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METAL LATHE USER MANUAL

MODEL:MX-S450/MX-S1170

We continue to be committed to provide you tools with competitive price. "Save Half", "Half Price" or any other similar expressions used by us only represents an estimate of savings you might benefit from buying certain tools with us compared to the major top brands and does not necessarily mean to cover all categories of tools offered by us. You are kindly reminded to verify carefully when you are placing an order with us if you are actually Saving Half in comparison with the top major brands.

MODEL:MX-S450/MX-S1170



(The picture is for reference only, please refer to the actual object)

NEED HELP? CONTACT US!

Have product questions? Need technical support? Please feel free to contact us:

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This is the original instruction, please read all manual instructions carefully before operating. VEVOR reserves a clear interpretation of our user manual. The appearance of the product shall be subject to the product you received. Please forgive us that we won't inform you again if there are any technology or software updates on our product.

	Warning-To reduce the risk of injury, user must read instructions manual carefully.
	This product is subject to the provision of European Directive 2012/19/EC. The symbol showing a wheeled bin crossed through indicates that the product requires separate refuse collection in the European Union. This applies to the product and all accessories marked with this symbol. Products marked as such may not be discarded with normal domestic waste, but must be taken to a collection point for recycling electrical and electronic devices

Safety Information



Workspace Safety

- Keep the work area clean and well lit. Cluttered or dark areas invite accidents.
- **DO NOT** allow individuals unfamiliar with this product to use it. Keep children and bystanders away while using this product.
- Ensure that this machine is anchored on a stable, level, and hefty surface before beginning operation.
- **DO NOT** operate this device in the presence of any explosive, flammable, or caustic liquids, gases, or dust.

Electrical Safety

- **ONLY** use this machine with stable compatible power sources.
- **ALWAYS** make sure the power switch is off before plugging in this device.
- **Do not** use this device if the power switch does not steadily turn it on or off. Repair or replace the damaged component before further use.
- Avoid body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerators while using this device.
- Do not expose the electrical components to water, including rain or excessive humidity.

- This device **MUST** be electrically grounded for safe use. **DO NOT** remove the grounding prong, modify the plug in any way, or use any adapter plugs.
- Keep the power cord away from heat, oil, sharp edges, or moving parts.

Personal Safety

- **DO NOT** use this device while you are tired or under the influence of drugs, alcohol, or medication.
- Always wear appropriate personal protective equipment, such as a dust mask, a hard hat, goggles, nonskid safety shoes, and ear plugs when using this machine.
- **DO NOT** overreach. Keep proper footing and balance at all times.
- **DO NOT** wear jewellery or loose clothing and tie back long hair during operation. Keep your clothing, hair, and gloves away from moving parts.
- Remove any adjusting keys or spanners before turning the device on.
- People with pacemakers should consult their physician before using this device. Electromagnetic fields in close proximity to a pacemaker can cause interference and even failure.

Lathe Use and Care

- **DO NOT** change gears while the machine is in operation.
- **DO NOT** force this device. Clean and lubricate as needed if parts begin to move slowly.
- Disconnect the power cord plug from the power source before making any adjustments, changing accessories, or storing the device.
- Use only accessories that are recommended by the manufacturer for your model.
- Never leave the device unattended when it is plugged in to an electrical outlet.
- Maintain all labels and nameplates on the device. If any come loose or become illegible, replace them before further use.

Maintenance Safety

- Always unplug the mini lathe from its electrical outlet before performing any inspection, maintenance, or cleaning procedures.
- Maintain this product. Check for misalignment or binding of parts, breakage of parts, or any other condition that may affect the device's operation. If damage is detected, have the part repaired or replaced before further use.
- Maintain tools with care. Keep cutting tools sharp and clean.
- Service for this device must be performed only by qualified repair personnel.
- Store this device and its components out of reach of children and other untrained persons.

Symbol Guide

The following symbols are used on this machine's labeling or in this manual:



These items present a risk of serious property damage or personal injury.



These components pose a risk of electric shock. Read the Electrical Safety section above carefully.



Read this manual completely before using this machine. Contact customer service if you have any questions before use.



Always ensure this machine is electrically grounded to prevent electrical shock. Disconnect this machine from its power source before servicing.



Always wear eye protection while using this machine.



Always wear ear protection while using this machine.



Always wear hand protection while using this machine. Take care that it is well fitted and cannot be caught by a turning workpiece.



Always wear foot protection while using this machine. Rubber-soled steel-toed boots are highly recommended.



Always wear head protection while using this machine. Use a hard hat or similar helmet to protect against any flying debris.



Specifications

Direct Drive Spindle, Electronic Wheel Series Lathe Parameters	
Model Number	MX-S450
Voltage	AC230V, 50HZ / AC110V 60Hz
The Spindle Type	DC Brushless Direct Drive Spindle
The Motor Power	1.25 KW
Output Torque	4.5NM / 850rpm
Speed	0-2500rpm
Spindle Through Hole / Size	38mm / MT5
Chuck Size	125mm
Head Size	60*60mm
Tailstock Sleeve Dimensions	50mm / MT2
Gross / Net Weight	61.1KG / 76.1KG
The Transmission Way	Electronic Hanging Wheel, Stepper Motor
Stepper Motor Model	86-8.5NM
Feed Way	Horizontal Automatic, Vertical Manual
Swing Over Bed	220mm
Range Of Threading	0.5-3mm / T.P.I 6-40
Machine Mode	Program Number Adjustable, Common British System
Main Screw Specifications	Tr16mm*2.0
Stroke (Center Distance)	450mm
Packing Size	1005*525*555mm

Specifications

Direct Drive Spindle, Electronic Wheel Series Lathe Parameters	
Model Number	MX-S1170
Voltage	AC230V, 50HZ / AC110v,60Hz
The Spindle Type	DC Brushless Direct Drive Spindle
The Motor Power	1.25 KW
Output Torque	4.5NM / 850rpm
Speed	0-2500rpm
Spindle Through Hole / Size	38mm / MT5
Chuck Size	125mm
Head Size	60*60mm
Tailstock Sleeve Dimensions	50mm / MT2
Gross / Net Weight	87.6KG / 109.7KG
The Transmission Way	Electronic Hanging Wheel, Stepper Motor
Stepper Motor Model	86-8.5NM
Feed Way	Horizontal Automatic, Vertical Manual
Swing Over Bed	220mm
Range Of Threading	0.5-3mm / T.P.I 4 -40
Machine Mode	Program Number Adjustable, Common British System
Main Screw Specifications	Tr16mm*2.0
Stroke (Center Distance)	1000mm
Packing Size	1490*515*555mm

Operation Instructions

1. Interface definitions

Limit switch

LM1, LM2: 2 limit switch inputs.

0V: Common terminal for LM1 and LM2 switch signals.

Encoder interface

5V: Power supply positive terminal of the encoder.

A+: Encoder signal A+.

B-: Encoder signal B-.

0V: Negative side of the encoder's power supply.

Stepper motor driver interface (X-axis/Y-axis, single axis only X-axis)

5V: DIR+ for stepper motor driver.

DIR-: DIR- of the stepper motor driver.



5V: PUL+ for stepper motor driver.

PUL-: PUL- of the stepper motor driver.

Power supply interface

0V: Negative power supply.

24V: Positive power supply.

2. Key Description

There are 6 buttons, KEY1~KEY6.

KEY5:

'Mode/Exit': short press action •

'[System Configuration]': long press action

Under the mode selection state, short press action of the key serves as the mode switching function and long press action of the key serves as the system configuration function.

Under the vehicle thread or round trip mode working state, key short press to exit the current working mode and return to mode selection state.

KEY4:

'Setting/Selection": short press action

'[Save/Enter]": long press action

In the mode selection state, short press action of the key serves to enter the setting and switch the setting parameters.

In the setting state, long press action of the key serves to save the setting and enter the work.

KEY3:

'Left shift / minus": short press action

'[Fast Forward / Fast Decrease]": Long press action



Left shift of the screw in manual mode, pointing or fast forward function.

Single minus or fast minus function for setup parameters in setup mode.

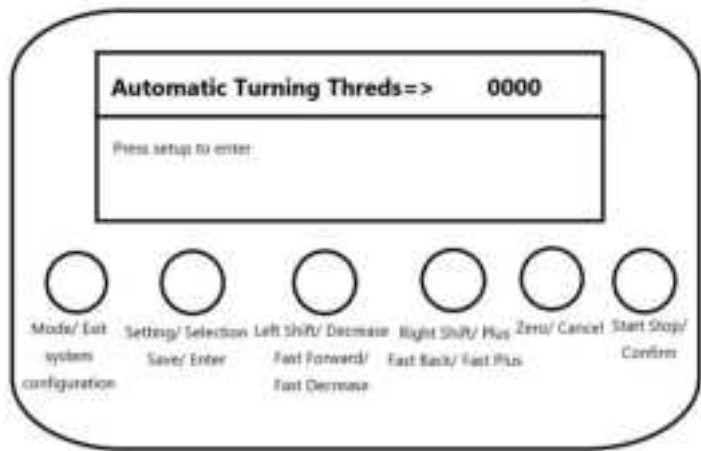
KEY2:

'Right shift/add": short press action

'[FAST RETRACT / FAST ADD]": long press action

Right shift of the screw in manual mode, pointing or fast backward function.

Single add or fast add function for setting parameter in setting state.



KEY1:

‘Clear/Cancel’’: short press action

Under setting state, short press key action for cancellation and exit parameter setting, return to mode selection state.

Under working status, short press key action is to zero the current position, or move the distance to zero.

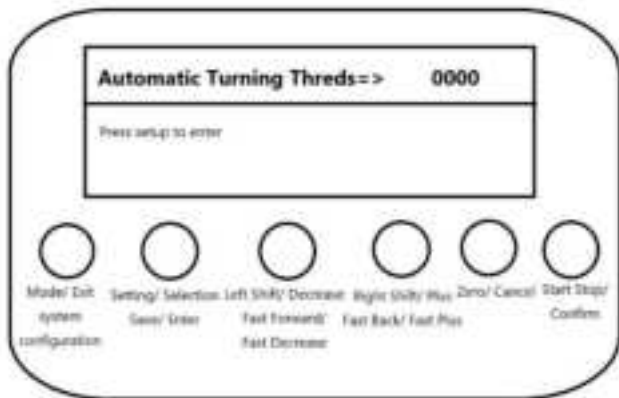
KEY6:

‘Start-stop/Confirm’’: short press action

Under the working state, start-stop action, or manual confirmation function during operation.

Functional Description

1. Display area layout



The LCD screen displays a total of 4 lines of information:

The 1st line displays mode, moving direction and speed;

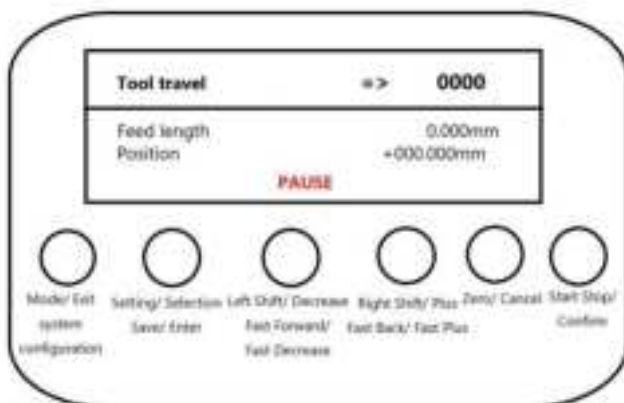
Lines 2 to 4 display setting parameter information, operation status information or prompt information.

2.Tool movement function

Function Description:

Turning is carried out by synchronising the spindle speed according to the set feed length, and the direction can be switched at any time during operation.

'Mode/Exit': short press action



'[System Configuration]": Long press action

Short press, exit work, switch mode.

Long press, exit work, enter system configuration.

'Set/Select": Short press action

'[Save/Enter]": Long press action

Short press, switch direction.

Long press, invalid.

'Move Left/Subtract": short press action

'[Fast Forward/Fast Decrease]": Long press action

Short press, single feed length adjustment.

Long press, continuous adjustment of feed length, long press hold down, every interval of 3S will automatically feed adjustment.

'Right shift/add": short press action

'[FAST RETRACT / FAST ADD]": Long press action

Short press, single feed length adjustment.

Long press, continuous adjustment of feed length, with long press hold, every interval of 3S will be adjusted automatically in position.

'Zero/Cancel": Short press action

Short press, the current position is zeroed.

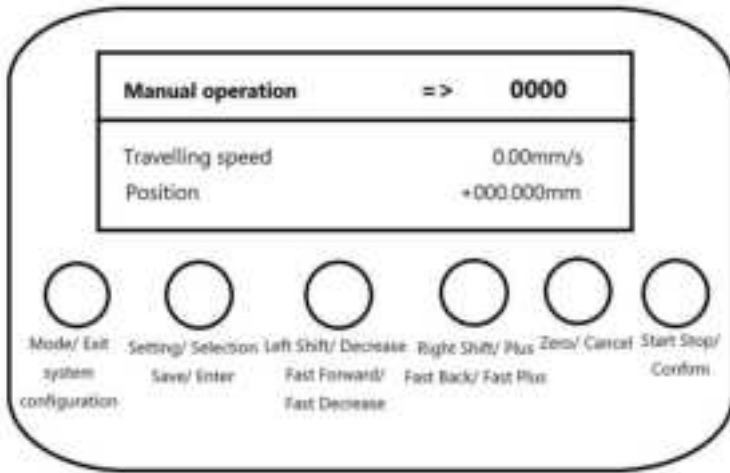
'Start/Stop/Confirm": short press action

Short press, run and pause control.

2. Manual Speed Shift Function

Function Description:

According to the set moving speed, move manually by 'left shift' or 'right shift' button, and you can switch the direction under the stop state.



'Mode/Exit': short press action

'[System Configuration]': Long press action

Short press, exit work, switch mode.

Long press, exit work, enter system configuration.

'Set/Select': Short press action

'[Save/Enter]': Long press action

Short press, switch direction.

Long press, invalid.

'Move Left/Subtract': short press action

'[Fast Forward/Fast Decrease]': Long press action

Short press, single feed length adjustment.

Long press, continuous adjustment of feed length, long press hold down, every interval of 3S will automatically feed adjustment.

‘Right shift/add”: short press action

‘[FAST RETRACT / FAST ADD]”: Long press action

Short press, single feed length adjustment.

Long press, continuous adjustment of feed length, with long press hold, every interval of 3S will be adjusted automatically in position.

‘Zero/Cancel”: Short press action

Short press, the current position is zeroed.

‘Start/Stop/Confirm”: short press action

Short press, run and pause control.

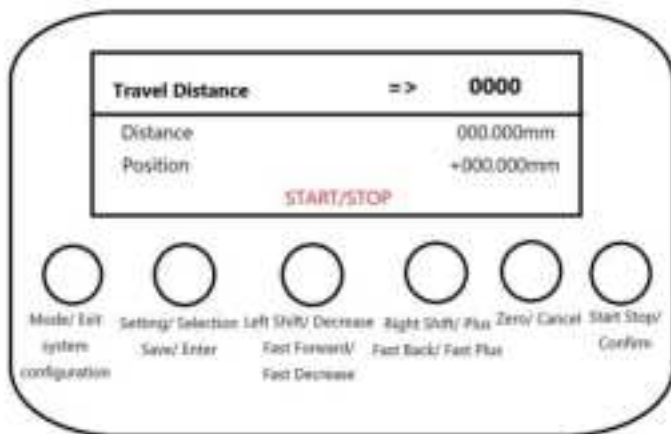
3.Manual distance shift function

Function Description:

According to the set distance to move, start and move the set distance after the automatic stop, running process can be paused, and then start again to continue to move the remaining distance.

‘Mode/Exit”: short press action

‘[System Configuration]”: Long press action



Short press, exit work, switch mode.

Long press, exit work, enter system configuration.

‘Set/Select’’: Short press action

‘[Save/Enter]’’: Long press action

Non-running state.

Short press to switch direction.

Long press, invalid.

‘Move Left/Decrease’’: Short press action

‘[Fast Forward/Fast Decrease]’’: Long press action

Non-running state.

Short press, single adjustment of the travelling distance parameter.

Long press, continuous adjustment of travelling distance parameter, with long press hold, every 3S interval will be adjusted automatically.

‘Right shift/add’’: short press action

‘[Fast Back/Fast Plus]’’: long press action

Non-running state

Short press, single adjustment of travelling distance parameter.

Long press, continuous adjustment of travelling distance parameter, with long press hold, every 3S interval will be adjusted automatically.

‘Zero/Cancel’’: short press action

Under non-running state.

Short press, the 1st time first clear the distance already moved, press again, clear the set distance.

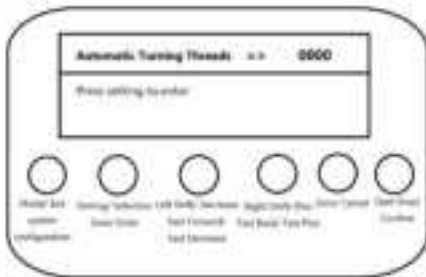
‘Start/Stop/Confirm’’: short press action

Short press, start and stop control.

4. Automatic threading function

Function Description:

Automatic thread turning according to the set thread type, thread length and thread size.



Standby status display interface



Setting Up the Overdrive Interface

The standby interface shown on the left is displayed under the state of mode selection, and the setting interface shown on the right is displayed after pressing the 'Setting' button, after entering the setting interface, the parameter setting will be cancelled after pressing the 'Cancel' button, and the exit setting will be displayed, and the saving setting will be displayed when the 'Save' button is pressed. When press 'Save' button, it will display save setting, and then it will enter working state automatically.



Setting parameter interface



Prompt to enter working operation

In the setting state

Short press the 'Set/Select' button to switch the setting parameters.

Parameter list:

Setting thread type: metric thread, inch thread and non-standard precision thread.

Setting thread size: set the pitch size for metric threads and non-standard precision threads, and set the number of teeth per inch for inch threads.

Set thread length: xxx.xxxmm.

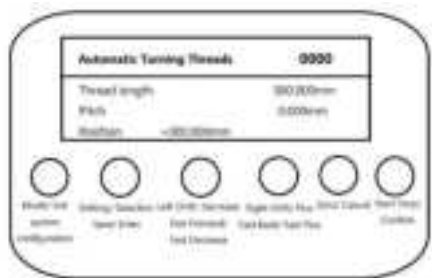
Start turning mode: manual key operation, immediate automatic operation and delayed automatic operation.

Start back mode: manual key operation, immediate automatic operation and delayed automatic operation.

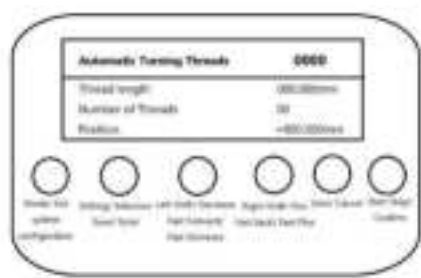
Delay time of automatic operation: 1~30 seconds.

Long press 'Save/Enter' button to save the parameters and enter the working state automatically. If the thread length is 0, it will prompt the message that the thread length is not set.

Short press 'Clear/Cancel' button to cancel parameter setting and return to mode selection interface.



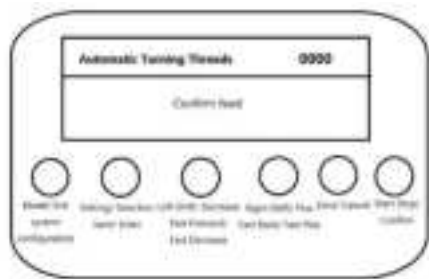
Metric/non-standard precision thread interface



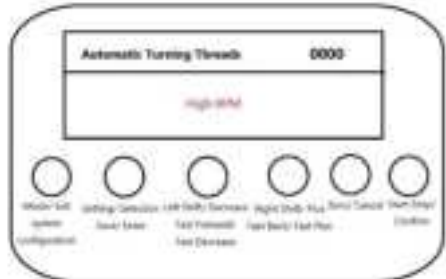
Fractional Thread Interface

When Metric or Non-Standard Precision Threads is selected the left graph screen is displayed with pitch information on line 3.

When imperial threads are selected, the right graph screen is displayed with the number of teeth per inch in line 3.



Confirmation of tool feed/return prompt interface



High RPM Alert Screen

When the start turning mode and start back mode are set to manual key operation, the interface on the left will be prompted when starting tool feed and retract, and it is necessary to press the 'Confirm' button briefly to run.

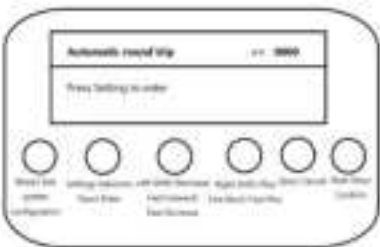
If the speed of the synchronous spindle of stepping motor is too high, it will prompt the interface of too high speed on the right, and it is necessary to reduce the spindle speed. Under the working condition, press the 'Mode/Exit' button briefly to stop the current work and return to the mode selection interface automatically.

5. Automatic round trip function

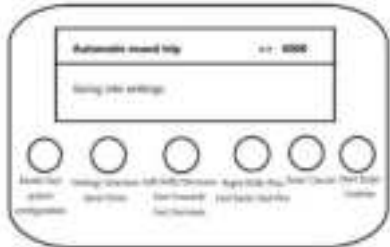
Function Description:

Synchronised spindle movement according to the set turning length and feed length, automatic return after moving the set turning length.

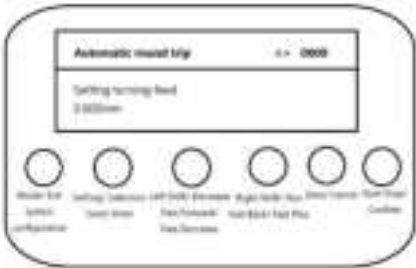
Standby status display interface



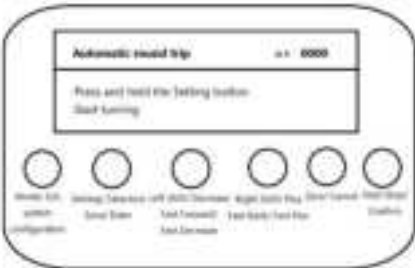
Setting Up the Overdrive Interface



The standby interface shown on the left is displayed under the state of mode selection, and the setting interface shown on the right is displayed after pressing the ‘Setting’ button, after entering the setting interface, the parameter setting will be cancelled after pressing the ‘Cancel’ button, and the exit setting will be displayed, and the saving setting will be displayed when the ‘Save’ button is pressed. When press ‘Save’ button, it will display save setting, and then it will enter working state automatically.



Setting parameter interface



Prompt to enter working operation

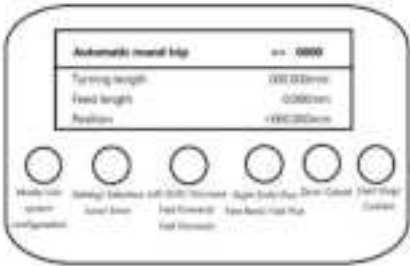
Under the setting state.

Short press ‘Set/Select’ button to switch the setting parameters.

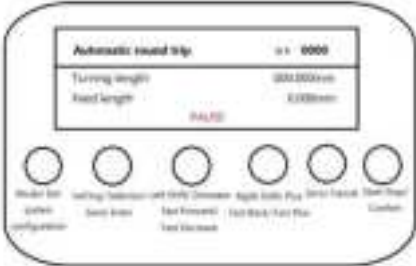
Press and hold the ‘Save/Enter’ button to save the parameters and enter the working state automatically.

Short press ‘Clear/Cancel’ button to cancel parameter setting and return to mode selection interface.

Running state interface



Pause state interface



In this pause state, line 4 displays the pause, and in the running state, line 4 displays the position information.

In pause state, press ‘Set/Select’ button briefly to switch the direction.

Press ‘Set/Select’ button briefly to switch the direction.

Press ‘Zero/Cancel’ button briefly to zero the position.

In pause or running state, press ‘Start/Stop/Cancel’ button briefly to switch direction.

Press ‘Start/Stop/Confirm’ button briefly to start or pause the function.

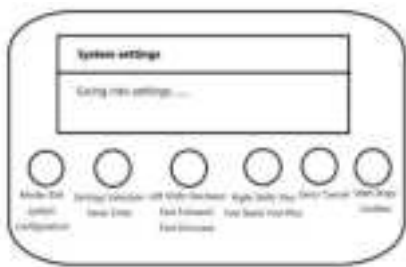
Short or long press ‘Left shift/decrease’ or ‘Right shift/add’ button to adjust the feed length.

Short press ‘Mode/Exit’ button to stop the current work and automatically exit back to the mode selection interface.

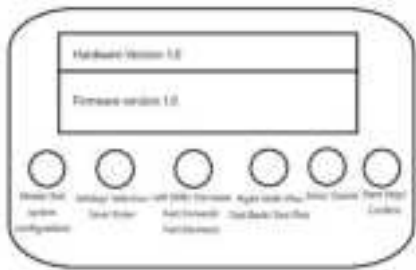
6.System Configuration Functions

Function Description:

Set system parameters, including display language, buzzer switch.



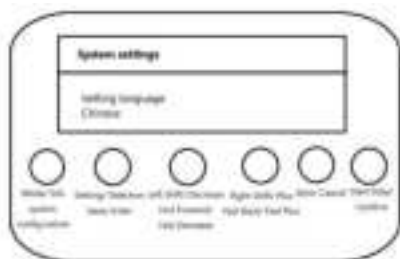
Entering the Settings screen



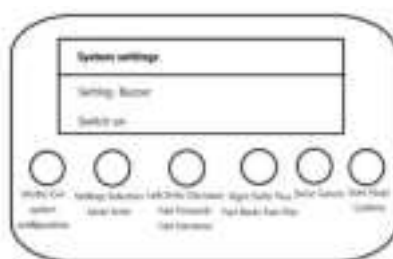
Version Information Screen

Under the mode selection status, long press ‘System Configuration’ button to enter the system setting interface, displaying the interface on the left

After entering the setting interface, press the 'Cancel' button to cancel the parameter setting and display the exit setting, long press the 'Save' button to display the saving setting, and then return to the mode selection interface automatically.



Language Settings screen



Buzzer Setting Interface

Short press 'Set/Select' button to switch the setting parameters.

Press and hold 'Save/Enter' button to save parameters and return to mode selection interface.

Press 'Clear/Cancel' button briefly to cancel parameter setting and return to mode selection interface.

Parameter:

Setting language: Chinese, English and Russian.

Setting buzzer: on and off.

Encoder and stepper motor parameters

Stepping motor configuration requirements: stepping motor a circle of 1600 pulses, a circle to move 2mm.

Encoder requirements: 1000 pulses / circle, spindle and encoder gear ratio of 2:1, that is, the spindle rotates 1 circle, the encoder rotates 2 circles.

Lathe Adjustments



MAKE SURE THE POWER SWITCH IS IN THE OFF POSITION AND THE SPEED IS TURNED DOWN TO ZERO BEFORE MAKING ANY ADJUSTMENT TO THIS DEVICE.

- **Chuck Replacement:** Turn the lathe off and unplug it from its power source. Place the tailstock as far away from the chuck as possible and place a piece of wood or a cloth underneath the chuck to protect the machine. Remove the three bolts holding the chuck in place by removing their nuts and subsequently remove the chuck. Tapping the chuck with a soft mallet might be required. To place a new chuck onto the spindle, follow the above steps in reverse order.
- **Jaw Replacement:** Place the chuck key into the chuck hole and rotate anti-clockwise until the jaws are at their maximum open distance. The jaws can now be manually pulled out. To place new jaws into the chuck, choose the # 1 jaw and place it into the desired chuck slot. Ensure that the top groove of that slot is not visible when inserting the jaw. Once the jaw is seated into the slot, rotate the chuck clockwise to drag down and secure the jaw. Repeat this with jaws #2 and #3.
- **Tailstock Adjustment:** To adjust the placement of the tailstock rest, loosen the nut on its base, change its position, and retighten the nut. Offset the tailstock in order to cut bevels or tapers.
- **Tailstock Locking:** Turn the clamping lever clockwise to lock the tailstock in place, or anti-clockwise to unlock.
- **Tool Post Adjustment:** To adjust the tool post, simply loosen both bolts holding it in place, move it to the desired position, and retighten the bolts. Loosen the bolts on top of the tool post to replace work cutters.
- **Carriage Adjustment:** Rotate the carriage handwheel clockwise to move the carriage towards the tailstock. Rotate the handwheel anti-clockwise to move the carriage towards the chuck.
- **Carriage Locking:** Turn the toolpost control handle clockwise to tighten and anti-clockwise to loosen. This handle must be loosened before automatic feeds are used.
- **Cross Slide Adjustment:** Turning the cross slide handwheel will slide the tool post perpendicular to the ways. Turn the handwheel clockwise to move it back, and anti-clockwise to move forward.
- **Carriage Feed Control:** Move the half nut lever down to engage the half nut and move the carriage under power. Make sure to disengage the half nut before making any adjustments to

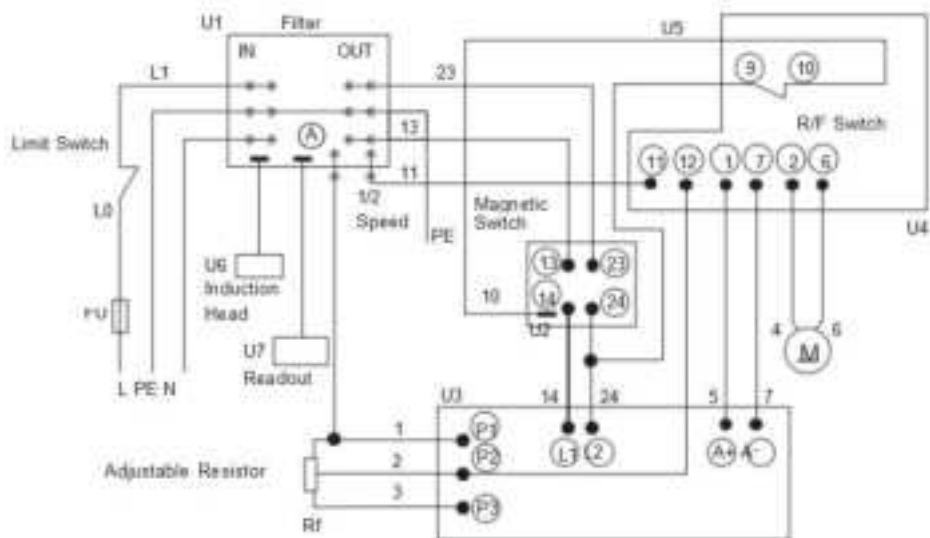
avoid unexpected carriage movement.

- **Compound Control:** Turn the compound control wheel anti-clockwise to move the compound outwards and clockwise to move it inwards, changing the cutting angle.
- **Quill Locking:** Rotate the lever clockwise to lock the spindle and anti-clockwise to unlock.
- **Tail Feed Adjustment:** Rotate the tail feed handwheel clockwise to advance the tailstock towards the chuck. Rotate the handwheel anti-clockwise to move the tailstock away from the chuck.

Operation

- **Workpiece Holding and Drilling:** Use the chuck to hold a workpiece firmly in place. Use the tailstock to press a drill into the rotating workpiece.
- **Face Cutting:** Use the chuck to hold a workpiece firmly in place. Use the tool post to press a cutter into the face of the workpiece. The edge of the cutter must be the same height as the centre.
- **Internal Cutting:** Use the chuck to hold a workpiece firmly in place. Rotate the tool post such that the cutter is placed in the middle of the front face of the workpiece.
- **Bevel Cutting:** Use the chuck to hold a workpiece firmly in place. Adjust the angle of the tool post to cut bevels into the workpiece.
- **Thread Cutting:** To cut threads, use the chuck to hold a workpiece firmly in place and engage the half nut. Use the tool post to press a cutter into the face of the workpiece.

Wiring Diagram



Key

A	Ammeter	PE	Ground Line
M	Motor	U	Integrated Circuit
L	Load Wire	P	Connector
N	Neutral Wire	FU	Fuse

Maintenance

- Clean the machine of any debris after every use.
- Lubricate the moving parts of the device with NLGI 2 grease between uses.
- DO NOT let excessive debris accumulate on the tray. Clear debris as it arises, stopping the lathe if necessary.
- Periodically inspect moving parts for signs of wear and tear. Repair or replace any damaged or worn parts before further use.
- Periodically inspect bolts, screws, levers, and other fasteners for any looseness. Tighten as needed.

Troubleshooting

Potential Problems	Common Solutions
The workpiece's surface is too rough.	Re-sharpen the cutting tool.
	Reduce the feed rate.
	Clamp the cutting tool with less overhang.
	Increase the tool tip's radius.
The cutting tool has a short lifespan.	Reduce the cutting speed.
	Lower the crossfeed distance.
	Add more lubricant onto the workpiece.
The cutting edge breaks off.	Increase the wedge angle.
	Lubricate the workpiece uniformly.
	Tighten the spindle bearing.
The cutting thread is wrong.	Adjust the cutting tool's grinding angle.
	Adjust the cutting tool's pitch.
	Adjust the workpiece's diameter.
The workpiece becomes coned.	Adjust the tailstock to the centre of the workpiece.
	Align the top slide properly.
The lathe is chattering.	Reduce the feed rate.
	Tighten the main bearing.
Flank wear is too high.	Increase the clearance angle.
	Properly centre the cutting tool onto the workpiece.
The centre runs hot.	Loosen the tailstock.
The spindle does not activate.	Unlock the emergency stop switch.

Controller fault indication and handling

NO.	Error code	Cause failure	Fault handling
1	ER01	Over-current protection	Check whether the motor interface is good, or replace the control box.
2	ER02	HALL signal failure	Check whether the motor interface is good condition, or replace the motor or controller.
3	ER03	Locked-rotor protection	Check whether the motor interface is good, or whether the motor load is excessive.
4	ER04	Chip failure	Replace the motor and control box
5	ER05	Motor failure	Check whether the motor interface is good, or whether the motor load is excessive.
6	ER06	Potentiometer failure	Check the speed control interface is in good condition.
7		No display, the switch lights come on	1 Main board is broken. 2 The display screen and the main board connection line contact is bad.

Manufacturer: Shanghaimuxinmuyeyouxiangongsi

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Imported to USA: Sanven Technology Ltd., Suite 250, 9166 Anaheim Place, Rancho Cucamonga, CA 91730

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