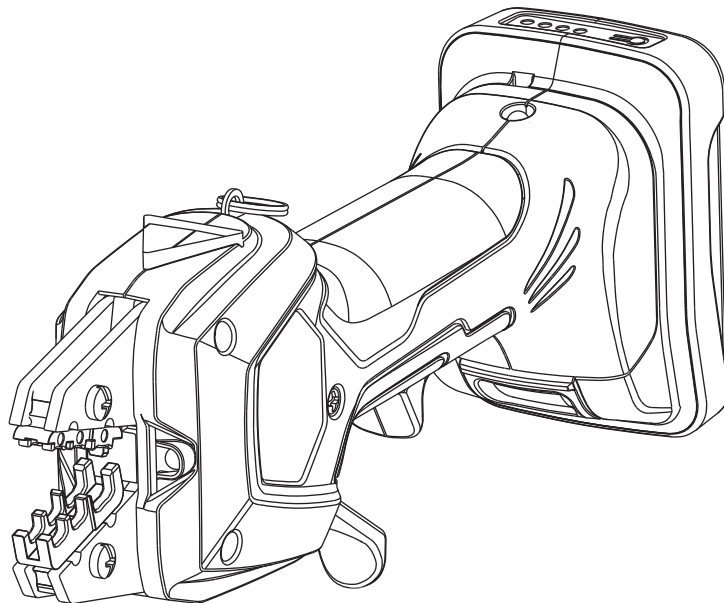


INSTRUCTION MANUAL



GREENLEE[®]
A Textron Company

Serial Number



EK50ML **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 EK50ML Battery-powered Crimping Tool is a hand-held, self-contained crimping tool intended to crimp cable using Greenlee's Kwik Cycle® 9 and CrimpALL® die sets as well as some competitors' die sets.

U.S. patent 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:

EK50ML 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 Textron Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

CrimpALL and Kwik Cycle are registered trademarks of Textron Innovations Inc.

Teflon is a registered trademark of Dupont.

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

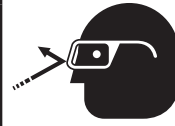
Immediate hazards which, if not avoided, **WILL** result in severe injury or death.

⚠ 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

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

An incomplete crimp can cause a fire.

Use proper die, connector, and cable combinations. Improper combinations can result in an incomplete crimp.

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



⚠ 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

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.



⚠ 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

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.

IMPORTANT SAFETY INFORMATION

⚠ 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

- Allow approximately 3 to 5 minutes of time to cool down as tool automatically switches off when it gets too hot.
- 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

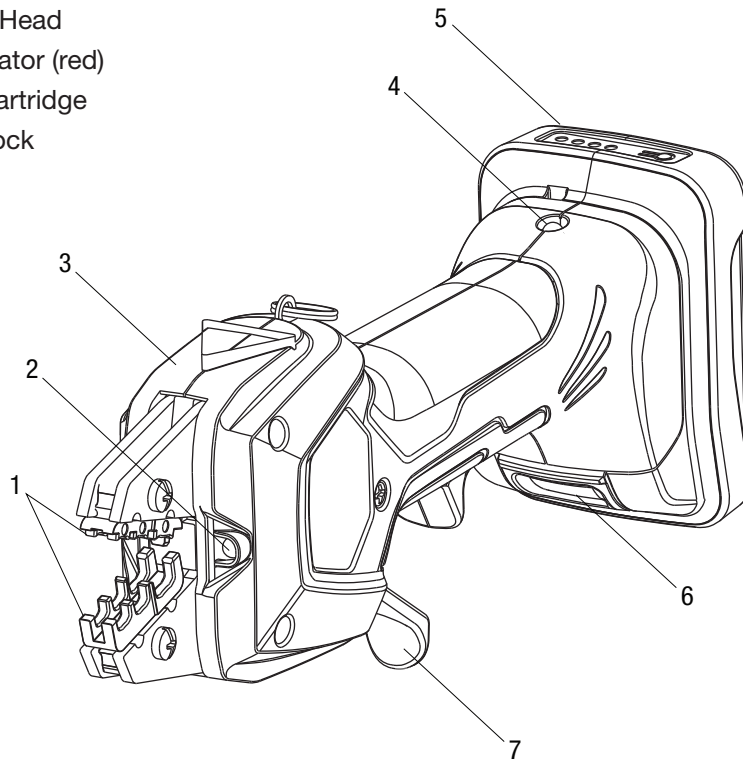
Do not perform any service or maintenance other than as described in this manual. Injury or damage to the tool may result.

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. Crimping Dies
- 2. LED Work Light (white)
- 3. Crimping Head
- 4. LED Indicator (red)
- 5. Battery Cartridge
- 6. Battery Lock
- 7. Trigger



Specifications

Crimping Tool

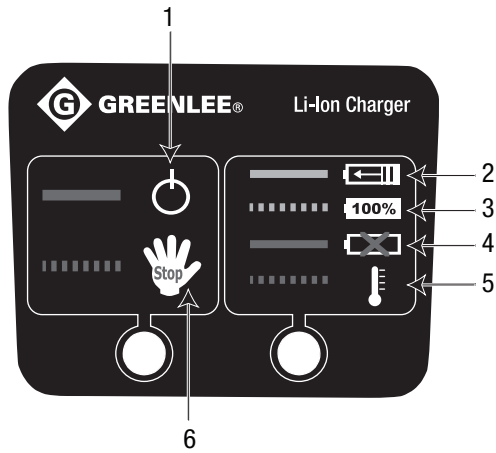
| | |
|--|-----------------------------------|
| Length (with battery)..... | 9.93" (252.22 mm) |
| Width | 2.5" (63.5 mm) |
| Depth..... | 3.6" (91.44 mm) |
| Weight..... | 2.18 lb (0.98 kg) |
| Crimping Force..... | 1.53 tons (15 kN) |
| Recommended Operating Temperature Range..... | 14 °F to 104 °F (-10 °C to 40 °C) |

Battery

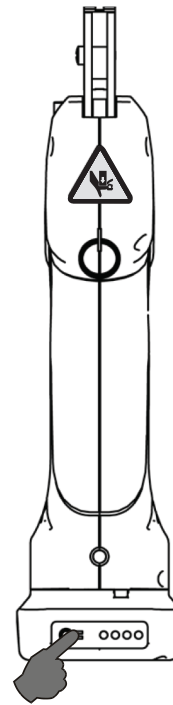
| | |
|---------------------|--------|
| Charging Time | 40 min |
|---------------------|--------|

| | |
|----------|--|
| 52068605 | Battery, 10.8V 1.5 Ah li-ion (16.2 Wh) |
| 52068603 | Charger, 10.8V li-ion batteries, 110V |
| 52068604 | Charger, 10.8V li-ion batteries, 230V |

Battery and Charger



1. Charger is plugged into socket.
2. Battery is charging.
3. Battery is fully charged.
4. Battery is defective.
5. Battery is too hot or too cold.
6. Charger is defective.



% Charge Remaining

| | |
|-------------|--|
| 100% | |
| 75% | |
| 50% | |
| 25% | |
| 0% | |

CAUTION

Remove battery only after unplugging charger from socket.
Failure to observe this precaution may result in injury and property damage.

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

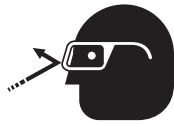


Electric shock hazard:

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

- Allow approximately 3 to 5 minutes of time to cool down as tool automatically switches off when it gets too hot.
- Do not secure this tool in a vise. This tool is designed for hand-held operation.
- 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

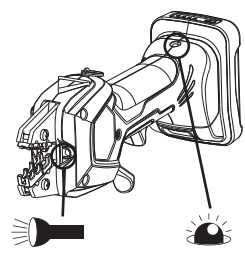



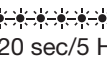


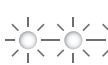

Read the instructions supplied with the battery charger.

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:

|  | | When | What it means |
|---|-------------|-----------------------------|--|
|  | 2 x | After inserting the battery | Battery is inserted in tool |
|  | 20 sec | After working cycle | Low battery |
|  | 20 sec/2 Hz | | Contact Greenlee service |
|  | 20 sec/5 Hz | | Tool has become too hot |
|  | 1 x | After interruption | Error – manual interruption of crimp cycle prior to completion |
|  | 1 x | | |
|  | 3 x | After working cycle | Error – automatic opening of tool due to exceeding crimp force |
|  | 3 x | | |

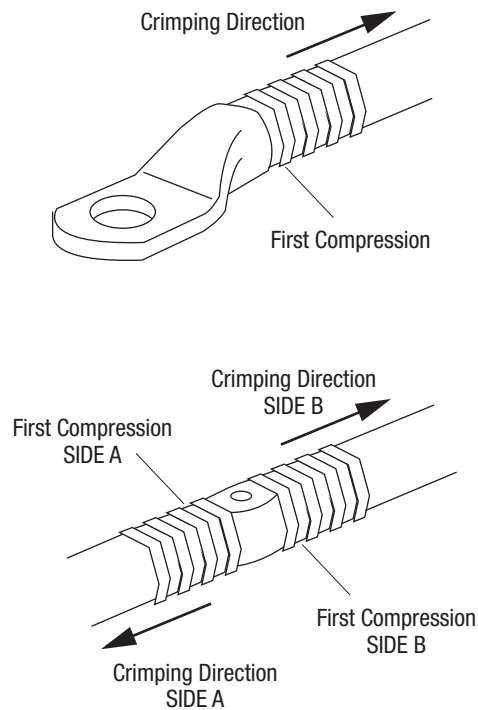
Operation (cont'd)

Installing Dies

1. Select the proper dies for the intended crimp.
2. Slide the die into the crimping head and secure with screw.
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. Insert the properly assembled connector into the crimping head.
2. Pull the trigger to make the crimp.
3. Hold the trigger down until the crimping tool automatically completes the cycle.
4. The crimp cycle automatically stops when complete, and the jaws automatically retract when the trigger is released.
5. Position the crimping tool for next crimp. Repeat Steps 2 and 3 for the number of crimps as described in this manual.

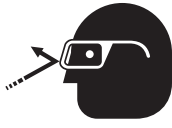
⚠ WARNING


An incomplete crimp can cause a fire.


Use proper die, connector, and cable combinations. Improper combinations can result in an incomplete crimp.

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

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>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> |

Daily
Before use:

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

After use:

1. Use a damp cloth and mild detergent to clean the housing. Allow the housing to dry.
2. 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 35,000 Crimps

Send the tool to a Greenlee Authorized Service Center for inspection.

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

Troubleshooting

Before You Begin

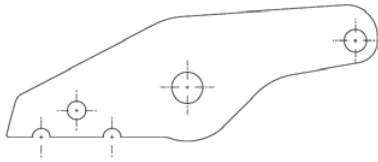
1. Make sure that the battery is charged. Recheck the battery after several minutes to make sure the battery is holding its charge.
2. Use a **nonflammable** contact cleaner or pencil eraser to clean the electrical contacts on the battery and tool.
3. Reinstall the battery and check the tool again.

| Problem | Possible Cause | Probable Remedy |
|---------------------------|--|---|
| Tool is inoperative. | Continuous use causes tool to become too hot and automatically switch off. | Allow approximately 3 to 5 minutes of time to cool down. |
| | Dirt, contaminants, etc., in jaw area of tool. | Clean tool. |
| | 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. |
| LED glows for 20 seconds. | Battery charge low. | Charge or replace battery. |

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

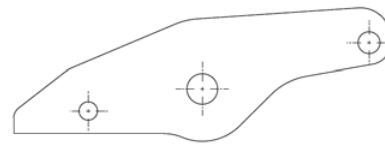
Die Holders

For EK50ML120GL



For Panduit and
T&B die sets














For EK50ML138GL



For Greenlee
CrimpALL® and
Kwik Cycle® dies;
some competitor
dies (Ideal)









CrimpALL® Interchangeable Die Sets

For Coaxial Connectors

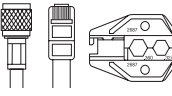

| CABLE TYPE | DESCRIPTION | | DIE CAT. NO. | REMARKS |
|--|--|---|--------------|---|
| | CONNECTION | CRIMP SIZES | | |
|  RG58, RG59, RG62AU | BNC/TNC and 3 Piece | 0.256" (6.5 mm), 0.213" (5.4 mm), 0.068" (1.7 mm) HEX | PA2034 | Common 2-piece and 3-piece BNC/TNC |
|  RG174, RG59/62, mini-coaxial 75 Ohm | HDTV SMA, True 75 Ohm BNC/TNC, Mini-UHF | 0.255" (6.5 mm), 0.197" (5.0 mm), 0.178" (4.5 mm), 0.068" (1.7 mm) HEX & 0.042" (1.0 mm) SQ | PA2648 | Common 2-piece and 3-piece BNC/TNC (Kings, ADC, Amphenol, etc.) |
|  RG59, RG6, Belden 8281, Belden 1694A | HDTV BNC/TNC/CATV "F" True 75 Ohm | 0.324" (8.2 mm), 0.255" (6.5 mm), 0.068" (1.7 mm) HEX & 0.052" (1.3 mm), 0.042" (1.0 mm) SQ | PA2649 | Common 2-piece and 3-piece BNC/TNC (Kings, ADC, Amphenol, etc.) |
|  RG6, Belden 1694, Belden 1694A | HDTV BNC/TNC True 75 Ohm | 0.278" (7.0 mm), 0.275" (6.9 mm), 0.068" (1.7 mm) HEX & 0.042" (1.0 mm) SQ | PA2657 | Common 3-piece BNC/TNC (Kings & ADC HDTV) |
|  RG58, Mini-59, RG-174, small coaxial | SMA, SMB, Mini-59 BNC/TNC, Mini-UHF | 0.128" (3.2 mm), 0.213" (5.4 mm), 0.197" (5.0 mm), 0.178" (4.5 mm), 0.068" (1.7 mm) HEX & 0.042" (1.0 mm) SQ | PA2653 | Common 2-piece and 3-piece SMA/SMB/ BNC/TNC & Mini-UHF |
|  RG58, RG174, AT&T 735, 50 and 75 Ohm | Thinnet, BNC/TNC, Mini-UHF | 0.213" (5.4 mm), 0.178" (4.5 mm) 0.068" (1.7 mm) HEX & 0.042" (1.0 mm) SQ | PA2046 | 50/75 ohm small 2-piece & 3-piece BNC/TNC (Kings, ADC, etc.) |
|  RG59, RG62, Belden 8281, 50 and 75 Ohm | BNC/TNC and Mini-UHF | 0.315" (8.0 mm), 0.252" (6.4 mm), 0.068" (1.7 mm), HEX 0.042" (1.0 mm) SQ | PA2047 | 75 ohm 2-piece & 3-piece BNC/TNC (Kings, ADC, Amphenol, etc.) |
|  RG174, RG179 and Small Cable Connection | BNC/TNC | 0.178" (4.5 mm), 0.128" (3.2 mm), 0.068" (1.7 mm) HEX | PA2051 | Common 2-piece and 3-piece BNC/TNC/SMA/SMB |
|  RG6 and RG6 Quad, Belden 1694A | BNC and CATV "F" Type & HDTV | 0.360" (9.1 mm), 0.324" (8.2 mm), 0.068" (1.7 mm) HEX | PA2045 | Common 2-piece and 3-piece BNC/TNC and CATV "F" 2-piece |
|  RG59, RG6 Video Cable | CATV "F" Type | 0.346" (8.8 mm), 0.319" (8.2 mm), 0.256" (6.5 mm) HEX | PA2042 | Crimps Ferrules or Sleeves Only |
|  RG8, RG11, RG213 | N-Type | 0.429" (10.9 mm), 0.100" (2.54 mm), 0.080" (2.03 mm) HEX | PA2656 | Common 2-piece and 3-piece "N"-Type (Kings, ADC, Amphenol, etc.) |
|  RG8, RG11, RG213, RG216 | N-Type, MS39012 Type | 0.415" (10.5 mm), 0.095" (2.4 mm) HEX | PA2039 | Crimps Pins and Ferrules |
|  Belden 1855A, 1865A, 1505A, 1505F, 1694A, 1694F, 179DT | HDYV BNC/TNC True 75 Ohm | 0.178" (4.5 mm), 0.255" (6.5 mm), 0.278" (7.0 mm), 0.068" (1.7 mm), 0.041" (1.0) HEX | PA2699 | Kings, ADC, B&L, Trompeter, Amphenol, Switchcraft |

CrimpALL® Interchangeable Die Sets (cont'd)

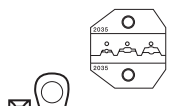
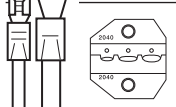
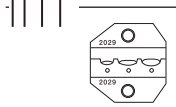
For Modular Plugs

| DESCRIPTION | | | | DIE CAT. NO. | REMARKS |
|--|----------------------------------|--|--------|--|---------|
| CABLE TYPE | CONNECTION | CRIMP SIZES | | | |
|  RJ45 - 8P8C (8 Pin) | Flat/Round, Solid/Stranded | RJ45 Unkeyed WE and SS | PA2061 | Western Electric (WE)/Stewart Connector (SS) | |
|  RJ11 & RJ12 - 6P6C, 6P4C, 6P2C | Flat/Round, Solid/Stranded | RJ11 & RJ12 Unkeyed WE and SS | PA2062 | Western Electric (WE)/Stewart Connector (SS) | |
|  RJ22 Handset - 4P4C (4 Pin) | Flat/Round, Solid/Stranded | 4 Pin Handset WE and SS | PA2063 | Western Electric (WE)/Stewart Connector (SS) | |
|  RJ45 - 8P8C (8 Pin) | Flat/Round, Solid/Stranded | RJ45 Unkeyed AMP | PA2064 | AMP (Tyco) Inc. Connectors Only | |
|  RJ50 - 10P10C (10 Pin) | Flat/Round, Solid/Stranded | RJ50 Unkeyed WE and SS | PA2068 | Virginia Plastics (VP) | |
|  British Telecom 6 Pole Plug | Flat/Round, Solid/Stranded | BT 6 Pole | PA2032 | British Telecom Plugs Only | |
|  RJ45, Molex Connectors for 5.0 dia. Cable | 5.0mm Dia. Round, Shielded (STP) | RJ45 STP Molex Connectors, 5.0 mm dia. cable | PA2673 | Molex | |
|  RJ45, AMP/Molex Connectors for dia. Cable | 6.0mm Dia. Round, Shielded (STP) | RJ45 STP AMP & Molex, 6.0 mm dia. cable | PA2674 | AMP (Tyco) Inc. & Molex | |

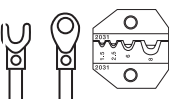
For Specialty Crimpers

| DESCRIPTION | | | | DIE CAT. NO. | REMARKS |
|---|---------------------------|--|--------|---|---------|
| CABLE TYPE | CONNECTION | CRIMP SIZES | | | |
|  RJ45 WE/SS & RG6/RG6 Quad CATV "F" | UTP 4-Pair & RG6/RG6 Quad | RJ45 WE/SS 8-pin & 0.360" (9.1mm) HEX/ 0.324" (8.2 mm) HEX | PA2687 | For standard RJ45 WE/SS Modular Plugs & 1-piece RG6/RG6 Quad CATV "F" conns. | |
|  HDMI Equivalent | HDMI | 24 AWG connector components, 24 AWG HDMI cable | PA4003 | <ul style="list-style-type: none"> Precision cast 4140 steel for durability High Tensile steel cutting blades for long life Error-proof design avoids misalignment | |

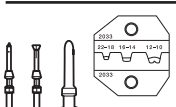
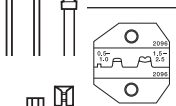
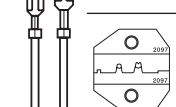
CrimpALL® Interchangeable Die Sets (cont'd)
For Insulated Terminal Crimpers

| DESCRIPTION | | | DIE CAT. NO. | REMARKS |
|---|------------------------------|---|--------------|---|
| CABLE TYPE | CONNECTION | CRIMP SIZES | | |
|  | Insulated Terminals and Lugs | Solid or Stranded Wire, 22-10 AWG (0.34-6 mm ²) | PA2035 | For Large Professional Terminals (Panduit, T & B, etc.) |
|  | Insulated Terminals and Lugs | Solid or Stranded Wire, 22-12 AWG (0.34-4 mm ²) | PA2040 | For Standard Commercial Terminals (Hardware Store Brands) |
|  | Insulated Terminals and Lugs | Solid or Stranded Wire, 26-14 AWG (0.10-2.5 mm ²) | PA2029 | For Smaller Wire Barrel Terminals |

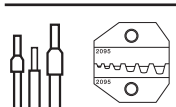
For Non-Insulated Terminal Crimpers

| DESCRIPTION | | | DIE CAT. NO. | REMARKS |
|--|----------------------------------|---|--------------|-----------------------------------|
| CABLE TYPE | CONNECTION | CRIMP SIZES | | |
|  | Non-Insulated Terminals and Lugs | Solid or Stranded Wire, 22-8 AWG (0.34-0.10 mm ²) | PA2031 | For Standard Commercial Terminals |

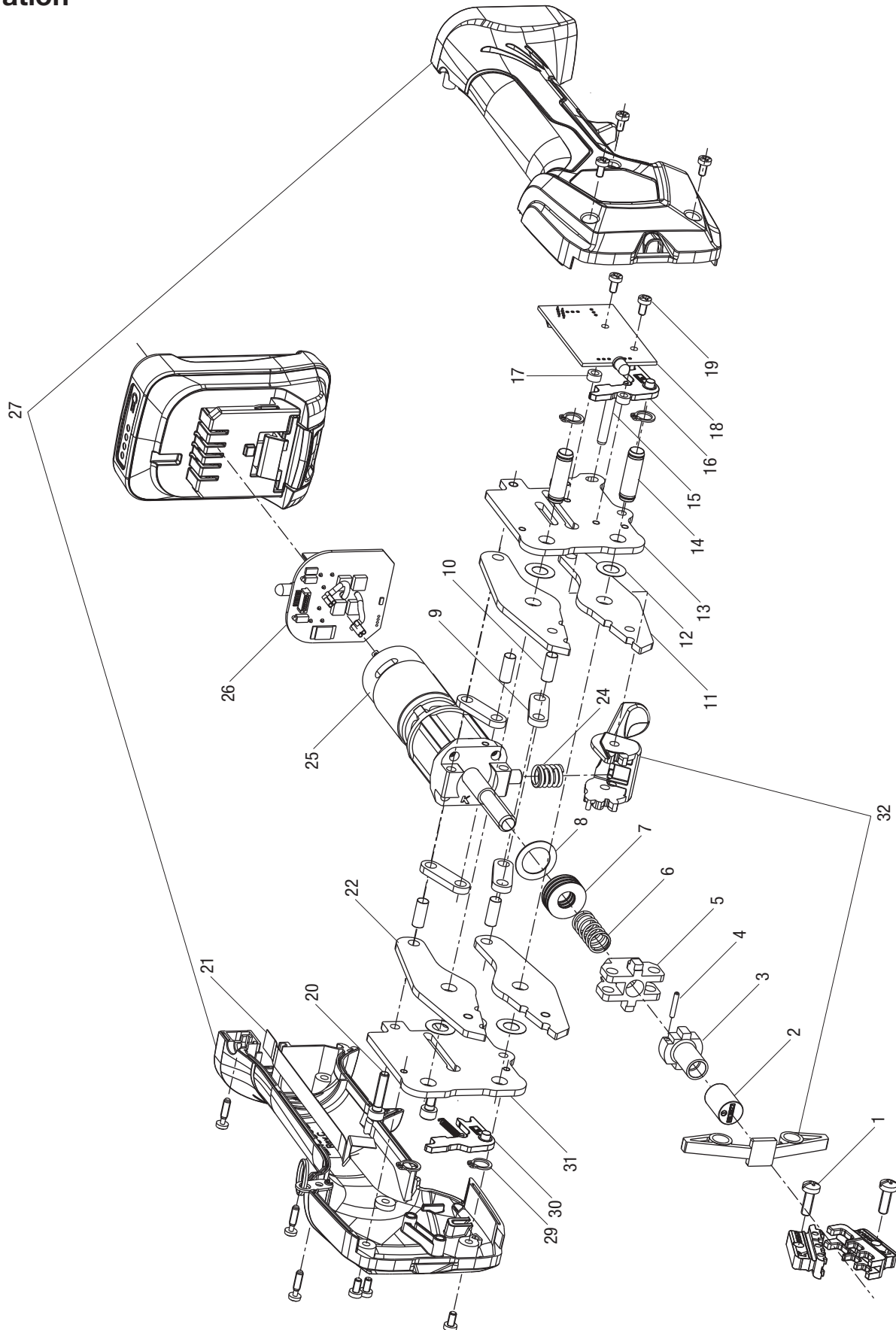
For Open Barrel, Box and Terminal Systems

| DESCRIPTION | | | DIE CAT. NO. | REMARKS |
|---|---|---|--------------|--|
| CABLE TYPE | CONNECTION | CRIMP SIZES | | |
|  | Open Barrel Non-Insulated Terminals, Narrow Lugs and Power Contacts | Solid or Stranded Wire, 22-10 AWG (0.34-6 mm ²), F Type* | PA2033 | For Standard Commercial Terminals |
|  | Open Barrel Non-Insulated Terminals, Wide Lugs and Power Contacts | Solid or Stranded Wire, 22-14 AWG (0.34-2.5 mm ²), F Type* | PA2096 | For Standard Commercial Terminals |
|  | Open Barrel D-Sub Contact Pins RS-232 | Solid or Stranded Wire, 28-20 AWG (0.08-0.50 mm ²), F Type* | PA2097 | For Standard D-sub Pins Only; not for HD D-sub |

For Wire Ferrules

| DESCRIPTION | | | DIE CAT. NO. | REMARKS |
|---|---|---|--------------|----------------------------------|
| CABLE TYPE | CONNECTION | CRIMP SIZES | | |
|  | Insulated & Non-Insulated Wire Ferrules | Solid or Stranded Wire, 22-10 AWG (0.34-6 mm ²) | PA2095 | For DIN or US Type Wire Ferrules |

Illustration



Parts List

| Key | Part No. | Description | Qty |
|-----|-----------------|---|-----|
| | 52068843 | Driver assembly with gearbox and spindle nut | |
| 2 | | Grease retainer cap..... | 1 |
| 3 | | Spindle nut..... | 1 |
| 4 | | Spring-type straight pin ISO 13337-2 x 12..... | 1 |
| 5 | | Yoke | 1 |
| 6 | | Compression spring..... | 1 |
| 7 | | Cup spring DIN 2093-18 x 0.5 x 8.2..... | 7 |
| 8 | | Shim washer DIN 988-13 x 19 x 0.5..... | 1 |
| 25 | | Drive assembly 46-gearing/10.8V engine | 1 |
| | 52068844 | Crimp head (complete) 12 mm | |
| 1 | | Screw, cross recess head M4 x 12 | 2 |
| 9 | | Linkage arm | 4 |
| 10 | | Bolt ø5 x 12..... | 4 |
| 11 | | Crimp head bracket with hole 4.2 mm..... | 2 |
| 12 | | Shim ring DIN 988-7 x 13 x 0.2 steel..... | 4 |
| 13 | | End plate, left | 1 |
| 14 | | Bolt ø7 x 12..... | 2 |
| 15 | | Parallel pin, hardened ISO 8734-4 x 28..... | 1 |
| 16 | | Gear lever..... | 2 |
| 20 | | HSH cap screw ISO 4762-M4 x 18 (DIN 912) | 2 |
| 22 | | Crimp head bracket with thread M4 | 2 |
| 24 | | Compression spring DA 9.8 x L 14, x D 1.4..... | 1 |
| 30 | | Retaining ring DIN 471-7 x 0.8 | 4 |
| 31 | | Extension spring DA 3.52 x L 8.7 x D 0.32 | 1 |
| 32 | | End plate, right..... | 1 |
| | 52068849 | Crimp head (complete) 13 mm | |
| 1 | | Screw, cross recess head M4 x 12 | 2 |
| 9 | | Linkage arm | 4 |
| 10 | | Bolt ø5 x 12..... | 4 |
| 11 | | Crimp head bracket with hole 4.2 mm..... | 2 |
| 12 | | Shim ring DIN 988-7 x 13 x 0.2 steel..... | 4 |
| 13 | | End plate, left | 1 |
| 14 | | Bolt ø7 x 12..... | 2 |
| 15 | | Parallel pin, hardened ISO 8734-4 x 28..... | 1 |
| 16 | | Gear lever..... | 2 |
| 20 | | HSH cap screw ISO 4762-M4 x 18 (DIN 912) | 2 |
| 22 | | Crimp head bracket with thread M4 | 2 |
| 24 | | Compression spring DA 9.8 x L 14, x D 1.4..... | 1 |
| 30 | | Retaining ring DIN 471-7 x 0.8 | 4 |
| 31 | | Extension spring DA 3.52 x L 8.7 x D 0.32 | 1 |
| 32 | | End plate, right..... | 1 |

Parts List (cont'd)

| Key | Part No. | Description | Qty |
|--------------------------|-----------------|---|-----|
| | 52068845 | Switch board assembly | |
| 17 | | Distance roll ø6 x 3 | 2 |
| 18 | | Plate for mini 10.8V | 1 |
| 19 | | Screw DIN 7985 M3 x 6-4.6-Z zinc plated | 2 |
| | 52068846 | Cup spring assembly | |
| 6 | | Compression spring | 1 |
| 7 | | Cup spring DIN 2093-18 x 0.5 x 8.2 | 7 |
| 8 | | Shim washer DIN 988-13 x 19 x 0.5 | 1 |
| 32 | 52068847 | Release lever and spacer | |
| | 52068848 | Tool housing (complete) 12 mm jaw | |
| 27 | | Housing assembly, green | 1 |
| | 52068850 | Tool housing (complete) 13 mm jaw | |
| 27 | | Housing assembly, green | 1 |
| Replacement Parts | | | |
| 21 | 52068569 | Flat flexible cable 8-pole L 131.5 | 1 |
| 26 | 52068582 | Programmed circuit board | 1 |