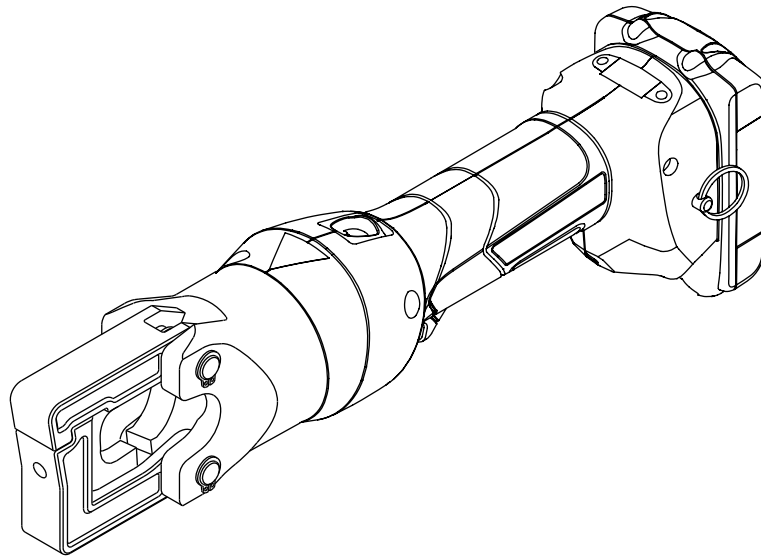


OPERATION MANUAL



Serial Number



EK410LX **GATOR[®] Battery-powered** **Crimping Tool**



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

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Description

The EK410LX Battery-powered Crimping Tool is a hand-held, self-contained crimping tool intended to crimp copper and aluminum cable with KC4-type dies.

This tool have Bluetooth® connectivity and an LCD screen.

The tool is protected by U.S. Patent No. 6,276,186, 6,401,515, 6,718,870, 7,086,979, and 7,254,982.

Model X—FCC ID: RFRMS42; IC ID: 4957A-MS42

USA requirements:

Responsible party: Greenlee Tools, Inc.
Rockford, IL 61109 USA

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with the RF exposure SAR test exclusion requirements for portable devices, if a minimum separation distance is kept. However, the device shall be used in such a manner that the potential for human contact during normal operation is minimized.

Canada requirements:

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

- (1) This device may not cause interference; and*
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.*

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- 1) l'appareil ne doit pas produire de brouillage;*
- 2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

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:

- EK410LX Battery-powered Crimping Tool

Keep this manual available to all personnel.

Replacement manuals are available upon request at no charge at www.greenlee.com.



Do not discard this product or throw away!

For recycling information, go to 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 is a registered trademark of Greenlee Tools, Inc.

Bluetooth is a registered trademark of Bluetooth SIG, Inc.

Blackburn is a registered trademark of Thomas & Betts.

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

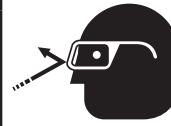
Immediate hazards which, if not avoided, **WILL** result in severe injury or death.

⚠ 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

An incomplete crimp can cause a fire.

- Use proper die, connector, and cable combinations. Improper combinations can result in an incomplete crimp.
- The relief valve sounds and the ram automatically retracts to indicate a completed crimp. If you do not hear the sound of the relieve valve or the ram does not automatically retract, the crimp is not complete.

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



⚠ WARNING

Pinch points:

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

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

IMPORTANT SAFETY INFORMATION

⚠ WARNING

Do not dispose of batteries in a fire. They will vent fumes and may explode.

Failure to observe this warning could result in severe injury from harmful fumes or burns from flying debris.

⚠ WARNING

Remove the battery before transporting the T version of this tool by air.

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

⚠ WARNING

Inspect tool and dies before use. Replace any worn or damaged parts. A damaged or improperly assembled tool can break and strike nearby personnel.

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

⚠ 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

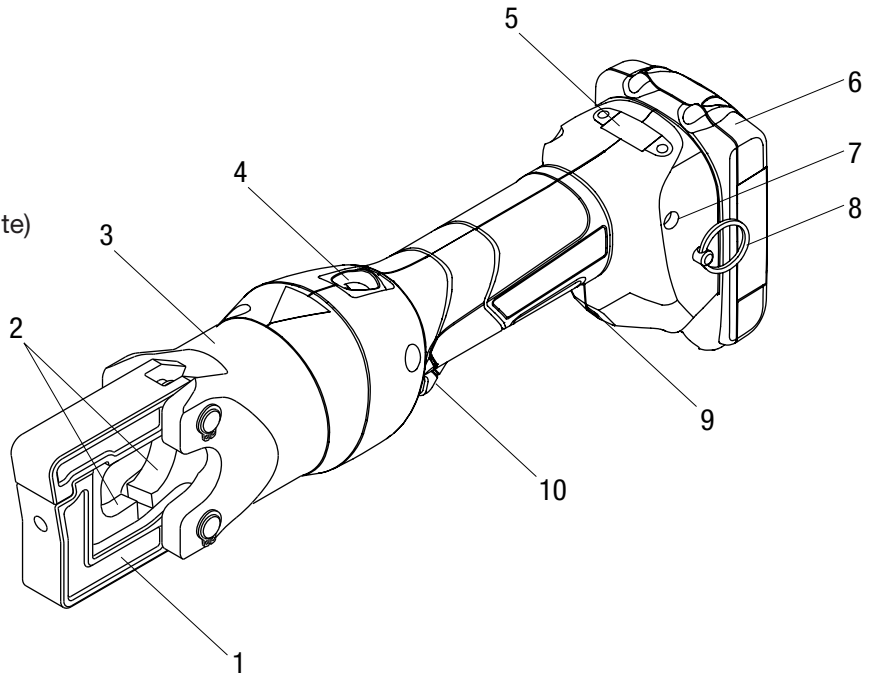
Do not perform any service or maintenance other than as described in this manual. Injury or damage to the tool may result.

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

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

Identification

- 1. Latch
- 2. Crimping Dies
- 3. Crimping Head
- 4. Retract Button
- 5. LCD Screen
- 6. Battery Cartridge
- 7. LED Indicator (red)
- 8. Lanyard Ring
- 9. LED Work Light (white)
- 10. Trigger



Specifications

Crimping Tool

Length.....	13.66" (347 mm)
Width	2.95" (75 mm)
Depth.....	4.92" (125 mm)
Weight.....	3.8 lb (1.7 kg)
Crimping Force.....	4 tons (35 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
Battery Technology	MAKITA® LXT® Lithium ion
	BL1815, BL1820, BL1830, BL1840, BL1850

Operation
⚠ WARNING

Inspect tool and dies before use. Replace any worn or damaged parts. A damaged or improperly assembled tool can break and strike nearby personnel.

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


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 crimping tool head when crimping.

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

⚠ 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.

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
Constant light for 20 seconds at end of cycle	█	Battery charge is below 17 V at beginning of cycle*
Tool will not 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
Flashing light for 20 seconds at end of cycle	●●●●	Send tool in for service

* Running the battery below 16 V can damage the battery.

Operation (cont'd)

Pressure Sensor

This tool is equipped with a pressure sensor that alerts the user of an incomplete crimp.

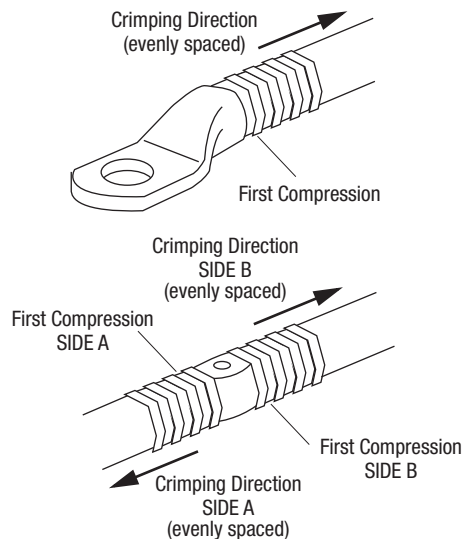
- If the tool is manually retracted before completion of a crimp, the red LED and an audible beep will be active for 2 seconds.
- If the tool is unable to reach the required crimp force, the red LED, work light, and an audible beep will pulse until after the trigger is released.

Installing Dies

1. Select the proper dies for the intended crimp.
2. Slide the die into the crimping head until it “snaps” into place.
3. Properly position the second die. Repeat Step 2.

Preparing Cable

Follow the lug manufacturer’s instructions for appropriate cable strip length.



Crimping Cable

1. Press the locking flange and open the crimping head.
2. Insert the properly assembled connector into the crimping head.
3. Close the crimping head.
4. Pull the trigger to make the crimp.
5. Hold the trigger down until the crimping tool achieves pressure relief, which is accompanied by an audible “pop”.
6. The ram retracts automatically.
7. Position the crimping tool for next crimp. Repeat Steps 4 through 6 for the number of crimps as described in this manual.
8. Open the crimping head and remove the connector.

Note: If it is necessary to retract the ram before a crimping cycle is completed, push the retract button. Pushing the retract button will result in the complete retraction of the ram.

⚠ WARNING

An incomplete crimp can cause a fire.

- Use proper die, connector, and cable combinations. Improper combinations can result in an incomplete crimp.
- The relief valve sounds and the ram automatically retracts to indicate a completed crimp. If you do not hear the sound of the relieve valve or the ram does not automatically retract, the crimp is not complete.

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

Die Selection

Crimps made on copper cable with Greenlee KC4-type dies and the copper connectors listed here are cUL and UL classified.

Crimps made on copper or aluminum cable with Greenlee KA4-type dies and the aluminum connectors listed here are cUL and UL classified.

Refer to “Connector Selection” for brand names and model numbers of appropriate lugs as well as crimping instructions.

Dies for Copper Connectors

Catalog No.	UPC No.	Cable Size	Color Code
KC4-8	02075	8 AWG	Red
KC4-6	02076	6 AWG	Blue
KC4-4	02077	4 AWG	Gray
KC4-2	02078	2 AWG	Brown
KC4-1	02079	1 AWG	Green
KC4-1/0	02080	1/0 AWG	Pink
KC4-2/0	02081	2/0 AWG	Black
KC4-3/0	02082	3/0 AWG	Orange
KC4-4/0	02083	4/0 AWG	Purple
KC4-250	02084	250 kcmil	Yellow
KC4-300	10988	300 kcmil	White

Dies for Aluminum Connectors

Catalog No.	UPC No.	Cable Size	Color Code
KA4-8	12222	8 AWG	Blue
KA4-6	12223	6 AWG	Gray
KA4-4	12225	4 AWG	Green
KA4-2	12226	2 AWG	Pink
KA4-1	12227	1 AWG	Gold
KA4-1/0	12228	1/0 AWG	Tan
KA4-2/0	12229	2/0 AWG	Olive

Dies for Service Entrance Connectors

Catalog No.	UPC No.	Usage
KD4-10	02021	5/8" Service Entrance
KD4-840	02022	840 Service Entrance

Connector Selection

Tool Range: Copper — 8 AWG to 300 kcmil copper wire;
Dual-rated Aluminum — 8 AWG to 2/0 AWG copper or aluminum wire

When used with KC4-type dies, this tool is cUL and UL classified for use with the following connector brands:

Connector Type	Barrel Type	Anderson	Blackburn®	Burndy	ILSCO	Panduit	T&B	Penn-Union	No. of Crimps*
Copper Splice	Short	VHSS**	CSP	YS-L	CT	SCSS/SCS	54504–54520	BCU	A
	Long	VHS**	CU	YS	CTL	SCL/SCH	54804–54820	BBCU	
Copper Lugs	Short	VHCS**	CTL-2/CTL	YA-2LN/YA-L/YA-2L YA/YA-L-TC/YA-L-2TC	CSW CRA/CRB	LCAS/LCA LCD	54104–54120 54204–54218	BLU	A
	Long	VHCL**	CTL-L/LCN	YA-2N	CLN/CLW CRA-L/CRB-L CRA-2L/CRB-2L	LCB/LCC	54930BE–54920BE 54850BE–54878BE	BBLU	

When used with KA4-type dies, this tool is cUL and UL classified for use with the following connector brands:

Connector Type	Barrel Type	Anderson	Blackburn®	Burndy	ILSCO	Panduit	T&B	Penn-Union	No. of Crimps*
Dual-rated Aluminum Splice	—	VACS	ASP	YS-A	AS ASN	SA ***	60501–60536	PIK	B
Dual-rated Aluminum Lugs	—	VACL	ATL	YA-A YA-ATN	ACL/ACN 2ACL/2ACN ALNS/ALNN/ALND	LAA/LAB ***	60101–60138 60230–60238	BLUA	B



* Use the number of crimps listed in the last column instead of the number provided with the connector:

A — 8 to 1/0 AWG: 1 crimp
2/0 AWG to 300 kcmil: 2 crimps

B — 8 to 2 AWG: 2 crimps
1 to 2/0 AWG: 3 crimps

** 6 AWG to 300 kcmil

*** 6 AWG to 2/0 AWG

LCD Screen

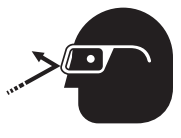
This tool has an LCD screen, which displays information about the tool. Turn on the screen by inserting the battery and jogging the tool. If there are any problems with the tool, an error code appears.

Error Code	Meaning
1	Overcurrent fuse
2	Overcurrent comparator
3	Overheated circuit board
4	Overheated battery
5	Battery empty; operation stops
6	Faulty crimp; complete cycle
7	Faulty crimp; incomplete cycle
8	Low battery
9	Battery empty; tool won't run
10	Real-time clock battery low
11	Tool deactivated
12	Service necessary
13	Real-time clock not found
14	Bluetooth® unit not found
15	
16	Pressure sensor not found
17	Burst pressure exceeded
18	Battery temperature too low


If there is no error code, cycle through the various displays using the left and right buttons on either side of the screen. There are seven displays in total.


Display	Information Shown
1	Bluetooth® status, battery charge, current pressure, max. pressure
2	Firmware, available firmware update, serial number
3	Current user. Press and hold both buttons to change user, select with right button, and confirm by jogging the tool.
4	
5	
6	Cycles until next service
7	Since manufacturing: operating hours, capacity, number of cycles

Maintenance

	⚠ WARNING
	<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>

	⚠ WARNING
	<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>

	⚠ WARNING
	<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>

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

IMPORTANT
<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 retract the ram. The head should rotate no more than 360°. If damage is detected, contact Greenlee customer service at 800-435-0786 for warranty service or repair.

After use:

1. Use a damp cloth and mild detergent to clean the housing. Allow the housing to dry.
2. Fully retract 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.

Monthly

Thoroughly clean all surfaces.

Annually or After 10,000 Crimps

Contact Greenlee customer service at 800-435-0786 for warranty service or repair, and hydraulic oil replacement.

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 components worn or damaged.	Contact Greenlee customer service at 800-435-0786 for warranty service or repair.
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.	Contact Greenlee customer service at 800-435-0786 for warranty service or repair.
Motor runs but tool will not complete a cycle.	Oil level low.	Contact Greenlee customer service at 800-435-0786 for warranty service or repair.
	Air in hydraulic system.	Pull trigger and hold retract button simultaneously. Run for approximately 10 seconds, and then attempt to crimp. If unsuccessful, contact Greenlee customer service at 800-435-0786 for warranty service or repair.
	Cold oil.	Pull trigger and hold retract button simultaneously to warm oil. Store tool in warm area.
LED glows for 20 seconds.	Battery charge low.	Charge or replace battery.
Tool loses oil.	Damaged internal seal.	Contact Greenlee customer service at 800-435-0786 for warranty service or repair.



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