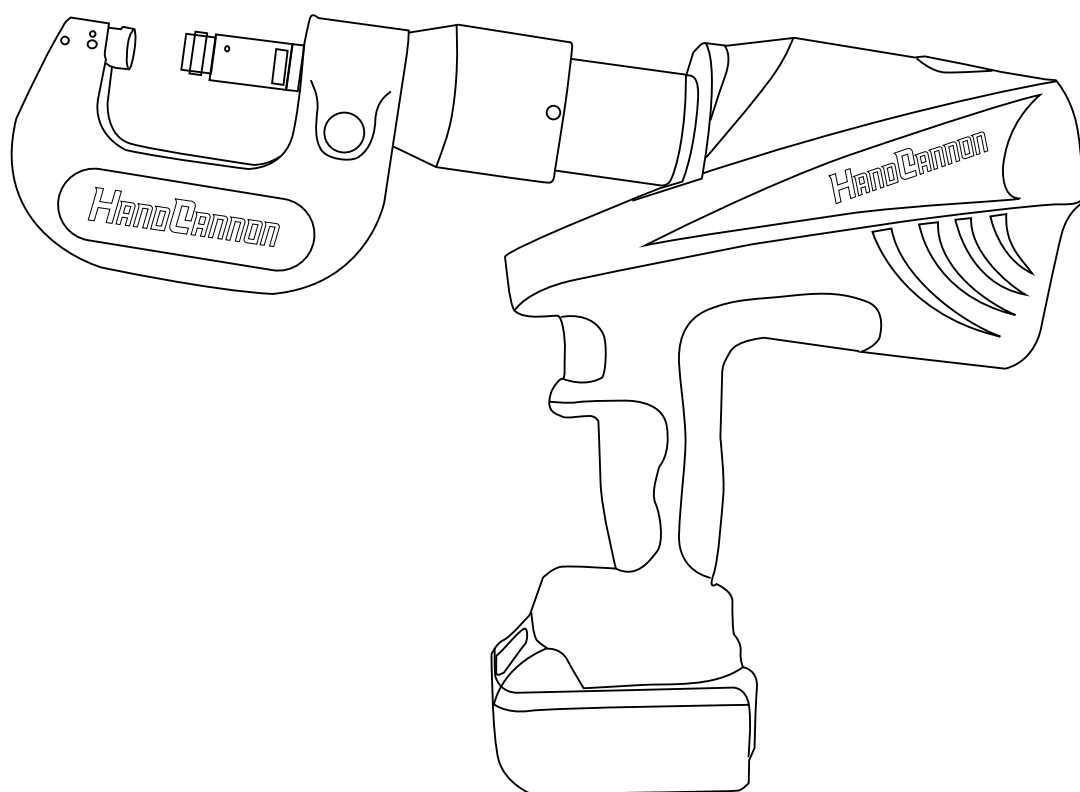


SPR-5-DFC

INSTRUCTION MANUAL FOR HANDCANNON
DIGITAL HYDRAULIC RIVET GUN




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Safety instructions

1. Precautions

- i. It is essential that all users must be fully trained in the operation of the SPR-5-DFC prior to its use and that they have thoroughly read this instruction manual.
- ii. All operators of the SPR-5-DFC must fully understand all aspects of its preparation, use and storage.
- iii. Untrained operators must not have access to the SPR-5-DFC.
- iv. This instruction manual must be kept with the SPR-5-DFC and be available to all users.
-  v. When the SPR-5-DFC is being used and in order to avoid accidents such as fire, electric shocks and injury, attention must be paid to the following safety requirements.

2. Work environment

- i. Keep the work environment clean with bright lighting. Untidy and dirty work environments with poor lighting will cause accidents.
- ii. The SPR-5-DFC should only be used in a work environment with no children and only with people present who are directly related to its use.
- iii. Do not use or store the SPR-5-DFC in the presence of strong acids, alkalis or other corrosive liquids; gas or in a high temperature environment.
- iv. Do not charge or use this device in the presence of flammable or explosive liquids, gases or dust.

3. Electrical safety

- i. The power plug of the charger must match the socket. The plug must not be modified in any way.
- ii. Do not use any batteries or battery chargers other than those supplied with the SPR-5-DFC. All replacement batteries and battery chargers must be sourced from Hand Cannon distributor and be specifically designed for use with the SPR-5-DFC.
- iii. Do not expose, store or use SPR-5-DFC, its chargers, rechargeable batteries, to rain or humid environments. If water enters into the electrical system it may cause electric shocks or damage the computer systems. Should the SPR-5-DFC be exposed to water it must not be used and it should be returned to an official representative of Hand Cannon distributor for repair.
- iv. Do not short-circuit or incinerate the battery due to the risk of explosion. Rechargeable batteries should be taken to an official recycling center. Rechargeable batteries contain nickel and cadmium, which may be hazardous to the environment if disposed of in a landfill or incinerator. These batteries must be disposed of at a hazardous waste collection site, a recycling facility, or a battery-recycling electronics retailer.

4. Personal safety



- i. Do not operate the SPR-5-DFC while fatigued, using medication, under the influence of alcohol or while receiving treatment that restricts body response or movement.
- ii. Safety protection clothing and equipment must be worn at all times while preparing and using the SPR-5-DFC. This includes the use of safety goggles, non-slip cut resistant gloves at all times and high-viz clothing is recommended.
- iii. At all times, no part of the body, such as fingers or hands should be placed within the working jaws of the SPR-5-DFC due to the risk of injury through accidental activation of the machine.
- iv. At all times, the SPR-5-DFC should be kept out of the reach of children and untrained personnel.



Warnings:

- The SPR-5-DFC must not be mechanically altered or changed in any manner. Before every use, check whether the SPR-5-DFC is damaged, aging, has parts missing, inaccurate adjustments or components are jamming, along with any other factors that endanger safety and normal operation. Ensure that the trigger switch can operate effectively without becoming stuck. If any problems are discovered, stop using it immediately and return it to an official Hand Cannon retailer or repair center.
- The stop block and screw on the clamp head are designed to prevent detachment of the clamp head. Do not remove it as its removal may cause a serious accident.
- Before use, remove any grease and dust on the handle and control components, to prevent slipping during operation and to avoid damage to both personnel and the SPR-5-DFC.
- The built-in safety valve has undergone strict pressure testing before leaving the factory and users must not adjust it. If insufficient pressure is encountered, send the SPR-5-DFC to an official maintenance center for repairs and use it only after it has passed manufacturer approved pressure test.
- When there are no dies in the clamp and arm, do not operate the SPR-5-DFC as this will damage it and may cause personal injury.

Precautions before operation:

-  Do not operate the device when there are no working pieces between female dies and male dies!
-  The SPR-5-DFC must not be operated when there are no dies installed in the arm.
- Take care to avoid damaging the male and female dies as damage to the dies will stop their effective use due to incorrect positioning.

- Follow the instructions for the use of the dies accurately. Incorrect use of male and female riveting dies will cause unsatisfactory riveting performance and may cause permanent damage to the male and female dies.
- Before starting a new riveting project or using new materials undertake a riveting test to ensure the SPR-5-DFC is set to the correct riveting pressure for the particular application.
- If the SPR-5-DFC is not going to be used for an extended period, the following storage rules need to be followed:
 - i. Reset the post rod to the end.
 - ii. Keep the dies securely stored for future by using an anti-rust oil.
 - iii. Wipe the surface of the device and apply evenly an anti-rust grease on the metal surfaces of the device and its spare parts.
 - iv. Remove the battery and store it in a suitable cool and dry toolbox.
- Do not try to use the device on the body, it will cause irreversible injury.
- The SPR-5-DFC must not be used by children, untrained personnel, and people who are under the influence of drugs or alcohol.

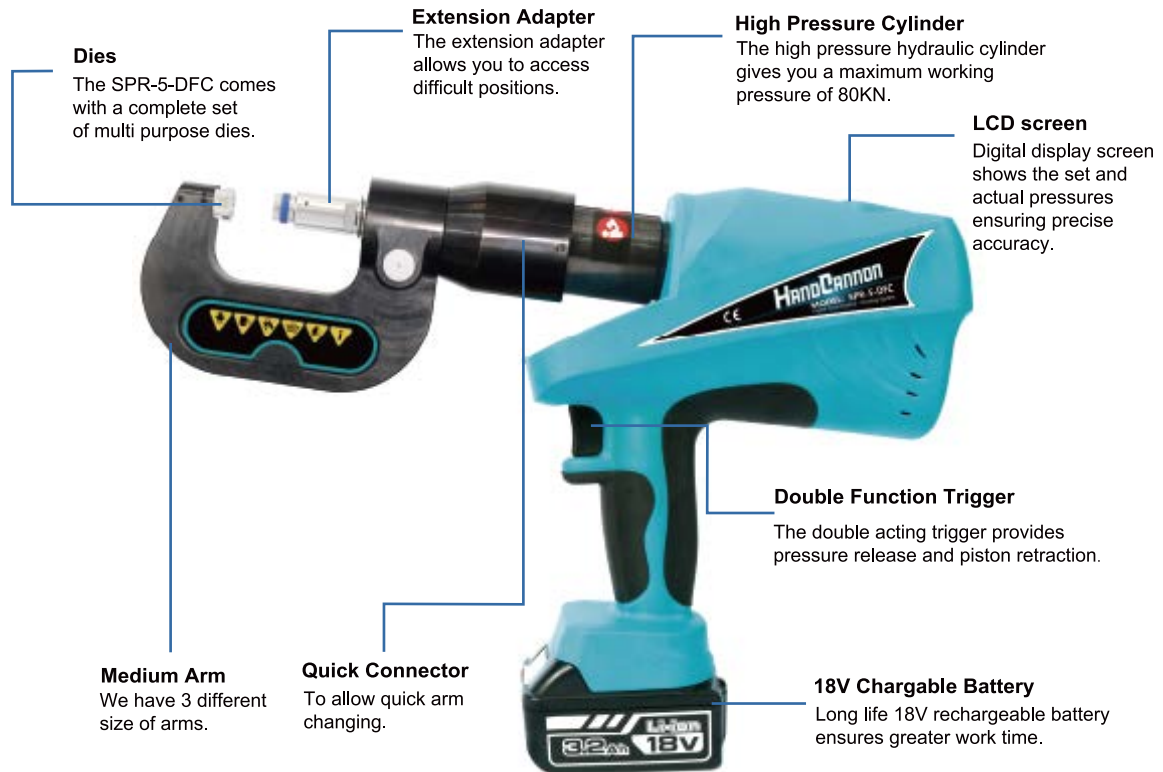


Keep this manual secure and read it before operation.

I , About SPR-5-DFC

Thank you for choosing the SPR-5-DFC digital rechargeable hydraulic riveting gun. The SPR-5-DFC features a high-performance lithium battery, motor drive, MCU control, ultrahigh pressure hydraulic system and high precision integrated mechanical and electronic technology with an ergonomic design. The SPR-5-DFC is easy and convenient to operate; it boasts a powerful motor producing up to 80KN; it is safe in operation and it is highly efficient, saving time and money. The SPR-5-DFC is the perfect choice to join various sheet metals in different applications such as automotive repair, HVAC, elevator manufacturing, aerospace, high speed train and light rail, electric power construction and many other assembly and construction applications.

II, Key Features of the SPR-5-DFC



III, Specification and configuration



Optional Arm Sizes



Standard equipment of the SPR-5-DFC

Name	Qty	Name	Qty
Main body	1	Charger	1
Arm/clamp	Size: Customer Choice	Power line	1
Dies	Size/type: Starter Die Kit	Work sling	1
Tools	1 Small wrench	Lithium battery	1 as standard, additional batteries are optional
Extension bar	SPR-40	Packing case	1

Specification

Output force:	1-80KN digital display and adjustable
Pressure accuracy:	$\pm 1\sim 2\%$
Work stroke:	40mm
Work period:	3-5s/time
Motor voltage:	18V DC
Battery:	DC 18V 3A lithium battery
Charger:	AC 100V-240V 50-60HZ
Charging time:	Around 1 hour
Work temperature:	From -10°C to 40°C
Hydraulic oil:	15# Low condensation anti-wear hydraulic oil 12ml
Work time/full charge:	130~350times (varies according riveting type)
Noise:	75dB

IV, SPR-5-DFC – Set-up and preparation for use



- Installation of dies: The Installation and removal of dies does not require excessive tightening and can be installed by hand. If required, a small wrench is provided to be used to assist with assembly and disassembly.
- Dies may be installed on either side of the clamp/arm according to the requirement of the project.

V, SPR-5-DFC – Precautions and checks before use

Before operation check that all parts of the SPR-5-DFC are secure and undamaged, in particular the battery cover, battery, arm, dies and casing.

1. Battery charging

- a) Battery life under normal use is approximately 600 charging and discharging cycles. The battery should be replaced when there is a significant reduction in the number of rivets that may be installed between recharging cycles.
- b) Do not drain the battery completely as this will reduce its life and may cause permanent failure of the battery.
- c) When the device is left unused for a long time, self-discharge of the battery will occur. The battery from the SPR-5-DFC should be fully charged once every three months.



















- d) At the end of its life the rechargeable battery should be taken to an official recycling center. Rechargeable batteries contain nickel and cadmium, which may be hazardous to the environment and may explode if disposed of in a landfill or incinerator. These batteries must be disposed of at a hazardous waste collection site, a recycling facility, or a battery-recycling electronics retailer.
- e) The charger must be used away from water, rain or snow at all times.
- f) The SPR-5-DFC will provide an audible warning that the battery requires recharging or replacement with a fresh charged battery with an alarm sounding "di-di-di" three times and a visual alarm with a red light flashing at the same time.
- g) The battery and charger must not be disassembled. If there is any failure during use, contact the dealer or manufacturer.



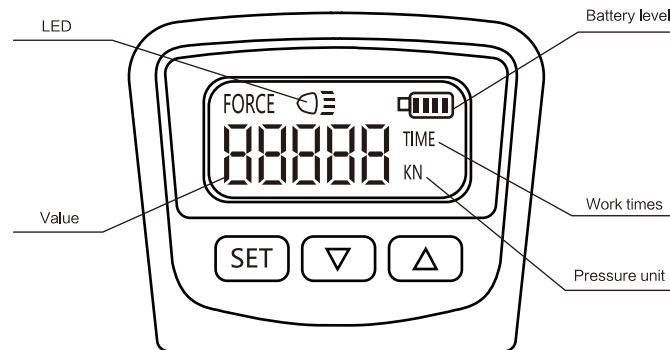
2.Operation

- a) Before operation, make sure you check whether the device is undamaged, if there are any parts that are worn out or missing, there is inaccurate adjustment or components are jamming, all of which may affect safety and normal operation. Ensure that the SPR-5-DFC may operate effectively and safely. If any problems occur stop using the SPR-5-DFC immediately and rectify the problem.
- b) The stop screw on arm head's quick connector is to prevent the arm head from falling off or popping out. Do not remove it as a serious injury and damage to the SPR-5-DFC may occur.
- c) The built-in safety valve has undergone strict pressure testing prior to leaving factory and it is not adjustable by users. If there is insufficient pressure for correct operation, the SPR-5-DFC must be repaired by an approved dealer or the manufacturer's maintenance personnel. It must be used only after a successful pressure test following repairs.
- d) Remove any grease and dust on the handle and control components to prevent slipping during operation and to avoid damage to the SPR-5-DFC and injury to its users.

VI, Die type and size

S. No	Model	Photo		Model	Photo	Function
1	A1		+	N1		rivet removal Φ3.3-4.3mm
2	A2		+	N2		rivet removal Φ5.3-6.3mm
3	A7/S7		+	N5/S8		Φ3.3mm SPR
4	A8/S9		+	N13/S10		Φ5.3mm SPR
5	A9		+	N1		Φ6.1mm hole punching
6	N6		+	N13		Semi-hollow rivet planting
7	A26		+	N6		Countersunk FFR rivet planting
8	N7/S5		+	N7		flattening
9	N7/S5		+	N12		flattening

VII, Set-up and pressure adjustment



1. Start-up

- A. Make sure that the lithium battery is fully charged and install the battery in the SPR-5-DFC. When installing the battery, make sure that the battery is correctly clamped in place. The SPR-5-DFC will indicate the battery is correctly installed by making the sound "da".
- B. Press the trigger of the gun body once to initiate the LCD display screen. The display will light up and display the word " **0A---** " indicating that SPR-5-DFC is in the process of software start-up.



During the start-up process, do not press the trigger of the gun body or any button on the LCD display as this may halt the software boot-up.

If you press the gun body button or any button on the LCD display during start-up and stop the software start-up, you can restart the computer by removing and reinstalling the battery to repeat the start-up process.

- C. When the opening screen " **0A---** " is replaced by a specific pressure value, the start-up is complete and normal operation can be performed.

2. Pressure adjustment

- A. The SPR-5-DFC is controlled by a computer in the body unit, and nine pressure settings (N1 to N9) have been preset at the factory. During use the desired pressure may be selected according to the specific requirements of the work.
- B. Select the pre-set pressure required by pressing the "▽" or "△" buttons on the LCD screen to select the memorized pressure.
- C. Modifying the pre-set pressure values. In addition to the pre-set pressure values, users may modify and set new pressure values.
 - 1) Set the SPR-5-DFC to the pressure value that needs to be changed using the "▽" or "△" buttons.
 - 2) Press and hold the SET button for three seconds. The pressure value will be displayed on the screen and it will start to flash. The pressure value can be modified by pressing the "▽" or "△" button to select the desired pressure.
 - 3) Once the desired new pressure has been reached, press and hold the SET button again for three seconds. When the buzzer beeps and the pressure value stops flashing, the new pressure value is stored in the memory.

3. When the gun is in riveting/clinching mode, the LCD display screen will display the real-time pressure value. When the riveting/clinching is completed, the screen will retain this riveting/clinching pressure value for two seconds with a reading such as

09.54_{KN}



Note: When the letter in front of the pressure value is C, the riveting/clinching operation cannot be repeated. It will take two seconds for the letter C to change to the letter N by then the next operation cycle may start.

VIII, Operation of the SPR-5-DFC

1. Know your SPR-5-DFC

- A. The trigger mechanism on the gun body. The SPR-5-DFC gun body has a two-stage trigger mechanism. The first stage of the trigger is the pressure holding stroke in which the hydraulic oil circuit forms a closed circuit, ready for pressure output. The second segment of pressing the trigger starts the motor and the gun body performs the riveting task. After the riveting task is completed, if the gun body trigger is released from the second stroke, the power supply is cut off, but the gun body still maintains hydraulic pressure. When the gun body trigger is fully released, the oil circuit is fully opened, the gun body pressure is released, and the post rod and piston retract to the initial position and wait for the next operating cycle.
- B. Display of hydraulic pressure during each operating cycle. The SPR-5-DFC displays the pressure value dynamically during each operating cycle and also displays the pressure result after completing a pressure output cycle. Therefore, during operation, operators should pay attention to the pressure value after each riveting/clinching is completed. This pressure output feedback from the SPR-5-DFC ensures the operator to check if each riveting or clinching is successful. If the pressure value after riveting/clinching is lower than set pressure, that means riveting/clinching is not completed thoroughly therefore the riveting/clinching is not successful.
- C. Pressure protection. The equipment computer will monitor the pressure value changes in real time throughout the whole process. When the set pressure value is reached, the equipment will automatically cut off the power and stop the pressure output to prevent overpressure and protect the project.

2. Operation

- A. Adjust the pressure value and select the appropriate pressure according to the project and work requirements.
- B. Press the trigger of the gun body, the motor starts to run, and the gun body outputs pressure. When the equipment reaches the set pressure value, the power will be cut off automatically at which point the trigger should be released. The post rod and the riveting dies will now retract to the initial position, waiting for the next working cycle.
- C. The SPR-5-DFC may be paused during operation to adjust the riveting position.
- D. The SPR-5-DFC, once the riveting/clinching cycle has been initiated by pressing and holding the trigger in its second position, will continue to operate until the chosen pressure has been reached. At this point the post rod retracts to make the dies leave the work-piece and a riveting/clinching cycle is completed, allowing the SPR-5-DFC to be moved to the next position.



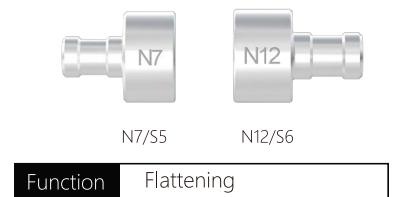
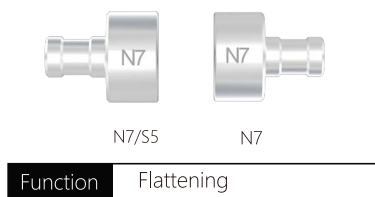
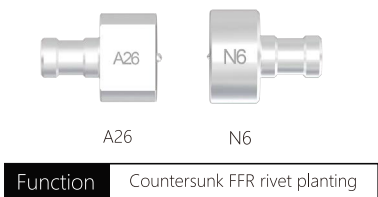
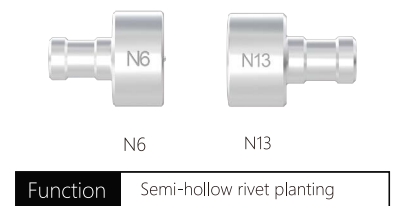
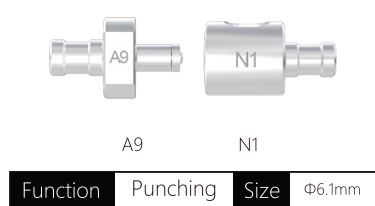
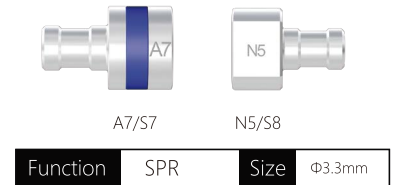
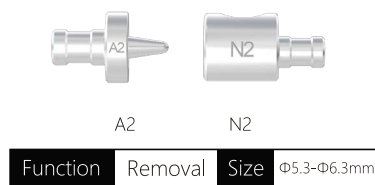
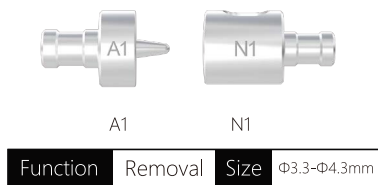
Note: The trigger must never be pressed multiple times in quick succession during the operation. This will cause instantaneous current overload and severe damaged to the SPR-5-DFC's electronics.



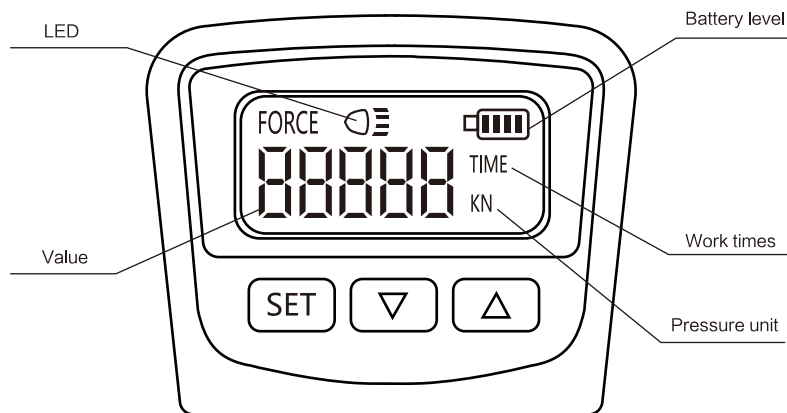
Note: In operation it is essential to strictly follow operating instructions and pay attention to personal safety at all times.




IX, Installation of dies

1. With reference to the matching list of riveting dies shown above, select the correct dies and match them correctly according to your application.
2. The dies must be inserted completely when installing, otherwise the dies will be damaged during operation.
3. The SPR-5-DFC must never be operated without a work piece in the arm, otherwise damage to the SPR-5-DFC and its dies will occur. As a reminder, nor should the SPR-5-DFC be used or be charged in an environment with gas or dust present.
4. Dies match and function:



X, SPR-5-DFC Screen indicators



S. No	Error code		Instruction	Meaning
1	ON---		Self-check	After installation of battery, the SPR-5-DFC has run a system check and it is normal.
2	E01		Overload	The hydraulic system may malfunction and must be checked immediately.
3		● ● ●	Charging reminder	Battery is low and needs to be charged.
4		●—5sec	low battery alarm	The battery is drained, the battery must be replaced immediately.
5	E01		Sensor error	Temperature sensor and voltage detection error.
6	E01	● ● ● ●	Temperature alarm	Device temperature is too high, must be cooled before further use.
7	E01	● ● ● ● ●	No pressure	Motor runs but no pressure; return to official dealer for repair.

XI, Maintenance

- a) This SPR-5-DFC is a precision high-pressure electro-hydraulic tool with a high technology design. Do not disassemble the SPR-5-DFC or remove internal parts. All failures caused by unauthorized disassembly or damage caused by improper use are not covered by the warranty.
- b) Keep the device and spare parts dry. Rain, humidity, liquids or moisture may corrode the cover, metal surfaces and electronic circuits. If the device gets wet, take out the battery and wait until the device is completely dry before re-installing the battery.
- c) Do not store the device in a place that is too cold or too hot. This may deform the plastic parts of the device, shorten the life of electronic components, and damage the battery.
- d) Avoid dropping the SPR-5-DFC or subject it to rough usage to avoid irreversible damage to internal electronic components or hydraulic parts.
- e) Do not use strong chemical cleaning agents or strong detergents to the clean tools. A soft cloth should be used for wiping and cleaning.
- f) In order to ensure the full service life of the device, it is recommended to replace the hydraulic oil of the device once a year. Please contact the dealer or manufacturer to have the hydraulic oil replaced by approved professional maintenance personnel.
- g) When the tool is going to be left unused for a long period:
 - i. Please reset the post rod to the end.
 - ii. Store the dies properly for future use with a light anti-rust oil applied.
 - iii. Wipe the surface of the device clean and evenly apply anti-rust grease on the metal surface of the device and spare parts.
 - iv. Take out the battery and store it in the toolbox, recharge every three months.
- h) The sealing element is a single use part and a non-owner replaceable unit. If hydraulic oil leaks out, contact the dealer or the manufacturer to have an approved professional repairer to replace the sealing element.

