCE, AND PROPER TRAINING OF THE PERSONNEL INVOLVED IN THE OPERATION, TRANSPORT, MAINTENANCE, AND STORAGE OF THE EQUIPMENT.

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## 1.0 General Information

Congratulations on the purchase of your TC Burton Enterprises, LLC, model LD-1 GEN 2. This unit has been carefully designed to ensure maximum performance, dependability, and quality for years of use. This manual contains operating, maintenance, adjustment, and safety instructions for your LD-1.

**BEFORE OPERATING YOUR LD-1, CAREFULLY READ THIS MANUAL IN ITS ENTIRETY.**

By following the operating, maintenance, adjustment, and safety instructions, you will prolong the life of your LD-1, maintain its maximum performance, and promote safe operation.

If additional information is needed, you may contact us at [TCBurton.com](http://TCBurton.com). Please have the serial # of your product ready. This will allow the representative to service your request as efficiently as possible.

Your serial # can be found on the under-side of the Back Panel Right Hand Top Rail Shown in Figure 1.0 below.

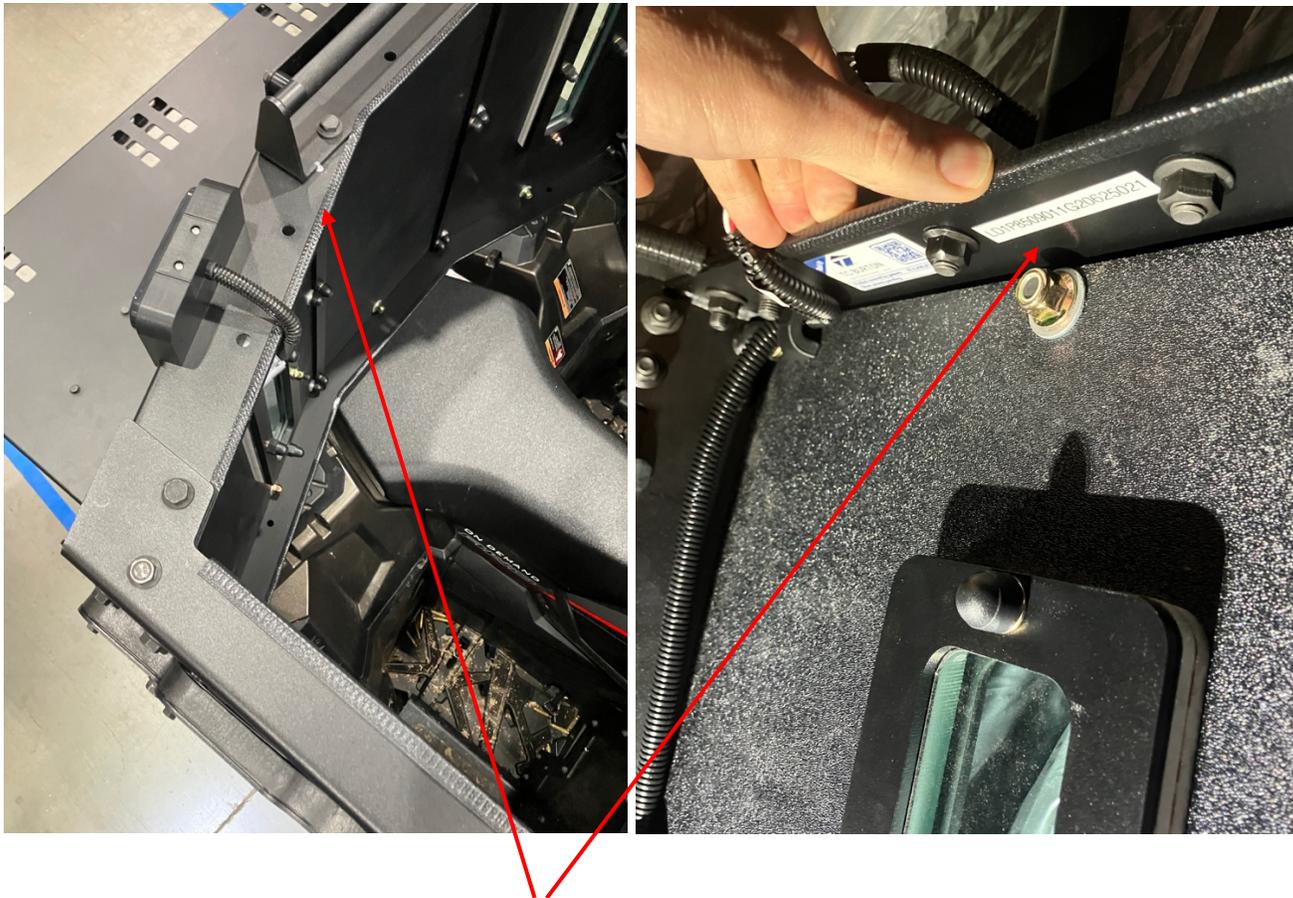


Figure 1.0: Serial Number Location: Back Panel (Right Rear) 18 digit, alphanumeric.

This manual is included with your LD-1 to help ensure that it is operated and maintained properly. Carefully reading and following instructions contained within this manual will help increase functionality and longevity of your LD-1. Electronic (PDF) copies of this manual can be found at [TCBurton.com](http://TCBurton.com) under the “Owner Info” tab.

If you have purchased an ATV with your LD-1, additional information regarding that unit can be found in the separate ATV Owner’s Manual provided by the ATV manufacturer.

TC Burton Enterprises reserves the right to make necessary changes to the design without notifying previous owners. If you notice a change and need updated information, contact us at [TCBurton.com](http://TCBurton.com). Be sure to check out the “Owner Info” tab on our website as well. As new model generations are introduced, there may be some changes to the Operating Manual as well.

## **2.0 Safety**

### **2.1 Introduction**

**Read this manual and the operator manual for your Polaris ATV before attempting to operate your LD-1.**

Failure to follow these instructions may result in serious injury or death. This manual is considered a part of the LD-1 and should always be kept nearby for reference.

Your machine is only as safe as the operator.

HAZARD CONTROL AND ACCIDENT PREVENTION ARE DEPENDENT UPON THE AWARENESS, CONCERN, PRUDENCE, AND PROPER TRAINING OF THE PERSONNEL INVOLVED IN THE OPERATION, TRANSPORT, MAINTENANCE, AND STORAGE OF THE EQUIPMENT.

Make sure every operator is properly trained and thoroughly familiar with all features and the safe operation of the LD-1 and associated purchased accessories before operating it.

Copies of this manual can be downloaded at [TCBurton.com](http://TCBurton.com) on the “Owner Info” tab.

## 2.2 Signal Words (Warning Stickers)



This symbol means “Attention! Become Alert!” It appears when the following topic is extremely important to safety. Carefully read and understand each message involving this symbol.

### SIGNAL WORDS:

Signal Words are found on safety decals of the machine throughout this manual to alert the operator (reader of this manual) to the existence and relative degree of the hazard.



“DANGER” indicates that an extremely hazardous situation exists involving the machine that could result in a high probability of death or irreparable injury if proper precautions are not taken.



“WARNING” indicates that a hazard exists involving the machine that can result injury or death if proper precautions are not taken.



“CAUTION” is a reminder of safety practices involving the machine that could result in personal injury if proper precautions are not taken.

## 2.3 Consideration Prior to Operation

1. Visually inspect the LD-1 for any damage to ballistic panels, ballistic glass, and frame. If any damage is found. **DO NOT OPERATE** the LD-1.
2. Visually inspect the LD-1 for any missing bolts from the original assembly. **DO NOT OPERATE** the LD-1 if any bolts are missing from the original assembly.
3. Only allow responsible individuals who are thoroughly familiar with all features and safe operation of the LD-1 and associated purchased accessories to operate the vehicle.
4. Never allow children to operate the LD-1.
5. Only one person (operator) should be inside the LD-1 cab in normal operation.
6. Always wear a helmet suitable for an ATV when operating an LD-1. Refer to your Polaris Owner's Manual for further attire recommendations.
7. **DO NOT OPERATE** the LD-1 under the influence of alcohol or drugs.
8. If the operator(s) or mechanic(s) cannot read English, it is the owner's responsibility to explain this material to them.
9. Do not wear loose fitting clothing. Loose clothing, jewelry, and long hair can get tangled in mechanisms. Wear long pants, safety shoes, safety glasses and restrain all long hair.



Note: Always wear a helmet suitable for an ATV when operating an LD-1.

10. Under normal circumstances, keep the doors closed when operating the LD-1. The deployment of the doors should be done when the vehicle is in a stopped position. In the case where the doors are open for "cover", the machine should be operated at crawling speed, 2-4 mph. Under no circumstances should higher speed turns be taken with the doors deployed.



Note: Operating the LD-1 at above 2-4 mph with the doors open, especially in a turn can cause unpredictable handling and may result in loss of control resulting in serious injury or death.

## **2.4 Safety During Operation**

Familiarize all operators with the all features and safe operation of the LD-1 and associated purchased accessories before operating it.



Under no circumstances should the LD-1 be operated on slopes greater than 25 degrees. Take extra caution on wet surfaces. This may reduce steering control and increase braking distance.

The operator should allow for longer stopping distances on all surfaces as the LD-1 kit adds a static load to the ATV. Loose dirt, gravel, wet surfaces, downward slopes, icy conditions, or other slick surfaces may cause significantly longer braking distance as well as adversely affect handling.

Execute turns at a slower speed and drive smoothly thru turns. Do not accelerate with high throttle at any point throughout the turning process. Fast, erratic turns may result in loss of control and cause the machine to overturn.



Do not attempt to mount machine when it is already in motion. The optional T-Bar and Rear Step Tread accessories should be mounted while the machine is stopped.

Use extra care when approaching blind corners, shrubs, trees, or other objects that could obscure vision.

## Hauling and Towing Cargo Reminders:

- USE EXTREME CAUTION when operating with loads. Stability and maneuverability may be adversely affected, causing the vehicle to overturn.
- Never exceed 50 mph (80 km/h) when rear cargo loads are above 75lbs (34kg) and/ or front cargo loads are above 37 lbs. (17kg). NEVER exceed 15 mph when rear cargo loads are above 200 lbs (91kg) and /or front cargo loads are above 100lbs.
- Slow down.
- Use low forward gear when hauling/ towing heavy cargo in order to extend belt life.
- Always operate the machine with extreme caution when hauling loads or towing. Handling and control may be affected.
- Do not attach/ strap any load to be towed while connected to the optional T-bar accessory. It is only designed to have a person standing on it. It is NOT designed to pull loads.

## 2.5 Slope Safety

Refer to your Polaris Owner's Manual for operation of this machine on slopes. See additional notes below.



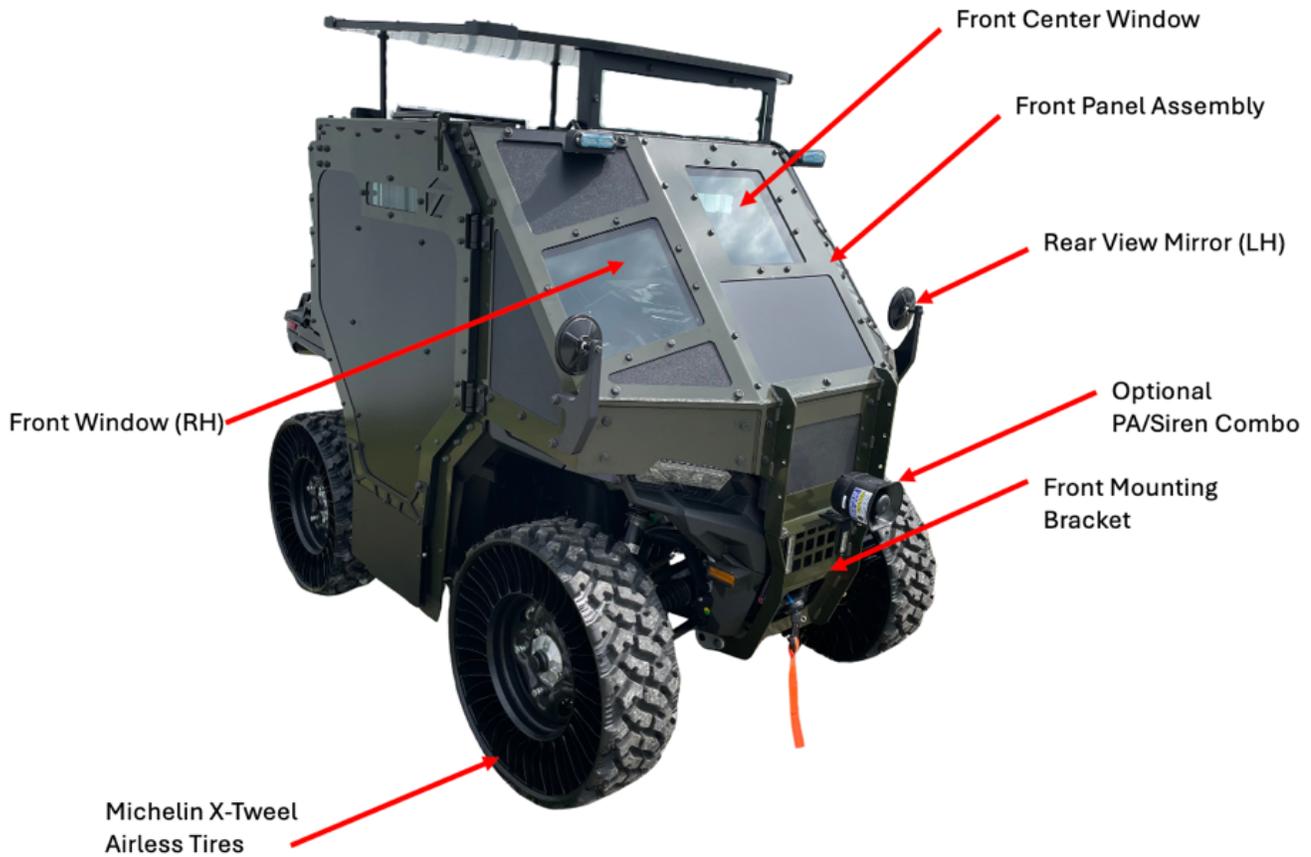
Slopes are a major factor related to loss of control and rollover accidents, which can result in severe injury or death. The operator is responsible for safe slope operation. Operating the machine on any slope requires extra caution. Before using the machine on a slope, do the following:

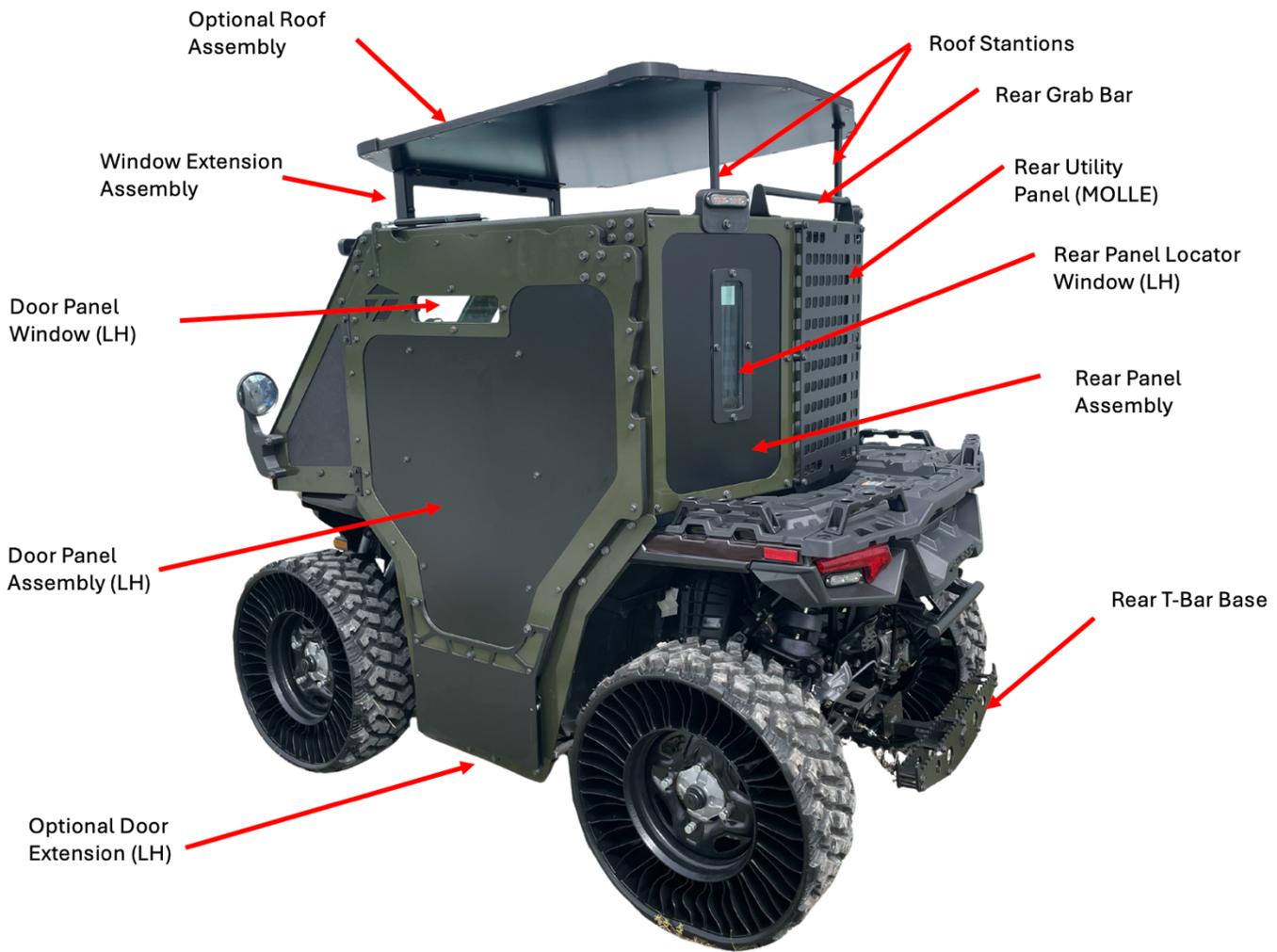
- Review and understand the slope instructions in the manual of your ATV.
- Use an angle indicator to determine the approximate slope angle of the area.

- Never operate the LD-1 on slopes greater than 25 degrees.
- Evaluate the site conditions of the day to determine if the slope is safe for machine operation. Use common sense and good judgement when performing this evaluation. Changes in terrain, such as moisture, can quickly affect the operation of the machine on a slope.
- Identify hazards at the base of the slope. Do not operate the machine near drop-offs, ditches, embankments, water, or other hazards. The machine could suddenly roll over if a wheel goes over the edge or the edge collapses. Keep a safe distance (twice the width of the machine) between the machine and any hazard.
- Avoid starting, stopping, or turning the machine on slopes. Avoid making changes in speed or direction; turn slowly and gradually.
- Do not operate the machine under any circumstances where traction, steering, or stability is in question. Be aware that operating the machine on wet grass or mud, across slopes, or downhill may cause the machine to unexpectedly lose traction. Loss of traction on the drive wheels can result in a slide and a loss of braking, even if the drive wheels are stopped.

### **3.0 Know Your LD-1**

The diagrams below are designed to familiarize you with the components and their names that comprise your LD-1. Refer to the parts manual for further details on any component that may become damaged during use.





**Key notes:** Each component of the LD-1 has been carefully engineered for maximum performance and reliability. Any modification to the steel frame (exoskeleton) or any other part of the LD-1 may compromise the ballistic capability and structural prowess. Please contact us at [TCBurton.com](http://TCBurton.com) with any inquiries.

## **4.0 LD-1 Operation**

The LD-1 kit is designed to be intuitive and efficient. Most of the kit remains stationary while mounted to the ATV. The door operation has been especially designed with a pull cable latch system for quick deployment of the doors to a full 90-degree open position.

To open the door from the outside of the machine, reach over the Upper Tie Bar (top of the door frame) and pull the cable up while pulling slightly on the door. The integrated gas shocks will push the door open from there. See figure 2a below.

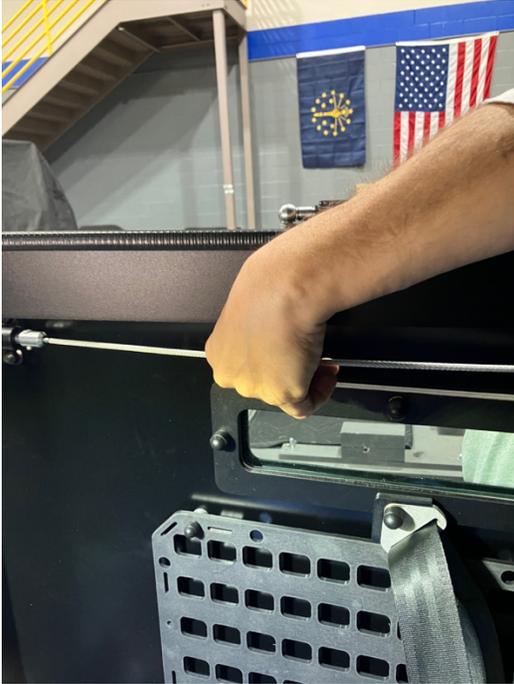


Figure 2a

To shut the door from the outside, simply push the door shut like you would with a car or truck.

To open the door from the inside of the LD-1, pull the latch cable down and push slightly on the door. The integrated gas shocks will push the door open from there. See figure 2b below.

To shut the door from inside the LD-1, pull on the door pull straps with a similar force as closing a car door until the latch engages in the close position. See Figure 2c below.



Figure 2b



Figure 2c

If your LD-1 is equipped with the Emergency Super LED Light Kit with PA/Siren Combo, the section below outlines features and operation of that system.

Factory accessory blanks are utilized for simple backlit switches for quick/ simple controls.

RH switch: Siren

LH Upper Switch: Upper Floods

LH Lower Switch: Red/Blue Alternating Flashers



- ❑ Upper Floods with lower red/blue alternating flashers.
  - ❑ Upper Floods are housed in custom brackets and housings.
- ❑ Upper Floods can run by themselves are along with the red/blue alternating flashers.
- ❑ Lower flashers are "clamp mount" to the LD-1 lower mounting bracket.



- ❑ Upper Floods with lower red/blue alternating flashers. Those are mounted with custom housings.
- ❑ Flood Lights can run by themselves are along with the red/blue alternating flashers.
- ❑ Lower alternating flashers are direct mounted to plastic area below the rear taillight.



- ❑ PA/Siren Combo is front mounted.
  - ❑ PA system is active with push of mic trigger.
  - ❑ Magnetic Mic holder installed on Fender Armor integrated MOLLE panel "blank space"



- ❑ PA/Siren Combo is front mounted.
- ❑ The Siren/PA Combo speaker shown with optional Tactical Bumper.



## **5.0 Adjustments**

There should be minimal adjustments required during the life of your LD-1. If any bolts come loose on certain components, the operation of the LD-1 can be affected. Please follow the maintenance schedule strictly to maintain proper operating conditions and performance.

### **Door Latch Adjustment:**

The doors should open and close smoothly. The door latch can be adjusted in or out by loosening the bolts shown below (Figure 3a). Once the latch position is adjusted to the desired position, re-torque the bolts per the Torque Specification Table-A.

If the door is not hanging straight, the door hinge mounts to the frame can be loosened and adjusted some. See (Figure 3b) Door hinge bolts should be re-torqued per the Torque Specification Table-A. Please check for damages before making any adjustments.



Figure 3a



Figure 3b

## **6.0 Maintenance**

**Service Procedure:** Contact us at [TCBurton.com](http://TCBurton.com) for genuine spare parts and associated installation / replacement instructions.



Do not drill, bend, or weld any part of the LD-1. This may degrade the capabilities and longevity of your LD-1. For upfit inquiries, please contact us at [TCBurton.com](http://TCBurton.com).

Only use genuine TC Burton Enterprises hardware, parts and accessories for your LD-1.



### **Glass Cleaning Instructions (per glass manufacturer):**

Rinse sheet with lukewarm water and gently wipe with mild soap or detergent and lukewarm water using a soft cloth.

DO NOT SCRUB or use brushes or squeegees. Rinse again. Dry with soft cloth or moist cellulose sponge to prevent water spotting. To remove paint, glazing compound or grease, rub lightly with a good grade of VM&P naphtha or isopropyl then wash and rinse.

Do not use gasoline or ammonia.

NOTICE: Abusive cleaning procedures by hand washing or automated washing equipment will result in visual hazing, loss of light transmission and coating deterioration.

### **Weekly Inspection**

- Inspect surface of all steel components for any defects such as gouges or rusty areas. If the structure is dented or bent in any way, note the results of the inspection and contact us at [TCBurton.com](http://TCBurton.com).
  
- Inspect the ballistic panels and ballistic glass surfaces for any scratches, cracks, or gouges.
- Inspect the X-Tweels for any large gouges or other damage.
- Inspect the rear spring spacers for any damage (2 per spring)
- Inspect the front spring spacers (2026 and later models) for any damage (1 per spring)



Note: if there is damage to the outer surface (ABS plastic, rubber coating, or Aluminum cover) of the ballistic panel, please note to see if damage is deeper into the ballistic panel itself. If the ballistic panel has been damaged, contact us at [TCBurton.com](http://TCBurton.com) for evaluation/ instruction.

- Inspect for any loose or missing nuts/ bolts throughout the LD-1. Tighten any loose bolts per the Torque Specification Table-A. Replace any missing bolts or nuts ONLY with genuine TC Burton Enterprises hardware. **DO NOT OPERATE** the LD-1 if any bolts are missing from the original assembly.

### **Monthly Inspection & Bolt Torque (per Torque Specification Table-A)**

Weekly Inspection Items plus:

- Torque Mounting Bracket Retainer Clips. (1 bolt per side)
- Torque Door Hinge bolts (4 hinges at 4 bolts each).
- Lubricate door latch cylinder (apply light oil sparingly or non-silicone based spray lubricant)
- Lubricate door hinges and, if applicable, the door extension hinges. (apply light oil sparingly or non-silicone based spray lubricant)
- If equipped, inspect the tactical bumper and insert for any damage. Torque mounting bolts.
- If equipped, inspect the Utility Platform for any damage. Torque mounting bolts.
- If equipped, inspect the window extension frame and components for any damage. Torque mounting bolts.
- If equipped with a roof, inspect for any damages. Torque roof clamp mount. CAUTION: tighten from the cab of the LD-1. Do NOT turn the bolt, only the nut. This is done to protect the o-ring under the bolt head on the A-side of the panel.

## TORQUE SPECIFICATION TABLE-A

**NOTE:** These are dry bolt torque values. Do NOT add any aftermarket lubrication to nuts or bolts prior to installation. If lubrication is required to removed hardware, replace with new genuine TC Burton Enterprises spares.

**NOTE:** Keep watch when tightening bolt heads directly on ballistic material or plastic surfaces. Observe to ensure no distortion is present on the material.

**NOTE:** Do not over-torque bolts on the Glass Panel Retainers. This may cause the glass to fracture and lose its ballistic capability. If glass is ever damaged, replace the glass, gaskets and hardware immediately before using the LD-1 again.

All nuts should be snugged before final torque.

**NOTE:** The prevailing nuts used on this unit are meant to be used ONE TIME. If any nuts are removed from the machine, they should be replaced with new genuine TC Burton Enterprises hardware to ensure proper mechanical fastening properties.

Component	Title	Torque Specification	1/4" drive 20-100 in-lb Torque Wrench	3/8" drive 20-100 ft-lb Torque Wrench
Door - RH	Perimeter M6 bolts	40 in-lb	x	
Door - RH	Door Stop M6 bolts	40 in-lb w/ loctite	x	
Door - RH	Glass Retainer M8 bolts	40 in-lb	x	
Door - RH	Ballistic Panel M10 bolts	90 in-lb	x	
Door - RH	Latch Cable Post M8 bolts	90 in-lb	x	
Door - RH	Door Latch M10 bolts	20 ft-lb		x
Door - RH	Hinges to Door M8 bolts	20 ft-lb		x
Door - RH	Hinges to Frame M8 bolts	30 ft-lb		x
Door - LH	Perimeter M6 bolts	40 in-lb	x	
Door - LH	Door Stop M6 bolts	40 in-lb w/ loctite	x	
Door - LH	Glass Retainer M8 bolts	40 in-lb	x	
Door - LH	Ballistic Panel M10 bolts	90 in-lb	x	
Door - LH	Latch Cable Post M8 bolts	90 in-lb	x	
Door - LH	Door Latch M10 bolts	20 ft-lb		x
Door - LH	Hinges to Door M8 bolts	20 ft-lb		x
Door - LH	Hinges to Frame M8 bolts	30 ft-lb		x
Rear Panel - RH	Glass Retainer M8 bolts	40 in-lb	x	
Rear Panel - RH	Ballistic Panel M8 bolts	50 in-lb	x	
Rear Panel - RH	Ballistic Panel M10 bolts	90 in-lb	x	
Rear Panel - CTR	Ballistic Panel M10 bolts	90 in-lb	x	
Rear Panel - CTR	AR-500 retainer strips M8 bolts	90 in-lb	x	
Rear Panel - LH	Glass Retainer M8 bolts	40 in-lb	x	
Rear Panel - LH	Ballistic Panel M8 bolts	50 in-lb	x	
Rear Panel - LH	Ballistic Panel M10 bolts	90 in-lb	x	

<b>Component</b>	<b>Title</b>	<b>Torque Specification</b>	<b>1/4" drive 20-100 in-lb Torque Wrench</b>	<b>3/8" drive 20-100 ft-lb Torque Wrench</b>
Front Panel - RH	Glass Retainer M8 bolts	40 in-lb	x	
Front Panel - RH	Ballistic Panel M10 bolts	90 in-lb	x	
Front Panel - LH	Glass Retainer M8 bolts	40 in-lb	x	
Front Panel - LH	Ballistic Panel M10 bolts	90 in-lb	x	
Front Panel - CTR	Glass Retainer M8 bolts	40 in-lb	x	
Front Panel - CTR	Ballistic Panel M10 bolts	90 in-lb	x	
Front Panel - CTR	AR-500 retainer strips M8 bolts	90 in-lb	x	
Front Panel - RH Winglet	Ballistic Panel M10 bolts	90 in-lb	x	
Front Panel - RH Winglet	Ballistic Panel M10 bolts	90 in-lb	x	
Front Panel RH Eyebrow	Ballistic Panel M10 bolts	90 in-lb	x	
Front Panel RH Eyebrow	Ballistic Panel M10 bolts	90 in-lb	x	
Front Panel Nose	Ballistic Panel M10 bolts	90 in-lb	x	
Front Panel	Mounting to front mount bracket M10 Bolts	30 ft-lb		x
Front Mount Bracket Lock	M10 Mount Bolts	45 ft-lb		x
Fender Armor - RH	M8 Clamp Bolts	20 ft-lb		x
Fender Armor - LH	M8 Clamp Bolts	20 ft-lb		x

Window Extension	M10 frame mount bolts	30 ft-lb		x
Window Extension	M8 glass mount bolts	40 in-lb	x	
Rear Roof Stansions	M10 mount bolts	30 ft-lb		x
Roof panel Clamp	M8mount bolts	90 in-lb	x	
Roof panel perimeter	M6 mount bolts	40 in-lb	x	
Rear Grab Bar	M10 mount bolts	45 ft-lb		x
Tactical Bumper	M10 mount bolts	45 ft-lb		x
Utility Platform	M8mount bolts	90 in-lb	x	
T-Bar	M8 Assembly Bolts (inc. Step Tread)	90 in-lb	x	
T-Bar	1/2" Bolt to Receiver	30 ft-lb		x
T-Bar	1/2" Nylock	30 ft-lb		x
X- Tweels	17mm bolts	45 ft-lb		x

## **7.0 Storage**

Wherever possible, the LD-1 should be stored indoors.

The LD-1 may be transported and used in any climate. Wherever possible, after use, clean and dry the entire unit.

The unit should be kept away from an open flame as the frame and outer ballistic skins maybe become damaged. If any outer ballistic skin is burnt/ melted, the inner ballistic panel must be inspected for damage. Prolonged fire can damage the construction of the ballistic panels as well as compromise the structural prowess of the steel frame.

When storing the LD-1, it is a good practice to store the unit under a dust cover to protect all surfaces from dust, dirt and other objects that can affect the paint finish or any other component.