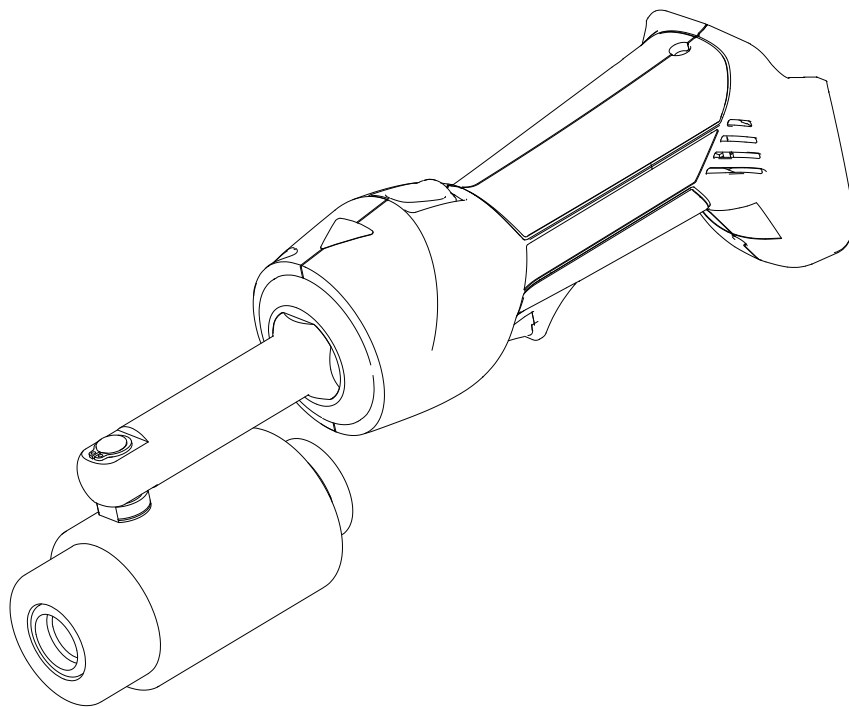


# INSTRUCTION MANUAL



## **Gator<sup>®</sup> LS50L2 Battery-Hydraulic Knockout Driver**



**Read and understand** all of the instructions and safety information in this manual before operating or servicing this tool.

Register this product at [www.greenlee.com](http://www.greenlee.com)

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## Description

The Greenlee LS50L2 Battery-Hydraulic Knockout Driver is a hand-held, self-contained knockout driver intended to be used with Greenlee punches, dies, and drawstuds for punching holes through mild steel, stainless steel, brass, copper, aluminum, fiberglass, and plastics.

The LS50L2 is designed to be used with the following Greenlee accessories:

- Standard punches, dies, and drawstuds
- Slug-Buster® punches, dies, and drawstuds
- Slug-Splitter® punches, dies, and drawstuds
- SPEED PUNCH® Knockout System
- Electronic connector panel punches
- Special shape punches, dies, and drawstuds (“D”, Double “D”, Key, Square, Rectangular, and Oiltight with notches)

Standard and Slug-Buster, Electronic Connector Panel Punches, and special shape punches can punch holes through mild steel, brass, copper, aluminum, fiberglass, and plastics, with limited stainless steel capability. Slug-Splitter punches, dies, and drawstuds are capable of punching through all of these materials and are optimized for stainless steel. Refer to the “Capacity” section in this manual for detailed information on maximum driver rating. Do not exceed the rated capacity of the punch or driver.

This tool is protected by U.S. Patent No. 6,276, 186, 6,401,515, 7,086,979, and 7,254,982 and patents pending.

## Safety

Safety is essential in the use and maintenance of Greenlee tools and equipment. This manual and any markings on the tool provide information for avoiding hazards and unsafe practices related to the use of this tool. Observe all of the safety information provided.

## Purpose of this Manual

This manual is intended to familiarize all personnel with the safe operation and maintenance procedures for the following Greenlee tool:

LS50L2 Battery-Hydraulic Knockout Driver

Keep this manual available to all personnel.

Replacement manuals are available upon request at no charge at [www.greenlee.com](http://www.greenlee.com).



**Do not discard this product or throw away!**

For recycling information, go to [www.greenlee.com](http://www.greenlee.com).

All specifications are nominal and may change as design improvements occur. Greenlee Tools, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

GATOR, Kwik-Stepper, Slug-Buster, Slug-Splitter and SPEED PUNCH are registered trademarks of Greenlee Tools, Inc.

# **KEEP THIS MANUAL**

## IMPORTANT SAFETY INFORMATION



### SAFETY ALERT SYMBOL

This symbol is used to call your attention to hazards or unsafe practices which could result in an injury or property damage. The signal word, defined below, indicates the severity of the hazard. The message after the signal word provides information for preventing or avoiding the hazard.

### ⚠ DANGER

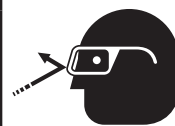
Immediate hazards which, if not avoided, **WILL** result in severe injury or death.

### ⚠ WARNING

Hazards which, if not avoided, **COULD** result in severe injury or death.

### ⚠ CAUTION

Hazards or unsafe practices which, if not avoided, **MAY** result in injury or property damage.



### ⚠ WARNING

Wear eye protection when operating or servicing this tool.

Failure to wear eye protection could result in serious eye injury from flying debris or hydraulic oil.



### ⚠ WARNING

Skin injection hazard:

Do not use hands to check for oil leaks. Oil under pressure easily punctures skin. If injured, seek medical attention immediately to remove oil.

Failure to observe this warning could result in serious injury, gangrene, or death.



### ⚠ WARNING

Do not use solvents or flammable liquids to clean the tool body. Solvents or flammable liquids could ignite and cause serious injury or property damage.



### ⚠ WARNING

Read and understand all of the instructions and safety information in this manual before operating or servicing this tool.

Failure to observe this warning could result in severe injury or death.



### ⚠ WARNING

Electric shock hazard:

This tool is not insulated. When using this unit on or near energized electrical lines, use proper personal protective equipment.

Failure to observe this warning could result in severe injury or death.



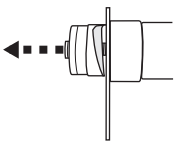
### ⚠ WARNING

Pinch points:

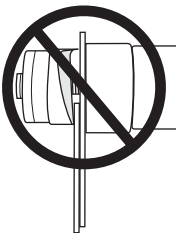
- Remove battery before changing dies, adapters, or jaws.
- Keep hands away from the tool head when punching.

Failure to observe these warnings could result in severe injury or death.

## IMPORTANT SAFETY INFORMATION (cont'd)

	<p align="center"><b>⚠ WARNING</b></p> <p>A component failure could throw broken parts.</p> <ul style="list-style-type: none"> <li>• Do not allow anyone to stand in front of the punch or behind the hydraulic ram.</li> <li>• Close access doors or covers on any equipment that is in line with the punch or ram.</li> </ul> <p>Failure to observe this warning could result in severe injury or death.</p>
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<p align="center"><b>⚠ WARNING</b></p> <ul style="list-style-type: none"> <li>• Inspect tool for wear or damage. Replace any worn, damaged, or missing components with Greenlee replacement parts. A damaged or improperly assembled tool can break and strike nearby personnel with sufficient force to cause severe injury or death.</li> <li>• Inspect the punch, die, and drawstud for wear or damage. Replace any worn or damaged items with Greenlee replacement parts. Replace any punches that have dull cutting surfaces.</li> </ul>
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	<p align="center"><b>⚠ WARNING</b></p> <p>Do not attempt to punch a hole through two or more layers of material. This will bend or break the drawstud, and could throw parts with great force.</p> <p>Failure to observe this warning could result in severe injury or death.</p>
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<p align="center"><b>⚠ WARNING</b></p> <p>Do not exceed the rated capacity of this tool. Exceeding the rated capacity could cause a component failure, which could throw broken parts with great force.</p> <p>Failure to observe this warning could result in severe injury or death.</p>
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<p align="center"><b>⚠ WARNING</b></p> <p>Set up the tool properly. An improper setup could cause a component to fail and strike nearby personnel with great force.</p> <ul style="list-style-type: none"> <li>• <i>Use only Greenlee punches, dies, and drawstuds. Other manufacturers' components might not withstand the forces generated by this punch driver.</i></li> <li>• <b>Manual Punch Setup:</b> The punch must be threaded completely onto the drawstud. All of the punch threads must be engaged by the drawstud threads. Incomplete assembly could cause a component failure.</li> <li>• <b>Hydraulic Punch Setup:</b> The drawstud must be threaded completely into the driver head. The punch must be threaded completely onto the drawstud. All of the punch threads must be engaged by the drawstud threads. Incomplete assembly could cause a component failure.</li> <li>• <b>SPEED PUNCH Setup:</b> The drawstud must be threaded completely into the driver head. The SPEED LOCK must fully engage and completely close on the drawstud. Incomplete assembly could cause a component failure.</li> </ul> <p>Failure to observe these warnings could result in severe injury or death.</p>
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<p align="center"><b>⚠ WARNING</b></p> <p>Do not dispose of batteries in a fire. They will vent fumes and may explode.</p> <p>Failure to observe this warning could result in severe injury from harmful fumes or burns from flying debris.</p>
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<p align="center"><b>⚠ WARNING</b></p> <p>Use this tool for the manufacturer's intended purpose only. Use other than that which is described in this manual can result in injury or property damage.</p>
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<p align="center"><b>⚠ WARNING</b></p> <p>Ensure the punch cycle is stopped after a hole is made. Failure to do so could cause a part collision which could throw broken parts.</p> <p>Failure to observe this warning could result in severe injury or death.</p>
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**IMPORTANT SAFETY INFORMATION (cont'd)****⚠ CAUTION**

The punch driver will fall free when the punch is complete.

- Support the weight of the tool when punching.
- Do not allow anyone to stand beneath an overhead punch.

Failure to observe this warning may result in injury or property damage.

**⚠ CAUTION**

- Do not use this tool for continuous use. After 30 to 40 cycles, allow the tool to cool for 15 minutes.
- Do not secure this tool in a vise. This tool is designed for hand-held operation.
- This tool may be used in damp or wet environments; however, air-drying is recommended before use if the tool becomes soaked. Damage may result when the tool is operated prior to thorough drying when electrical components are soaked.
- Use this tool for the manufacturer's intended purpose only.

Failure to observe these precautions may result in injury or property damage.

**⚠ CAUTION**

Do not allow anything to contact the battery terminals.

- Do not immerse the batteries in liquid. Liquid may create a short circuit and damage the battery. If batteries are immersed, contact your service center for proper handling.
- Do not place the battery into a pocket, tool pouch, or tool box with conductive objects. Conductive objects may create a short circuit and damage the battery.
- Do not place a battery on moist ground or grass. Moisture may create a short circuit and damage the battery.

Failure to observe these precautions may result in injury or property damage.

**⚠ CAUTION**

- Do not store the battery at more than 122 °F (50 °C) or less than -4 °F (-20 °C). Damage to the battery can result.
- Do not use another manufacturer's charger. Other manufacturers' chargers may overcharge and damage the battery.
- Do not attempt to open the battery. It contains no user-serviceable parts.

Failure to observe these precautions may result in injury or property damage.

**⚠ CAUTION**

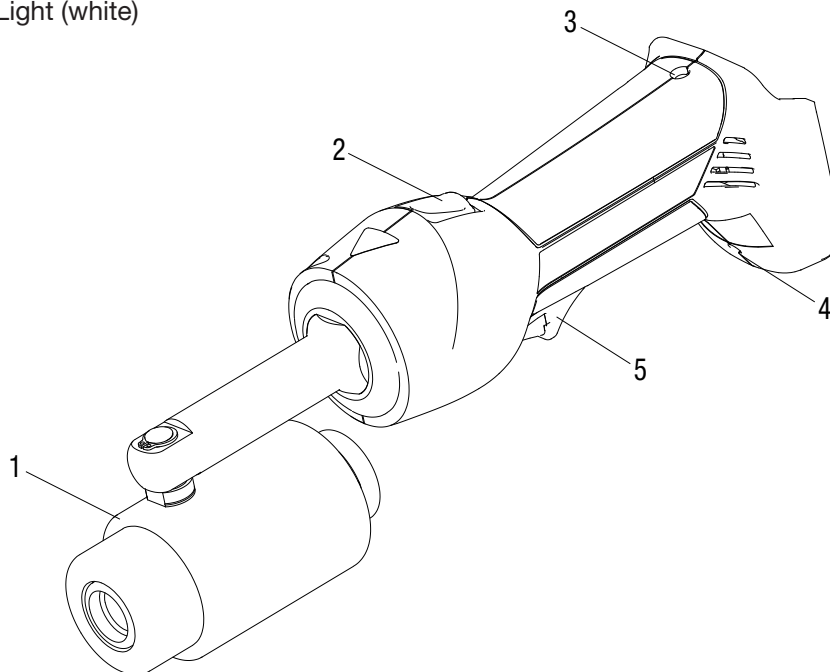
Do not perform any service or maintenance other than as described in this manual. Injury or damage to the tool may result.

Failure to observe this precaution may result in injury and property damage.

*Note: Keep all decals clean and legible, and replace when necessary.*

## Identification and Illustration

1. Punching Head
2. Return Button
3. LED Indicator (red)
4. LED Work Light (white)
5. Trigger



## Specifications

Knockout Driver (without 18V, 3.0 Ah lithium-ion battery)

Length.....	14.3" (363.2 mm)
Width .....	2.8" (71.5 mm)
Depth.....	4.3" (108.3 mm)
Weight.....	3.6 lb (1.6 kg)
Force.....	7 tons (63 kN)
Hydraulic Oil .....	52057878 biodegradable hydraulic fluid
Recommended Operating Temperature Range.....	5 °F to 122 °F (–15 °C to 50°C)
Battery Charger.....	Read the instructions supplied with the battery charger

52047087	120 VAC corded adapter	52054992	Li (18 V) to NiCd, NiMH (12 V) charger adapter
52047088	230 VAC corded adapter	52049201	120 VAC, 18 V charger
52049190	18 V, 2.0 Ah lithium-ion battery	52049202	230 VAC, 18 V charger
52049189	18 V, 3.0 Ah lithium-ion battery	52049204	12 VDC, 18 V charger
52070024	18 V, 4.0 Ah lithium-ion battery		

## Setup and Operation

### Punching

*Note: The LS50L2 is equipped with a microprocessor to control the operation. It automatically shuts off if punching does not begin within 1 second after pulling the trigger. This guarantees the entire stroke is available for punching and saves power.*

1. Refer to the hydraulic punch instruction manual for proper punch, die, and drawstud selection and setup.
2. Select the appropriate punch, die, and drawstud for the desired hole size.
3. Determine and mark the exact location for the hole. Use a Greenlee Kwik-Stepper® step bit to drill a pilot hole slightly larger than the drawstud being used.
4. Depress the Return button to reset the ram to the starting position.
5. Thread the appropriate drawstud completely into the ram in the punching head.
6. Slide the corresponding die onto the drawstud. The open end of the die should face away from the punching head.
7. Insert the drawstud through the pilot hole in the material being punched.
8. Thread the punch (cutting edge facing the material) onto the drawstud until the punch assembly is tight on the material surface.

*Note:*

- *All of the punch threads must be engaged with the drawstud threads. If any punch threads are not engaged, reassemble the setup.*
  - *For SPEED PUNCH®, slide the punch onto the drawstud (cutting edge facing the material) and secure the SPEED LOCK to the drawstud.*
9. Press and hold the trigger to complete the punch cycle. The LS50L2 driver will automatically stop when it senses the punch is completely through the material.
  10. Unscrew the punch from the drawstud. Slide the die

### IMPORTANT

Release the trigger when the punch completes the hole. The LS50L2 may not sense when a hole is made in sheets thinner than 18 ga (1 mm) and soft materials (such as plastic, etc.).

off the drawstud and remove any slugs from the die.

*Note: For SPEED PUNCH®, remove the SPEED LOCK. Slide the punch off the drawstud; then slide the die off the drawstud and remove any slugs from the die*

### Charging the Battery

Read the instructions supplied with the battery charger.

### LED Work Light (white)

This LED automatically turns on when the trigger is pulled. It remains on for 10 seconds after the trigger is released.

### LED Indicator (red)

This tool is equipped with a special circuit board incorporating several important features to inform the user about the current status of the unit. The LED signals in the following cases:

What happens	Signal	What it means
Flashing light for 2 seconds	● ●	Battery is inserted in tool
Constant light for 20 seconds at end of cycle	■	Battery charge is below 17 V at beginning of cycle
Tool will <b>not</b> start, and constant light for 20 seconds when trigger is released	■	Battery charge is below 16 V at beginning of cycle
Tool will stop, and constant light for 20 seconds after trigger is released	■	Battery voltage drops below 13 V during cycle
Tool will stop, and flashing light for 20 seconds when trigger is released	● ● ● ●	Motor current exceeds 20 A during cycle Circuit has become too hot



**Setup and Operation (cont'd)**
**⚠ WARNING**

- Inspect tool for wear or damage. Replace any worn, damaged, or missing components with Greenlee replacement parts. A damaged or improperly assembled tool can break and strike nearby personnel with sufficient force to cause severe injury or death.
- Inspect the punch, die, and drawstud for wear or damage. Replace any worn or damaged items with Greenlee replacement parts. Replace any punches that have dull cutting surfaces.

**⚠ CAUTION**

- Do not use this tool for continuous use. After 30 to 40 cycles, allow the tool to cool for 15 minutes.
- Do not secure this tool in a vise. This tool is designed for hand-held operation.
- This tool may be used in damp or wet environments; however, air-drying is recommended before use if the tool becomes soaked. Damage may result when the tool is operated prior to thorough drying when electrical components are soaked.
- Use this tool for the manufacturer's intended purpose only.

Failure to observe these precautions may result in injury or property damage.


**⚠ WARNING**

Electric shock hazard:

This tool is not insulated. When using this unit on or near energized electrical lines, use proper personal protective equipment.

Failure to observe this warning could result in severe injury or death.


**⚠ WARNING**

Wear eye protection when operating or servicing this tool.

Failure to wear eye protection could result in serious eye injury from flying debris or hydraulic oil.


**⚠ WARNING**

Pinch points:

- Remove battery before changing dies, adapters, or jaws.
- Keep hands away from the tool head when punching.

Failure to observe these warnings could result in severe injury or death.



## Capacity

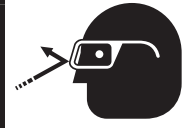
### LS50L2 Battery-Hydraulic Knockout Driver


STAINLESS STEEL	
Slug-Splitter and Large 3-Point Punches	
Pipe and Conduit Size	Maximum Driver Rating
1/2" to 1-1/4"	10 ga (0.134", 3mm)
1-1/2" to 2"	12 ga (0.104", 2.5mm)
2-1/2" to 4"	N/A


MILD STEEL	
Standard and Slug-Buster Punches	
Pipe and Conduit Size	Maximum Driver Rating
1/2" to 3"	10 ga (0.134", 3mm)
3-1/2" to 4"	12 ga (0.104", 2.5mm)


*Note: Please consult the hydraulic punch instruction manual for punch, drawstud, and die selection.*

## Maintenance

	<b>⚠ WARNING</b>
	<p>Wear eye protection when operating or servicing this tool.</p> <p>Failure to wear eye protection could result in serious eye injury from flying debris or hydraulic oil.</p>

	<b>⚠ WARNING</b>
	<p>Skin injection hazard:</p> <p>Do not use hands to check for oil leaks. Oil under pressure easily punctures skin. If injured, seek medical attention immediately to remove oil.</p> <p>Failure to observe this warning could result in serious injury, gangrene, or death.</p>

	<b>⚠ WARNING</b>
	<p>Do not use solvents or flammable liquids to clean the tool body. Solvents or flammable liquids could ignite and cause serious injury or property damage.</p>

	<b>⚠ WARNING</b>
	<p>Pinch points:</p> <ul style="list-style-type: none"> <li>• Remove battery before changing dies, adapters, or jaws.</li> <li>• Keep hands away from the tool head when punching.</li> </ul> <p>Failure to observe these warnings could result in severe injury or death.</p>

<b>IMPORTANT</b>	
<p>Relief valve adjustments must be done by an authorized service center.</p>	

### Daily

#### Before use:

1. Inspect the tool for wear or damage, such as cracks, gouges, or chips.
2. Inspect the tool for damage or leaks.
3. Inspect the rotation of the head assembly. Fully return the ram. The head should rotate freely. If damage is detected, send the tool to a Greenlee Authorized Service Center for inspection.

#### After use:

1. Use a damp cloth and mild detergent to clean the housing. Allow the housing to dry.
2. Fully return the ram. Place the tool in the carrying case and store in a cool, dry place.
3. If necessary, recharge the batteries. Refer to the instructions supplied with the battery charger.

## Troubleshooting

### Before You Begin

1. Make sure that the battery is charged. Recheck the battery after several minutes to make sure the battery is holding its charge.
2. Use a **nonflammable** contact cleaner or pencil eraser to clean the electrical contacts on the battery and tool.
3. Reinstall the battery and check the tool again.

Problem	Possible Cause	Probable Remedy
Tool is inoperative.	Dirt, contaminants, etc. in ram area of tool.	Clean tool.
	Tool battery contacts damaged.	Reform contacts.
	Tool components worn or damaged.	Return tool to a Greenlee Authorized Service Center.
Motor is inoperative.	Low or uncharged battery.	Try known charged battery. Inoperative battery may be discharged or may have reached life expectancy.
	Broken switch components.	Return tool to a Greenlee Authorized Service Center.
Motor runs but tool will not complete a cycle.	Oil level low.	Return tool to a Greenlee Authorized Service Center.
	Air in hydraulic system.	Pull trigger and hold return button simultaneously. Run for approximately 10 seconds, and then attempt to punch. If unsuccessful, return tool to a Greenlee Authorized Service Center.
	Cold oil.	Pull trigger and hold return button simultaneously to warm oil. Store tool in warm area.
Dies stop during operation.	Oil level low.	Return tool to a Greenlee Authorized Service Center.
	Air in hydraulic system.	Pull trigger and hold return button simultaneously. Hold for approximately 10 seconds.
LED glows for 20 seconds.	Battery charge low.	Charge or replace battery.
Tool loses oil.	Damaged internal seal.	Return tool to a Greenlee Authorized Service Center.

*Note: For Warranty Service or Repair, contact Greenlee customer service at 800-435-0786.*