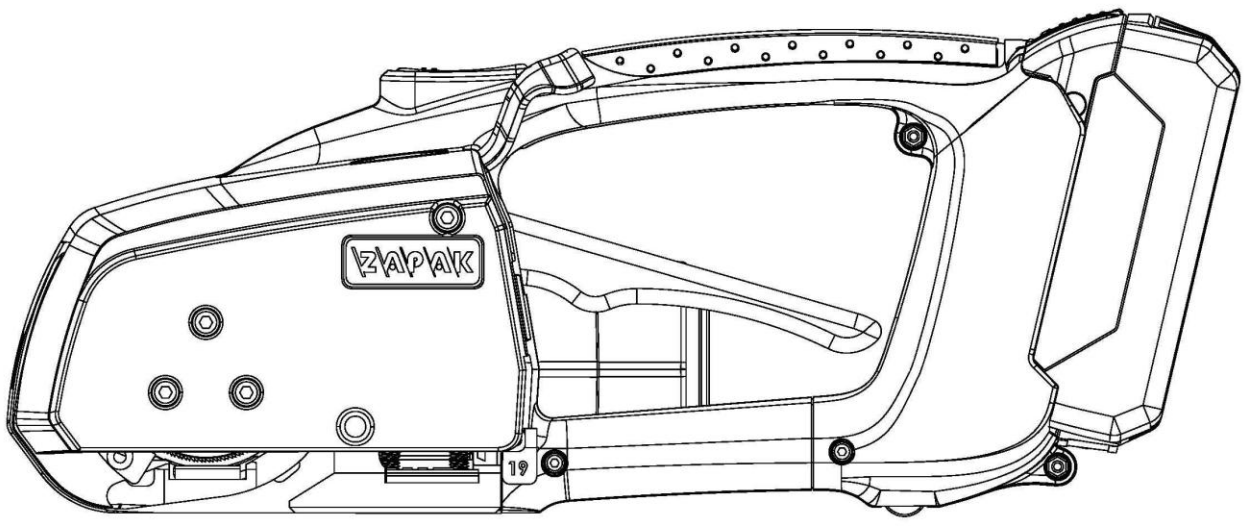
DEALER MANUAL

ZP93/ZP97 (V1.1)
ZP92/ZP96 (V1.4)

AUTOMATIC HIGH TENSION
BATTERY POWERED
PLASTIC STRAPPING TOOL



CE RoHS **UN38.3**

INDEX

GENERAL NOTICE

- ＊ **TAKE OFF THE BATTERY BEFORE ANY REPAIR OR MAINTENANCE WORK.**
- ＊ **PLEASE WEAR SAFTY GOGGLE.**
- ＊ **ALL FIGURES (DRAWINGS) BASED ON ZP93 UNLESS OTHERWISE SPECIFIED.**

GENERAL REPAIRING INFORMATION

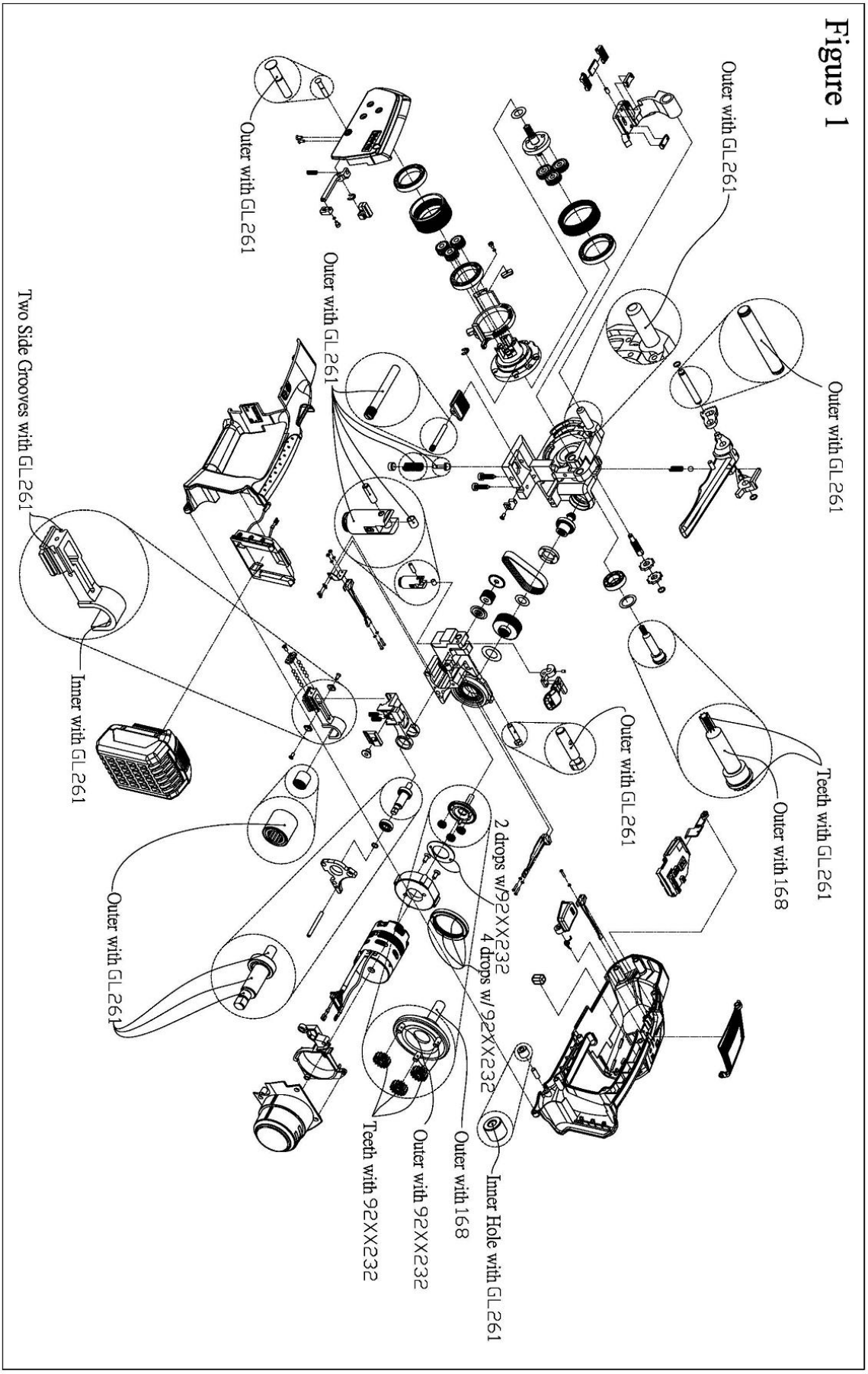
1. Check the index for work article. Follow the disassemble and assemble steps indicated in the article carefully.

2. Pay attention to special notices and follow the instructions of disassembly and assembly steps carefully.

3. **Check the security seals on the electronic control unit (ECU) and brushless motor. The warranty is void without a proper seal.** The defective electronic control units and motors must be kept and returned to the manufacturer upon request. The authorized dealership may be cancelled if such instruction is failed.

4. When the tool is disassembled to step 3.12- Right housing, it shall be treated as major disassembly step of tool and thus, the brushless motor should be covered completely and properly in a clean poly bag to avoid damage caused by inhalation of foreign metal articles due to strong magnetism of motor itself. Also, following items needs to be checked closely and defective parts shall be replaced with new ones.
   (1) All gears.
   (2) Clean up all parts and re-apply lubrication properly:
   Lubrication (92XX232)：Apply on specified parts as per Figure 1. **No other lubrications can be used for these particular parts.**
   Lubrication (GL261)：For all gears, springs, balls, and other specified parts as per Figure 1.
   Lubrication (168)：For bearings of clutch gears and their co-working axes as per Figure 1,
   No other lubrications can be used for these particular parts.
   (3) Make sure no noise, shaky or unsmooth turnings of all bearings.
   (4) The reversed braking function of the clutch gear assembly should act normally.
   (5) The axes are not worn or deformed.
   (6) All washers / nylon washers are not worn or deformed.
   (7) Make sure no disconnections of soldered contacts of all wires, switches, operation indicator, connectors and all terminals.
   (8) Wearing-out situation of all other parts and make replacement when necessary.
   (9) If any screws are stripped or loosened.
   (10) Clean up any dust, dirt, or strap residues.
5. **Protect the feeder wheel with cushioned materials during repairs or replacements from possible damages.**
6. **Examine the tool and clean up thoroughly if any chips or foreign articles left inside.**
7. **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.**
8. **Wearing ESD Wrist Band is requested for repair service and maintenance.**

Figure 1

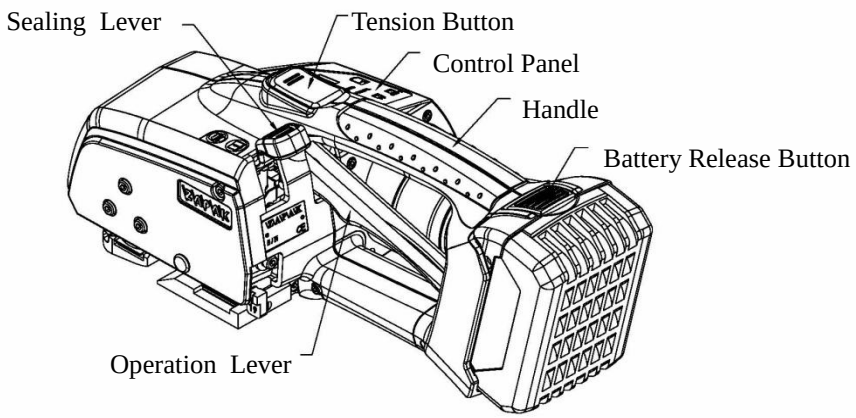

Outer with GL261
Outer with GL261
Outer with GL261
Outer with GL261
Teeth with GL261
Outer with 168
Outer with GL261
2 drops w/92XX232
4 drops w/ 92XX232
Inner Hole with GL261
Outer with 168
Outer with 92XX232
Teeth with 92XX232
Two Side Grooves with GL261
Inner with GL261
Outer with GL261

2.1 Installation and Setting before Operation

2.1.1 Introduction of Operation Components

ZP93/ZP97 Strapping Tool's Operation Components are shown as Figure 2.

Figure 2



2.2 Strap Width Setting

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

A kit contains different sizes of front strap guiders and rear strap guiders are enclosed with each tool for delivery as follows:

Model	Front Strap Guiders Enclosed	Rear Strap Guiders Enclosed	**Standard Pre-set on Tool** **(Both Front & Rear Strap Guiders)**
ZP92A/92B ZP93	1) 9mm (also applies to 10mm) 2) 13mm (also applies to12mm)	1) 9mm (also applies to 10mm) 2) 13mm (also applies to12mm)	16mm (also applies to15mm)
ZP93A	13mm (also applies to12mm)	13mm (also applies to12mm)	16mm (also applies to15mm)
ZP96A/96B ZP97/97A	1) 16mm (also applies to 15mm)	1) 16mm (also applies to 15 mm)	**19mm**

Please check the preset information shown on the side labels of box for front & rear guider strap width settings of each tool for delivery. If other than the preset specifications, please change the front strap guider and rear strap guider as follows:

2.2.1 Change Front Strap Guider

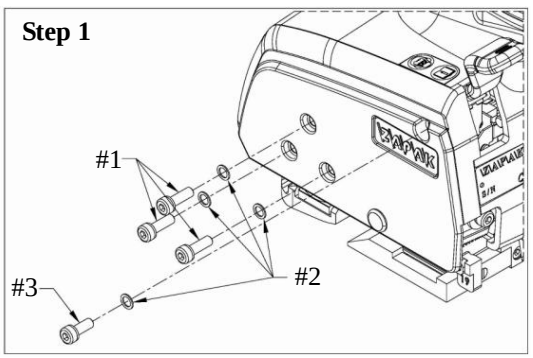
Follow instructions step by step:

Step 1: Take off 3pcs each of #1 screw (M4×0.7×12mm) and #2 washer (M4), 1pc #3 stainless steel screw (M4×0.7× 10mm) and #2 lock washer (M4), and the side cover can be removed.

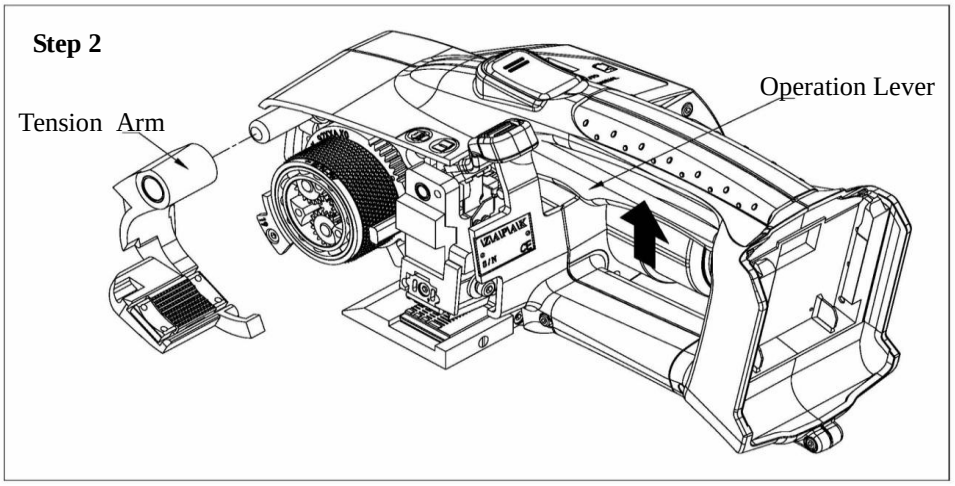
Step 2: Lift up the Operation Lever to open the Tension Arm, then remove the Tension Arm.

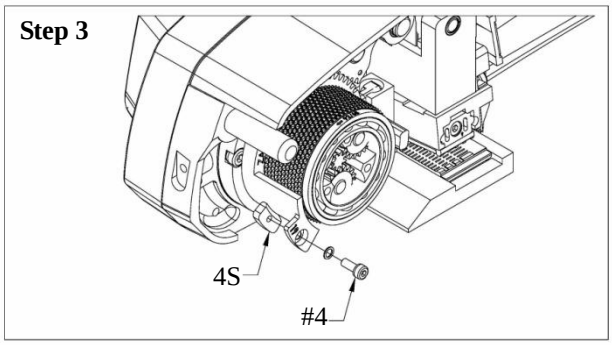
Step 3: Take off #4 screw (M3×0.5×6mm) and the 4S Front Strap Guider can be removed and replaced with new one.

Step 1



NOTICE If #3 stainless steel screw is mistakenly disassembled or screwed back, it causes damage on tool, and invalidate the warranty.





NOTE 1: FOR ZP96/97, THE 19MM FRONT STRAP GUIDER IS ALREADY INSTALLED ON THE TOOL, SO THERE IS NO 19MM FRONT STRAP GUIDER ENCLOSED WITH TOOL SEPARATELY.

NOTE 2: While screwing back #4 screw, **apply a little "Loctite"** on screw end.

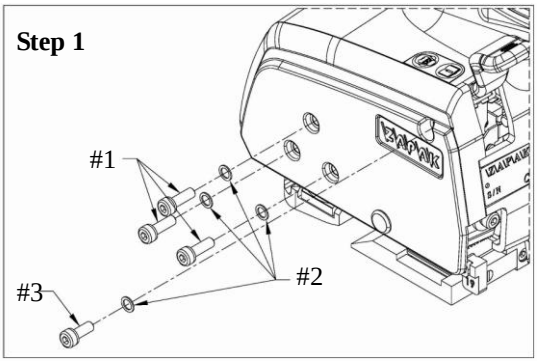
2.2.2 Change Rear Strap Guider

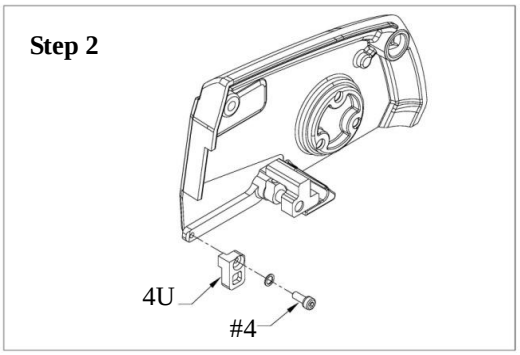
Follow instructions step by step below.

NOTICE If #3 stainless steel screw is mistakenly disassembled or screwed back, it causes damage on tool, and invalidate the warranty.

Step 1: Take off 3pcs each of #1 screw (M4×0.7×12mm) and #2 washer (M4), 1pc #3 stainless steel screw (M4×0.7×10mm) and #2 lock washer (M4), and the side cover can be removed.

Step 2: Take off 1pc #4 screw (M3×0.5×6mm), 4U Rear Strap Guider can be removed and replaced with new one.





ASSEMBLY NOTICE While screwing back #4 screw, **apply a little "Loctite"** on screw end.

2.3 LED Light Indicators on Control Panel

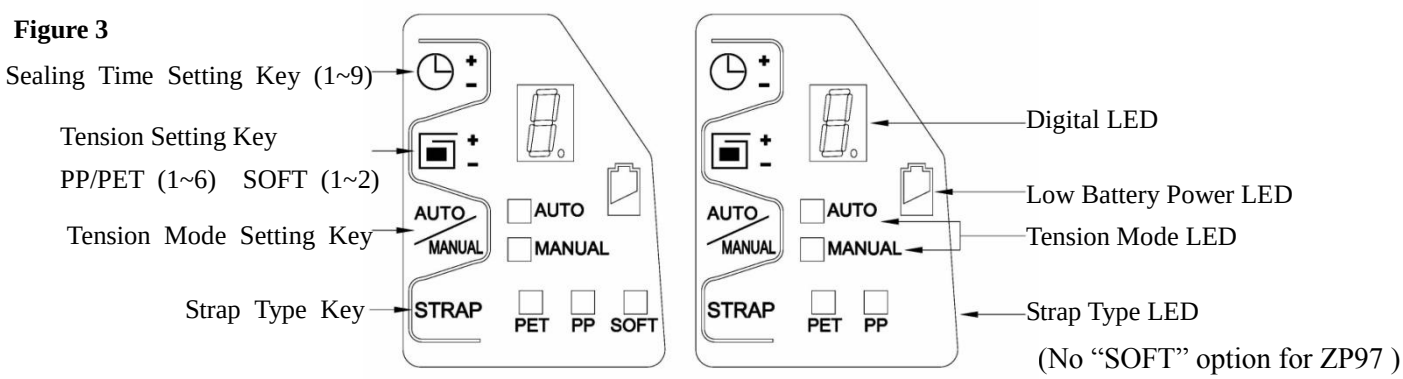
The LED light indicators instantly tell you the status of the tool:

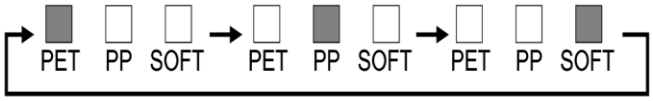
Tool status	LED lights / Sound	Remark
1) No power. 2) Or, when tool is not used after 10 minutes, the battery power shuts off automatically and power goes off.	**Off**	1) Insert battery into the tool. 2) Tool goes to power saving mode (sleeping) automatically. At first, you need to press tension button once to connect with battery electricity system and wake tool up.
Start-up and stand-by for strapping.	**On** **(Yellow digital LED & orange LEDs) with "beep"**	After first press on tension button, the tool is woken up from sleeping mode, with one second of "beep" and a flash of all LEDs lights simultaneously. All settings on Control Panel come up with previous settings.
Ready to tension.	**On** **(Yellow digital LED & orange LEDs)**	Press the tension button again to proceed with tensioning according to your tension setting as well as the tension mode (Auto or Manual) setting .
Ready to seal and cut.	**On** **(Yellow digital LED with little "Sealing Ready Dot" appears & orange LEDs)**	Press sealing lever, sealing and cutting will be performed according to the sealing time you set.
Cooling	**Yellow digital LED flashing & number counted down**	LED number begins flashing and counting down during cooling process. Sealing efficiency will be reduced or sealing joint is not firm enough when cooling time is too short or tool removal is too early before cooling process is finished.
1) Completion of sealing, cooling and cutting. 2) Ready to remove and strapping cycle can be resumed.	**Yellow digital LED stops at "0" with "beep" & then goes back to tension setting digit.**	Followed by "Beep" simultaneously when the cooling process is finished. Sealing and cutting are also completed at the same time. Tool can be removed and strapping cycle can be resumed from tensioning.
Battery power is low	**Battery power LED flashing in red with "beep…beep…" alarm**	"beep...beep...beep" alarm continues until the battery is pulled off . Battery power is too low to work and battery should be charged.
Improper operation or malfunctions.	**Digital LED turns to letter "E" & followed by "number " as :** ***E.2..E.2..E2..** **Or,*E.3..E.3..E.3..** **Or,*E.4..E.4..E.4..** **Or, *E.9..E.9..E.9.. repeatedly**	"beep..beep..beep" alarm continues until the battery is pulled off. When motor malfunctions occur as follows: 1)E.2 : motor is jammed. 2)E.3 : motor overheats. 3)E.4 : other motor malfunctions or self-detective malfunctions. 4)E.9: Motor wiring signals malfunction. Please lift up the operation lever and remove battery. If malfunction remains unsolved, please consult with ZAPAK for further examinations and technical advice.

2.4 Operation Instruction of Control Panel

Introduction of Control Panel per Figure 3, Operation Instruction as below:

Figure 3

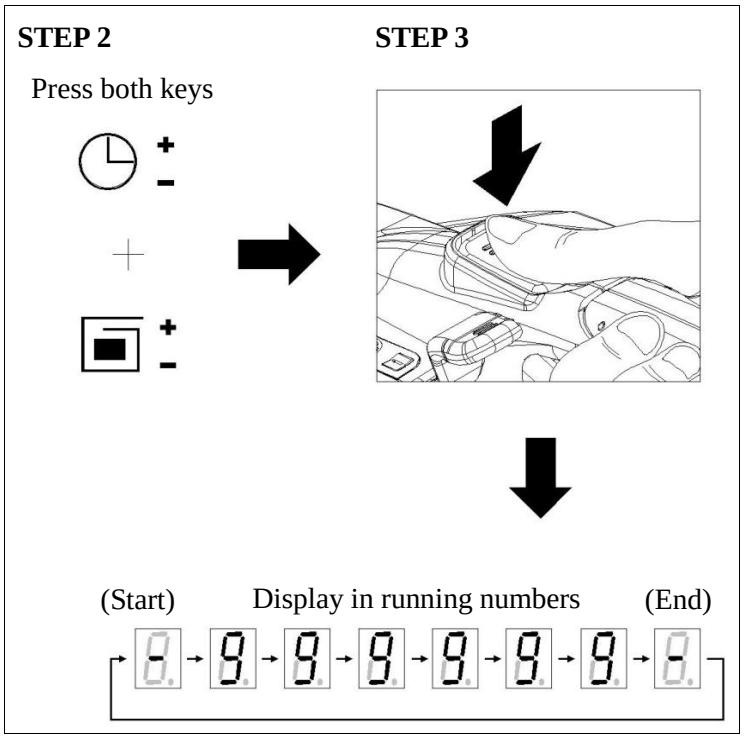


Description	Operation Instructions of Control Panel
All the keys	In order to avoid any mistaken presses or any careless initiations of tool, every key needs to be pressed longer than 1 second before any LED lights starts to react and respond.
Strap Type Key STRAP & Strap Type LED	STEPS: 1) Press and hold the key until Strap Type LED below flashes and then release. 2) Press key again to switch Strap Type LED which runs in order of PET->PP->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) 3) Release key and wait for 1 second for Strap Type LED to stop flashing and your strap type setting is completed. Example is based on ZP93 
Auto or Manual Tension Key AUTO / MANUAL & Tension Mode LED	STEPS: 1) Press and hold the key until the Tension Mode LED below flashes and then release. 2) Press key again to switch and select "AUTO" or "MANUAL" LED as you desire. To avoid scratches, pre-test to find a proper tension setting is required.(refer to 4.6.1 User Manual) 3) Release key and wait for 1 second. Your setting of tension mode is completed. Auto Tension Mode: AUTO ■ / MANUAL □ Manual Tension Mode: AUTO □ / MANUAL ■ **Note** : No trickles (re-tensions) are allowed under " AUTO" mode. Please switch to "MANUAL" mode to perform trickles tensioning (re-tensions). Do not trickle excessively which may fail your set tension or go beyond strap's strength or max. tension limit and cause strap scratches, slippage and breakage hazards. Pre-test to find a proper tension setting under " MANUAL " mode before you can proceed to "AUTO" mode.
Tension Setting Key + / − & Digital LED	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 User Manual for 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.

	STRAP or AUTO / MANUAL or + − **Note** : During tensioning, NO adjustments or settings can be made on Control Panel. **Note** : When tensioning movement keeps going and lasts over 180 seconds (3 minutes) either under AUTO or MANUAL tension mode, Or, 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 User Manual for 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 (4.6.2 User Manual) 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. STRAP or AUTO / MANUAL or + − **Note** : During sealing, NO adjustments or settings can be made on Control Panel.
Digital LED 	1) There are 10 digital numbers switchable from 0 to 9 pre-programmed in it (see below). You can switch the digital number to select and set the tension force and sealing time based on different strap type and strap specifications. 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 of User Manual) 10 Switchable Digital Numbers  Malfunction  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.  Sealing Ready Dot 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 .
Low Battery Power LED 	When battery power gets too low to work, battery LED flashes in red with "beep…beep" alarm continuously and charging process is required. Low Battery Power 

2.5 Inspect Count of Use

Follow the steps to check on count of use:
STEP 1: Make sure the power is off by removing the battery and put it back into tool again (Re-set).
STEP 2: Press both keys of “Tension Setting” and “Sealing Time Setting” together at the same time.
STEP 3: Keep pressing both keys above without release. Then press the Tension Button once and all LED lamps on the control panel board shall be lighted up and you will see digital LED display the count of use by running numbers.

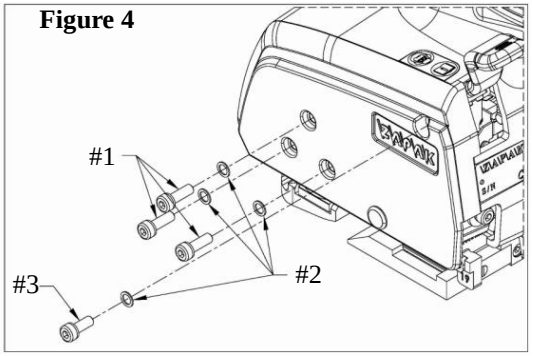


3.1 Side Cover

DISASSEMBLE STEPS：

Take off 3pcs each of #1 screw (M4×0.7×12mm) , #2 washer (M4), 1pc #3 stainless steel screw (M4×0.7×10mm) and #2 lock washer (M4). The side cover can be removed as shown in Figure 4.

Figure 4



ASSEMBLE NOTICE

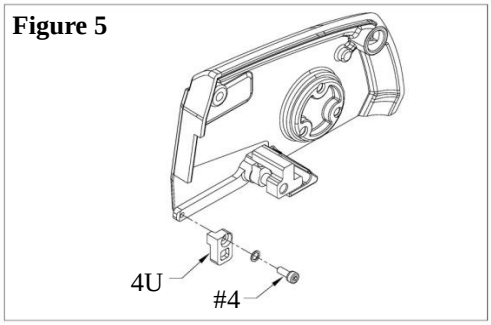
If #3 stainless steel screw is mistakenly disassembled or screwed back, it causes damage on tool and invalidate the warranty.

3.1.1 Rear Strap Guider

DISASSEMBLE STEPS：

Take off 1pc #4 screw (M3×0.5×6mm) and 4U Rear Strap Guider can be removed.

Figure 5



ASSEMBLE NOTICE

- ∗ Change rear strap guider when different strap width is applied. Please refer to 4.7 of User Manual.
- ∗ While screwing back #4 screw, **apply a little “Loctite”** on screw end.

3.1.2 Side Cover Assembly & Rear Guider Link Pole/Spring

DISASSEMBLE STEPS：

In Figure 6 (Old Version):
Take off 2pcs #13 screw (M3x0.5x7mm) & 4T Side Cover Link Axis Holder, loosen #5 set screw (M3x0.5x4mm), take off 4V Rear Guider Link Pole Holder, 4Z Side Cover Link Pole Axis, then 2D Side Cover Assembly can be removed. After taking off 4X Rear Guider Link Pole, 4W Rear Guider Link Pole Spring can be removed as shown in Figure 6.

In Figure 6 (New Version):
Take off 2pcs #13 screw (M3x0.5x7mm) & 4T Side Cover Link Axis Holder, take off #22 E Ring, take off 4Z-R Side Cover Link Pole Axis, then 2D Side Cover Assembly can be removed. After taking off 4X Rear Guider Link Pole, 4W Rear Guider Link Pole Spring can be removed as shown in Figure 6.

Figure 6 (Old Version)

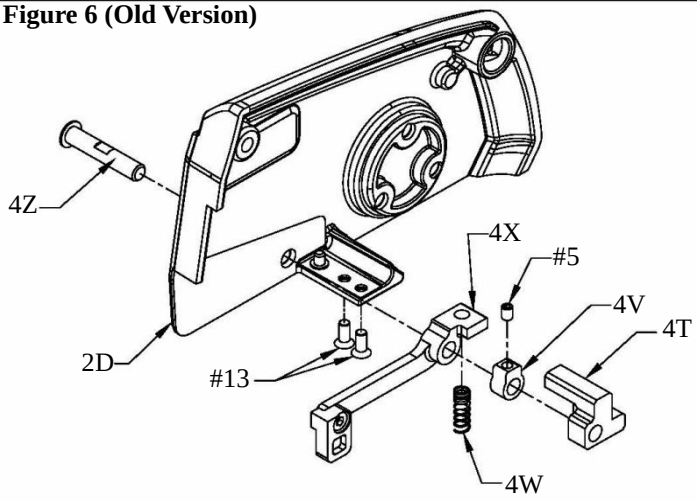
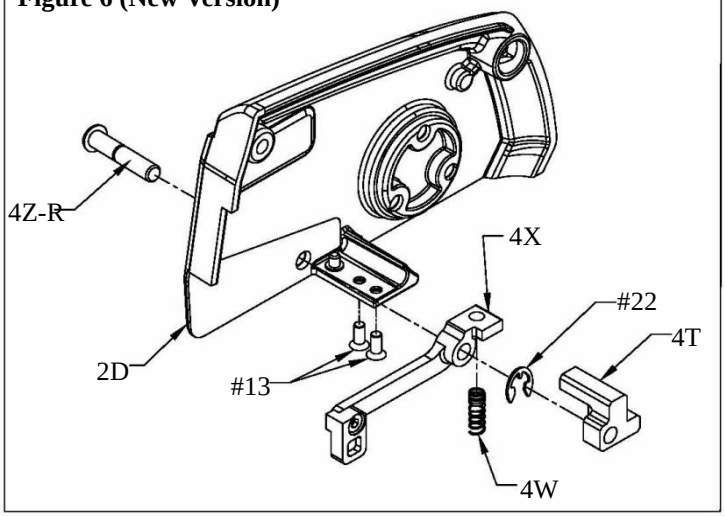


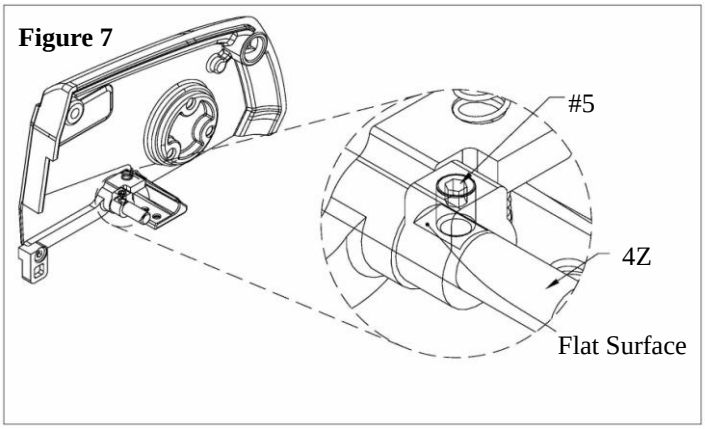
Figure 6 (New Version)



ASSEMBLE NOTICE

- ∗ Lubricate 4Z/4Z-R with lubrication GL261.
- ∗ (Old Version) Screw on the #5 set screw on flat surface of 4Z as shown in Figure 7.
- ∗ Slightly cover hole of 4X with finger, screw 4W into 4X with dense coils upwards as Figure 6 shown. Stop screwing further once 4W spring touches the finger. 4W spring should not protrude 4X's hole surface or much below the surface.
- ∗ (Old Version) Press down 4X's end to ensure it bounces back naturally, or re-adjust assembly tightness of 4V, 4Z, and #5.

Figure 7

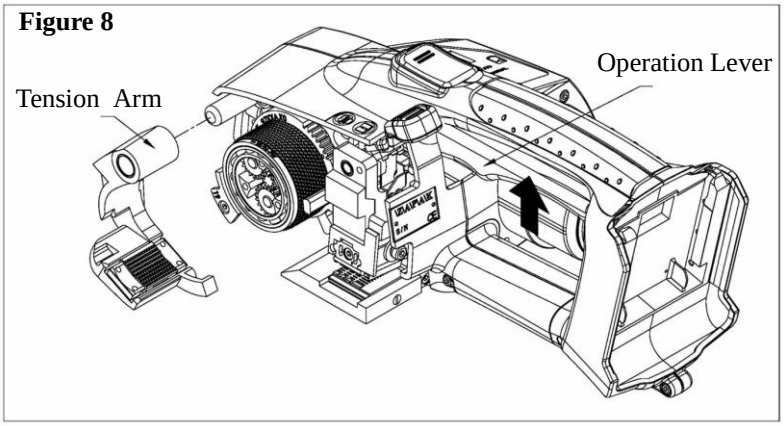


3.2 Tension Arm

DISASSEMBLE STEP：

Follow and complete step3.1, lift up the Operation Lever to open the Tension Arm, Tension Arm can be removed as shown in Figure 8.

Figure 8

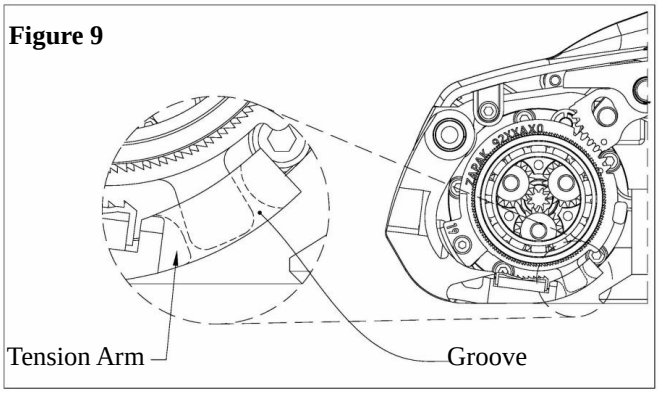


ASSEMBLE NOTICE

∗ Match and place the concave groove of Tension Arm into main frame mechanism as shown in Figure 9.

∗ The related shaft or axis should be lubricated with lubrication GL261 as shown in Figure 1.

Figure 9



3.2.1 Strap Grippers Assembly & Tension Arm Assembly

DISASSEMBLE STEPS :

Remove 2pcs #6 Screw (M3×0.5×6mm) from outer side first, and loosen 2pcs #6 Screw (M3×0.5×6mm) from inner side, then 4J Strap Grippers Assembly, 4J-CN Strap Grippers Connecting Plate, 4P Strap Gripper Protection, and 4B Tension Arm Assembly can be removed as shown in Figure 10.

NOTICE：Pay attention to 4I Shifting Plate Roller which may fall or come off during disassembly process.

Figure 10

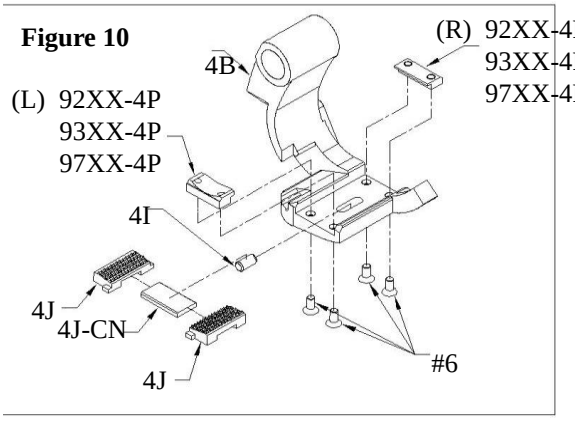
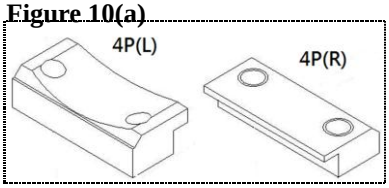


Figure 10(a)



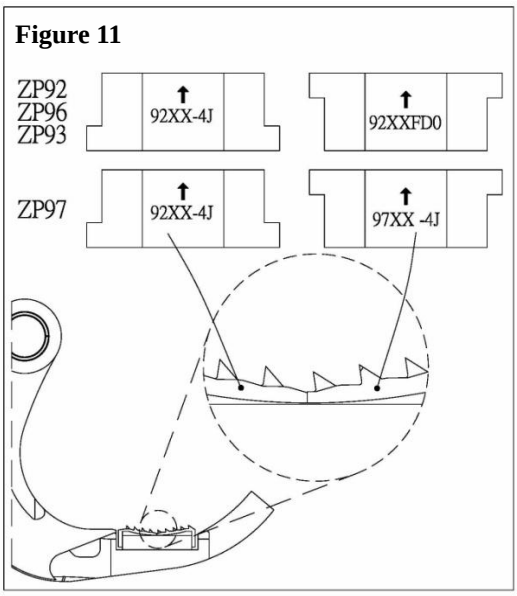
ASSEMBLE NOTICE

∗ Take note of installation of 4P(L) “Left” protector & 4P(R) ”Right” protector. They are in different shape and design, should be replaced together and placed correctly as Figure 10(a) shown.

∗ **When installing the 4P(R) “Right protector”, please make sure to use the correct 4P(R) on applicable tool models; 93XX-4P (engraved 3.85) applied for ZP93, 97XX-4P for ZP97 (engraved 4.00).**

∗ Note the assembly direction of teeth of 4J, the direction of teeth should face forward. Place the front piece (with "↑ 92XX-4J" bottom laser words) and the rear piece (with "↑ 92XXFD0" or "↑ 97XX-4J" bottom laser words) as shown in Figure 11.

Figure 11



3.3 Front Strap Guider

DISASSEMBLE STEPS：

Follow and complete disassembly step 3.2, take off the #4 screw (M3×0.5×6mm) then 4S Front Strap Guider can be removed and replaced as shown in Figure 12.

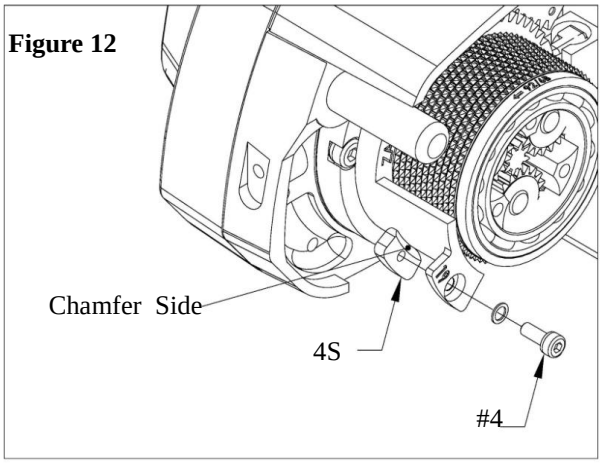
ASSEMBLE NOTICE

∗ The chamfered side of 4S should face toward the flat screw #4.

∗ Different strap width requires different Front Strap Guider, please refer to user manual 4.7 for replacement instructions when necessary.

∗ While screwing back #4 screw, **apply a little “Loctite”** on screw end.

Figure 12



3.4 Bottom Sealing Grippers Assembly

DISASSEMBLE STEPS：

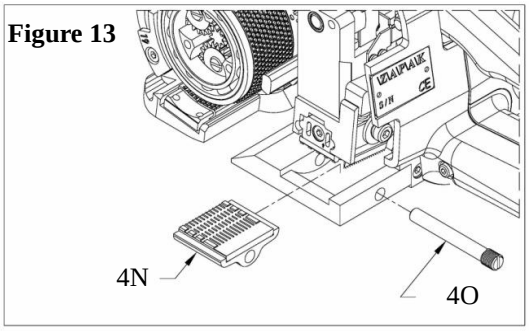
Follow and complete disassemble step 3.1, remove the cutter first (refer to disassemble step 3.5), and take off 4O bottom sealing grippers axis, then 4N bottom sealing grippers assembly can be removed as shown in Figure 13.

ASSEMBLE NOTICE

∗ The LOCK-TITE glue is applied to the threads of 4O. In case the glue peels off, it must be re-applied. The surface of 4O Axis should be lubricated with lubrication GL261. After 4O is screwed into the end, reverse 2 threads to enable 4N to swing smoothly.

∗ Place 4N with smooth side to face backwards as shown in Figure 13.

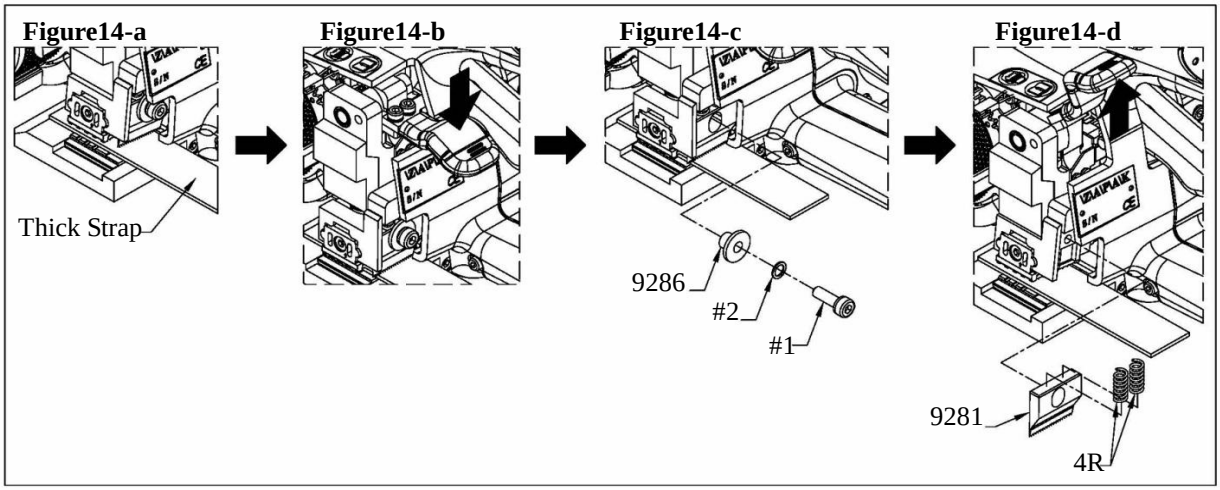
Figure 13



3.5 Cutter、Cutter Spring

DISASSEMBLE STEPS：

Follow and complete step 3.1, place thick strap (0.75mm or above) under the cutter (Figure 14-a), and then press down sealing lever (Figure 14-b), take off #1 screw (M4×0.7×12mm), #2 lock washer (M4), and 9286 cutter screw cover (Figure 14-c), lift up sealing lever, then 9281 cutter and 4R cutter spring set (Figure 14-d) can be removed.



ASSEMBLE NOTICE

＊ 4R should be lubricated with lubrication GL261.

ASSEMBLE STEPS

＊ Place the thick strap (0.75mm or above) between sealing head and bottom sealing gripper (Figure 14-a), place two 4R into the hole, and place 9281 into position, press down sealing lever, put back 9286, tighten screw #1 and #2, then lift up the sealing lever.

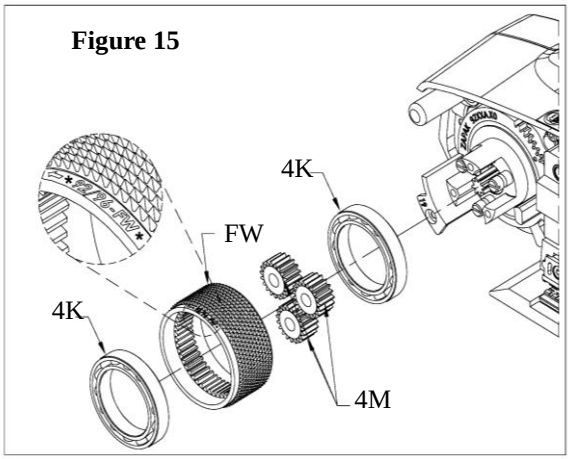
3.6 Feeder Wheel、Tension 19T Epicyclic Gear Set

DISASSEMBLE STEPS：

Follow and complete step3.1, feeder wheel can be replaced. As 4K bearings slide and move with feeder wheel, pay close attention to avoiding collision between bearings as shown in Figure 15, after taking off 4K and Feeder Wheel, the 4M tension 19T Epicyclic gear set can be removed .

NOTICE：Avoid collision damage on the teeth tips when taking out the feeder wheel.

Figure 15



ASSEMBLE NOTICE

＊ Note assembly direction of Feeder Wheel, the laser engraved side with "← *92/96-FW*" should be located with arrow to face forward as shown in Figure 15.

＊ Lubricate teeth of 4M and inner circle with GL261.

3.7 Tension Arm Link、Tension Arm Link Spring

DISASSEMBLE STEPS：

Follow and complete step 3.6, take off 3H-1 tension arm link screw at the bottom of tool, 3H-R tension arm link spring can be removed. After taking off 3G-R spring bolt, the 4L tension arm link can be removed as shown in Figure 16. To replace 3G-R, 3H-R, 3H-1, simply remove them from the bottom of the tool directly.

NOTICE：When the free length of 3H-R is less than 30mm, it needs to be replaced with new part.

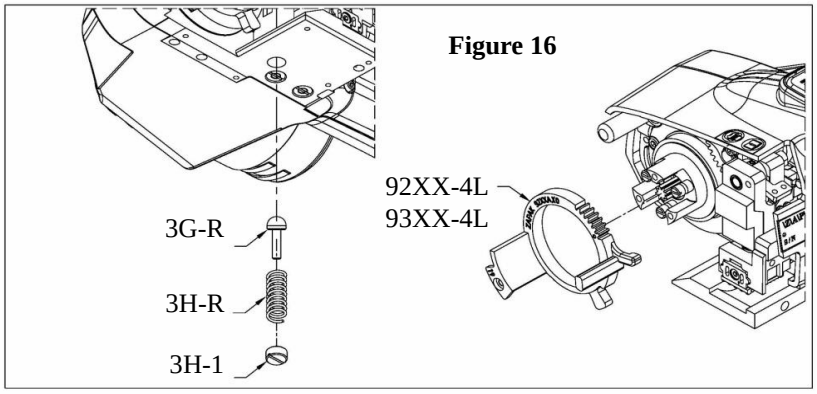


Figure 16

ASSEMBLE NOTICE

- ∗ Lubricate 3G-R and 3H-R with lubrication GL261.
- ∗ To install 4L, the concave point must be aligned with the corresponding point of 4D Operation Lever Link each other (the first convex tooth of upper part 4D should be wedged into the first concave area of 4L) as shown in Figure 17.

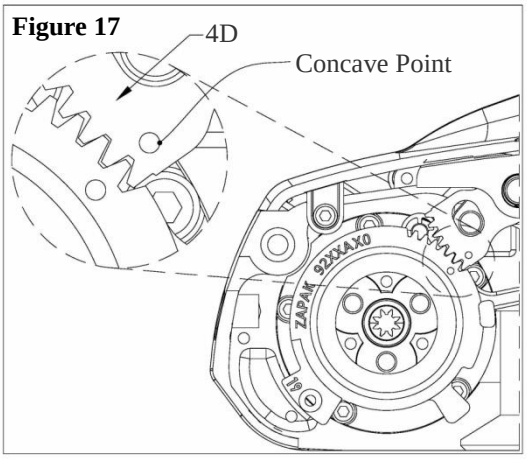


Figure 17

NOTE 1：Please make sure to apply a small amount of Loctite before assembling 3H-1.

NOTE 2：**Different part no. of tension arm link:**

ZP92/96: Part no. 92XX-4L

ZP93/97: Part no. 93XX-4L

3.8 Sealing Lever

DISASSEMBLE STEPS：

Follow and complete step 3.1, press down sealing lever to be "ON" position (refer to user manual step 5.4), take off 2pcs #7 screw (M3×0.5× 8mm) and #8 lock washer (M3) and 2E sealing lever can be removed as shown in Figure 18.

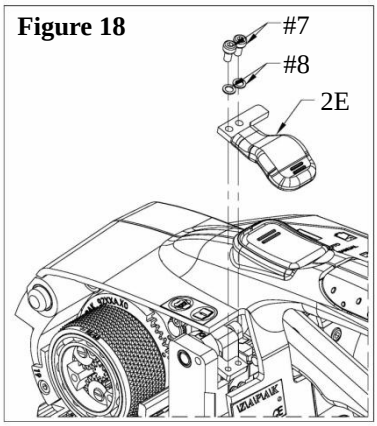


Figure 18

ASSEMBLE NOTICE

While screwing back 2pcs #7 screw, apply a little "Loctite" on screw end.

3.9 Left Housing

DISASSEMBLE STEPS：

Follow and complete step 3.8, press down sealing lever to be "ON" position (refer to user manual 5.4). Take off 2pcs #9 screw on the left side (M4×0.7×8mm) and #2 lock washer (M4), 1pc #10 screw (M3×0.5×8mm) and #8 lock washer (M3), 2pcs #11 screw (M3×0.5×20mm) and #8 lock washer (M3), and

2pcs #12 screw on the right side (M3×0.5×14mm) and #8 lock washer (M3), 1pc #14 screw (M4×0.7×22mm) and #2 lock washer (M4), while removing 2pcs #12, take note that 2pcs #15 Nuts (M3×0.5mm) will come off at the same time. After taking off all above screw, 2A left housing can be removed as shown in Figure 19-a. [For ZP92/96, should take off 1pc #13 screw (M3×0.5×30mm) and #8 lock washer (M3) as shown on Figure 19]

NOTICE：After taking off 2A, sealing lever needs to be lifted up to its original position.

NOTICE：No need to take off any other screws other than those mentioned above if only disassembling the left housing.

Figure 19 (ZP92/96)

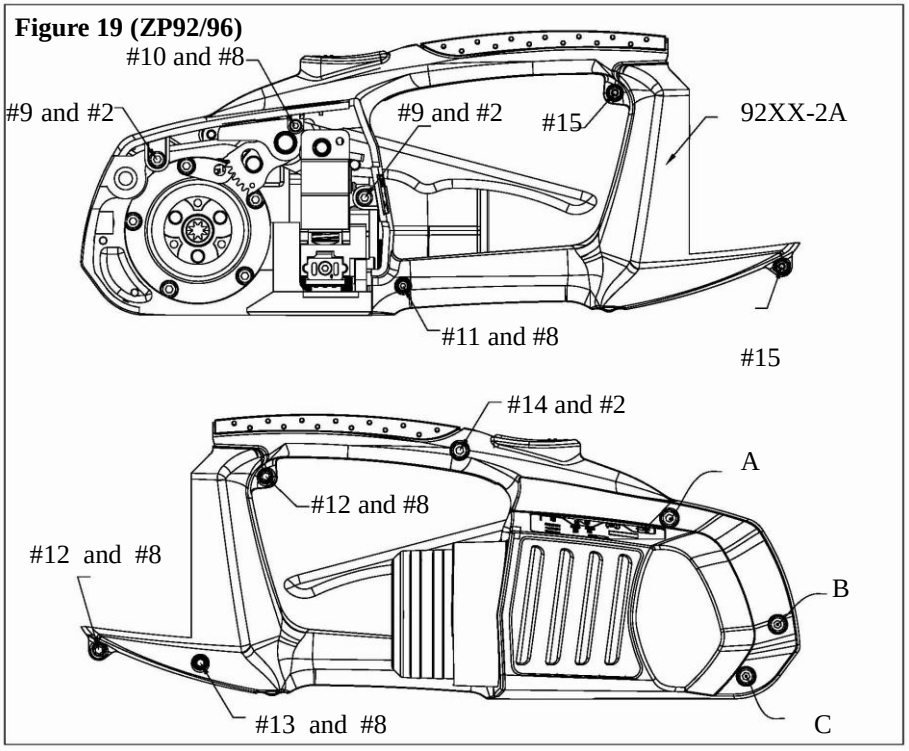
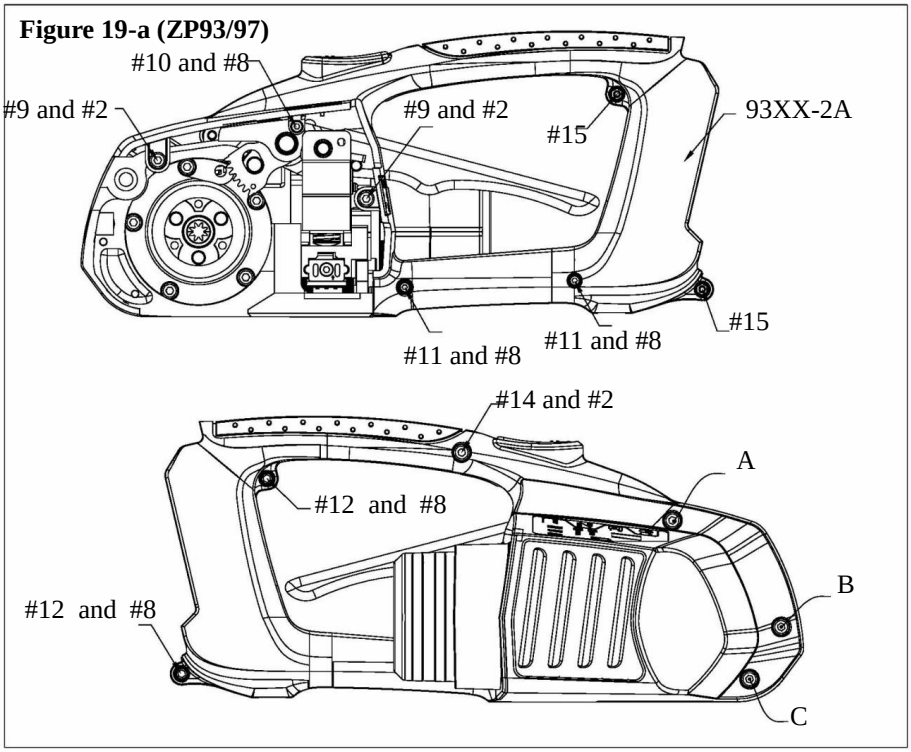


Figure 19-a (ZP93/97)



3.10 Power Output Protector Assembly、Motor Power Wires

DISASSEMBLE STEP：(ZP92/96)

∗ Follow and complete step 3.9, take off power output protector assembly (9280-OP), unplug the wires as shown in Figure 20 and 21, and remove 2G end roller and 2H end roller axis.

∗ While removing motor power wires, hold the connectors to remove instead of pulling the wires directly.

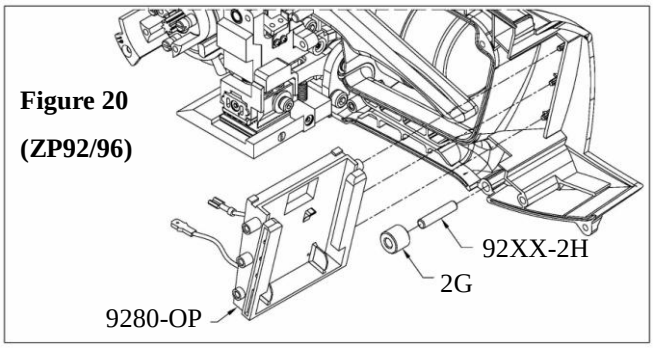


Figure 20

(ZP92/96)

DISASSEMBLE STEP：(ZP93/97)

∗ Follow and complete step 3.9, take off power output protector assembly (9380-OP), unplug the wires as shown in Figure 20-a and 21, and remove 2G end roller and 2H end roller axis.

∗ While removing motor power wires, hold the connectors to remove instead of pulling the wires directly.

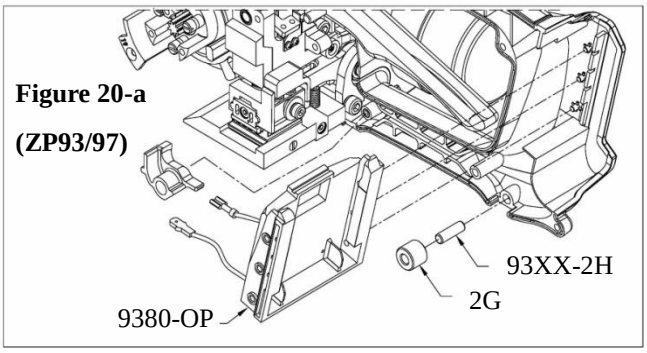


Figure 20-a

(ZP93/97)

NOTE：**Different part no. of power output protector assembly:**

ZP92/96: Part no. 9280-OP
ZP93/97: Part no. 9380-OP

ASSEMBLE NOTICE

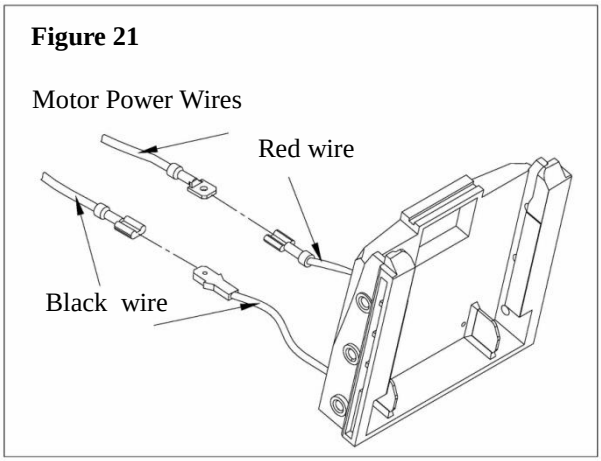
∗ Lubricate inner hole of 2G with lubrication GL261.

∗ Motor power wires must be connected before 9380-OP can be put back into the right housing.

∗ Organize all wires properly, avoid wires being cut or pinched by the main frame mechanism body or by the left and right housings.

∗ Positive wire (red) and negative wire (black) of motor. Power wires must be connected correctly and firmly with the red/ black wires connectors of 9380-OP and their joints should be covered by insulation sleeves. If any insulation sleeve has been aged or broken, be sure to replace it and wrap it with industrial grade electrical insulation tape to ensure 100% isolation.

Figure 21

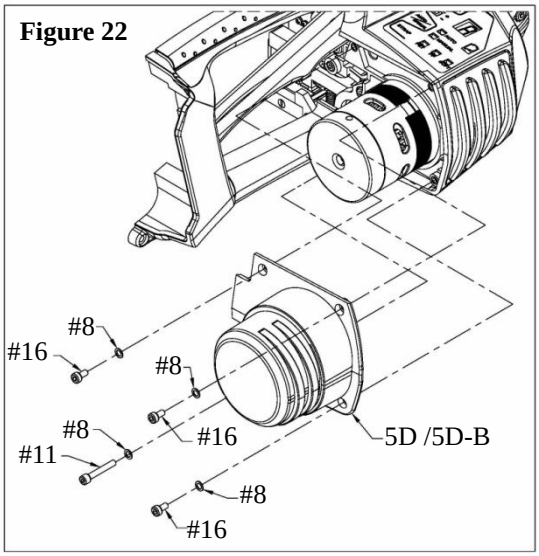


3.11 Motor Housing

DISASSEMBLE STEPS：

∗ Follow and complete step 3.10, Take off 1pc #11 screw (M3×0.5×20mm) and #8 lock washer (M3), 3pcs #16 screw (M3×0.5×10mm) and # 8 lock washer (M3), then 5D/5D-B Motor Housing can be removed as shown in Figure 22.

Figure 22



NOTE: 5D applied for A version tool only, 5D-B with longer housing applied for B version tool (fit A version also).

ASSEMBLE NOTICE

∗ The #11 screw is longer, take note of its screw-on position

∗ After connecting motor power wires with 9280-OP, place connectors at the bottom of right housing as shown in Figure 23-a, install 2L Motor Power Wire Holder on screw hole pole, let motor power wires go through upper groove of 2L (refer to Figure 23-b) and organize the wires along the right housing, then insert the sealer to fix the power wires, some extra wires can be collected at the back of motor before motor housing can be assembled.

Figure 23-a

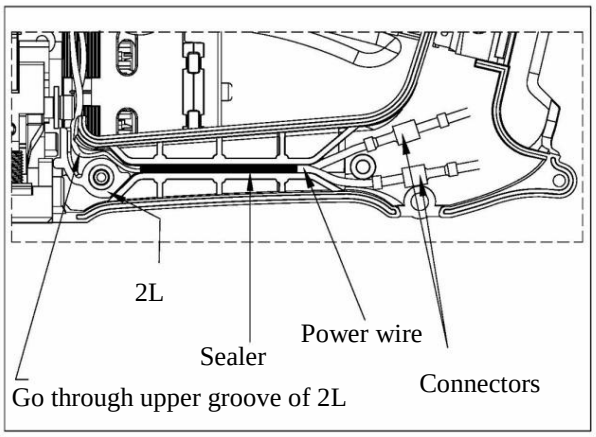
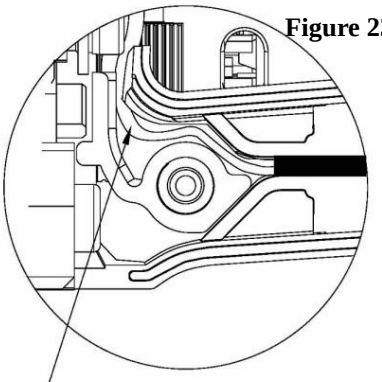


Figure 23-b



Power wires should go through upper groove of 2L

3.12 Right Housing

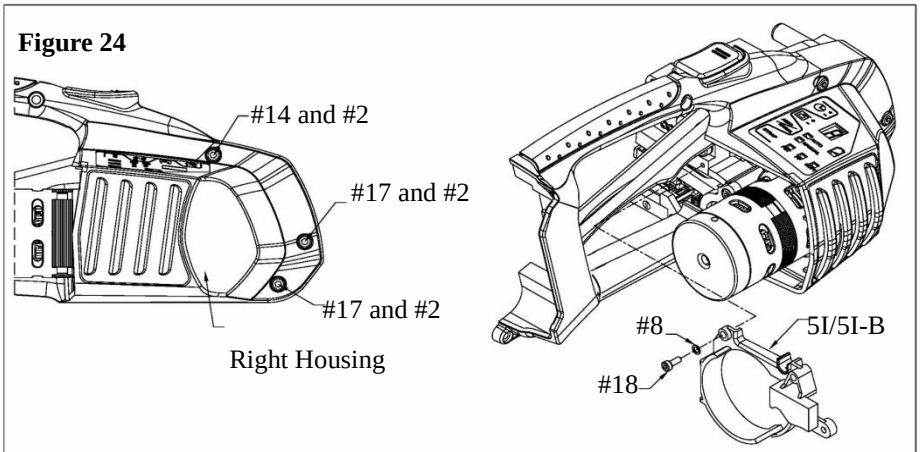
DISASSEMBLE STEPS：

Follow and complete step 3.11, loosen 1 pc #14 screw (M4×0.7×22mm) at the top of right housing and #2 lock washer (M4), 2pcs #17 screw (M4×0.7×30mm) and #2 lock washer, then take off 1 pc #18 screw (M3×6mm) and #8 lock washer (M3), motor housing rack (5I/5I-B) can be removed, and then all screws of right housing can be taken off as shown in Figure 24.

NOTE 1：#14 screw is shorter and it should be screwed at top of right housing as shown below.

NOTE 2：”5I” is applied for ZP92/96 A version, “5I-B” with narrower holding ring is applied for ZP92/96 B version & ZP93/97.

Figure 24



Take off the wires holder (2B-WH) from right housing (as shown in Figure 25-a), then unplug all the connectors attached on all micro switches and take off 2K Coiled Wire Tie (Figure 25-b).

Figure 25-a

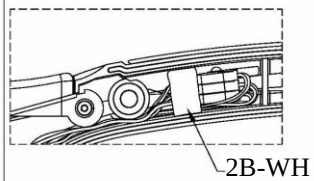
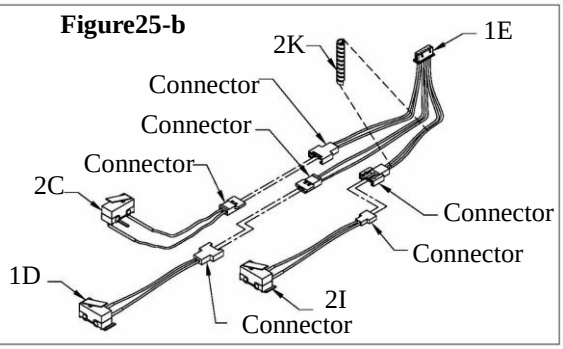


Figure25-b



NOTE：While removing above micro switches, hold the connectors to remove instead of pulling the wires directly.

NOTE：Distinguish various switches by wire colors:
2I (Tension switch): Black/Brown
2C (Lift switch): Yellow/Green
1D (Sealing switch): Orange/Red

Turn the right housing clockwise by 45 ° angle to allow the main frame mechanism to come out and then unplug 1E ECU wires (6pins) and Motor signal wires (8pins) from ECU as shown in Figure 26-b/c.

Figure 26-b: New version ECU (direction of connector as horizontal)

Figure 26-a

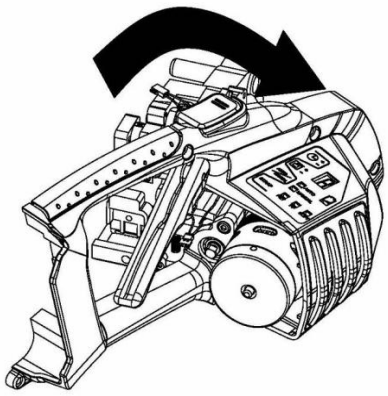


Figure 26-b

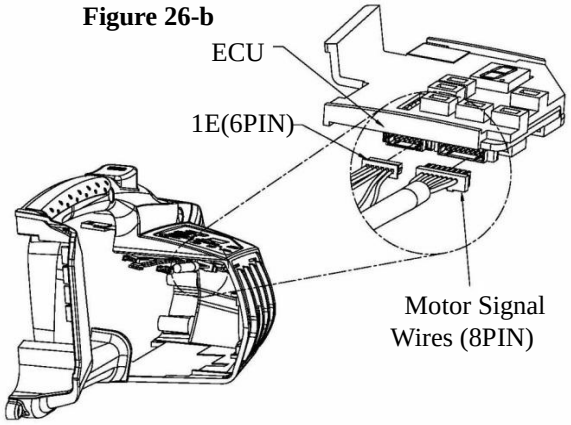
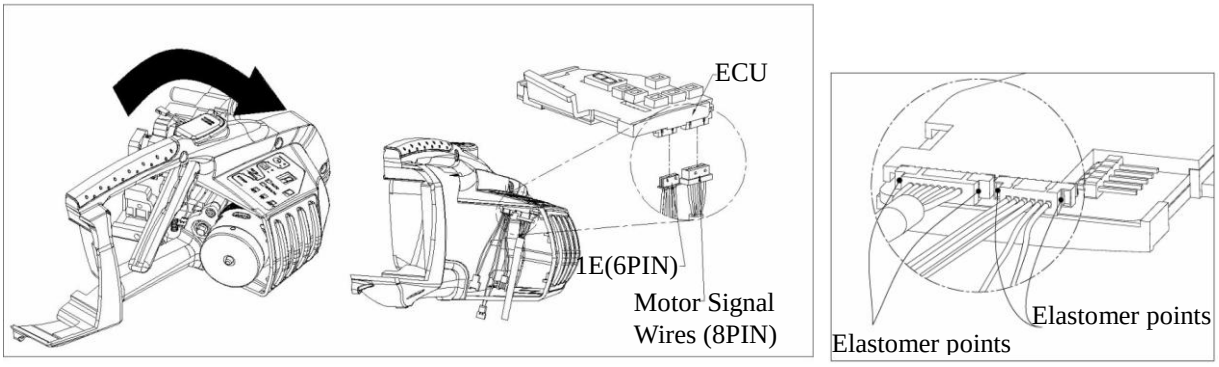


Figure 26-c: Old version ECU (direction of connector as Vertical)



NOTE: While disassembling/assembling Motor Signal wires and ECU wires, hold the connectors to remove instead of pulling the wires directly.

NOTE: **When re-assembling back the Motor Signal wires and ECU wires, apply a small amount of Elastomer Adhesive on both sides of the 8 pin & 6 pin connectors as indicated on above figure, to prevent connectors loosened from vibration of friction welding during operation.**

ASSEMBLY SEQUENCE

Turn the Main Frame Mechanism clockwise by 45° angle to enter into the right housing half way (Figure 26-a), plug on 1E ECU wires and motor signal wires into ECU (Figure 26-b), assemble the Main Frame Mechanism with the right housing completely, screw on (but do not tightly lock them yet) 1pc each of #14 screw (M4x0.7x22mm) & #2 lock washer (M4) at top, put on Motor Housing Rack by screwing on #18 screw (M3x6mm) & #8 lock washer (M3), then screw on 2pcs #17 screw (M4x0.7x30mm) & #2 lock washer (M4), and then connect all connectors in accordance with colors (Figure 25-b); Using 2K Coiled Wire Tie to tie up all wires as per tying position (in dotted line) as shown in figure 25-b properly. Then the connectors should be arranged beneath the tension button and use 2B-WH Wires Holder (Figure 25-a) to hold them well. Insert 5I/5I-B Motor Housing Rack directly through motor, motor's power wires should cross over the U-shaped groove (Figure 27-a/b/c), and then organize the wires along the right housing, 5I/5I-B should be fit inside of latches of right housing (Figure 27-a/b/c). Lock the relevant screws tightly.

Figure 27-a for ZP92/96(A)(Old version)

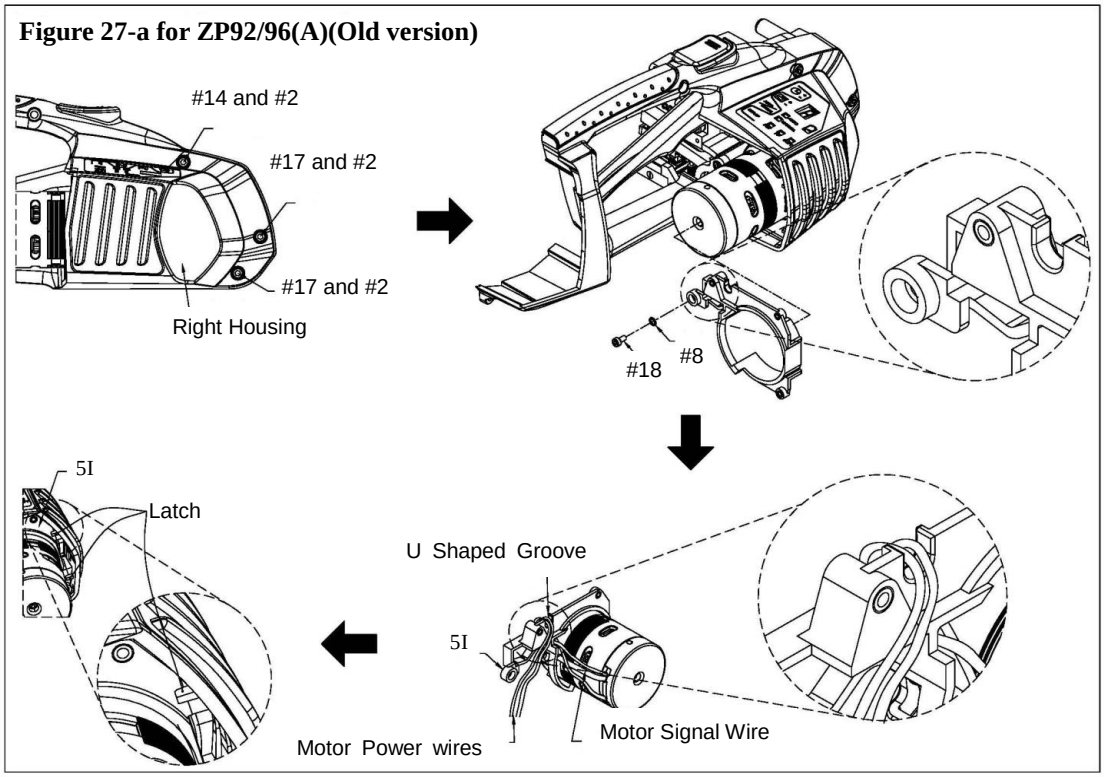


Figure 27-b for ZP92/96(A)(New version) and ZP92/96(B)

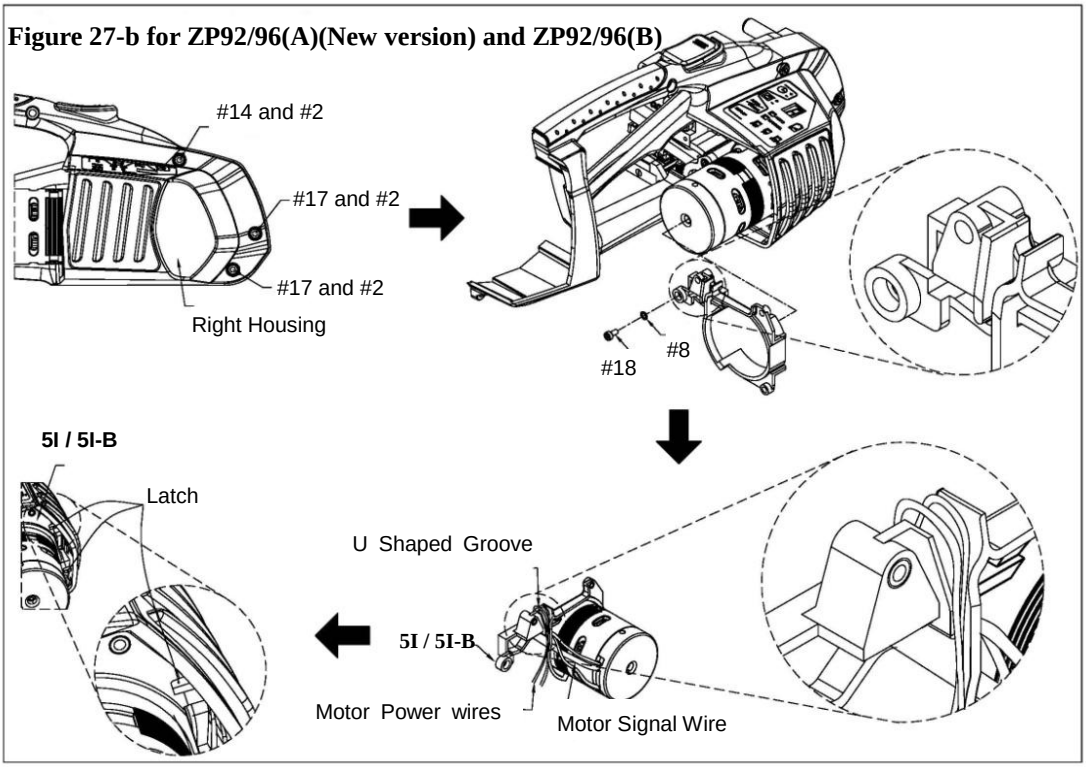
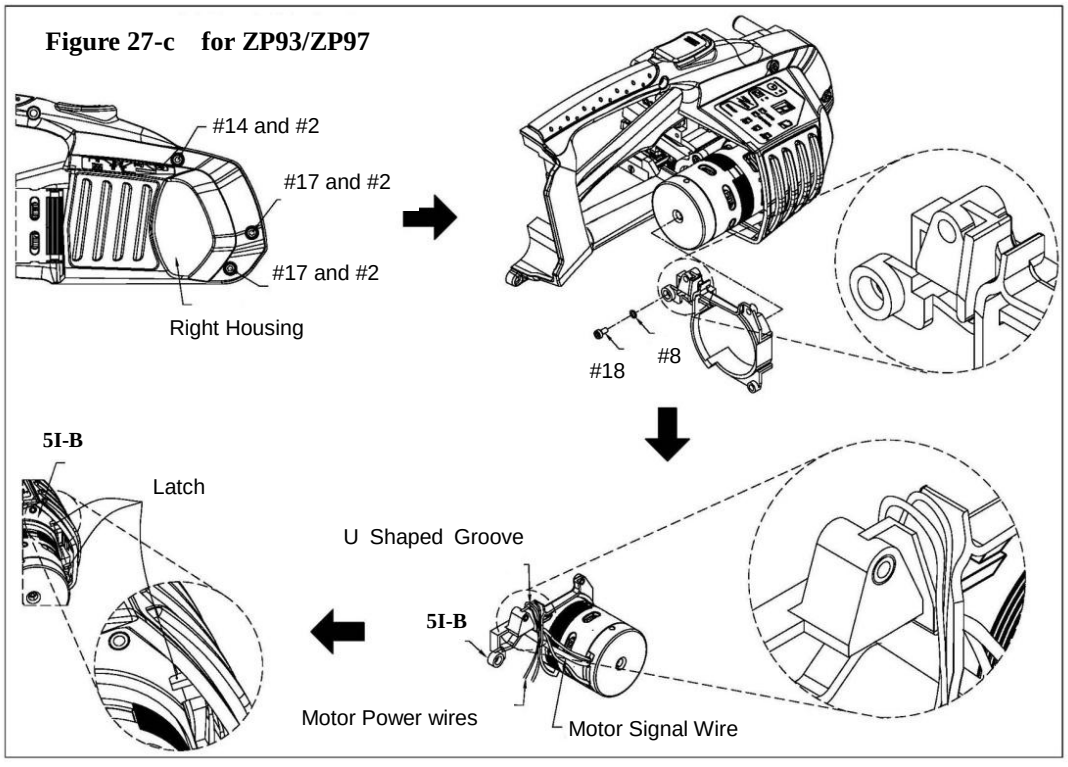


Figure 27-c for ZP93/ZP97



ASSEMBLE NOTICE

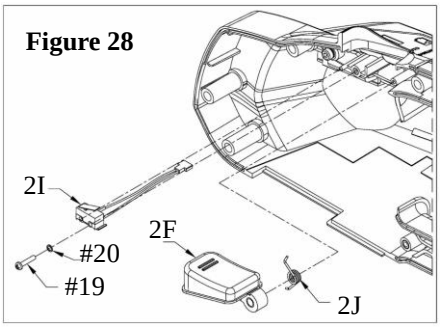
- ∗ Be sure to organize the wires properly to avoid being cut or pinched by housings or main frame mechanism, all connectors of micro-switches must be connected correctly and firmly by matching colors to avoid tool malfunction.
- ∗ After turning main frame mechanism into the right housing by 45° angle, have all connectors being connected first before you can assemble the right housing with main frame mechanism completely.
- ∗ Insert 5I/5I-B through the motor directly, then turn the motor power wires to go across the U-shaped groove as shown in Figure 27-a/b/c, Make sure 5I/5I-B is fit inside the latches of right housing.

3.12.1 Tension Button Assembly

DISASSEMBLE STEPS：

Take off 1 pc #19 screw (M2×0.4×10mm) and #20 spring washer (M2), 2I Tension Switch can be taken off first and then 2F Tension Button Assembly and 2J Tension Button Spring can be removed as shown in Figure 28

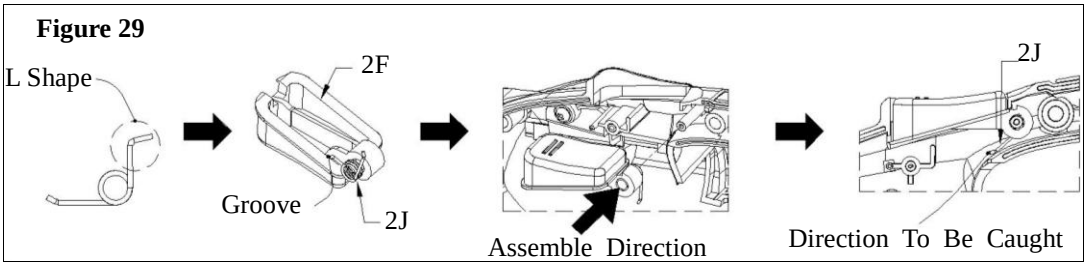
Figure 28



ASSEMBLE NOTICE

Firstly, the right angled end of 2J should be hooked up to the groove of 2F and then assemble into the right housing by pushing 2J forward to enable it to fit into the right housing as shown in Figure 29.

Figure 29



3.12.2 ECU、Right Housing Assembly

DISASSEMBLE STEPS：

Take off 1pc #18 screw (M3×0.5×6mm) and #8 lock washer (M3), and 1F ECU Holder, unplug the black inlet from ECU and then the ECU and Right Housing Assembly 2B can be removed as shown in Figure 30.

ASSEMBLE NOTICE

Put black inlet belt behind 1F ECU holder (as shown on Figure 30-a)

Do not bend the black inlet belt.

Figure 30

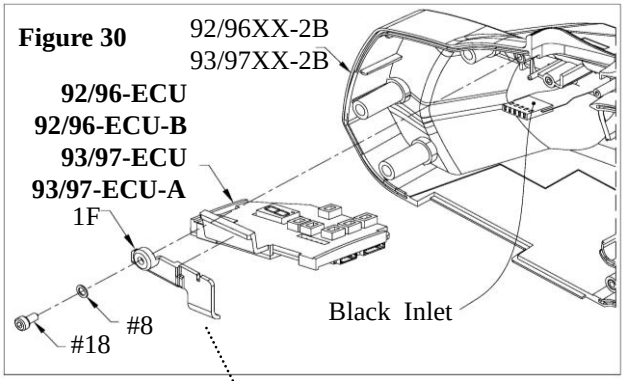
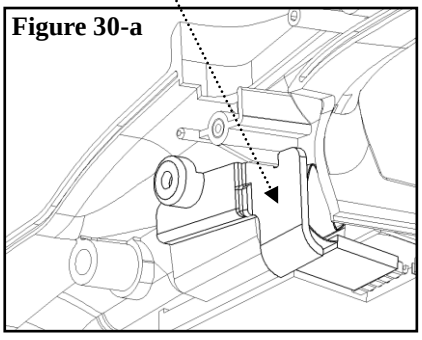


Figure 30-a



NOTE 1：Different Part no. of ECU:

ZP92/96(A): 92/96-ECU
ZP92/96(B): 92/96-ECU-B
ZP93/97: 93/97-ECU
ZP93/97(A): 93/97-ECU-A

NOTE 2：Different Part no. of Right housing:

ZP92/96: 92XX-2B / 96XX-2B
ZP93/97: 93XX-2B / 97XX-2B

REMARK

ECU has security seal affixed, once the seal is damaged or missing, the warranty is invalid. Distributors should keep and return faulty ECU upon Pantech's request. Without Pantech's written permission , faulty ECU cannot be disposed or discarded.

After all the above disassembly steps are completed, the following steps are major disassembly. Note the motor is magnetic, so the motor must be well-covered by a clean plastic bag after housings are opened in order to avoid any inhalations of foreign articles. Also clean up area around motor before your assembly and disassembly of motor. Fail to follow this instruction will cause motor to damage or malfunction and invalidate the warranty.

3.13 Rear Inner Guider

DISASSEMBLE STEPS：

Follow and complete all the steps above, #4 screw (M3×0.5×7mm) can be removed, then 3J Rear Inner Guider can be taken off as shown in Figure 31.

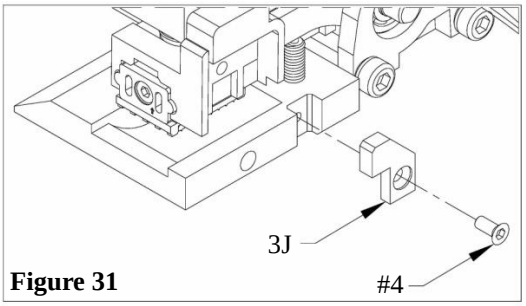


Figure 31

3.14 Operation Lever Assembly

DISASSEMBLE STEPS：

Follow and complete step 3.13, take off 1pc #21 C-Ring (STW-8) on the right, pull out 4F Operation Lever Axis from the other side, then 4C Strap Release Ratchet Link, 4E Operation Lever Assembly and 4D Operation Lever Link can be removed in order, you can replace 4G Operation Lever Steel Ball and 4H Operation Lever Spring after taking off 4C as shown in Figure 32.

ASSEMBLE NOTICE

* When removing 4F, be sure to press down 4C by hand first so that 4G steel ball won't be bounced back and cause danger.
* 4G、4F&4H should be lubricated with lubrication GL261.
* While assembling 4D , the concave point should face outward as shown in Figure 32.

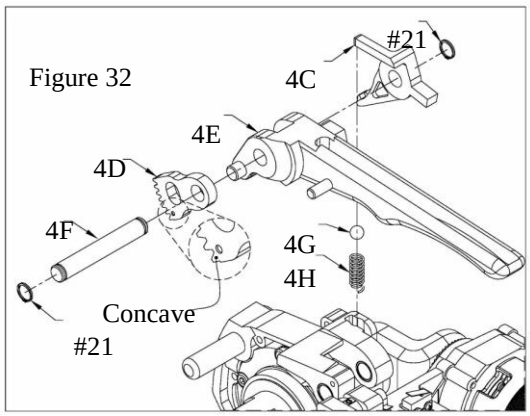


Figure 32

3.15 Strap Release Axis、Strap Release Ratchet Gear Set

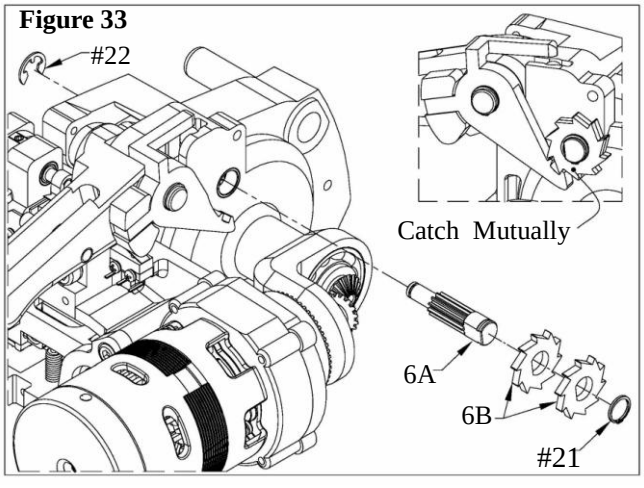
DISASSEMBLE STEPS：

Follow and complete step 3.14, take off #22 E-Ring (ETW-4) and #21 C-Ring (STW-8), pull out 6B Strap Release Ratchet Gear Set then 6A Strap Release Axis can be removed and replaced. If to replace 6B only, simply remove #21 as shown in Figure 33.

ASSEMBLE NOTICE

* Take note of teeth direction of 6B which should be counter-clockwise and must be hooked and caught with 4C as shown in Figure 33.
* Lubricate teeth of 6A with Lubrication GL261.

Figure 33

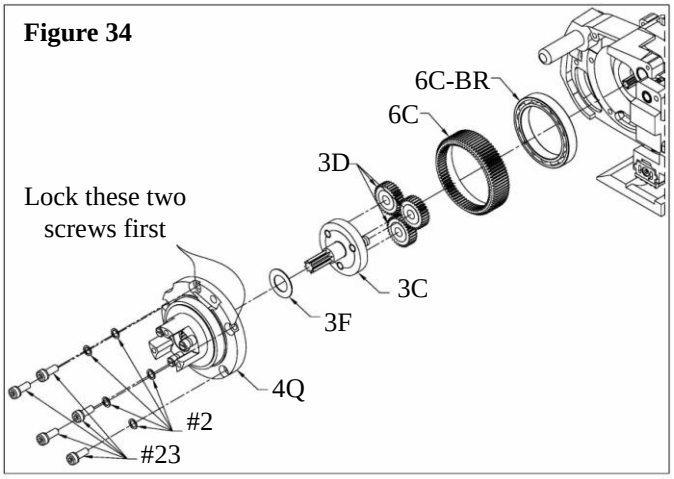


3.16 Tension Epicyclic Gears Axis Assembly、Tension Transmission Gear Assembly

DISASSEMBLE STEPS：

Follow and complete step 3.15, take off 5pcs #23 screw (M4x0.7x10mm) and #2 lock washer (M4), then 4Q Tension Transmission Assembly (19T), 3F Tension Washer, 3C Tension Epicyclic Gears Axis Assembly (31T), 3D Tension Epicyclic Gear Set (31T), 6C Tension Transmission Gear Assembly and 6C-BR Tension Transmission Gear Bearing can be removed as shown in Figure 34.

Figure 34



ASSEMBLE NOTICE

- ∗ 3D teeth and inner circle should be lubricated with Lubrication GL261.
- ∗ Beveled edge of 6C should face outward.
- ∗ After mounting on 4Q, check if 6A axis turns smoothly then lock the two screws (as indicated on Figure 34) first; Turn to check 6A axis again and make sure if it turns smoothly, then lock the rest of 3 screws.

3.17 Sealing Screw Bolt Supporter、Sealing Mechanism

DISASSEMBLE STEPS：

Follow and complete 3.13, use the flat screw driver not less than 1.0x5.5mm to take off 2pcs 3I Sealing Screw Bolt Supporters from the bottom, loosen 2pcs #25 screw (M5×0.8×45mm) and #24 lock washer (M5), punch out 3R Frame & Motor Holder Lock Pin with a 1.5 mm Allen wrench and rubber hammer, also remove 2pcs #25 screw (M5×0.8×45mm) and #24 lock washer (M5) and 1pc #26 screw (M5×0.8×30mm) and #24 lock washer (M5) (Figure 35-a), then lift up the Operation Lever and follow the direction of the arrow by 45 ° angle to take out the Sealing Mechanism and 3E Belt Wheel Washer (Figure 35-b).

ASSEMBLE NOTICE

- ∗ Be careful not to bump against 4N Bottom Sealing Grippers Assembly to cause damages when assembling back the sealing mechanism by 45° angle.
- ∗ Be sure to securely install 3R first, then (1) Loosely assemble 1pc #26 screw (M5x0.8x30mm) with 1pc #24 washer (M5) and 2pcs #25 screw (M5x0.8x45mm) with 2pcs #24 washer (M5). (2) Lift 3N Sealing Head Assembly in order to insert **93XX-SP Special Plate (enclosed with 1st tool shipment)**; make sure 93XX-SP special plate is covering the entire 4N and then press down 5H. (3) While 5H is pressed down, please tightly screw on 1pc #26 screw (M5x0.8x30mm) & 2pcs #25 screws (M5x0.8x45mm). (4) Remove SP special plate, then 3I can be screwed on finally as shown in Figure 35-c.

Figure 35-a

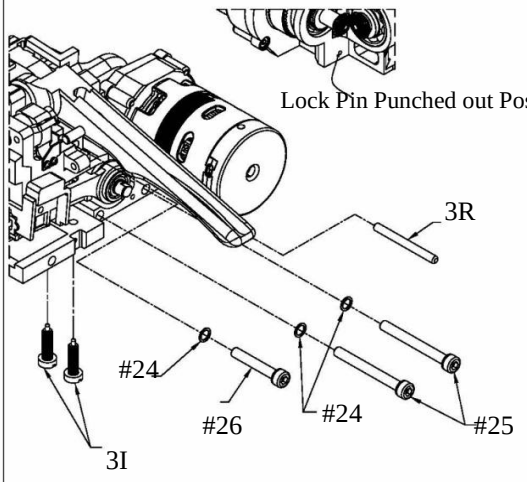


Figure 35-b

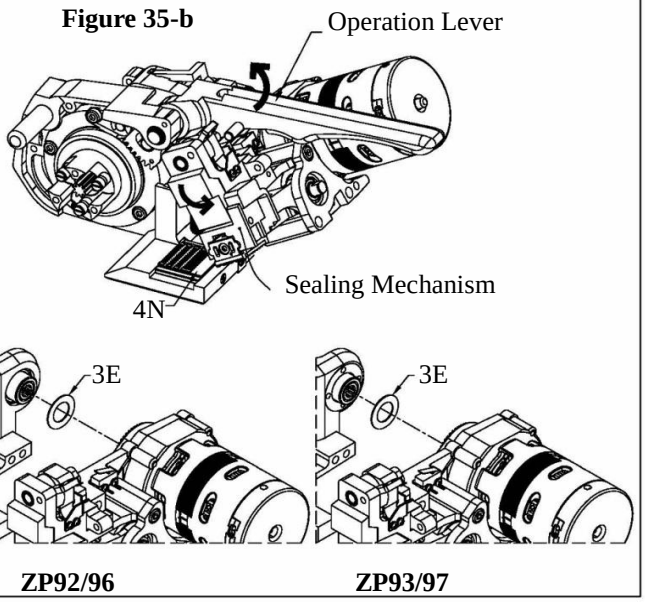
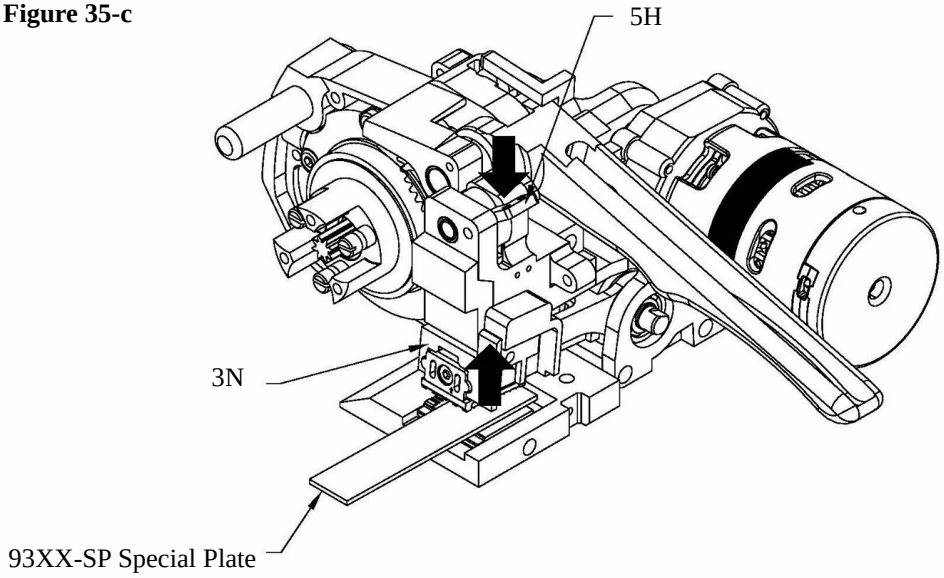


Figure 35-c

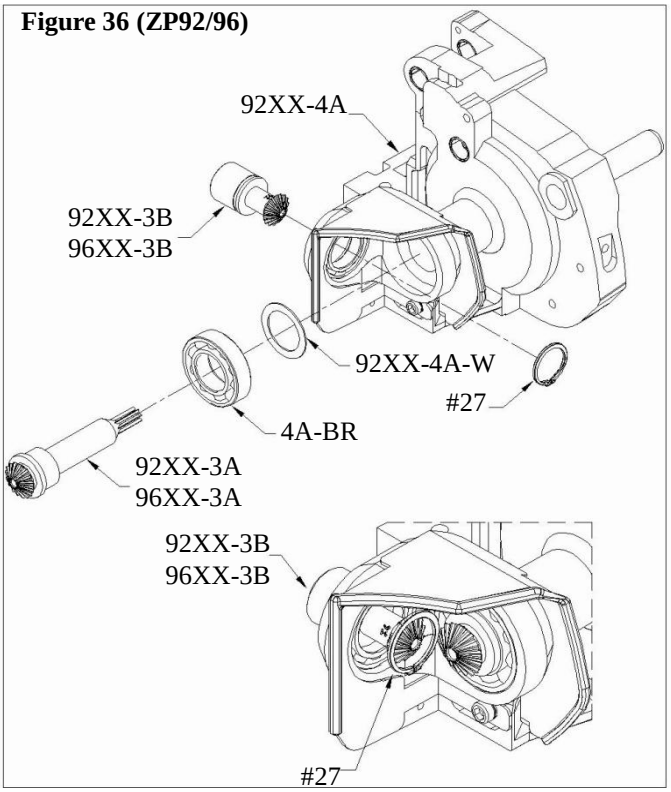


3.18 Bevel Gear、Main Frame Assembly

DIS ASSEMBLE STEPS：(ZP92/96)

Follow and complete all the steps above, open up #27 C-Ring (STW-15) to remove 92XX-3B or 96XX-3B Small Bevel Gear Assembly (15T), and take off #27 C-Ring (STW-15) then 92XX-3A Bevel Gear (17T) or 96XX-3A Bevel Gear (32T), 4A-W Big Bevel Gear Bearing Washer, 4A-BR Bearing and 92XX-4A Main Frame Mechanism Assembly can be removed as shown in Figure 36.

Figure 36 (ZP92/96)



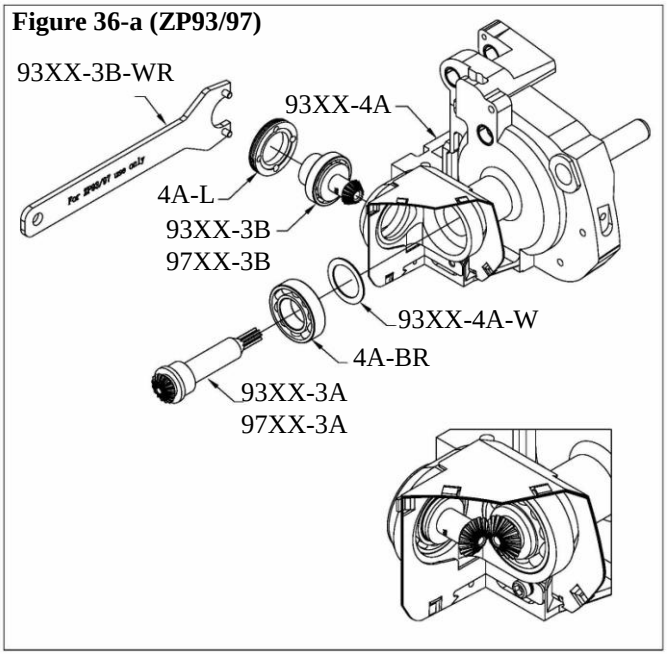
ASSEMBLE NOTICE

- ∗ To assemble 92XX-3B or 96XX-3B, go through the 4A half way, put on #27, then place 92XX-3B or 96XX-3B in position, clip on #27 firmly as shown in Figure 36.
- ∗ The teeth of all Bevel Gears 92XX-3A or 96XX-3A shall be applied with lubricant GL261, and the middle part applied with lubricant 168 as shown in Figure 1.
- ∗ **Bevel Gears need to be replaced in pairs regardless if only one of the Bevel Gears is worn or broken. The paired Bevel Gears as a combined set and are given Part Numbers "92XX-3AB" or "96XX-3AB."**
- ∗ Note the Bevel Gears used on ZP92/ZP96 have different teeth numbers and dimensions and can't be assembled by mistake, please refer to corresponding bevel gears as shown in the table below.

DISASSEMBLE STEPS：(ZP93/97)

Please use the Small Bevel Gear Wrench 93XX-3B-WR(enclosed with 1st tool shipment) to unscrew Small Bevel Gear Fastener 4A-L before removing 93XX-3B (15T) or 97XX-3B Small Bevel Gear Assembly (14T). Then remove 93XX-3A Bevel Gear (22T) or 97XX-3A Bevel Gear (35T), and then remove 4A-W Big Bevel Gear Bearing Washer and 4A-BR Bearing from Main Frame Mechanism Assembly 93XX-4A as shown in Figure 36-a.

Figure 36-a (ZP93/97)



ASSEMBLE NOTICE

- ∗ **Small Bevel Gear Fastener 4A-L is directional; the concaved surface side faces towards the Main Frame Mechanism 4A.**
- ∗ **Small Bevel Gear Fastener 4A-L must not be overly tightened to avoid damaging the Main Frame Mechanism 4A.**
- ∗ The teeth of all Bevel Gears 93XX-3A or 97XX-3A shall be applied with lubricant GL261, and the middle part applied with lubricant 168 as shown in Figure 1.
- ∗ **Bevel Gears need to be replaced in pairs regardless if only one of the Bevel Gears is worn or broken. The paired Bevel Gears as a combined set and are given Part Numbers "93XX-3AB" or "97XX-3AB."**

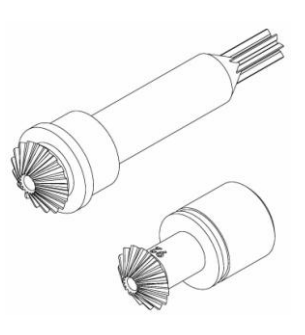
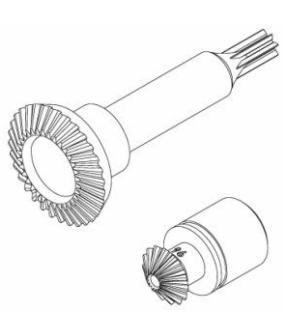
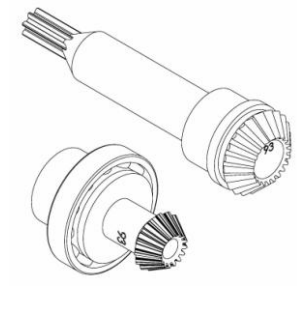
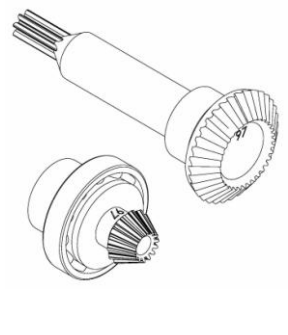
NOTE 1：

Different Part no. of main frame assembly:
ZP92/96: 92XX-4A
ZP93/97: 93XX-4A

NOTE2：

Different Part no. of Big Bevel Gear Bearing Washer:
ZP92/96: 92XX-4A-W
ZP93/97: 93XX-4A-W

∗ Note the Bevel Gears used on ZP93/ZP97 have different teeth numbers and dimensions and can‘t be assembled by mistake, please refer to corresponding bevel gears as shown in the table below.

ZP92	ZP96	ZP93	ZP97
			
92XX-3AB 17T/15T Bevel Gear Set	96XX-3AB 32T/15T Bevel Gear Set	93XX-3AB 22T/15T Bevel Gear Set	97XX-3AB 35T/14T Bevel Gear Set

Remarks:

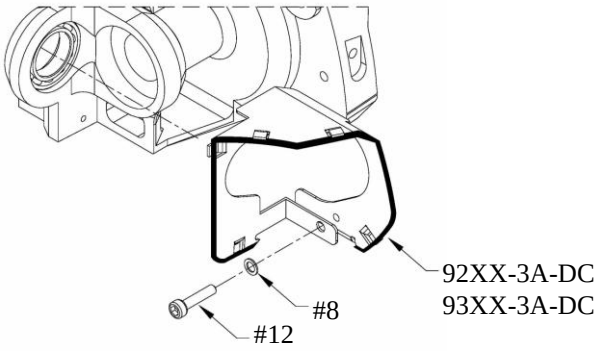
1) To smooth disassembly process of bevel gears, 3A-DC Bevel Gear Dust Cover can be taken off first as shown in Figure 36-b.
2) Take off #12 screw (M3x0.5x14mm) and #8 lock washer (M3), to remove 3A-DC.

NOTE：Different Part no. of Bevel Gear Dust Cover:
ZP92/96: 92XX-3A-DC
ZP93/97: 93XX-3A-DC

NOTE：Be sure to install 3A-DC dust cover, and replace once damage found on the plastic strip.

NOTE：Use Needle Nose Pliers when replace the plastic strip of 93XX-3A-DC.

Figure 36-b

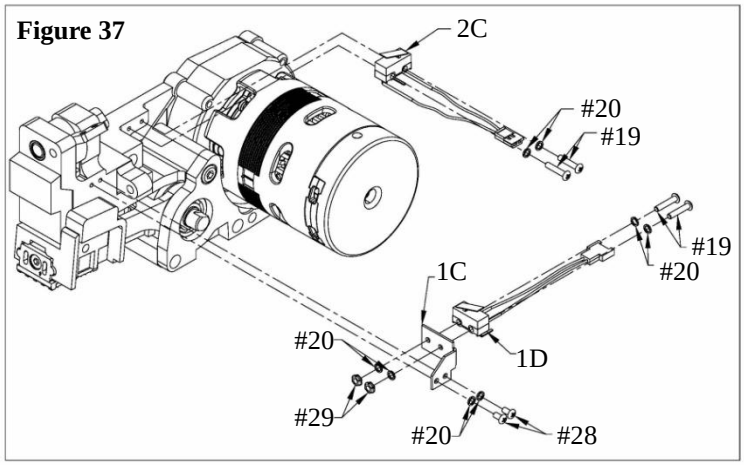


3.19 Sealing Switch、Lift Switch

DISASSEMBLE STEPS：

Follow and complete step 3.17, take off 2pcs # 19 screw (M2×0.4×10mm) and #20 lock washer (M2), then 2C Lift switch can be removed. Take off 2pcs #28 screw (M2×0.4×4mm) and #20 lock washer (M2), then remove 2pcs #19 screw (M2×0.4×10mm) and #20 lock washer (M2) and 2pcs #29 Nut (M2×0.4mm) and #20 lock washer (M2), 1D sealing Switch and 1C Sealing Switch Mounting rack can be removed as shown in Figure 37.

Figure 37



ASSEMBLE NOTICE

When assembling 1C, screw on 2pcs #28 screw but do not tightly lock them yet. Press 5H all the way down, Make sure that there is not any space between 1D and 5G as shown in figure 37-a before you can fully tighten the 2pcs #28 screw. In case there is any space between 1D & 5G (figure 37-b), use 2.5mm flat screwdriver to slightly push up (see screwdriver push-up position as indicated in figure 37-c) until there is no space in between and then you can lock 2pcs #28 screw tightly as shown in figure 37-c.

NOTE : If motor is jammed after re-assembling, please follow above tips to re-adjust the position of 1D sealing switch.

NOTE：If fail to start sealing movement, try to push down the sealing lever a bit slower.

Figure 37-a

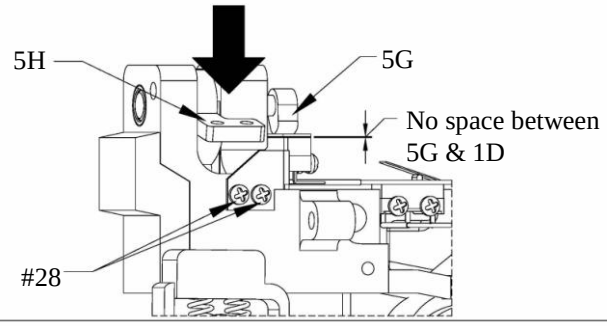


Figure 37-b

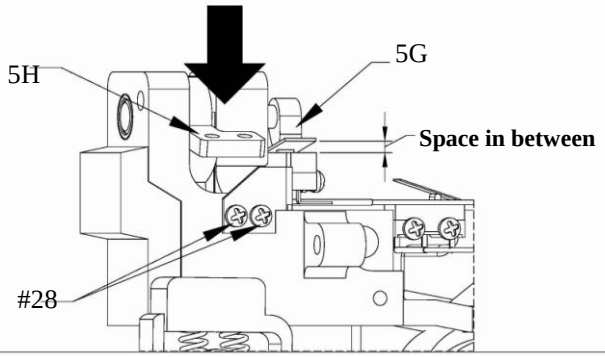
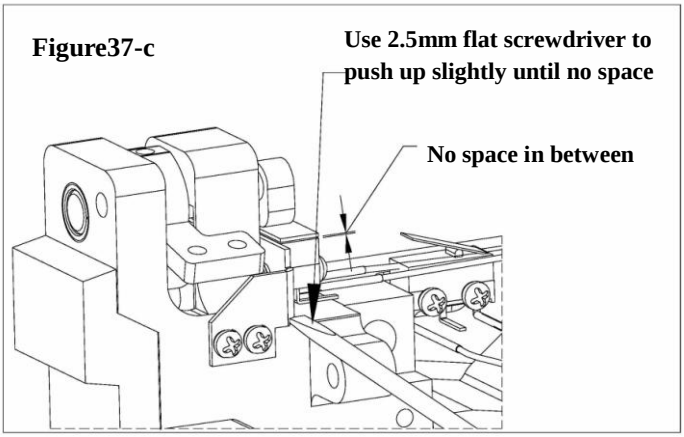


Figure37-c



3.20 Sealing Lever Cam

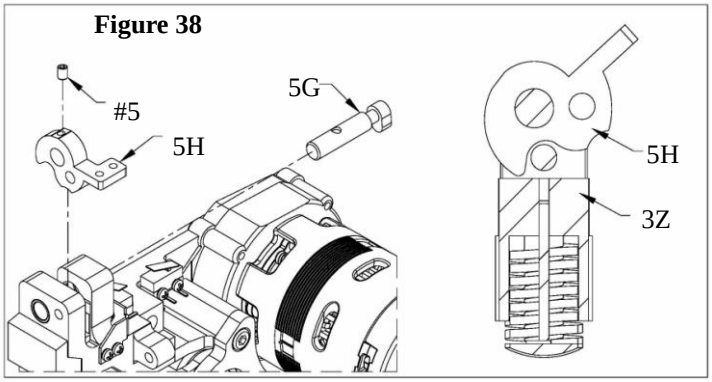
DISASSEMBLE STEPS：

Follow and complete step 3.17, take off 1pc #5 set screw (M3×0.5×4mm), pull out 5G Sealing Switch Cam Axis Assembly, then 5H Sealing Lever Cam can be removed as shown in Figure 38.

ASSEMBLE NOTICE

- ∗ When assembling 5H, watch the relevant position of 3Z Sealing Springs Holder Assembly as per Figure 38.
- ∗ Screw hole of 5G needs to face up for inserting into 5H. After screw on #5 set screw tightly, make sure you can still see 3~4 threads from #5's hole to ensure correct screwing position.
- ∗ Lubricate 5G Axis with GL261 (Figure 1)

Figure 38



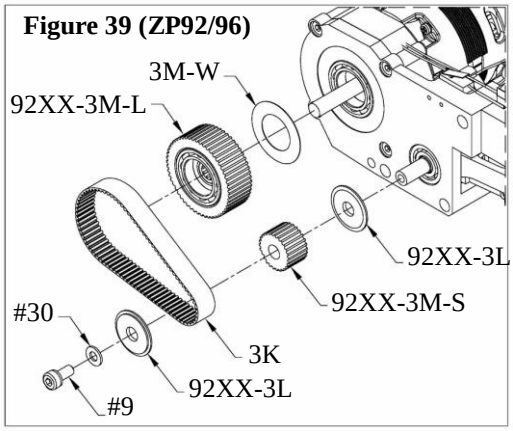
3.21 Sealing Belt Wheel Assembly、Sealing Belt Wheel

DISASSEMBLE STEPS :

ZP92/96 : 54T/26T Sealing Belt Wheel Assembly

Follow and complete step 3.17, take off 1pc #9 Socket Screw (M4×0.7×8mm) and #30 flat washer (M4), then 3L Belt Holder and 3M-S Sealing Belt Wheel (26T) can be removed. And then remove 3K Sealing Transmission Belt, 3M-L Sealing Belt Wheel Assembly (54T) & 3M-W Belt Wheel Washer as shown in Figure 39.

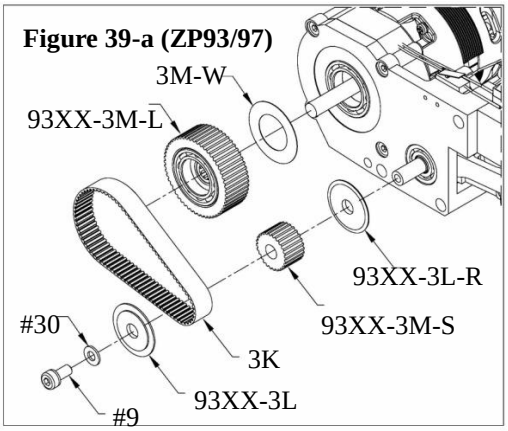
Figure 39 (ZP92/96)



ZP93/97 : 50T/31T Sealing Belt Wheel Assembly

Follow and complete step 3.17, take off 1pc #9 Socket Screw (M4×0.7×8mm) and #30 flat washer (M4), then 3L Belt Holder and 3M-S Sealing Belt Wheel (31T) can be removed. And then remove 3K Sealing Transmission Belt, 3M-L Sealing Belt Wheel Assembly (50T) & 3M-W Belt Wheel Washer as shown in Figure 39-a.

Figure 39-a (ZP93/97)



ASSEMBLE NOTICE

- ∗ Place 3M-S into 3K first, then rotate 3M-L in clockwise to enable 3K to move accordingly and locate in place as shown in Figure 40.
- ∗ Be sure to screw on #9 correctly. Before screwing back #9 screw, brush "Loctite" on screw threads. To tighten #9 screw, use 5.5mm open wrench and fix on the other end and then lock the screw tightly. After screwing, make sure that 3M-S fit each other with 3L and both parts do not move back & forth.
- ∗ Chamfer sides of 3L/3L-R should face towards 3M-S for assembly as shown in Figure 40-a.

Figure 40

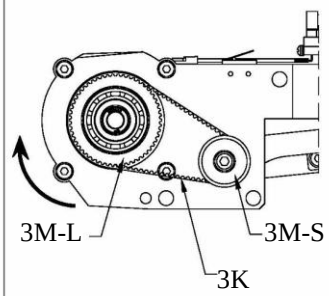
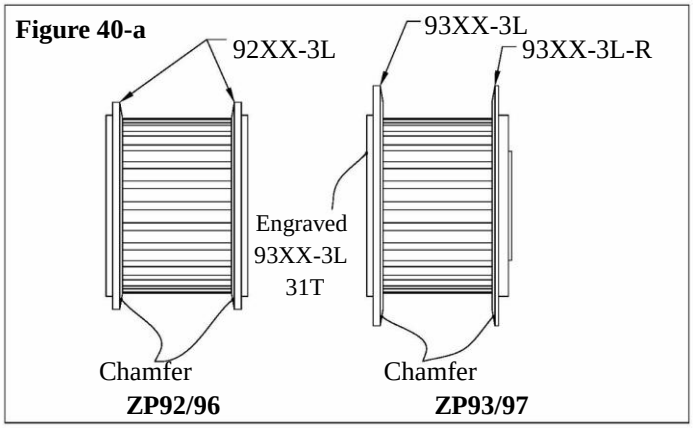


Figure 40-a



3.22 Sealing Eccentric Axis & Sealing Springs Holder Assembly

DISASSEMBLE STEPS：

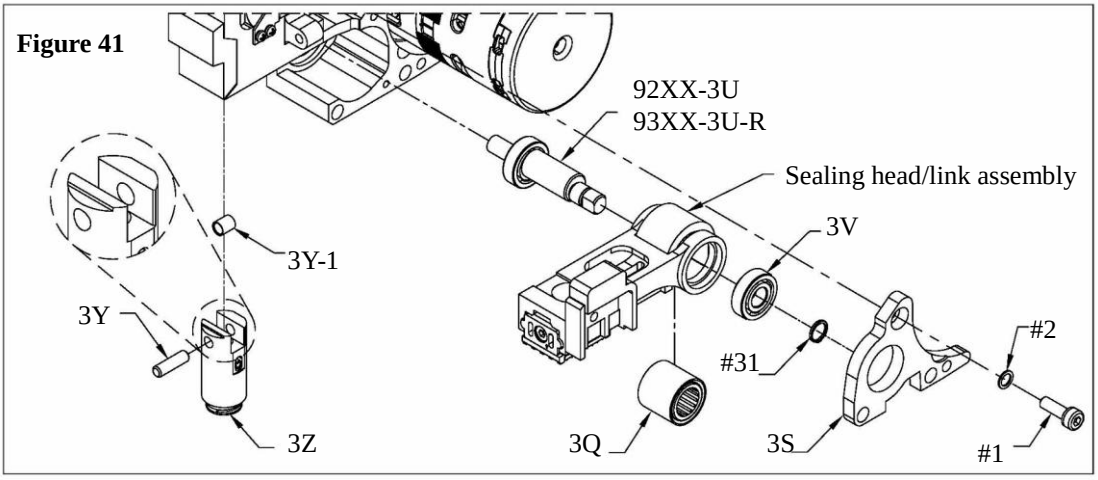
Follow and complete step 3.17, take off 1pc #1 screw (M4×0.7×12mm) and #2 lock washer (M4), remove 3S Sealing Eccentric Axis Holder and the entire Sealing Head/Link Assembly (parts breakdown per Figure 42), then remove 3U/3U-R Sealing Eccentric Axis, 3V Sealing Link Bearing, & 3Q Sealing Eccentric Axis Sleeve Assembly in order. If to replace 3U/3U-R, #31 C-ring (STW-7) needs to be taken off. After taking off the Sealing Head/Link Assembly, then the entire Assembly of 3Z+3Y+3Y-1 can be taken off. Pull out 3Y Sealing Cam Axis and 3Y-1 Sealing Cam Axis Holder, then 3Z Sealing Springs Holder Assembly can be removed as shown in Figure 41.

ASSEMBLE NOTICE

∗ Pay attention to the assembly direction of the groove for 3Z as per Figure 41.
∗ Do not tightly lock # 1 screw until going to the assembly step 3.17.
∗ Outer of 3Z, 3Y, 3Y-1, 3Q & 3U/3U-R should be lubricated with GL261 lubrication as shown in Figure 1.

NOTE ：Different Part no. of Sealing Eccentric Axis :
ZP92/96: 92XX-3U
ZP93/97: 93XX-3U-R

Figure 41



3.22.1 Sealing Link Assembly & Sealing Head Assembly

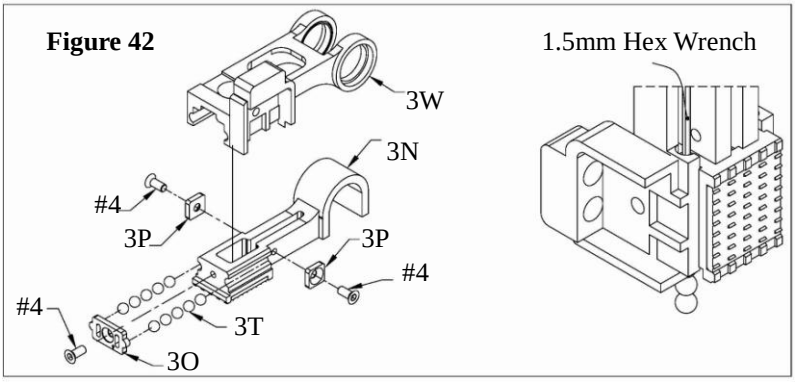
DISASSEMBLE STEPS：

Take off 1pc #4 screw (M3×0.5×7mm) and 3O Sealing Head Holder, then use 1.5mm hex wrench to punch out 3T Sealing steel Balls (total 8pcs) from both sides, and then take off #4 screw (M3×0.5×7mm) from both sides, then 3P Sealing Steel Balls Holder, 3N Sealing Head Assembly, & 3W Sealing Link Assembly can be removed as shown in Figure 42.

ASSEMBLE NOTICE

∗ Two-sided grooves of 3N and inner of U-shape groove should be applied with lubrication GL261 as shown in Figure 1.
∗ The arrow engraved on the 3O should be pointed up.

Figure 42



3.23 Motor 15T Epicyclic Gears Base Assembly & Brushless Motor

DISASSEMBLE STEPS：

For ZP92/96 A version tool (refer to Figure 43-a):

Follow and complete step 3.21, take off 4pcs #32 screw (M3x0.5x12mm), 5N Motor Washer and 5M-4 Motor Epicyclic Gears Base Assembly, then 5L-P4 15T Motor Epicyclic Gears Set can be removed. Use magnet to pick up 5K Gear Washer, and remove 2pcs #33 screw (M4x0.7x8mm), take off 5J-P Motor Gears Holder Assembly, and 92XX-5A-BP or 96XX-5A-BP Brushless Motor can be removed.

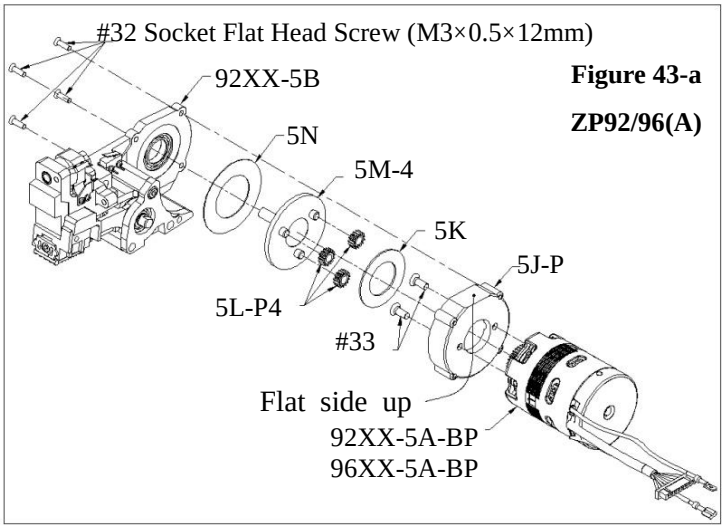


Figure 43-a

ZP92/96(A)

For ZP92/96 B version tool (refer to Figure 43-b):

Follow and complete step 3.21, take off 4pcs #12 screw (M3x0.5x14mm) and 4pcs #8 washer (M3), 5M-4B Motor Epicyclic Gears Base Assembly, then 5L-P4B 15T Motor Epicyclic Gears Set can be removed. Use magnet to pick up 5K Gear Washer, and remove 2pcs #33 screw (M4x0.7x8mm), take off 5J-PB Motor Gears Holder Assembly, and 92XX-5A-BPB or 96XX-5A-BPB Brushless Motor can be removed.

NOTE: 5N Motor Washer is not needed for B version.

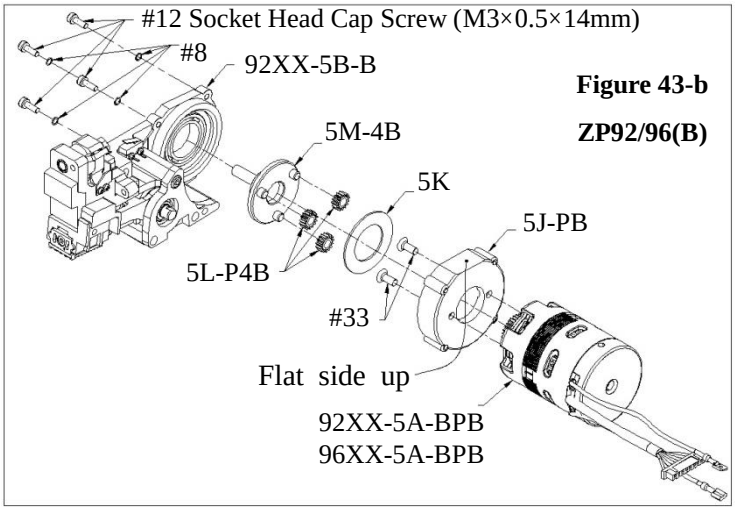


Figure 43-b

ZP92/96(B)

For ZP93/97 tool (refer to Figure 43-c):

Follow and complete step 3.21, take off 4pcs #12 screw (M3x0.5x14mm) and 4pcs #8 washer (M3), 5M-4B Motor Epicyclic Gears Base Assembly, then 5L-P4B 15T Motor Epicyclic Gears Set can be removed. Use magnet to pick up 5K Gear Washer, and remove 2pcs #33 screw (M4x0.7x8mm), take off 5J-PB Motor Gears Holder Assembly, and 93XX-5A-B or 97XX-5A-B Brushless Motor can be removed as shown in Figure 43-c.

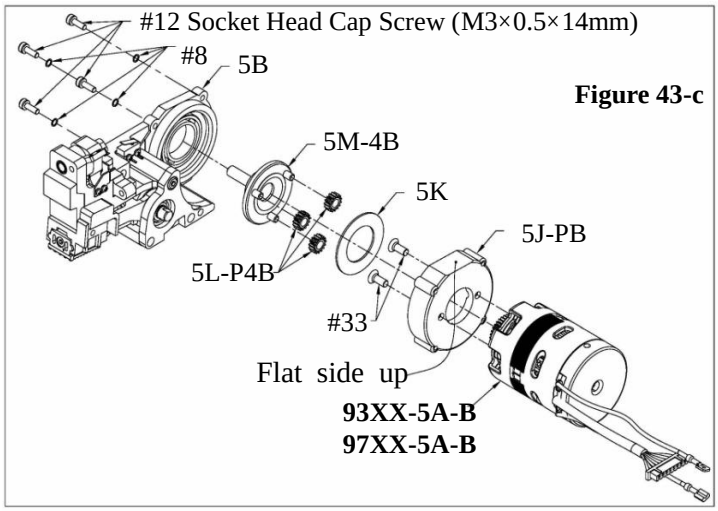


Figure 43-c

For ZP93A/97A tool (refer to Figure 43-d):

Follow and complete step 3.21, take off 4pcs #12 screw (M3x0.5x14mm) and 4pcs #8 washer (M3), 5M-A Motor Epicyclic Gears Base Assembly, then 5L-A 15T Motor Epicyclic Gears Set can be removed. Use magnet to pick up 5K Gear Washer, and remove 2pcs #33 screw (M4x0.7x8mm), take off 5J-PB Motor Gears Holder Assembly, and 93XX-5A-B1 or 97XX-5A-B1 Brushless Motor can be removed as shown in Figure 43-d.

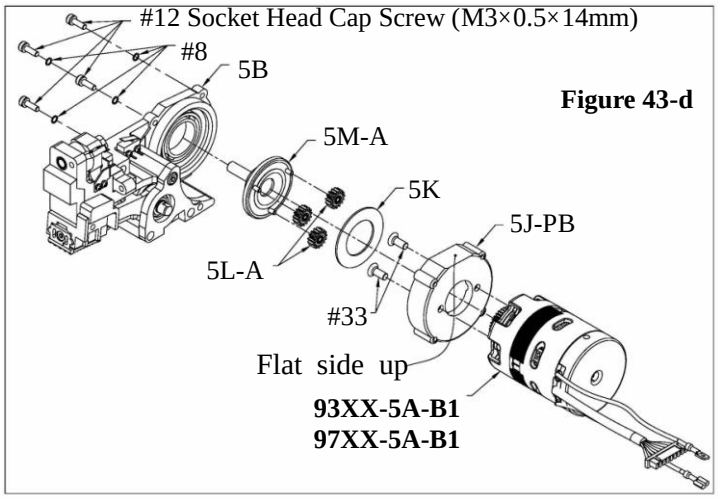


Figure 43-d

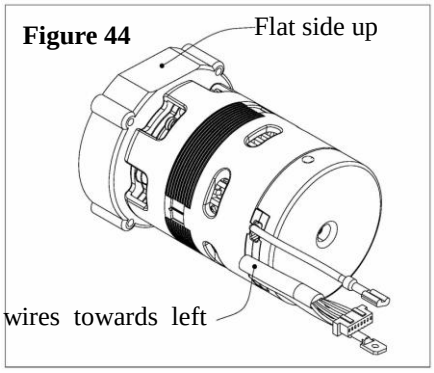


Figure 44

ASSEMBLE NOTICE

∗ When assembling Motor, note the label on motor part should comply with the tool's model/version.
(Tool Model ZP92A/motor part no. 92XX-5A-BP / label ZP92)
(Tool Model ZP96A/motor part no. 96XX-5A-BP / label ZP96)
(Tool Model ZP92B/motor part no. 92XX-5A-BPB / label ZP92 + laser mark "B")
(Tool Model ZP96B/motor part no. 96XX-5A-BPB / label ZP96 + laser mark "B")
(Tool Model ZP93/motor part no. 93XX-5A-B / label ZP93)
(Tool Model ZP97/motor part no. 97XX-5A-B / label ZP97)
(Tool Model ZP93A/motor part no. 93XX-5A-B1 / label ZP93A)
(Tool Model ZP97A/motor part no. 97XX-5A-B1 / label ZP97A)

∗ The flat side of 5J-P (B) should face up as shown in Figure 44.

∗ The Brushless Motor Wires should be positioned on the left of the Motor when the Motor is assembled to the 5J-P(B) with its flat side up as shown in Figure 44.

∗ Apply lubricant (92XX232) to the teeth of 5L-P4(B) and inner of 5J-P(B) as shown in Figure 1. After assembling 5M-4(B), 5L-P4(B), 5K, 5J-P(B), & 5A-BP(B), turn around the axle of 5M-4(B) for 10~30 second to make sure the lubricant spreads out evenly.

∗ Keep 5J-P(B) / 5A-BP(B) / 5K and 5M-4(B) / 5L-P4(B) leveled horizontally when assembling to prevent 5L-P4(B) from falling out.

∗ While assembling 5J-P(B) motor gears holder and 3M-L/3M-S sealing belt wheels with 5B(-B) motor frame assembly, screw on 4pcs #32 / #12 screws diagonally (but do not lock them tightly yet), check if the sealing belt wheels turns smoothly then lock #32 / #12 screws tightly.

∗ While screwing back 4pcs #32 / #12 screws, apply a little "Loctite" on two threads of screw end.

∗ Lubricate 5M-4(B) axle with lubrication 168 as per Figure 1.

∗ Apply about 4cc of lubricant (92XX232) to both 5L-P4(B) / 5J-P(B) polished parts and 5L/5J un-polished parts as shown in Figure 1.

∗ **While replacing motor 1st deceleration parts (including 5M, 5L, 5J), must clean-up old remaining lubricant first, and make sure no chips or foreign articles attached, suggest to clean by air gun, then re-apply new lubricant; Also, keep the working environment clean, once maintenance work was interrupted, should cover all related parts, including motor, by a clean plastic bag to avoid abnormal /damages caused by fallen dust or dirt or foreign articles.**

REMARKS

1) **Note the security seal is affixed on Brushless Motor, once the label is broken or missing, it will invalidate the warranty. Distributors should keep and return faulty motors upon Pantech's request. Without Pantech's written permission, faulty motors cannot be disposed or discarded.**
2) **Do not use magnetic screwdriver to disassemble the two #33 screws of motor.**
3) **While taking off 4pcs #32 screw (M3×0.5×12mm) or #12 screw (M3x0.5x14mm), please use 2mm Allen wrench in Metric system and note the following:**

- #32 / #12 screws are small and tightened with Loctite glue. Not only you will need to press the Allen wrench slightly harder to unscrew each screw (follow Figure 45-1) carefully, but also turn it slowly to gradually break free of the Loctite glue when unscrewing.
- Place the wrench straightly onto screw's cap without tilting. Please refer to Figure 45-1 below for your understanding.
- In addition, when using Allen wrench, please make sure the tip of Allen wrench should be flat, NOT rounded tip or damaged tip. Or, it may cause slippage or stripping screw problems. Please refer to Figure 45-2 for your understanding.

Figure 45-1

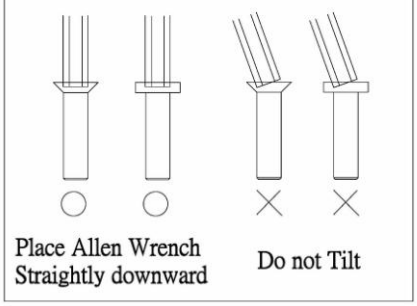
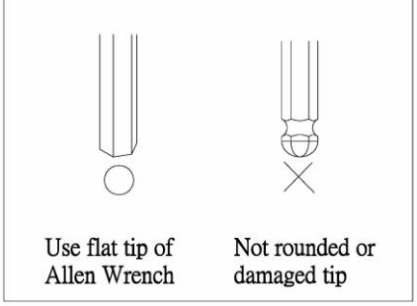


Figure 45-2



3.24 Motor Frame Assembly

DISASSEMBLE STEPS：

Follow and complete disassemble step 3.23, then 5B or 5B-B Motor Frame Assembly can be removed as shown in figure 46-a/b/c.

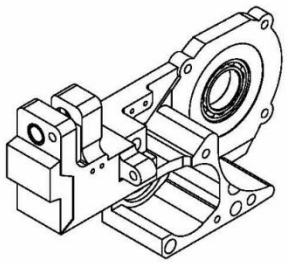
NOTE：Different Part no. of Motor Frame Assembly :

ZP92/96(A): 92XX-5B

ZP92/96(B): 92XX-5B-B

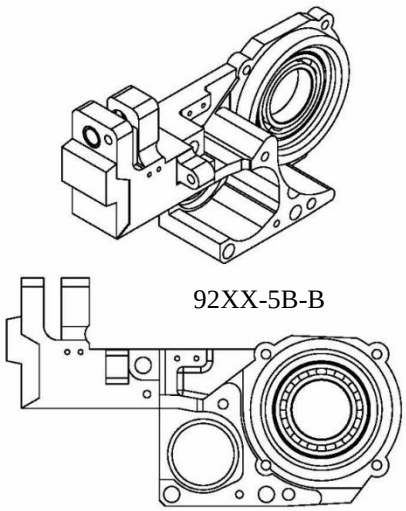
ZP93/97: 93XX-5B

Figure 46-a ZP92/96(A)



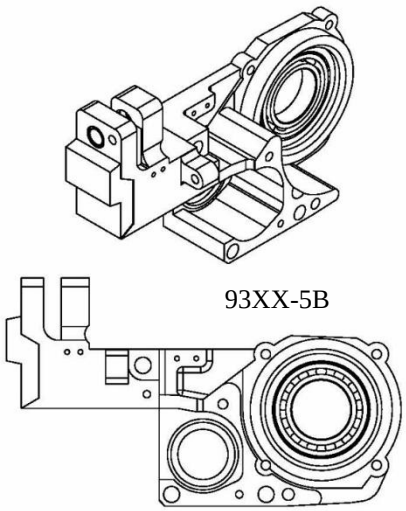
92XX-5B

Figure 46-b ZP92/96(B)



92XX-5B-B

Figure 46-c ZP93/97



93XX-5B

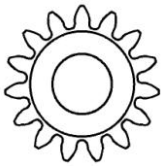
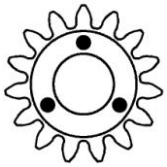
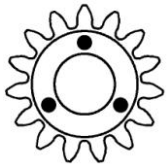
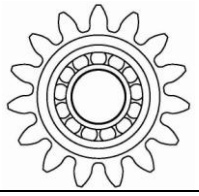
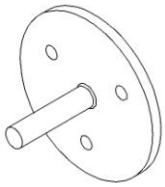
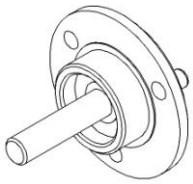
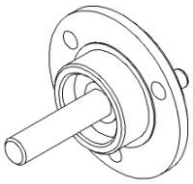
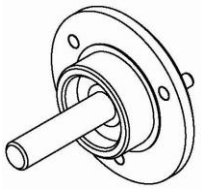
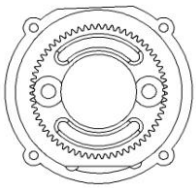
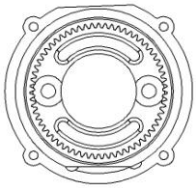
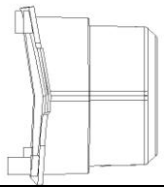
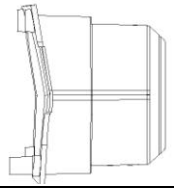
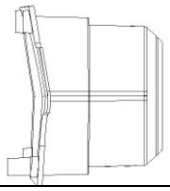
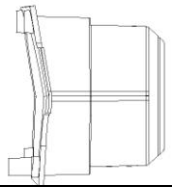
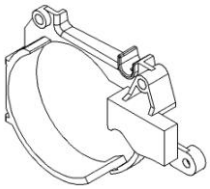
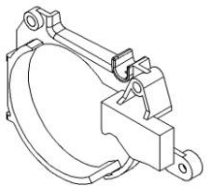
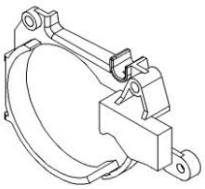
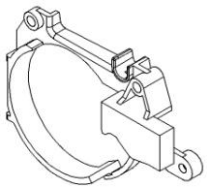
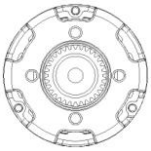
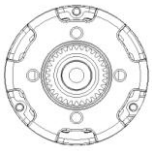
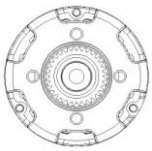
NOTICE

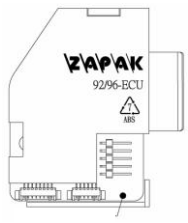
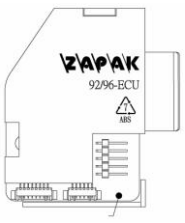
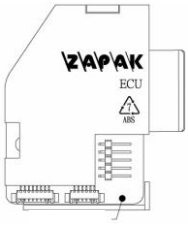
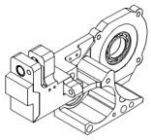
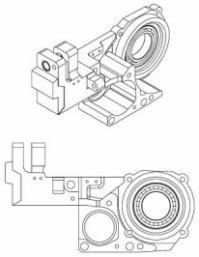
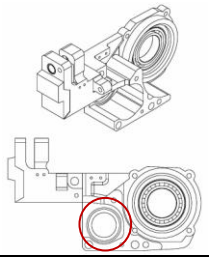
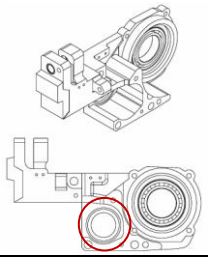
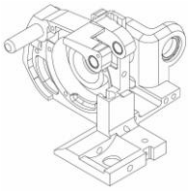
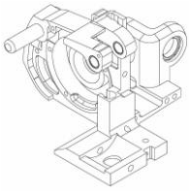
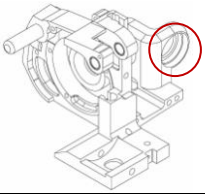
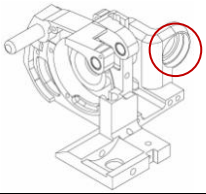
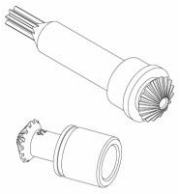
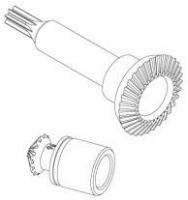
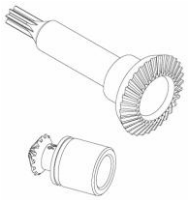
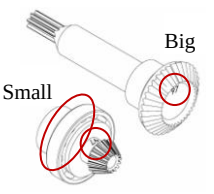
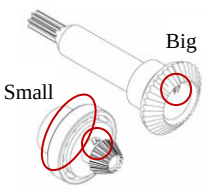
The 4pcs screws applied on Motor Frame of B version tools are different with A version tools :

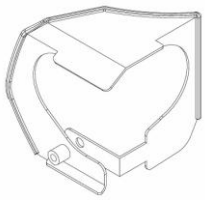
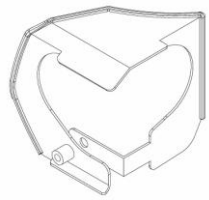
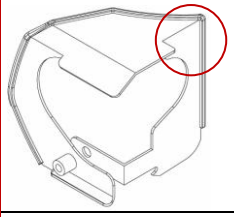
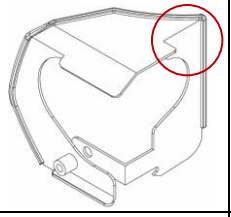
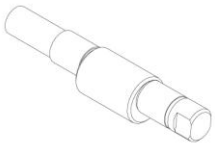
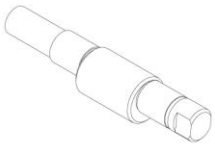
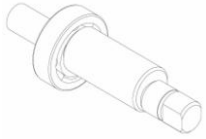
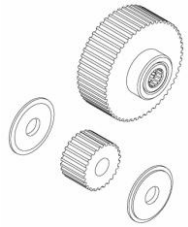
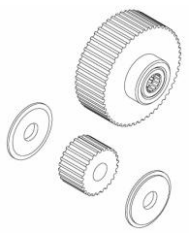
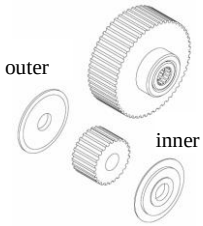
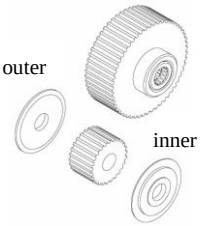
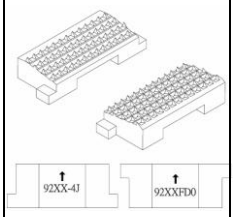
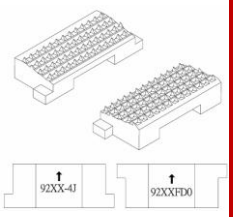
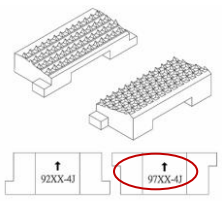
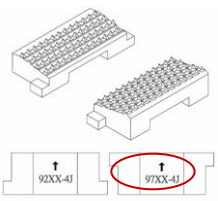
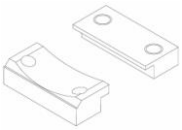
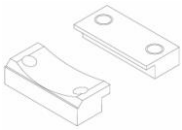
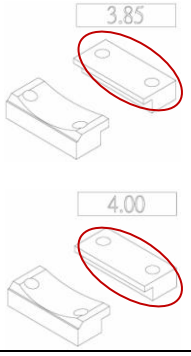
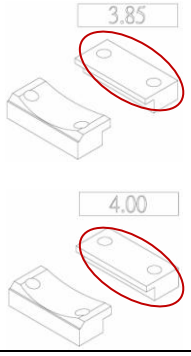
∗ For 92XX-5B: applied #32 Socket Flat Head Screw (M3×0.5×12mm).

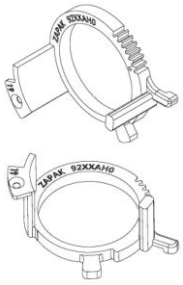
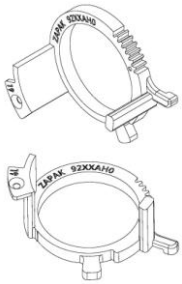
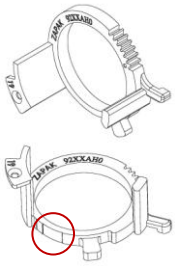
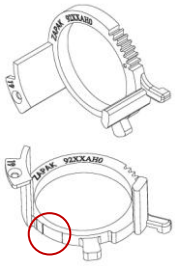
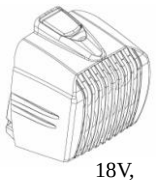
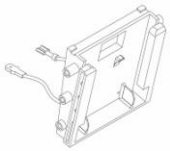
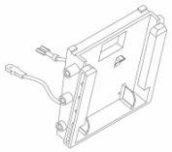
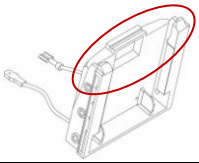
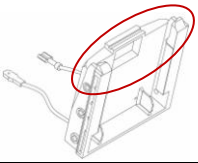
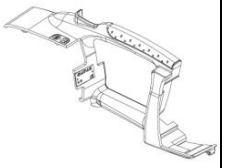
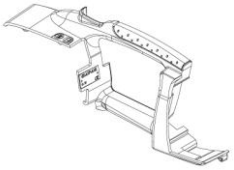
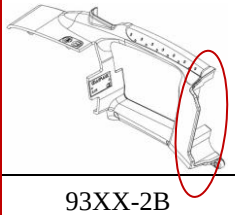
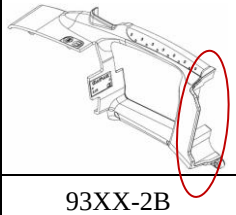
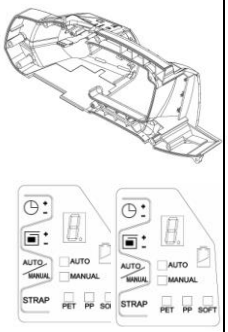
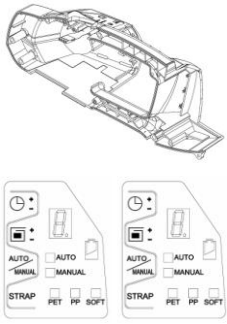
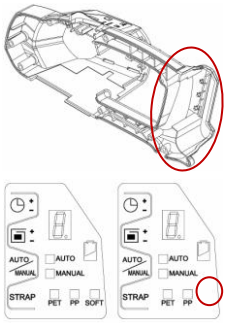
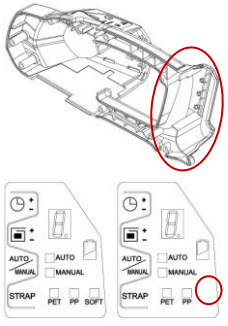
∗ For 92XX-5B-B/93XX-5B: applied #12 Socket Head Cap Screw (M3×0.5×14mm) + #8 washer (M3).

3.25 Tool Parts Difference among ZP92/96-A&B vs.ZP93/97-0&A

Part Description	ZP92,96 (A)	ZP92, 96 (B)	ZP93, 97	ZP93, 97 (A)	
Motor 15T Epicyclic Gears Set, 3pcs/set	92XX-5L-P 	92XX-5L-P4B 	92XX-5L-P4B 	93XX-5L-A 	Size enlarged to insert micro bearings (2 micro bearings required for each gear)
Motor Epicyclic Gears Base Assembly	92XX-5M-4 	92XX-5M-4B 	92XX-5M-4B 	93XX-5M-A 	Re-design to fit new gears set
Motor Gears Holder Assembly	92XX-5J-P 	92XX-5J-PB 	92XX-5J-PB 	92XX-5J-PB 	
Motor Housing	92XX-5D 	92XX-5D-B 	92XX-5D-B 	92XX-5D-B 	
Motor Housing Rack	92XX-5I 	92XX-5I-B 	92XX-5I-B 	92XX-5I-B 	
Brushless Motor	92XX-5A-BP 96XX-5A-BP 	92XX-5A-BPB 96XX-5A-BPB 	93XX-5A-B 97XX-5A-B 	93XX-5A-B1 97XX-5A-B1 	Re –programmed and Rotor's pinion change to fit new gears. Label shows "ZP93A/ZP97A" as identification

Electronic Control Unit (ECU) Assembly	92/96-ECU  WHITE dot	92/96-ECU-B  RED dot	93/97-ECU  BLACK dot	93/97-ECU-A  No dot	Re-programmed
Motor Frame Assembly	92XX-5B 	92XX-5B-B 	93XX-5B 	93XX-5B 	Insert a bearing
Main Frame Assembly	92XX-4A 	92XX-4A 	93XX-4A 	93XX-4A 	Enlarged the hole for loading the Small Bevel Gear fixing ring.
Bevel Gear Set	92XX-3AB(17T/15T) 	92XX-3AB(17T/15T) 	93XX-3AB(22T/15T) 	93XX-3AB(22T/15T) 	1) Attached a bearing to Small Bevel Gear. 2) Engraved “93” on gears as ID. *Small and Big Bevel Gears are combined as a set.
	96XX-3AB(32T/15T) 	96XX-3AB(32T/15T) 	97XX-3AB(35T/14T)  	97XX-3AB(35T/14T)  	1) Attached a bearing to Small Bevel Gear. 2) Engraved “97” on gears as ID. *Small and Big Bevel Gears are combined as a set.
Big Bevel Gear Bearing Washer	92XX-4A-W (d15.1*D28 t=0.5) 	92XX-4A-W (d15.1*D28 t=0.5) 	93XX-4A-W (d16*D22 t=0.3) 	93XX-4A-W (d16*D22 t=0.3) 	Changed size and thickness

Small Bevel Gear Fixing Ring	nil	nil	93XX-4A-L 	93XX-4A-L 	A special wrench 93XX-3B-WR is needed for disassembly/assembly of 93XX-4A-L.
Bevel Gear Dust Cover	92XX-3A-DC 	92XX-3A-DC 	93XX-3A-DC 	93XX-3A-DC 	
Sealing Eccentric Axis	92XX-3U 	92XX-3U 	93XX-3U-R 	93XX-3U-R 	Dimension change + attach one 3V bearing as an assembly
Sealing Belt Wheel (Assembly) and Belt Holder	92XX-3M-L (54T) 92XX-3M-S (26T) 92XX-3L x 2 	92XX-3M-L (54T) 92XX-3M-S (26T) 92XX-3L x 2 	93XX-3M-L (50T) 93XX-3M-S (31T) 93XX-3L x 1 93XX-3L-R x 1 	93XX-3M-L (50T) 93XX-3M-S (31T) 93XX-3L x 1 93XX-3L-R x 1 	1) Teeth change 2) Engrave model no. as identification 3) Design change on inner and outer belt holder
Strap Grippers Assembly	92XX-4J 	92XX-4J 	92XX-4J (ZP93) 97XX-4J (ZP97) 	92XX-4J (ZP93) 97XX-4J (ZP97) 	1) Change on rear gripper for ZP97 only, ZP93's keep the same as ZP92/96 2) Engrave "97XX-4J" on rear gripper of ZP97 as identification
Strap Grippers Protection (L+R/Set)	92XX-4P 	92XX-4P 	93XX-4P(ZP93) 97XX-4P(ZP97) 	93XX-4P(ZP93) 97XX-4P(ZP97) 	Engrave 3.85 for ZP93 Engrave 4.00 for ZP97

Tension Arm Link	92XX-4L 	92XX-4L 	93XX-4L 	93XX-4L 	Dimension change
Power Pack Set, 2pcs/Pack	9280  18V, 3.0Ah	9280  18V, 3.0Ah	9380  BOSCH 18V, 4.0Ah	9380  BOSCH 18V, 4.0Ah	Change to use “Bosch” battery and capacity increased up to 4.0Ah
Power Output Protector Assembly	9280-OP 	9280-OP 	9380-OP 	9380-OP 	Dimension change
Left Housing	92XX-2A 	92XX-2A 	93XX-2A 	93XX-2A 	Changed rear housing to fit new Bosch battery
Right Housing	92XX-2B 96XX-2B  ZP92 ZP96	92XX-2B 96XX-2B  ZP92 ZP96	93XX-2B 97XX-2B  ZP93 ZP97	93XX-2B 97XX-2B  ZP93 ZP97	1) Change rear housing to fit new Bosch battery 2) No “SOFT” LED for ZP97
End Roller Axis	92XX-2H 	92XX-2H 	93XX-2H 	93XX-2H 	Size change

4. ACCESSORY CODE & SPECIFICATION

#1 Socket Head Cap Screw(M4×0.7×12mm)
#2 Lock Washer(M4)
#3 Stainless steel Socket Head Cap Screw(M4×0.7×10mm)
#4 Socket Flat Head Screw(M3×0.5×6mm)
#5 Socket Set Screw(M3×0.5×4mm)
#6 Socket Flat Head Screw(M3×0.5×6mm)
#7 Socket Head Cap Screw(M3×0.5×8mm)
#8 Lock Washer(M3)
#9 Socket Head Cap Screw(M4×0.7×8mm)
#10 Socket Head Cap Screw(M3×0.5×8mm)
#11 Socket Head Cap Screw(M3×0.5×20mm)
#12 Socket Head Cap Screw(M3×0.5×14mm)
#13 Socket Head Cap Screw(M3×0.5×7mm)
#14 Socket Head Cap Screw(M4×0.7×22mm)
#15 Hex Nut(M3×0.5mm)
#16 Socket Head Cap Screw(M3×0.5×10mm)
#17 Socket Head Cap Screw(M4×0.7×30mm)
#18 Phillips Cross Recessed Pan Head Machine Screw(M3×6mm)
#19 Phillips Cross Recessed Pan Head Machine Screw(M2×0.4×10mm)
#20 Spring Lock Washer(M2)
#21 C Ring(STW-8)
#22 E Ring(ETW-4)
#23 Socket Head Cap Screw(M4×0.7×10mm)
#24 Lock Washer(M5)
#25 Socket Head Cap Screw(M5×0.8×45mm)
#26 Socket Head Cap Screw(M5×0.8×30mm)
#27 C Ring(STW-15)
#28 Phillips Cross Recessed Pan Head Machine Screw(M2×0.4×4mm)
#29 Hex Nut(M2×0.4mm)
#30 Flat Washer(M4)
#31 C Ring(STW-7)
#32 Socket Flat Head Screw(M3×0.5×12mm)
#33 Socket Flat Head Screw(M4×0.7×8mm)

5. MAINTENANCE TOOL LIST

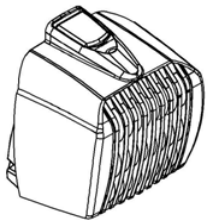
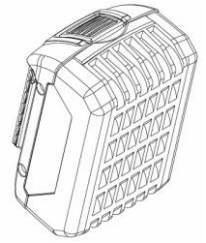
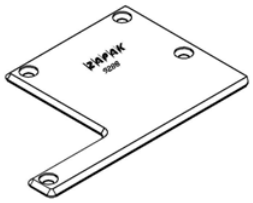
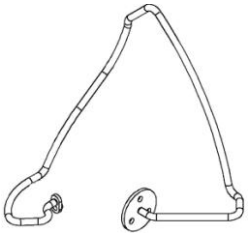
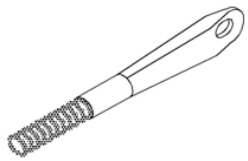
1. 3mm Allen Wrench
2. 1.0×5.5mm Flat Screw Driver
3. 1.0×5mm Flat Screw Driver
4. 1.5mm Allen Wrench
5. 2.5mm Flat Screw Driver
6. 2.5mm Allen Wrench
7. 2mm Allen Wrench
8. 4mm Allen Wrench
9. 5.5mm Open-End Wrench
10. PH0 Phillips Screw Driver
11. PH2 Phillips Screw Driver
12. Small Brush
13. Open-End C Ring Clip
14. Needle Nose Pliers
15. Magnet (Provided by ZAPAK)
16. Rubber Hammer
17. 93XX-3B-WR Small Bevel Gear Wrench (Provided by ZAPAK)
18. 93XX-SP Special Plate (Provided by ZAPAK)

NOTICE

Please use "Metric" system of Screwdriver/Wrenches for Service and Maintenance works of ZP92/96 & ZP93/97.

ZP92/ZP96(A)(B) & ZP93/ZP97(0)(A) - OPTIONAL ACCESSORY LIST

Date: May 30, 2015

Drawing	Part No.	Description	Applicable Models	Remarks
	**9280**	Power Pack Set (New), 2pcs/Pack	ZP92/ZP96(A)(B)	Pack of 2
	**9380**	Power Pack Set (New), 2pcs/Pack	ZP93/ZP97(0)(A)	Pack of 2
	**9288**	Wear-Resisting Plate	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
	**9287**	Hanger	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
	**2382-10** **2382-15** **2382-23** **2382-25**	Charger 100V Charger 115V Charger 230V Charger 240V	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
	**26XX-12**	Cleaning Brush, 3pcs/Pack	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	Pack of 3

[Remarks]

(1) All parts are packed 1 piece (set)/pack except otherwise specified.

(2) Do not open packaging until ready to use.

ZP92/ZP96(A)(B) & ZP93/ZP97(0)(A) - MAINTAINING PARTS LIST

(PLAN A)

Part No.	Description	Applicable Models	Remarks
92XX-3H-R	Tension Arm Link Spring	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3G-R	Spring Bolt	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3M-W	Belt wheel washer Set, 10pcs/Set	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	**Set of 10**
92XX-14	Lubricant (92XX232)	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	**50g/Bottle**

(PLAN B)

Part No.	Description	Applicable Models	Remarks
92XX-1D	Sealing Switch	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-1E	ECU Wires	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-2B-WH	Wires Holder, 5pcs/Set	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	Set of 5
92XX-2C	Lift Switch	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-2DZ	Side Cover Assembly	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-2I	Tension Switch	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-2J	Tension Button Spring	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-2K	Coiled Wire Tie	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3E	Belt Wheel Washer	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3F	Tension Washer	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3I	Sealing Screw Bolt Supporter	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3K	Sealing Transmission Belt	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	

(to be continued)

Part No.	Description	Applicable Models	Remarks
92XX-3Q	Sealing Eccentric Axis Sleeve Assembly	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3V	Sealing Link Bearing	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3Y-1	Sealing Cam Axis holder	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3Z	Sealing Springs Holder Assembly	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4A-BR	Big Bevel Gear Bearing	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4A-W	Big Bevel Gear Bearing Washer	ZP92/ZP96(A)(B)	
93XX-4A-W	Big Bevel Gear Bearing Washer	ZP93/ZP97(0)(A)	
92XX-4H	Operation Lever Spring	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4R	Cutter Spring Set, 2pcs/Set	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	Set of 2
92XX-4W	Rear Guider Link Pole Spring	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-5A-BP	Brushless Motor (ZP92A)	ZP92A	
96XX-5A-BP	Brushless Motor (ZP96A)	ZP96A	
92XX-5A-BPB	Brushless Motor (ZP92B)	ZP92B	
96XX-5A-BPB	Brushless Motor (ZP96B)	ZP96B	
93XX-5A-B	Brushless Motor (ZP93)	ZP93	
97XX-5A-B	Brushless Motor (ZP97)	ZP97	
93XX-5A-B1	Brushless Motor (ZP93A)	ZP93A	
97XX-5A-B1	Brushless Motor (ZP97A)	ZP97A	
92XX-5J-P	Motor Gears Holder Assembly(Polished)	ZP92/ZP96(A)	
92XX-5J-PB	Motor Gears Holder Assembly(Polished)	ZP92/ZP96(B) ZP93/ZP97(0)(A)	

(to be continued)

Part No.	Description	Applicable Models	Remarks
92XX-5L-P4	Motor 15T Epicyclic Gears Set (Polished)(ϕ 4), 3pcs/Set	ZP92/ZP96(A)	Set of 3
92XX-5L-P4B	Motor 15T Epicyclic Gears Set (Polished)(ϕ 4), 3pcs/Set	ZP92/ZP96(B) ZP93/ZP97(0)	Set of 3
93XX-5L-A	Motor 15T Epicyclic Gears Set (Polished)(ϕ 3), 3pcs/Set	ZP93/ZP97(A)	
92XX-5M-4	Motor Epicyclic gears Base Assembly(ϕ 4)	ZP92/ZP96(A)	
92XX-5M-4B	Motor Epicyclic gears Base Assembly(ϕ 4)	ZP92/ZP96(B) ZP93/ZP97(0)	
93XX-5M-A	Motor Epicyclic gears Base Assembly(ϕ 3)	ZP93/ZP97(A)	
92XX-5N	Motor Washer	ZP92/ZP96(A)	
92XX-6C-BR	Tension Transmission Gear Bearing	ZP92/ZP96(A)(B) ZP93/ZP97	
92/96-ECU	Electronic Control Unit (ECU) Assembly	ZP92/ZP96(A)	
92/96-ECU-B	Electronic Control Unit (ECU) Assembly	ZP92/ZP96(B)	
93/97-ECU	Electronic Control Unit (ECU) Assembly	ZP93/ZP97	
93/97-ECU-A	Electronic Control Unit (ECU) Assembly	ZP93/ZP97(A)	

(PLAN C)

Part No.	Description	Applicable Models	Remarks
92XX-1C	Sealing Switch Mounting Rack	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-1F	ECU Holder	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-2A	Left Housing	ZP92/ZP96(A)(B)	
93XX-2A	Left Housing	ZP93/ZP97(0)(A)	
92XX-2B	Right Housing Assembly(ZP92A)	ZP92(A)(B)	
96XX-2B	Right Housing Assembly(ZP96A)	ZP96(A)(B)	
93XX-2B	Right Housing Assembly(ZP93)	ZP93(0)(A)	
97XX-2B	Right Housing Assembly(ZP97)	ZP97(0)(A)	

(to be continued)

Part No.	Description	Applicable Models	Remarks
92XX-2B-CVR	Control Panel Cover	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-2E	Sealing Lever	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-2F	Tension Button Assembly	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-2G	End Roller	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-2H	End Roller Axis	ZP92/ZP96(A)(B)	
93XX-2H	End Roller Axis	ZP93/ZP97(0)(A)	
92XX-2L	Motor Power Wire Holder	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3A-DC	Bevel Gear Dust Cover	ZP92/ZP96(A)(B)	
93XX-3A-DC	Bevel Gear Dust Cover	ZP93/ZP97(0)(A)	
92XX-3AB	17T/15T Bevel Gear Set	ZP92(A)(B)	
96XX-3AB	32T/15T Bevel Gear Set	ZP96(A)(B)	
93XX-3AB	22T/15T Bevel Gear Set	ZP93(0)(A)	
97XX-3AB	35T/14T Bevel Gear Set	ZP97(0)(A)	
92XX-3C	Tension Epicyclic Gears Axis Assembly	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3D	Tension 31T Epicyclic Gear Set, 3pcs/Set	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	Set of 3
92XX-3H-1	Tension arm link screw	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3J	Rear Inner Guider	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3L	Belt Holder	ZP92/ZP96(A)(B)	
92XX-3M-L	54T Sealing Belt Wheel Assembly	ZP92/ZP96(A)(B)	
92XX-3M-S	26T Sealing Belt Wheel	ZP92/ZP96(A)(B)	
93XX-3L	Belt Holder (Outer)	ZP93/ZP97(0)(A)	
93XX-3L-R	Belt Holder (Inner)	ZP93/ZP97(0)(A)	

(to be continued)

Part No.	Description	Applicable Models	Remarks
93XX-3M-L	50T Sealing Belt Wheel Assembly	ZP93/ZP97(0)(A)	
93XX-3M-S	31T Sealing Belt Wheel	ZP93/ZP97(0)(A)	
92XX-3O	Sealing Head Holder	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3P	Sealing Steel Balls Holder	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3R	Frame & Motor Holder Lock Pin	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3S	Sealing Eccentric Axis Holder	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3T	Sealing Steel Balls Set, 8pcs/Set	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	Set of 8
92XX-3U	Sealing Eccentric Axis	ZP92/ZP96(A)(B)	
93XX-3U-R	Sealing Eccentric Axis	ZP93/ZP97(0)(A)	
92XX-3W	Sealing Link Assembly	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-3Y	Sealing Cam Axis	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4A	Main Frame Assembly	ZP92/ZP96(A)(B)	
93XX-4A	Main Frame Assembly	ZP93/ZP97(0)(A)	
93XX-4A-L	Small Bevel Gear Fixing Ring	ZP93/ZP97(0)(A)	
92XX-4B	Tension Arm Assembly	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4C	Strap Release Ratchet Link	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4D	Operation Lever Link	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4E	Operation Lever Assembly	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4F	Operation Lever Axis	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4G	Operation Lever Steel Ball	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4I	Shifting Plate Roller	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4K	Feeder Wheel Bearing	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	

(to be continued)

Part No.	Description	Applicable Models	Remarks
92XX-4L	Tension Arm Link	ZP92/ZP96(A)(B)	
93XX-4L	Tension Arm Link	ZP93/ZP97(0)(A)	
92XX-4J-CN	Strap Grippers Connecting Plate	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4M	Tension 19T Epicyclic Gear Set, 3pcs/Set	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	Set of 3
92XX-4O	Bottom Sealing Grippers Axis	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4P	Strap Gripper Protection (L+R/Set)	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	Set of 2
93XX-4P	Strap Gripper Protection (L+R/Set)	ZP93(0)(A)	Set of 2
97XX-4P	Strap Gripper Protection (L+R/Set)	ZP97(0)(A)	Set of 2
92XX-4Q	Tension 19T Transmission Assembly	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4S-15/16	Front Strap Guider-15/16mm	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4S-12/13	Front Strap Guider-12/13mm	ZP92(A)(B) ZP93(0)(A)	
92XX-4S-9	Front Strap Guider-9mm	ZP92(A)(B) ZP93(0)	
92XX-4T	Side Cover Link Axis Holder	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4U-19	Rear Strap Guider - 19mm	ZP96(A)(B) ZP97(0)(A)	
92XX-4U-15/16	Rear Strap Guider - 15/16mm	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-4U-12/13	Rear Strap Guider - 12/13mm	ZP92(A)(B) ZP93(0)(A)	
92XX-4U-9	Rear Strap Guider - 9mm	ZP92(A)(B) ZP93(0)	
92XX-4V	Rear Guider Link Pole Holder	ZP92/ZP96(A)(B)	
92XX-4X	Rear Guider Link Pole	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	

(to be continued)

Part No.	Description	Applicable Models	Remarks
92XX-4Z-R	Side Cover & Link Pole Axis	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-5B	Motor Frame Assembly	ZP92/ZP96(A)	
92XX-5B-B	Motor Frame Assembly	ZP92/ZP96(B)	
93XX-5B	Motor Frame Assembly	ZP93/ZP97(0)(A)	
92XX-5D	Motor Housing	ZP92/ZP96(A)	
92XX-5D-B	Motor Housing	ZP92/ZP96(B) ZP93/ZP97(0)(A)	
92XX-5G	Sealing Switch Cam Axis assembly	ZP92/ZP96(A)(B) ZP93/ZP97	
92XX-5H	Sealing Lever Cam	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-5I	Motor Housing Rack	ZP92/ZP96(A)	
92XX-5I-B	Motor Housing Rack	ZP92/ZP96(B) ZP93/ZP97(0)(A)	
92XX-5K	Gear washer	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-6A	Strap Release Axis	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
92XX-6B	Strap Release Ratchet Gear Set, 2pcs/Set	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	Set of 2
92XX-6C	Tension Transmission Gear	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
9286	Cutter Screw Cover	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
9280-OP	Power Output Protector Assembly	ZP92/ZP96(A)(B)	
9380-OP	Power Output Protector Assembly	ZP93/ZP97(0)(A)	

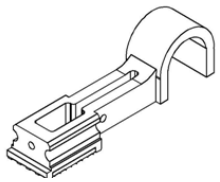
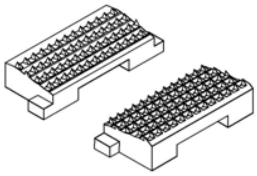
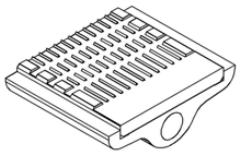
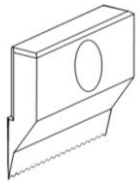
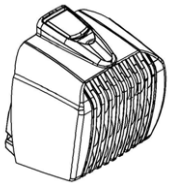
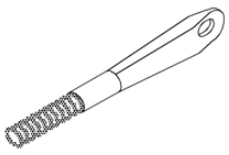
[Remarks]

(1) All parts are packed 1 piece (set)/pack except otherwise specified.

(2) Do not open packaging until ready to use.

ZP92/ZP96(A)(B) & ZP93/ZP97(0)(A) - WEARING PARTS LIST

Date: May 30, 2015

Drawing	Part No.	Description	Applicable Models	Remarks
	92XX-3N	Sealing Head Assembly	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
	92XX-4J	Strap Grippers Assembly	ZP92/ZP96(A)(B) ZP93(0)(A)	
	97XX-4J	Strap Grippers Assembly	ZP97(0)(A)	
	92XX-4N	Bottom Sealing Grippers Assembly	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
	92/96-FW	Feeder Wheel	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
	9281	Cutter (NEW)	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	
	9280	Power Pack Set (New), 2pcs/Pack	ZP92/ZP96(A)(B)	Pack of 2
	9380	Power Pack Set (New), 2pcs/Pack	ZP93/ZP97(0)(A)	Pack of 2
	26XX-12	Cleaning Brush, 3pcs/Pack	ZP92/ZP96(A)(B) ZP93/ZP97(0)(A)	Pack of 3

[Remarks]

(1) All parts are packed 1 piece (set)/pack except otherwise specified.

(2) Do not open packaging until ready to use.

Q&A OF POSSIBLE PROBLEMS

POSSIBLE TENSIONING PROBLEMS		
PROBLEMS	POSSIBLE CAUSES	WHAT TO DO
Scratches on upper strap	1. Feeder Wheel (FW) is worn out by operation without strap or naturally worn by use.	Change (FW); refer to Dealer Manual Step 3.6 "Feeder Wheel, Tension 19T Epicyclic."
	2. Feeder Wheel has too much residue clogged on or between the wheel teeth due to over-setting of tension force.	Reduce tension force, and clean Feeder Wheel completely; refer to User Manual Step 7.1 "Cleaning Feeder Wheel. "
	3. Over tension setting or tension over the maximum strap tension limit due to over trickles (re-tensions).	Reduce tension force and do not over trickle, refer to User Manual Step 4.6.1 "Setting Tension."
	4. Inferior strap quality.	Use better strap.
	5. If scratches occur before straps are tightened, check if Front/Rear Strap Guiders press against or sit on straps. Or incorrect sizes of Front/Rear Strap Guiders are used and not matching to the strap width correctly.	Follow User Manual Step 5.2 "Inserting Strap into Slot," learn straps alignment and practice operation skills. Use correct Front and Rear Strap Guiders to match strap width accordingly; Refer to User Manual Step 4.7 "Strap Width Setting."
	6. Feeder Wheel (FW) is incorrectly installed in the reversed direction by mistake.	Reinstall (FW); refer to Dealer Manual Step 3.6 "Feeder Wheel, Tension 19T Epicyclic."
	7. Tool does not move forward due to rough/uneven surface of strapped object.	Improve surface of strapped object or operate on smooth flat surface.
	8. Tension Arm Link Spring (3H-R) is aged.	Change (3H-R); refer to Dealer Manual Step 3.7 "Tension Arm Link, Tension Arm Link Spring."
	9. Tension Arm (4B) is aged or deformed.	Change (4B); refer to Dealer Manual Step 3.2.1 "Strap Grippers Assembly, Tension Arm Assembly."
Scratches on lower strap	1. Strap Grippers Assembly (4J) is worn out.	Change (4J); refer to Dealer Manual Step 3.2.1 "Strap Grippers Assembly, Tension Arm Assembly."
	2. Too much strap residues in Strap Grippers Assembly (4J) or inside the gap between two grippers' plates.	Change (4J); refer to Dealer Manual Step 3.2.1 "Strap Grippers Assembly, Tension Arm Assembly."
	3. Strap Grippers (4J) is unable to slide back and forth freely due to improper installation.	Reinstall (4J); refer to Dealer Manual Step 3.2.1 "Strap Grippers Assembly, Tension Arm Assembly."

POSSIBLE TENSIONING PROBLEMS		
PROBLEMS	POSSIBLE CAUSES	WHAT TO DO
Tension movement stops during tensioning	1. Obstacle or barrier blocks in front of tool.	Remove barrier or obstacle and restart the strapping cycle.
	2. Tension setting is too low or improper.	Adjust tension force higher; refer to User Manual Step 4.6.1 “Setting Tension.”
	3. Transmission mechanical structure or gears are worn or damaged.	Change related transmission parts or gears.
	4. 17T/32T Bearing Washer (4A-W) is aged and worn out.	Change (4A-W); refer to Dealer Manual Step 3.18 “Bevel Gear Assembly, Main Frame Assembly.”
Tension movement is completed but straps are loose.	1. Tension setting is too low or improper.	Adjust tension force higher; refer to User Manual Step 4.6.1 “Setting Tension.”
	2. Transmission mechanical structure or gears are worn or damaged.	Change related transmission parts or gears.
Abnormal noise during tensioning	1. Large gap between Small Bevel Gear (3B) and Large Bevel Gear (3A) which causes improper gears contact when turning.	Stop operation; insert proper thickness of spacer(s) on Smaller Bevel Gear (3B) to fill the gap properly.
	2. Failure of motor 15T Epicyclic Gear Base Assembly (5M-4/5M-4B) and 15T Epicyclic Gears Set (5L-P/5L-P4B).	Stop operation and change (5M-4/5M-4B) & (5L-P/5L-P4B); refer to Dealer Manual Step 3.23 “15T Epicyclic Base Assembly, Brushless Motor.”
	3. Failure of Tension 19T Transmission Assembly (4Q) and Tension 31T Epicyclic Gears Axis Assembly (3C)	Stop operation and change (4Q) & (3C); Once damage on either of 4Q or 3C, should check the other one; Refer to Dealer Manual Step 3.16
Press Tension Button but no movement. However Motor & Control Panel appear to still function normally. (LED lights on)	1. Transmission mechanical structure or gears are worn or damaged.	Change related transmission gears or parts.
	2. Large & Small Bevel Gear Assemblies (3A/3B/3AB) are worn or damaged.	Change (3A/3B by 3AB); refer to Dealer Manual Step 3.18 “Bevel Gear Assembly, Main Frame Assembly.”
	4. Lift Switch (92XX-2C) has bad connection or is damaged.	Change Lift Switch if necessary; refer to Dealer Manual Step 3.12 “Right Housing Assembly.”
Cannot stop strapping by lifting up operation lever	Lift Switch (92XX-2C) has bad connection or is damaged.	Change Lift Switch if necessary; refer to Dealer Manual Step 3.12 “Right Housing Assembly.”
Press Tension Button but no movement. And both Motor & Control Panel do not respond or function either. (LED lights off)	1. Failed Brushless Motor (5A-BP/5A-BPB/5A-B/5A-B1) or foreign articles have fallen inside the Motor due to lack of Motor protection during the disassembly process.	Change Motor; refer to Dealer Manual Step 3.23 “ 15T Epicyclic Base Assembly, Brushless Motor.” ***Return faulty Motor to manufacturer if requested. Do Not throw away without manufacturer’s written permission.**
	2. Either Main Switch (2C) or Tension Switch (2I) has bad connection or is damaged.	Disassemble tool to check and change Switch if necessary; refer to Dealer Manual Step 3.12 “Right Housing Assembly.”
	3. ECU Wires (92XX-1E) has bad connection or damaged.	Disassemble tool to check and change Switch if necessary; refer to Dealer Manual Step 3.12 “Right Housing Assembly.”

	4. Electronic Control Unit (ECU) fails.	Change ECU; refer to Dealer Manual Step 3.12.2 "ECU Assembly, Right Housing Assembly." ***Return faulty ECU to manufacturer if requested. Do Not throw away without manufacturer's written permission.**
	5. Ambient working temperature is too high or too low for battery power to output.	Change working environment and operate under proper temperature.
Press Tension Button but no movement. And Motor becomes shorted or smoke appears.	1. Extremely high current caused by over-loaded motor.	Remove battery and STOP operation. DO NOT put on any new battery on the tool before changing new Motor. Refer to Dealer Manual Step 3.23 and follow all assembly steps correctly.
Feeder Wheel skips & jumps during tensioning	1. Large & Small Bevel Gear Assemblies (3A/3B/3AB) are clogged with too much residues.	Clean up related Bevel Gears Assembly parts or change Bevel Gears when necessary. Refer to Dealer Manual Step 3.18 "Bevel gear assembly, Main Frame Assembly."

POSSIBLE SEALING PROBLEMS		
PROBLEMS	POSSIBLE CAUSES	WHAT TO DO
Insufficient sealing efficiency with scratches on the Sealing Joint surface.	1. Sealing lever is not pressed down all the way to the bottom correctly in one nonstop motion.	Sealing lever should be pressed down all the way to the bottom in ONE motion without hesitation or stopping in the middle. Refer to User Manual Step 5.4 "Sealing Straps."
	2. Sealing Gripper plate on the Sealing Head Assembly (3N) is worn out.	Change (3N); refer to Dealer Manual Step 3.22.1"Sealing Link Assembly, Sealing Head Assembly."
Insufficient sealing efficiency but the Sealing Joint surface is neat.	1. Sealing time setting is too short.	Adjust sealing time longer; refer to User Manual Step 4.6.2 "Sealing Time Adjustment."
	2. Bottom Sealing Grippers Assembly (4N) is not properly installed, or too much residue causes restricted movements of bottom Sealing Gripper.	Re-install (4N) or use air gun to blow residues away after disassembly. Refer to Dealer Manual Step 3.4 "Bottom Sealing Grippers Assembly."
	3. Bottom Sealing Grippers Axis (4O) is dried out of lubricant oil which restricts the movement of Bottom Sealing Grippers Assembly (4N).	Disassemble (4O), clean up the dried lubricant oil around its surface, and re-apply lubricant oil; refer to Dealer Manual Step 3.4 "Bottom Sealing Grippers Assembly."
	4. Sealing Cam Axis Holder (3Y-1) is aged or worn out.	Change (3Y-1); refer to Dealer Manual Step 3.22 "Sealing Eccentric Axis, Sealing Spring Holder Assembly."

POSSIBLE SEALING PROBLEMS		
PROBLEMS	POSSIBLE CAUSES	WHAT TO DO
Over sealing efficiency	1. Sealing time setting is too long.	Adjust sealing time shorter; refer to User Manual Step 4.6.2 ”Sealing Time Adjustment”.
Motor jammed during sealing or Low Battery Power LED flashes with red alert and beep..beep sound, Or, fail to start sealing movement	1. Transmission mechanical structure or gears are worn out or damaged. 2. Low battery power	Cross check or re-charge the battery. If problem still remains, check related transmission gears or parts. If transmission related gears and parts all work well, then brushless motor could be faulty. ***Return faulty Motor to manufacturer if requested. Do Not throw away without manufacturer’s written permission.**
	3. Improper positioning of Sealing switch (1D) after re-assembling.	Re-adjust the position of 1D (refer to Dealer Manual Step 3.19)
	4. Push down the sealing lever too quick	Push down the sealing lever a bit slower
Abnormal noise during sealing	1. Sealing Eccentric Axis Holder (3S) is aged and worn out.	Change (3S); refer to Dealer Manual Step 3.22 ”Sealing Eccentric Axis, Sealing Spring Holder Assembly.”
	2. Motor Frame Assembly (5B/5B-B) is aged and worn out.	Change (5B/5B-B); refer to Dealer Manual Step 3.24 “Motor Frame Assembly.”
	3. Malfunction of Motor Epicyclic Gears Base Assembly (5M-4/5M-4B) and 15T Epicyclic Gears Set (5L-P/5L-P4B).	Change (5M-4/5M-4B) & (5L-P/5L-P4B); refer to Dealer Manual Step 3.23 “ 15T Epicyclic Base Assembly, Brushless Motor.”
Press Sealing Lever but no movement. However Motor & Control Panel appear to still function normally. (LED lights on)	1. 26T Sealing Belt Wheel (3M-S) is not properly installed; possibly used incorrect screw during installation.	Disassemble tool to check and change (3M-S) if necessary. Refer to Dealer Manual Step 3.21 “54T sealing Belt Wheel, 26T Sealing Belt Wheel.”
	2. Malfunction of 54T Sealing Belt Wheel (3M-L).	Change (3M-L); refer to Dealer Manual Step 3.21 “54T sealing Belt Wheel, 26T Sealing Belt Wheel.”
Press Sealing Lever but no movement. And both Motor & Control Panel do not respond or function either. (LED lights off)	1. Either Sealing Switch (1D) or Tension Switch (2I) has bad connection or is damaged.	Disassemble tool to check and change Switch if necessary; refer to Dealer Manual Step 3.12 “Right Housing Assembly.”
	2. When Strap Type LED is set in “SOFT” mode and digital LED window appears malfunction code “E””2,” which means signals are being interrupted.	Reset the tool by taking off battery from tool and put it back again and press the Tension Button to wake the tool (see Remarks #1).

Press Sealing Lever but no movement. And Motor becomes shorted or smoke appears.	1. Extremely high current caused by over-loaded motor.	Remove battery and STOP operation. DO NOT put on any new battery on the tool before changing new Motor. Refer to Dealer Manual Step 3.23 and follow all assembly steps correctly.

POSSIBLE CUTTING PROBLEMS		
PROBLEMS	POSSIBLE CAUSES	WHAT TO DO
Straps cannot be cut completely	1. Cutter is dull.	Change Cutter; refer to Dealer Manual Step 3.5 “Cutter, Cutter Spring.”
	2. Sealing Link Assembly (3W) is aged and worn out which causes unstable movements of cutter.	Change (3W); refer to Dealer Manual Step 3.22.1 ”Sealing Link Assembly, Sealing Head Assembly.”
	3. Inferior PP strap quality or certain types of re-cycled and soft PP straps.	Use better quality PP straps or consult with your dealer.
	4. Cutter Spring (4R) is aged and worn out.	Change (4R); refer to Dealer Manual Step 3.5 “Cutter, Cutter Spring.”
	5. Sealing Cam Axis Holder (3Y-1) is aged and worn out.	Change (3Y-1); refer to Step 3.22 ”Sealing Eccentric Axis, Sealing Spring Holder Assembly.”
	6. Surface of straps could be torn or cracked.	Use better quality straps.
	7. The holes for placing Cutter Spring Set (4R) in Sealing link assembly (3W) are clogged with residues.	Take off (4R), clean up holes and lubricate with small amount of anti-rust oil after cleaning. Refer to Dealer Manual Step 3.22.1
Straps are only partly uncut on the strap edge	1. Strap used is too thin or the PP strap is too soft.	Use thicker and stiffer PP straps.
	2. Improper strap placement. Rear Strap Guider sits on or presses against straps during operation.	Follow User Manual Step 5.2 “Inserting Strap into Slot.” Learn straps alignment and practice operation skills.
	3. Use incorrect size of Rear Strap Guider.	Use correct Rear Strap Guider to match with strap width. Refer to User Manual Step 4.7.2 “Change Rear Strap Guider.”
	4. Use wrong type of Cutter. (For very old ZP92/96 A version tools only)	Change and use correct Cutter (PET Cutter no. 9285 or PP cutter no. 9283); refer to Dealer Manual Step 3.5
	5. Cutter (9285/9283/9281) is dull.	Change Cutter; refer to Dealer Manual Step 3.5 “Cutter, Cutter Spring.”
	6. Bottom Sealing Grippers Axis (4O) is dried out of lubricant oil which restricts the movement of Bottom Sealing Grippers Assembly (4N).	Disassemble (4O), clean up the dried lubricant oil around its surface, and re-apply lubricant oil; refer to Dealer Manual Step 3.4

POSSIBLE BATTERY PROBLEMS		
PROBLEMS	POSSIBLE CAUSES	WHAT TO DO
Low Battery Power LED flashes with red alert and beep..beep sound.	1. Battery power (9280/9380) is too low to work.	Take battery off and re-charge.
	2. Battery (9280/9380) is naturally aged from usage or is damaged from overly discharged.	Use another good battery to cross check. If tool resumes to normal after battery change, then the malfunction is caused by battery. Otherwise, the malfunction could be caused by a jammed motor. ***Return faulty Battery to manufacturer if requested. Do Not throw away without manufacturer's written permission.**
Battery cannot be recharged.	1. Battery (9280/9380) is naturally aged from usage or component is exhausted from over-charge/over-discharge due to failure to conduct periodical activation by fully charging every three months during long storage, or from not re-charging when battery is already at a low voltage level.	Change Battery. Pay close attention to correct working habits to avoid quick failure of battery. Refer to User Manual Step 4.4 "Charging battery." ***Return faulty Battery to manufacturer if requested. Do Not throw away without manufacturer's written permission.**
	2. Temperature of Battery (9280/9380) is too high.	Take battery off and try again after it has cooled down.
Battery fails to transmit current to power the tool.	1. Burnt fuse caused by Motor short circuit or other unknown reasons. 2. Use wrong charger by mix-up between Li-Ion & Ni-MH charging system by mistake.	DO NOT put any new battery on the tool before changing new motor. Check if any damage on battery power wires that causes short-circuit, then replace Motor, Battery, or other damaged parts.

POSSIBLE CHARGER'S PROBLEMS		
PROBLEMS	POSSIBLE CAUSES	WHAT TO DO
Battery Charger suddenly stops charging or burns up during the charging process.	1. Surge occurs during the charging process.	Installation of surge protector by end user is required. Contact local BOSCH Service Center if charger is damaged.
	2. Temperature of Li-Ion Battery Charger (2382-XX) itself gets too high.	Take battery off and unplug the charger. Try again after the charger is cooled down. Refer to BOSCH Charger User Manual.
	3. Battery Charger (2382-XX) is plugged into the wrong voltage socket or is damaged by charging the wrong type of battery (NiMH & Li-Ion) by mistake.	Change Charger, contact local Bosch Service Center.

OTHERS		
PROBLEMS	POSSIBLE CAUSES	WHAT TO DO
Difficult to insert straps into Tool Slot.	1. Sealing Screw Bolt Supporter (3I) is aged and worn out.	Change (3I); refer to Dealer Manual Step 3.17 ”Sealing Screw Bolt Supporter, Sealing Main Mechanism.”
All LED light indicators on the Control Panel stay “ON.”	1. Malfunction of Electronic Control Unit (ECU) due to bad connections or the ECU 8 pin wire connector is damaged.	Change ECU; refer to Dealer Manual Step 3.12.2 “ECU assembly, Right Housing Assembly.” ***Return faulty ECU to manufacturer if requested. Do Not throw away without manufacturer’s written permission.**
All LED light indicators on the Control Panel are “OFF” and fail to respond.	1. ECU Wires (1E) has bad connections or is damaged.	Check and change (1E) wires if necessary; refer to Dealer Manual Step 3.12 “Right Housing Assembly.”
	2. Malfunction of Electronic Control Unit (ECU) due to bad connections or the ECU 8 pin wire connector is damaged.	Change ECU; refer to Dealer Manual Step 3.12.2 “ECU assembly, Right Housing Assembly.” ***Return faulty ECU to manufacturer if requested. Do Not throw away without manufacturer’s written permission.**
	3. Malfunction of Battery (9280/9380) internal components.	Change Battery, ***Return faulty Battery to manufacturer if requested. Do Not throw away without manufacturer’s written permission.**
	4. Control Panel’s Wire Belt damaged.	Change Control Panel.
LED indicators on the Control Panel can’t be adjusted or changed, or light irregularly switches by itself.	1. Control Panel keys damaged	
	2. Control Panel’s Wire Belt damaged.	
	3. Malfunction of Electronic Control Unit (ECU).	Change ECU; refer to Dealer Manual Step 3.12.2 “ECU assembly, Right Housing Assembly.” ***Return faulty ECU to manufacturer if requested. Do Not throw away without manufacturer’s written permission.**
	4. Bad connections of ECU Wires.	Check and change wires, if necessary.

Remarks:

1. “Reset” means that battery should be taken off from the tool and put back on the tool again. After that, press Tension Button to resume tool’s operation back to “ready-to-work” status.
2. Numeric sequence of possible causes is listed by the possibility of malfunctions from high to low. For example, the most possible cause is listed as number 1 and the next possible cause becomes number 2 and followed by number 3 etc…

WEARING PARTS' DISASSEMBLE / ASSEMBLE STEPS

Please remove Battery from tool before parts replacement.

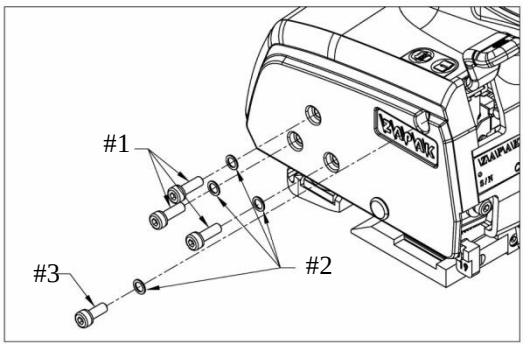
9281 Cutter

DISASSEMBLE

STEP 1：

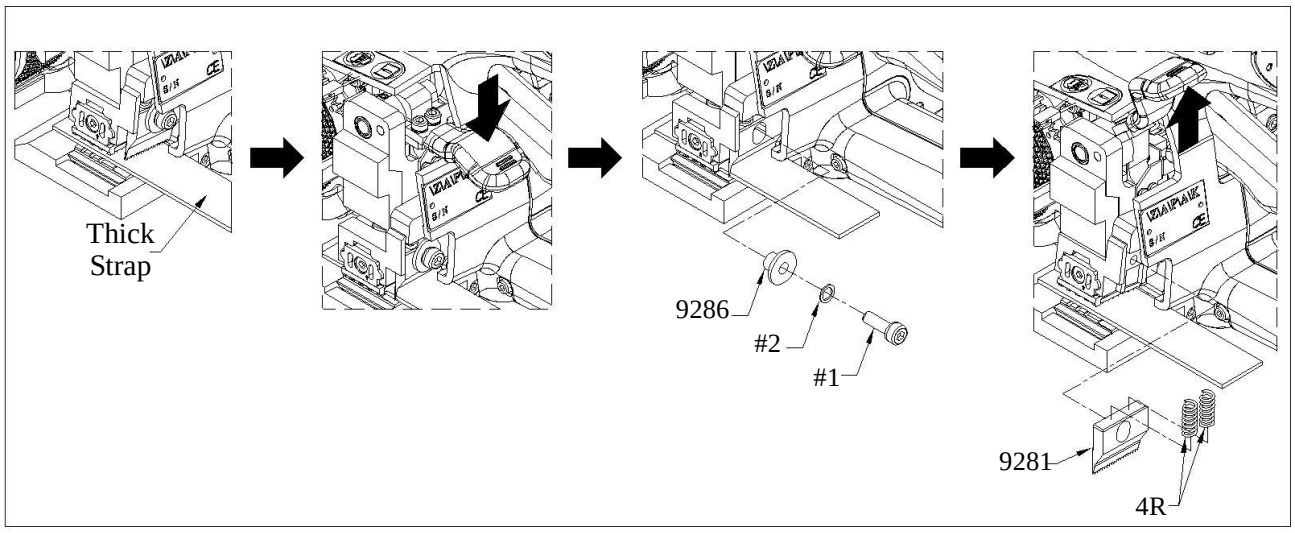
Take off 3 pieces of each #1 screw (M4×0.7×12mm) and #2 washer (M4), 1 piece #3 stainless steel screw (M4×0.7×10mm) and #2 Lock washer (M4), and the side cover can be removed.

NOTICE If #3 stainless steel screw is mistakenly disassembled or screwed back, it causes damage on tool, and it invalidate the warranty.



STEP 2：

Place thick strap (0.75mm or above) under the cutter, and then press down Sealing Lever, take off #1 screw (M4×0.7×12mm), #2 Lock washer (M4), and (9286) Cutter screw cover, lift up Sealing Lever, then (9281) Cutter and (4R) Cutter Spring Set can be removed.



ASSEMBLE STEPS

Place the thick strap (0.75mm or above) between sealing head and bottom sealing gripper, place two (4R) inside the hole, and place (9281) into position, press down Sealing Lever, put back (9286), #1, tighten screws #1 and #2, then lift up the Sealing Lever.

ASSEMBLE NOTICE

(4R) should be lubricated with lubrication GL261.

Print No. 9285002

Printed in Taiwan 2014

Please remove Battery from tool before parts replacement.

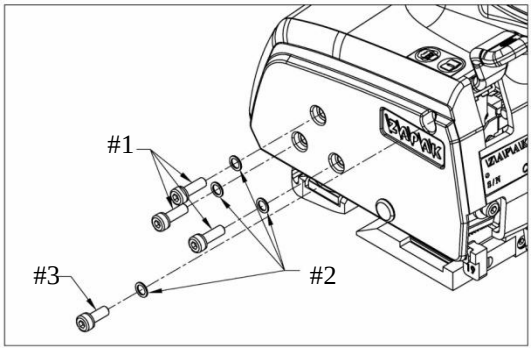
92/96-FW Feeder Wheel

DISASSEMBLE

STEP 1：

Take off 3 pieces of each #1 screw (M4×0.7×12mm) and #2 washer (M4), 1 piece #3 stainless steel screw (M4×0.7×10mm) and #2 Lock washer (M4), and the side cover can be removed.

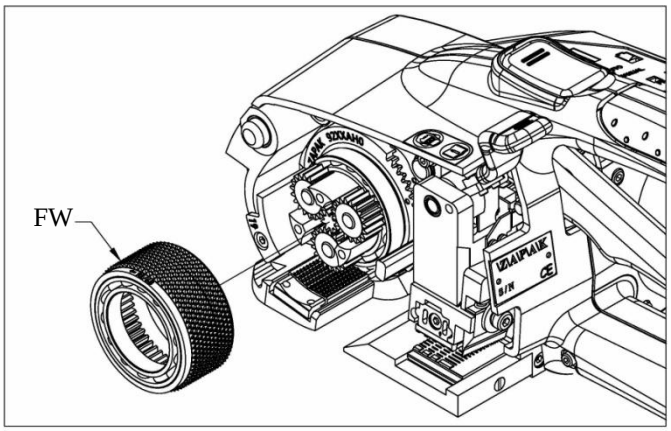
NOTICE If #3 stainless steel screw is mistakenly disassembled or screwed back, it causes damage on tool, and it invalidate the warranty.



STEP 2：

After removing the Side Cover, Feeder Wheel can be replaced. As the bearings slide and move with Feeder Wheel, pay special attention to avoid collision with bearings. After taking off Feeder Wheel, be sure to keep the tension 19T Epicyclic Gear Set & other parts away from collision.

NOTICE：Avoid collision damage on the Feeder Wheel teeth when taking out the Feeder Wheel.



ASSEMBLE NOTICE

＊ Note assembly direction of Feeder Wheel, the laser engraved side with "← *92/96-FW*" should be located to face forward as shown in above Figure.

＊ Lubricate teeth of (4M) and inner circle with lubrication GL261.

Print No. 92/96-FW2

Printed in Taiwan 2014

Please remove Battery from tool before parts replacement.

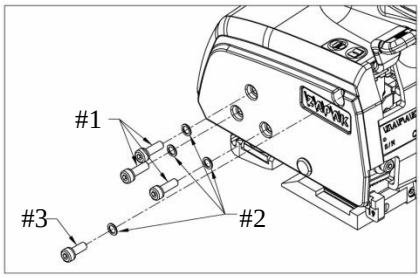
92XX-4J / 97XX-4J Strap Grippers Assembly

DISASSEMBLE

STEP 1：

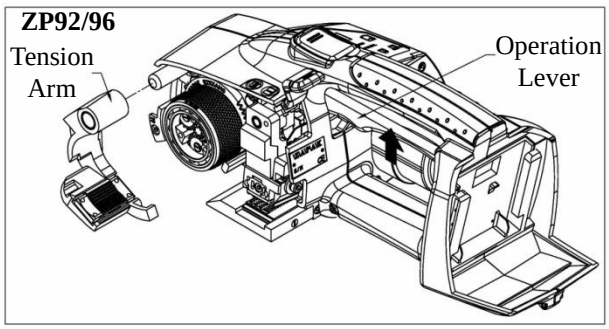
Take off 3 pieces of each #1 screw (M4×0.7×12mm) and #2 washer (M4), 1 piece #3 stainless steel screw (M4×0.7×10mm) and #2 Lock washer (M4), and the side cover can be removed.

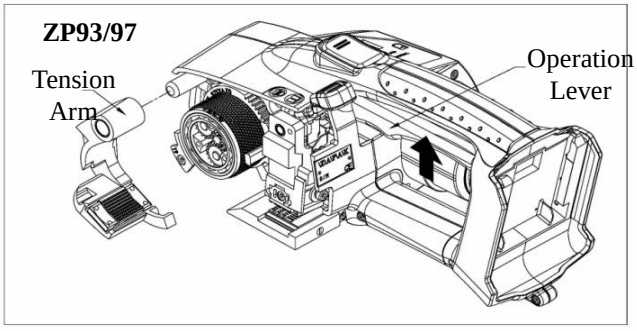
NOTICE If #3 stainless steel screw is mistakenly disassembled or screwed back, it causes damage on tool, and it invalidate the warranty.



STEP 2：

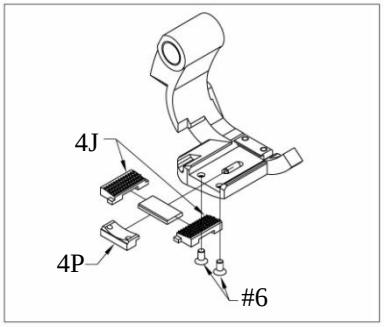
After removing the side cover, lift up the Operation Lever to open the Tension Arm, then remove the Tension Arm, as shown in following Figures.





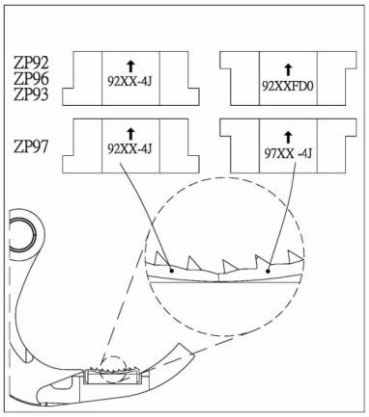
STEP 3：

Remove 2pcs #6 screw (M3×0.5×6mm) from outer side, take off the outer (4P) Strap Gripper Protection, then (4J) Strap Grippers Assembly can be removed.



ASSEMBLE NOTICE

Notice the teeth direction of (4J) Strap Grippers Assembly,
the direction of teeth should face forward. Place the front piece (with "↑92XX-4J" bottom laser words) and the rear piece (with "↑92XXFD0 / ↑97XX-4J" bottom laser words) as shown in Figure below.



Print No. 92XX-4J2

Printed in Taiwan 2014

Please remove Battery from tool before parts replacement.

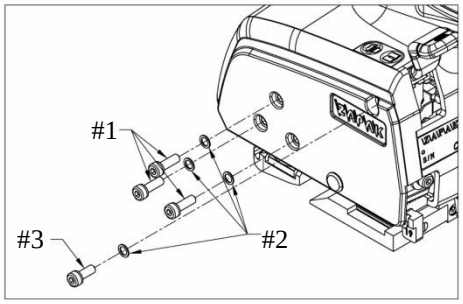
92XX-4N Bottom Sealing Grippers Assembly

DISASSEMBLE

STEP 1：

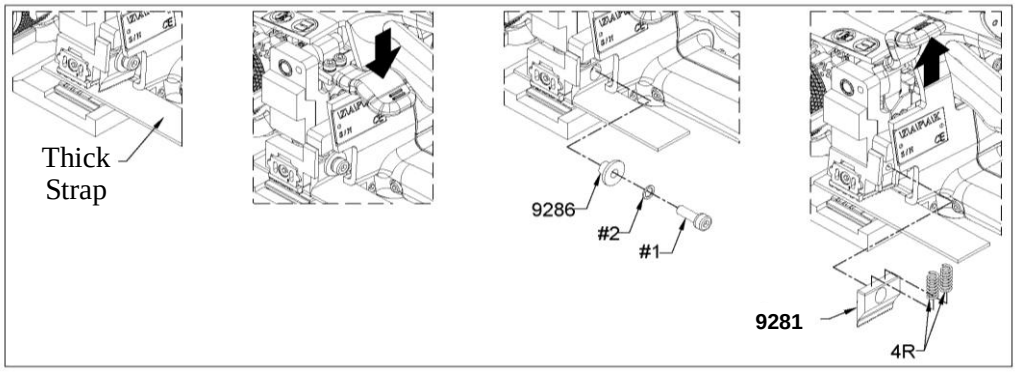
Take off 3 pieces of each #1 screw (M4×0.7×12mm) and #2 washer (M4), 1 piece #3 stainless steel screw (M4×0.7×10mm) and #2 Lock washer (M4), and the side cover can be removed.

NOTICE If #3 stainless steel screw is mistakenly disassembled or screwed back, it causes damage on tool, and it invalidate the warranty.



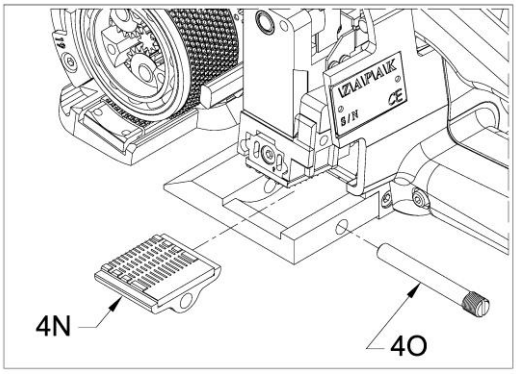
STEP 2：

Place thick strap (0.75mm or above) under the cutter, and then press down Sealing Lever, take off #1 screw (M4×0.7×12mm), #2 Lock washer (M4), and (9286) Cutter screw cover, lift up Sealing Lever, then (9281) Cutter and (4R) Cutter Spring Set can be removed.



STEP 3：

Take off (4O) Bottom Sealing Grippers Axis, and (4N) Bottom Sealing Grippers Assembly can be removed as shown in following Figure.



ASSEMBLE NOTICE

- **The LOCK-TITE glue is applied to the threads of (4O). If the glue peels off, it must be re-applied. The surface of (4O) Axis should be lubricated with lubrication GL261. After (4O) is screwed on to the very end, then reverse turn the Axis by 2 threads to make sure (4N) is able to swing smoothly.**
- **When installed, the smooth side without gripper teeth of (4N) should be placed to meet the Cutter as shown in Figure above.**

Print No. 92XX-4N2

Printed in Taiwan 2014

May, 2015
(Applied to Models ZP92/96 & ZP93/97)

ZAPAK PRODUCTS WARRANTY AND AFTER SERVICE BYLAW

This bylaw is offered to all ZAPAK brand products' authorized distributors (herein under called distributors) who should follow and enforce every regulations herein under listed during the limited warranty period which is provided by Pantech International Inc. (herein under called Pantech).

1. Products (Model No. ZP92/96 & ZP93/97)

Products in this bylaw mean the above models of ZAPAK brand tools and related products manufactured by Pantech which do not include all wearing parts and materials (herein under called wearing parts) listed in User Manual and Dealer Manual. Bosch Battery Charger is not included which is covered by Bosch parts warranty.

2. Warranty Period

2-1 The warranty is effective for one calendar year limited warranty for regular parts of tool (except the Brushless Motor and ECU- Electronic Control Unit) based on ex-factory date or Bill of Lading date of shipment of tools.

If to base one calendar year on the purchase date of tool by the end user, it should be no later than fifteen months from the date the tool is dispatched or shipped from Pantech. The purchase date is based on the date of the distributor's invoice to the end user or the date shown on the warranty proof.

2-2 Pantech provides a "Three-Year" warranty period or a total counts of 250,000 sealing cycles, whichever is fulfilled first for the Brushless Motor and ECU installed in the tool.

3. Warranty on Parts

All separately sold spare parts except wearing parts and materials, are entitled to have an individual warranty period of three (3) months. Distributors should present the Service report (as appendix) to Pantech upon request which is requested to include Model No., Serial No., purchase date of tool, malfunction description and contents details of replaced parts etc., acknowledged and signed by the end user.

4. Warranty Proof

This bylaw is regulated in accordance with Pantech's warranty proof. Any conflict meaning, unclear wordings or unmentioned facts are to be explained and ruled by Pantech.

5. Inspection upon Shipment arrival

5-1) Inspection on arrival status

Whenever a shipment arrives in the distributor's end, distributor takes the full responsibility to inspect the arrival status on the packaging and counts of goods and advise Pantech immediately if discrepancy is found.

5-1-1) Shipment by CIF (or C&F) basis

Distributors should take photos on any packaging or counts of goods discrepancy and report to Pantech immediately upon arrival and help Pantech on all necessary supporting documents so that Pantech can file a claim to the transportation service provider. Distributors should not attempt to unpack the shipment until further notifications from Pantech. Pantech will provide free replacement parts for distributors to resume the shipment.

5-1-2) Shipment by FOB basis

Distributors should take photos on any packaging or counts of goods discrepancy of the shipment and report to Pantech upon arrival. Pantech will aid distributors by providing all necessary support with which distributors can file claim to the transportation service provider. Pantech will provide replacement parts for distributors to resume the shipment at the distributors' cost.

6. Helpdesk information to End user

In order to protect user's rights, distributors should fill in all requested information in the warranty proof on the date of purchase, stamped and signed by distributors. In order to facilitate after service requirements, distributors should indicate address and telephone number of its service locations on the user manual (or the warranty proof) or any other material clearly posting such service information .

7. End user obligation

End users must follow the operation instruction of user manual and properly use the product. This warranty is invalid including but not limited to the following conditions:

7-1). Use at improper locations or environments including but not limited to outdoors raining days or exposures under strong magnetic fields, or in dusty, or inflammable environments.

7-2). Damaged by careless use or mishandling including but not limited to immersion, incorrect connection or wrong plug-in of power source, misuse or negligence.

7-3). Damaged by wars, accidents, transportation or force majeure (including but not limited to earthquakes, flood, fire etc.) Any unknown or foreign force damages including but not limited to cable broken by excessive pulling, throwing or rodents etc.

7-4). Self-repaired or maintained by unauthorized party and/or use any non-genuine parts.

7-5). Any modifications or deign changes of any products or parts.

7-6). Other damages which are caused by improper operation or negligence.

8. Claim for Warranty

When tool malfunction is found in end-user side, distributor must fill out " Products Repair Worksheet "with full malfunction descriptions and send to Pantech for proper record. Whenever a warranty obligation is requested, the following documents need to be presented . There will not be any free replacement parts from Pantech to distributors if distributors fail to follow documents requested by Pantech :

a. Pantech's valid warranty proof.
b. Distributor's original invoice of sales to end user.
c. Product Repair Worksheet filled out by distributor.

The warranty is invalid under the following conditions:

8-1).Warranty proof is damaged or lost and the distributors' countersigned invoice can not be presented.

8-2).Warranty proof is modified or the serial number indicated on the warranty proof is not conformed to the product.

8-3). The serial number, purchase date and distributor's acknowledgement including but not limited to seal, stamp, signature etc. are not indicated on the on the warranty proof.

8-4). The date of warranty proof exceeds one calendar year. OR

8-5). The date of shipment dispatched exceeds fifteen months.

8-6). When the security seal of the product is removed, unless a distributor's certification can be presented and proven that this defect is not caused by the end user. (refer to article 9.)

8-7). Any modifications or information deletions or losses of serial number labels.

8-8) Tool failed by misuse, abuse, negligence, improper operation & maintenance etc.

9. Seals and Serial Number Labels

If it is imperative to damage the security seal or serial number label when disassembling the product, distributors should obtain new seals or labels from Pantech or issue a certification to the end user to prove that this defect was not caused by the end user. Distributors should return the damaged seals or labels or a copy of the certification to Pantech upon request.

10.Service Obligation to other purchase source

All distributors have the obligation to service all Pantech products regardless its purchase source.

11. Service cost

Distributors have the rights to request compensation from Pantech for valid warranty repair material cost and its shipping cost. However , distributors are accountable for the service labor cost. Pantech will not answer all the service labor cost incurred in distributor's site. Distributors should enclose those necessary documents when requesting compensation. (Refer to article 8)

12. Stock and Return on Replaced Part

The replaced defect parts by valid warranty must be filed and kept for one year. It may be returned to Pantech for investigation and inspection upon request. Pantech is responsible for the returning freight when Pantech requests to ship back those replaced parts. However, if the inspection results prove that the defects or damages are caused by end user or distributor, or the defects returned are actually good parts, then Pantech is entitled to charge distributor back for all related expenses incurred by freights, customs import fees, duty and spare part losses etc.

13. Refusal on Warranty Claim

Pantech reserves the rights to refuse any compensation for invalid warranty or any charges besides the direct cost of the product repair. (refer to article 7 and 8)

14. Service Record

In order to guard Pantech's and distributor's reputation and end users' rights. Pantech reserves the rights to review all necessary information and records of the distributors' service work . To implement the review, Pantech will randomly check with end-users or dealers on service performance and result. Distributors should not refuse this request for any reasons and shall provide the contact information of selected end-users or dealers upon Pantech's request .

15. Tool Return

Without written permission from Pantech, distributors should not send back any tools to Pantech for repairs or maintenances services under any conditions. Otherwise, distributors are accountable for round-trip freights and related expenses customs fees and duty etc. incurred. In the event that tool is returned for examination but the inspection result is proved that defects or damages are caused by end users or distributors and/or such return of tool is unnecessary as problems could have been solved if distributor would have followed technical advices or suggestions given by Pantech previously, then Pantech will charge back all related expenses incurred by freights, customs import fees, duty and spare part losses etc. caused by unnecessary returns of tools.

16. Cross-border or cross-country sales of tools

Without written permission from Pantech, cross-border or cross-country sale is prohibited. Pantech reserves the rights to cancel authorization of distributorship and warranty obligations of tools if distributors fail to follow this request. Also, Pantech has the right to designate other local distributors for after sales services, if required.

17. Warranty claims from non-original distributor

Pantech reserves the rights to refuse warranty obligations if the warranty claim is raised by non-original distributor or supplier of the claimed tool. However, if original distributor or supplier fails to implement after services as required by Pantech, Pantech reserves the rights to cancel authorization of original distributorship and designate other local distributors to support after sales services.

18. Compensation

Pantech reserves the rights to ask distributors to compensate two hundred times of all improper or untruly warranty services compensation amounts. The total improper or untruly compensation amount and time period are unlimited. Distributors agree to waive all legal rights non-contingently under this term.

19. Dissemination on Information

This bylaw is ruled by Pantech, all distributors should follow the above terms and consider them as part of the business clauses and trade terms. Pantech should inform distributors this bylaw and effective when a DISTRIBUTION AGREEMENT or a purchase order is agreed upon. It is not necessary to indicate on every business contracts or purchase orders.

20. Amendment on this Bylaw

Pantech reserves the rights to amend this bylaw when necessary and inform distributors such amendments.

21. Implementation

This bylaw is amended and issued on the 30th day of May, 2015.

PANTECH INTERNATIONAL INC.
Taipei, Taiwan, R.O.C.

Printed in Taiwan, R.O.C.