

MANUAL VERSION

1.5

INDUSTRIAL RIVET & FASTENER CO.

RIVETING TOOL MANUAL



MODEL#

RK-797

FREESAT

Technical Data Sheet

MODEL#	RK-797-1	RK-797-3
Device Stroke	25mm	25mm
Setting Force	18kn	18kn
Drive	Brushless DC motor	Brushless DC motor
Lighting	Power LED	Power LED
Battery	Li-Ion 18V	Li-Ion 18V
Weight	1.9 kg w/o battery	2.0 kg w/o battery
Application	3/16" and 1/4" Lockbolts	3/16" and 1/4" Lockbolts with Process Monitoring

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BASIC INFORMATION

1 PURPOSE OF THIS DOCUMENT

This document is intended for persons responsible for the operation of the FreeSet lockbolt setting tool (the "tool"). Please read, understand and follow all instructions contained in this document. Please read this document prior to starting to use the tool and pay attention to the safety information. The information contained in this document is important for avoiding workplace mishaps and ensuring problem-free operation. We assume no liability for damage or business disruption due to failure to adhere to the instructions contained in this document. Should you Nonetheless encounter problems, please contact us and we will do our utmost to assist you.

1.1 Intended Use

This tool may only be used for setting lock bolts and blind rivets as described in this document.

NOTE!

Intended use also includes

- Compliance to all information in this document
- Compliance with inspection and maintenance procedures

Any other use is considered improper use of the tool.

Industrial Rivet is not liable for damage resulting from improper use.

1.2 Improper Use

We assume no liability for damage or business disruption due to failure to adhere to the instructions contained in this document or due to improper use of the setting tool.

1.3 Warranty and Liability

Warranty and liability claims for personal and property damage are excluded if they occur as the result of one or more of the following:

- Improper use
- Improper installation, placement into service, operation and maintenance
- Operating the tool with defective safety equipment or improperly installed or non-functioning safety and protective devices
- Failure to comply with the information contained in this document regarding transport, storage, assembly, placement into service, operation, and maintenance of the tool
- Unauthorized modifications to the tool
- Improperly performed repair work
- Catastrophic events beyond human control and acts of god

1.4 Copyright

This document is intended only for the owner and personnel authorized to operate the tool.

It contains the relevant rules and information, which may not be:

- Duplicated
- Distributed or
- Otherwise shared, either in whole or in part.

The copyright for this document remains with Industrial Rivet and Fastener Co.

Address of the manufacturer:

Industrial Rivet and Fastener Co., Inc.
200 Paris Avenue
Northvale, New Jersey 07647
Ph. 201-750-1040

2 BASIC SAFETY INFORMATION

2.1 Information contained in this document

- To ensure safe use and problem-free operation, please make sure that you are familiar with the basic safety information and guidelines.
- Also be sure to observe all local rules and regulations.

2.2 Owner Responsibilities

The owner is responsible for ensuring that all persons using the tool are familiar with basic work safety and accident prevention rules and have been briefed on tool operation. Safety practices should be reviewed regularly with all personnel operating the tool.

2.3 Personnel Responsibilities

All persons assigned to work with the tool should be aware of the basic work safety and accident prevention rules prior to commencing work.

2.4 Personnel Training

Personnel must be trained and briefed before operating this tool.

Personnel responsibilities for installation, placement into service, operation, maintenance and repair must be clearly defined. Personnel in training may operate the tool only under the supervision of an experienced person.

2.5 Risks When Using This Tool

All possible safety risk factors must be addressed immediately.

Warning!

The tool is designed using state-of-the-art technology and according to recognized safety standards. Nonetheless, operating the tool involves the risk of life-threatening injury to the user, third parties, and/or property.

Warning!

The tool may only be used:

- For intended purposes
- If the tool is in proper and safe working order.

2.6 Electrical Hazards

Warning!

Work on this tool is to be performed only by a qualified electrician. Inspect the tool's electrical components on a regular basis. Repair loose connections and damaged cables immediately. Remove the battery before performing tool repairs.

Note!

The tool must always be kept locked in a secure location.

2.7 Basic Safety Measures

Warning!

The terms “tool” and “power tool” used in the safety information refers to tools powered from a wall outlet (with power cord) and battery – powered tools (without a power cord).

1. **Keep your working area clean and well lighted.**
A cluttered or poorly illuminated working area may result in accidents.
2. **Do not operate the tool in areas which explosions can occur.**
Where flammable liquids, gases, or dusts are located. Power tools produce sparks that can ignite dust or vapors.
3. **Pay attention to environmental conditions**
Do not expose the tools to rain or water.
Do not use tools in a damp or wet environment.
4. **Keep children and other persons away when using the tool.**
Distractions may cause you to lose control of the tool.

2.8 Electrical Safety

1. **Avoid contact with grounded surfaces such as pipes, heaters, stoves, and refrigerators.**

When your body is grounded there is an increased risk of electrical shock.

2. **Keep the tool away from rain and humidity**

The penetration of water into a tool increases the risk of electrical shock.

3. **Keep the tool away from heat, oil, sharp edges or moving parts**

4. **Minimize the effects of ESD “Electro Static Discharge”**

ESD can effect the performance of electronic components on the tool.

2.9 Personal Safety

1. **Always pay close attention and use caution when working with a power tool.** Do not operate power tools when you are tired or under the influence of drugs, alcohol or medications. Even one moment of carelessness when operating the tool can result in serious injury.

2. **Always wear personal protective gear and safety goggles.** Wearing personal protective gear appropriate to the type of tool and the work being performed, such as a dust mask, non-slip safety shoes, a safety helmet and ear protection, minimizes the risk of injury.

3. **Avoid accidentally starting the tool.** Make sure that the tool is switched off before connecting it to the battery, picking it up or carrying it. Carrying the tool with your finger on the power switch or connecting to a power source when it is switched on may result in accidents.

4. **Maintain an ergonomic working posture.** Stand firmly and always maintain balance. By doing this, you can control the tool better in unexpected situations.

5. **Wear suitable clothing.** Do not wear loose clothing or jewelry. Keep hair, clothing, and gloves away from moving parts. Loose clothing, jewelry or long hair can get caught in moving parts.

2.11 Use and care of the power tool

1. **Do not overload the tool.** Use the appropriate tool for your work. Using the correct tool allows you to perform your work more efficiently and safely.
2. **Do not use a power tool that has a defective power switch.** Power tools that cannot be switched on and off are dangerous and must be repaired.
3. **Remove the battery before changing tool settings, replacing accessory parts or storing.** By doing this, you can prevent the tool from starting accidentally.
4. **Keep unused tools out of the reach of children.** Do not allow anyone to use the tool who is unfamiliar with it or has not read this document. Power tools are hazardous when used by inexperienced persons.
5. **Maintain the tool carefully.** Make sure that moving parts are in good working condition and do not jam, and check for broken or damaged parts that may impair proper function. Ensure that any damaged parts are repaired before using the tool.
Poorly maintained power tools are responsible for many accidents.
6. **Keep tools clean.** Carefully maintained tools jam less frequently and are easier to operate.
7. **Follow these instructions when using the tool and accessories.** Take into account the working conditions and the work to be performed. Using power tools for unintended purposes may be hazardous.
8. **Use the correct tool.** Do not use tools with insufficient power to perform the task. Do not use tools for purposes and work for which they are not intended.
9. **Check your tool for damage.** Before using the tool, check for damaged parts and ensure that safety equipment is in good working order and functions as intended. Check that moving parts are in working order and do not jam, that all parts are properly mounted and none are broken, and that all conditions are correct for operating the tool. Damaged protective equipment and parts should be properly repaired by a customer service workshop or replaced, unless this document specifies otherwise. Damaged power switches must be replaced by a customer service workshop. Do not use a tool if the start switch does not function properly.

2.12 Service

Warning!

All repairs should be carried out by qualified personnel, using only original replacement parts available from Industrial Rivet and Fastener Co. Doing this will ensure that the tool safety is maintained.

2.13 Lithium Ion Battery

Warning!

Please observe the following when handling the provided lithium ion batteries.

- a) **Use only devices recommended by the manufacturer to charge the batteries.** Using an improper charger may ruin the battery.
- b) **Use the correct batteries in the power tools.** Using other batteries may result in injury and fire hazard.
- c) **If the battery is not used for an extended period, it should not remain in the charger or in the tool.** If it is expected that the riveting tool will remain unused for more than 3 hours, the battery must be removed. Failure to do so entails the risk of permanent battery damage.
- d) **For safety reasons, the lithium ion battery should not remain in an active charging device for more than 36 hours.** After charging, remove the battery from the charger as soon as possible.
- e) **An empty battery should not remain in the tool or in an unpowered charging device for an extended period of time.** In both cases, the residual current flow may completely discharge and ruin the battery.
- f) **If possible, recharge the lithium ion battery immediately after use and do not store when empty.** If the battery is stored separately from the tool and the charger, it will retain its charging capacity for a longer time. (Maximum loss 5% per year)
- g) **Always transport the battery separately from the tool whenever possible.** This ensures that the tool is not accidentally switched on, thus preventing the battery from discharging.
- h) **Do not expose the lithium ion battery to high temperatures (120°F/50°C) or direct sunlight.** If the battery temperature exceeds 120°F/50°C during operation (charging or discharging), it must be removed from the charger or riveting tool immediately.
- i) **Keep unused batteries away from paper clips, coins, keys, nails, screws or other small metal objects that could create a short circuit between the battery contacts. Do not open or short-circuit the battery.** A short circuit between the battery contacts may result in burns, fire or explosion.

- j) Batteries may leak under extreme operating conditions or high temperatures.** If a battery leaks, avoid contact with the skin or eyes. Battery fluid is corrosive and can cause chemical burns to body tissues. If fluid comes in contact with the skin, wash off immediately using soap and water, and then apply lemon juice or vinegar. Should fluid get in the eyes, rinse for at least 10 minutes with water and consult a physician immediately.
- k) Do not drop the lithium ion battery or subject it to physical shock.**
- l) Clean the battery contacts regularly using cotton swabs dipped in alcohol.**

Warning!

Lithium ion batteries hold their charge almost indefinitely and are not subject to memory effects.

With proper care, you can reliably charge your battery for years to come (approx. 700-1000 charging cycles).

Avoid completely discharging or overcharging the lithium ion batteries under all circumstances. Doing so will prematurely will ruin them.

2.14 Battery Chargers

- a) Do not charge the battery at temperatures UNDER 50°F/10°C or OVER 100°F/40°C.**
- b) The battery charger must not be connected to a step-up transformer, generator or DC outlet.**
- c) Make sure that the battery charger air vents are not covered or blocked.**
- d) Do not store the tool, battery charger or battery in places where the temperature might exceed 120°F/50°C.**
- e) Never charge the battery in a box or a closed container**

2.15 Structural Modifications

No changes, additions or modifications may be made to the tool components without the written permission of the manufacturer. All modifications require written confirmation by Industrial Rivet and Fastener Co.

Warning!

Should repairs or maintenance be required, use only original replacement parts.

2.16 Cleaning the tool and disposal

Handling and disposal of used substances and chemicals, especially when cleaning with solvents.

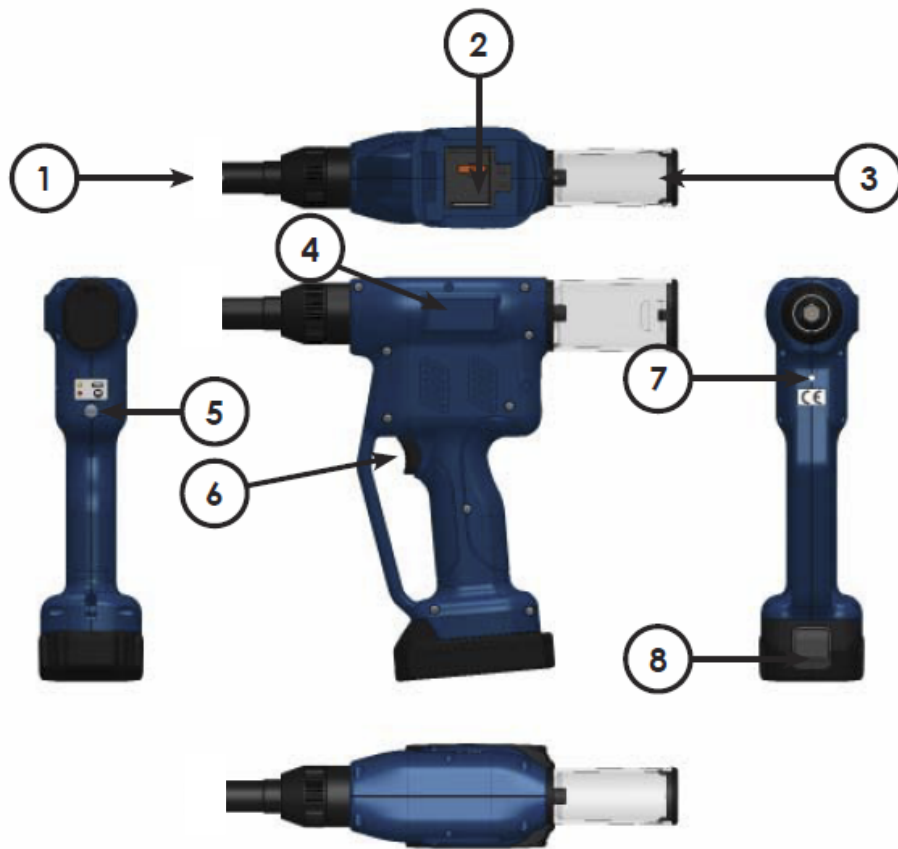
Do not place used batteries into household garbage, fire or water. Ask the dealer or manufacturer to handle disposal.



2.17 Risk of injury and tool damage

1. Attach the mandrel collection container before using the tool. Failure to do so will allow the mandrels to be thrown off when they detach, which may result in injury.
2. Make sure that there are no damaged tool parts. All damaged parts must be repaired before use.
3. Working with damaged tool parts creates the risk of injury. If you work in an elevated area, wear a safety harness, be mindful of falling rivets, and avoid dropping the tool. Failure to do so could result in injury and substantial damage.
4. Remove the battery before cleaning or performing general maintenance on the tool.
5. Keep your face away from the exhaust vents.
6. Avoid skin contact with substances such as lubricants and grease. These substances are flammable on the skin. If you should come in contact with them, wash the affected area carefully.
7. Avoid unsafe working positions. You could fall and injure yourself.
8. Take good care of your tool. Follow the operating instructions for maintenance and cleaning. Keep the handgrip free from lubricants and dirt.
9. Use the tool carefully and make sure to operate it correctly. Use the tool with care. Proper working conditions should exist. Maintain concentration and focus while working.

3.3 Freeset Anatomy



POS.	Description
1	Nose Assembly (not included)
	Nose Adapter (included)
2	Serial Number
3	Mandrel Collector
4	Model Number
5	Status LED
6	Trigger
7	Worklight
8	Battery

3.4 Technical Details (ALL MODELS)

MODEL#	RK-797-1	RK-797-3**
Device Stroke	25mm	25mm
Setting Force	18kn	18kn
Drive	Brushless DC motor	Brushless DC motor
Lighting	Power LED	Power LED
Battery	Li-Ion 18V	Li-Ion 18V
Weight	1.9 kg w/o battery and nose assembly	2.0 kg w/o battery and nose assembly
Application	3/16" and 1/4" Lockbolts	3/16" and 1/4" Lockbolts with Process

* WEIGHT NOTED WITHOUT BATTERY

** TOOLS COME WITH PROGRAMMING FEATURES



4 OPERATION

4.1 Quick Start

This section describes how to start operating the RK-797-1 FreeSet and setting rivets. See section x for details about additional setup options on RK-797-3 in the FreeSet Manager Software.

4.2 Checklist

Check the following before using the riveting tool:

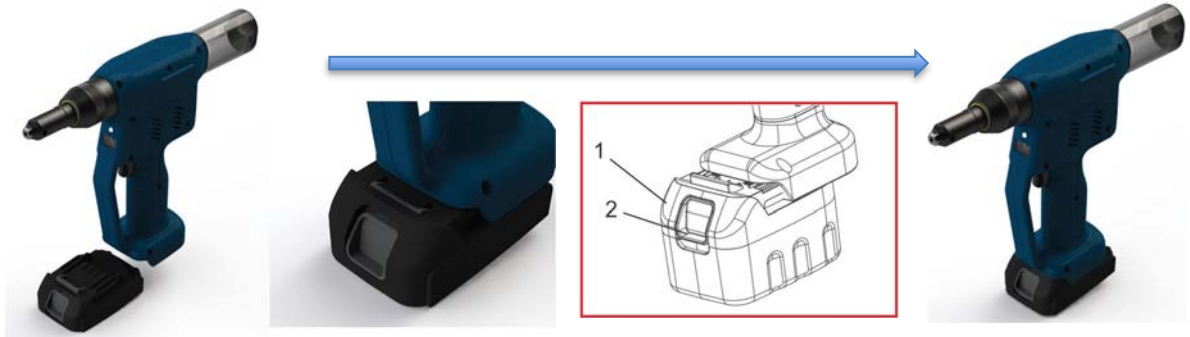
- The housing is closed and there are no obvious defects
- The battery is correct for the riveting tool and shows no damage
- The nosepiece fits the rivets to be used.
If the rivet does not fit into the nosepiece or is too loose, another nosepiece must be used.
- The mandrel container is attached

Note!

Only batteries approved by Industrial Rivet and Fastener Co., Inc for use in FreeSet tools may be used.

Using incorrect batteries can ruin both the batteries and the riveting tool. Industrial Rivet assumes no liability for the use of incorrect batteries

4.3 Inserting The Battery



To attach the battery (1), align the battery tab with the groove in the housing such that it slides easily into place.

Always attach the battery completely so that it locks into place with a click. If the battery is not properly attached to the tool, it can become detached and cause substantial damage.

Never use force when attaching the battery. If the battery does not slide into place, it is not correctly aligned. In this case, remove the battery and guide it once again into the grooves.

To remove the battery, press down the clip (2) on the front of the battery. The battery can now easily be removed by sliding it forward out of the holder.

After the battery has been inserted, a green light will appear in the LED status display if there is enough battery power to operate. Subsequently, the light will go off.



Press the start switch “trigger” (1)

4.4 Emptying The Container

The detached mandrels must be emptied from the container. The nail container should be emptied when full. The container can be opened and closed through turn left or right.



Turn the collection container by hand to the left or right to remove it. After emptying the container it can be mounted in the same way it was opened.

Note!

The mandrel container must be emptied regularly, otherwise mandrels will become jammed in the tool which can cause costly damage.

4.5 Setting the First Rivets

Insert the threaded end of the lockbolt into the sheet metal application. Place the lockbolt collar on the lockbolt correctly, place the nose piece over lockbolt. Insure there is no the n of the rivet into the nose piece of the riveting tool. Make sure that the rivet rests securely in the nosepiece.

1. Using the riveting tool, insert the lockbolt into the holes in the parts to be joined, (usually sheet metal).
2. Place the collar over the lockbolt in the correctly oriented position. Please consult the lockbolt manufacturer for more details on the correct orientation.
3. Press the riveting tool over the lockbolt so the grooves enter the nose of the tool until the lockbolt collar rests firmly against the nose. Maintain light pressure during the rivet setting operation to ensure an optimal result.
 - a. If the tool has been configured with a pressure switch, be sure to provide enough force to enable the pressure switch.
4. Press the start button to begin the rivet setting operation. The jaws close and grip the lockbolt grooves. The lockbolt and collar is compressed until the collar swages over the locking grooves and breakload pressure is reached. Once this occurs, the lockbolt and pulling grooves detach at the break point.
5. The jaws then open, the detached mandrel is released, and the mechanism returns to its initial position.

5 MAINTENANCE AND SERVICE

By performing regular maintenance on the FreeSet RK-797 lockbolt setting tool, you can ensure trouble free operation. Using a preventive maintenance program will reduce wear of critical components and prolong its service life.

5.1 Service Principles

As in compliance with the guidelines in this manual and the warranty, as well as with the procedures we employ in our own repair center, please follow these core principles.

- 1) Maintenance work may only be performed by staff trained and certified in repair for Industrial Rivet & Fastener. This includes the RivetKing® in house repair center, RivetKing® Authorized Service Centers, or customers in house service centers. All trained personnel will receive a certificate as evidence of this training.
- 2) Only original/genuine RivetKing®/Freeset® parts are to be used in repairs of the tool components. Nose pieces may be supplied by RivetKing or other lockbolt manufacturers, so long as the proper configuration is applied.
- 3) Document all maintenance work with:
 - Serial Number
 - Date
 - Rivet count (if equipped)
 - Type of work performed.
- 4) Follow a preventive maintenance program

5.2 Preventive Maintenance

The following maintenance and checks must be performed at regular intervals and when the tool is heavily used or soiled.

Daily:

- Check/Clean Jaws at the start of every shift. Replace if necessary.
- Check/Clean nose piece at the start of every shift for ear and replace if necessary.
- Check/Clean the spent pin path and spray with compressed air to remove debris.

Weekly:

- Check the compression spring for shortening and replace if necessary.
- Clean battery contacts with alcohol

5.3 Approved Lubricants

The tool must not be cleaned with fat-solvent agents or water.

5.4 Removing the Nose Assembly

- Remove the outer sleeve.
- Remove the nose assembly
- Disassemble and clean the nose assembly according to manufacturer instructions.
- Clean with mineral based cleaning agent and check wear off all components.
- Replace as necessary and re-install in the reverse order

5.5 Cleaning the Jaws








- Clean with mineral based cleaning agent and check wear off all components.

Warning!

The proper nose assembly must be selected for the lockbolt specified.
Contact your RivetKing® representative for assistance.

6 LED STATUS LIGHT (RK-797-1 Models)

The LED Status light is located below the mandrel container. The following signals can be output during operation.

LED display		Description of the status	Action
	LED illuminates briefly, red and green	Functional test after installing the battery and pressing the start button	
	LED illuminates green	Rivet mandrel container not installed or not installed correctly or pressure switch not pressed	Correctly install the rivet mandrel and press the pressure switch
	LED blinks green	Pressure switch must be released prior to every placement process	Release the pressure switch; a new riveting process can be started
	LED blinks orange	Battery almost empty, work can continue	Replace or charge battery
	LED illuminates orange	Battery empty, work cannot continue	Replace or charge battery
	LED rapidly blinks red	Fault: Overcurrent due to an excessive mandrel breaking load or the device has overheated (55 °C)	Incorrect blind rivet used or tension unit is dirty or damaged. Maintain tension unit and let the device cool down.
	LED illuminates red	Fault: The riveting device is defective; it no longer functions	Contact the manufacturer

When you connect the battery for the first time, it must be at least 40% full or the display will indicate it is empty.

7 QUICKDRAW FUNCTION

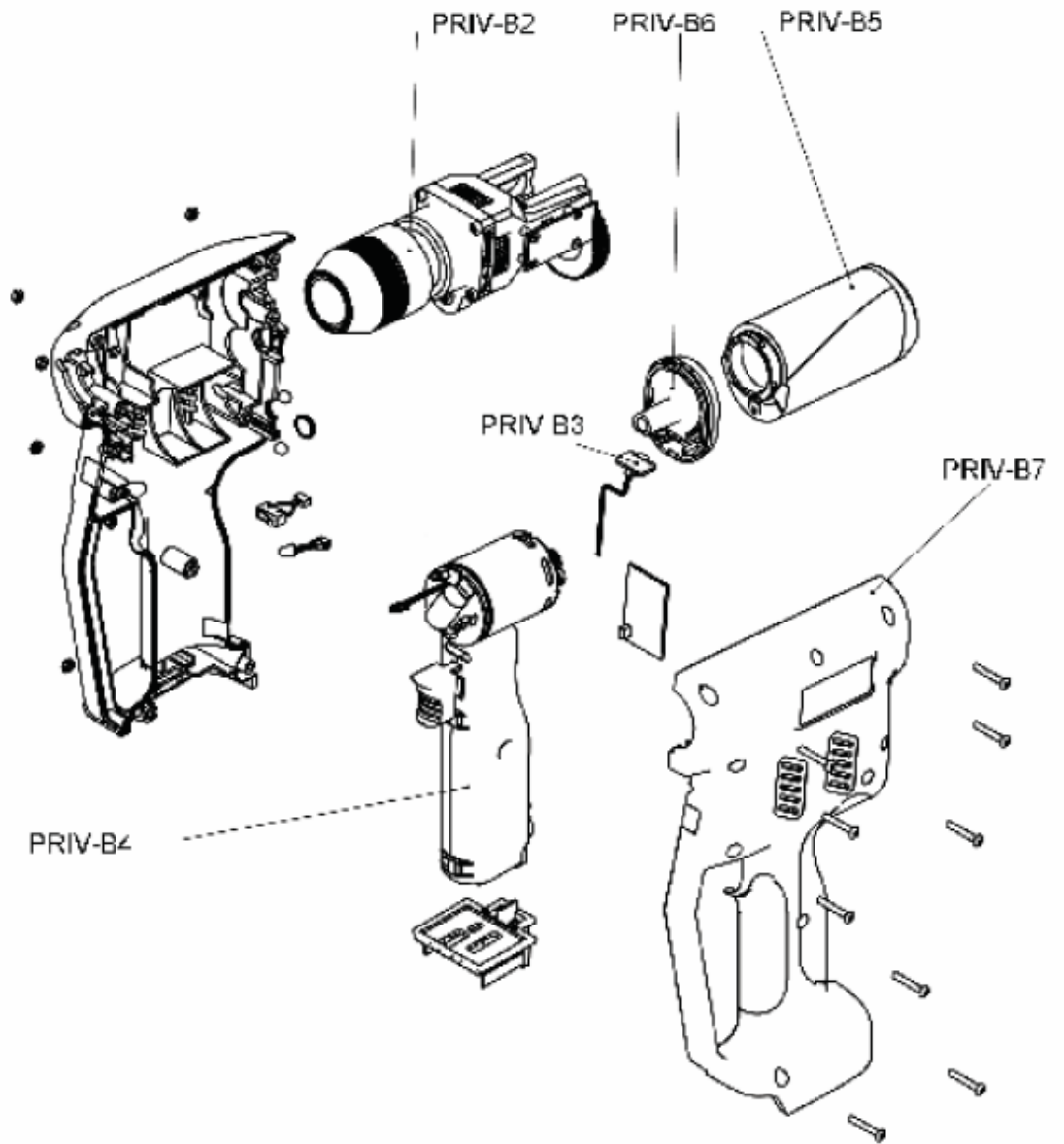
The riveting tool is enabled with QuickDraw functionality. The purpose of this function is to speed up the riveting process and limiting the stroke of the tool to only the stroke needed for effective riveting. This results in a quicker cycle time. Typically, pneumatic tools must reach complete stroke before completing the riveting cycle. The quickdraw function can recognize when the rivet has broken, even before the stroke capacity is reached. The tool will return to home position when it has recognized the lockbolt has broken. This feature can be enabled, or disabled.

7.1 Enabling QuickDraw

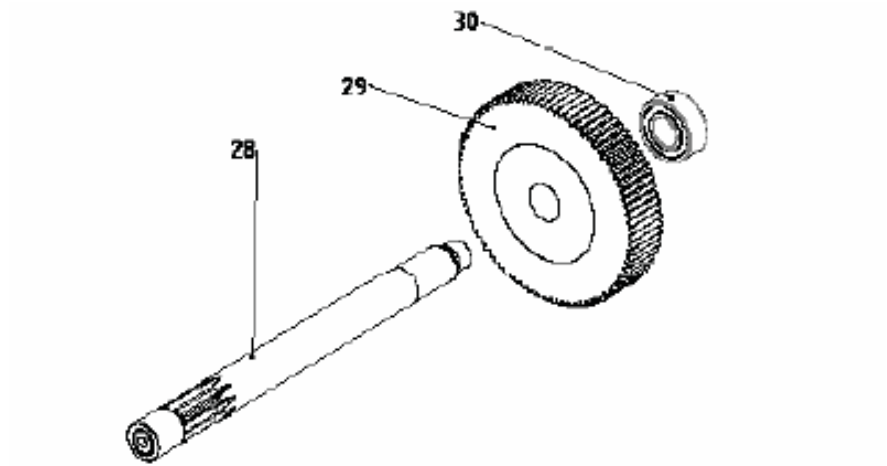
- Unplug the battery
- Hold the trigger and do not release
- Plug the battery while holding the trigger
- Wait for red/green flashing of the LED.
- Release the trigger.
- Press the trigger once to change the setting.
 - Red light = Disabled
 - Green Light = Enabled
- Once the desired setting is reached, press end hold the trigger to lock in the setting.
- When the LED light is off, the setting is applied.

8 DRAWINGS

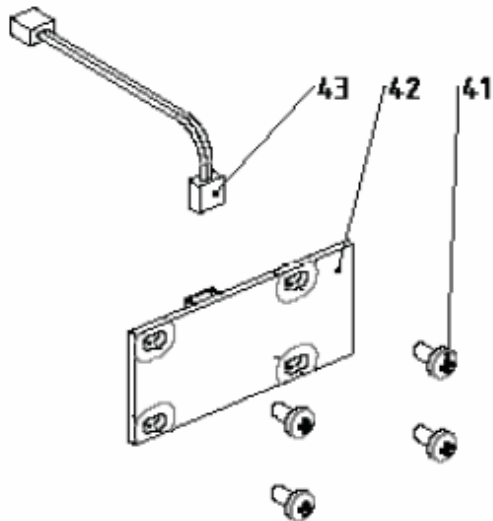
8.1 Main Components



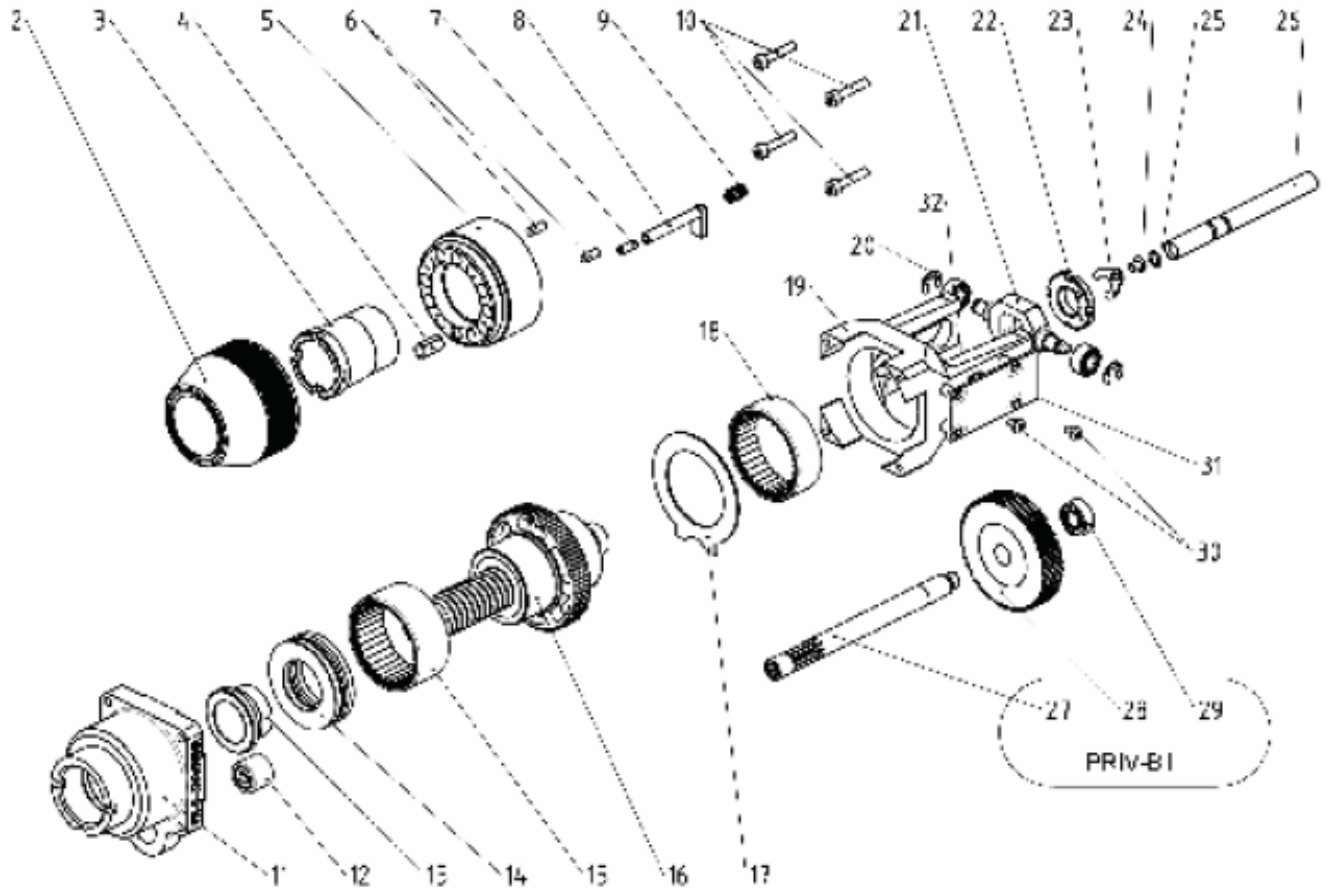
8.2 Drive Shaft Assembly PRIV-B1



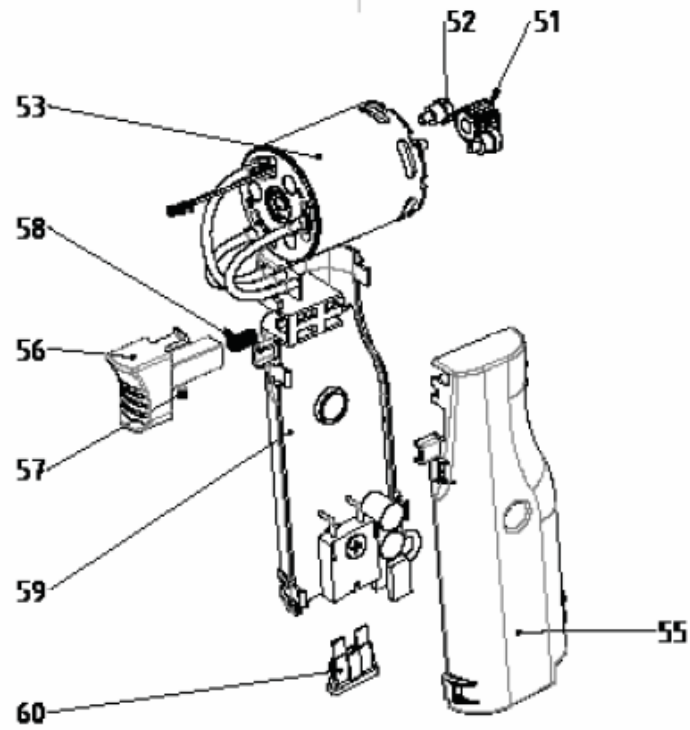
8.3 Limit Switch Circuit Board PRIV-B3



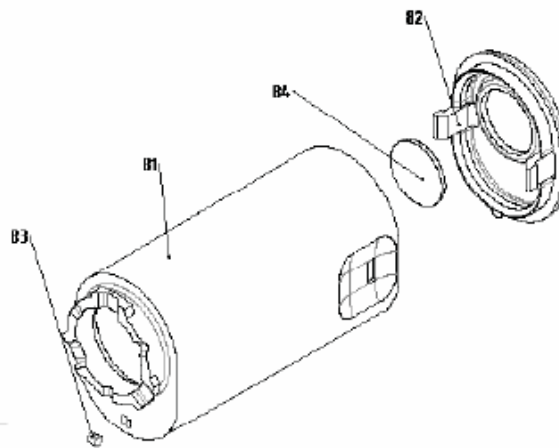
8.4 Drive Unit Assembly PRIV-B2



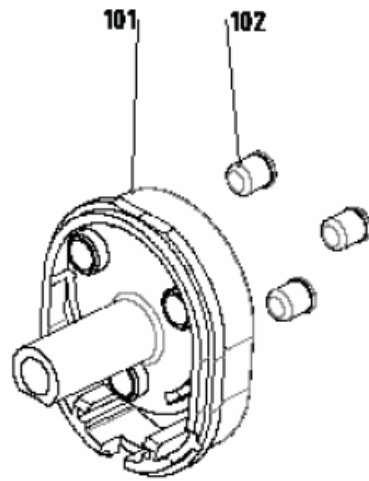
8.5 Motor Assembly & Main Circuit Board PRIV-B4



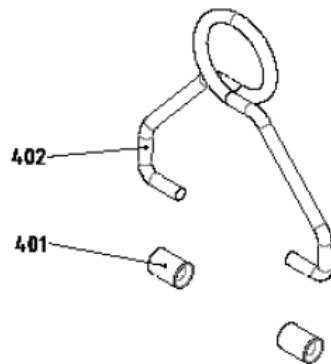
8.6 Mandrel Container Assembly PRIV-B5



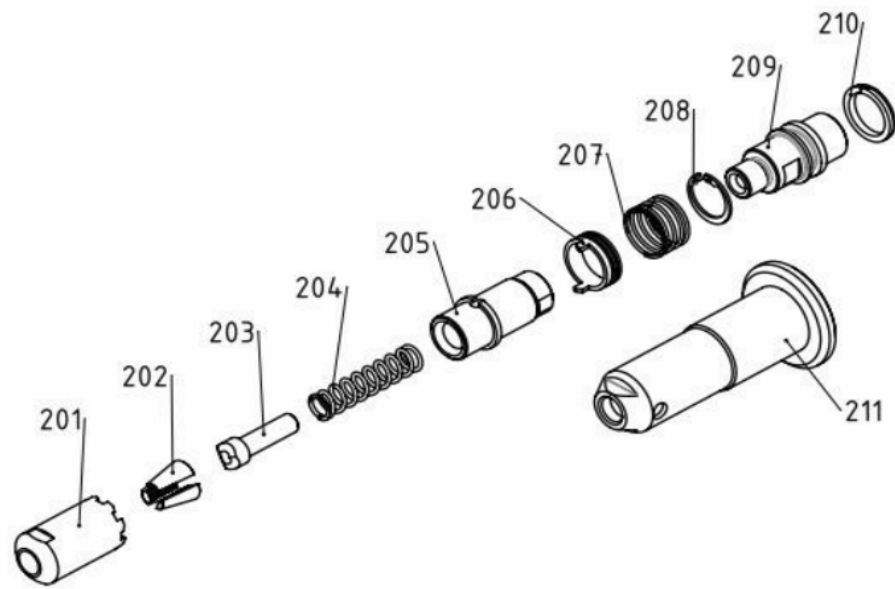
8.7 Mandrel Container Holder PRIV-B6



8.8 Tool Holder PRIV-B8



8.9 Nose Assembly Parts



9 Parts Ordering

Parts can conveniently be ordered from RivetKing® or its authorized distributors. Please purchase from you're the distributor you have purchased the tool from as list price discounts are not offered when purchased from RivetKing® directly.

Please have the following ready when preparing to order spare parts.

Model#

Serial#

Part Number or Pos. Number of the part being order.

For assistance in identifying a specific part, please contact 1-800-289-7483, ext 4.