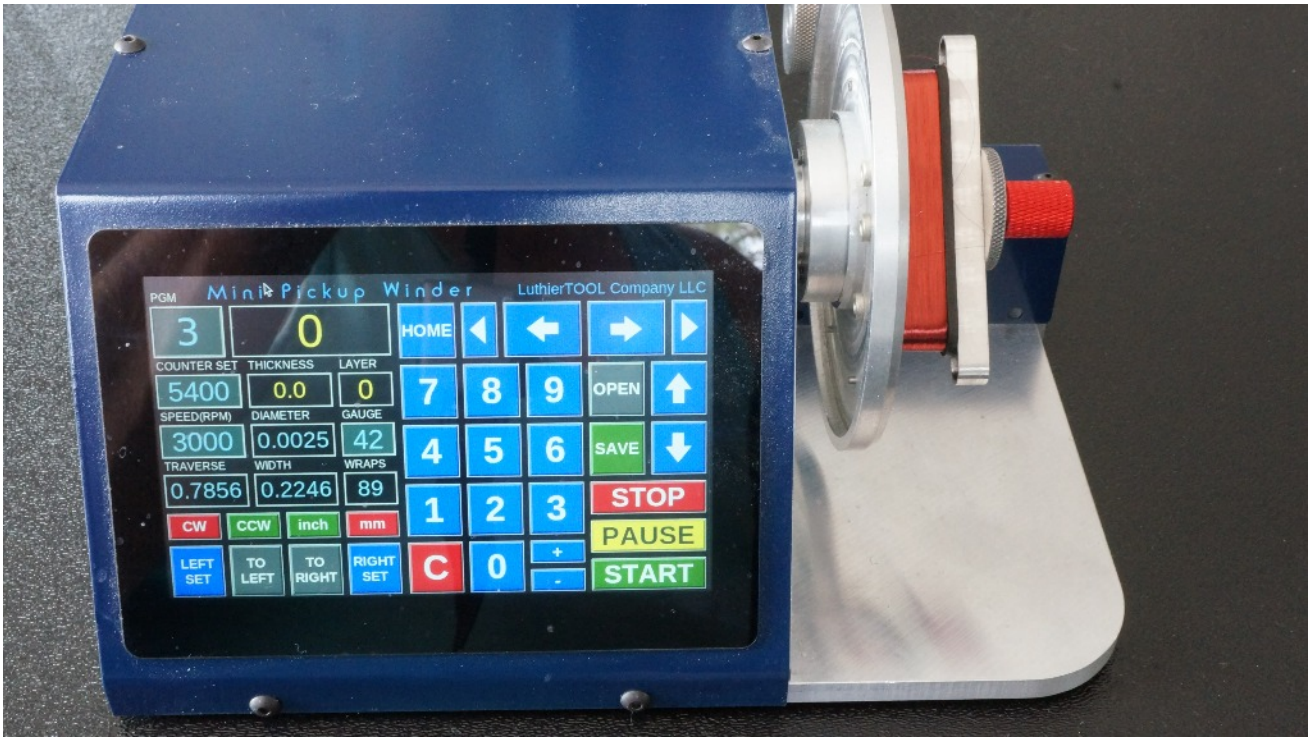
MINI PICKUP WINDER



This Winder is designed for guitar and bass pickups. It can wind at a speed of 350 to 3000 RPM's. The wind counter can be set and follows the acceleration and speed and is accurate within one count. Once all the parameters are set these can be saved as a PGM number from 1 to 999 and recalled (or opened) before a wind. The traverse arm will move every time the spindle makes a rotation, this will lay down the wire next to each other within the flatwork or bobbin flanges. The area within the bobbin flanges or flatwork is set by lining up the wire with the left side first and then the right side. Once set the machine will calculate the width distance between left and right, it will also calculate how many wraps there are based on wire gauge and width. The wire gauge can be set from 40 to 46 AWG, once set the machine will show the actual wire diameter. This diameter is used to calculate coil thickness and number of wire layers.

Both the spindle and traverse can be moved manually with the arrow keys. A home is provided to manually move the traverse to left home sensor position and then move to the right were the left limit is set. A set parameter screen can be save and opened using the SAVE and OPEN keys. The C (clear) key is used to clear the counter. The START, STOP and PAUSE keys are used for running the machine per set parameters. A + and - keys are provided if you want to increase or decrease the wire diameter. CW and CCW keys set the direction of the spindle, as the inch and mm sets the unit of measure. The bottom keys on the right left of the screen sets and moves the traverse to either the left limit or the right limit.

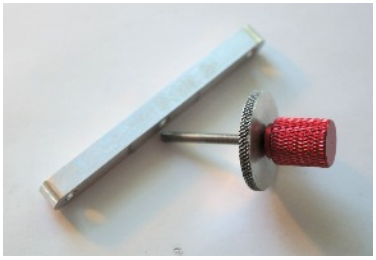
This machine has a simple traverse wire holder between two felt washers that can be adjusted for tightness. The machine also has replaceable pickup plates that can be removed and changed out with three screws. The machine comes with a 24VDC power supply and has a USB port for future software updates, a power jack for the power supply and a mini phone jack for future break detect mechanism.

Weighing in at 6 pounds this machine has a small footprint reducing the amount of space required on the bench or desktop. Length 8.50”, Width 6.00” and Height 4.00”. The control system is a Raspberry Pi 3+ PCB with our own interface PCB, with a linux desktop operating system. All the operation is written in Python. The spindle is a brushless DC motor with driver and the traverse is a stepper motor and lead screw with a silent drive. The traverse and spindle both have optical sensors to count each rotation and to sense the left home position.

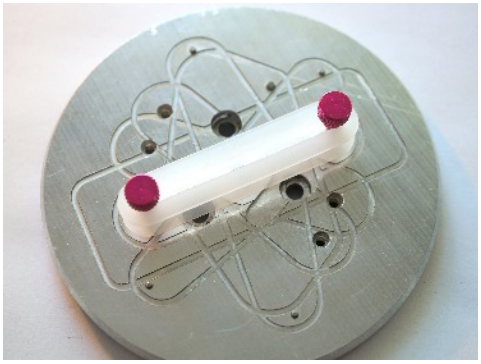
SPINDLE PLATE and BOBBINS

The Spindle plate is designed to hold different bobbin styles each with its own mounting holes.

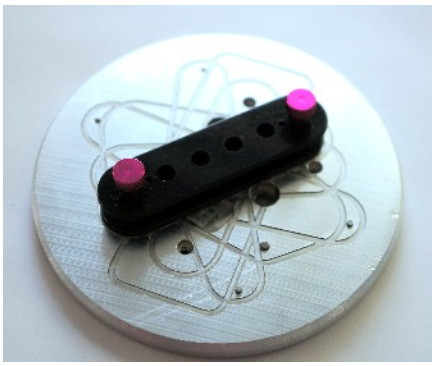
Two types of mounting screws can be used. The two small screws are used for blade type, P90, Humbucker or equivalent bobbins.



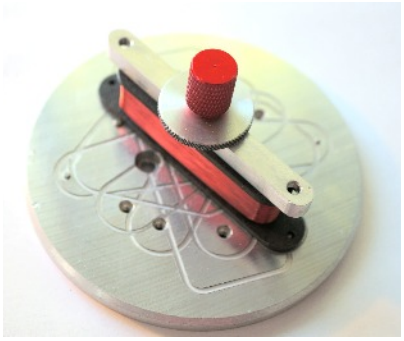
This mounting screw and bar is designed for single coil bobbins. The large thumb plate is used for different bobbin heights.



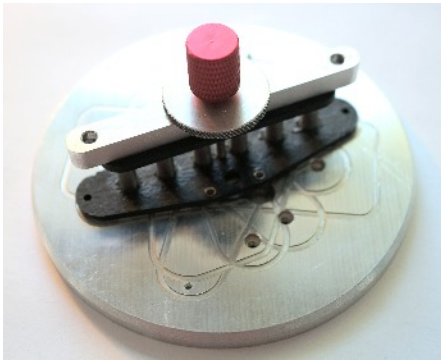
The blade type bobbins use the same mounting holes as humbucker type bobbins, the two red mounting thumb screws fit inside the bobbin holding the bobbin tight to the plate.



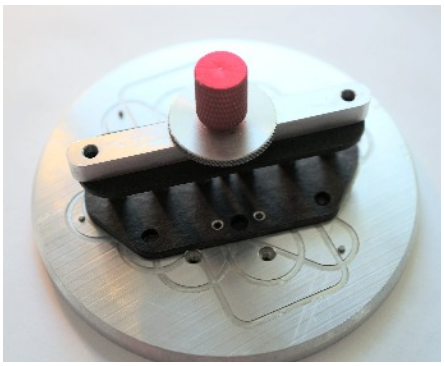
Using the same two red mounting screws the humbucker bobbins are mounted like the blade bobbins. Two bobbin sizes are available.



Single coil like the one shown (strat) uses a red thumb screw with a disk thumb knob. The disk thumb know is to adjust for different flatwork heights. Also are two 1/16” diameter pins to prevent the bobbin from slipping.



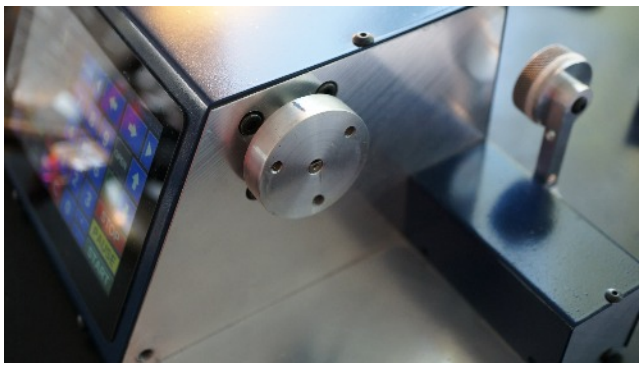
Tele neck single coil bobbin.



Tele bridge single coil bobbin.

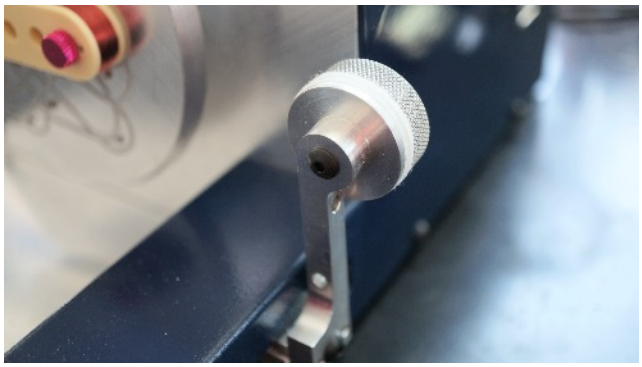
Like the blade and humbucker bobbins the P90 bobbin also uses the two red thumb screws.

The spindle plate can be removed and exchanged with another one. These plates come with standard bobbin styles but can also be customized. Three screws hold the plate in place and should be clean when installing on the spindle hub.



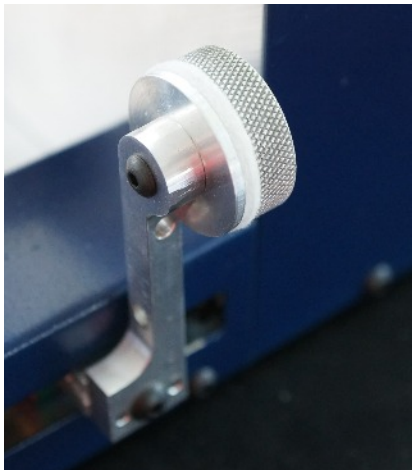
WIRE HOLDER

The traverse arm has an adjustable tension knob that tighten the wire between the two felt disks. These worn felt disks can be replaced.



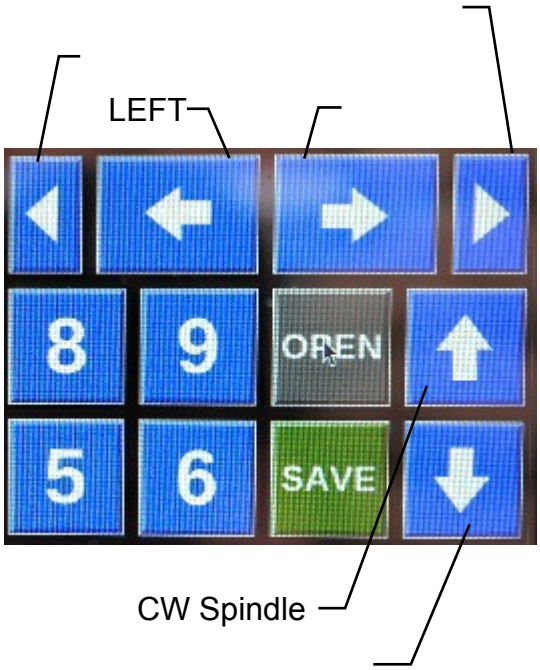
The wire can be placed between the felt disks either at the bottom or at the top depending where the wire is coming from.

The best way to place the wire between the felt disks is to loosen the knob and either with a thin knife or small screw driver spread the twp felts apart.



MANUAL MOVES

The spindle and the traverse can be moved manually with the arrow keys.

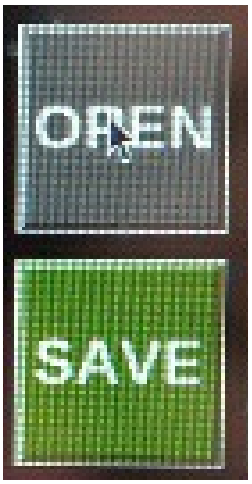


The traverse speed are fixed and is based on the spindle speed. This speed can not be changed. The manual speed is set slow so that the LEFT limit and RIGHT limit can be set accurately during a manual move. The single step buttons are designed to move the traverse only one motor step (0.0001 inches or 0.0025 mm).

The spindle speed however can be adjusted with the SPEED(RPM) box. When releasing these buttons the spindle will stop on a dime bypassing de-acceleration.

OPEN and SAVE programs

The OPEN and SAVE buttons basically saves the settings under the program number and also loads the screen with the settings entered by the program number.



If trying to save a program and all or part of the settings are not set, the machine will show a warning for each of the not set settings. Always remember to SAVE after changing setting. Settings can always be edited at any time.

When opening a program the machine will look up the program number in memory and try to load the settings, if it can't fine a number a warning will be displayed. Once the program is found and loaded the machine will automatically home to the left and move to the LEFT limit.

If everything looks good the pickup can be wound, or the program can be edited.

HOMING the traverse

The function of HOME is to move the traverse left until the sensor, then move slightly right and move to the sensor again to confirm the position. At this point the machine knows where the traverse is.

Once it knows its position the traverse will move to the LEFT limit. A warning will be displayed if this limit is not set.

HOME can be used at any time to bring the traverse to the left limit. The OPEN button will load program and then home the traverse.

Clearing counter

The C button (Clear) is only used to reset the counter to zero.

However the STOP will also clear the counter.

Setting COUNTER

The window next to PGM is the current count of the bobbin wind.

The counter can be set by pressing the COUNTER SET window and entering a number using the key pad.

Once set press the SAVE button to store it under the program number.

Setting SPEED

The spindle speed are in RPM's and can be set by pressing the SPEED(RPM) window. Using the key pad enter the desired speed.

The speed range is from 350 RPM to 3000 RPM. Once set press the SAVE button to store it under the program number.

Wire GAUGE

Wire gauge can be set by pressing the GAUGE window and entering via the key pad the wire gauge number.

The wire gauge range is from 40 to 46 AWG, once set the machine will display the wire diameter.

Press the Save button to store it under the program number.

Wire gauge	wire diameter	
40	0.0031"	0.078 mm
41	0.0028"	0.072 mm
42	0.0025"	0.064 mm
43	0.0022"	0.056 mm
44	0.0020"	0.051 mm
45	0.0018"	0.046 mm
46	0.0016"	0.041 mm

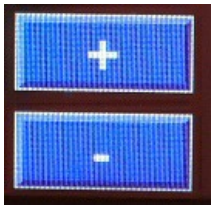
Spindle direction and unit of measure

Spindle direction is set by pressing the CW or CCW button, like wise the unit of measure can also be selected by pressing inch or mm button.

Press the Save button to store it under the program number.

Wire diameter adjustment

The + or - button is used to increase or decrease the wire diameter by 0.0001 inches or 0.0025 mm.



Once set press the SAVE button to store it under the program number.

STOP, START and PAUSE

The START, STOP and PAUSE buttons control the motion of the machine.

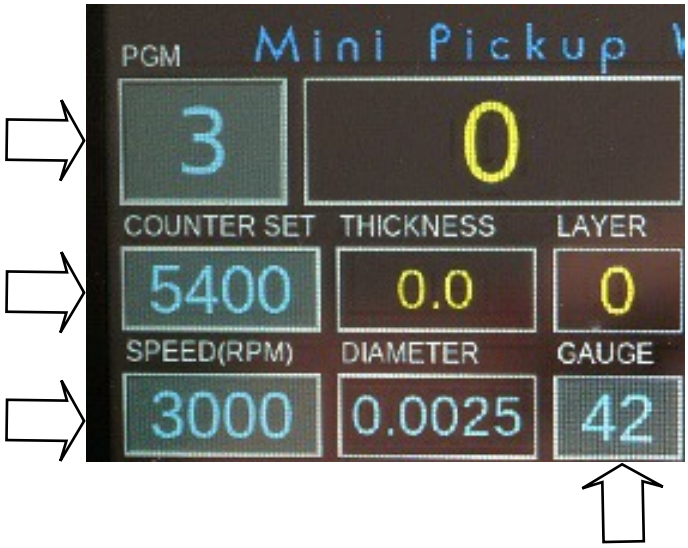
The START button will activate the spindle and traverse. The Spindle will slowly accelerate to speed and the traverse will follow accordingly. The counter will increment on every revolution, before the count reaches the end the spindle will de-accelerate until the set count.

The STOP button will stop the rotation very quickly reset the counter and re-home the machine. The PAUSE button will also stop the spindle quickly but will not reset the counter nor home the machine, its designed to make adjustments and re-start the machine until the end. Once the machine finishes the count it will automatically home.

Also when the machine is in motion all buttons a de-activated with exception of START, STOP and PAUSE.

Editing

Editing the settings is a bit different than what you might be used to.



There is no enter, delete or escape keys, the changes can be done as follows:

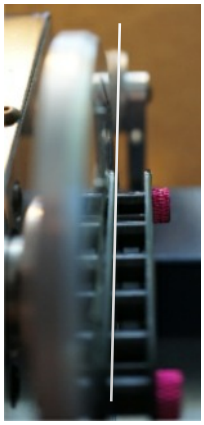
1. Press the setting box you want to change (SPEED(RPM)). The box will clear its content and will show a flashing cursor line.

2. Using the key pad enter a new number, again the cursor will be at the left. If you wan to change the number simply press the box again and it will clear the content ready for a new number. At this time the software is focused on the box so that you can make changes.

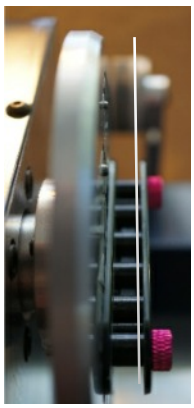
3. When done press the SAVE button, this will take the focus off the box and display SAVE SETTING(S) YES NO. Pressing YES will store the setting into the program file. NO will just get back to the display with the original number.

Setting Limits

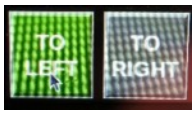
The LEFT and RIGHT limits must be set before a wind. These limits can also be edited but not during a winding process.



Using the left/right buttons move the traverse so that bottom flange lines up with the split felt. Once lined up press the LEFT SET button. The number in the TRAVERSE box is temporary saved.



Do the same for the right limit, press RIGHT SET to temporary save the limit setting. When this is set the number in the WIDTH box will change which is the dimension between the left and right bobbin flange. Also the WRAPS box will change which is the number of wire wraps with in the width based on the wire gauge.

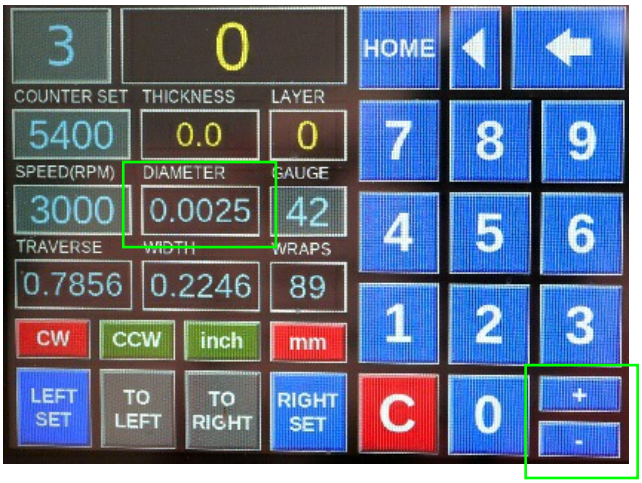


To check the traverse felt location you can press either TO RIGHT or TO LEFT button, these will turn green to indicate that the traverse is at that position. When satisfied with the setting press SAVE to store in the program number file.

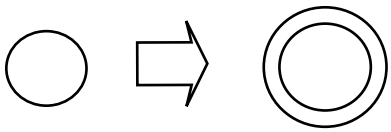
The HOME and OPEN button will clear the color on the TO LEFT or TO RIGHT buttons.

By using the single step buttons you can adjust the limit distance in small increments.

Wire diameter adjustments

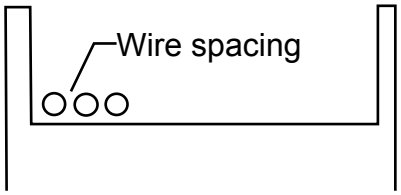


This is a feature where the actual wire diameter can be adjusted. Although the wire gauge stays the same the diameter can be changed. The + will increase the diameter by 0.0001 inch or 0.0025 mm and the - will decrease the diameter by the same amount.



Wire diameter Wire coating

This setting comes in handy to adjust for various wire coatings.



This setting can also be used for wire spacing, a bit more room between wires.

Thickness and Layer

These two boxes are to display while the machine is running the THICKNESS of the coil and how many LAYER there are.

The thickness is calculated by adding the wire diameter every time the traverse changes direction. The layer is calculated by incrementing a counter every time the traverse changes direction.