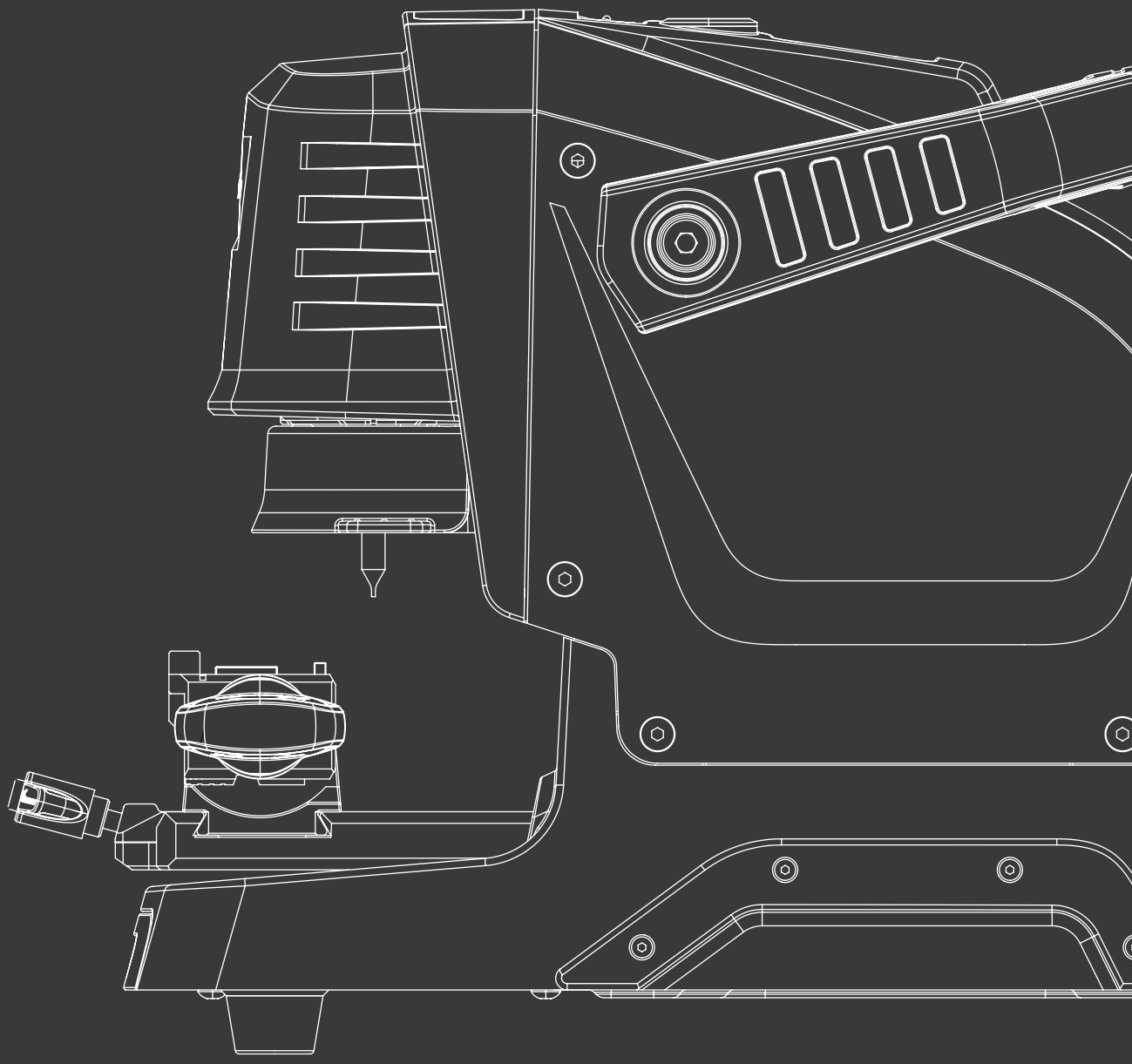
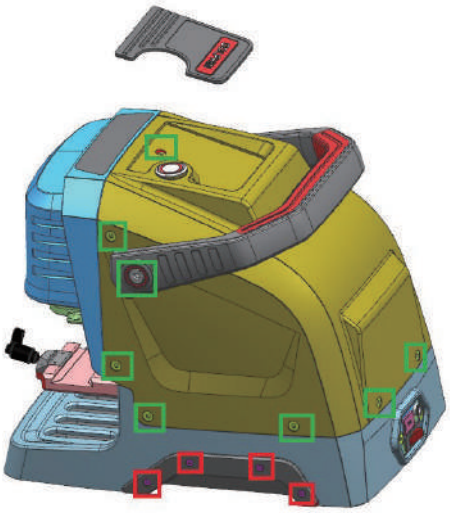
EXTREME HORSE POWER

Dolphin Generation 1
Maintenance Manual V1.0

Note: This manual is applicable to models with serial number KM06、KM12 of Dolphin Generation I model.



1 Machine disassembly exploded pictures



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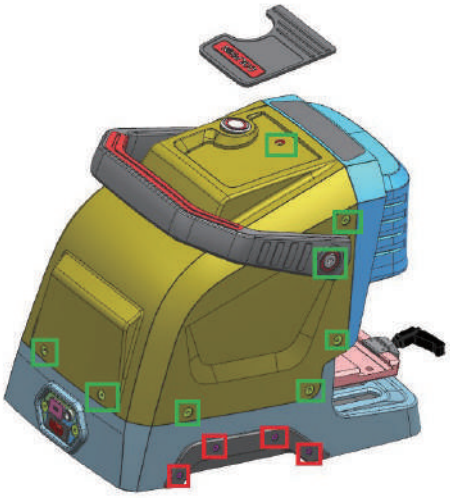

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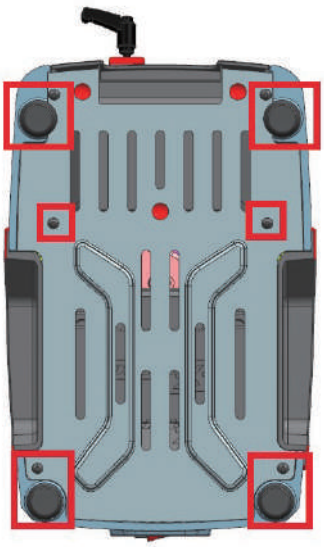

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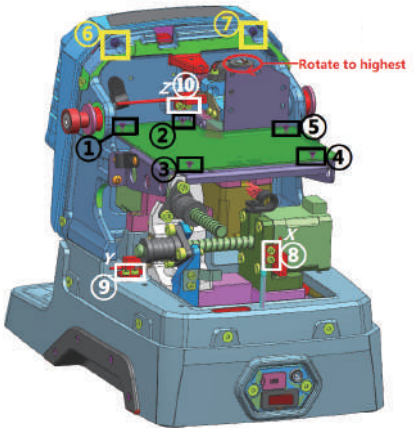
P4



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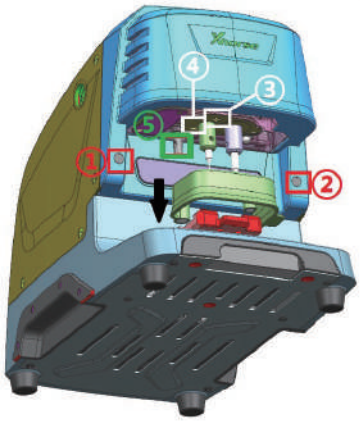

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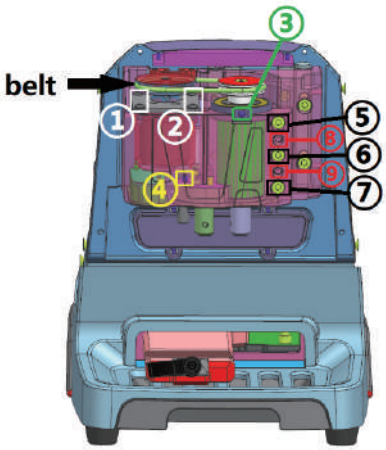

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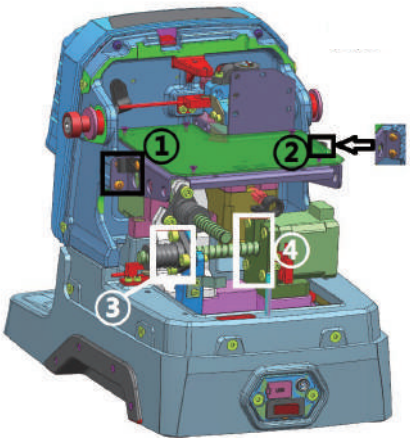

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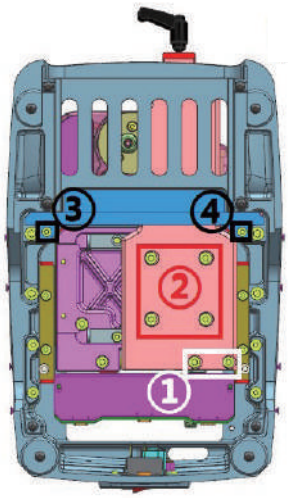

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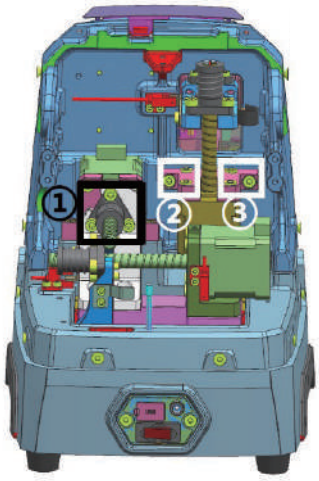


P10

2 Method of replacing parts due to machine malfunction

2.1 Replace the battery

Please refer to the disassembly pictures **P1, P2, P3, and P4** in Chapter 1. Unscrew the screws in the **red box** separately to replace the battery module with a new one, and plug in the three wiring ports of the battery accordingly.

2.2 Replace the mainboard

Reason of replacement：**1.** The cutter non-conductive **2.**Unable to charge **3.**Unable to power on or upgrade. **4.** LED light does not light up **5.**Startup error **6.**cutting error.

Please refer to the disassembly pictures **P1 and P2** in Chapter 1. Remove the screws in the **green frame** to remove the rear cover. Then refer **P5** to remove the screws at **position Z of the white frame at ⑩,** and then remove the screws in **the black frame at ① to ⑤** separately to replace the mainboard with a new one. Insert the mainboard port according to the wire harness label.

2.3 Replace the LED screen

Please refer to the disassembly pictures **P1 and P2** in Chapter 1. Remove the screws in the **green frame** separately to remove the rear cover. Then refer **P5** to remove the screws in the **yellow frame at ⑥⑦,** and then rotate the Z-axis in the **red circle clockwise** to its highest position, refer **P6** to pull down the protective cover in the direction of the **black arrow,** rotate the column in the **green box at ⑤** to the left and remove it, then remove the rubber plug from the **red box at ①②** and unscrew the screw, and remove the front cover and screen and replace them. Insert the mainboard port according to the wire harness label.

2.4 Replace the spindle motor belt

Due to long-terms use, the belt should be replaced in a timely manner when it ages, breaks or slips (breaking the cutter during cutting). Refer **chapter 2.3** to remove the front cover to see the belt (as shown in **P7**), and replace it directly.

2.5 Replace the motor

2.5.1 Replace the spindle motor

When the motor makes abnormal noise, it needs to be replaced. Refer chapter **2.3** to remove the front cover and belt, then refer **P7** to unscrew the screws in the **white frame at ①②** and **green frame at ③**, after that, replace it directly.

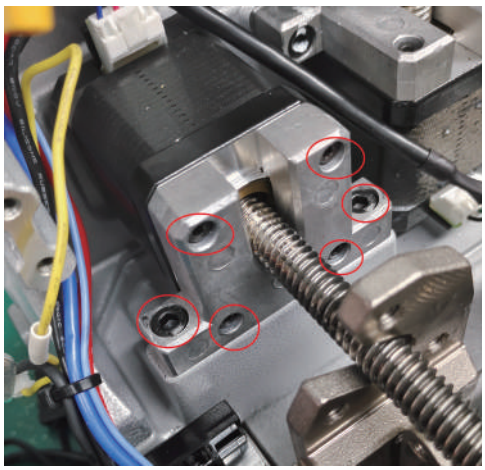
2.5.2 Replace the X-axis screw shaft motor

When the screw motor gets stuck or bent, **the X-axis screw shaft motor** need to replace. Refer to the disassembly pictures **P1 and P2** in Chapter 1, remove the screws in their **green frame** separately to remove the rear cover, refer **P8** to remove the screws in the **white frame at** ③④**,** after that, replace it directly.

Replace the **x-axis rail** need to refer to **chapter 2.1**.Remove the battery first, then refer P9 to remove the screws in the **white frame at** ①**,** then remove screws in the **red frame at** ② and the **black screws at**③④**,** after that, replace it directly.

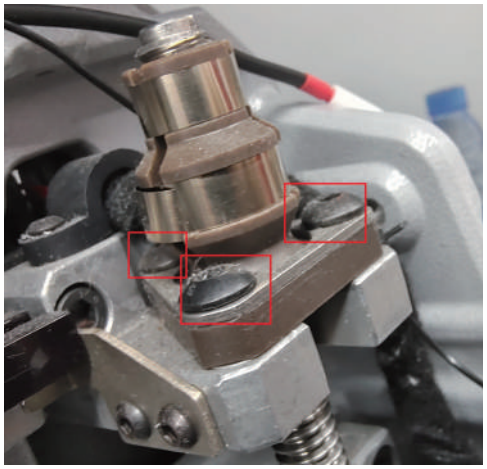
2.5.3 Replace the Y-axis screw shaft motor

When the screw motor gets stuck or bent, the **Y-axis screw shaft motor** need to replace. Refer chapter 2.2 to remove the mainboard first, then refer **P8** to remove the screws in the **black frame at** ①② and the **white frame at** ③④**,** remove **the X-axis screw shaft motor** first, then refer **P10** to remove the screws in the **black frame at** ①, remove the screws in the **red circle** in the right picture , then replace the Y-axis screw shaft motor directly.



2.5.4 Replace the Z-axis screw shaft motor

When the screw motor gets stuck or bent, **the Z-axis screw shaft motor** need to replace. Refer to the **chapter 2.2** to remove the mainboard first, refer **P8** to remove the screws in the **black frame at** ①②**,** then refer **P10** to remove the screw in the **white frame at**②③, remove the screws in the **red circle** in the right picture , then replace the Y-axis screw shaft motor directly.



2.6 Replace the sensor

2.6.1 Replace the X-axis sensor

When the sensor is defective or damaged, it needs to be replaced. Please refer **P1 and P2** to remove the screws in the **green frame** and remove the rear cover, then refer **P5** to remove the screws in the **white frame at** ⑧**,** then replace it. Insert the mainboard port according to the wire harness label.

2.6.2 Replace the Y-axis sensor

When the sensor is defective or damaged, it needs to be replaced. Please refer **P1 and P2** to remove the screws in the **green frame** and remove the rear cover, then refer **P5** to remove the screws in the **white frame at** ⑨**,** then replace it. Insert the mainboard port according to the wire harness label.

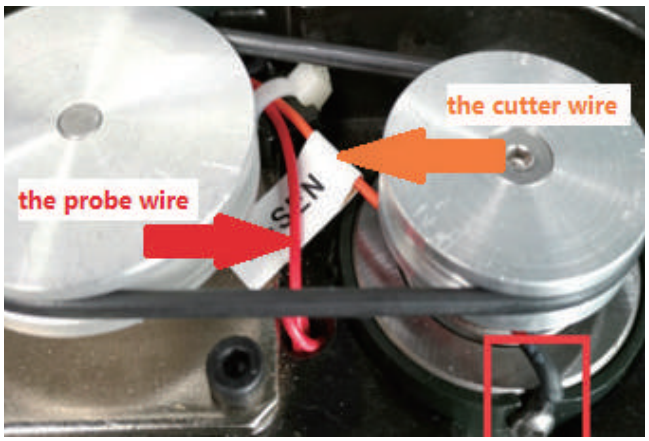
2.6.3 Replace the Z-axis sensor

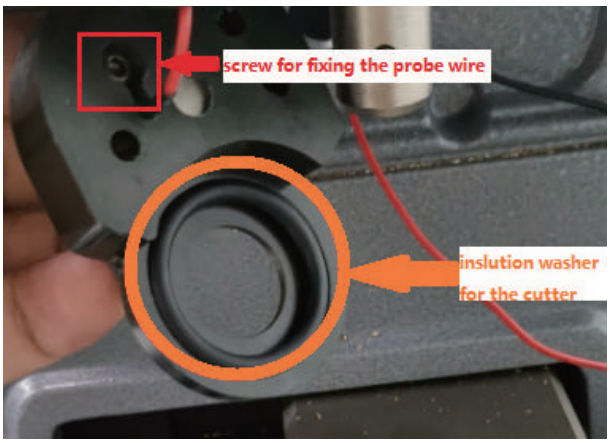
When the sensor is defective or damaged, it needs to be replaced. Please refer **P1 and P2** to remove the screws in the **green frame** and remove the rear cover, then refer P5 to remove the screws in the **white frame at** ⑩**,** then replace it. Insert the mainboard port according to the wire harness label.

2.7 Replace or inspect the probe wires

2.7.1 The probe non-conductive

Poor contact or broken circuit caused by worn probe wires. Refer **chapter 2.3** to remove the front cover and belt, then refer **P7** to remove the **green frame at**③**,** refer **P6** to remove the **white frame at**③④**.** As shown in the left picture below, **gently** pull the red probe wire forward while shaking the probe base. Then in the right picture below, you can see the screw which fixed probe **in the red frame,** unscrew it to replace the probe and cutting wires. Insert the mainboard port according to the wire harness label.





2.7.2 The probe remains conductive

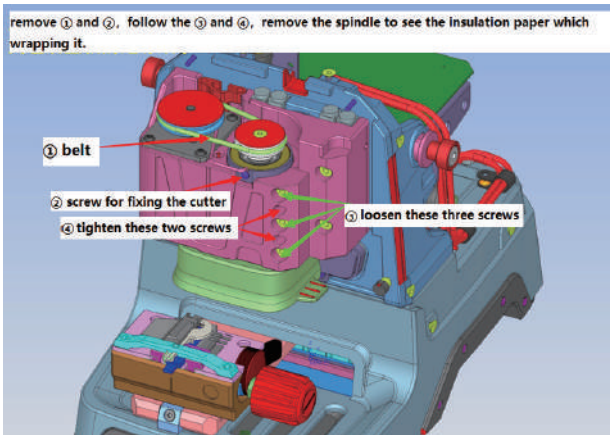
Refer to **chapter 2.7.1,** check if the probe wire is broken, and if there are metal debris near the fixing screws or at the lamp panel (don’t blow with an air gun).

2.8 Replace or inspect the cutter wires

2.8.1 The cutter non-conductive

Poor contact or broken circuit caused by worn probe wires, refer **chapter 2.7.1** to replace the probe and cutting wires. Insert the mainboard port according to the wire harness label.

2.8.2 The cutter remains conductive



Refer to **chapter 2.7.1,** check if the cutter wire is broken, and if there are metal debris near the fixing screws or at the lamp panel (don't blow with an air gun).

If none of the above situation exist, the cutter remains conductive, refer **P7** to **loosen** the screws in the **black frame at⑤⑥⑦,** and **tighten** the screws in the **red frame at⑧⑨,** use your fingers to push the cutter hole upwards slowly, then observe if the **white insulation paper** is broken or if there are metal debris inside the cutting shaft (don't blow with an air gun), refer to the picture on the right. when reinstalling the screws, it is necessary to refer **P7** to loosen the screws in the **red frame at⑧⑨** first.

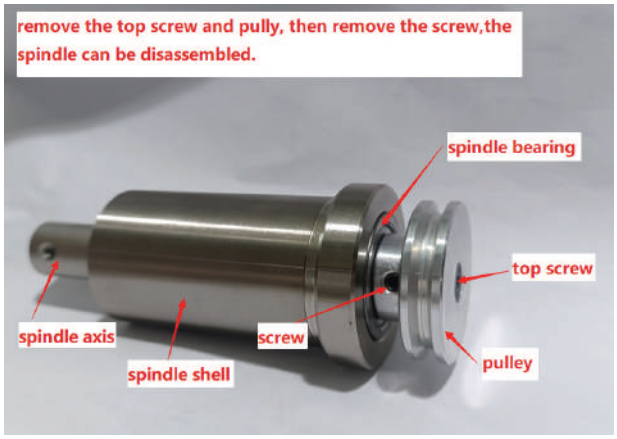
2.9 Replace the probe shaft or the cutter shaft

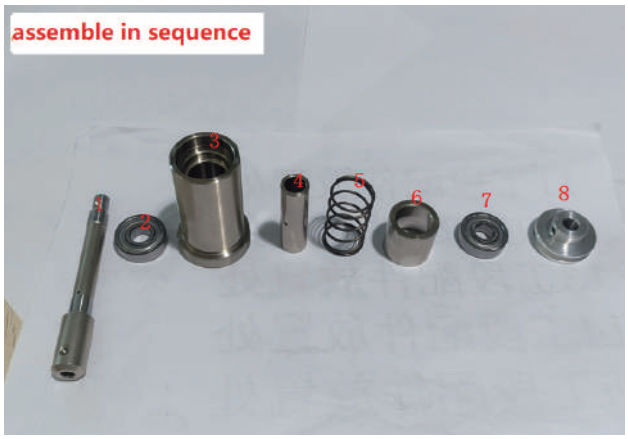
When the top thread of the probe and the cutter is slippery and cannot be removed, it is necessary to replace the probe shaft or the cutter shaft. Replace the **probe shaft** needs to refer **chapter 2.7.1** and replace the probe base. Replace the cutter shaft needs to refer **chapter 2.8** and remove the cutter shaft, then refer **chapter 2.10** to disassemble it.

2.10 Main shaft abnormal noise maintenance

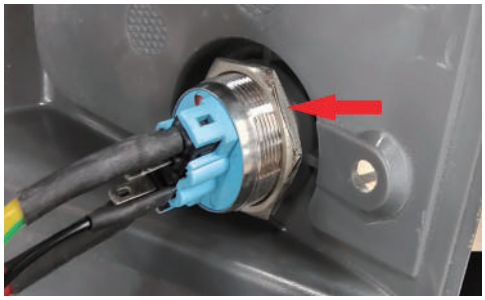
Reason for abnormal noise: metal debris present, belt wear and large gap in the shaft hole for the cutter. Refer **chapter 2.3** to remove the front cover, clean the metal debris, replace the belt, or refer **P7** to **loosen** the screws in the **red frame at⑧⑨,** and **tighten** the screws in the **black frame at⑤⑥⑦.**

The disassembly and assembly of the spindle structure are as follows:



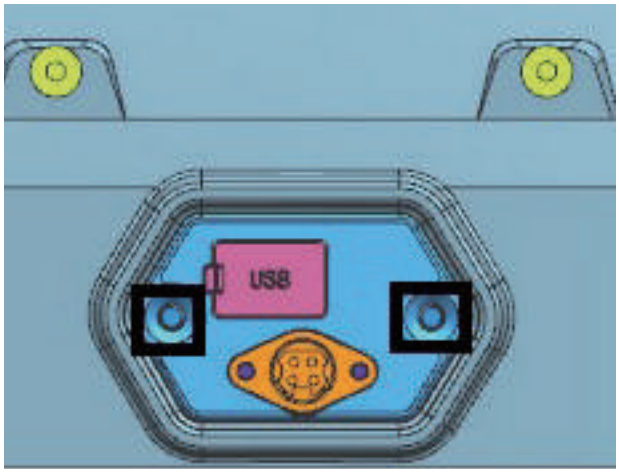


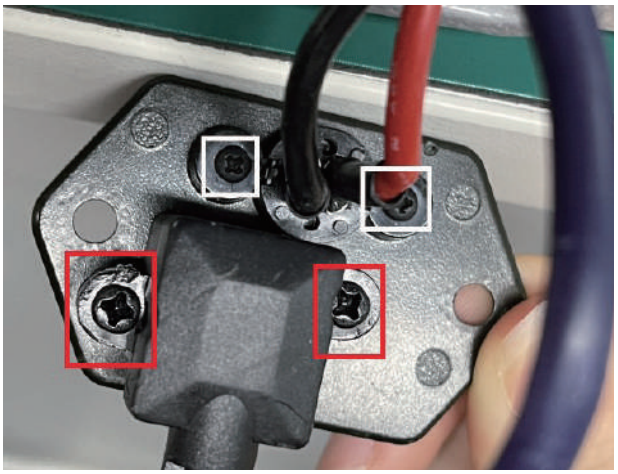
2.11 Replace the key switch and USB port



Replace **the key switch** should refer to the disassembly pictures **P1 and P2** in Chapter 1. Remove the screws in the **green frame** to remove the rear cover. Unscrew the nut indicated by the arrow to replace it. Then insert the mainboard port according to the wire harness label.

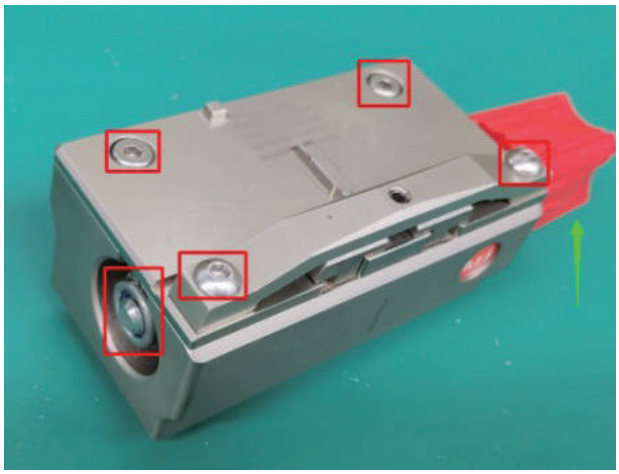
Replace **the USB** port should refer the picture below, remove the screws in the **black frame,** then remove the screws in the **red frame**. After replacement, insert the mainboard port according to the wire harness label.

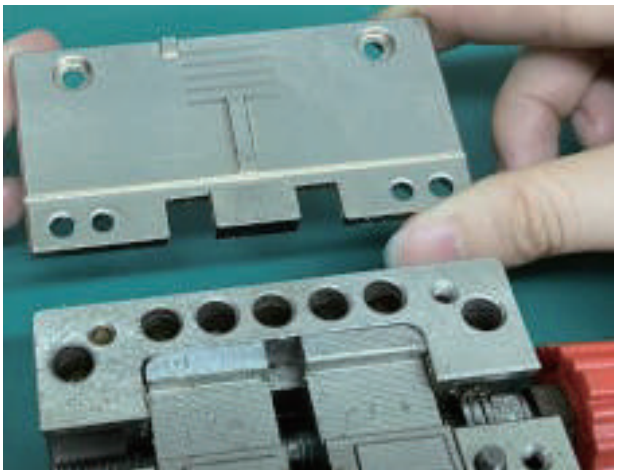




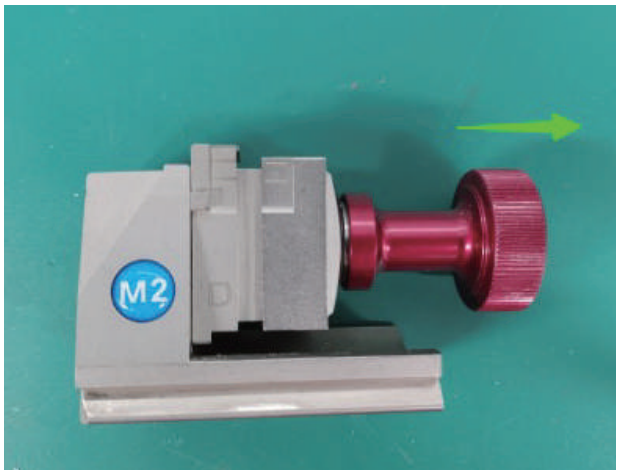
2.12 Replace clamp parts

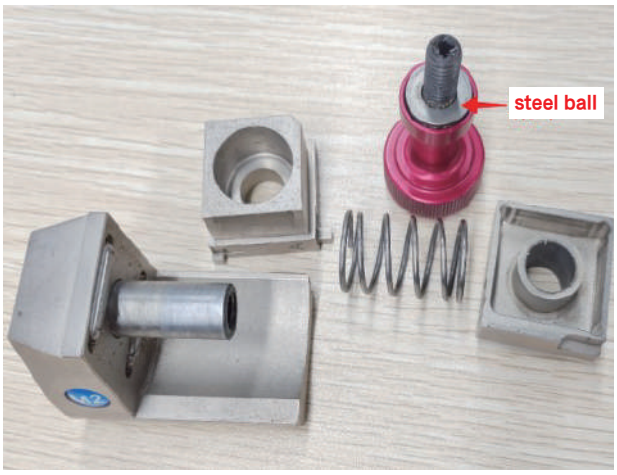
M1 clamp: Remove the screws and nut in the **red frame** on the left picture, push the knob up, then you can replace the clamp surface



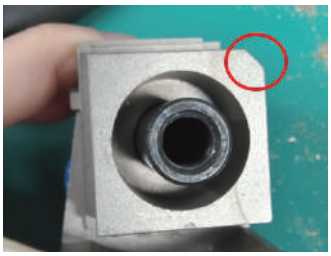


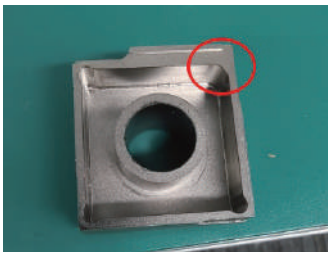
M2 clamp: Rotate the knob outward on the left picture, then it can be disassembled. Replace the corresponding parts according to the picture on the right.



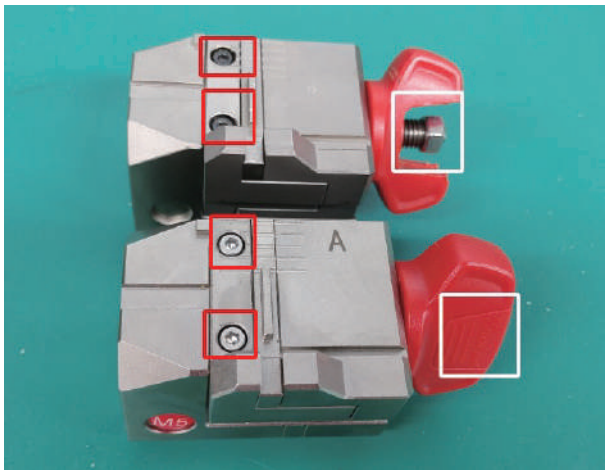


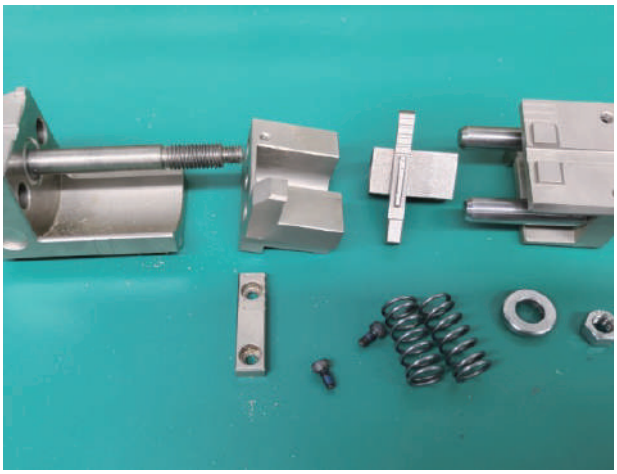
Note: M2 clamp needs to pay attention to **the gaps** in the figure below, align it before tightening, Otherwise, it may get stuck.





M5 clamp: Remove the nut in the **white frame** and remove the screws in the **red frame** on the picture below, rotate the knob outward on the left picture, then it can be disassembled. Replace the corresponding parts according to the picture on the right.





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