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Twotrees TTC 450

TTC 450 CNC Milling Machine User Manual

Model: **TTC 450** | Brand: **Twotrees**

1. INTRODUCTION

The Twotrees TTC 450 is a versatile 3-axis CNC milling machine designed for precision engraving and cutting a variety of materials. Its robust construction and advanced features make it suitable for both hobbyists and professionals. This manual provides essential information for the safe and effective operation, maintenance, and troubleshooting of your TTC 450 machine. The machine features an 80W spindle with a speed range of 0 to 12000 RPM, capable of working with materials such as plastic, soft aluminum, wood, acrylic, PVC, and PCB.

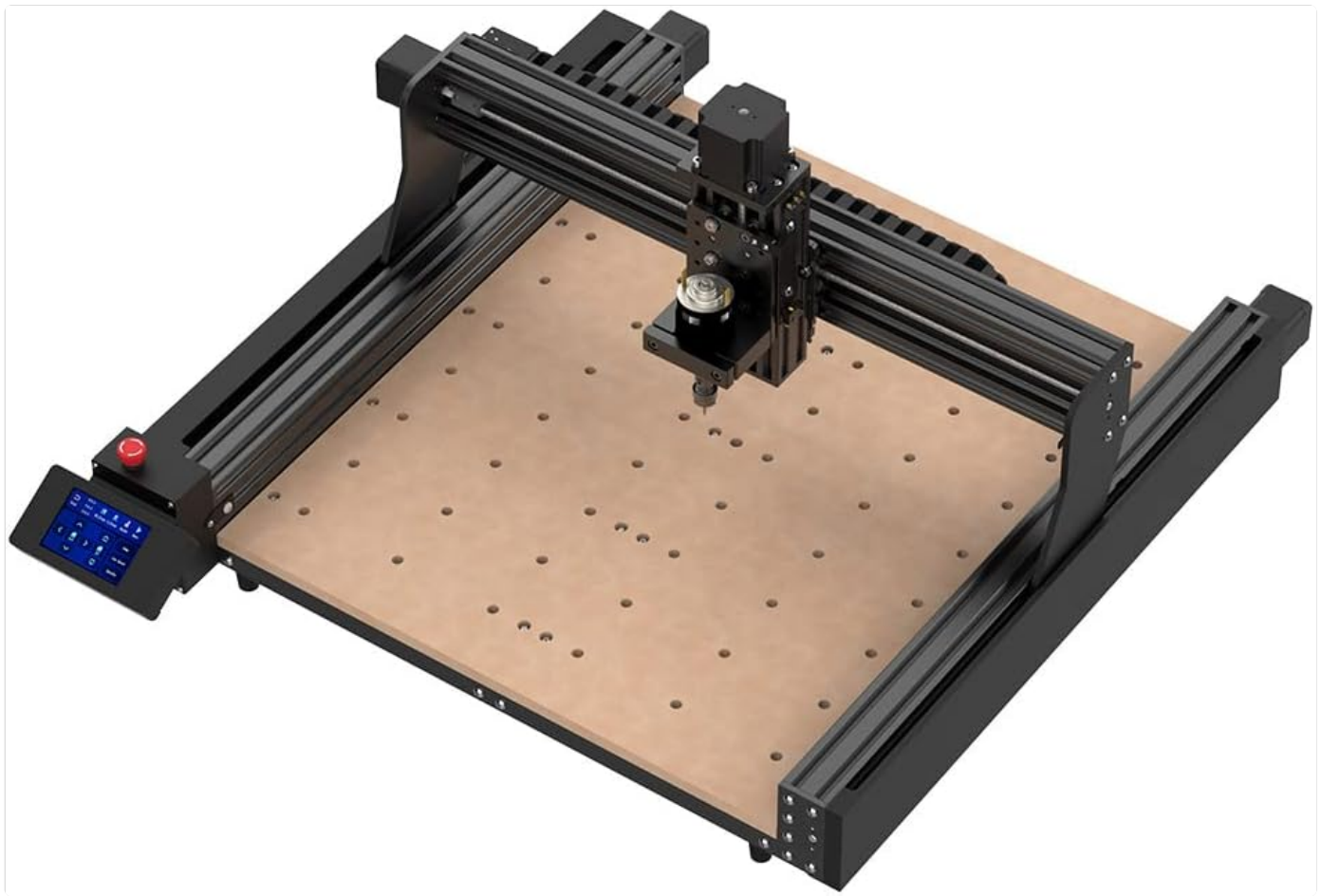


Figure 1.1: Overview of the TTC 450 CNC Milling Machine.

2. SAFETY INSTRUCTIONS

Operating a CNC machine requires adherence to strict safety protocols to prevent injury and damage to the equipment. Always read and understand these instructions before operating the machine.

- **Eye Protection:** Always wear safety glasses or goggles to protect your eyes from flying debris.
- **Respiratory Protection:** Use a dust mask or respirator, especially when working with materials that produce fine dust (e.g., wood, MDF). Ensure adequate ventilation in your workspace.
- **Hand Safety:** Keep hands and fingers clear of moving parts, especially the spindle and cutting tool, during operation. Do not wear loose clothing, jewelry, or gloves that could get caught in the machine.
- **Emergency Stop:** Familiarize yourself with the location and operation of the emergency stop button.
- **Power Disconnection:** Always disconnect power before performing any maintenance, cleaning, or assembly.
- **Material Compatibility:** Ensure the material you are working with is suitable for CNC milling and does not pose a fire or toxic fume hazard. The machine is not designed for carving hard metals or jade.
- **Supervision:** Never leave the machine unattended during operation.

3. SETUP

3.1 Unpacking and Component Check

Carefully unpack all components from the packaging. Verify that all parts listed in the packing list are present and undamaged. Report any missing or damaged parts to the supplier immediately.

3.2 Assembly

The TTC 450 CNC machine comes 70% pre-assembled, significantly reducing the complexity of the setup process. Follow the

included assembly guide for detailed instructions on connecting the remaining components, such as the gantry and workbed. Ensure all screws are tightened securely.

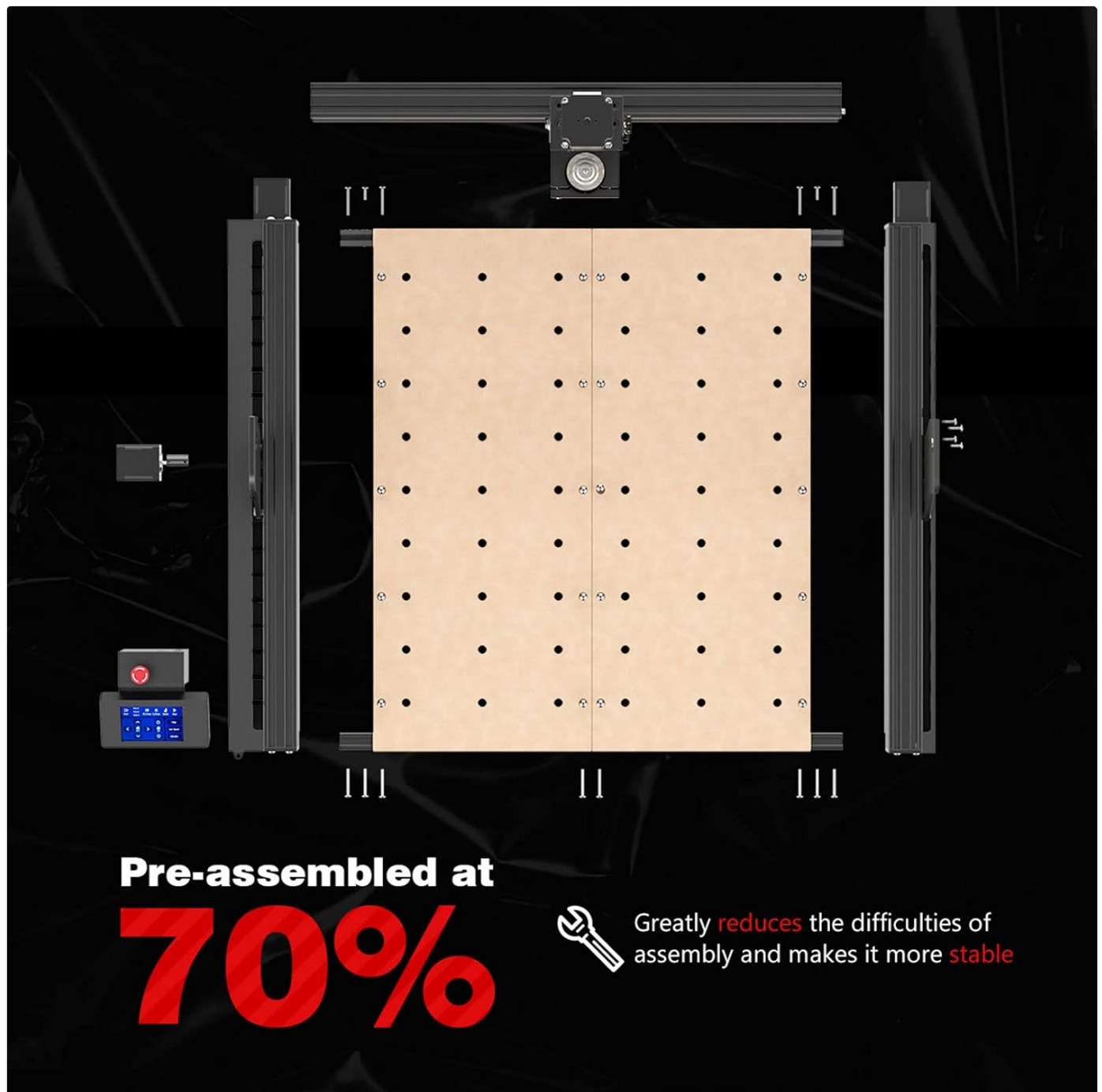


Figure 3.1: The TTC 450 is 70% pre-assembled, simplifying setup.

3.3 Power Connection

Connect the provided power adapter to the machine and then to a suitable power outlet. Ensure the power supply matches the machine's requirements (120W, 24V, 5A).

3.4 Software Installation

The TTC 450 is compatible with various CAM software, including Candle, Carveco, Artcam, and Easel. Install your preferred software on your computer. Refer to the software's documentation for specific installation and setup procedures. The machine's integrated ESP32 32-bit chip and built-in WiFi module allow for direct control via computer, application, and the smart display.



Figure 3.2: The TTC 450 supports popular CAM software like Candle, Carveco, Artcam, and Easel.

4. OPERATING INSTRUCTIONS

4.1 Smart Display and Control

The TTC 450 features an intelligent display for direct control and monitoring. The integrated WiFi module allows for seamless control from a computer or a dedicated mobile application. The ESP32 chip provides advanced functionalities and supports additional modules like a laser head or rotary axis.

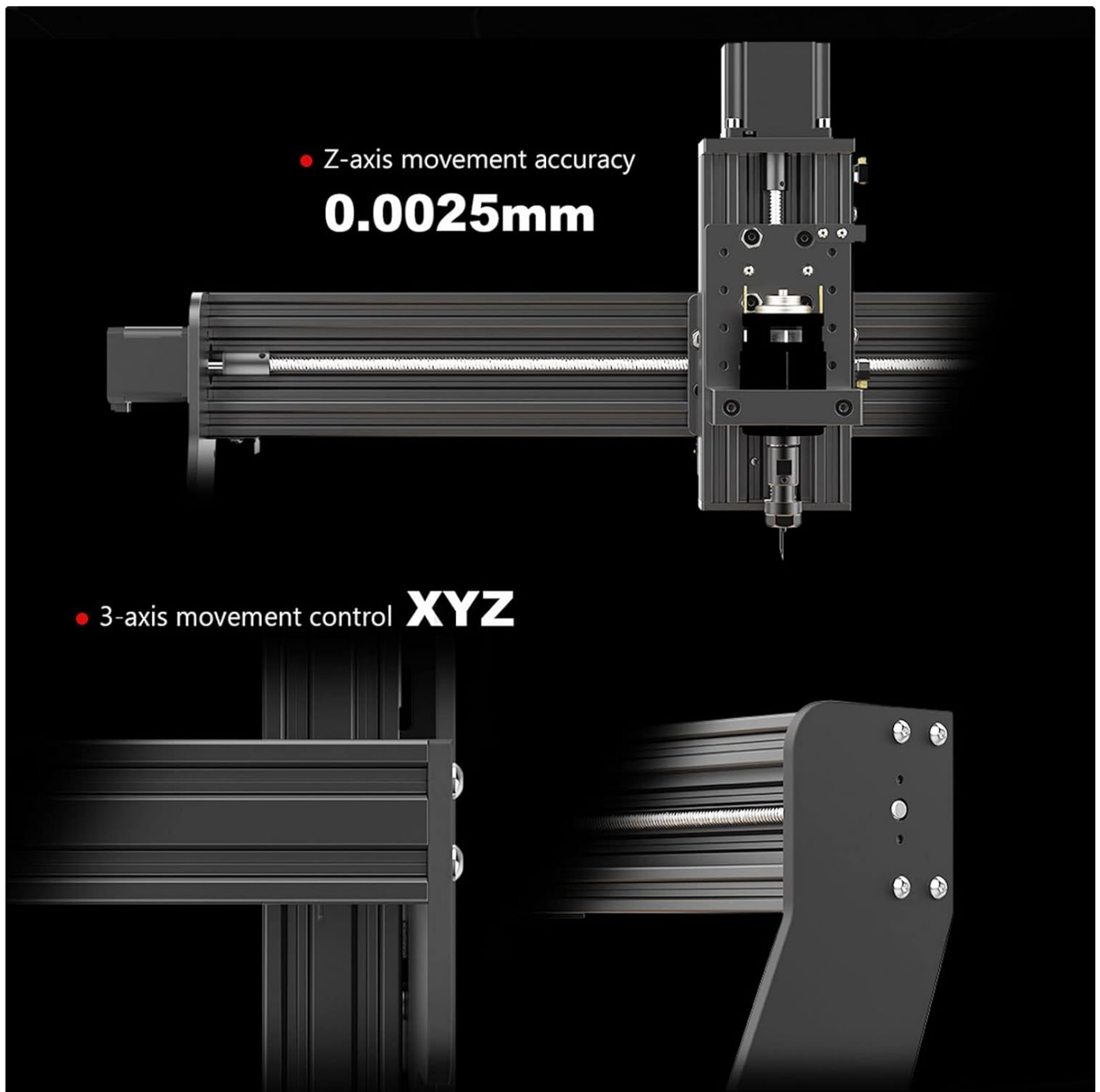


Figure 4.1: The smart display provides intuitive control and monitoring.

4.2 Loading Material

Securely fasten your material to the workbed using clamps or other appropriate fixtures. Ensure the material is flat and stable to prevent movement during the milling process.

4.3 Setting Up a Job

Use your CAM software to design or import your desired carving path. The TTC 450 features 3-axis (XYZ) movement control. For precise results, note the Z-axis movement accuracy of 0.0025 mm and a dimensional accuracy of up to 0.1 mm.

LARGER THAN NORMAL

460*460*80mm Work Area
(18.1*18.1*3.1 inch)



Figure 4.2: The machine offers high precision with 0.0025mm Z-axis movement accuracy.



Figure 4.3: Examples demonstrating the fine detail achievable with the TTC 450.

4.4 Spindle Operation and Tooling

The machine is equipped with an 80W spindle, providing ample power for various materials. The spindle speed can be adjusted from 0 to 12000 RPM. The ER11 system ensures compatibility with a wide variety of clamp sets and cutting tools, allowing for diverse applications.

**Rigid H-Beam structure, Leadscrew Driven,
Y-Axis Dualscrew drive, Z-Axis Optical Axis
Drive deliver more stability than the
traditional v-slot drive.**

Note: Can not carve hard metal, jade and other hard materials.

80W CNC Module

Powerful **775** spindle

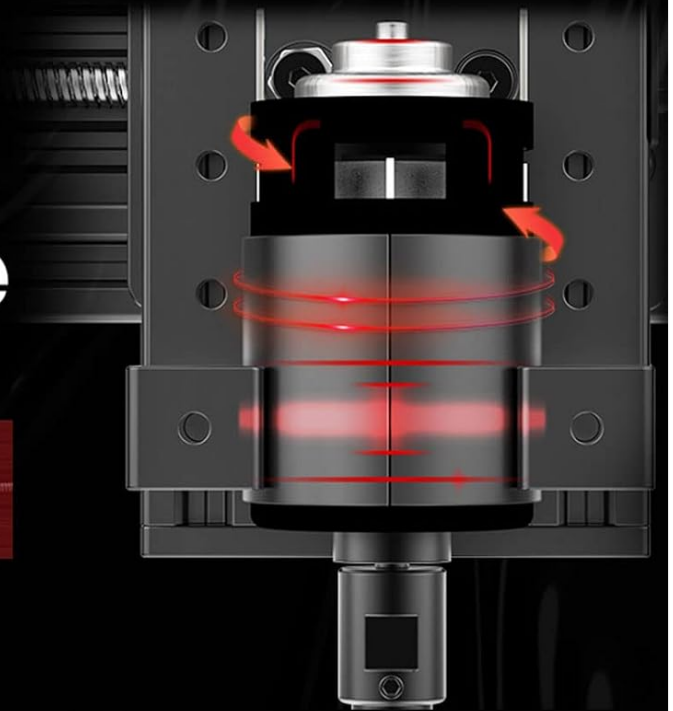


Figure 4.4: The powerful 80W spindle module.

Creating Unlimited Possibility

ER11 COMPATIBLE WITH A WIDE
VARIETY OF CLAMP SETS

Easily configurable with add-ons

Easy maintenance



Figure 4.5: The ER11 system allows for a wide range of compatible clamp sets and tools.

4.5 Monitoring the Process

Always monitor the machine during operation. Pay attention to unusual noises, vibrations, or smoke. Be prepared to use the emergency stop button if any issues arise.

5. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your TTC 450 CNC machine.

- **Cleaning:** After each use, clean the work area and machine components to remove dust and debris. Use a soft brush or compressed air. Avoid using liquids directly on electronic components.
- **Lubrication:** Periodically lubricate the leadscrews and linear rails according to the manufacturer's recommendations to ensure smooth movement and prevent wear.
- **Component Inspection:** Regularly inspect all cables, connectors, and moving parts for signs of wear or damage. Check the homing switches (X, Y, Z double limit switch + ESTOP) for proper function.

- **Tool Maintenance:** Keep your cutting tools sharp and clean. Dull tools can lead to poor cut quality and increased strain on the machine.

6. TROUBLESHOOTING

This section addresses common issues you might encounter with your TTC 450 CNC machine.

Problem	Possible Cause	Solution
Machine does not power on.	Power cable disconnected; faulty power supply; emergency stop engaged.	Check power connections; test power supply; disengage emergency stop.
Poor engraving/cutting quality.	Dull tool; incorrect feed rate/spindle speed; loose material; machine vibration.	Replace/sharpen tool; adjust settings in CAM software; secure material; check machine for loose components.
Machine not connecting to software.	Incorrect port selection; driver issues; WiFi connectivity problems.	Verify COM port; reinstall drivers; check WiFi connection and settings.
Unusual noises during operation.	Loose components; dry leadscrews; motor issues; tool hitting clamps.	Inspect and tighten components; lubricate leadscrews; check tool path for obstructions.

7. SPECIFICATIONS

Detailed technical specifications for the TTC 450 CNC Milling Machine.

Model Name	TTC450 CNC Router Machine
Work Area	460 x 460 x 80mm(18.11" x 18.11" x 3.15")
Body Material	Metal Frame & Aluminium 4080U Profile
Drive System	Translation Screws Drive With Double Y-axis System
Main Board	DLC32 V2.1
Stepper Driver	A4988, 1.3A
Stepper Motors	17HS8401S, NEMA23 20mN.m
Spindle	80W,8000RPM / 500W,12000RPM
Max Speed	800mm/Min
Running Accuracy	±0.1MM
Repositioning Accuracy	±0.0025MM
Power Supply	120W,24V,5A
CAM Software	Candle, Carveco, Artcam,Easel
Homing Switches	X,Y,Z double limit switch + ESTOP
Leadscrew Size & Type	T8 2mm Pitch, 4mm Lead 5 Start Acme Lead Screw

Figure 7.1: Key technical specifications of the TTC 450.

Feature	Detail
Model Name	TTC450 CNC Router Machine
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Stepper Motors	17HS8401S, NEMA23 20mN.m
Spindle	80W, 0-12000 RPM
Max Speed	800mm/Min
Running Accuracy	±0.1MM
Repositioning Accuracy	±0.0025MM
Power Supply	120W, 24V, 5A
CAM Software	Candle, Carveco, Artcam, Easel
Homing Switches	X,Y,Z double limit switch + ESTOP
Leadscrew Size & Type	T8 2mm Pitch, 4mm Lead 5 Start Acme Lead Screw

8. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the documentation provided with your purchase or contact the manufacturer directly. Keep your proof of purchase for warranty claims.

Manufacturer: Twotrees

For further assistance, please visit the official Twotrees website or contact their customer service department.