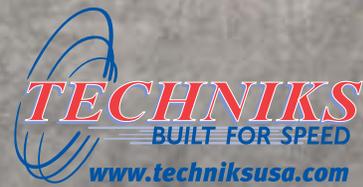




MagVISE ECPM

Operations Manual for Multi-Chuck Controller



EARTH-CHAIN

Dear Customer,

Congratulations on your purchase of an Earth Chain MagVISE EEPM Multi-Chuck Controller and Chucks from Techniks. With proper installation, operation, and maintenance, your MagVISE workholding system will deliver years of reliable performance.

Please review the contents of this Operations Manual thoroughly and familiarize yourself with the proper installation, operation, and maintenance procedures that ensure the long-term reliability and performance of your MagVISE workholding system.

We're here to help! If you have any questions about the installation, operation, or maintenance of your MagVISE system please contact customer service at: 877-354-3837 or info@techniksusa.com. We are committed to your complete satisfaction with our products and service.

Thank you for your business.

Techniks Inc.
9930 E. 56th St.,
Indianapolis, IN 46256



The MagVISE Multi-Chuck Controller operates as many chucks, or sizes of chucks as needed for your application.



If your requirements change, we have dozens of different size chucks in stock that are compatible with the MagVISE Multi-Chuck Controller. Also, custom chucks can be quickly manufactured to your specifications for vertical or horizontal applications.

TABLE OF CONTENTS

UNPACKING YOUR MAGVISE EEPM CHUCK AND CONTROLLER.....page 4

MAGVISE EEPM CHUCK INSTALLATIONpage 4

 Factors That Affect Magnetic Holding Power.....page 4

MAGVISE EEPM MULTI-CHUCK CONTROLLER INSTALLATION.....page 5

 Power Supply Check Procedure.....page 5

 Chuck Controller Electrical Connections.....page 5

MAGVISE EEPM MULTI-CHUCK CONTROLLER-TO-CHUCK CONNECTIONSpage 6

 MagVISE EEPM Chuck Workholding Overview.....page 6

MAGVISE EEPM MULTI-CHUCK CONTROLLER AND CHUCK OPERATIONpage 7

 CAUTIONS AND WARNINGS

 Powering Up The Controller

 Controller Touch-Screen Interface

 Creating and Saving Setups

 Recalling and Reusing Saved Setups.....

 Adjusting Magnetic Holding Power

 Powering Down the Controller and Chuck

PART SETUPpage 11

MAINTENANCE.....page 12

 SAFETY PRECAUTIONS.....page 12

 Chuck Controller Maintenance

 Magnetic Chuck Maintenance.....page 13

 Induction Block Maintenance

STORING THE EQUIPMENTpage 14

DISPOSING OF THE EQUIPMENT.....page 14

TROUBLESHOOTING.....page 15

APPLICATION EXAMPLES.....back cover

Unpacking the Chuck and Controller

The following items were shipped with your order:

- ✓ *EEPM magnetic chucks w/toe clamps per your requirements*
- ✓ *1 multi-chuck controller with power supply cables*
- ✓ *this Operations Manual*

Upon receiving the equipment carefully unpack the crate and verify:

- ✓ *The packing list describes the correct products ordered*
- ✓ *All items listed on the packing list arrived intact and undamaged*

In the event of damages please contact us immediately at
(877) 354-3837 or info@techniks.com

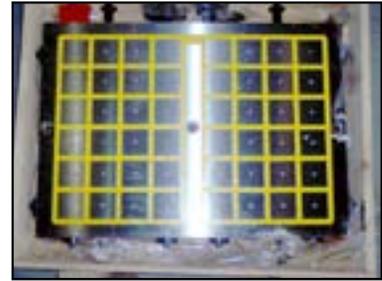
Factors That Affect Magnetic Holding Power

- *Higher carbon content in the workpiece reduces the magnetic attraction between the chuck and the workpiece*
- *Thickness of workpiece*
 - a) *above 1-1/4" = 100%*
 - b) *3/4" – 1-1/4" = 85%*
 - c) *3/8" – 3/4" = 50%*
- *Contact surface between workpiece and chuck. Chips, burrs, oil, dirt, rough or uneven surfaces will reduce holding power*
- *Contact area with the chuck. Holding power is approximately 1 ton for every 4 poles*
- *Temperatures above 176° will reduce holding power*
- *Improper power supply will cause improper performance*

MagVISE EEPM Chuck Installation

Read this manual completely before installing the chuck and controller. Always obey the **CAUTIONS AND WARNINGS** instructions in this manual. Installation should only be carried out by qualified personnel.

1. Make sure all the EEPM components and your machine bed are clean and dry.
2. Use EZ-Lift Lifting Magnets to safely transport the chuck to your machine bed.
3. Position the magnetic chuck in the desired location on the bed of your machining center or pallet. Secure the chuck using the supplied toe clamps.
4. Verify that the chuck is properly secured by tapping it on the side with a rubber hammer, or holding a block of wood against the side of the chuck and striking it with a regular hammer.



Specifications

Chuck Type:

Electro-Permanent Magnetic

Pole Pattern:

Square Pole (50mm x 50mm)

Power Requirements:

440-480V/30A single phase



transporting the EEPM chuck



securing EEPM chuck to bed "T" slots

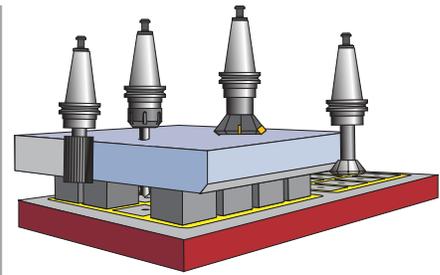


toe clamps

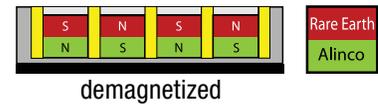
MagVISE EEPM Chuck Workholding Overview

Your EEPM chuck is designed to work best with iron-bearing metals (ferrous) including all grades of steel and cast iron. Maximum holding power requires stock of sufficient thickness and material type to create a magnetic attraction, a power supply that meets the requirements, and smooth clean contact between the magnetic chuck and the workpiece. Your results will vary depending upon the size, shape, thickness and material type you are holding.

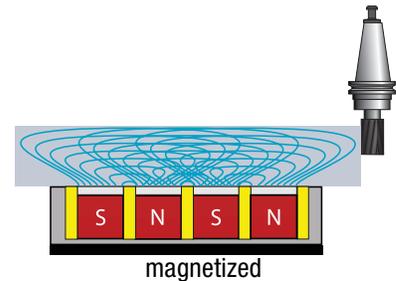
Once put in a magnetized state, the EEPM chuck maintains constant holding power until it is put in a demagnetized state. Electricity is **NOT** required to maintain magnetic holding power. Electricity is used only to reverse the polarity of the alnico magnets, thereby changing the magnetic state of the chuck. The chuck will **NOT** lose holding power in the event of a power loss. There is no decay of magnetic holding power over time, and there is no heat generated by the chuck.



magnetic workholding allows machining on 5 sides & thru-hole drilling



demagnetized



magnetized

MagVISE Controller-to-Chuck Connections

Place the multi-chuck controller in a location away from chips, oil, coolant, and any moving parts of the machine, but near enough to the machine bed and EEPM chucks for convenient operation.

1. Connect the chuck controller power cable to the correct power source (440-480V/30A single phase)
2. Remove the cap from each EEPM chuck power receptacle and gently spray the socket and cap with dry shop air to knock out any unseen contaminants. Inspect the electrical connection on the front of the chuck for any contaminants or damage. Connect the power supply cables from the controller to the power receptacle of each chuck. Make sure each connection is properly secured.



position controller away from contaminants, but within easy access.



chuck electrical receptacle

OPERATING INSTRUCTIONS

Powering Up the Controller



CAUTIONS AND WARNINGS

- To prevent injury never put any part of your body (i.e. fingers, skin, etc) between a metal object and the chuck surface. Do not wear rings, watches, necklaces, bracelets etc., while operating the chuck.
- To prevent damage to the chuck and/or controller wait at least two (2) minutes after magnetizing or demagnetizing the chuck, before attempting to change the magnetic state of the chuck again.
- Always make sure the power receptacle on the chucks and the plug on the chuck controller cables are free of moisture, chips, and any contaminants before connecting the chuck controller cable to the chuck. Failure to do so could result in damage to the chuck and chuck controller.
- Always verify that the controller is properly connected to the chucks before operating the controller
- Always replace the cap on the chuck power receptacle when disconnecting the power cable from the chuck.
- Always use workstops when operating the chuck at a power level lower than 8 to ensure the workpiece does not move during machining.
- High temperatures (176° or above) will cause permanent decay / loss of magnetic power. Do not operate the chuck under high temperature conditions.

Power ON

1. Turn the main power switch on the chuck controller to "On"
2. Verify that the controller is getting power by visually checking the green "Power ON" LED, and that the touch-screen is working.

The touch-screen will display the most recent EEPM Chuck information in system memory.

EX: If the chucks were magnetized when the controller was powered OFF, it will display the chuck state as "magnetized" when powered ON again, along with power levels and chuck sequence data.

After 5 minutes of inactivity, the touch-screen will go into a sleep mode. Simply touch the screen to reactivate it.



transporting workpiece



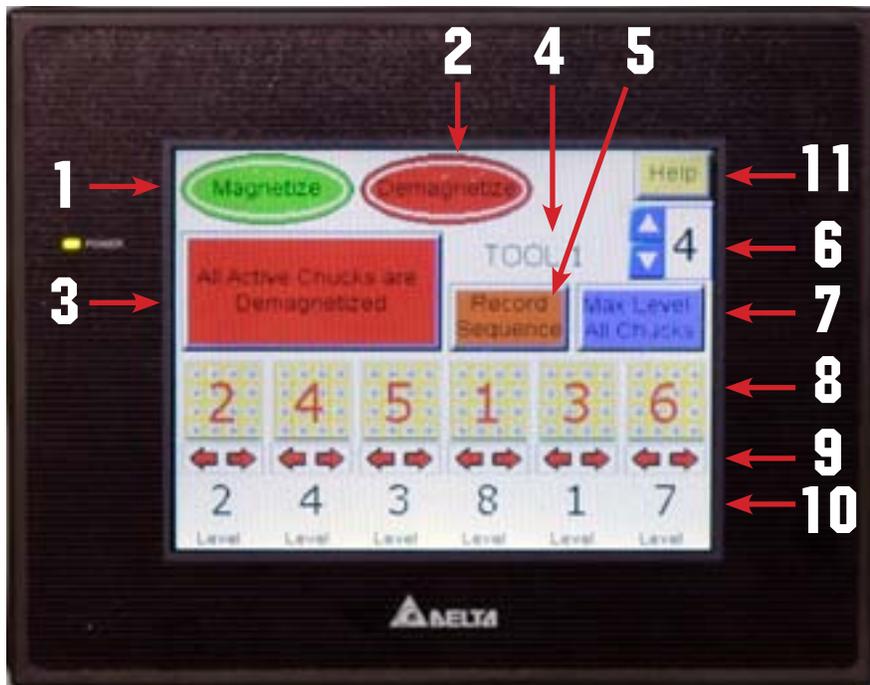
thru-hole application using fixed induction blocks

"Power ON" LED



power switch and touch-screen control

MagVISE Multi-Chuck Controller Touch Screen Interface



1. Magnetize Button
2. Demagnetize Button
3. Magnetic Chucks Status Indicator
4. Setup Name (for naming recorded setups. Up to 7 characters)
5. Record Sequence / End Sequence Button
6. Previously Recorded Setups (up to 9)
7. Max Level All Chucks Button (sets all chucks to power level 8)
8. Chucks Mag / Demag sequence
9. Chucks magnetic state indicators
10. Magnetic power level settings
11. Help Button (pulls up help screen)

Creating A Magnetic Workholding Setup For A Job

1. Verify the Status Indicator on the touch-screen reads All Active Chucks are Demagnetized, as shown in the photo above.
2. Physically check each chuck by touching the surface of the chuck (**touch test**) with a ferrous object (ex. screwdriver). **Be careful not to put any part of your body between the ferrous object and the surface of the chuck.** You should not feel any magnetic attraction as the tip of the screwdriver comes in close proximity to the chuck surface.
3. If any chucks are magnetized, press Demagnetize (no. 2) and wait until the demagnetize cycle is completed and the Status Indicator reads All Active Chucks are Demagnetized. Repeat step 2 until all chucks are physically verified demagnetized.

4. Touch one of the setup screen scrolling arrows (no. 6) to scroll to the setup screen you want to use (1 thru 9) to record the new setup information.
5. Press the Record Sequence button
6. Touch the Setup Name field (no. 4) to change the name of the setup. The keyboard input screen is displayed (right). You can use up to 7 characters for the new name. Touch "ENT" (enter) when done to return to the main screen.
7. Touch each chuck icon displayed in the Mag / Demag sequence display (no. 8) in the order that you want them to magnetize. The touch-screen will display the order. Note that they will demagnetize in reverse order.
8. The default magnetic power level is 8 (maximum) To change the power on any chuck touch the power level and the input screen will appear (right). Select the power level desired and press enter to return to the main screen. Repeat as needed for the remaining chucks.
9. Once the setup settings are completed press End Sequence to save the setup information to the previously selected screen.

Use the 9 setup screens to create saved setups for repeat jobs, or to create setups for jobs that require multiple setups such as turning the work-piece. Setups can include any combination of Mag / Demag sequences, power levels, or active chucks. You can magnetize as many or as few chucks as required.

NOTE: To reset the power level of all active chucks to maximum (8) first press the Demagnetize button and wait until the demagnetize cycle is complete. Then press the Max Level All Chucks button (no. 7). Power levels for all active chucks used in your setup will be overridden to maximum and your setup will save the change in power level. Press the Magnetize button and wait until the magnetize cycle is complete. Active chucks in your setup will be magnetized to power level 8, and inactive chucks will remain inactive.

NOTE: Wait two minutes between Magnetize and Demagnetize cycles to prevent damage to the chucks.

Recalling and Reusing Saved Setups

1. Verify that all chucks are in a demagnetized state (steps 1, 2, and 3 above)
2. Scroll to the setup you want to use. (step 4 above)
3. Verify the settings
4. Press Magnetize and wait until the magnetize cycle is complete
5. Perform physical tests to check part workholding (see part setup pg. 11)



Adjusting The Magnetic Holding Power

We recommend using level 8 for general operation. Using the touch-screen you can adjust magnetic power levels to compensate for stock thickness if necessary.

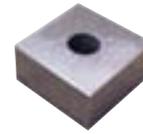
You only need to adjust the holding power if a strong magnetic field extends beyond the surface of the workpiece. This is more likely when workpieces are under $\frac{3}{4}$ " thick. Perform a **touch test** (see step 3 at top of page) to determine if it is necessary to reduce the magnetic power.

1. **Power Up** and **Demagnetize** the EEPM chuck following the procedures and **CAUTIONS AND WARNINGS** from page 7 and 8. **Wait two minutes before proceeding to step 2.**
2. Adjust the power level as needed using the + or - keys. **Magnetize** the chuck and verify that it is magnetized by following the procedures and **CAUTIONS AND WARNINGS** from page 7 and 8.
3. Perform the **touch test** (see step 3 at top of page) to verify that the magnetic field is no longer strong at the surface of the workpiece.
4. Repeat steps 1, 2, and 3 if necessary.

Powering Down the EEPM Controller and Chuck

1. **Demagnetize** the EEPM chuck and verify that it is demagnetized by following the procedures and **CAUTIONS AND WARNINGS** from page 7 and 8. **Wait two minutes before proceeding to step 2.**
2. Turn **OFF** the power switch on the chuck controller.
3. Disconnect the power cable from the chuck and gently blow out the receptacle with dry shop air to remove any contaminants. Replace the power receptacle cap making sure it is properly secured.

INDUCTION BLOCKS



EEPM-S50



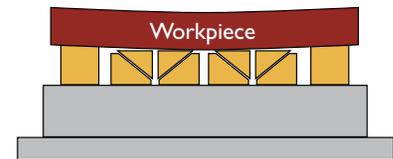
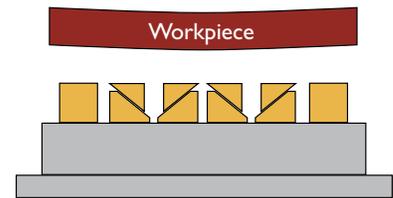
EEPM-SP50



EEPM-SPF50



EEPM-SPF50-STOP



use fixed induction blocks on the corners and spring-loaded induction blocks in the centers to create a setup designed to hold warped stock (see below)



PART SETUP



CAUTION

- *Never place your hand or any body part between the magnetic chuck surface and a metal object.*
1. **Power Up** and **Demagnetize** the EEPM chuck following the procedures and **CAUTIONS AND WARNINGS** from page 7 and the “touch test” (pg. 8, step 2)
 2. If you are using fixed or spring-loaded induction blocks install these on the chuck before loading your workpiece. Then, machine flat the top surface of the fixed induction blocks only.
 3. Center your workpiece on the chuck(s). Position it so it covers an even number of poles (4, 8, etc.) as is possible.
 4. Install workstops as needed. Small or thin workpieces may require workstops to prevent the part from moving during machining. For best results we recommend using workstops whenever possible. Examples of work-stops are fixed pole induction blocks, dowel pins, or the side stops included with the magnetic chuck. Also, subplates and fixed-pole induction blocks can be machined to “nest” parts and provide a positive stop.
 5. Select the active chucks sequence, power levels (see pg. 8 & 9) We recommend using power level 8 for standard operation. **Magnetize** the chuck and verify that it is magnetized by following the procedures and **CAUTIONS AND WARNINGS** from page 7 and 8.
 6. Perform a **touch test** (see step 3, pg. 8) to verify that the magnetic field is no longer strong at the surface of the workpiece. If a strong magnetic field is present on the top of the workpiece adjust the power level as necessary following the procedures on pages 7 and 8.
 8. Verify that the workpiece is properly secured by gently tapping it on the side with a soft hammer, or striking a block of wood with a regular hammer while checking for any movement.
 9. After the machining is complete, **Demagnetize** the EEPM chuck following the procedures and **CAUTIONS AND WARNINGS** from page 7 and 8. You may now remove the workpiece.

MAINTENANCE

Proper maintenance increases the life expectancy of your chuck and controller and keeps them in safe working condition.



SAFETY PRECAUTIONS

Follow these precautions while servicing the chuck and/or controller:

- *Only qualified personnel should carry out maintenance operations*
- *Always make sure the receptacle on the chuck and the plug on the chuck controller cable are free of moisture, chips, and any contaminants before connecting the chuck controller cable to the chuck. Failure to do so could result in damage to the chuck and chuck controller.*
- *Always replace the cap on the chuck power receptacle when disconnecting the power cable from the chuck*
- *Disconnect the equipment from the power supply before attempting any repairs or maintenance. Never touch connections or components unless the power supply is disconnected*
- *Do not wear rings, watches, necklaces, bracelets etc. while performing maintenance operations*
- *Always use protective gloves, safety shoes, and any other protective gear needed*

Chuck Controller Maintenance

Regular routine maintenance includes keeping the exterior of the controller, touch-screen, and cables clean and dry. Every time you use the EEPM chucks make the following inspections.

1. Carefully inspect all electric connections and condition of the cables between the chucks and controller. Make sure that no part of the power supply circuit or connections has become loose or show signs of overheating.
2. Contact us if any components show signs of wear or malfunction.



WORKSTOPS



workstops on side of chuck



DETAIL: workstop included with EEPM-SPF50-STOP induction block



part nests machined into a subplate provide workstops for repeat jobs.



Magnetic Chuck Maintenance

There are no user-serviceable parts inside the chuck, so chuck maintenance is limited to maintaining the surface finish of the chuck face and verifying that the electrical connection is clean and uncontaminated by chips or liquid.

Weekly Maintenance

For proper operation the chuck surface must be clean and smooth. Regularly check the surface condition of all magnetic poles making sure they are not damaged. Remove any gouges or roughness using 250 grit sandpaper with a backing block. Finish the surface using 400 grit. Remove any rust or scale deposits with 400 grit sandpaper and a backing block. Remove all dust or other contaminants before storing the chuck or returning it to operation.

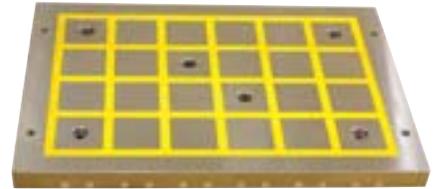
Daily Maintenance

Unscrew the cap and inspect the electrical socket connection on the front of the chuck. Make sure there are no chips or other contaminants in the socket. Gently spray the socket and cap with dry shop air to knock out any unseen contaminants. Make sure the socket and cap are clean and dry, and the cap functions properly and makes a tight seal. Any contaminants or liquid in the socket may cause damage during magnetize / demagnetize operations.

Induction Block Maintenance

1. The amount of holding power provided from the chuck is greatly influenced by the contact area between the chuck (or induction blocks) and the workpiece. Regularly check the condition of all induction blocks and remove any gouges, rust, or other signs of wear.
2. Machine the top surface of the inductions blocks as needed to restore them to a smooth, even surface.

SUBPLATES



subplates are sized to fit your chuck



part nesting in a subplate



Storing The Equipment

If the need arises to store the equipment for a certain amount of time observe the following instructions.

- ✓ *Demagnetize the chuck (follow the procedures on pages 7 and 8)*
- ✓ *Turn the power switch on the chuck controller to "OFF"*
- ✓ *Disconnect the chuck controller from the power supply*
- ✓ *Disconnect the controller from the chuck*
- ✓ *Remove any moisture or debris from the chuck receptacle and replace the cap over the receptacle*
- ✓ *Clean all components and coat the surface of the chuck in a protective, rust inhibitive solvent.*
- ✓ *Cover the equipment with a waterproof sheet (plastic)*
- ✓ *Keep the equipment in a dry environment. To preserve all electric parts the room temperature must be between 45°F to 80°F*

Disposing of the Equipment

If the need arises to dispose of the equipment, it is mandatory to observe a few fundamental rules for the safeguarding of the environment.

- ✓ *Protective covering, flexible pipes, plastic or non-metal material should be dismantled and disposed of separately.*
- ✓ *The electric components should be disassembled and if in good condition, re-used or recycled, or if that is not possible properly disposed of according to local municipal regulations.*
- ✓ *This equipment contains polluting oils that must be disposed of at authorized waste disposal sites.*

TROUBLE SHOOTING

Problem: The controller is **ON** but the lamp in the remote is not lit.

Solution: (a) *The power supply cable is loose or is not connected properly.*

Problem: The chuck does not magnetize / demagnetize when the correct buttons are pushed.

Solution: (a) *The chuck cable is not properly connected to the controller, or the receptacle contains moisture or debris.*

(b) *The power supply does not meet the required specifications, or is incorrectly wired to the controller.*

Problem: Insufficient holding power

Solution: (a) Verify that the power supply meets the requirements stated in the Power Requirements section of this manual.

(b) Verify that the power setting on the chuck controller is set to the maximum value(8). The power setting must be changed when the chuck is in a demagnetized state.

(c) Verify that both the blue and green buttons on the chuck controller or hand-held remote unit are pressed at the same time for a period of one full second. Do not hold the buttons down for more than 2 seconds.

(d) Verify that the workpiece covers at least 4 poles and is thick enough, and has enough iron content to be magnetically attracted to the chuck.

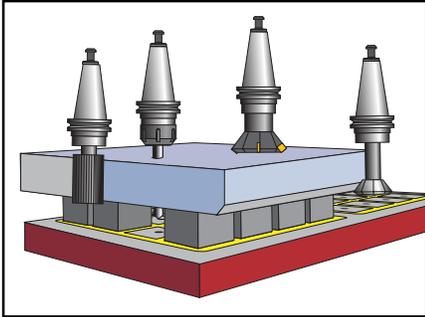
(e) Verify that the mating surfaces of the chuck and the workpiece are clean, smooth, and free of burrs.

(f) Machine the surface of the fixed pole extensions to ensure a uniform, flat surface.

(g) Remove any oil or coolant from the workpiece and chuck surface before positioning workpiece on chuck.

(h) Install workstops as needed to prevent slippage.

APPLICATION EXAMPLES



Machine 5 sides freely and thru-hole drill



Face milling warped stock



Works great for machining mold cavities



Flood coolant hole making application



5 axis machining



Rotary Table application



Works on thick or thin workpieces



Heavy side loads



Gang setups for high-volume



tombstones for palletized setups



Holding power to take big cuts



Use induction blocks as work stops

EPM-MultiChuck-480V-OM2011

9930 East 56th St., Indianapolis IN 46236 • (877) 354-3837 or (317) 803-8034 for assistance.