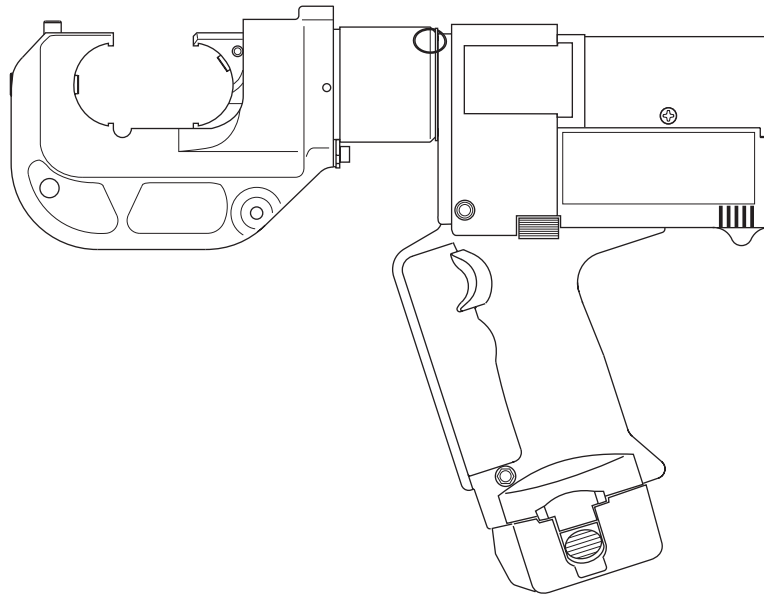


INSTRUCTION MANUAL



GATOR[®] **EK1240 and EK1240C** **Battery-powered** **Crimping Tools**



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

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Description

The EK1240 Crimping Tool is a hand-held, self-contained, battery-powered tool intended to crimp aluminum and copper connectors onto electrical cable. The EK1240C has a PVC-covered crimping head.

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:

EK1240	Battery-powered Crimping Tool
EK1240C	Battery-powered Crimping Tool with PVC-covered Head

Keep this manual available to all personnel.

Replacement manuals are available upon request at no charge.

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

GATOR is a registered trademark of Greenlee Textron Inc.

AVIA is a registered trademark of Avia International.

Mobil is a registered trademark of Mobil Oil Corporation.

NUTO is a registered trademark of Exxon Corporation.

Tellus is a registered trademark of Shell Oil Company.

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**

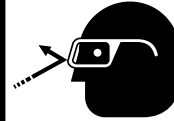
Immediate hazards which, if not avoided, **WILL** result in severe injury or death.

⚠ **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:

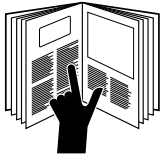
Do not use hands to check for oil leaks. Oil under pressure easily punctures skin. If injured, seek medical attention immediately to remove oil.

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



⚠ **WARNING**

Do not use solvents or flammable cleaners to clean the tool body. Solvents could ignite, causing 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**

An incomplete crimp can cause a fire.

- Use proper die, connector, and cable combinations. Improper combinations can result in an incomplete crimp.
- An audible “pop” indicates that the crimping tool has achieved a complete crimp. If you do not hear a “pop,” the crimp is incomplete.

Failure to observe these warnings 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:

Keep hands away from the crimping tool head when crimping.

Failure to observe this warning 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

Inspect tool 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 operate the tool without dies. Damage to the ram or crimping tool head can result.
- This tool is not designed for continuous use. After 30 to 40 crimping cycles, allow the crimping tool to cool for 15 minutes.
- Do not place the tool in a vise. The crimping tool is designed for hand-held operation.
- Protect the crimping tool from rain and moisture. Water will damage the crimping tool and battery.
- 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 60 °C (140 °F). 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.

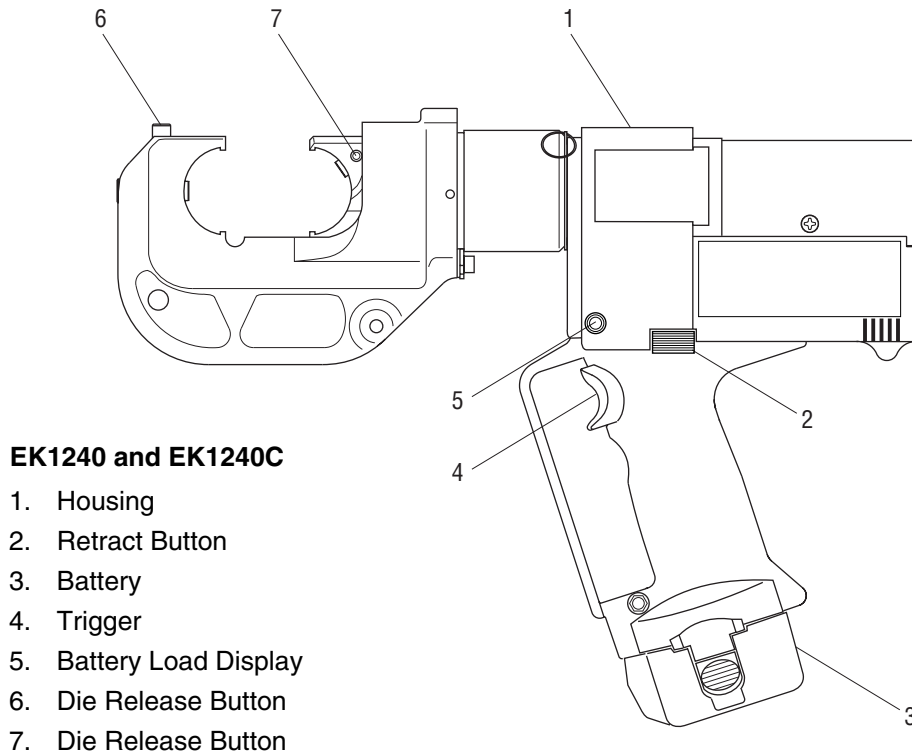
⚠ CAUTION

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



Specifications

Crimping Tool

Length	396 mm (15.6")
Width	80 mm (3.16")
Height	306 mm (12.03")
Mass/Weight (with battery)	6.9 kg (15.2 lb)
Sound Level	75 dB (A) at 1 meter
Vibration	< 2.5 m/s ²
Motor Voltage	12 VDC
Hydraulic Oil	50 ml (0.1 pint) of Shell Tellus® T 15


Crimping Capacities

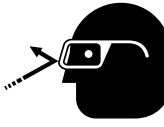
Crimping Range	8 AWG to 750 kcmil
Crimping Force	106 kN (12 tons)


Battery

Charging Voltage	12 VDC
Charging Time	1 hour


Operation

	<p>⚠ WARNING</p> <p>Electric shock hazard:</p> <p>This tool is not insulated. When using this unit on or near energized electrical lines, use proper personal protective equipment.</p> <p>Failure to observe this warning could result in severe injury or death.</p>
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	<p>⚠ WARNING</p> <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>
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	<p>⚠ WARNING</p> <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>
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<p>⚠ WARNING</p> <p>An incomplete crimp can cause a fire.</p> <ul style="list-style-type: none"> • Use proper die, connector, and cable combinations. Improper combinations can result in an incomplete crimp. • An audible “pop” indicates that the crimping tool has achieved a complete crimp. If you do not hear a “pop,” the crimp is incomplete. <p>Failure to observe these warnings could result in severe injury or death.</p>	
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	<p>⚠ WARNING</p> <p>Pinch points:</p> <p>Keep hands away from the crimping tool head when crimping.</p> <p>Failure to observe this warning could result in severe injury or death.</p>
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The battery indicator illuminates to show battery charge level as follows:

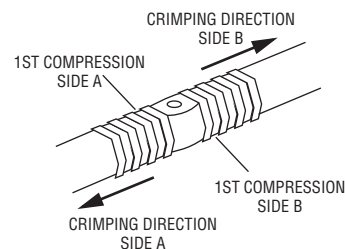
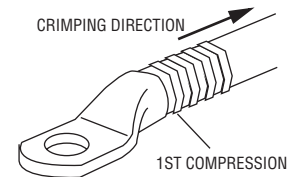
Normal: Illuminates momentarily at beginning of crimp.

Normal: Flickering at point of maximum crimping force.

Low charge: Flickering during entire crimping cycle.

Low charge: Illuminates continuously when operating without a load.

1. Clean the die seat area.
2. Install the proper size and type of crimping dies.
3. Press the release button on the C-head and slide one of the die halves into the jaw. Release the button and slide the die half until the retainer snaps and locks the die into place.
4. Press the release button on the ram body (located in the cutout) and slide the other die half in. Release the button and slide the die half until the retainer snaps and locks the die into place.
5. Follow the connector manufacturer's instructions for appropriate cable strip length and surface preparation.
6. Insert cable fully into connector and center the connector between the dies.



7. Using the sequence illustrated here, press the trigger to advance the dies. Continue to crimp until the pressure relief valve activates.

Note: Pressure relief occurs at approximately 106 kN (12 tons) and is indicated by an audible “pop.”

8. After achieving pressure relief, the ram automatically returns to the start position and the dies retract.
9. When using KC12-type dies, complete the number of crimps listed on the “Connector Selection” chart in this manual. For other dies, complete the number of crimps specified by the manufacturer.

10. Remove the connector from the crimping tool.

Note: After completing the last crimp on an aluminum connector, wipe off the excess oxide inhibitor.

Die Selection

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

Crimps made with this tool and KC12-type or KA12-type dies are cUL and UL classified when used with the appropriate conductor and connectors listed below.

Dies for Copper Connectors

Catalog Number	UPC Number	Cable Size	Color Code	No. of Crimps
KC12-8	10996	8 AWG	Red	1
KC12-6	10997	6 AWG	Blue	1
KC12-4	10998	4 AWG	Gray	1
KC12-2	10999	2 AWG	Brown	1
KC12-1	11003	1 AWG	Green	1
KC12-1/0	11004	1/0 AWG	Pink	1
KC12-2/0	11007	2/0 AWG	Black	1
KC12-3/0	11010	3/0 AWG	Orange	1
KC12-4/0	11011	4/0 AWG	Purple	1
KC12-250	11012	250 kcmil	Yellow	1
KC12-300	11013	300 kcmil	White	2
KC12-350	11014	350 kcmil	Red	2
KC12-400	11015	400 kcmil	Blue	2
KC12-500	11016	500 kcmil	Brown	2
KC12-600	11018	600 kcmil	Green	2
KC12-750	11020	750 kcmil	Black	2

Dies for Aluminum Connectors

Catalog Number	UPC Number	Cable Size	Color Code	No. of Crimps
KA12-8	22084	8 AWG	Blue	1
KA12-6	22085	6 AWG	Gray	1
KA12-4	22086	4 AWG	Green	1
KA12-2	22087	2 AWG	Pink	1
KA12-1	22088	1 AWG	Gold	1
KA12-1/0	22089	1/0 AWG	Tan	1
KA12-2/0	22090	2/0 AWG	Olive	2
KA12-3/0	22121	3/0 AWG	Ruby	2
KA12-4/0	22122	4/0 AWG	White	2
KA12-250	22123	250 kcmil	Red	2
KA12-300	22124	300 kcmil	Blue	2
KA12-350	22125	350 kcmil	Brown	2
KA12-400	22126	400 kcmil	Green	3
KA12-500	22127	500 kcmil	Pink	3
KA12-600	22128	600 kcmil	Black	3
KA12-750	22129	750 kcmil	Yellow	3

Connector Selection

Tool Range: 8 AWG to 750 kcmil

When used with KC12-type dies, this tool is cUL and UL classified for use with the following connector brands:

Connector Type	Barrel Type	Anderson	Blackburn®	FCI Burndy	IlSCO	Panduit	T&B	Penn-Union	Number of Crimps*
Copper Splice	Short	VHSS	CSP	YS-L	CT	SCSS SCS	54504 to 54523-TB	BCU	8 AWG to 250 kcmil: 1 crimp 300 to 750 kcmil: 2 crimps
	Long	VHS	CU	YS	CTL	SCL SCH	54804 to 54823	BBCU	
Copper Lugs	Short	VHCS	CTL-2/CTL	YA-2LN/ YA-L/YA-2L; YA/YA-L-TC/ YA-L-2TC	CRA/CRB CRC	LCAS LCA LCD LCAN	54104 to 54123-TB; 54204 to 54223	BLU	
	Long	VHCL	CTL-L/LCN	YA/YAZ YA-2N/YA-2TC YAZ-2N/YAZ-2TC	CRA-L/CRB-L CRA-2/CRB-2L CRC-2L	LCB LCC	54930BE to 54923BE; 54850BE to 54880BE	BBLU	

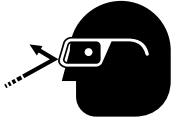
When used with KA12-type dies, this tool is cUL and UL classified for use with the following connector brands:

Connector Type	Anderson	Blackburn®	FCI Burndy	IlSCO	Panduit	T&B	Penn-Union	Number of Crimps*
Dual-Rated Aluminum Splice	VACS	ASP	YS-A	AS	SA	60501 to 60578	PIK	8 to 1/0 AWG: 1 crimp 2/0 AWG to 350 kcmil: 2 crimps
Dual-Rated Aluminum Lugs	VACL	ATL	YA-A YA-ATN	ACL/ACN 2ACL/2ACN	LAA LAB	60101 to 60176; 60230 to 60278	BLUA	400 to 750 kcmil: 3 crimps





* Use the number of crimps listed in this column instead of the number provided with the connector.

Maintenance

	<p align="center">⚠ WARNING</p> <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>
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	<p align="center">⚠ WARNING</p> <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>
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	<p align="center">⚠ WARNING</p> <p>Do not use solvents or flammable cleaners to clean the tool body. Solvents could ignite, causing serious injury or property damage.</p>
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	<p align="center">⚠ WARNING</p> <p>Keep hands away from the crimping tool head when crimping.</p> <p>Failure to observe this warning could result in severe injury or death.</p>
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<p align="center">IMPORTANT</p>	
<p>Relief valve adjustments must be done by an authorized service center.</p>	

Daily

Before use:

1. Inspect dies for wear or damage, such as cracks, gouges, or chips.
2. Inspect the crimping tool for damage or leaks.

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 crimping 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

1. Thoroughly clean all surfaces.
2. Check the oil level.
3. Perform the "Periodic Pressure Relief Valve Check."

Annually or After 10,000 Crimps

1. Replace the hydraulic oil.
2. Send the tool to an authorized Greenlee service center for inspection.


Checking the Oil Level

1. Remove the two screws that retain the tank housing cover. Remove the tank housing cover.
2. Point the crimping head downward and remove the oil reservoir plug. Fill reservoir if necessary.
3. Replace the oil plug and tank housing cover.

Recommended Hydraulic Oils

AVIA® HVI 15
 Shell Tellus T 15
 Mobil® DTE 11M
 NUTO® H 15

Periodic Pressure Relief Valve Check

	⚠ WARNING
	<p>Pinch points:</p> <p>Keep hands away from the crimping tool head when crimping.</p> <p>Failure to observe this warning could result in severe injury or death.</p>

The crimping tool's relief valve may require occasional adjustment. To determine whether this adjustment is necessary, periodically test the crimping tool with a Greenlee model 35887 Load Cell (purchased separately).

1. Insert the test die into the tool (refer to steps 3 and 4 under "Operation" in this manual). Position the load cell so that the load cell piston is centered between the two test dies.
2. Press the trigger until the crimping tool achieves pressure relief and note the position of the needle when the pressure relief is achieved. The needle should indicate the "12T" range; if the needle is outside of this range, send the crimping tool to an authorized service center for adjustment.

Note: If some other type of load cell is used, the ratio between the area of the tool and the area of the load cell may be different. The appropriate corresponding pressure range depends upon this ratio.

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 crimping tool.
3. Reinstall the battery and check the tool again.

Problem	Probable Cause	Probable Remedy
Tool is inoperative.	Dirt, contaminants, etc., in ram area of tool.	Clean tool.
	Crimping tool battery contacts damaged.	Reform contacts.
	Tool components worn or damaged.	Return tool to an authorized Greenlee service center.
	Dead battery.	Charge or replace.
Dies stop during operation.	Oil level is low.	Check oil level. Refill reservoir.
	Air in hydraulic system.	Pull trigger and hold retract button simultaneously. Hold for approximately 10 seconds.
Battery load display flashes constantly.	Battery charge low.	Charge or replace battery.
Tool loses oil.	Damaged internal seal.	Return tool to an authorized Greenlee service center.
	Oil plug not installed properly.	Refill reservoir and replace plug.

Disassembly

Main Components

1. Remove the battery.
2. Remove the screw (37) and stop (34).
3. Unscrew and remove the head assembly.
4. Remove the piston (16). Replace the piston O-ring (14) and piston backup ring (15).
5. Unscrew two tank cover screws (53) and remove the tank cover (58).
6. Remove the hydraulic reservoir plug (76) and drain the hydraulic fluid.
7. Reinstall the plug.
8. Remove the remaining housing screws (51, 53).
9. Remove the right housing half (59).
10. Remove the switch cover (56).
11. Lift the pump/motor assembly and circuit card from the left housing half (60). Lift the LED from its housing (8).
12. Slide a plastic bag over the circuit card and electronic subassemblies. Tape the bag shut to protect the subassemblies from hydraulic oil and other contamination.
13. Unscrew the shoulder bolt (99) and remove the release lever (107).
14. Remove screws (108) and separate the gear housing/motor subassembly from the pump housing.

Pump

1. Use a hooked tool to remove the reservoir O-ring (80). Gently tug it over the reservoir.
2. Remove the reservoir (74).
3. Remove the pump piston (152).
4. Remove the screw plug (151), washer (153), pump piston (150), valve stem (156), and spring (155). Replace the sealing washer (154).
5. Use a piece of tape to mark the side of the relief that is facing up. This mark or piece of tape will later be used when installing the unloading valve sub-assembly. Remove the unloading valve subassembly by unscrewing the plug (126).
6. Remove the feeder tube subassembly by unscrewing the feeder tube (78). Replace the oil filter (77). Remove metal chips from the magnet (82).
7. Remove the threaded bushing (72) and replace the O-ring (73).

Motor, Gearbox, and Bearing

1. Remove the tamper-proof paper seal (96).
2. Remove two screws (92). Remove the end cap (102).
3. Apply pressure evenly at three points around the ball bearing (91) and gently pry the bearing up to remove it.
4. Remove the eccentric (103), grooved ball bearing (101), and snap ring (100) subassembly from the shaft.
5. Remove four screws (93). Remove the mounting block (109) from the gear housing (94).
6. Use a snap-ring removal tool to remove the snap ring (100).
7. Unscrew four bolts (not numbered) from the gear housing (94). Separate the gear housing from the spacer (not numbered). Unscrew two Fillister head screws (112) to separate the spacer from the motor (90).

Assembly

Motor, Gearbox, and Bearing

1. Install two Fillister head screws (112) into the spacer (not numbered) and motor (90). Tighten the screws.
2. Install four screws (not numbered) into the gear housing (94). Tighten the screws.
3. Install four screws (93) into the mounting block (109) and gear housing (94). Tighten the screws.
4. Replace the grooved ball bearing (101) and snap ring (100).
5. Replace the eccentric (103). Use a fiber mallet to tap the eccentric onto the shaft. Replace the ball bearing (91).
6. Align the end cap (102). Use a fiber mallet to tap the cover until it is flush on the mounting block (109). Install two screws (92).
7. Align the gear housing/motor subassembly so that the pump piston (152) extends through the mounting block (109) and makes contact with the grooved bearing (101). Locate and start the screws (108) through the mounting block and into the pump housing. Tighten the screws.

Pump

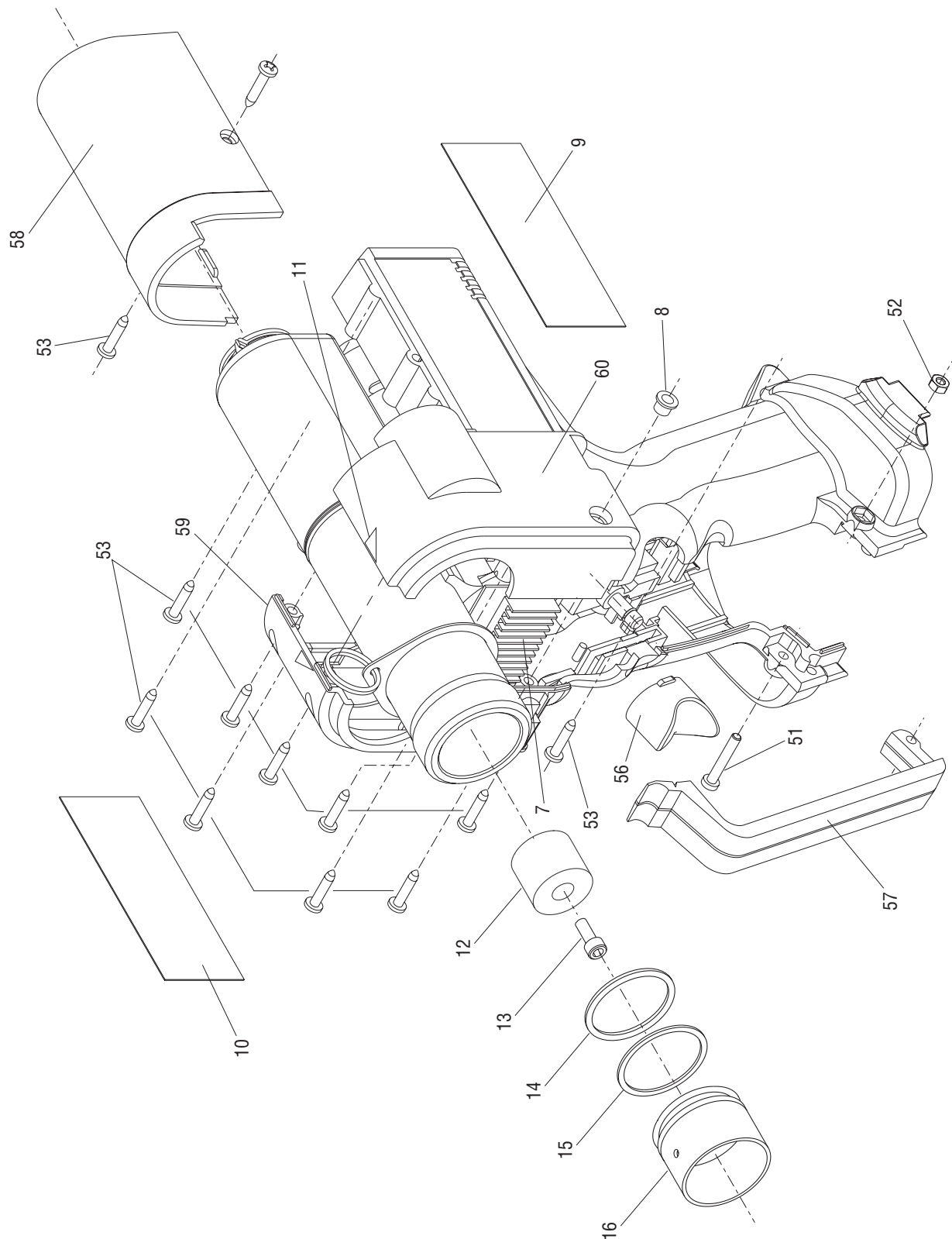
1. Insert the pump piston (152) into the pump housing.
2. Insert the seal (122) and unloading valve subassembly into the pump housing. Grasp the needle valve subassembly by the plug (126) and twist it several turns clockwise. Stop when the mark or piece of tape is facing the screw hole.
3. Assemble the pump piston (150), valve stem (156), washer (153), spring (155), and screw plug (151). Be sure to replace the sealing washer (154). Torque the screw plug (151) to 102 Nm (75 ft-lb).
4. Install the release lever (107) so that the forked end engages the unloading valve subassembly between the pressure relief (126) and the support ring (127). Install the screw (99) and washer (104).
5. Insert the threaded bushing (79) and feed tube subassembly (77, 78, 82). Screw in until snug.
6. Install the reservoir (74). Slip the O-ring (80) over the reservoir. Using a hooked tool, carefully slip the O-ring over the lip of the pump housing.
7. Insert the plug (76) into the reservoir.

Main Components

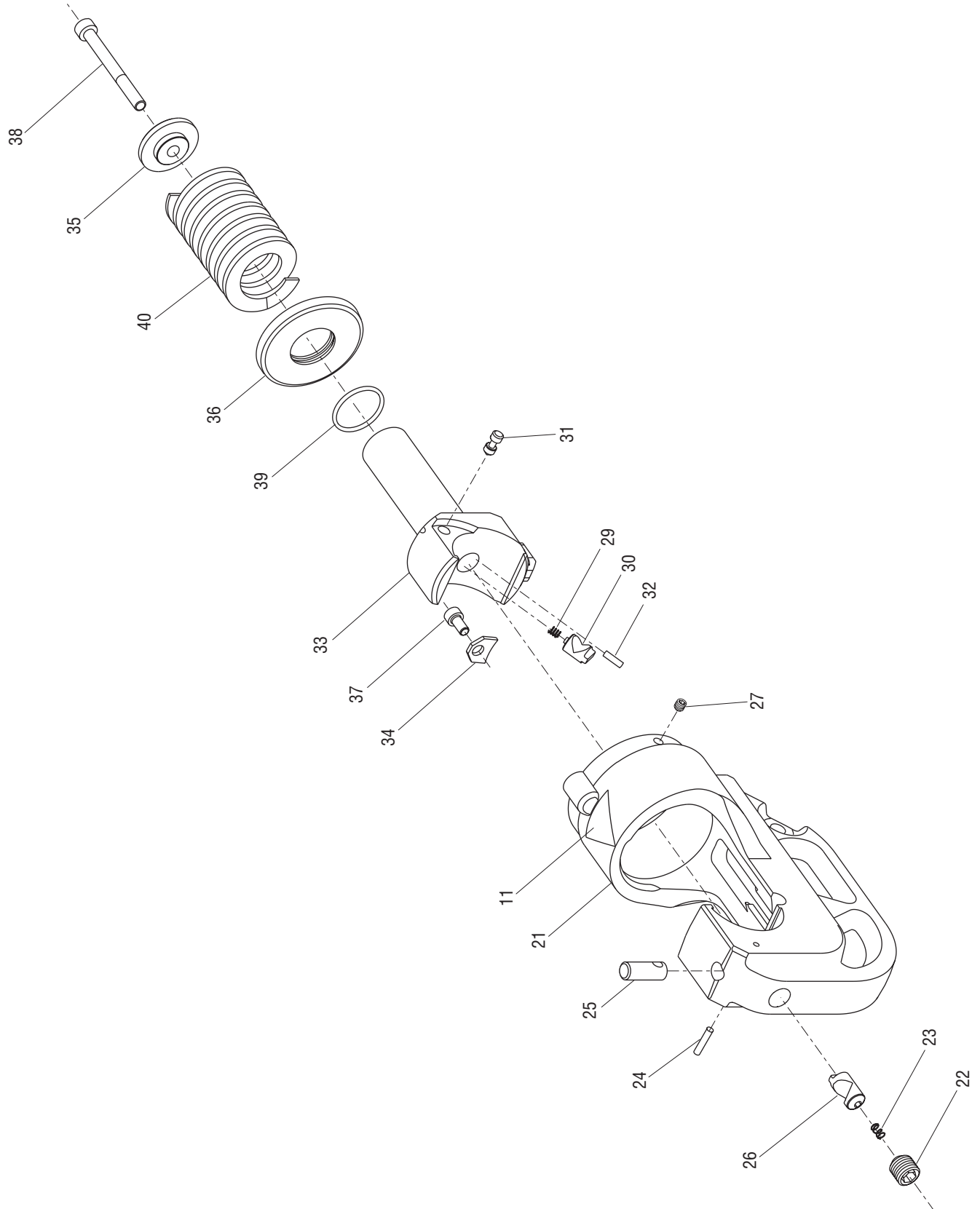
1. Remove the protective plastic bag from the electronics subassembly. Insert the LED into the LED bushing (8).
2. Lay the gear housing/motor subassembly into the left half of the housing. Insert the circuit board into the circuit board slot so that the wires and chip face in the direction of the trigger.
3. Lay the wires into the case. Be sure that the wires will not be pinched.
4. Guide the wires for the battery clip so that the battery wires lay on top of the electronics box; install the battery clip so that the red wire is upward.
5. Install the switch cover (56). Press and release the trigger to be sure that it operates freely.
6. Locate the right housing half (59) on the top of the left housing half (60). Check for pinched wires.
7. Install the housing screws (51, 53).
Note: The handle screw (51) must engage the nut (52).
8. Install the spacer (12) and screw (13).
9. Install the piston (16).
10. Replace the front head assembly. Twist the base (21) until it stops; back off 3/4 of a turn and install the stop (34) and screw (37). Be sure that the crimping head assembly rotates freely approximately 350°.
11. Clamp the head assembly into a vise with the reservoir plug facing upward. Remove the fill plug (76) and fill the reservoir with hydraulic oil.
12. Install the battery.
13. Squeeze the trigger while pressing the release lever for 45 to 60 seconds. Fill the reservoir with hydraulic oil. Replace the fill plug (76). This might require several attempts to bleed all of the air from the system.
14. Replace the tank cover (58) and tank cover screws (53).



Illustration

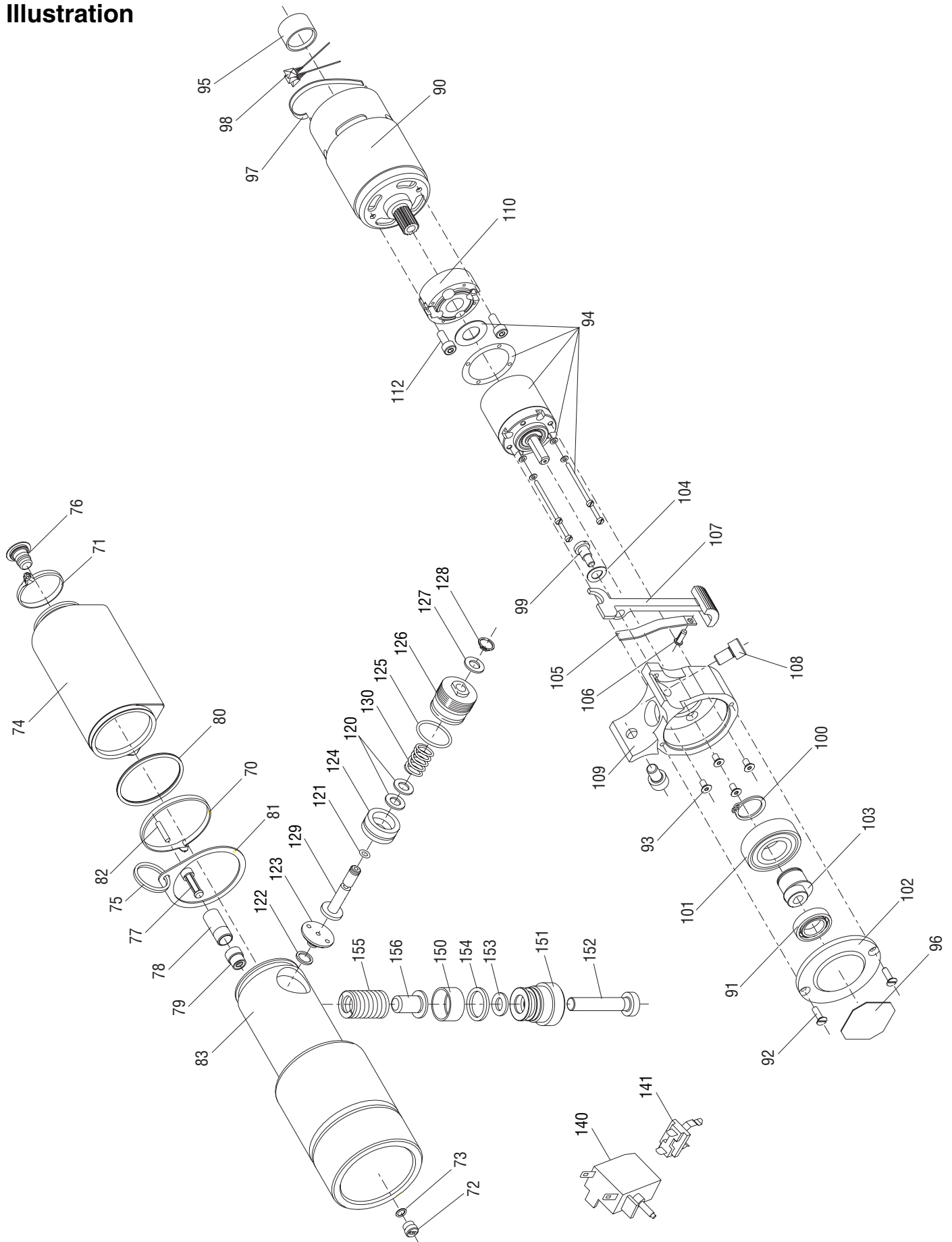


Illustration





Illustration



Parts List

Key	Part No.	Description	Qty
7	50067753	Circuit board, programmed	1
8	50042416	Bushing LED	1
9	50065050	Decal, identification	1
10	50065084	Decal, warning	1
11	50062140	Decal, pinch hazard	2
12*	50067737	Adapter	1
13*	50067745	Screw	1
14	50067770	O-ring	1
15	50067761	Backup ring	1
16	50067796	Piston	1
	50053736	C-head assembly, 42 mm (includes items 11, 21A, and 22–27)	
	50766063	C-head assembly, 42 mm, PVC-covered (includes items 11, 21B, and 22–27)	
21A	50053299	C-head, 42 mm	1
21B	50072226	C-head, 42 mm, PVC-covered	1
22	90550609	Set screw	1
23	50038214	Compression spring	1
24	90550633	Groove pin	1
25	50053175	Die release button	1
26	50053191	Die release pin	1
27	90550617	Set screw	1
	50053787	Ram assembly (includes items 29–33)	
29	50038214	Compression spring	1
30	50053167	Die release pin	1
31	50053183	Release shaft	1
32	90550641	Spring pin	1
33	50066706	Ram	1
34	50066943	Stop	1
35	50066900	Disc	1
36	50066927	Spring stop	1
37	50043676	Screw, M5 x 10	1
38	50066897	Screw, M6 x 80	1
39	50066935	O-ring	1
40	50066919	Ram spring	1
	50013459	Housing unit (green) (includes items 51–60)	
51	50042203	Screw	1
52	50042211	Nut	1
53	50042076	Screw	12
56		Switch cover (black)	1
57		Trigger guard	1
58		Reservoir cover	1
59		Housing, right side	1
60		Housing, left side	1

Parts List (cont'd)

Key	Part No.	Description	Qty
	50014200	Pump housing, reservoir assembly (includes items 70–83)	
70	50103407	Ring tie	1
71	50071777	Cable tie	1
72	50041444	Threaded bushing	1
73*	50041436	O-ring	1
74	50058738	Hydraulic reservoir	1
75	50041983	Ring	1
76	50058789	Reservoir plug	1
77	50058800	Filter	1
78	50058827	Filter adapter	1
79	50058851	Threaded bushing	1
80*	50058860	O-ring	1
81	50058290	Attachment ring	1
82	50058983	Magnet	1
83	50014218	Pump housing	1
	50121758	Motor assembly (includes items 90–112)	
90	52024659	Motor with gear	1
91	50041380	Ball bearing	1
92	50041550	Screw	2
93	50041576	Screw	4
94	50015729	Gearbox	1
95	50041134	Spacer	1
96*	50041533	Self-adhesive label	1
97	50041363	Ground strap	1
98	50041371	Capacitor	3
99	50041630	Socket head screw	1
100	50041517	Retaining ring	1
101	50041398	Grooved ball bearing	1
102	50041088	End cap	1
103	50041231	Eccentric	1
104	50049224	Lock washer	1
105	50043960	Spring	1
106	50058720	Screw	1
107	50121804	Release lever	1
108	50121839	Screw	2
109	50084020	Eccentric case	1
110	50013513	Gearbox	1
112	50067729	Screw	2

Parts List (cont'd)

Key	Part No.	Description	Qty
	50059033	Relief valve assembly (includes items 120–130)	
120	50058606	Washer	2
121*	50041347	O-ring	1
122*	50058622	Seal	1
123	50058630	Valve seat	1
124	50058649	Plunger	1
125*	50058690	O-ring	1
126	50058711	Pressure relief	1
127	50058754	Support ring	1
128*	50058762	Retaining ring	1
129	50058770	Needle valve	1
130	50019015	Spring	1
	50013475	Electrical assembly (includes items 140–144)	
140	50041266	Switch	1
141	50041274	Battery contacts	1
142	50063383	Circuit board, unprogrammed	1
143	50058991	Wire (not shown)	1
144	50059009	Wire (not shown)	1
	50013483	Piston pump assembly (includes items 150–156)	
150	50058916	Pump piston	1
151	50103652	Screw plug	1
152	50103709	Pump piston	1
153*	50103695	Washer	1
154*	50103660	Sealing washer	1
155	50103679	Spring	1
156	50103687	Valve stem	1
*	50014099	Seal kit (includes items marked with an asterisk)	
	50067125	Case with inserts	
	50112171	Decal, connector compatibility	
	50029991	12 V battery NiCd	
	50030469	12 V charger 110 VAC	
	50030477	12 V charger 220 VAC	
	50030485	12 V charger 12 VDC	



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