



MAGNETIC CHUCK

INSTALLATION AND OPERATIONS MANUAL

P.O. #:

Order #:

Part #:

INTRODUCTION

Thank you for purchasing this IMI Walker Magnetics Product. IMI Walker engineers and manufactures the highest quality electromagnetic, electro-permanent, and permanent magnetic chucks for grinding, machining, milling, turning, EDM, and molding applications:

GRINDING CHUCKS

Electromagnetic or permanent chucks are exceptional at workholding and have the power required for accurate holding for grinding and EDM operations. We offer standard grinding chucks as well as low-profile, magnetic micro-pitch and traverse bar pole chucks.



ROTARY CHUCKS

Rotary chucks include permanent magnetic chucks for lathing, tooling and grinding, permanent magnetic chucks for solid rounds, holding rings and bearing races, and electromagnetic and electro-permanent chucks for hard turning and free-state grinding of circular workpieces.



MILLING CHUCKS

Both electro-permanent magnetic chucks and permanent magnetic chucks accommodate all industrial milling operations.

ELECTROMAGNETIC CHUCK CONTROLS are also available: both manual chuck control systems and automatic release chuck control systems with full, variable and residual holding.



THIS MANUAL SHOULD BE CONSIDERED A PERMANENT PART OF THE MAGNET AND SHOULD ALWAYS BE AVAILABLE TO ALL OPERATORS AND REMAIN WITH THE MAGNET IF IT IS RE-SOLD.



SAFETY INSTRUCTIONS



Never attempt to use this magnet until this manual has been reviewed and understood.



Please be advised that in and around the application of magnetic equipment, there are potential safety concerns that can arise with sensitive medical devices:



- » Pacemaker behavior can be affected when they are near strong magnetic fields
- » Medical implants and external fixation systems can be influenced by magnetic fields
- » Hearing aid behavior may be affected when exposed to strong magnetic fields

Any individual that carries the above equipment or other sensitive medical devices should use caution when they are around or handling magnets. For more specific information the wearer should contact their physician.



Beware of pinch points from sudden attraction and unexpected movement between magnets and ferrous metal equipment, components or tools.

INSTALLATION INSTRUCTIONS

All IMI Walker new and rebuilt magnetic chucks are precision ground for flatness and parallelism between the top and base plates prior to shipment, and usually require a minimum of effort to install on the machine.

To assure that the chuck has been properly installed and will allow the machine to produce the highest quality precision machining the following procedure must be followed:

1. The mounting surface on the machine must be clean, perfectly flat, and free of burrs. Check the mounting surface. If it is not flat and true with the machining axis, it must be re-machined.
2. Even though all IMI Walker chucks are precision ground for flatness and parallelism, check the mounting surface of the chuck for flatness. Remove any imperfections that may have occurred since shipment with a smooth abrasive stone. If the flatness is not within required tolerances, the base plate can be ground by following the grinding instructions on the following pages.
3. Clean the mounting surfaces just before mounting the chuck to the machine.



INSTALLATION INSTRUCTIONS (CONTINUED)

RECTANGULAR CHUCKS

1. Rectangular Chucks Clamps provided with rectangular type chucks should initially be tightened only enough to prevent the chuck from moving. If the clamp(s) does not sit "flat" on the clamping ledge of the chuck then evaluate the cause of the condition. The addition of a spacer under the foot of the clamp is acceptable; multiple spacers should be avoided due to resulting instability.
2. The chucks should be aligned with the table and the clamp bolts gradually tightened in an alternating sequence to a torque of 10 foot-pounds.
3. Last only the bolts on one end of the chucks should be tightened to an increased torque of 15 foot-pounds. This will allow for expansion without distortion along the chuck length as the chuck and machine reach normal operating temperatures.

ROTARY CHUCKS



- » Rotary Chuck Mounting bolts should initially be tightened only enough to prevent the chuck from moving.
- » The chuck should then be aligned for concentricity with the rotary spindle and the bolts gradually tightened in an alternating sequence to a torque of 20 foot-pounds for .313" bolts and 30 foot-pounds for .375" bolts.

WARNING Electromagnetic Chucks ONLY



- » Prior to energizing an electromagnetic chuck, check all the electrical connections and confirm that the metal body of the chuck is electrically grounded.
- » Most rectangular type chucks are supplied with the power cord containing a green safety ground wire that is connected to the body of the chuck.
- » Rotary chucks are provided with either the green safety wire or provisions for a safety ground connection.

MAKE CERTAIN THAT THE CHUCK HAS BEEN CONNECTED TO A PROPER ELECTRICAL GROUND.

- » After proper wiring and grounding, electromagnetic chucks can be turned on and allowed to stabilize at the "median" temperature of the machine.
- » Normal coolant flow (usually any non-nitrate or inhibited nitrate coolant) should be used during this period.
- » Permanent magnetic chucks do not contribute heat, but also require a stabilization period to reach the "median" temperature of the machine.
- » Finish grind surface of the chuck to be assured it is in alignment with the machining axis. A general purpose medium hard open structure grinding wheel such as 36-40 grit is appropriate. (See grinding instructions the following page).
- » If the chuck is installed on a cutting tool type machine such as a lathe, the surface of the chuck may be machined using a very light cut and a very fine feed. Then the surface should be lightly polished with a smooth abrasive stone.



MAINTENANCE

GRINDING THE MOUNTING SURFACE OF RECTANGULAR CHUCKS

1. Place the chuck, face down, on the sliding table of the surface grinder and indicate the surface of the chuck length wise and cross wise.
Shim as necessary to level the surface to be ground.
2. Block each end of the chuck to prevent from moving while being ground.



DO NOT HOLD THE CHUCK IN PLACE BY ENERGIZING THE CHUCK

3. Use a general purpose medium hardness 36-40 grit type grinding wheel. Wet grind using any non-nitrate or inhibited-nitrate coolant.
4. Depth of cut can vary dependant on machine size and wheel type, consult machine manual or grinding wheel manufacturer.
5. Crossfeed-half wheel width per pass dependant on machine and wheel size, consult machine manual.
6. Table speed about 75 feet per minute dependant on machine and wheel size, consult machine manual.
7. Grind and clean bottom of chuck.



DO NOT DRY GRIND THE CHUCK

After the base surface has been ground flat:

- » Remove the chuck
- » Clean and dry the mounting area of the able.
- » Be sure to clean thoroughly freeing from all burrs before mounting in normal upright position.



NOTES:

- » Each time the chuck is ground the wheel should be trued.
- » There should be no effort to "spark out" on the top of the chuck after the last pass has been taken. A "commercial" grind finish will provide the best coefficient of friction for non-slip magnetic holding of work pieces on the chuck.
- » A loaded wheel, whether caused by heavy cuts, improper dressing, or wrong type of wheel can create heat build-up sufficient to warp the center of the chuck up into the wheel and seriously affect chuck flatness.

Re-surfacing a magnetic chuck:

Re-grinding (or sometimes light milling) the top surface of a magnetic chuck may be necessary. Typically 1/3 of the thickness of the top plate is the maximum removal allowed.

Machining areas into the top surface of a magnetic chuck:

It may be required to mill or drill specific areas into the top surface to provide clearance for features on the workpieces. It is highly recommend that customers contact IMI so advice can be provided for what areas can be modified: there are certain "no mill or drill" areas. Auxiliary Plates are also offered to mount on top of the chuck for situations where milled-out areas are needed. These Auxiliary Plates will match the pattern on the top plate so that no magnetism is lost.

COMMENTS OR CONCERNS?

We believe Industrial Magnetix, Inc. offers the finest Magnetic Chucks available today. Great pride has gone into the design and manufacture of this unit. Any comments or concerns should be directed to our Customer Service Department at 1-888-582-0822.

We appreciate the opportunity to serve you!