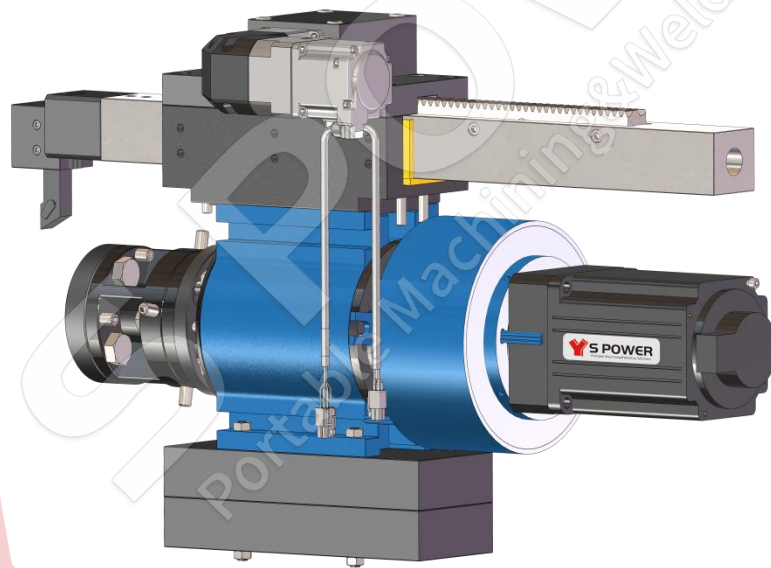


Operation Manual

Portable shaft lathe PL50



I. Receipt and Inspection

Your S Power product was inspected and tested prior to shipment, and packaged for normal shipment conditions.

S Power does not guarantee the condition of your machine upon delivery. When you receive your S Power product, Please perform the following receipt checks first.

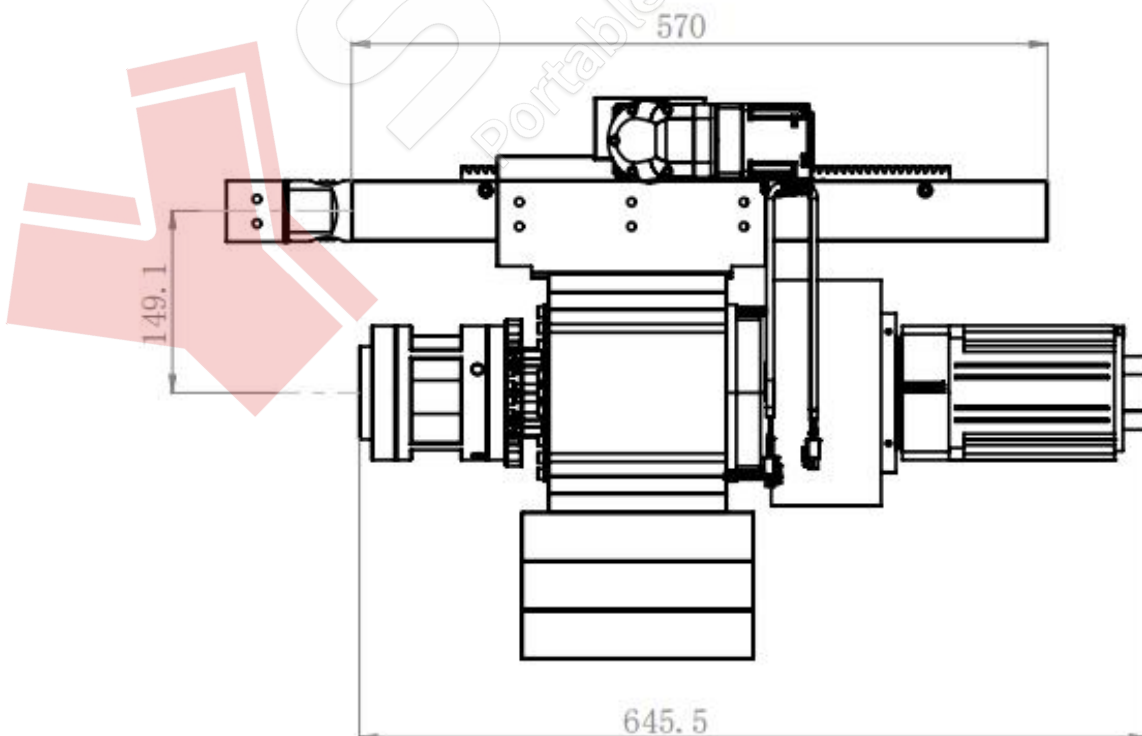
1. Inspect the shipping containers for damage.
2. Check the contents of the shipping containers against the included invoice to ensure that all components have been shipped.
3. Inspect all components for damage.

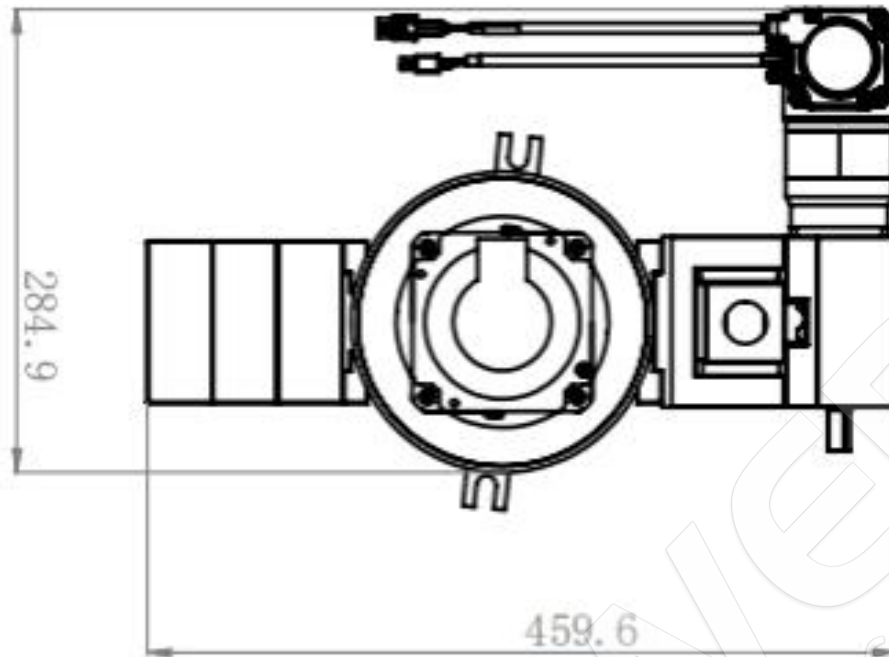
Contact S Power immediately to report damaged or missing components.

CAUTION

To avoid bodily injury from moving machinery, turn off and disconnect all power cords before setting up the machine.

II. Machine Dimensions & Weight





Weight: 51KG(No Counterweights)
Count weights(2pcs): 145*110*40mm, 5KG

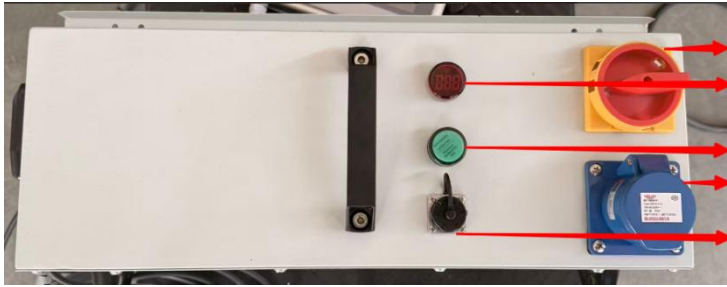
III. Controllers、 Main Control Box

The control system include hand control panel, control box ,cables.

Caution:

- ① **Without factory approval. The machine can not be disassemble , data reset ,or elements repair/replace .**
- ② **The connection plug type is different . Pay attention , avoid dust ,wrong connection damage the internal pin.**
- ③ **For new machine received , it must be take trial run test in workshop first . with understanding of machine operation , and test is good , it can start on-site working .**

1.Main control box



- Main power switch
- Voltage indicator
- Power indicator
- Power plug
- Hand control panel plug



- MIG welder signal wire connect cable
- Power Cable

First connect the power cord of the main control box,, then connect the PLC hand control panel. Turn the red main power switch knob to ON. After confirming that the voltage is stable, turn off the red knob on the hand control panel. The power-on process is complete, and you can start working.

Connect all cables according to their pin configurations, as shown in the pictures below:
(White spot to white spot)






2.Control box operation
Homepage



Lathe

Weld

Thread

	Click to enter the Lathe interface
	Click to enter the Bore Weld interface
	Click to enter the thread interface

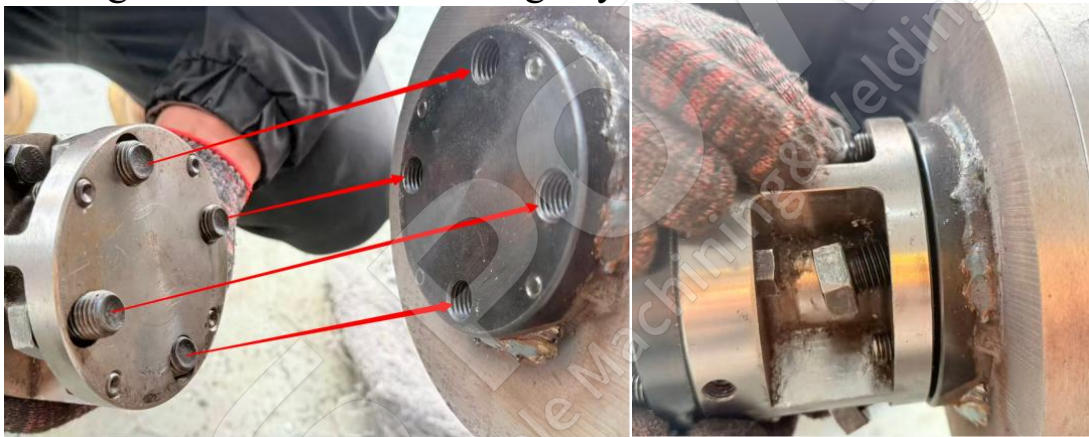
The Lathe, Bore Weld, Thread functional operations of the control box will be demonstrated in the following operation steps.

IV. Motor Module Installation

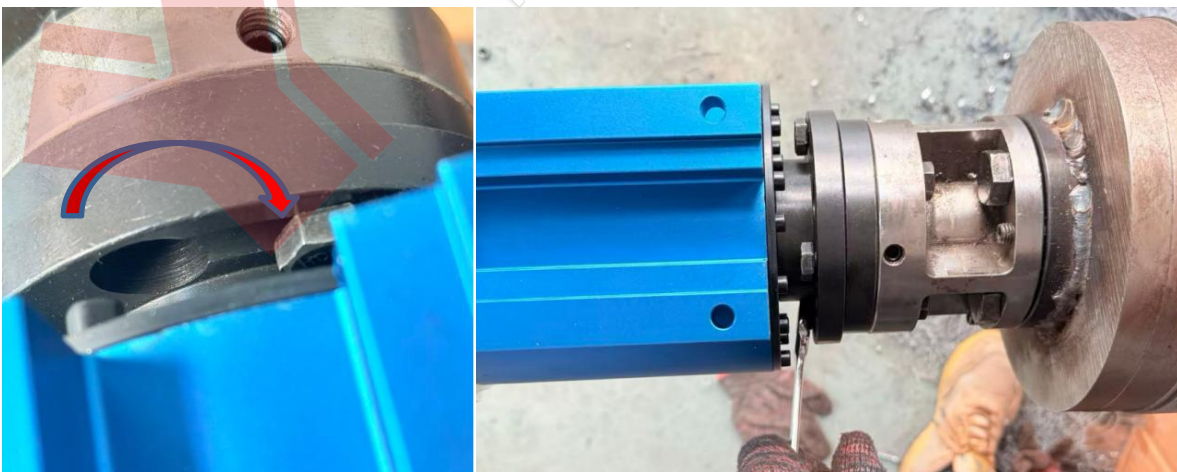
1. weld the flange to the workpiece roughly center.



2. Connect alignment block to the flange by bolts .



3. Install motor module (motor side) , hold the motor ,and turn the bolts into flange key slot , then tighten the bolts.



4. Install cable holder (plastic tube) into steel bar, as shown in the picture, and use tape to tie all cables



V. Install the counterweight



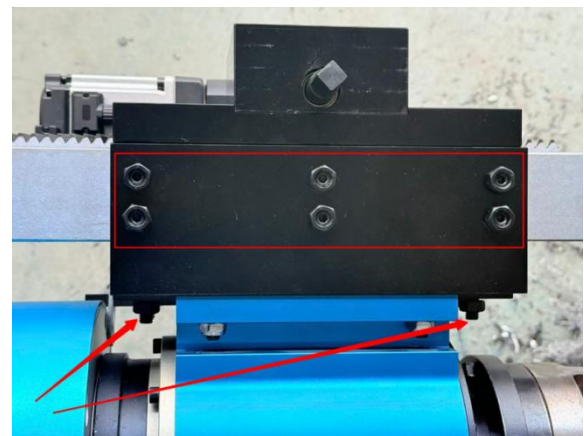
Adjusting the turning arm clearance (It has been adjusted well at the factory; adjustments are only needed if there are problems with the cutter arm feed.)

Before working, Need to ensure the screw on the turning arm (six screws on the side and the four screws at the bottom) tightened to keep the arm stable for cutting. First turn in the hex socket screws and tighten them with the allen wrench. Torque: 5 N.m (approximately the strength of an index finger. Do not tighten too much, otherwise it will affect the feed of the axial feeding arm). Then tighten the Hex nuts. The nuts must be fully tightened with the hex socket screw to prevent loosening during work.

Hex socket screw



Hex nuts



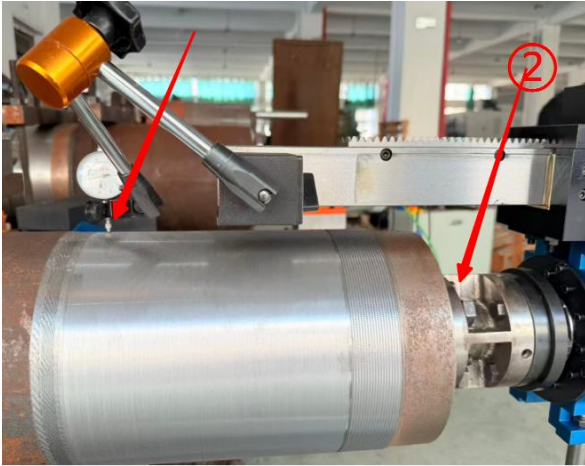
VI. Centering

Use a dial indicator to adjust concentricity and parallelism.

1. First, adjust the tool arm to be parallel to the workpiece.

To adjust the tool arm to be parallel to the workpiece, two directions need to be adjusted: At 12 o'clock and 3 o'clock directions

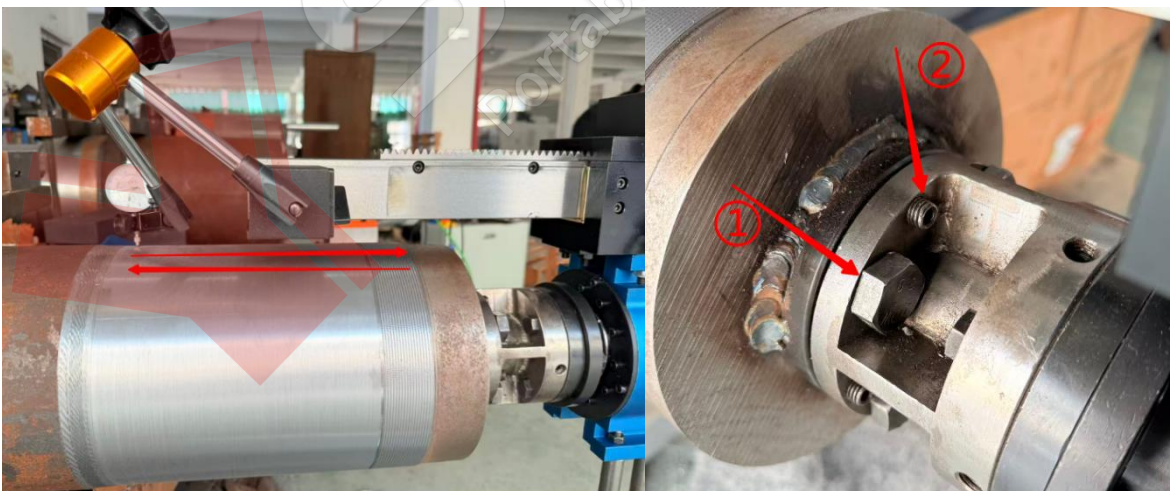
12 o'clock direction: Align the dial indicator with the headless screw ②



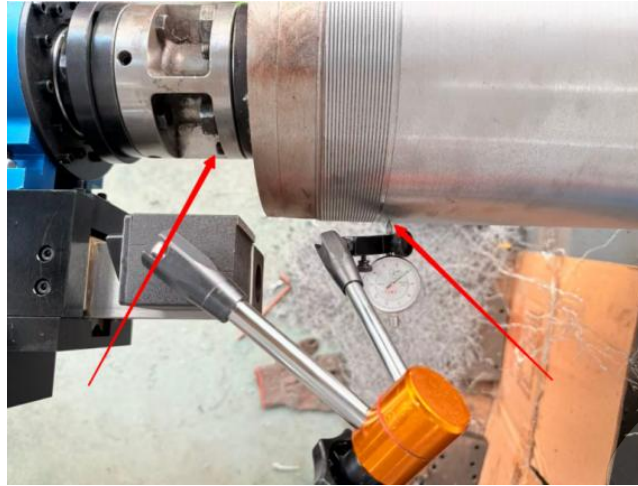
Attach the magnetic dial indicator to the cutter arm and control its movement back and forth over the workpiece. Check the dial indicator reading for fluctuations during the movement.

If the reading changes when the dial indicator is moved to the end of the workpiece furthest from the machine, it indicates that the turning arm is not parallel to the workpiece. The cutter arm needs to be adjusted by changing screws ① and ② on the connect plate to make it parallel to the workpiece. Slightly loosen screw ①, then adjust the headless screw ② to make the turning arm parallel. Repeat this adjustment until the dial indicator readings are consistent at both ends of the workpiece; then the cutter arm is parallel to the workpiece.

There are 4 groups of ①② screws on the connect plate, can adjust in all directions.



Three o'clock direction: The adjustment in the Three o'clock direction is as shown in the following figure



2. Adjusting for Concentricity

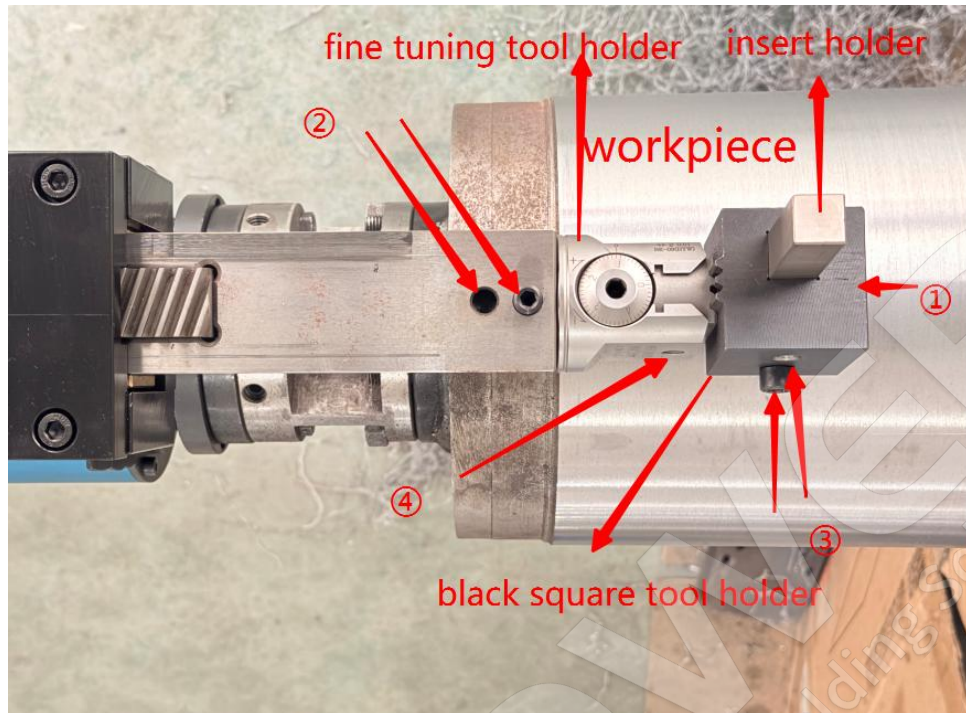
There are four screws around the area shown in the image below. Adjust these four screws, together with a dial indicator, to align the machine to concentricity with the workpiece.

Use the manual jog mode to rotate the cutter arm and check the change in the dial indicator reading. Adjust until the dial indicator reading does not change after one full rotation of the turning arm; Then the machine has been adjusted to be concentric with the workpiece.



VII. Installing the Tool Holder

Tool Holder Installation Sequence and Method



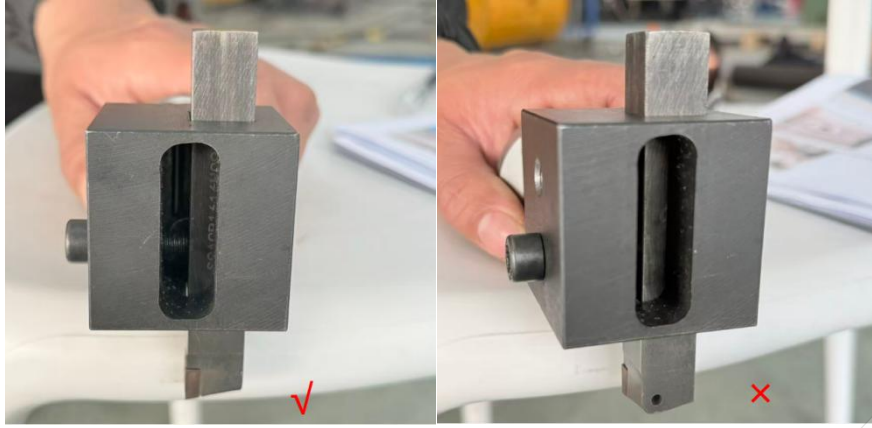
1. Install the fine-tuning tool holder, tightening the two screws at position ② to secure it. Install the black square tool holder onto the fine-tuning tool holder, tightening the screw at position ① to secure it.



Then install the insert holder onto the black square tool holder, securing the insert holder by tightening the screw at position ③.

After adjusting all the positions of the tool rest, tighten the screw ④

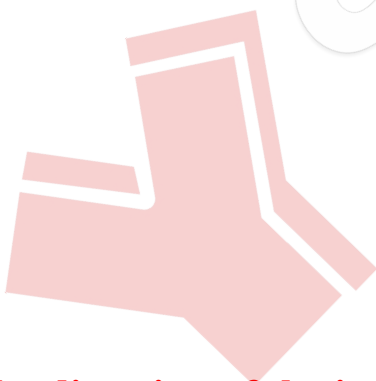
Notice: The insert holder needs to be installed in the correct direction so that the insert is at the center of the tool holder and consistent with the rotation direction of the turning arm.



2. The adjusting screw on top of the fine-tuning tool holder, Each small rotation corresponds to a 0.01mm increment on the scale.



Note: After adjusting the tool holder position, the screws on the side of the fine-tuning tool holder must be tightened.



The direction of the insert installation should be consistent with the direction of the cutter arm rotation to prevent blade breakage.

CAUTION !!!

To avoid serious personal injury, keep clear of the machine before power on.

Lathe interface

Lathe

Home Page

Feed Speed

 mm/s

Feed Distance

 mm

Rotation Speed

 r/min

X-axis Coordinate

 mm

Zero Reset

Y S POWER
Portable Machining & Welding Solutions

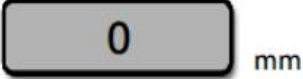



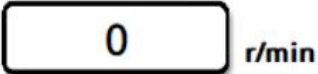



Start Feed

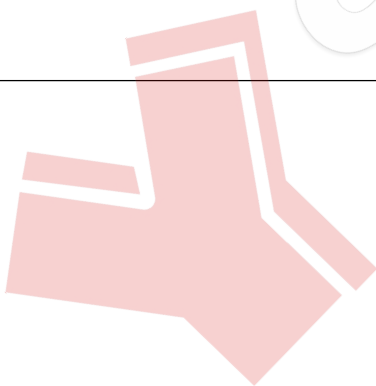
Stop

Manual Jog

Start Rotate

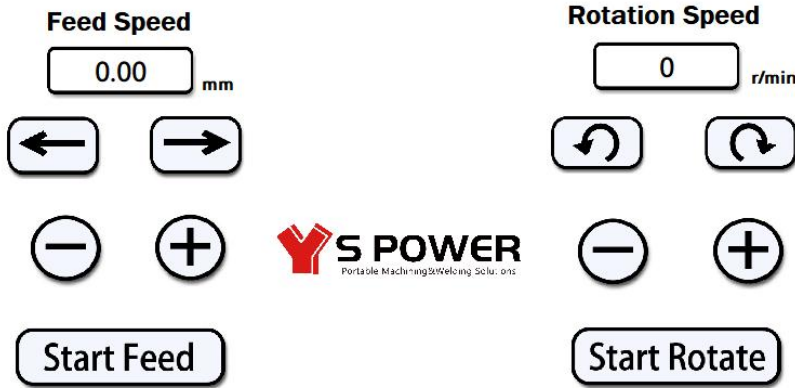
<p>Home Page</p>	Click to return to the homepage
<p>Feed Speed</p> <input style="width: 100px; text-align: center;" type="text" value="0.00"/> mm/s	Axial feed speed control ,the recommended speed during turning is between 0.1-0.2 mm/s.
<p>⊖ ⊕</p>	The axial feed speed increases or decreases Each press increases or decreases by 0.01 mm/s
<p>← →</p>	Axial feed direction: forward, backward The direction indicated by the arrow does not represent the direction of feed; the required direction of feed should be tested first.
<p>Start Feed</p>	When the button is red, can use control panel to adjust feed. When the button is gray, the machine's forward and backward feed can be adjusted by using a wrench. Both the start feed and start rotate buttons must be red at the same time for the machine to start operating normally.
<p>Feed Distance</p> <input style="width: 100px; text-align: center;" type="text" value="0"/> mm	Input the feed distance, ranging from 0 to 300 mm.


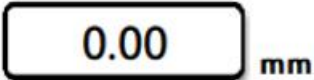






<p>X-axis Coordinate</p> 	<p>The feed distance display in real position during operation (display only, input is not allowed).</p>
	<p>Zero reset: Clears the data of the X-axis coordinate.</p>
	<p>Click to stop feeding and rotation</p>
	<p>Click to enter the manual jog mode</p>
<p>Rotation Speed</p> 	<p>Rotation speed, input rotational speed, range 0-150 r/min</p>
	<p>Rotation speed adjustment: Each press increases or decreases the speed by 1 r/min.</p>
	<p>Turn counterclockwise, turn clockwise</p>
	<p>When the button is red, can use control panel to adjust rotation. When the button is gray, The rotation Angle of the machine can be manually adjusted. Both the start feed and start rotate buttons must be red at the same time for the machine to start operating normally.</p>



Lathe manual control interface

Home Page Manual Control



	Click to return to the lathe page.
<p>Feed Speed</p> 	Axial feed speed control , Input range: 0.1-10mm
	Axial feed direction: forward, backward Press and hold to move forward or backward; release the button to stop moving
	The axial feed speed increases or decreases Each press increases or decreases by 0.01 mm/s
<p>Start Feed</p> 	When the button is red, can use control panel to adjust feed. When the button is gray, the machine's forward and backward feed can be adjusted by using a wrench. Both the start feed and start rotate buttons must be red at the same time for the machine to start operating normally.
<p>Rotation Speed</p> 	Rotation speed, input rotational speed, range:1-20r/min
	Rotate counterclockwise or clockwise; press and hold to keep rotating, release to stop.
	Rotation speed adjustment: Each press increases or decreases the speed by 1 r/min.

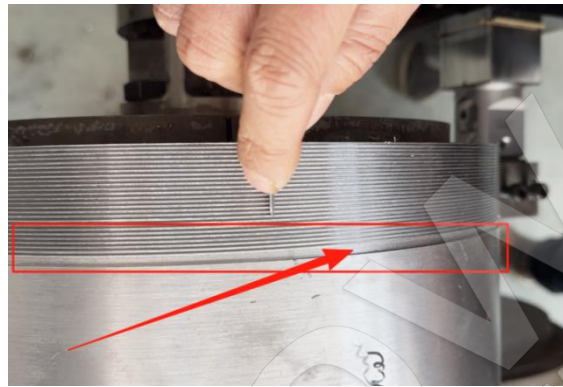
Start Rotate

When the button is red, can use control panel to adjust rotation.

When the button is gray, The rotation Angle of the machine can be manually adjusted.

Both the start feed and start rotate buttons must be red at the same time for the machine to start operating normally.

VIII. Before threading, a relief groove needs to be cut to prevent tool breakage when the insert stops.



Use a grooving tool holder and grooving inserts as shown below.



In the thread cutting interface, calculate the position of the relief groove. The recommended spindle speed for grooving is 7-8 rpm on the control panel setting

During grooving, manually rotate the adjusting screw on the fine-tuning tool holder to adjust the tool depth. Each rotation of the tool arm corresponds to one full rotation of the fine-tuning tool holder, which is 0.5mm.

The relief groove depth should be 0.5mm-1mm deeper than the thread pitch.

IX. Thread cutting:

1. First, a safe retraction distance needs to be set between the tool insert and the workpiece surface. This is a fixed value, typically 0.5mm (equivalent to one full turn of the adjusting screw on the fine-tuning tool holder).

When cutting thread, after each pass, the tool insert needs to be retracted to this safe distance before returning to the starting point of the thread. This prevents the tool insert from getting stuck or breaking during retraction.

Measure the distance from the starting point to the center of the relief groove and input it into the thread distance box.

After inputting the thread distance, keep the tool insert within the safe retraction distance and

attempt to complete one stroke to see if the insert tool ultimately lands precisely in the center of the relief groove.

If it is not in the center of the relief groove, return to the origin and adjust the input thread length until the tool insert lands in the center of the relief groove.

2. After setting the thread distance, retract the tool insert to the starting point and begin thread cutting.

At this point, there should be a safe distance of 0.5mm between the tool insert and the workpiece surface.

For the first thread cut, it is recommended to have a depth of cut of 0.5mm, and subsequent cuts of 0.2mm.

Adjust the tool holder as follows:

First, lower the safe distance (0.5mm) (i.e., turn the tool holder screw one full turn),

Then add the 0.5mm depth of cut for the first cut (i.e., turn the tool holder screw one full turns).

After making the first cut, must retract the screw of the fine-tuning tool holder to the safe distance before return the tool insert to the starting point of the thread, which means the screw needs to be unscrewed by $0.5 + 0.5$ mm (two full turns).

For the second thread cut:

After retracting the tool insert to the starting point of the thread, adjust the tool insert downwards by $0.5 + 0.5 + 0.2$ mm (safety distance + depth of the first cut + depth to be cut in the second cut), then start cutting the second cut of thread.

For each subsequent cut, the adjustment formula is: safety distance + depth already achieved + depth to be achieved in this current cut.

Note:





- 1. When threading, a rotation speed of around 50 RPM is recommended.**
- 2. The larger the thread pitch, the slower the rotation speed should be.**
- 3. When threading reverse threads, start from the end closest to the relief groove.**
- 4. The thread depth needs to be 0.2mm deeper than the thread pitch.**

Thread interface

The screenshot shows the 'Thread' interface with the following elements:

- Home Page**: A button to return to the main screen.
- Thread Pitch**: A numeric input field set to 0.000.
- Thread Distance**: A numeric input field set to 0.
- Rotation Speed**: A numeric input field set to 0.
- X-axis Coordinate**: A numeric display field set to 0 mm.
- Zero Reset**: A button to reset the X-axis coordinate.
- Coordinate origin**: A button to return the axis to the starting point.
- Y S POWER**: Logo for Portable Machining & Welding Solutions.
- Rotation Direction**: Two buttons, **RH** (Right Hand) and **LH** (Left Hand).
- Status**: **In Operation** (red), **Stop**, and **Manual Jog** buttons.

Home Page	Click to return to home page
Thread Pitch 0.000	Click, enter the desired thread pitch, range: 0.5-4mm
Thread Distance 0	Click, enter the required thread length, range:0-300mm
Rotation Speed 0	Click, enter the rotation speed, range:1-150r/min
X-axis Coordinate 0 mm	Real position display of thread length (display only, input not supported)
Zero Reret	Zero reset: Clears the values of the X-axis coordinate.
Coordinate origin	Coordinate origin: After reaching the set point in thread cutting, manually retract the cutting tool. Click "Coordinate origin," and the rotary axis will return to the starting angle, the feed axis will retract to the starting point, and then a second cutting operation can be performed.
Start In Operation	Click Start, and it will display "in operation" in the working state.

	<p>Click to stop feeding and rotation (Note: Stopping is not permitted unless it is an emergency) After stopping, retract the threading insert and return it to the initial point; will not cause thread damage.</p>
	<p>Click to enter the manual jog mode</p>
 	<p>Click to switch between right-hand and left-hand threads. RH is right-hand (positive) thread. LH is left-hand (negative) thread.</p>

Thread manual jog interface

Home Page



Manual Jog



Feed Speed



 mm


Rotation Speed



 r/min


















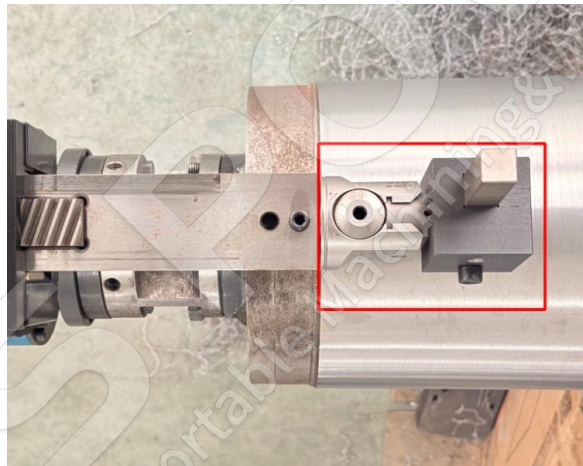



	<p>Click to return to thread page</p>
<p>Feed Speed</p> <input style="width: 100px; text-align: center;" type="text" value="0.00"/> mm	<p>Feed speed , Input range: 0.1-10mm</p>
 	<p>feed direction: forward, backward Press and hold to move forward or backward; release the button to stop moving</p>
 	<p>The axial feed speed increases or decreases Each press increases or decreases by 0.01 mm/s</p>
<p>Rotation Speed</p> <input style="width: 100px; text-align: center;" type="text" value="0"/> r/min	<p>Rotation speed, input rotational speed, range:1-20r/min</p>

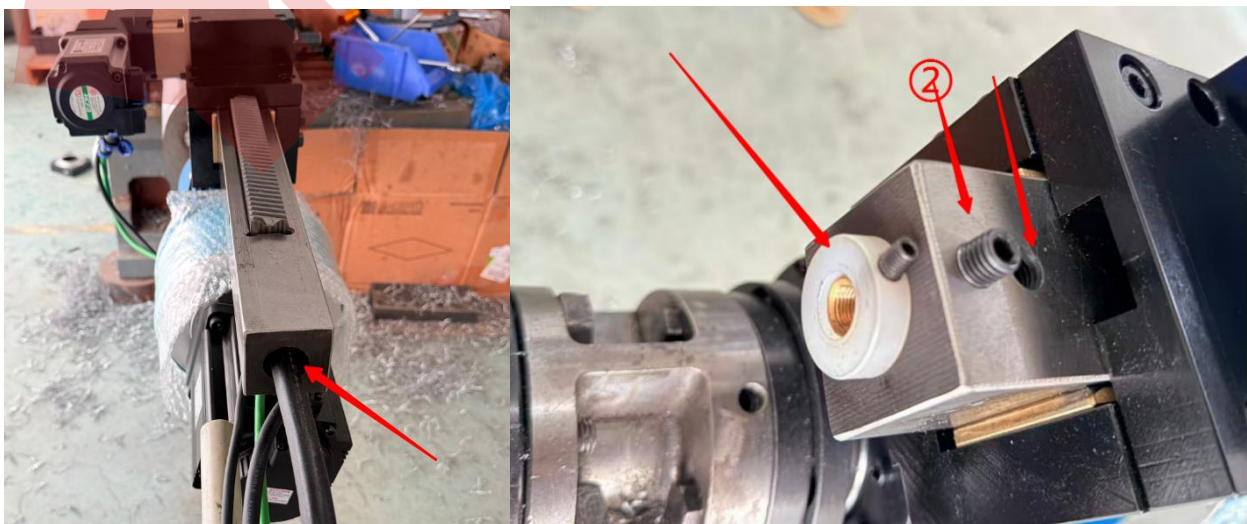
	<p>Rotate counterclockwise or clockwise; press and hold to keep rotating, release to stop.</p>
	<p>Rotation speed adjustment: Each press increases or decreases the speed by 1 r/min.</p>
	<p>When the button is red, can use control panel to adjust feed. When the button is gray, the machine's forward and backward feed can be adjusted by using a wrench. Both the start feed and start rotate buttons must be red at the same time for the machine to start operating normally.</p>
	<p>When the button is red, can use control panel to adjust rotation. When the button is gray, The rotation Angle of the machine can be manually adjusted. Both the start feed and start rotate buttons must be red at the same time for the machine to start operating normally.</p>

X. Weld installation

1. Remove the tool holders from the framed area.



2. Set the welding cable through the hole at the end of the turning arm, put on the plastic retaining sleeve, and tighten the screw at position ② to secure the welding cable.



3. Install the welding torch head, conductive nozzle, and protective nozzle, and adjust the angle of the welding torch head so that the protective nozzle is close to the surface of the workpiece.

If the welding torch head is not long enough, it can be extended by welding extension.



If the torch head angle is far away from the workpiece, then you can also cut under 45 degrees like below picture to meet better results.



Adjust the welding torch head angle, (welding torch head keep in same line with welding bar), leave 1-2mm clearance gap between protective nozzle and welding surface. trial run 360 degree rotate the nozzle to inspect the gap to welding surface clearance gap is equal or not .

The clearance gap difference cannot be big. (Welding torch head can be adjusted). Against proper distance adjustment, the welding can be start when welding bar reducing sleeve screw locked .

If the shaft damage and loss circle shape too much ,suggest make one shaft turning work first .

4. Connect the welding signal cable from the control box to the welding wire.



Welding interface

Home Page

Weld

Shaft Diameter

0

Feed Distance

0

Weld Seam Clearance

0.0

X-axis Coordinate

0.0

mm

Zero
Reset

Weld Angle

0

Continue Weld

In Operation

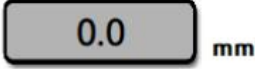

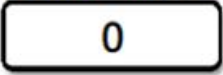

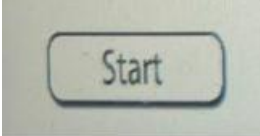



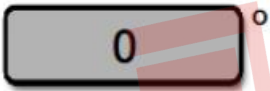
Stop

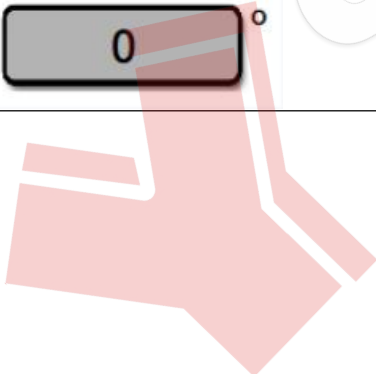
Manual Jog

Exist angle

0°

<div style="border: 1px solid black; border-radius: 10px; padding: 5px 15px; background-color: #f0f0f0; margin-bottom: 5px;">Home Page</div>	Click to return to home page
<p>Shaft Diameter</p> <div style="border: 1px solid black; width: 60px; height: 25px; margin: 0 auto; text-align: center; line-height: 25px;">0</div>	Click to enter the workpiece shaft diameter, range : 80-230mm
<p>Feed Distance</p> <div style="border: 1px solid black; width: 60px; height: 25px; margin: 0 auto; text-align: center; line-height: 25px;">0</div>	Welding length, Click to set, range: 0-300mm
<p>Weld Seam Clearance</p> <div style="border: 1px solid black; width: 60px; height: 25px; margin: 0 auto; text-align: center; line-height: 25px;">0.0</div>	Welding seam width settings , Setting range: 0-5mm, recommended setting: 3-4mm

<p>X-axis Coordinate</p> 	<p>Real position display of the length of welds already completed (display only, cannot be entered).</p>
	<p>Zero reset: Clears the data of the X-axis coordinate.</p>
<p>Weld Angle</p> 	<p>Welding angle, Click to enter the required welding angle. Range: 0-360 degrees. To weld a full circle, enter 360 degrees.</p>
	<p>Continue weld: After pressing the stop button to pause the welding, click this button to continue welding</p>
 	<p>Click Start, and it will display "in operation" in the working state.</p>
	<p>Click to stop feeding and rotation</p>
	<p>Click to enter the manual jog mode</p>
<p>Exist angle</p> 	<p>Displays real position welding angle (display only, cannot be entered).</p>



Weld manual control

Home Page

Manual Control

Feed Speed

 mm

Exist angle

 °

Rotation Speed

 r/min

←
→

Zero
Reset

↺
↻

-
+

S POWER
Portable Machining & Welding Solutions





-
+

Start Feed

Back To
Coordinate

Start Rotate

<div style="border: 2px solid black; border-radius: 15px; padding: 5px; display: inline-block;">Home Page</div>	Click to return to the weld page
<p>Feed Speed</p> <input style="width: 100%; text-align: center;" type="text" value="0.00"/> mm	Welding feed speed , Input range: 0.1-10mm
<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; border-radius: 10px; padding: 5px;">←</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px;">→</div> </div>	Welding feed direction: forward, backward Press and hold to move forward or backward; release the button to stop moving
<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; border-radius: 50%; padding: 10px;">-</div> <div style="border: 1px solid black; border-radius: 50%; padding: 10px;">+</div> </div>	The axial feed speed increases or decreases Each press increases or decreases by 0.01 mm/s
<div style="border: 2px solid black; border-radius: 15px; padding: 5px; display: inline-block; background-color: #f0f0f0;">Start Feed</div>	When the button is red, can use control panel to adjust feed. When the button is gray, the machine's forward and backward feed can be adjusted by using a wrench. Both the start feed and start rotate buttons must be red at the same time for the machine to start operating normally.
<p>Exist angle</p> <input style="width: 100%; text-align: center;" type="text" value="0"/> °	If not welding a complete circle, set the starting position of the welding torch and press and hold the rotation button until the torch head reaches the desired endpoint. The value displayed for the current phase of the rotating axis is the required welding angle. Clicking "Phase Reset" will return the welding torch to the starting point. Input the value just displayed for the current phase of the rotating axis into the welding angle in the welding interface.
<div style="border: 1px solid black; border-radius: 10px; padding: 5px; display: inline-block;">Zero Reret</div>	Zero reset: Clears the value of the rotation axis
<p>Rotation Speed</p> <input style="width: 100%; text-align: center;" type="text" value="0"/> r/min	Rotation speed, input rotational speed, range:1-20r/min

	<p>Rotate counterclockwise or clockwise; press and hold to keep rotating, release to stop.</p>
	<p>Rotation speed adjustment: Each press increases or decreases the speed by 1 r/min.</p>
	<p>When the button is red, can use control panel to adjust rotation. When the button is gray, The rotation Angle of the machine can be manually adjusted. Both the start feed and start rotate buttons must be red at the same time for the machine to start operating normally.</p>
	<p>Reset the current phase of the rotation axis to the starting point</p>

Note:

1. **Welding process have to be done under forward to backward movement, from the end furthest from the machine to the end closest to the machine.**
2. **Anti-blocking cream or anti-blocking agent must coat , or else it will jam during welding**

