

# USER GUIDE

## AUTOMATIC HIGH TENSION BATTERY POWERED PLASTIC STRAPPING TOOL

### ZP



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01.2021

# 1. INTRODUCTION OF ZP90/ZP93/ZP97 LINE OF PRODUCTS

ZP90/ZP93/ZP97 line of products are high tension battery powered plastic strapping tools, designed to fit PP and PET straps. It is powered by only one D/C BRUSHLESS motor to drive the mechanism for both tensioning and friction welding.

## 1.1 Description of major components

Components as Figure 1 shown :

- (1) Control Panel
- (2) Impact-resistant Bumper
- (3) Brushless Motor
- (4) Handle
- (5) Battery Release Button
- (6) Sealing Lever
- (7) Tension Button
- (8) Tension Arm
- (9) Side Cover
- (10) Front Strap Guider
- (11) Strap Grippers
- (12) Feeder Wheel
- (13) Bottom Sealing Grippers
- (14) Sealing Head Link
- (15) Cutter
- (16) Rear Strap Guider
- (17) Operation Lever
- (18) Li-Ion Battery

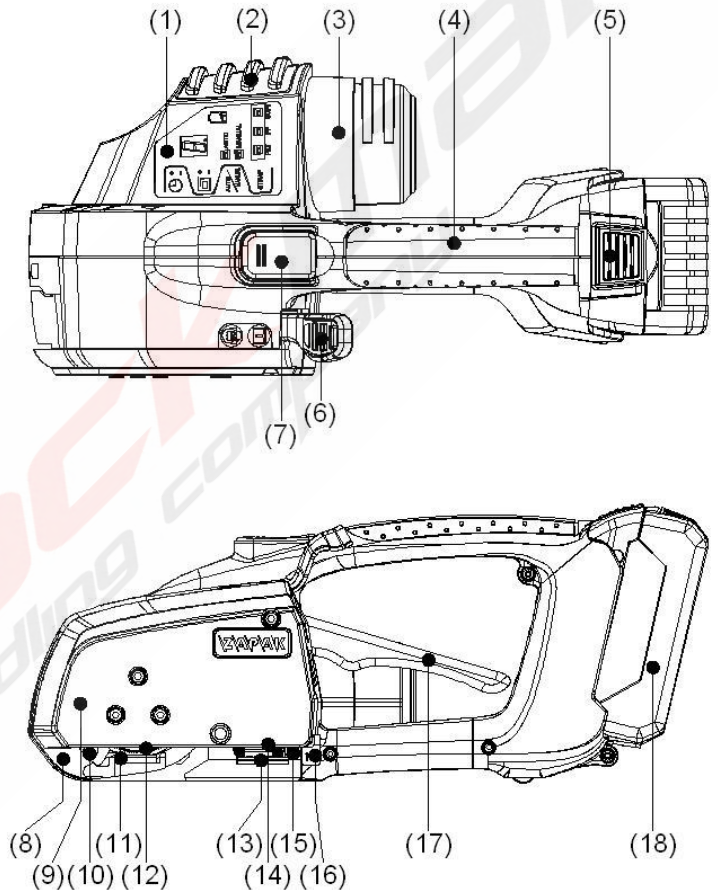
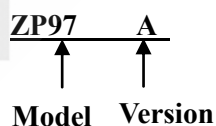


FIGURE 1. ZP90/ZP93/ZP97 Major Components Description

## 1.2 MODEL /VERSION NUMBER EXAMPLE



## 2. MODEL/VERSION NUMBERS & SPECIFICATIONS:

Model/Version	Battery Charger Voltage	Fits poly strap	Strap Width		Strap Thickness		Tension Range	Sealing Efficiency
			Mm	Inch	Mm	Inch		
ZP90A	100V a.c. 115V a.c. 230V a.c. 240V a.c.	PP & PET	9~13	3/8 & 1/2	0.50~0.85	0.020~0.034	15~120kgs	85 ± 5%
ZP93A/B	100V a.c. 115V a.c. 230V a.c. 240V a.c.	PP & PET	12~16	1/2~5/8	0.65~1.27	0.026~0.05	25~250kgs	
ZP97A	100V a.c. 115V a.c. 230V a.c. 240V a.c.	PP & PET	16 & 19	5/8 & 3/4	0.70~1.27	0.028~0.05	40~400kgs	

**\*Tension performance and Sealing efficiency varies based on strap specification, quality, setting and remaining battery power. Pre-testing before operation is required.**

### 〈REMARKS〉

- A. Dimension  
(Tool size with battery) Length : Approx. 320.00 mm  
Width : Approx. 150.00 mm  
Height : Approx. 130.00 mm
- B. Weight : ZP90/ZP93/ZP97 TOOL : Approx.2.80 kgs (abt. 6.16 Lbs)  
ZP90/ZP93/ZP97 Li-Ion BATTERY : Approx. 0.60 kg
- C. Noise : Sound pressure level : 85dB(A)  
Sound power level : 94dB(A)
- D. Vibration : Hand-arm vibration : 3.9m/sec<sup>2</sup>( uncertainty K=1.5m/sec<sup>2</sup>)
- E. Tension : ZP90 : Tension is adjustable from: 15kg~ 120kg ± 5 %.  
ZP93 : Tension is adjustable from: 25kg~ 250kg ± 5 %.  
ZP97 : Tension is adjustable from: 40kg~ 400kg ± 5 %.
- NOTE** : Tension performance varies based on strap specification, quality, setting and remaining of battery power. (Please refer to article 4.6.1 “Tension Adjustment”.)
- F. Tension speed : ZP90 : 320mm/sec.  
ZP93 : 190mm/sec.  
ZP97 : 150mm/sec.
- G. Sealing time adjustment : 0.3second ~ 2.7 seconds ( 0.3 second / increment )
- H. Sealing efficiency : 85 % ± 5 % tested by normal strap specification and condition.  
**NOTE** : Sealing efficiency varies based on strap specification, quality, setting & remaining of battery power. (Please refer to article 4.6.2 “Sealing Time Adjustment”. )
- I. Battery : For ZP90/ZP93/ZP97 : BOSCH (Item no. 9380) Voltage / Capacity 18Vd.c./4.0Ah Li-Ion.  
**NOTE** :
- The Li-Ion battery may fail to work when ambient temperature is lower than -10°C~40°C (14°F~104°F) . Please use Li-Ion battery within such temperature range (ZAPAK Item no. 9380 Li-Ion battery, 18Vd.c., 4.0Ah Li-Ion)

2. Strapping cycles number for a brand new & fully charged battery :
  - ZP90: Approx. 650 cycles with 13mm x 0.80mm PP strap
  - ZP93/ZP97: Approx. 450 cycles with 16mm x 1.0mm PET strap,  
Approx. 600 cycles with 15mm x 0.80mm PP strap.
  - ZP97: Approx. 360 cycles with 19mm x 1.0mm PET strap.

**Strapping cycles number varies based on strap quality, specification, set tension, set sealing time, operation habit, ambient environment and tensioning distance. (The approx. strapping cycle number was tested on normal quality straps based on a new and fully charged Li-Ion battery, part no. 9380 ).**
3. Life cycle: Approx. 2000 charges **(based on proper charging & discharging operation and working habits).**
4. **Please refer to “4.4. Charging Battery“ regarding usage and storage of battery.**
5. Storage temperature : -20°C~60°C (-20°C~20°C would be better)
6. Storage humidity: 65% ± 20%
7. Ambient temperature: -10°C~40°C
8. Average ambient temperature for charge is 0 °C~45 °C, charging efficiency drops if ambient temperature is above 45 °C or lower than 0 °C which may lead to deterioration in performance and even battery leakage.

**(Please refer to article 3. “SAFETY INSTRUCTION “ and BOSCH Safety Notes regarding environmental, recycle and safety precautions of battery.) BOSCH Li-Ion battery (No. 9380) complies with UN38.3 safety requirements.**

J. Bosch Charger :

For ZP90/ZP93/ZP97 (ZAPAK part no.2382-XX, Bosch Charger no. AL1860CV/ GAL1880CV) : Charging time 30 minutes under normal condition. **(Please refer to user manual of Bosch charger for detailed specification and safety precautions.)**

K. Suitable poly straps :

**ZP90/ZP93/ZP97 are suitable to work with both PP & PET material straps (Please refer to article 2. “MODEL/VERSION NUMBERS & SPECIFICATIONS”). The strap’s bridging strength and breaking strength must be conformed to the standard of portable strapping tool’s request.**

#### **REMARKS :**

1. Each tool is equipped with one battery powered plastic strapping tool, one Li-Ion battery, one Bosch charger(with charger manual) , cleaning brush , strap width adjustment kit (incl. front strap guiders & rear strap guiders) , control panel cover and operation user manual etc.
2. All electrical and mechanical specifications conform to the most major safety standards. Please refer to the label and packaging for detail information.
3. Plug specification of charger varies with different country /areas’ request.
4. Most parts of this tool are made of recyclable material. Please refer to the recycle mark on each component.
5. Products and specifications subject to change without notice.

#### **NOTE :**

**Fail to follow instructions in this manual may cause malfunction to the tool and invalidate the warranty.**

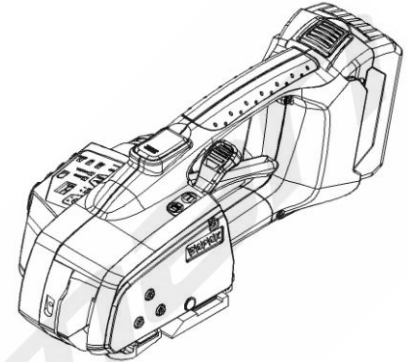
### 3. SAFETY INSTRUCTION

When using this strapping tool, basic safety precautions should always be followed to reduce the risk of fire, leaking batteries and personal injury including but not limited to the followings:

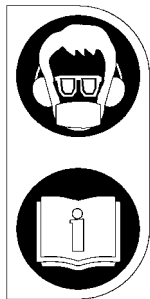
Read all these instructions before operating this product and save these instructions.

#### Labels on the tool :

Please notice and follow the safety precautions listed on the security label, preset information of strap width and thickness and manufacture label shown on tool before operation. Please notice the following position of labels on tool.



#### (1) Security label



Always wear safety glasses, ear protection and mouth mask to protect yourself from possible exhaust gas, fumes and dust etc. during operation, failure to wear these protections may result in severe injuries.

Read all instructions carefully before operating this product.

Do not touch feeder wheel by hand to avoid injury.

#### (2) Manufacture label contains model number, serial number, country of origin and CE mark.



#### Working Environment

- \* Do not expose and use the tool to wet or dusty environment.
- \* **Do not expose and use the tool in environment with corrosive chemical fumes or liquids, which may accelerate rust damages on metal & electronic parts and invalidate your warranty.**
- \* Do not use the tool where is risky to cause fire or explosion or near flammable substances including but not limited to fine dusts and gas.
- \* Keep your working area clean. Cluttered areas and benches invite injuries.

#### Operation Precautions

- \* Properly use the tool : please use the tool in accordance to this user manual. Do not use the tool for any unintended purpose.
- \* Use authentic accessories and components recommended in this manual, **Improper or unauthentic accessories components / parts may damage the tool & result in a risk of personal injury & invalidate your warranty.**
- \* Positioning yourself and keep other personnel at a safe distance from direction of the loosened strap end when operating tool. The loosened strap end might fly and hurt the user and bystanders.
- \* Keep proper footing and balance at all times when operating the tool. Do not use the tool when you are in an awkward position.

- \* Stay alert during operation. Watch what you are doing. Use common sense. Do not operate the tool when you are tired.
- \* Avoid careless starting or unintentional pressings on the tension button.
- \* Avoid long time idle running of motor which may cause damages on the control system and mechanical parts.
- \* Dress properly. Do not wear loose clothing or jewelry. They can be caught in moving parts. Rubber gloves and non-skid footwear are recommended when working outdoors. Wear protecting hair covering to contain long hair.

#### Strap

- \* **Use only recommended strap specifications in this manual. Poor quality strap or improper strap specifications reduces tensioning and sealing performances and causes strap scratches or slippage problem.**

#### Sealing Joint Examination

- \* Check the sealing joint after sealing. Please re-strap the article when sealing joint is poor in order to secure goods in transit. Please adjust the sealing time in reference to this manual to reach the best sealing efficiency.

#### Tensioning Precautions

- \* When tension exceeds strap's breaking strength, strap will be split and may hurt the user and bystanders with flying strap. **Do not set or adjust tension force over the strap's breaking strength to avoid any hazards.**
- \* Sharp edges or corners of the objects may result in strap breakage during tensioning.  
**Please use edge protectors if the object has sharp edges or corners.** When adjusting the tension higher, please adjust it slightly and gradually if you do not have the correct strap breaking strength information.

#### Environmental, Recycle and Safety Precautions for Battery

- \* **Do not dispose battery in household refusal, water or fire.**
- \* Do not store battery together with metal objects to prevent any hazard of short circuit.
- \* **Do not open up battery cases.** Keep it in dry place.
- \* **Never attempt to short-circuit the battery by connecting the positive (+) and negative (-) terminals.**
- \* **Remove battery from the tool when tool is not in use to prevent quick power exhaustion. This good habit will extend the life of the battery.**
- \* **Remove battery from charger as soon as the charging process is completed.**
- \* **A fully charged battery will gradually lose its power naturally in storage. Please activate the battery by a full charge every 6 months.**
- \* **When Battery Power LED on Control Panel of tool is flashing in red with continuous "beep" sound alarm, please recharge the battery.**
- \* **Use BOSCH Li-Ion battery (part no. 9380) only for ZP90/ZP93/ZP97. ZAPAK 9380 battery is only suitable for BOSCH Charger (AL1860CV/GAL1880CV, ZAPAK part no. 2382-XX ), No adaptor is needed for charging battery part no. 9380. Using improper charger or improper battery may result in risks of electric shock, overheat, explosion, burning or leakage of corrosive liquid from the battery and invalidate your warranty.**
- \* If corrosive liquid contacts your body, please clean and wash it with water immediately.

#### Safety Precautions for Charger

- \* Please read and follow the safety instruction of the charger user manual before using charger.
- \* Ensure the battery is clean and dry before plugging into the charger.

#### Maintenance & Service

- \* Good maintenance and keeping the tool clean can ensure a normal operation and a good performance of the tool. Please change original spare parts or mount accessories according to this user manual when necessary. Using non-original spare parts or accessories for replacement may result in considerable danger. If any damage occurred, please send it to manufacturer's authorized dealer for repairing. **Do not repair or replace any parts by yourself except for those self-changeable wearing parts marked as \* in the " ZP90/ZP93/ZP97 Wearing parts list " ( P. 23 ) indicated in article 8 . Or, your warranty will be invalid.**
- \* **Do not modify the tool design or any parts by yourselves. It will invalidate your warranty.**
- \* Check damaged parts. Before further using the tool, any part that is damaged should be carefully checked to determine that it would operate properly and perform its intended function. Check for alignment of moving parts, free running of moving parts, breakage of parts, mounting and any other conditions that may affect its operation. Do not operate tool with broken or worn parts.
- \* **Please remove battery from tool before any maintenance or replacements of self-changeable wearing parts.**

\* Please refer to **articles 6 “ MAINTENANCE AND SERVICE”** for detailed information.

### **Storage**

- \* Store the tool and battery separately in a dry and clean location when not in use. Keep away from reach of children.
- \* Do not let visitor touch the tool. All visitors should be kept away from work area.

### **General Safety Rules**

**WARNING ! Read all instructions. Fail to follow all instructions listed below may result in electric shock, fire and/or serious injury. The term "power tool" in all of the warnings listed below refers to your battery-operated (cordless) power tool.**

**SAVE THESE INSTRUCTIONS :**

### **Work area**

- a) Keep work area clean and well lit. Cluttered and dark areas invite accidents.
- b) Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes.
- c) Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control

### **Electrical safety**

- a) Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is earthed or grounded.
- b) Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.

### **Personal safety**

- a) Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
- b) Use safety equipment. Always wear eye protection. Safety equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
- c) Remove any adjusting key or wrench before turning the power tool on. A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- d) Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.
- e) Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry or long hair can be caught in moving parts.
- f) If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of these devices can reduce dust-related hazards.

### **Power tool use and care**

- a) Ensure the switch is in the off position before inserting battery pack. Inserting the battery pack into power tools that have the switch on invites accidents.
- b) Recharge only with the charger specified by the manufacturer. A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.
- c) Use power tools only with specifically designated battery packs. Use of any other battery packs may create a risk of injury and fire.
- d) When battery pack is not in use, keep it away from other metal objects like paper clips, coins, keys, nails, screws, or other small metal objects that can make a connection from one terminal to another. Shorting the battery terminals together may cause burns or a fire.
- e) Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help. Liquid ejected from the battery may cause irritation or burns.
- f) Do not force the power tool. Use the correct power tool for your application. The correct power tool will do the job better and safer at the rate for which it was designed.
- g) Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- h) Remove the battery pack from the power source before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.

- i) Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.
- j) Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tools operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- k) Keep cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- l) Use the power tool, accessories and tool bits etc., in accordance with these instructions and in the manner intended for the particular type of power tool, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from intended could result in a hazardous situation.

#### **Service**

- a) Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained.

#### **Notice**

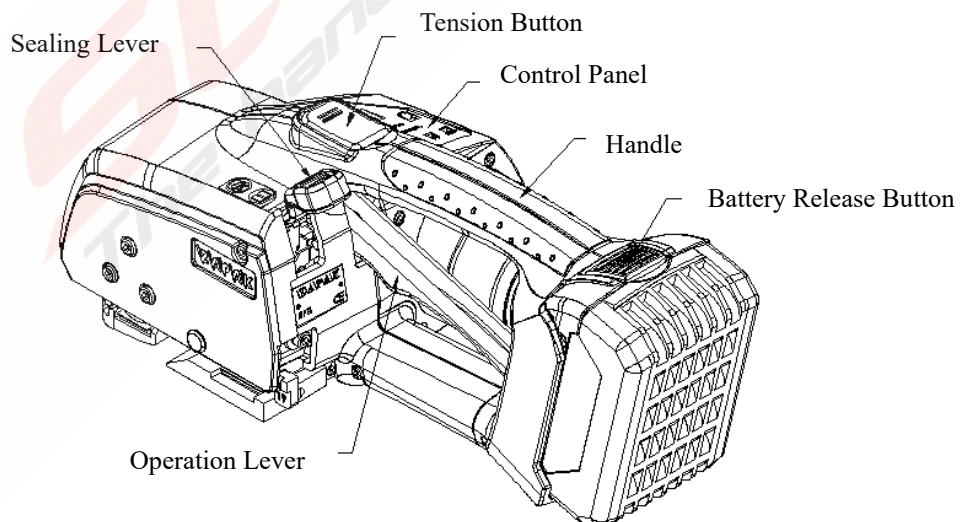
- \* Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.
- \* Contact your local government for information regarding the collection systems available.
- \* If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.
- \* When replacing old appliances with new one, the retailer is legally obligated to take back your old appliance for disposal at least for free of charge.



## **4. SETTING BEFORE OPERATION**

Read and follow the safety instruction of this manual. Please follow the steps as follows before initial operation.

### **4.1 Introduction of Operation Components ( Figure 2 )**



**FIGURE 2. ZP90/ZP93/ZP97 Introduction of Operation Components**





### 4.3 OPERATION INSTRUCTIONS OF CONTROL PANEL

#### INTRODUCTION OF CONTROL PANEL ( FIGURE 3 )

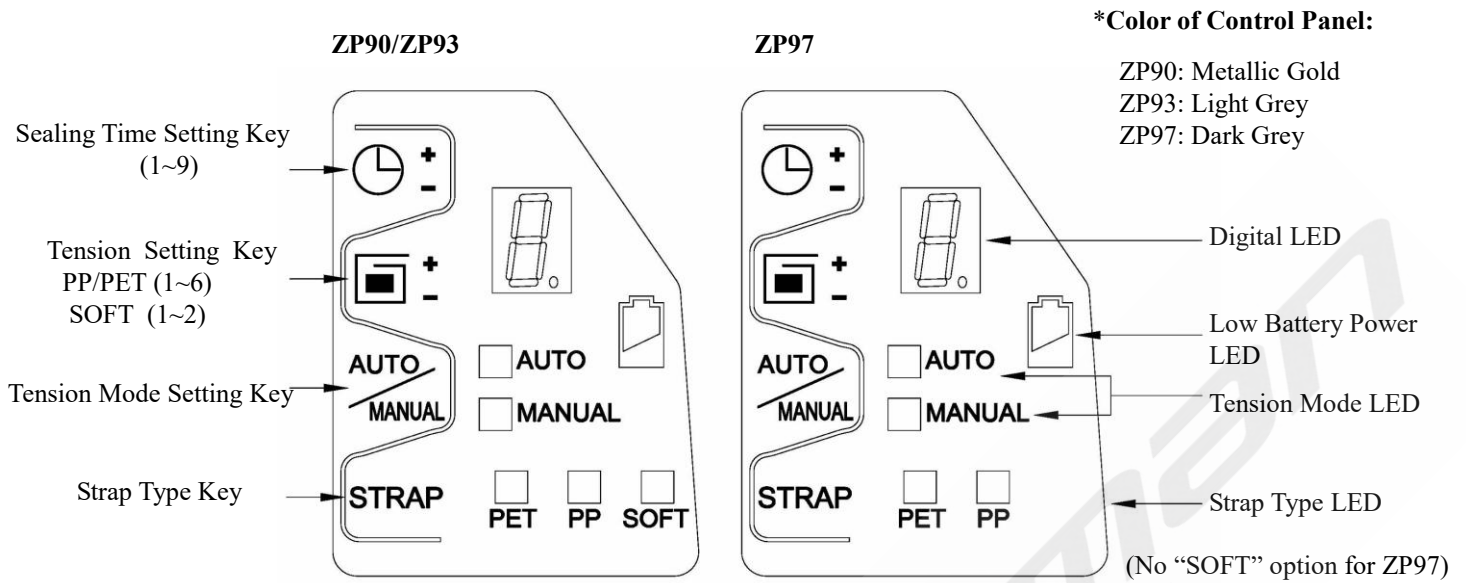


FIGURE 3. Introduction of Control Panel

Description	Operation Instructions of Control Panel						
All the keys	In order to avoid any mistaken presses or any careless initiations of tool, every key needs to be pressed longer than 1 second before any LED lights starts to react and respond.						
Strap Type Key  <b>STRAP</b>  & Strap Type LED	<p><b>STEPS:</b></p> <p>1) Press and hold the key until Strap Type LED below flashes and then release.</p> <p>2) Press key again to switch Strap Type LED which runs in order of PET-&gt;PP-&gt;SOFT as shown below and select based on your strap type. ( "SOFT" is for very low and slow tension for light packages or fragile products or objects for ZP90/ZP93 only)</p> <p>3) Release key and wait for 1 second for Strap Type LED to stop flashing and your strap type setting is completed. (Take ZP93 for example below)</p>						
Auto or Manual Tension Key  <b>AUTO</b> <b>MANUAL</b>  & Tension Mode LED	<p><b>STEPS:</b></p> <p>1) Press and hold the key until the Tension Mode LED below flashes and then release.</p> <p>2) Press key again to switch and select "AUTO" or "MANUAL" LED as you desire. To avoid scratches, <b>pre-test to find a proper tension setting is required.</b>( refer to 4.6.1)</p> <p>3) Release key and wait for 1 second. Your setting of tension mode is completed.</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>Auto Tension Mode</td> <td>Manual Tension Mode</td> </tr> <tr> <td><input checked="" type="checkbox"/> AUTO</td> <td><input type="checkbox"/> AUTO</td> </tr> <tr> <td><input type="checkbox"/> MANUAL</td> <td><input checked="" type="checkbox"/> MANUAL</td> </tr> </table>	Auto Tension Mode	Manual Tension Mode	<input checked="" type="checkbox"/> AUTO	<input type="checkbox"/> AUTO	<input type="checkbox"/> MANUAL	<input checked="" type="checkbox"/> MANUAL
Auto Tension Mode	Manual Tension Mode						
<input checked="" type="checkbox"/> AUTO	<input type="checkbox"/> AUTO						
<input type="checkbox"/> MANUAL	<input checked="" type="checkbox"/> MANUAL						

Tension Setting Key



& Digital LED (next page)

**STEPS:**

- 1) Press and hold the key until the Digital LED flashes and then release.
- 2) Press key again to select a digit in the digital LED for the tension setting required according to your strap quality and specifications. ( digital LED ranges from 1 to 6 for your selection of tension setting , refer to 4.6.1 Setting Tension )
  - \* Switch digital LED from 1 up to 6 to increase (+) tension.
  - \* Switch digital LED from 6 down to 1 to reduce ( - ) tension.
- 3) Release key and wait for 10 seconds to complete your tension setting automatically. Or, you can press any one of the rest 3 keys below to finish your setting quickly.



**Note :**

During tensioning, NO adjustments or settings can be made on Control Panel.

**Note :**

Either under AUTO or MANUAL tension mode, when the operation lever is being lifted up , all actions or movements of tool will be halted and tool goes back to initial stand-by status automatically. You shall re-start strapping cycles to resume tool's operation .

Sealing Time Setting Key



& Digital LED(next page )







**STEPS**

- 1) Press and hold the key until the Digital LED flashes and then release.
  - 2) Press key again to select a digit in Digital LED for the sealing time required according to your strap quality and specifications. (Digital LED ranges from 1 to 9 for your selection of sealing time setting, refer to 4.6.2 Sealing Time Settings )
    - \* Switch digital LED from 1 up to 9 to increase (+) sealing time.
    - \* Switch digital LED from 9 down to 1 to reduce ( - ) sealing time.
- Pre-test to find a proper sealing time setting is required ( refer to 4.6.2 )**
- 3) Release key and wait for 10 seconds to complete sealing time setting automatically. Or, you can press any one of the rest 3 keys shown below to finish your setting quickly.



**Note :**

During sealing, NO adjustments or settings can be made on Control Panel.

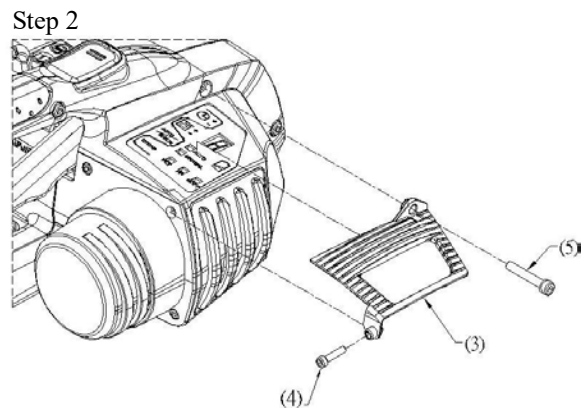
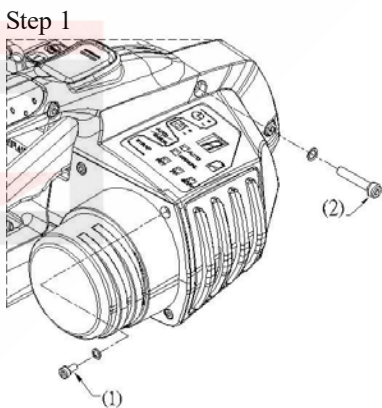
<p>Digital LED</p> 	<p>1) There are 10 digital numbers switchable from 0 to 9 pre-programmed in it (see below). You can switch the digital numbers to select and set the tension force and sealing time based on different strap type and strap specifications.</p> <p>2) To alarm malfunctions, the digit will be changed to show letter “E” followed by “2” or “3” or “4” with continuous “beep..beep” alarm, indicating 3 kinds of malfunctions ( refer to 4.2)</p> <p style="text-align: center;">10 Switchable Digital Numbers</p> <p style="text-align: center;">  </p> <p style="text-align: right;">Malfunction</p> <p style="text-align: right;">  </p> <p>3) After tensioning, the digital LED turns to show your setting of sealing time and the little “Sealing Ready Dot” located at lower right corner (see below), will light up at the same time when tool gets ready to seal.</p> <p style="text-align: center;">  Sealing Ready Dot </p> <p>When sealing lever is pressed down, the sealing time digit starts to count down to “0” with “Sealing Ready Dot” flashing simultaneously until cooling process is finished, followed by a “beep” sound as an indication of completion of sealing, cooling and cutting .</p>
<p>Low Battery Power LED</p> 	<p>When battery power gets too low to work, battery LED flashes in red with “beep...beep” alarm continuously and charging process is required.</p> <p style="text-align: center;">Low Battery Power Status </p>

### 4.3.1 Installation of Control Panel Cover

To avoid undesired and careless presses or touches on Control Panel after tension setting and sealing time setting are completed. A Control Panel Cover is enclosed with every tool for your screwing on as a protection. Please follow steps and drawings below for installation.

Step 1 : Unscrew (1) M3x0.5x10mm & (2) M4x0.7x22mm hex screws as shown.

Step 2 : Place the Control Panel Cover (3) on top of the Control Panel and fix it with (4) M3x0.5x14mm & (5) M4x0.7x25mm screws.



## 4.4 Charging battery

Refer to FIGURE 4 to insert the battery into charger (Please refer and follow the safety instruction and operation of the battery and charger user manual.)

**BOSCH Li-Ion battery (No.9380) has different features from Li-Ion battery (No.9280), please note:**

### I. Usage Notice:

- \* Each BOSCH Li-Ion battery (No. 9380) is equipped with Charge Level Indicator. Press button to check the status of charge level condition (capacity), as shown on Figure 4 (\*For safety reasons, it is only possible to check the charge condition when the tool is at a standstill.)
- \* When you receive BOSCH Li-Ion battery, its capacity may not be sufficient. Please check capacity status and charge fully before use when necessary.
- \* When three LEDs light up, the capacity is sufficient, no need to charge.
- \* When only one LED lights up or flashing green, or the Tool's "Battery Power LED" display in flashing red, proceed charging with BOSCH charger (No. 2382-XX).
- \* Adaptor is NOT required for charging BOSCH Li-Ion battery (No. 9380)
- \* Remove battery from charger upon charging process is completed. Otherwise, it may shorten battery's service life due to over-charging.

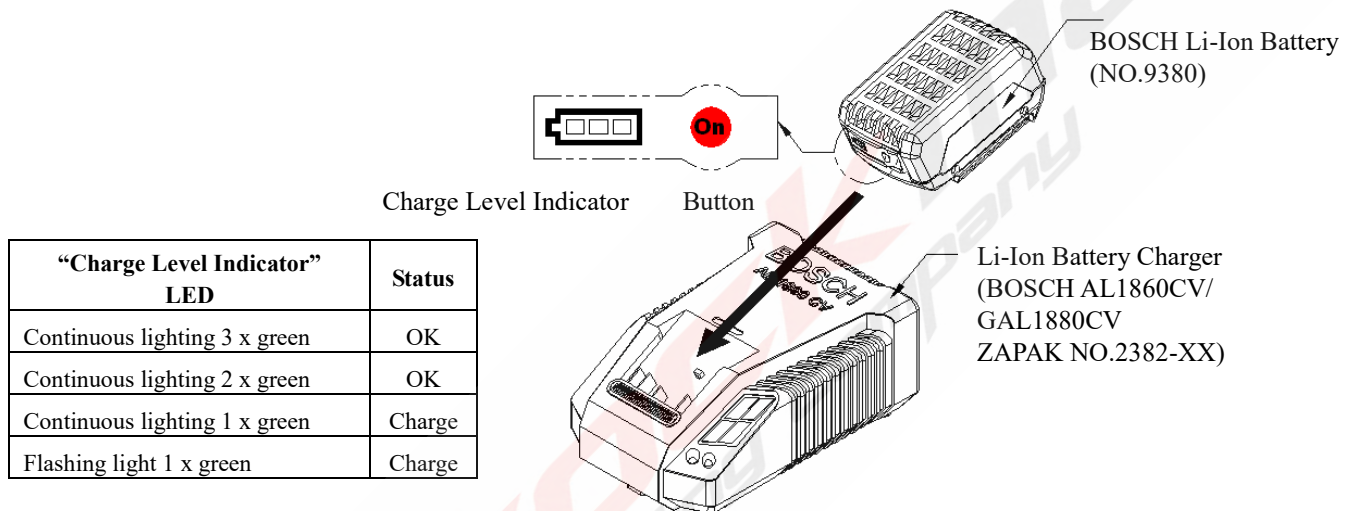


FIGURE 4. Illustration of Inserting Battery onto Charger

### II. Storage Notice:

- \* For storage within 6 months under normal temperature and environment, BOSCH battery does not require a full charge before storage. However, when the Charge Level Indicator shows low capacity with only one LED light, a 5~10 min. charge is needed to raise the capacity up to 2 green lights.
- \* For long time storage or un-use over one year or above, Check capacity level every 6 months. When only one LED lights up, please charge 5~10 minutes until two LEDs light up.

### III. Others:

- \* In order to achieve the best charging capacity, please wait until the battery has cooled down before recharging.
- \* Charging time may vary based on the voltage variation of each individual area/country.
- \* Abnormal temperature of battery and charger will reduce the charging efficiency significantly.
- \* **Always remove battery from tool when tool is not in use.**
- \* **Always remove a low-power battery from tool for a recharge process SOON AFTER the "Battery Power LED" blinks in red and continuous "beep... beep" alarm appears. DO NOT wait and leave such battery unattended and un-recharged. Fail to recharge timely will cause quick battery failures due to power being overly output and discharged.**
- \* Charging the battery: When charging speed becomes abnormally slow due battery temperature is raised abnormally or charger shows abnormal signal, Please remove the battery from charger for cooling. Either battery or charger is defective if the battery still can not be charged. Use another battery to check which is defective.
- \* Bosch charger is installed with protection device to avoid overcharge hazard. Such device will cut off charging process automatically when the battery has been charged fully or reached its maximum voltage level. Even so, for safety reason, please remove battery from charger upon charging process is completed.
- \* **Remove battery and discontinue charging process if any abnormal situation occurs.**
- \* **It is required to install a surge protector to protect the charger and minimize the risks and damages caused by surge (a strong and sudden electricity shock).**



## 4.5 Battery installation and removal

Insert a fully charged battery onto the tool as shown (FIGURE 5-1). **Be sure to install the battery all the way down until the release button is popped up as shown (FIGURE 5-2).** Press tension button the first time, all LEDs on control panel should be lighted up and all previous settings come up with “beep” sound simultaneously. These indicate that battery electricity system is ready to work under normal condition.

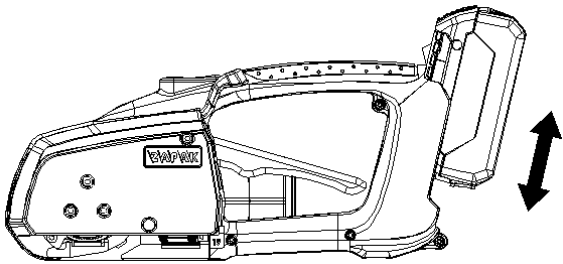


FIGURE 5-1. Illustration of Inserting and Removal of Battery

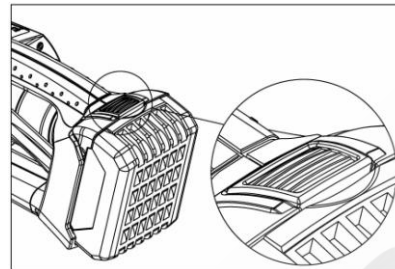


FIGURE 5-2. Illustration of Release Button Pop Up

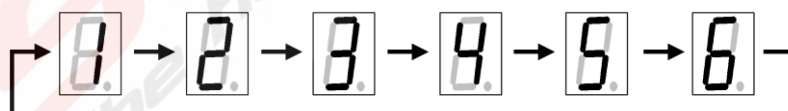
- \* When the Battery Power LED on control panel shows “Red flashing”, it means the battery power is too low to work and needs to be re-charged. Then the tool is NOT supposed to be operated under such condition. You will simultaneously hear “Beep..beep..beep” alarm. Please press “Battery Release Button “ on top of battery and pull battery upward to remove it from the tool. The “ beep..beep” alarm will continue until the battery is removed. (FIGURE 5-1)
- \* If the battery release button does not pop up, the tool will likely shut-down during operation, it could create power surge to damage the motor and ECU. This will be treated as improper operation and which invalids the warranty.

## 4.6 Setting tension and sealing time

### 4.6.1 Setting tension

ZP90 tension ranges from 15kg to 120kg, ZP93 tension ranges from 25kg to 250kg and ZP97 tension ranges from 40kg to 400kg  $\pm$  5%.

Follow and refer to 4.3 Control Panel Operation Instructions, digital LED ranges from 1~6 for 6 tension settings for PP & PET straps & ranges 1~2 for two “SOFT” tension settings (very low and slow tension for light or fragile products). Press “ Tension Setting Key “ to switch digit in the LED. For PET & PP straps, the digit circulates from 1→2→3→4→5→6→1→2→3→4→5→6 for you to increase (1~6) or to reduce (6~1) your tension setting.



Strap Type	Tension Setting Range
PET	1 ~ 6
PP	1 ~ 6
SOFT	1 ~ 2

(“SOFT” for ZP90/ZP93 only)

**Note** Under the same tension setting digit, tension force of PET > PP > Soft due to different strengths of straps and application of strapping jobs required.

**Note** Please refer to the side labels of box package for full details of preset information of each tool.

**Note** Pre-test prior to tension operation is required. Start at a lower tension setting under “MANUAL” mode to test and find your best tension setting before you can proceed to “AUTO” mode. Increase tension setting according to your strap quality and specifications (width x thickness) and breaking strength SLIGHTLY and GRADUALLY when necessary. DO NOT overset tension which results in strap scratches, slippage and breakage tensioning problems.

**Note** Tension stops automatically upon reaching your set tension. You may increase tension further by FEW trickles on tension button under “MANUAL” tension mode. However, DO NOT trickle when tension setting is at maximum level which may cause strap scratches, slippage and breakage problems. TENSION SETTING NEEDS TO BE REDUCED AT A LOWER LEVEL TO AVOID SCRATCHES IN TRICKLE-TENSIONING.

**Note** No trickles (re-tensions) are allowed under “AUTO” Mode. Please switch “AUTO” to “MANUAL” mode in order to perform trickles tensioning (re-tensions). DO NOT trickle excessively which may fail your set tension or go beyond strap’s strength or maximum tension limit and causes strap scratches, slippage and breakage hazards.

**Note** Textured (embossed) PET and PP straps require much lower tension settings than smooth PET. Higher tension is produced by thicker and wider straps and better strengths/quality of straps, please change to use proper quality and specifications of straps when industrial or heavy duty strapping job is required.

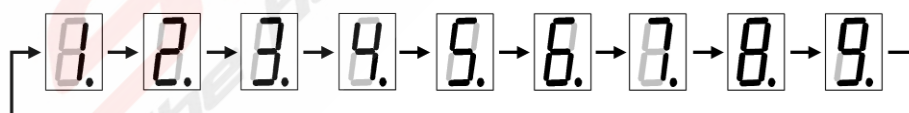
**Note** Tension performance might be less than the set tension once in a while due to insufficient battery Power or various strap surface friction. You may increase tension setting higher or trickles few times under “MANUAL” tension mode. If tension cannot be increased any further by trickles, max. tension limit is reached.

## **WARNING**

IN CASE OF SCRATCHES OCCUR WHEN TENSIONING CERTAIN NARROWER & THINNER STRAPS UNDER “AUTO” MODE. PLEASE CHANGE “AUTO” MODE TO “MANUAL” MODE & RE-SET STRAP TYPE LED AT “SOFT “, ADOPT “QUICK” TRICKLES ( HALF-SECOND PER TRICKLE) TO COMPLETE TENSIONING ON SUCH SPECIAL QUALITY STRAPS PARTICULARLY.

### 4.6.2 Sealing time adjustment

Follow and refer to 4.3 Control Panel Operation Instructions for sealing time setting. Digital LED ranges from 1~9 for 9 increments of sealing time settings. Press “ Sealing Time Setting Key “to switch digit in the LED and the digit circulates from 1→2→3→4→5→6→7→8→9→1→2→3→4→5→6→7→8→9 for you to increase ( 1~9) or reduce ( 9~1) your sealing time setting based on your strap quality and specifications.

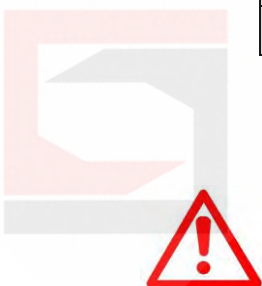


Increments	1	2	3	4	5	6	7	8	9
Sealing Time(sec)	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7

#### **A tip to preset proper sealing time.**

Cut off a length of strap and fold it into two straps. Put the overlapped section into sealing slot as (FIGURE 6) shown. Press tension button ( under MANUAL tension mode ) to tension the strap slightly. Then press the sealing lever down to seal the strap.

Check sealing efficiency of sealing joint for your strap and make sealing time adjustments if necessary. (Please refer to article 4.6.2.1“Best sealing efficiency adjustment”.)



#### 4.6.2.1 Best sealing efficiency adjustment

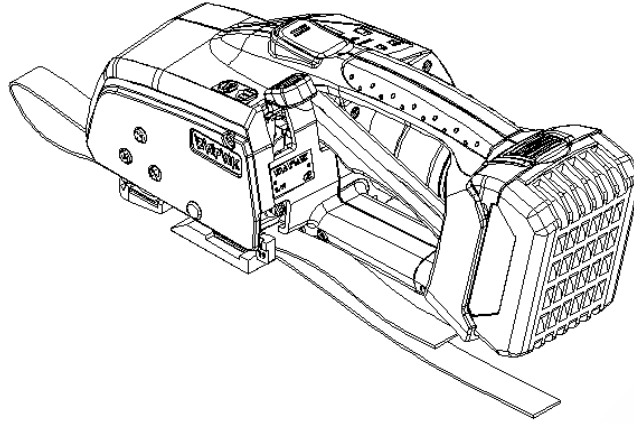
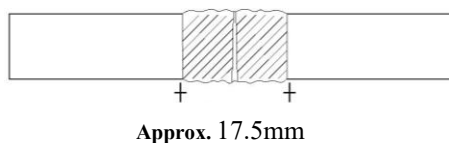


FIGURE 6. Illustration of Pretesting for a Proper Sealing Time



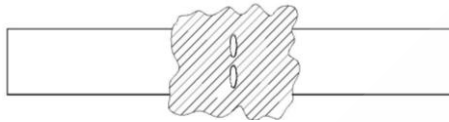
##### Normal Sealing

Sealing joint is mostly or completely welded over the whole width of the straps.



##### Sealing time too short

Sealing joint is small and incompletely covered the width of the straps. Please refer to article 4.6.2.



##### Sealing time too long

The straps are over melted and sealing joint overflows too much on both sides of the straps. Please refer to article 4.6.2.

#### 4.7 Strap width setting



**PLEASE CHANGE THE FRONT STRAP GUIDER & REAR STRAP GUIDER TO MATCH CLOSELY WITH YOUR STRAP WIDTH BEFORE TOOL OPERATION OR WHEN STRAP WIDTH IS CHANGED.**

When different strap width is applied, it needs to change the front strap guider as well as the rear strap guider to get a proper tension, sealing & complete strap cutting.

A kit contains of front strap guiders and rear strap guiders is enclosed with each tool in the package to accommodate with different strap widths as follows:

Model	Front Strap Guiders Enclosed	Rear Strap Guiders Enclosed	Standard Pre-set on Tool ( Both Front & Rear Strap Guiders)
ZP90	1)9mm (also applies to 10mm)	1)9mm (also applies to 10mm)	<b>12/13mm</b> ( applies to 12,13mm )
ZP93	1)13mm ( also applies to 12mm )	1)12/13mm( applies to 12,13mm )	<b>16mm( also applies to 15mm)</b>
ZP97	1)16mm ( also applies to 15mm)	1)15/16mm ( applies to 15,16mm)	<b>19mm</b>

**Please check the preset information shown on the side labels of the tool's package for front & rear guider strap width settings for delivery.** If other than the preset specification is required, please change front strap guider and rear strap guider per steps as follows:



## 4.7.1 Change Front Strap Guider

Refer to FIGURE 7 and follow below instructions step by step to change front strap guider to fit different strap width.

Step 1: Unscrew and take off 3 pieces of M4×0.7×12mm screws (1) & 1 piece of M4×0.7×10mm screw (2) as per drawing below. And side cover (3) can be removed.

Step 2: Lift up the Operation Lever (4) to take off the tension arm assembly as (5) shown.

Step 3: Take off one M3×0.5×6mm screw (6) and the front strap guider (7) can be removed and replaced with new one.

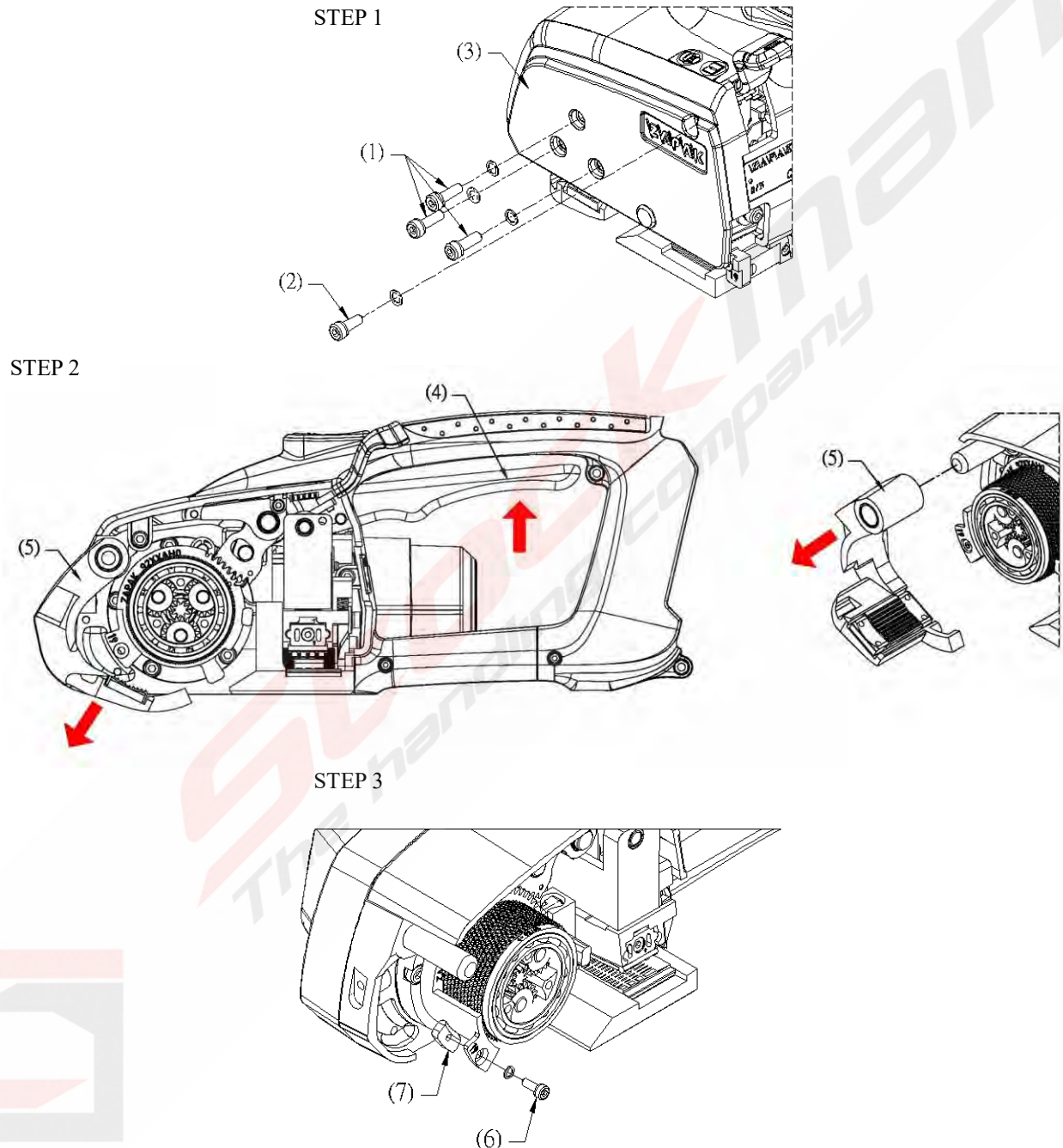


FIGURE 7. Illustration of Changing Front Strap Guider

**NOTE:** FOR ZP97, THE 19MM FRONT STRAP GUIDER HAS BEEN DESIGNED & INSTALLED READY ON TOOL FOR SHIPPING, SO THERE IS NO 19MM FRONT STRAP GUIDER ENCLOSED SEPARATELY.

## 4.7.2 Change Rear Strap Guider

Refer to FIGURE 8 and follow below instructions step by step to change rear strap guider to fit different strap width.

Step 1: Unscrew and take off 3 pieces of M4×0.7×12mm screws (1) & 1 piece of M4×0.7×10mm screw (2) shown below.

Step 2: Unscrew and take off one M3×0.5×6mm screw (3), the rear strap guider (4) can be removed and replaced with new one.

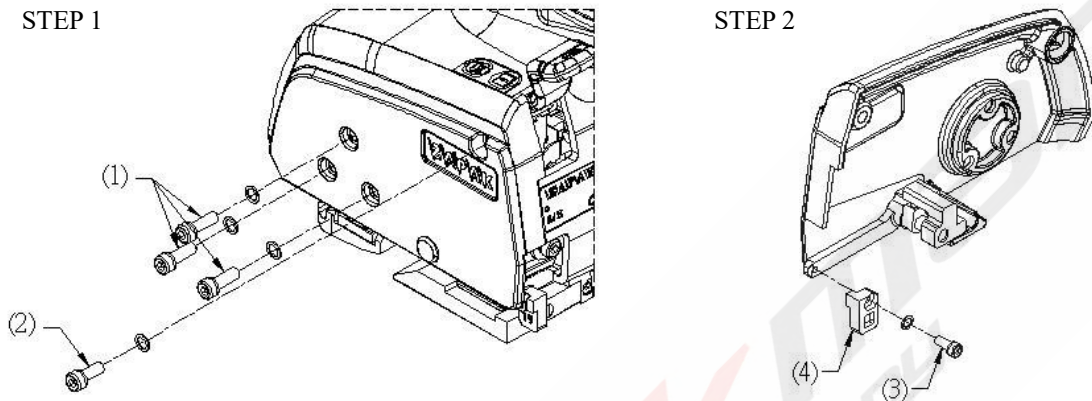


FIGURE 8. Illustration of Changing Rear Strap Guider



**THE STAINLESS STEEL M4× 0.7× 10mm SCREW (2) SHOWN IN ABOVE DRAWINGS NEEDS TO BE UNSCREWED AND SCREWED BACK TO SIDE COVER PROPERLY. ANY MISTAKEN OR IMPROPER DISASSEMBLY OR ASSEMBLY OF THIS PARTICULAR SCREW OR USE ANY WRONG SCREW WILL DAMAGE THE TOOL AND INVALIDATE YOUR WARRANTY.**



**IN CASE OF TOOL MALFUNCTION OR ABNORMAL SITUATION OR ABNORMAL SOUND OCCURS, PLEASE LIFT UP THE OPERATION LEVER TO HALT TOOL'S MOVEMENT AND REMOVE BATTERY FROM THE TOOL IMMEDIATELY. DO NOT PUT ANY NEW BATTERY ON TOOL AND DO NOT RE-START TENSIONING (EITHER AUTO OR MANUAL MODE). PLEASE CONSULT WITH YOUR DEALER OR SEND THE TOOL BACK TO AUTHORIZED DEALER FOR CHECKING OR REPAIR IF NEEDED.**



## 5. OPERATION

### 5.1 Strap around the article

Strap around the article, **the front end of the loop should be under the strap roll end.** Tighten the loop by hand to a reasonable tightness.

Hold the overlapped section of the loop by left hand at its rear position as (FIGURE 9) shown.

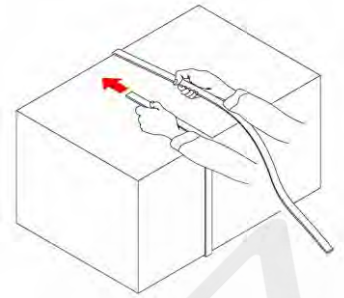


FIGURE 9. Strap Around

### 5.2 Inserting strap into slot

Lift up the Operation Lever. Insert the overlap section of the loop into the slot as (FIGURE 10) shown. **Quick straps alignment:** please use two fingers (thumb and index finger) of your left hand to push straps into the innermost side of slot as (FIGURE 11) shown to get a quick straps alignment. Please make sure that **the front end of the strap is extended out of the tension arm.** Otherwise, the strap will not be tightened. Release the Operation Lever as (FIGURE 12) shown.

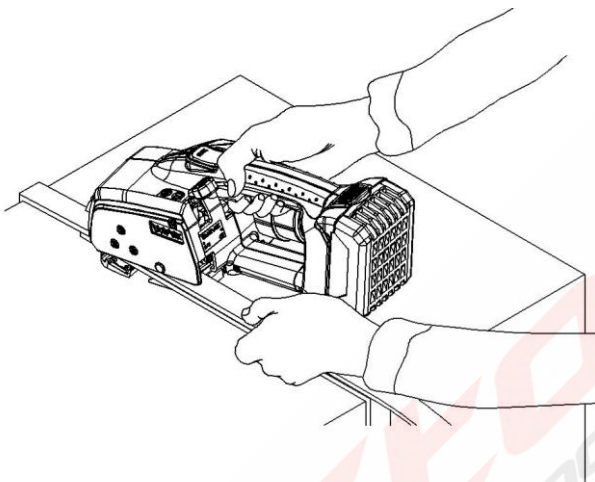


FIGURE 10. Insert Straps into slot

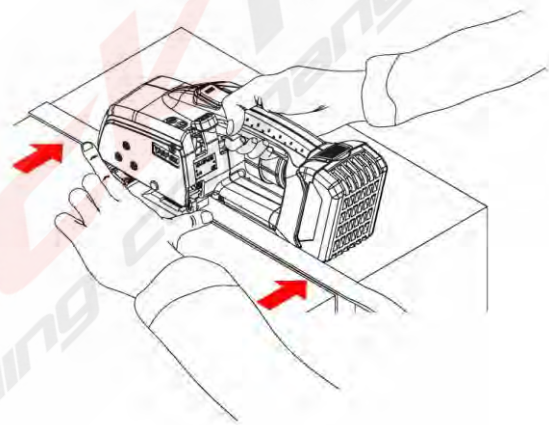


FIGURE 11. Push straps into the innermost side of slot

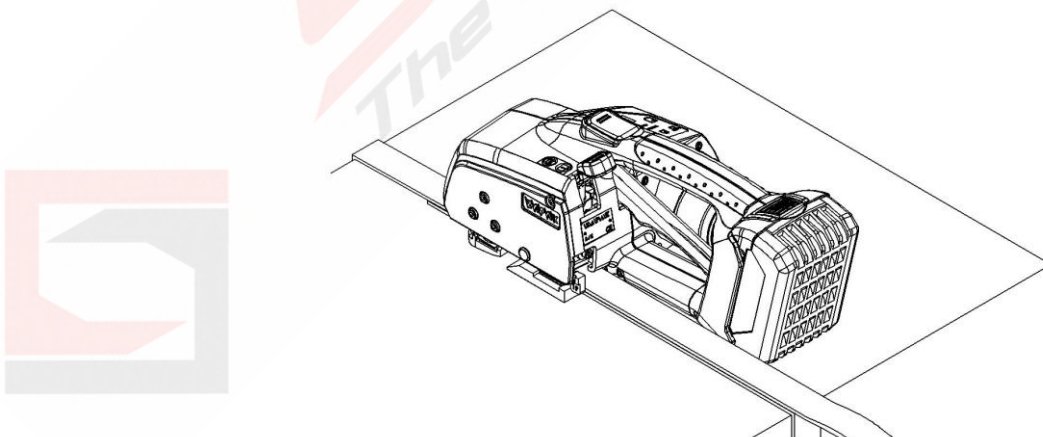


FIGURE 12. Release Operation Lever



**The front strap guider and the rear strap guider should not press on the straps.** Otherwise, the straps could not be tensioned and may result in strap scratches or slippage problem.

### 5.3 Tensioning strap

Press tension button first to wake tool up if all LED lights are at “off” status. Refer to 4.6 steps to complete tension setting and sealing time setting.

Press tension button again to tension ( FIGURE 13) . Tension will be performed based on the Tension Mode you set :

- \* **If under “MANUAL “ tension mode: keep your thumb holding on tension button. Do not release it until tension movement stops. Few trickles are allowed under “MANUAL”. Excessive trickles should be avoided. ( refer to 4.6.1 )**
- \* **If under “AUTO” tension mode,: simply ONE push on tension button and release. The tension movement will stop automatically when tension setting is reached. NO trickles (re-tensions) are allowed under “AUTO” Tension Mode. (refer to 4.6.1 )**

**NOTE** Tension movement stops upon reaching your set tension. If tension cannot be increased any further by few trickles, max. tension limit is reached.

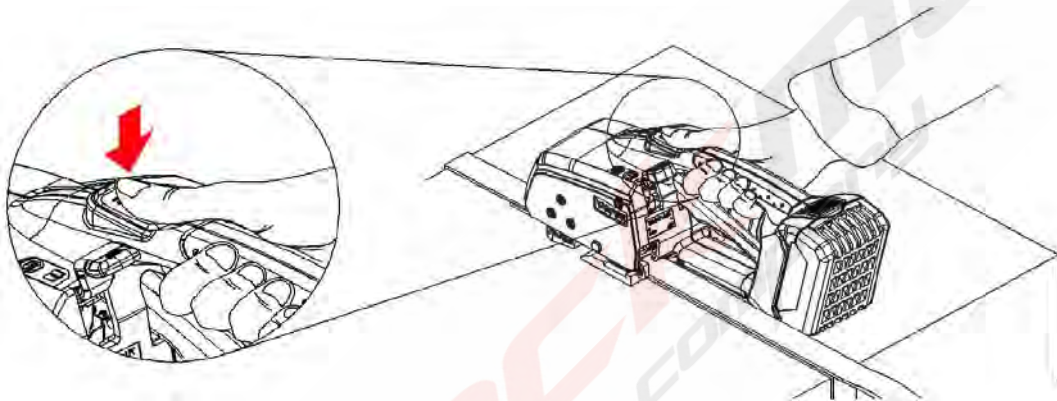


FIGURE 13. Tension Operation

**NOTE** \* Do not lift up the Operation Lever during tensioning, unless you intend to halt and intermit the tensioning movement.

\* When scratches occur during tensioning, strap residues will be left on the feeder wheel and/or strap grippers. Strap residues must be removed and cleaned completely before next operation. Otherwise, scratches or poor tensioning problem will appear every operation. Please follow and refer to article 7. “Cleaning strap residue” and reduce your tension settings to avoid strap scratches and accumulations of straps residues.

\* Do not leave any objects in front of the tool which block the moving of the tool.

\* During tensioning, any interference like obstacle or damaged strap may halt the operation before reaching the set tension. Please remove interference and trickle on tension button few times under “ Manual “ tension mode to complete tension or lift up operation lever to re-start a new strapping cycle.

**! Do not press tension button long and continuously. To keep motor running continuously over 10 seconds (ex. Start tensioning without strap) is considered as improper operation and damages caused are not covered under warranty.**

**! Do not press or push too hard on the tension button when tensioning, it may damage interior micro device and shorten its service life.**

**NOTE** If strap surface is scratched during tensioning, please check the tool as follows:

- 1) Please reduce the set tension force or use better breaking/surface strengths of strap. Refer to 4.6.1 for details and pretest before tension operation based on your strap quality & specifications.

- 2) If there are scratches on upper strap, please clean strap residues on the feeder wheel.
- 3) If there are scratches on lower strap, please clean strap residues on the strap grippers.
- 4) Make sure the front strap guider and rear strap guider are not pressing or standing on the strap.
- 5) Make sure the front strap guider and rear strap guider have been adjusted to match with strap width.
- 6) If scratches problem still exists, please check whether feeder wheel and/or strap grippers are worn out or damaged. Please change the damaged parts when necessary.
- 7) Please use better quality and proper spec. of straps. Refer to instructions (enclosed with part) for steps of changing feeder wheel or strap grippers.

## 5.4 Sealing straps

Press sealing lever all the way down ( FIGURE 14) to start sealing operation. Sealing process stops automatically upon reaching the sealing time setting. When sealing is in process, the digital LED will be counted down to “0” and followed by “beep” sound to indicate completion of cooling process. The longer sealing time is set, the longer cooling process takes. Cutting is completed at the same time when sealing is finished. Lift up Operation Lever to remove the tool. Sealing lever will pop up at “OFF” position automatically as FIGURE 15 shown.

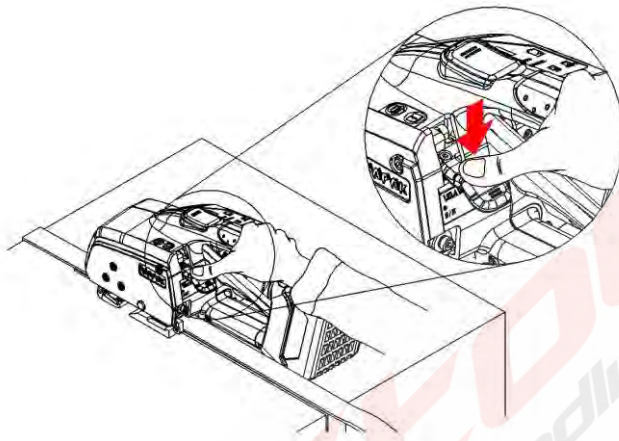


FIGURE 14. Press Sealing Lever down to start sealing

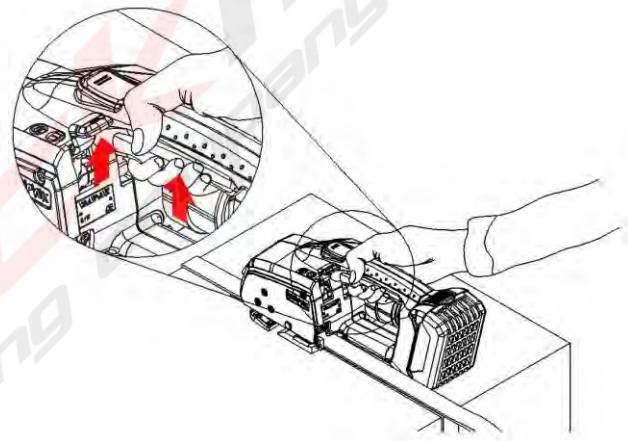


FIGURE 15. Lift up operation lever and sealing lever pops up to “OFF” position automatically.



- \* Do not lift up Operation Lever before “beep” sound is heard and cooling process is finished. Or, the sealing joint may be split up and failed due to insufficient cooling time.
- \* Sealing lever should be pressed down all the way without hesitation or stopping in the middle. Obvious breaking steps of pressing down the sealing lever will reduce sealing efficiency or cause scratches on sealing joint.
- \* This tool is designed with safety devices to prevent damage of tension and sealing structure from accidental or undesired presses on tension button or sealing lever. However, please, do not attempt to touch or press the tension button or sealing lever carelessly.
- \* If sealing joint is abnormal, please refer to article 4.6.2 “SEALING TIME SETTING” for corrections or improvements.
- \* If sealing lever is loosened and bounced back during sealing, please press and hold the sealing lever or send the tool to your dealer for repair service.
- \* The surface of strap must not be stained by oil or grease. Otherwise, it will cause insufficient sealing efficiency or failure of sealing.



## 5.5 Remove the tool from straps

Lift up Operation Lever, raise the rear end of tool slightly and push tool to the right side for removal from straps. It may be difficult to lift up the Operation Lever when straps are extremely tight which is normal. Using left hand to push the rear end of tool to the right side will help remove the tool easily.

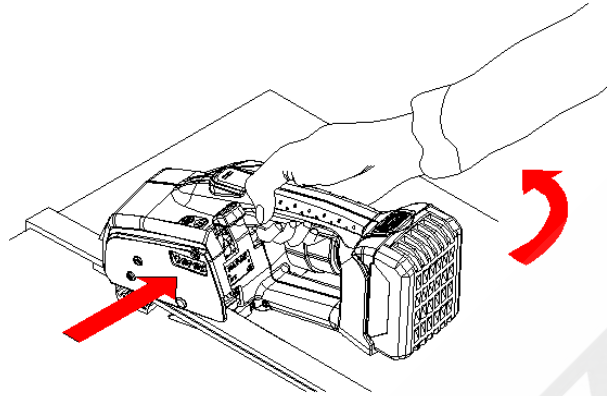


FIGURE 16. Remove tool from straps

**NOTE:** Please be sure to lift up operation lever all the way up to the top before removing the tool from straps. Fail to follow this instruction may result in difficult tool removal from straps and may cause damages of side cover and relevant parts by forced removal. Such damages are not covered under warranty.

**NOTE:** Do not play with the operation lever ups and downs when tool is not in operation or service. It may damage the interior micro device and shorten its service life.

## 6. MAINTENANCE AND SERVICE

- \* Please refer to conditions on warranty proof. To protect your warranty rights, please make sure your dealer had completely filled out your warranty proof and signed on it.
- \* When tool is damaged, please call your dealer for further instruction and send your tool to manufacturer's authorized dealer for repair service. **Do not attempt to repair it by yourself. This will invalidate the warranty.**
- \* Please use cleaning brush to clean strap slot including feeder wheel, strap gripper, and bottom sealing grippers. Regular cleaning will assure efficient working.
- \* Clean your tool's exterior with only slightly damp cloth. Never use any chemical, gasoline, thinner, turpentine, dry cleaning fluids or liquids which may damage the plastic housing or finishing. Never let any liquid get into the tool and never immerse into any liquid.

### **WARNING**

**Keep the tool away from magnetic fields, water, and small metal objects or debris within operating surroundings. Fail to follow this instruction or inhalation of metal foreign objects of motor will cause malfunction to the tool and invalidate the warranty.**

## 7. CLEANING STRAP RESIDUE

Scratched strap will leave some residues on feeder wheel and strap grippers. **It must be cleaned before next operation as to avoid continuously scratching or slippage problems.** A cleaning brush is enclosed.

## 7.1 Cleaning feeder wheel

### 7.1.1 Quick cleaning method:

Use air gun to blow away the residues on feeder wheel.

### 7.1.2 Complete cleaning method: (Refer to Figure 17)

Step 1: Unscrew and take off 3 pieces of M4×0.7×12mm screws(1) & 1 piece of M4×0.7×10mm screw(2) and side cover (3) can be removed.

Step 2: Lift up operation lever, take out feeder wheel (4) and clean feeder wheel completely by cleaning brush.

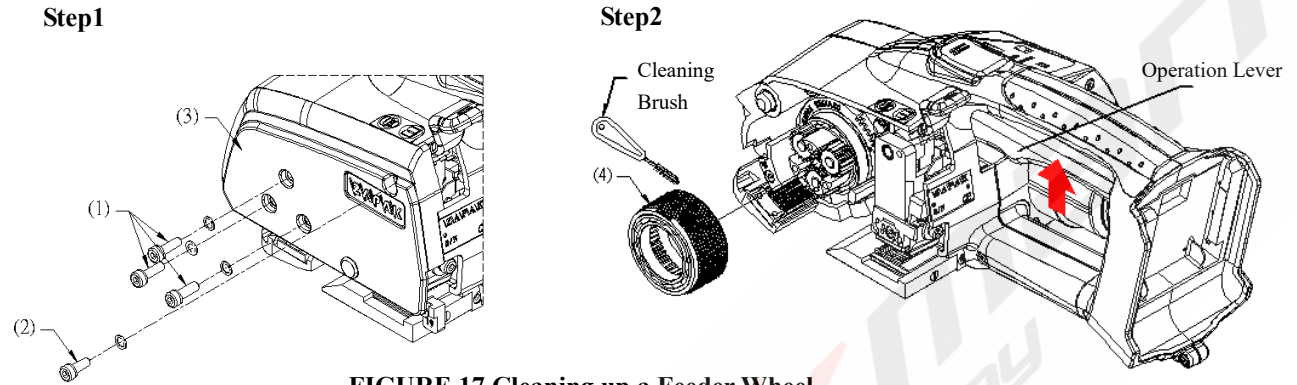


FIGURE 17 Cleaning up a Feeder Wheel



THE STAINLESS STEEL M4× 0.7× 10mm SCREW (2) SHOWN IN ABOVE DRAWING NEEDS TO BE UNSCREWED AND SCREWED BACK TO SIDE COVER PROPERLY. ANY MISTAKEN OR IMPROPER DISASSEMBLY OR ASSEMBLY OF THIS PARTICULAR SCREW OR USE ANY WRONG SCREW WILL DAMAGE THE TOOL AND INVALIDATE YOUR WARRANTY.

## 7.2 Cleaning strap grippers

### 7.2.1 Quick cleaning method:

You can use air gun to blow away the residues on grippers as well as gap between grippers' plates.

### 7.2.2 Complete cleaning method: (Refer to Figure 18)

Step 1: Unscrew and take off 3 pieces of M4×0.7×12mm screws (1) & 1 piece of M4×0.7×10mm screw (2) and side cover (3) can be removed.

Step 2: Lift up operation lever and take off the tension arm, use cleaning brush to clean the residues on strap grippers.

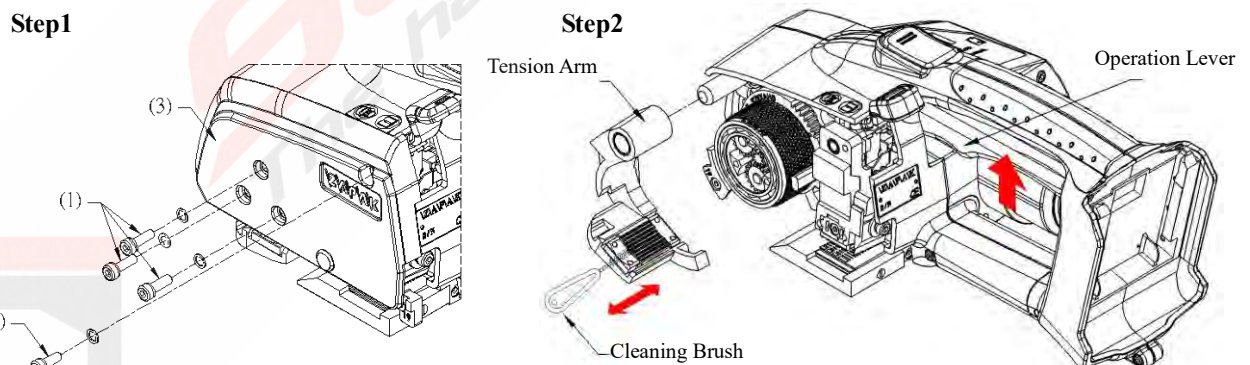


FIGURE 18. Cleaning Strap Grippers

**NOTE** : Use Cleaning Brush to clean the strap residues on feeder wheel and strap grippers GENTLY. Do not brush hard as it may cause damages to the related parts.

## 8. CHANGING WEARING PARTS



Please remove battery from tool before maintenance or parts replacement.

Some wearing parts can be changed by user ( marked \* in below list ) which will not affect your warranty of other parts in the tool.

The warranty excludes all wearing parts.

### ZP90/ZP93/ZP97 Wearing parts list

Item no.	Description	Remark
*9081	*PET/PP Cutter	*ZP90
*9281	*PET/PP Cutter	*ZP93/ZP97
*9380	*Li-Ion battery (18V/4.0Ah Li-Ion)	*ZP90/ZP93/ZP97
*92/96-FW	*Feeder wheel	*ZP90/ZP93/ZP97
*92XX-4J *97XX-4J	*Strap grippers	*ZP90/ZP93 *ZP97
*92XX-4N	*Bottom sealing grippers assembly	*ZP90/ZP93/ZP97
*25XX-12	*Cleaning Brush	*ZP90/ZP93/ZP97
92XX-3N	Sealing head link assembly	ZP90/ZP93/ZP97 (maintained by authorized dealer)

This tool is designed with user self-changeable wearing parts (only refer to items marked \* above) including cutter, battery, feeder wheel, strap grippers, bottom sealing grippers and cleaning brush etc. Each self-changeable wearing part is enclosed with a copy of replacement instruction.(provided by authorized dealer),except cleaning brush and battery. Other than those \* parts, please send your tool to a manufacturer's authorized dealer for repair service or warranty will be invalidated.

**NOTE:** Lubricate the Feeder wheel, Grippers, and Cutter with Antirust Oil (ex. WD-40) periodically, if the tool is not used for over a week or store or work under humid environment.

## 9. OPTIONAL ACCESSORIES

### 9.1 Li-Ion Battery (Item no. 9380)

Recommend to buy more than one or two batteries as spares to meet more frequent strapping job demand. BOSCH Li-Ion battery ( 9380) are only suitable for BOSCH Li-Ion Charger ( part no. 2382-XX, Bosch no. AL1860CV/GAL1880CV) (Please refer to article 3. "SAFETY INSTRUCTION" regarding environmental, recycle and safety precautions of battery.)

### 9.2 Battery Charger (Bosch AL1860CV/GAL1880CV, ZAPAK Item no.2382-XX)

Battery charger 2382-XX is suitable for ZP90/ZP93/ZP97 strapping tools series. Please refer to article 3. "SAFETY INSTRUCTION" regarding safety precautions and the user manual of charger.

ITEM NO.	VOLTAGE	Applicable model	PLUG	REGIONS
2382-10	100V a.c.	ZP90/ZP93/ZP97	2 flat pins	Japan
2382-15	115V a.c.	ZP90/ZP93/ZP97	2 flat pins	USA, Canada, Mexico N. America, Taiwan
2382-23	230V a.c.	ZP90/ZP93/ZP97	2 round pins	European countries, China, Middle/S. America
2382-25	240V a.c.	ZP90/ZP93/ZP97	2 diagonal flat pins	Australia, N.Z.

**Bosch charger is covered by BOSCH warranty program and not covered under ZAPAK warranty policy.**



### 9.3 Wear-resisting plate (Item no. 9288)

Tool can be mounted with a wear-resisting plate as FIGURE 19 shown to prevent the bottom of the tool from excessive wearing or scratches on rough surface.

**Screw must be lower than the surface of wear-resisting plate.**

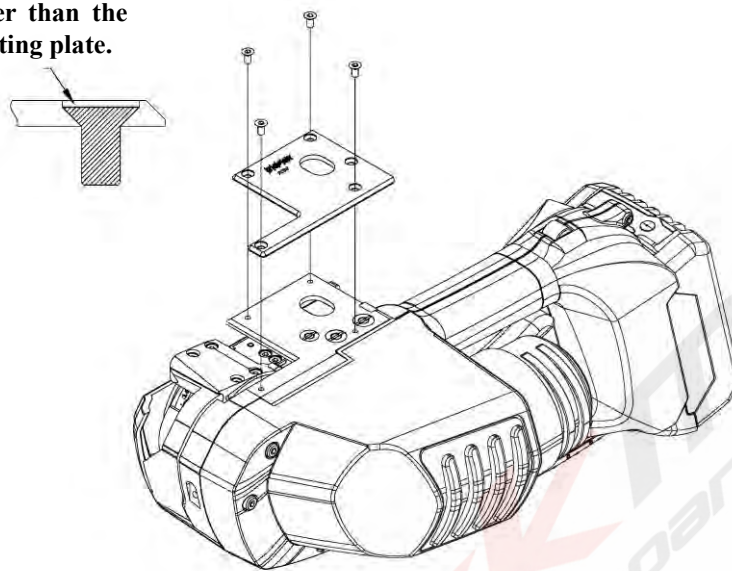


FIGURE 19. ILLUSTRATION OF MOUNING WEAR-RESISTING PLATE

### 9.4 Hanger (Item no.9287)

You can opt to equip the tool with a hanger at your work station. Recommend to work with spring balancer which loads minimum 5 kgs up to suspend the tool to reduce the operation fatigue. Please contact your dealer for further details.



MODEL NO. :

SERIAL NO. :

PURCHASER:

PURCHASE DATE:

INVOICE NO. :

DEALER:

DEALER'S STAMP:

PANTECH INTERNATIONAL INC.  
4FL, NO.1, LANE 538, CHUNG CHENG ROAD.,  
HSIN-TIEN DISTRICT, NEW TAIPEI CITY, TAIWAN .  
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