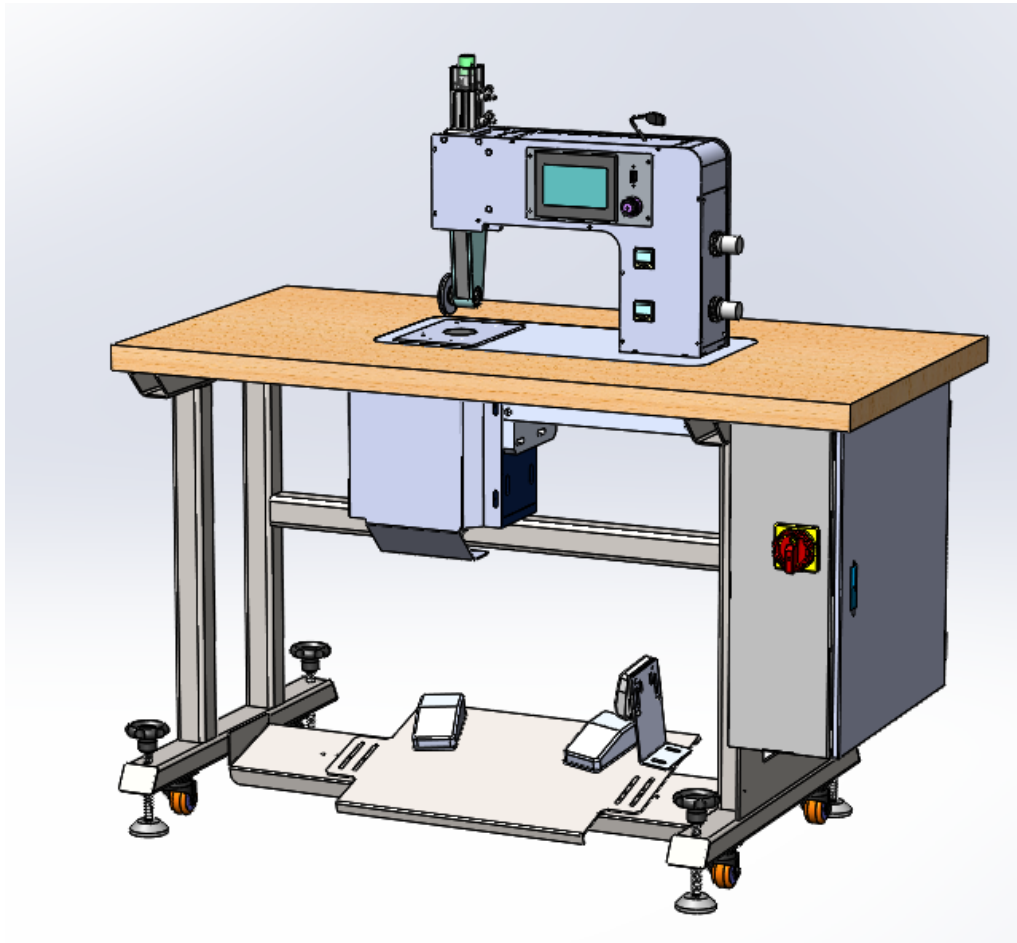


## *US-511 Ultrasonic Rotary Welding Machine*

### *Operation Manual*

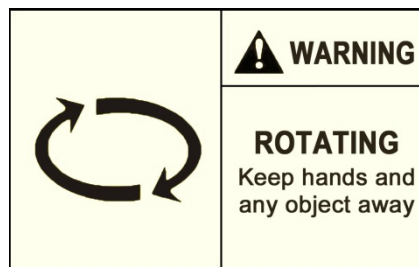
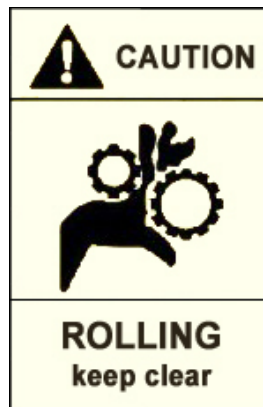
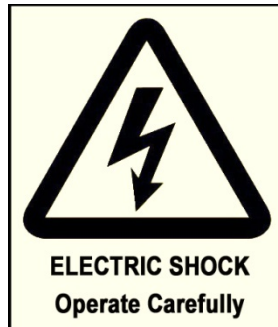


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> Precautions with Regard to Safety

Please observe these safety tips for safe, efficient, and injury-free operation of your equipment. By strictly following all instruction contained in this manual you will certainly obtain an excellent performance from the use of this equipment for many years.



> **Name Plate**

**Model : US-511**  
**Ultrasonic Rotary Welding Machine**

Voltage	Frequency	Power	Weight
220 V	50/60 Hz	700 W	108Kg
Date :		S/N :	

Figure 1 Name Plate

**> Introduction**

Thank you for your choosing of US-511 which is manufactured by H&H.

The US-511 ultrasonic rotary welding machine was specially designed for cutting and welding different type of fabric. Various operations such as “line bonding”, anti-fray cutting, button hole opening can be carried out using US-511.

In order to fully understand how to use this machine properly, and avoid damage to both the machine and operating personnel, please read this manual carefully and keep it safe for future reference.

**> Specifications**

Model	:	US-511
Voltage	:	220 V, Single Phase
Frequency	:	50/60 Hz
Power Consumption	:	700 W
Compressed Air	:	0.4~0.6 Mpa
Sonic Frequency	:	28kHz
Overall Dimensions	:	1200mm x 650mm x 1230mm (length x width x height)
Net Weight	:	108 kg

Note : due to continuous improvement, specifications are subjected to change without prior notification

**> Features**

- ✧ Quiet ultrasonic system.
- ✧ Microprocessor control with large panel touch screen operator interface.
- ✧ Unique welding technique ensuring consistent welding energy control.
- ✧ Precise timing control resulted in no marking, over welding and skip welding during start and stop operation.
- ✧ Excellent control in constructing curved seams.
- ✧ 3D seam construction.
- ✧ Easy to adopt sewing machine platform.

> **Component Names**

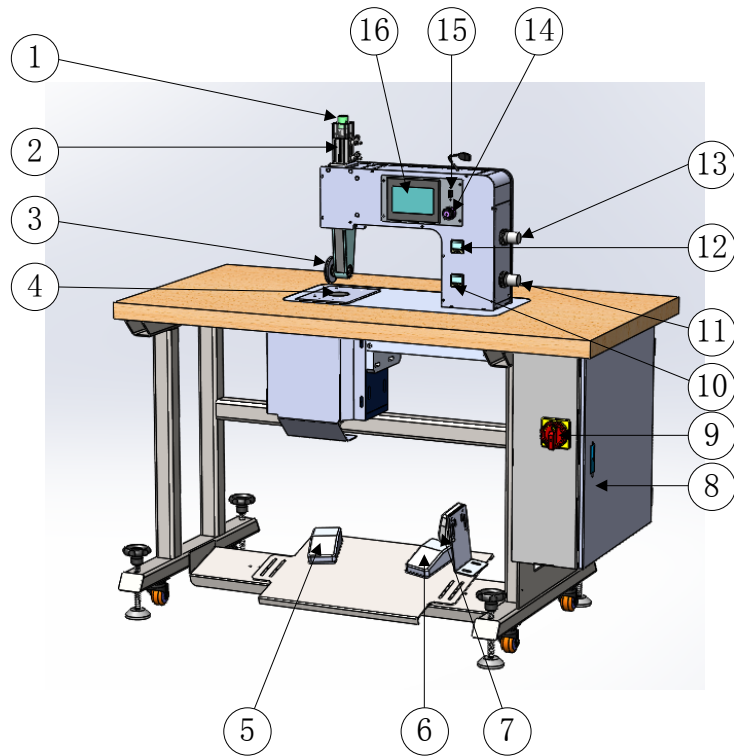


Figure 2 Machine parts names

1. pressure adjusting knob	9. power switch
2. cylinder	10. pre-pressure (working pressure) gauge
3. cutter wheel	11. pre-pressure (working pressure) adjustment knob
4. lower wheel	12. pressurized pressure gauge
5. pressure pedal	13. pressurized pressure adjustment knob
6. working pedal	14. supervisor control key
7. side pedal, control cutter wheel up and down	15. USB socket
8. electric box	16. touch screen



**> Principle of Seam Sealing**

Ultrasonic energy is a form of physical vibration. The commonly used vibration frequencies are 20kHz, 30kHz, 35kHz and 40kHz. Different materials exhibit different behaviors under ultrasonic vibration. Synthetic material generates internal heat under ultrasonic vibration. The US-511 machine generates vibration on the surface of the horn. Fabric with at least 50% synthetic material is placed on the surface of the horn. A special tool called cutter bit is pressed against the horn so that fabric between the horn and the cutter bit is exposed to vibration. The heat generated in the fabric portion under pressure is heated up instantly and the temperature is high enough to melt the fabric, hence resulting in an ultrasonic cut.

US-511 is engineered to carefully manage this vibrating energy in order to slice fabric consistently in single layer or multi-layer application.

During single layer operation, fabric is melted and separated resulting in a fray free edge. While during multi-layer operation, layers of fabrics are cut but at the same time the edges of the fabrics are melted and fused together resulting in a “weld”. This process is sometimes referred to as a “cut and seal” or “line bonding” operation.

**> Preparation for Installation**

Installation must be carried out by authorized personnel. Follow the steps below:

1. Position the machine on a flat surface and allow at least 50cm clearance on both sides as well as the back side, this is essential for the hot air ventilation and also to allow enough room for maintenance personnel to carry out necessary service and maintenance.
2. Adjust the foot stand so that the machine is level and stable.
3. Loosen all packing cable ties and materials in order to free up all machine movements.
4. Connect the power plug to a suitable outlet with at least 10A capacity. Make sure grounded and reliable.
5. Locate the air hose supplied with the machine. Connect one end to the inlet of the compressed air water filter at the back side of the machine; connect the other end to a compressed air supply such as air compressor or central air supply. Make sure the compressed air supply has at least 0.4Mpa (4 bar) of pressure.

## > Selection and Replacement of Cutter Wheel

### >> Selection of the cutter wheel

According to different fabrics and process, you can choose to buy a cutter wheel with different angle. Straight knife is 0 degree angle knife. Normally, the straight knife is easy to cut the fabric, and the cutting surface is smooth, but have small incision fusion point. The greater opposite blade angle, the better incision adhesion will achieve. (as shown in Figure 3).

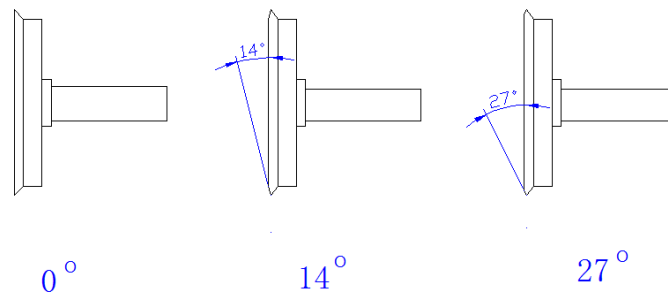


Figure 3

### >> Replacement of the Cutter Wheel

Cutter wheel is a vulnerable product. When it is difficult to cut even the pressure is increased, or fusion point becomes very large, you should replace the cutter wheel, otherwise, high work pressure will speed up the mold wear.

Remove the three screws which fix the wheel, then you can change the cutter wheel (shown as figure 4).

Change the position of the gasket next to the cutter wheel can move the position of the cutter wheel. The lower wheel must be adjusted at the same time once the position of the upper cutter wheel is changed. Otherwise it will lead to different speed in upper and lower wheel which affecting the cutting effect.

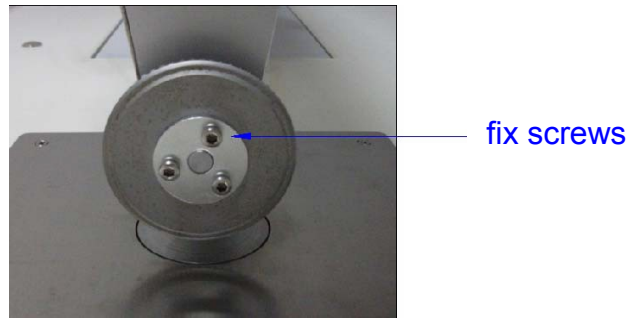


Figure 4

> **Operation and Controls**

>> **Touch Screen Control**

The 1<sup>st</sup> & 2<sup>nd</sup> pages are welcome note & program loading pages. It will show up once the machine is powered on.



Figure 5 Greeting

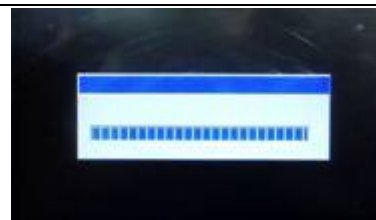


Figure 6 Loading

**>> Main Page**

The 3<sup>rd</sup> page of the panel is named “main” means it is the main control of the machine.

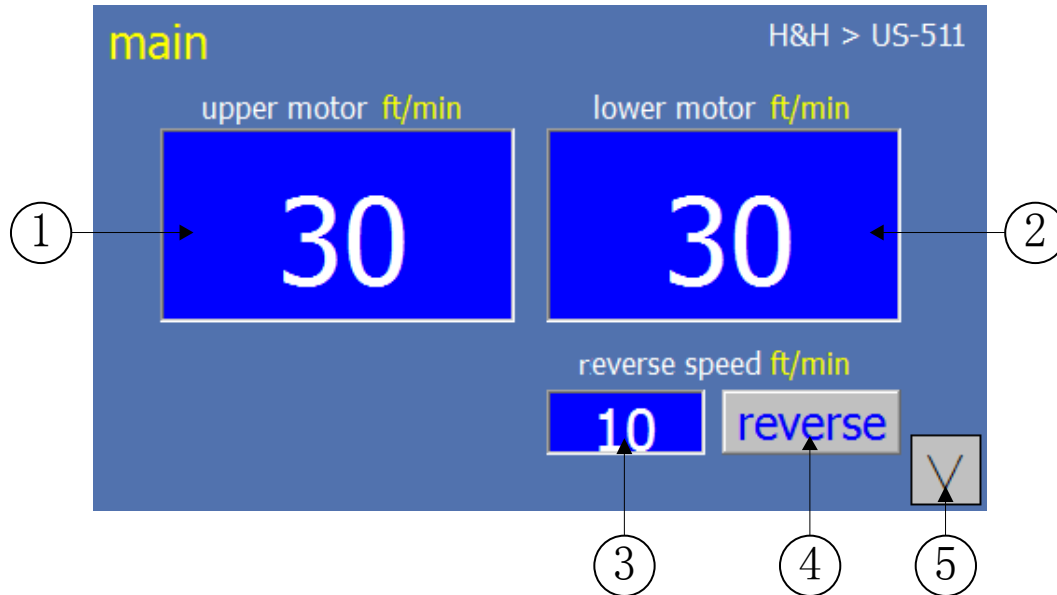


Figure 7 Main Page

1. Upper motor (cutter wheel) speed setting button & display.
2. Lower motor (lower wheel) speed setting button & display.
3. Reverse speed setting button & display.
4. Click to make the machine to reverse.
5. Turn to next page.

## &gt;&gt; Parameter

The page after main page is “parameter” page, shown as figure 8.

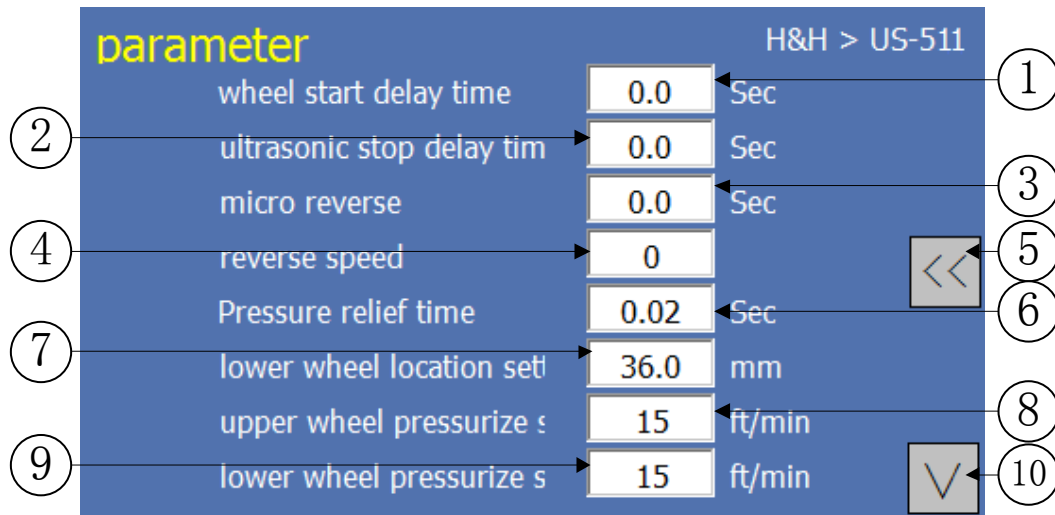


Figure 8 Parameter Page

1. Wheel start delay time setting. The time from when the right pedal is depressed to when the upper and lower wheels start to rotate. This setting aims to prevent poor cutting result because the ultrasonic may not function immediately at the beginning.
2. Ultrasonic stop delay time setting. Time from when the right foot pedal is released to when the ultrasound stops. This setting aims to prevent poor cutting result because the ultrasonic may stop earlier than the upper and lower wheels at the end.
3. Micro reverse time setting.
4. Reverse speed setting.
5. Back to main page.
6. Pressure relief time setting. When pressing the left pedal to pressurize, the air pressure needs to be converted from working pressure to pressurized pressure, pressure relief time refers to the time from when the left pedal is depressed to when the working pressure relief to zero.
7. Lower wheel location setting. The location of cutter wheel may need to be changed, the

lower wheel position must be changed at the same time. Otherwise it will lead to different speed in cutter wheel and lower wheel which may affect the cutting effect.

8. Upper wheel pressurize speed setting. When processing fabric position such as bone position, pressurize is needed. Then the cutter wheel working speed will change to this speed instead of the speed set in main page during pressurizing.
9. Lower wheel pressurize speed setting. When processing fabric position such as bone position, pressurize is needed. Then the lower wheel working speed will change to this speed instead of the speed set in main page during pressurizing.
10. Turn to next page.

## >> Fixed Length Mode

The page after parameter page is “fixed length mode” page, shown as figure 9.

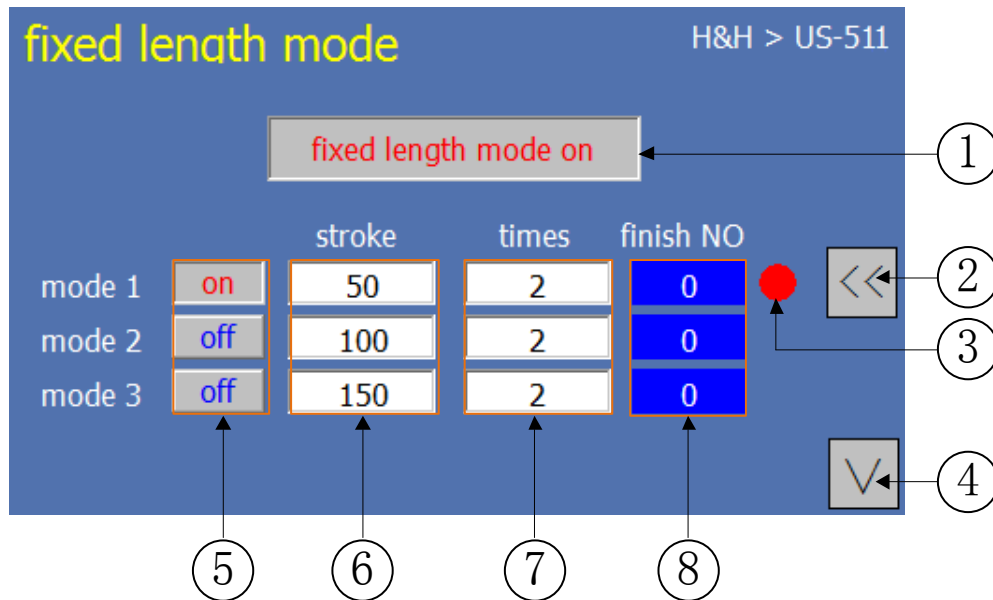


Figure 9 Fixed Length Page

1. Fixed length mode on/off button. When the fixed length mode is on, the mode with the status “on” will be completed in order; when the fixed length mode is closed, the setting of fixed length mode will not work.
2. Back to main page.
3. A red dot indicates that the machine is performing a fixed length operation of mode 1, and which mode the red dot follows indicates which mode is in progress.
4. Turn to next page.
5. Press to turn on/off the corresponding fixed length mode.
6. Press to preset the additional strokes of corresponding fixed length mode.
7. Press to preset the times of corresponding fixed length mode.
8. Display the number of completions of corresponding fixed length mode. When the number is equal to the number of setting times, it will turn to zero.



**>> Monitor**

The page after fixed length mode page is “monitor” page, shown as figure 10.

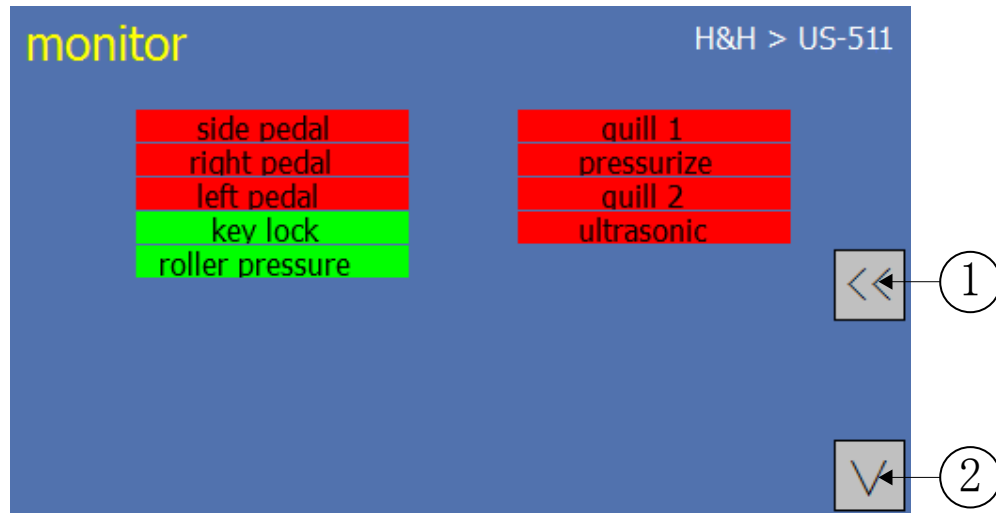


Figure 10 Monitor Page

1. Back to main page.
2. Turn to next page.

>> Maintenance

When the supervisor control key is turned right, the page after monitor page is “maintenance” page, shown as figure 11. When the supervisor control key is turned left, the maintenance page is hidden.

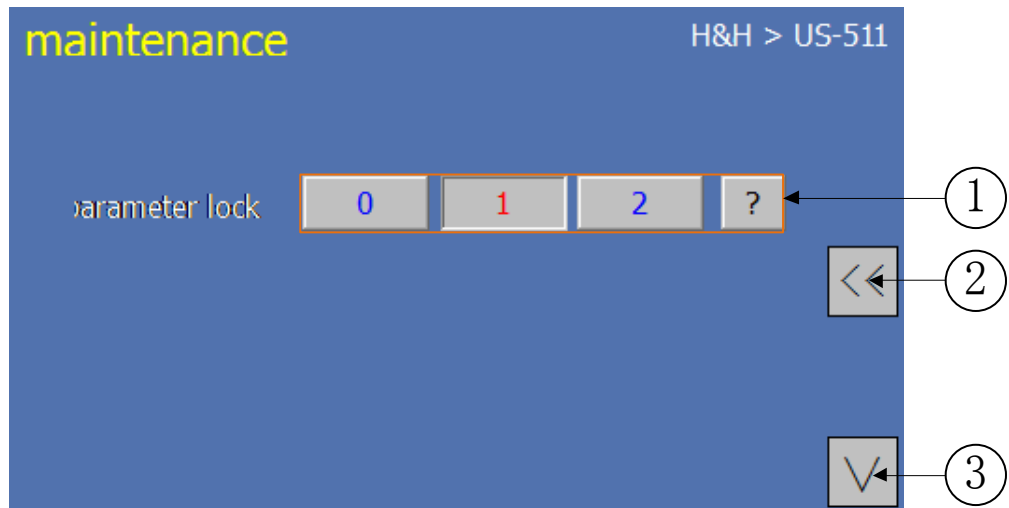


Figure 11 Maintenance Page-1

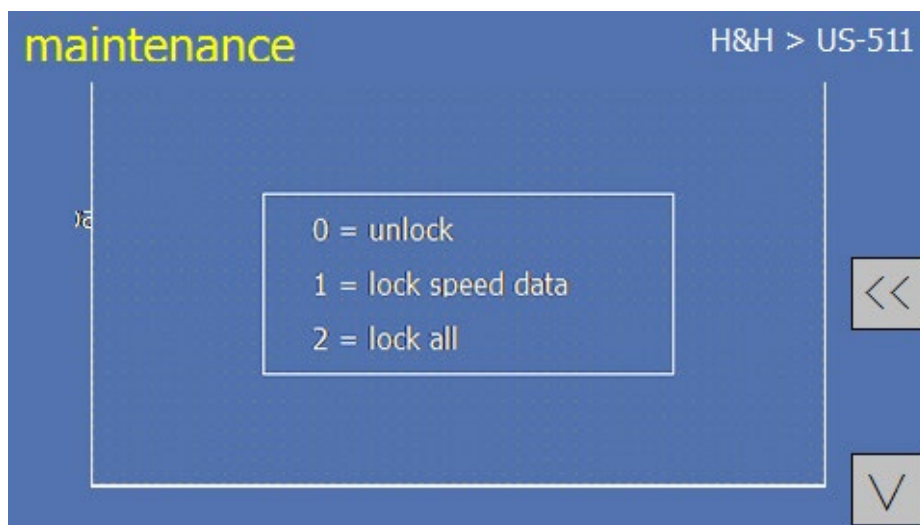


Figure 12 Maintenance Page-2

1. Parameter lock, different numbers represent different meanings. For details, press “?” to view the corresponding numbers’ meanings, as shown in figure 12 “Maintenance Page-2”.
2. Back to main page.
3. Turn to next page.

## >> Program Version

When the supervisor control key is turned right, the page after maintenance page is “program version” page, shown as figure 13. When the supervisor control key is turned left, the page after monitor page is program version page.

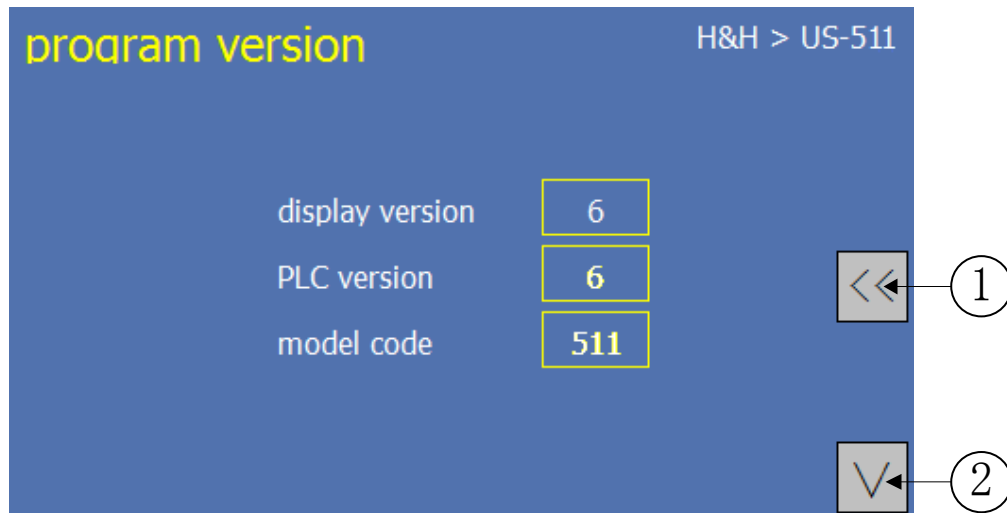


Figure 13 Program Version Page

It is an information page for your reference and we can use these data for future maintenance usage.

1. Back to main page.
2. Turn to next page.

**>> Language**

The page after program version page is “language” page, shown as figure 14.

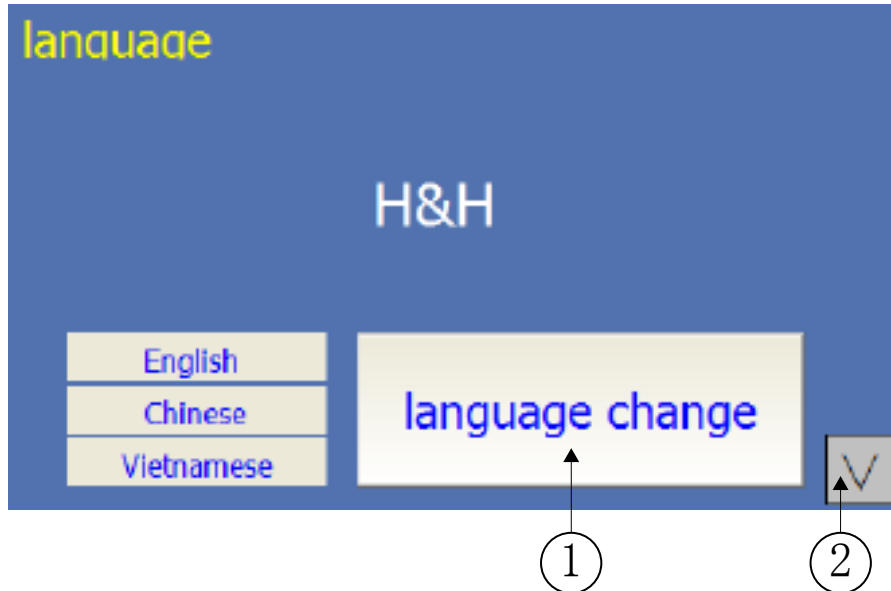


Figure 14 Program Version Page

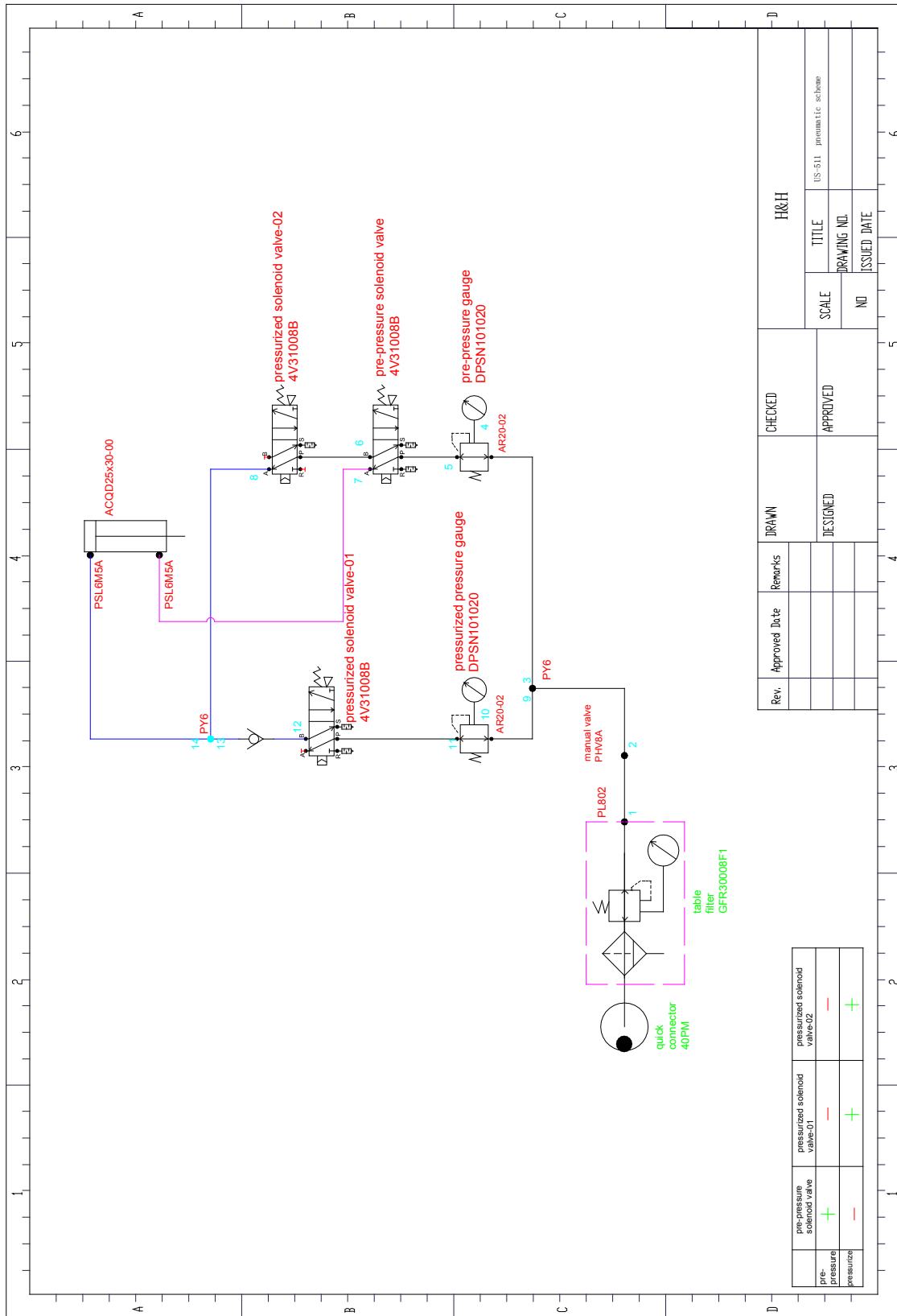
1. You can change the language between English, Chinese and Vietnamese by pressing the button #1.
2. Turn to next page (main page).

**> Maintain**

In order to keep the machine in top running condition, regular maintenance is important for trouble free operation. This will minimize possible down time and to prolong machine life.

- Check the motion of the machine for smoothness and strange noise.
- Check the air hoses for leakage or damage.
- Check the cutter wheel for worn or damaged.
- If there have abnormal sound when the ultrasonic current and voltage are normal, you can adjust the ultrasonic screws to change the tightness, the specific operation, please contact us.
- Check the tightness of the upper and lower wheel timing belt every 3 months, adjust the internal timing belt tension wheel can change the tightness of the belt;
- Check the bottom of the table whether there are cloth and other debris and keep clean.

> **Appendix A . Pneumatic Scheme**



Rev.	Approved Date	Remarks	DRAWN	CHECKED	H&H		
			DESIGNED	APPROVED	SCALE	TITLE	US-511 pneumatic scheme
					DRAWING NO.	ISSUED DATE	

pre-pressure	+	pre-pressure solenoid valve-01	-	pre-pressure solenoid valve-02	+
pre-pressure	-	pre-pressure solenoid valve-01	+	pre-pressure solenoid valve-02	-

> **Appendix B . Wiring Scheme**

