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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.



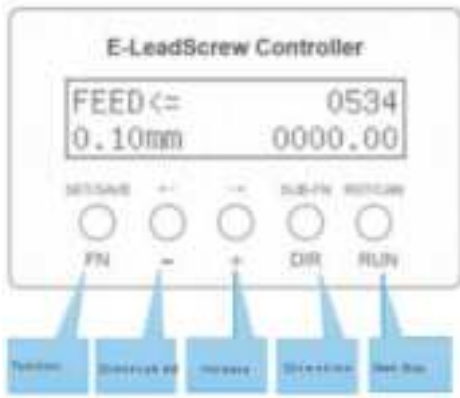
Specifications

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 10-44
Machine Mode	Program Number Adjustable, Common British System
Main Screw Specifications	Tr16mm*2.0
Stroke (Center Distance)	450mm
Packing Size	990*690*524mm

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 10-44
Machine Mode	Program Number Adjustable, Common British System
Main Screw Specifications	Tr16mm*2.0
Stroke (Center Distance)	1000mm
Packing Size	1470*490*525mm

Key Description

	Key Subscript Description: 【 FN 】 : Function key, short press switch function . 【 - 】 : Reduce key 【 + 】 : Increasing key 【 DIR 】 : Direction key 【 RUN 】 : Start stop key Key Superscript Description: 【 SET/SAVE 】 : Long press to set or save system settings 【 ← 】 : In the manual movement function, move the turning tool to the left 【 → 】 : Move the turning tool to the right when moving the function manually 【 SUB-FN 】 : In some functions, used to enter sub- functions 【 RST/CAN 】 : In some scenarios, this is used as a reset or cancel
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Feed Function



- 【 - 】 【 + 】 : Adjust feed speed
- 【 DIR 】 : Short press switch tool direction;
- 【 RUN 】 : Short press to start and stop the tool
- Long press the [SUB-FN] key, you can switch the function to knife mode or winding mode
- Long press the [RST/CAN] key to clear the distance to zero

Mobile Function



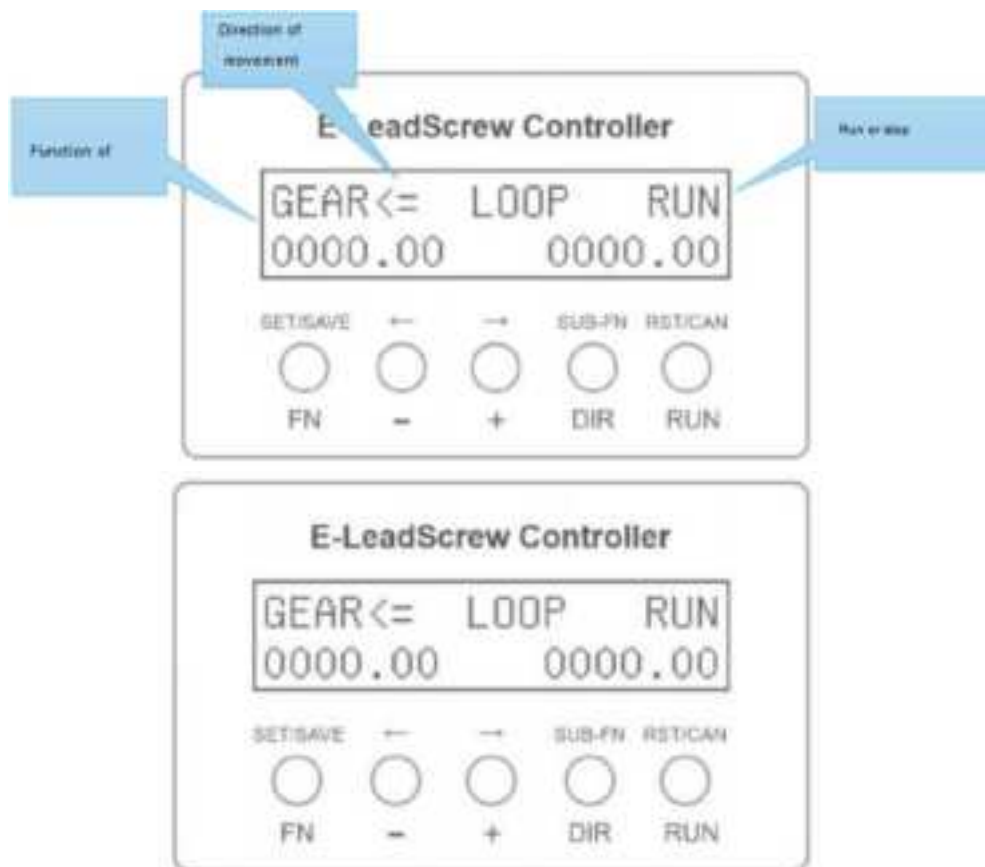
- **【-】 【+】** : Set the distance you need to move
- **【 DIR 】** : Setting the direction of movement;
- **【 RUN 】** : Short press to start and stop moving
- Long press the **[SUB-FN]** key, you can set the speed of movement
- Long press **[RST/CAN]** key to clear the distance to zero, and then long press again to set the distance to zero

Movement

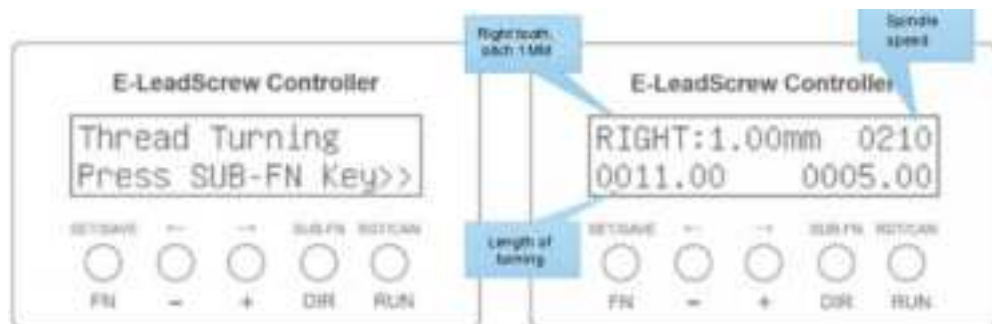




- Press [DIR] to switch the Angle Press
- [RST/CAN] to clear the Angle



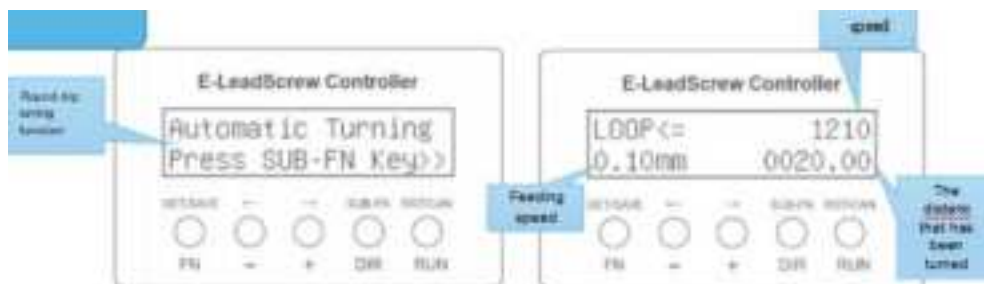
- **【-】 【+】** : Set the distance to be moved
- **【 DIR 】** : Set the direction of movement;
- **【 RUN 】** : Press to start and stop moving
- Long press the [sub-FN] key to set the number of round-trip movement, 1~99 times, or LOOP.
- Long press [RST/CAN] to clear the moving distance, and long press again to clear the set moving distance



Press [sub-FN] to enter the parameter setting of the thread function:

- **【Thread Standard】** : Thread system, metric system, English system, arbitrary
- **【Thread Size】** : Size of thread
- **【Thread Length】** : Length of thread
- **【Thread Direction】** : Thread direction, left tooth, right tooth

Round-trip Turning Function



Press [sub-FN] to enter the parameter setting of round-trip turning function:

- **【Length Limited】** : Round-trip turning length
- **【When Finished】** : When the turning knife reaches the end point, whether to stop or return
- **【Thread Length】** : Length of thread

- After setting, long press [FN] key to save setting and start round trip turning; Adjust the knife moving speed and function to be consistent
- Press the [FN] key to exit the round-trip turning function and return to the automatic cutting function

System Settings

Long press the [SET/SAVE] key to enter the system setting;

- **【 Encoder Pulses 】** : The number of pulses of the encoder per revolution of the spindle;
- **【 Step Motor Pulses 】** : The number of subdivision pulses of the stepping driver;
- **【 Lead Screw 】** : Screw pitch, the distance of turning tool movement per turn of stepping motor
- **【 Limited Switch 01 】** : Action after trigger of limit switch 01: turning tool stop or return
- **【 Limited Switch 02 】** : Action after trigger of limit switch 02: turning tool stop or return
- **【 Z-Moving Frequency】** : When moving function, the speed of turning tool movement;
- **【 Key Sound 】** : Button sound switch
- **【 Feed ACCEL 】** : Tool starting acceleration of tool walking function;
- **【 Limit Feeding Speed 】** : Safety range of tool moving. After this function is enabled, the tool moving value will be limited to 0.01~0.4mm to prevent users from setting the tool moving speed too high by mistake.
- **【 Start Motor by Def 】** : After the controller is turned on, whether the stepper motor starts by default;
- **【 FN : FEED 】** : Enable/disable the automatic knife moving function. · **【 FN : MOVE 】** : Enable/disable mobile function;
- **【 FN : Manual Moving】** : Enable/disable manual movement function; · **【 FN : Index Plate 】** : Enable/disable the indexing function.
- **【 FN : Gear Shaping 】** : Enable/disable the gear shaper function. ■ **【 FN : Thread Turning 】** : Enable/disable the thread function.
- **【 FN : Auto Turning】** : Enable/disable round-trip turning function; · Press [RST/CAN] to cancel the setting and exit the setting interface
- Long press the [SET/SAVE] key to SAVE the setting and exit the setting interface

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.

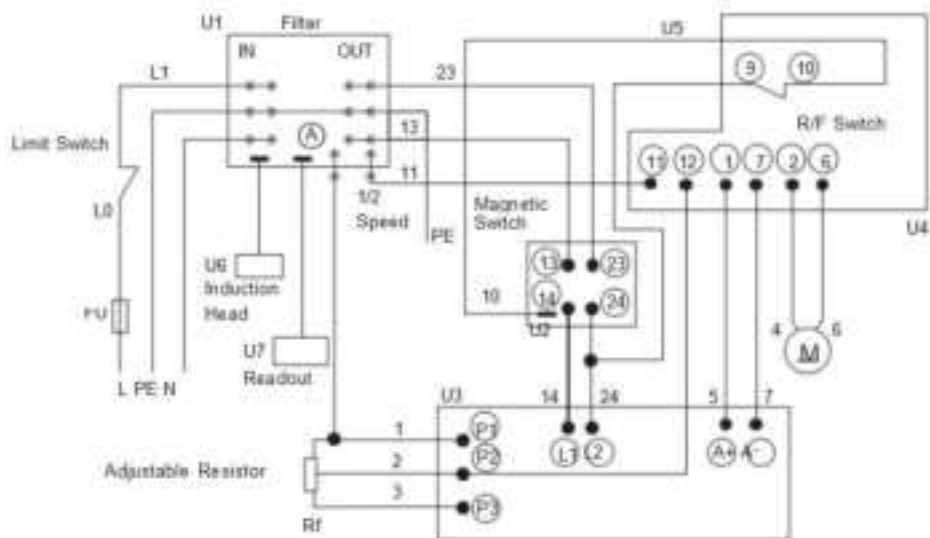
- **Chuck Replacement:** Turn the lathe off and unplug it from its power source. Place the tailstock as far away from the chuck as possible and place a piece of wood or a cloth underneath the chuck to protect the machine. Remove the three bolts holding the chuck in place by removing their nuts and subsequently 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

1. Display shows E1 (flashes seven times slowly): Indicates hardware current protection, please check if the motor output line connection socket (MOTOR) and motor commutation signal line connection socket (HRE) are connected properly or the IGBT is damaged.
2. Display shows E2 (blinks six times): The motor commutation signal cable is not connected properly. Please check that the motor reversing signal cable (HER) is connected.
3. E3 (flashing three times): indicates software current protection, please check if the motor is overloaded or if the machine is stuck.
4. Display shows E4 (flashes slowly three times): indicates chip current module protection.
5. Display shows E5: Indicates a communication error between the display and the control board. Check that the display connection socket (LED) is plugged in.
6. Display shows E6 (flashing twice): indicates a pedal start sensor fault, check that the pedal sensor connection socket (SPEED) is connected, that the Hallban board is adjusted and that the Hall voltage is ready.
7. Display shows E7: Motor internal temperature protection.

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