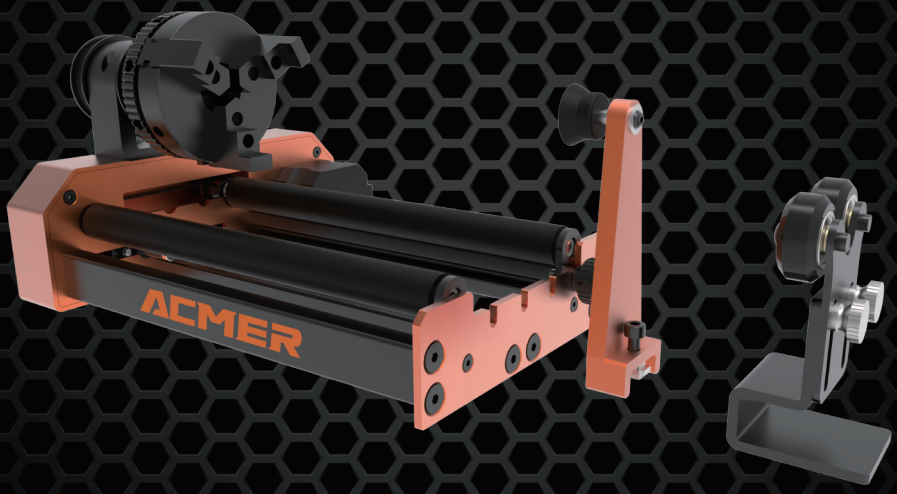
ACMER



M4 Chuck Rotary Module

MANUAL V 1.2

Thank you for choosing our product and placing your trust in our brand. We are committed to offering top-tier quality products and unparalleled customer service. Your support is invaluable to us.

To ensure you get the most out of your product, we offer a range of support solutions:

Your ACMER machine arrives with an in-depth manual, but we also under stand the value of visual learning. Scan the QR code below to access video and document tutorials tailored to your specific machine model. Stay connected with ACMER for expert guidance:



For ongoing updates and insights, don't hesitate to engage with us directly or follow our social media channels. Stay informed about the latest news, expert advice, and engaging events.



Email Support:

For personalized assistance, our after-sales service team is just an email away. Reach out to us at support@acmerlaser.com for any queries or concerns you may have.

We're here to help you make the most of your ACMER experience. Thank you again for your trust and support.

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1.Package List



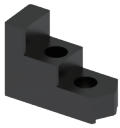
Roller Module*1



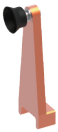
Chuck Module*1



Single-step jaw components*3



Double-step jaw components*3



Tail module*1



Support module*1



Stud components*3



2.5mm Hex Wrench x1
3mm Hex Wrench x1



Chuck Locking Rod*2



Measuring Tape*1



Belt *1



Level*1



Adapter Cable A*1



Motor Cable*1



Adapter Cable B*1



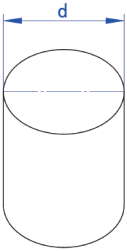
Screw Pack x1

Note:

ACMER engravers can directly use Adapter Cable A. For engravers from other brands, due to possible differences in motor wiring sequences, users may need to use Adapter Cables A and B to connect and test independently.

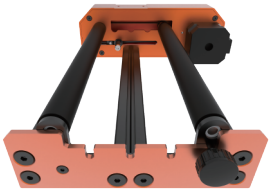
2.Installation/Usage Guide

Note:
Using the M4 Chuck Rotary Module requires changes to the default parameters of the device or software settings. If you no longer use the M4 Chuck Rotary Module, you must revert the modified device parameters or software settings to their original values; otherwise, the laser engraver will not function properly.

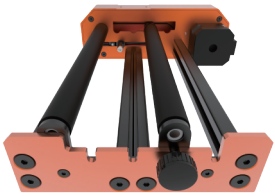


2.1 Roller Usage Guide

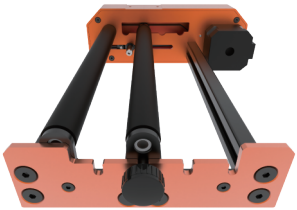
2.1.1 Roller Position Size Reference



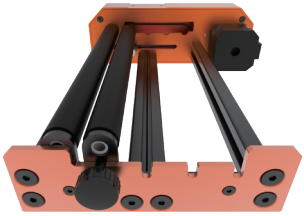
Position 1 (d > Ø100mm):



Position 2 (Ø60mm ≤ d ≤ Ø100mm) :



Position 3 (Ø25mm ≤ d ≤ Ø60mm):



Position 4 (Ø3mm ≤ d ≤ Ø25mm):

2.1.2 Adjusting Roller Position

Step 1: Loosen the hand-tightened screws on both sides of the roller assembly.

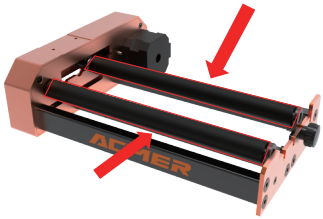




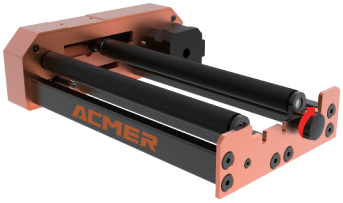
Step 2: Adjust the position of the rollers (ensure that both rollers are parallel during installation).

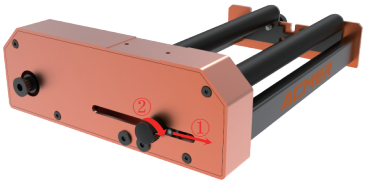






Step 3: First, tighten the hand-tightened screws on the roller, then pull the belt on the other side tight and tighten the hand-tightened screws.





2.2 Chuck Installation Guide

2.2.1 Chuck Engraving Size Reference

When engraving large objects, interference with the roller may occur. For the solution, refer to 2.2.3 - Note 2.

① Double-step Jaws (suitable for Ø1mm-Ø100mm cylindrical objects)





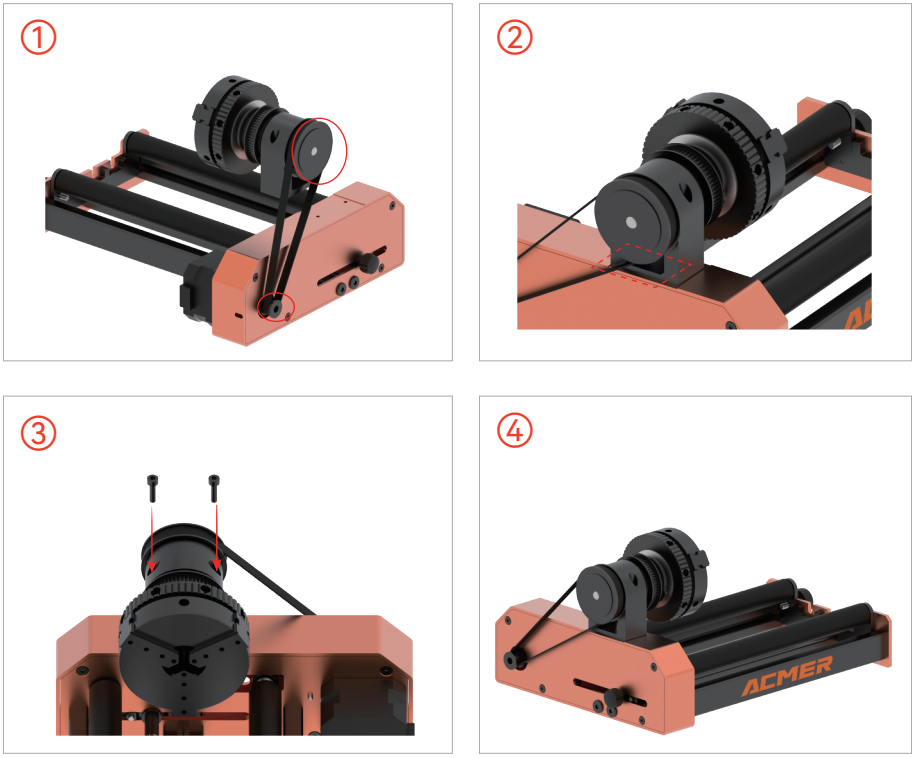
② Single-step Jaws (suitable for Ø1mm-Ø134mm cylindrical objects)

③ Stud Rod (suitable for ring-shaped objects with an inner diameter of Ø9.5mm to Ø95mm or spherical objects from Ø16mm to Ø75mm)



2.2.2 Installing the Chuck Module

Step 1: First, insert the timing belt onto the large synchronizing wheel of the chuck module and the small synchronizing wheel behind the roller assembly. Then, place the chuck module in the slot on the roller module shell and screw in two M3x12 screws. (You need to tighten the timing belt slightly to tighten the screws correctly.)



Step 2: Install the Chuck Jaws

Select the appropriate chuck accessory based on the size of the object to be engraved. Attach the jaws to the chuck using M3*8 hex screws.

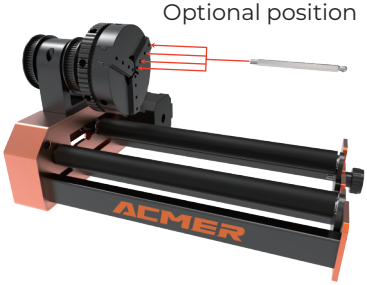








Optional position

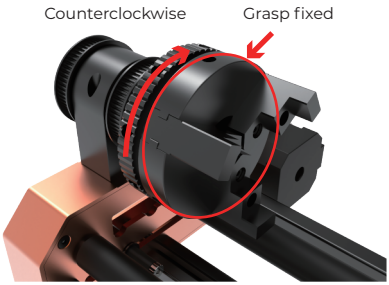


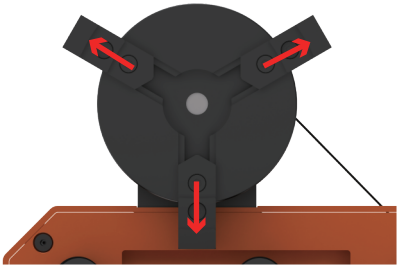


2.2.3 Chuck Usage Guide

① Clamping a Cylindrical Workpiece

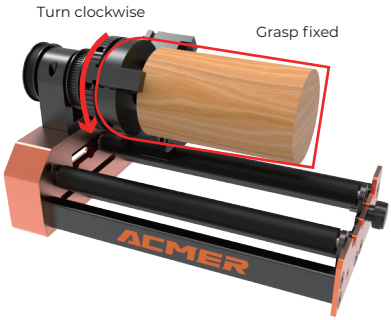
Step 1: Hold the outer ring of the chuck with one hand, and rotate the inner ring counterclockwise with the other hand to open the chuck jaws.





Step 2: Place the workpiece to be engraved inside the jaws, then rotate the inner ring of the chuck clockwise to clamp the workpiece securely.





Note 1:

When engraving a longer workpiece, the far end of the workpiece may fall, causing problems with engraving. Please use a level to calibrate the parallelism of the workpiece (make sure the bubble in the level is at the center of the level), and use a high stand to assist in supporting the workpiece.



Note 2:

When engraving a workpiece with a larger diameter, interference may occur between the jaws and the roller. In this case, install the chuck assembly in reverse. Due to the weight imbalance caused by reversing the chuck assembly, one side of the roller may lift. To stabilize, install the sliding rail profile in the middle of the roller on the same side as the chuck.





Note 3:

When the M4 module's chuck is used to clamp heavier objects, insufficient clamping force may cause the object to fall off during the engraving process. The chuck locking rod can increase the clamping force of the chuck.



Instructions for Use:

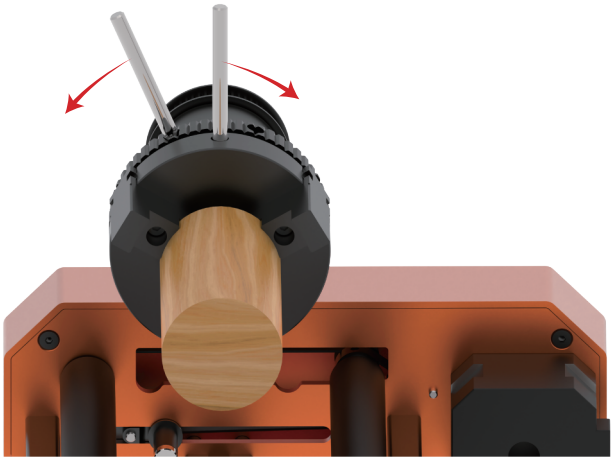
1.First, manually secure the object to be engraved onto the chuck.



2. Insert the chuck locking rod into any two holes from the two rows of holes on the chuck.



3.Use the locking rod to rotate the chuck with the installed jaws clockwise, while rotating the other side in the opposite direction to securely clamp the object to be engraved.



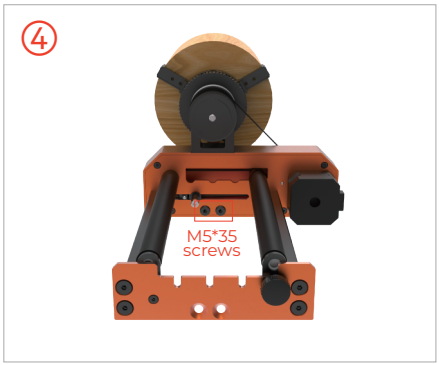
Tips: The locking jaws may cause damage to certain surfaces of the clamped object. Please exercise caution!

Sliding Rail Profile Disassembly and Installation Guide







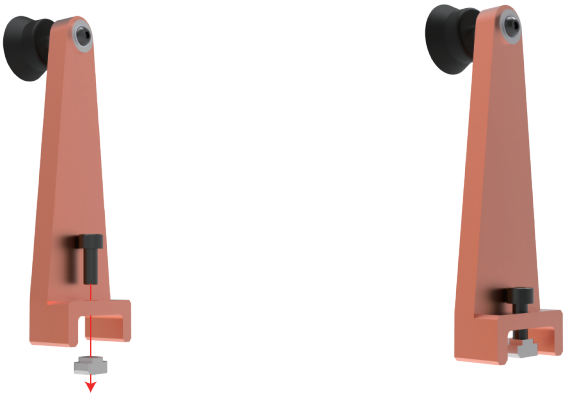


② Clamping Spherical/Ring-Shaped Workpieces
Use the included spherical rod and, based on the size of the object to be engraved, attach the spherical rod to the screw holes on the chuck. Open the chuck and secure the workpiece onto the spherical rod.

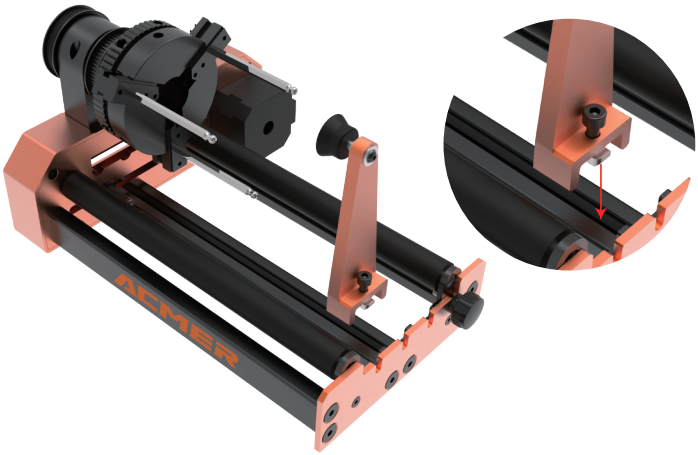




Note:
When engraving larger spherical workpieces, use a suction cup stand to support the back of the sphere.
Step 1: Attach the M4*10 screws and T-nuts to the back of the suction cup stand (do not fully tighten the screws and nuts yet).



Step 2: Place the nuts of the suction cup stand into the center groove of the roller module.



Step 3: Slide the suction cup stand to press firmly against the back of the spherical workpiece.



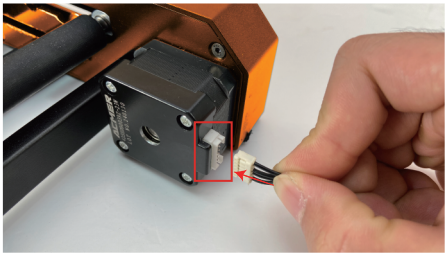
Step 4: Tighten the M4 screws to secure the T-nuts in the groove. After tightening, check to ensure it is properly fixed in place.



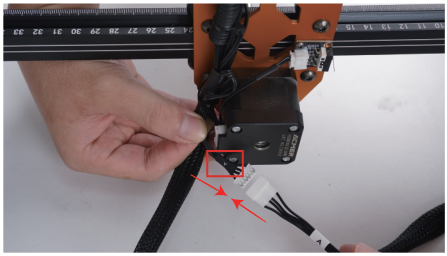
2.3 Cable Connection

For ACMER P1 S Pro:
Step 1: Take out wire A and connect the male terminal of the wire to the motor of the rotary roller.

Step 2: Disconnect the Y-axis motor wire from the machine and connect it to the female terminal of wire A.



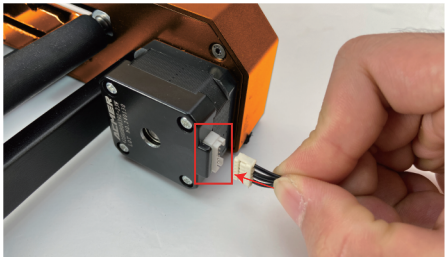
Step 1



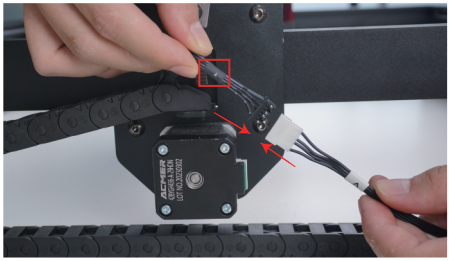
Step 2

For ACMER P1:
Step 1: Take out wire A and connect the male terminal of the wire to the motor of the rotary roller.

Step 2: Disconnect the Y-axis motor wire from the machine and connect it tothe female terminal of wire A.



Step 1

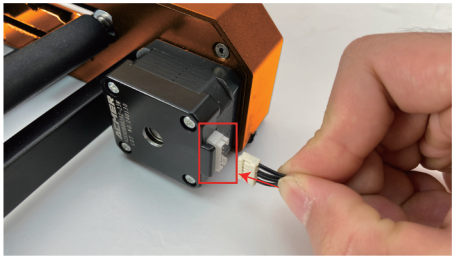


Step 2

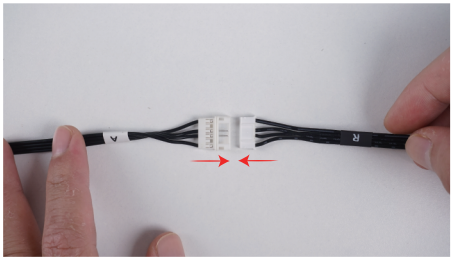
For ACMER P2:

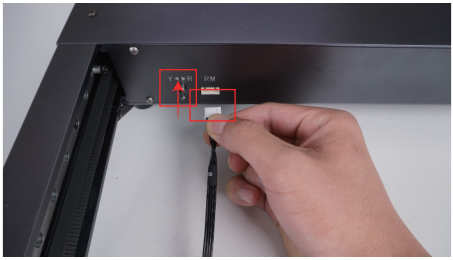
Step 1: Take out wire A and connect the male terminal of the wire to the motor of the rotary roller.

Step 2: Take out the conversion wire provided with the P2 machine (the one labeled with "R," not the one that comes with the rotary roller). Connect the female terminal of the wire A to the 6-pin male terminal of the P2 conversion wire. Then, insert the 4-pin male terminal of the P2 conversion wire into the reserved terminal of the P2 back frame. Finally, shift the switch to the right to the "R" position.



Step 1





Step 2

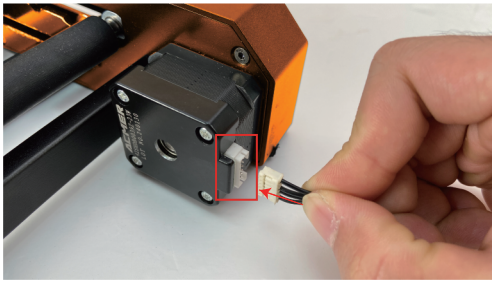
Note: The wire B and conversion wire are spare wires designed for use with other brand machines.

FOr ACMER P3:

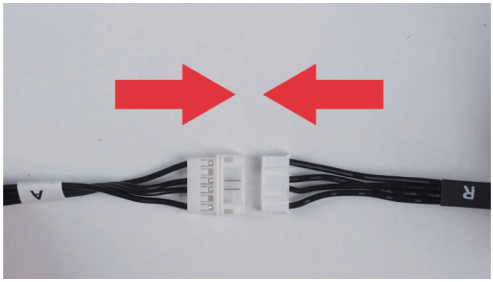
Step 1: Connect one end of the cable(come with the rotary module)to the rotary module motor.

Step 2: Connect wire A towire R.

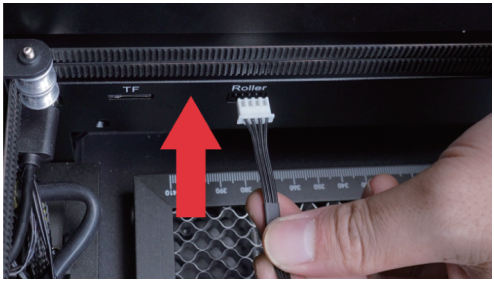
Step 3: Connect the otherend of the cable to the interface on the front of the machine frame.



Step 1



Step 2



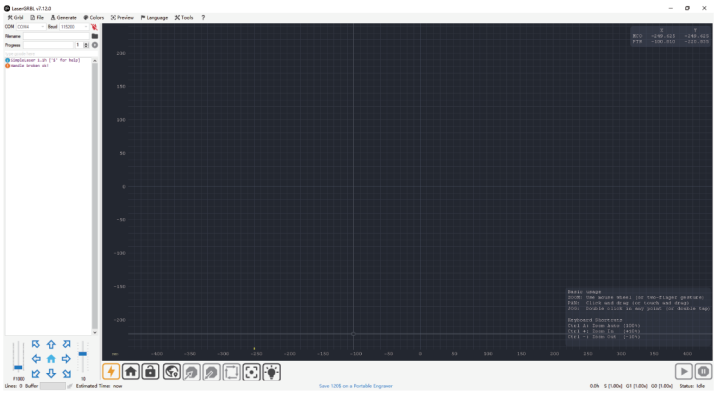
Step 3

2.4 Software Setup Guide

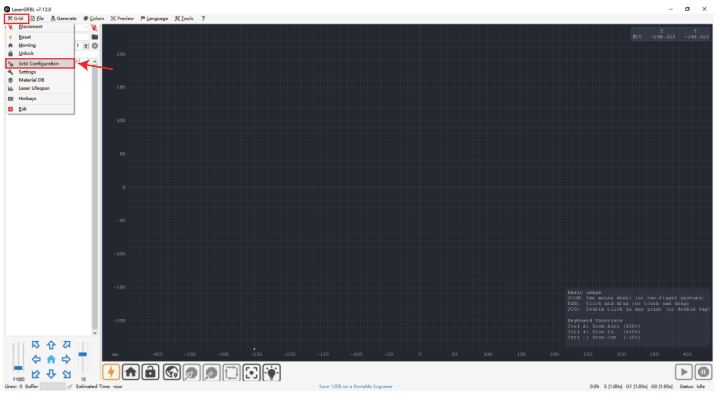
2.4.1 LaserGRBL

Note：At present, ACMER P1 and P2 can use M4 chuck rotation module through LaserGRBL, while P3 can only use M4 chuck rotation module through LightBrun.

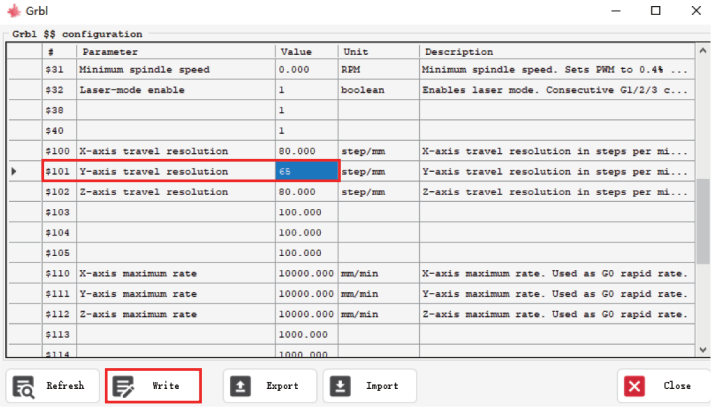
Step 1: Open LaserGRBL and connect the machine.



Step 2: Open Grbl Configuration page



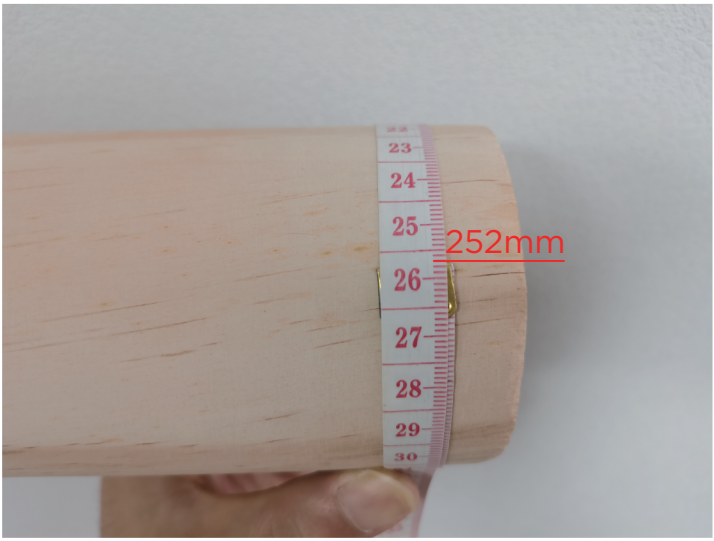
Step 3: When using Roller mode, Find $101, change it to 65 then click Write



#	Parameter	Value	Unit	Description
$31	Minimum spindle speed	0.000	RPM	Minimum spindle speed. Sets PWM to 0.4% ...
$32	Laser-mode enable	1	boolean	Enables laser mode. Consecutive G1/2/3 c...
$38		1		
$40		1		
$100	X-axis travel resolution	80.000	step/mm	X-axis travel resolution in steps per mi...
$101	Y-axis travel resolution	65	step/mm	Y-axis travel resolution in steps per mi...
$102	Z-axis travel resolution	80.000	step/mm	Z-axis travel resolution in steps per mi...
$103		100.000		
$104		100.000		
$105		100.000		
$110	X-axis maximum rate	10000.000	mm/min	X-axis maximum rate. Used as G0 rapid rate.
$111	Y-axis maximum rate	10000.000	mm/min	Y-axis maximum rate. Used as G0 rapid rate.
$112	Z-axis maximum rate	10000.000	mm/min	Z-axis maximum rate. Used as G0 rapid rate.
$113		1000.000		
$114		1000.000		

Step 4:

① When using Chuck mode, first use a measuring tape to measure the circumference of the cylindrical object to be engraved. As shown in the image below, the circumference of this cylindrical wood block is measured to be 252mm.



② Use the formula below to calculate the Y-axis travel resolution (i.e., the $101 value) required for engraving the current size of the cylinder.

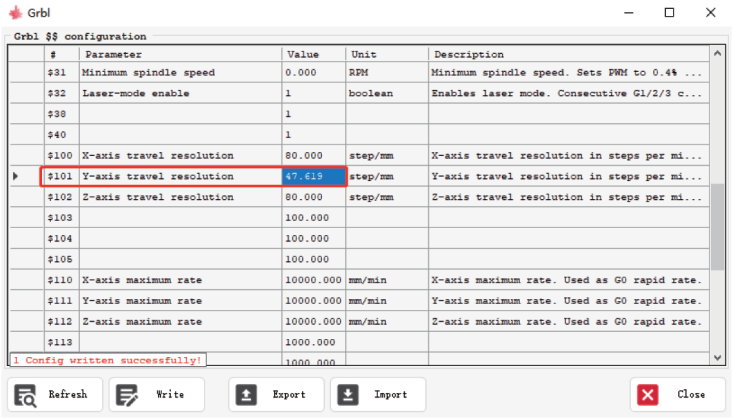
12000 ÷ Circumference of the Workpiece (unit: mm) = Y-axis Travel Resolution

Note: The values obtained from this formula are reference values and may need to be adjusted based on the final engraving results.

For example, the circumference of the cylinder measured in ① is 252mm. Applying the formula above gives:

12000 ÷ 252mm ≈ 47.619
(rounded to three decimal places)

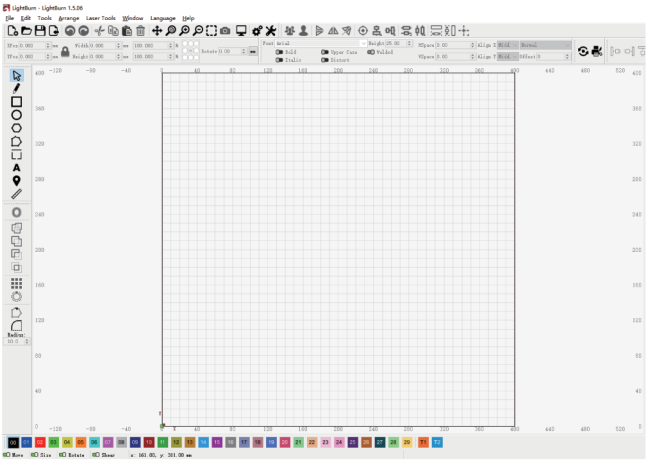
③ Change the value of the $101 option in the GRBL settings to the value calculated in ②, then click 'Write'.



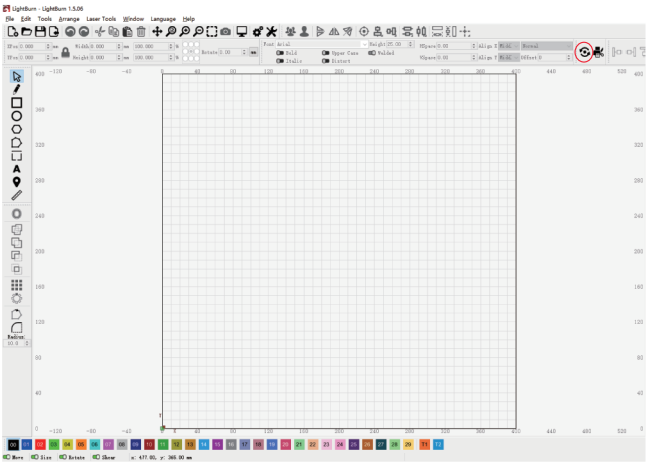
Note: When using the Roller, no calculation is needed; the $101 value is fixed at 65. However, when using the Chuck to engrave workpieces of different sizes, the $101 value must be calculated separately for each.

2.4.2 LightBurn

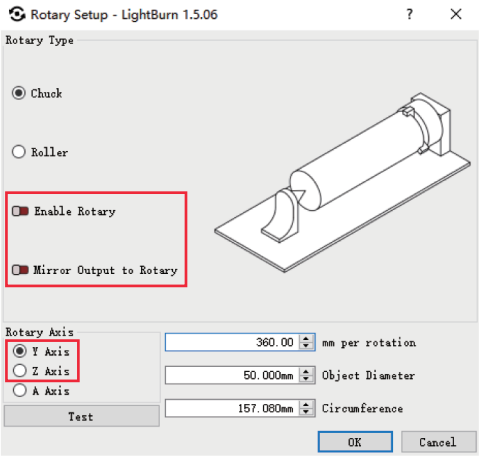
Step 1: Open LightBurn and connect to the machine.



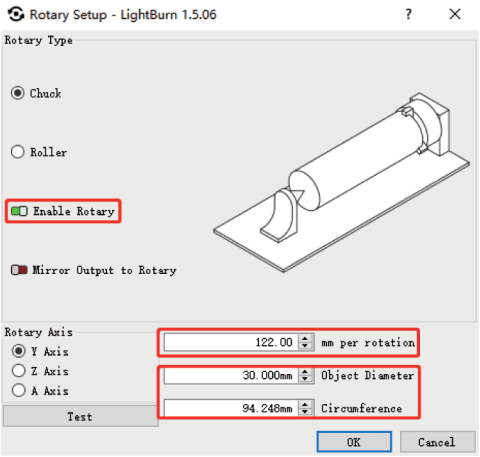
Step 2: Click on 'Rotary Setup' in the upper right corner.



Step 3: The Rotary Setup window will pop up. Select Chuck or Roller mode based on the module being used.If you are an ACMER P3 user, you also need to change the rotation axis to the Z-axis.

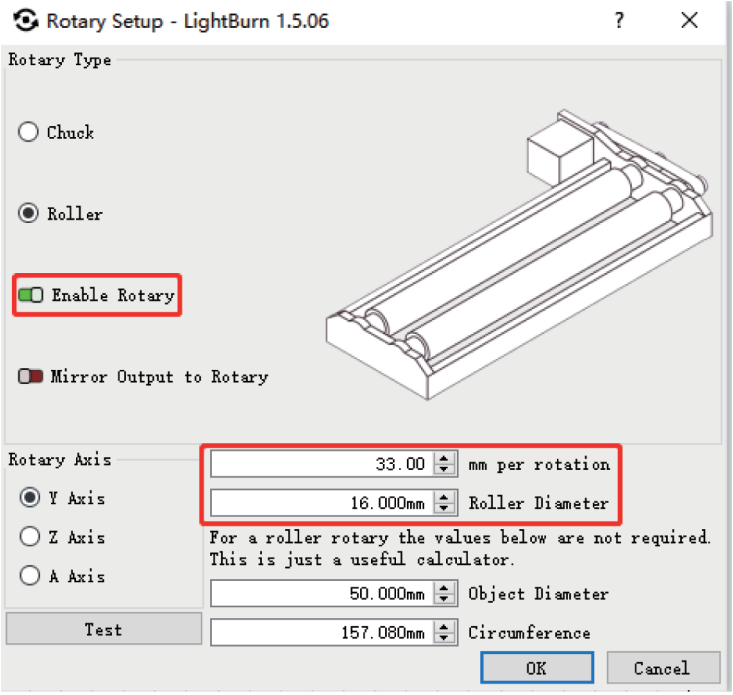


Step 4: In Chuck mode, enable the 'Enable Rotary' option, set it to 122mm per rotation, and adjust the corresponding values based on the diameter or circumference of the object to be engraved.



Note: If the engraved image appears upside down, enable the 'Mirror Output to Rotary' option.

Step 5: In Roller mode, enable the 'Enable Rotary' option, set the corresponding value to 33mm per rotation, and set the Roller Diameter to 16mm.



Precautions

1. Before use, ensure that the M4 is parallel to the X-axis of the engraver; otherwise, the engraved pattern may become distorted.

2. When using Roller mode, if the roller loses steps, adjust the belt tension.

3. When using the chuck, try to keep the top of the workpiece in close contact with the inner plane of the chuck and tighten it. If necessary, a tailstock can be used to secure the tail end to prevent the workpiece from falling during engraving.

4. When using Chuck mode, each time the material is changed, you need to update the material parameters again in the "Rotary Setup" window.

5. If the ACMER M4 is not in use, you need to reset the parameters written to the mainboard or disable "Enable Rotary" in the "Rotary Setup" window.

6. The engraved pattern is mirrored. You can set the reverse Y-axis motor direction or enable "Mirror Output to Rotary."

7. If this is your first time using this product, please read the accompanying instructions carefully to enhance your experience. ACMER is not responsible for any damages caused by failure to comply with the instructions and requirements for using this product or incorrect usage of the product.

8. ACMER has carefully checked the contents of this manual; however, there may be errors or omissions. We are committed to continuously improving the features and quality of our products and services, and therefore reserve the right to make changes to the manual and the products or software described in it without prior notice.

After-sales

To ensure high-quality after-sales support, we recommend visiting our official website (acmerlaser.com) for detailed information on after-sales and warranty.

If you have any questions or need further assistance, please feel free to contact us via email at support@acmerlaser.com. Our support team will provide you with prompt assistance to ensure timely resolution of your issues.

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