

MACTECH

**MACTECH
MT8 LRA x 30
BORING MILL
SETUP & OPERATION
MANUAL**

Model	MT8 LRA x 30
Description	Mactech Boring Mill w/ 8" x 30" Linear Rail slide
Part Number	600-6688H, 600-6688A
Machine Serial Number	
Manual Document Number	900-0031
Manual Revision	Rev B

REVISIONS**Manual Revision History**

Revision Level	ECO No.	Description	Initials	Date
A		Release		10/28/2019
B		Updated format, added Safety Instructions, Revision History	JCS	3/3/2020

Contacts

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HOW TO USE THIS MANUAL

How to Use this Manual

This manual must be read in its entirety for a complete understanding of the operation and characteristics of the machine. This manual must always be kept with the machine and be readily available for the operator of the machine. Extra copies of this manual are available upon request at no charge.

This manual is divided into four sections:

Section 1 - Description: This section describes the machine capabilities, dimensions, lifting points, component specifications, and power requirements

Section 2 - Setup: This section describes the preparation and setup of the machine before operation.




Section 3 - Operation: This section describes the testing and operation of the machine.

Section 4 - Maintenance: This section describes the inspection and maintenance procedures for the machine as well as troubleshooting.

SAFETY INSTRUCTIONS





Safety Keywords

The safety keywords DANGER, WARNING, and CAUTION used in this manual indicate the level of hazard that may be encountered by the user. These keywords appear in a box with the hazardous condition or operation throughout this manual. The definitions of these safety keywords are:






	<p>DANGER : Indicates death or serious injury will occur if precautions are not taken.</p>
	<p>WARNING : Indicates death, serious injury, or property damage can occur if precautions are not taken.</p>
	<p>CAUTION : Indicates injury or property damage may occur if precautions are not taken.</p>

Safety

Safety is an essential part of the operation of this equipment. Heed all warnings in this manual and markings on the machine to avoid hazardous and unsafe operation. Always observe site safety rules and safety information provided to the user of this equipment. Use personal protective equipment including gloves, safety glasses and steel-toe boots when using this equipment.

	<p>WARNING : Users must read and understand these instructions before operating this equipment. Failure to comply with these instructions can result in death, serious injury, or damage to the equipment.</p>
	<p>DANGER : Keep away from moving parts. Do not reach into moving machinery. Keep the work area clear of personnel and non-essential materials. Always turn off power before adjusting the machine or clearing material. Lift the machine using the specified lifting points only. Always use appropriate personal protective equipment. Always follow all site safety procedures and regulations.</p>
	<p>DANGER : All lifting points and rigging must be inspected by a qualified rigger prior to each use. The lifting ring must be replaced immediately if it has been subjected to an impact load. A qualified rigger must perform connections and lifting operations. Failure to follow safe rigging practices can result in serious injury or death.</p>
	<p>DANGER : Do not stand under a suspended load. Use tag lines to guide the load. Use self-closing latches to connect to the lifting points. Failure to follow safe rigging practices can result in serious injury or death.</p>

SAFETY INSTRUCTIONS

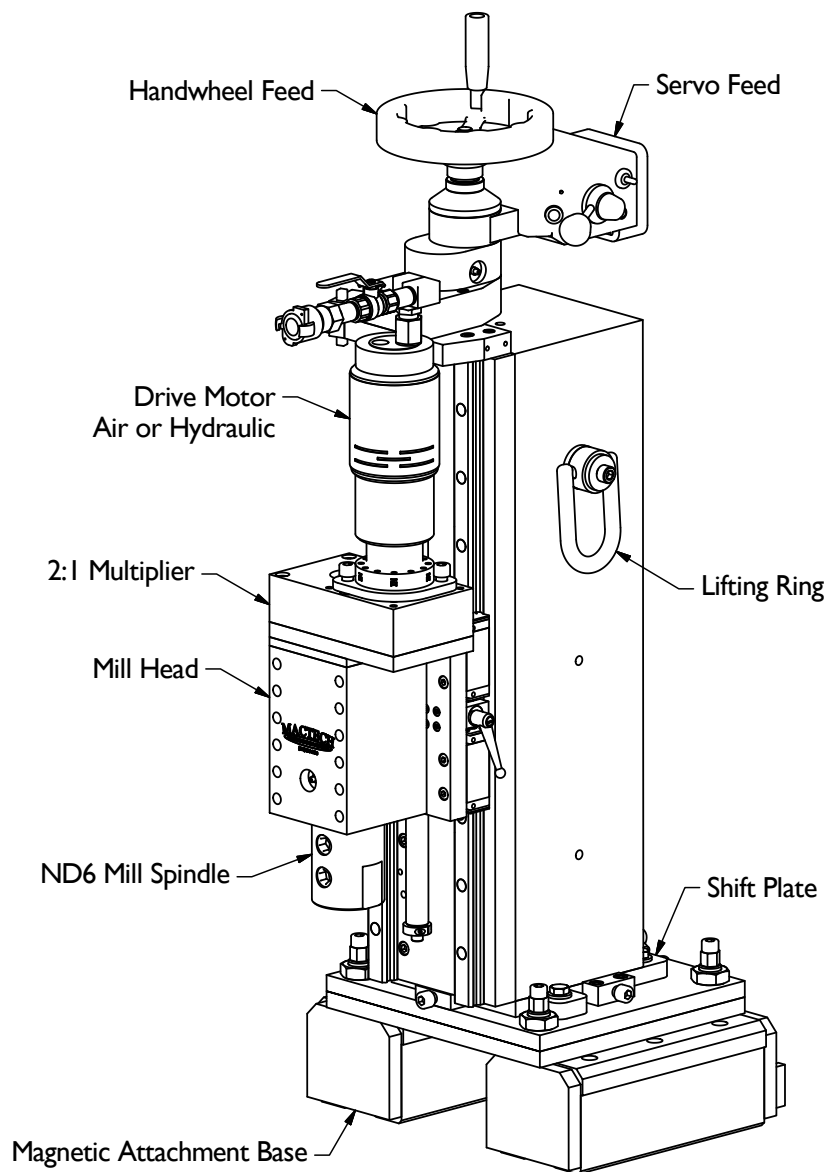
	WARNING : Perform a JSEA (Job Safety Environmental Analysis) before using this equipment. Always be aware of your surroundings. Failure to analyze site specific hazards can result in serious injury or death.
	WARNING : Do not exceed the maximum hydraulic flow or pressure specified for this equipment. Failure to heed this warning may result in serious injury.
	WARNING : Skin injection hazard. Do not check for hydraulic leaks with your hands. Do not hold hydraulic hose or connectors while the hydraulic system is pressurized. Always shut off and de-pressurize the hydraulic system before servicing the unit. Hydraulic fluid under pressure can easily puncture skin, causing serious injury or death.
	CAUTION : Valves and other hydraulic components may be hot during and after operation. Allow the equipment to cool before handling, or use heat-resistant gloves. Hot surfaces may cause serious burns.
	CAUTION : Before each use thoroughly inspect the machine. Make sure all guards are in place and securely fastened. Correct any problems that require maintenance or replacement before using the machine.

SECTION 1 - DESCRIPTION

Section I - Description

The MT8 LRA x 30 Boring Mill is a heavy-duty mill designed to drill or bore holes through most materials, including steel, steel alloys, aluminum and other materials. Features included are a servo driven feed mechanism, 2:1 feed multiplier and a large bore diameter capability. The MT8 LRA x 30 Boring Mill is available with air or hydraulic drive.

NOTE: Before each use thoroughly inspect the machine. Check for loose or missing fasteners. Make sure all guards are in place and securely fastened. Make sure the tooling is sharp and in good condition. Make sure there are no hydraulic fluid leaks. Correct any problems that require maintenance or replacement before using the machine.



MT8 LRA x 30 Boring Mill Components

SECTION 1 - DESCRIPTION

Capabilities

The MT8 LRA x 30 Boring Mill is capable of boring up to 7 inch diameter holes through most materials.

Tooling

- The mill is supplied with an ND6 extended mill spindle. Other adapters and tooling are available from Mactech.

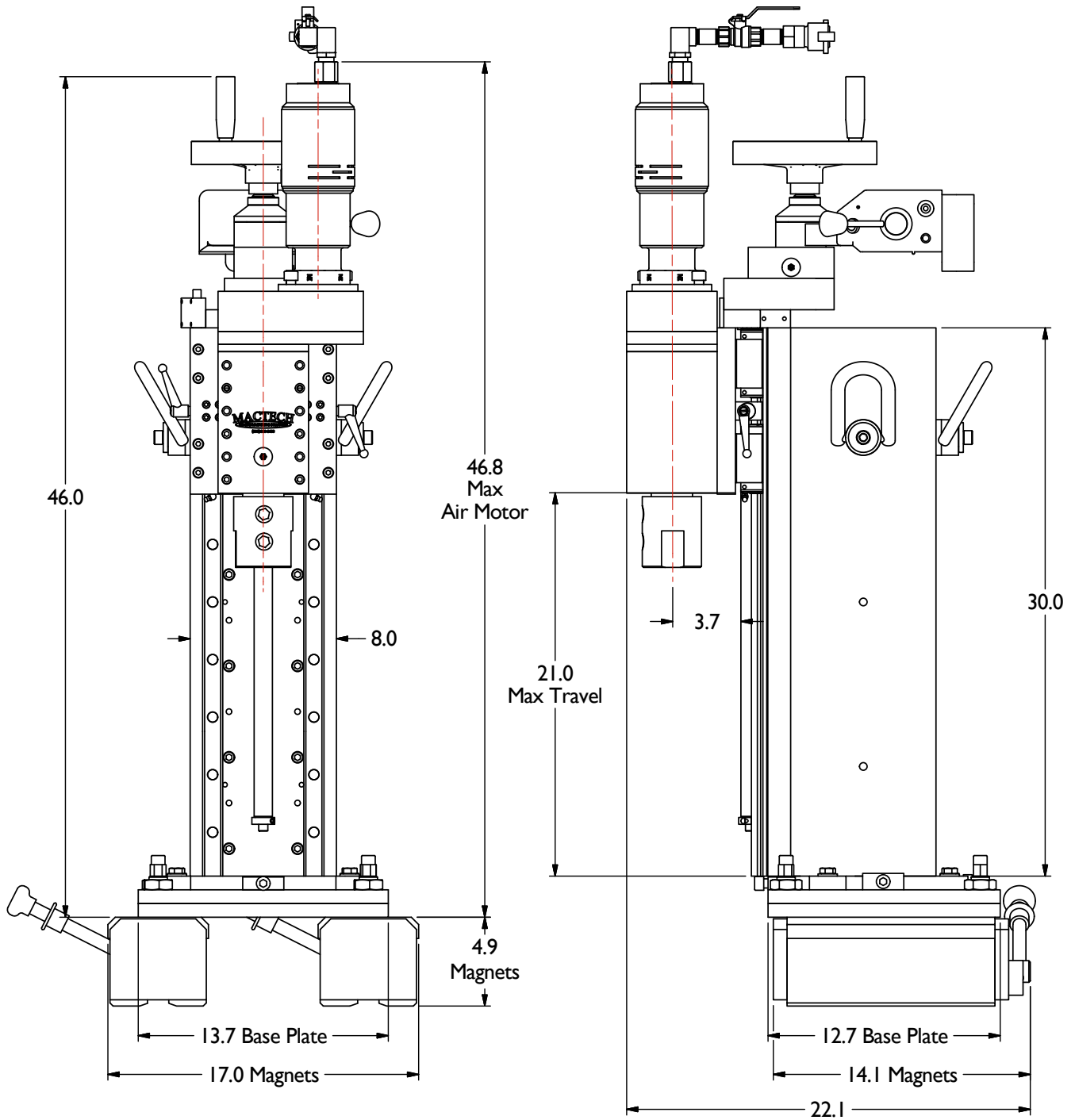
Drive

- Hydraulic Power Requirement: 10-15 gpm @ 1000 psi continuous pressure.
- Air Power Requirement: 100 cfm @ 100 psi
- Electrical Power Requirements: 110V, 50/60 Hz

Weights

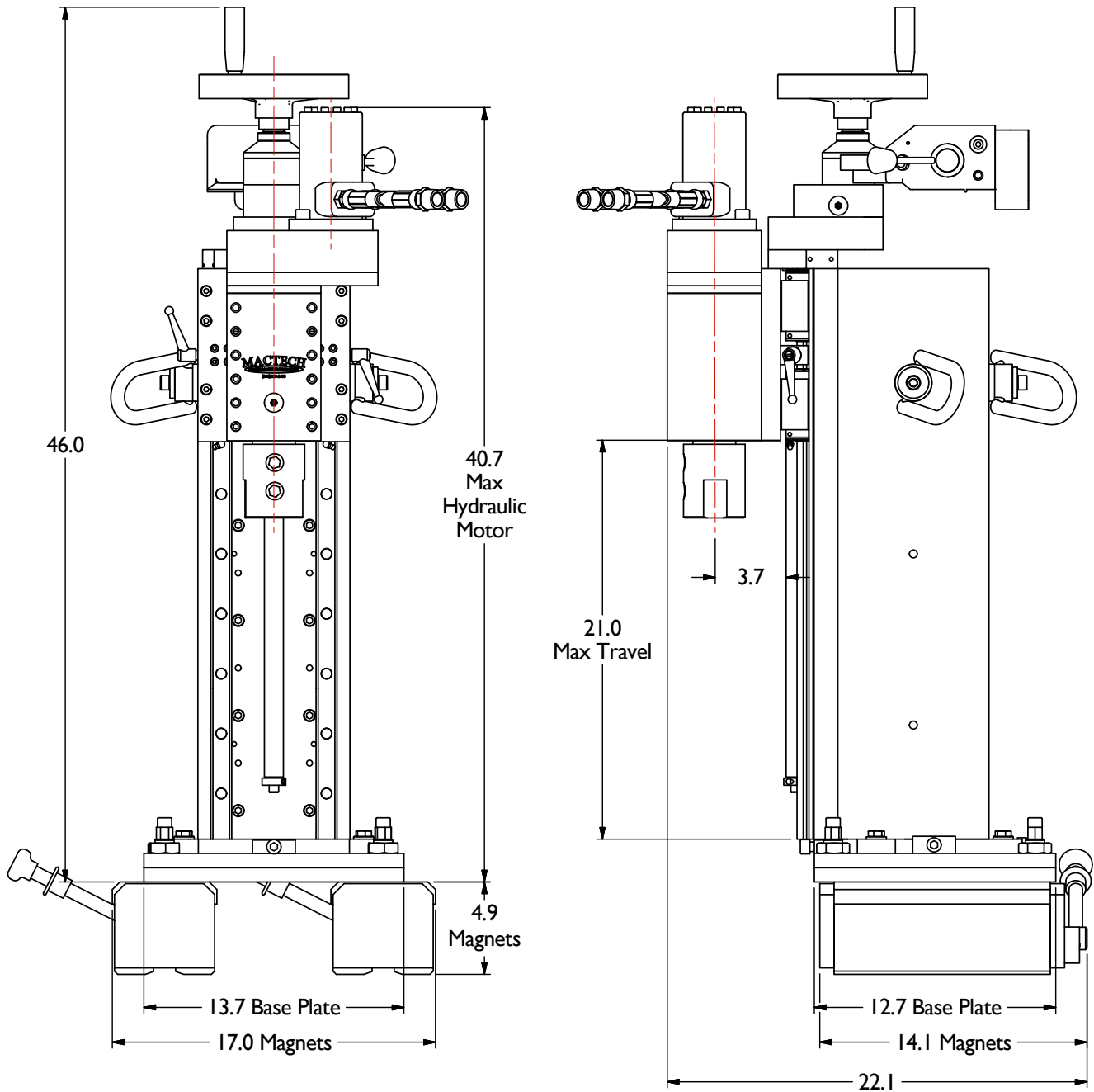
- MT8 LRA x 30 Boring Mill with Air Motor: 660 lbs.
- MT8 LRA x 30 Boring Mill with Hydraulic Motor: 670 lbs.

SECTION 1 - DESCRIPTION



Dimensions - MT8 LRA x 30 Boring Mill with Air Motor

SECTION 1 - DESCRIPTION



Dimensions - MT8 LRA x 30 Boring Mill with Hydraulic Motor

SECTION 2 - SETUP

Section 2 - Setup

Lifting the Boring Mill

- I. The boring mill is supplied with three lifting rings. The lifting rings can be installed in different locations to allow the mill to be lifted vertically, horizontally, or at an angle. Select the lifting ring mounting locations that will best balance the load. See Figure 1 for lifting ring mounting locations.

CAUTION: Always use the lifting rings to lift the machine. Do not lift the machine in any other manner. The lifting rings must be securely attached to the machine. Balance the load when lifting. Failure to lift the machine properly may result in damage to the machine or injury to the operator.

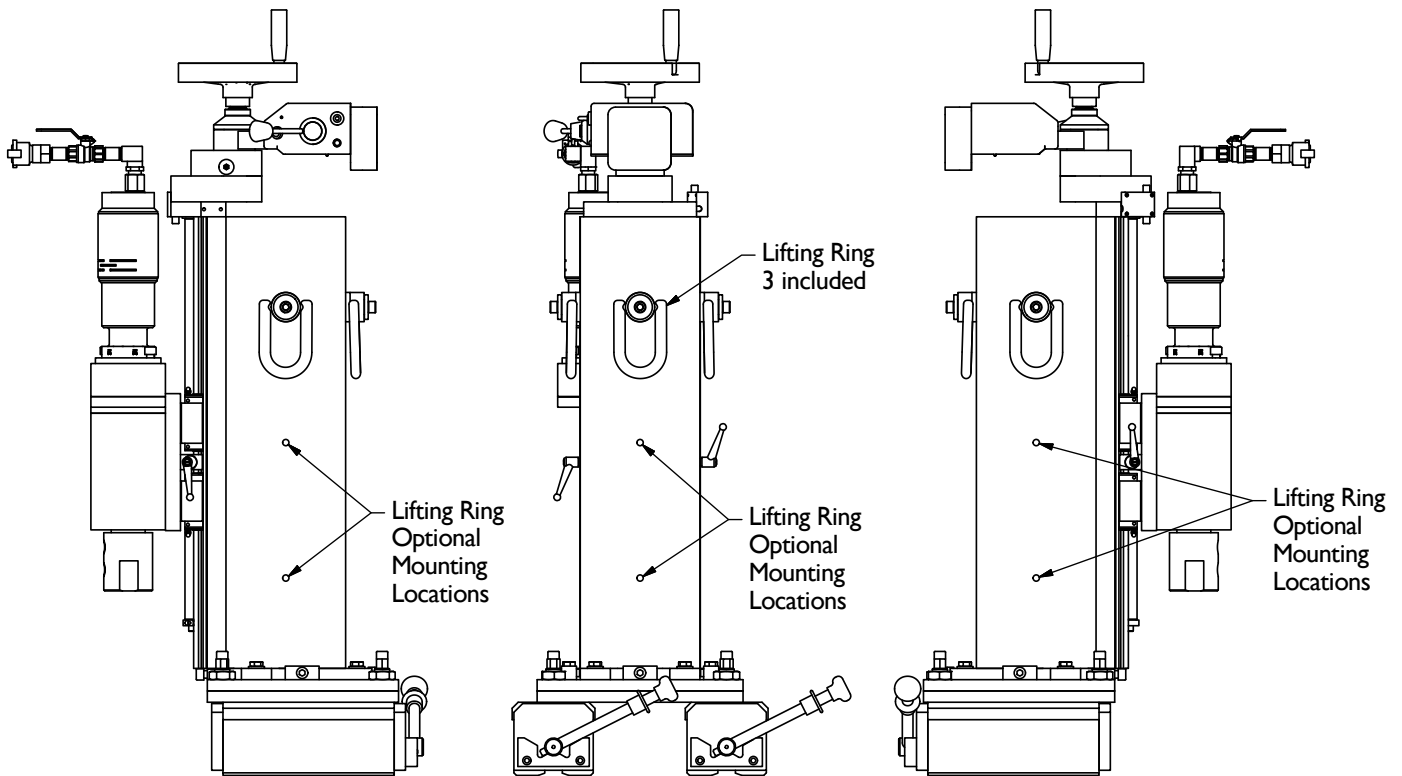


Figure 1 - Lifting Ring Mounting Locations

Mounting Options

The boring mill can be attached to the workpiece in several ways:

- Clamp
- Weld
- Magnetic Attachment Base

Select the mounting option best suited to your application.

SECTION 2 - SETUP

Clamp or Weld Boring Mill to Workpiece

See Figure 2

1. To clamp or weld the boring mill to the workpiece, first remove the two magnetic attachment bases and the magnet plate. The magnet plate is held in place by the four jack screws.
2. Back out the four jack screws to allow the mounting plate to sit flush on the workpiece.
3. Position the mill over the area to be machined. Clamp or weld the mounting plate to the workpiece. Make sure the mill is securely fastened to the workpiece. A stable and rigid setup is essential for accurate milling and safe operation of the machine.

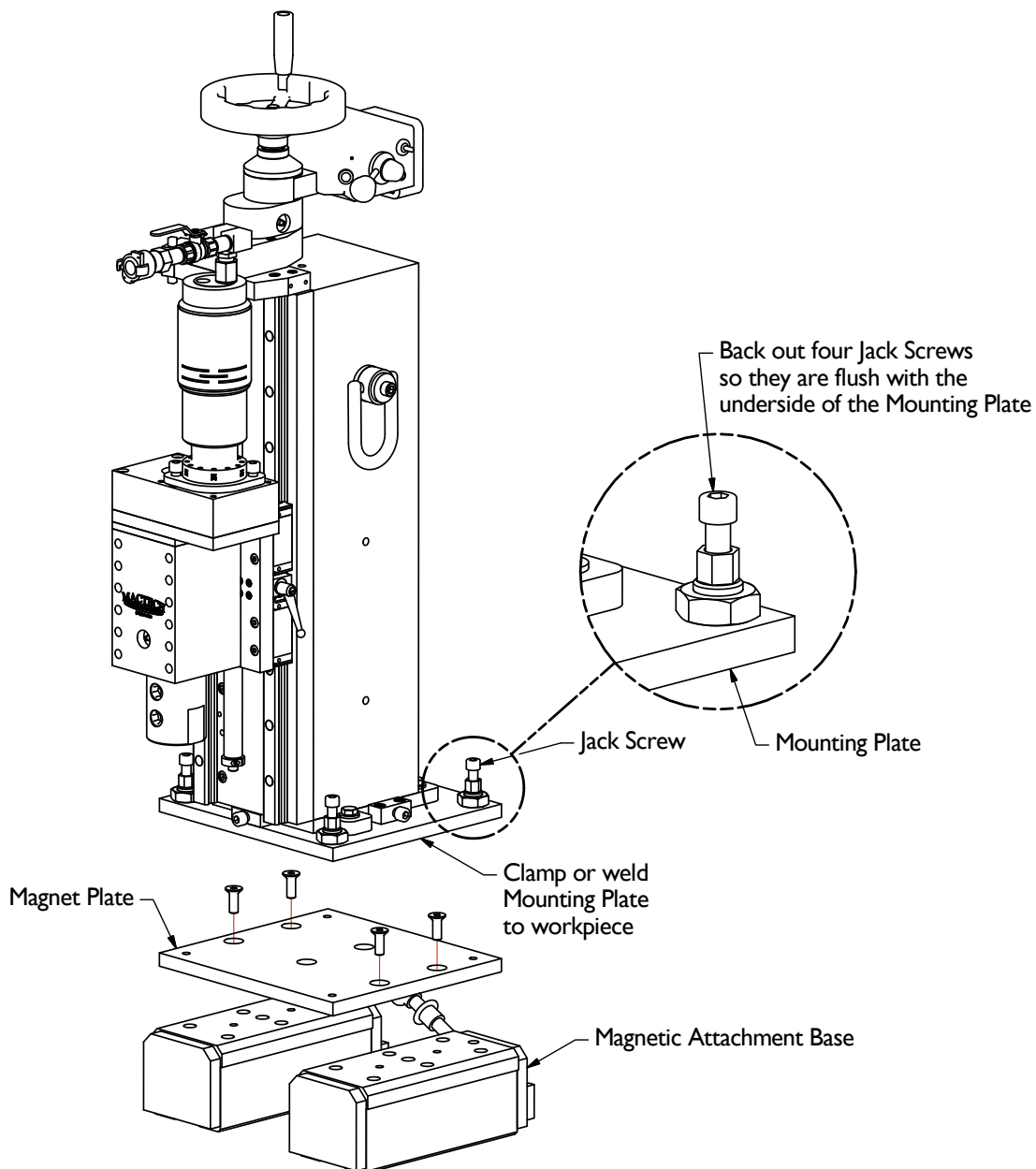


Figure 2 - Clamp or Weld Mounting

SECTION 2 - SETUP

Magnetic Attachment Base

See Figure 3

CAUTION: The steel workpiece surface for the magnetic attachment bases must be clean and free of rust, scale, oil, and other contaminants. The magnets require a clean surface at least 1.5 inches thick to ensure maximum holding strength. Failure to provide a clean attachment surface of required thickness could result in the machine breaking free, which may cause damage to the machine or injury to the operator.

1. Place the mill with magnetic attachment bases on the workpiece surface, over the area to be machined. Make sure the workpiece surface is clean.
2. Position the mill over the area to be machined. Lock the mill onto the workpiece by turning the magnet levers fully to the left (counter-clockwise). This will activate the magnet and secure the mill to the surface.
3. Make sure the mill is securely fastened to the workpiece. A stable, rigid and secure setup is essential for accurate milling and safe operation of the machine.

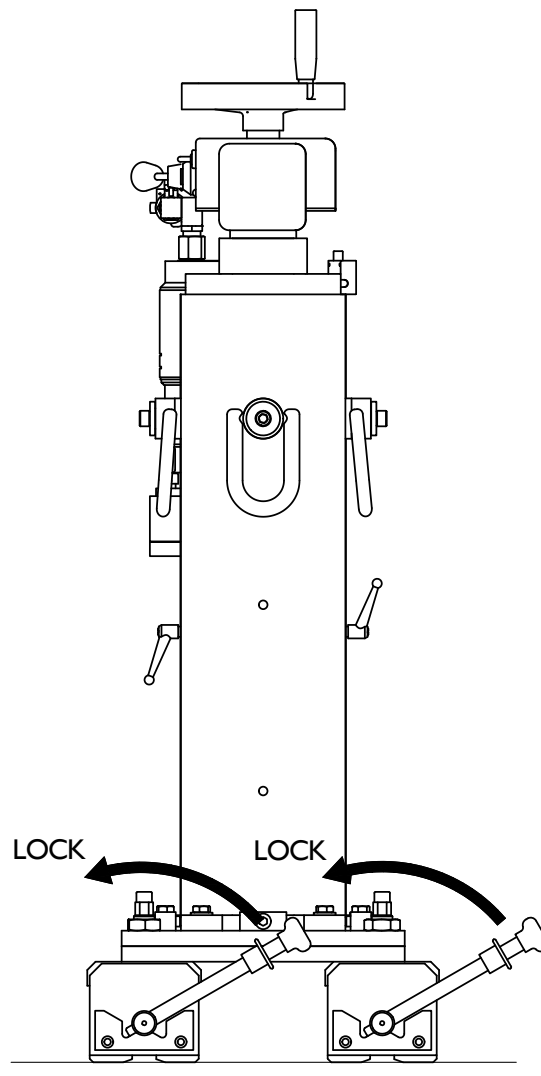


Figure 3 - Magnetic Attachment Base Mounting
MT8 LRA x 30 Boring Mill Setup & Operation Manual

SECTION 2 - SETUP

Position and Square the Boring Mill

See Figure 4

- I. The shift plate allows $\pm 1/4$ inch positional adjustment in the X and Y directions. Use the shift plate to position the mill head exactly over the area to be machined. Loosen the four shift plate screws and tap the vertical support block with a rubber mallet to adjust the position. Firmly tighten the shift plate screws when the mill is at the desired position.

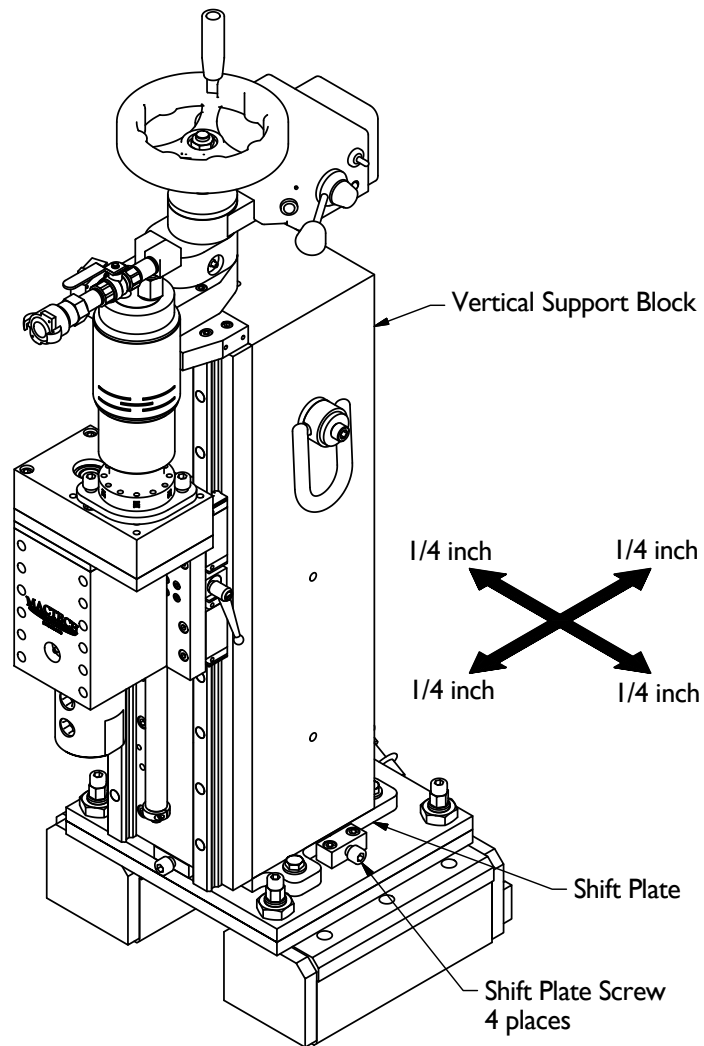


Figure 4 - Shift Plate

SECTION 2 - SETUP

2. Level the mill to the workpiece by adjusting the mounting plate with the four jack screws. Lock the jack screws in place with the nut. See Figure 5.

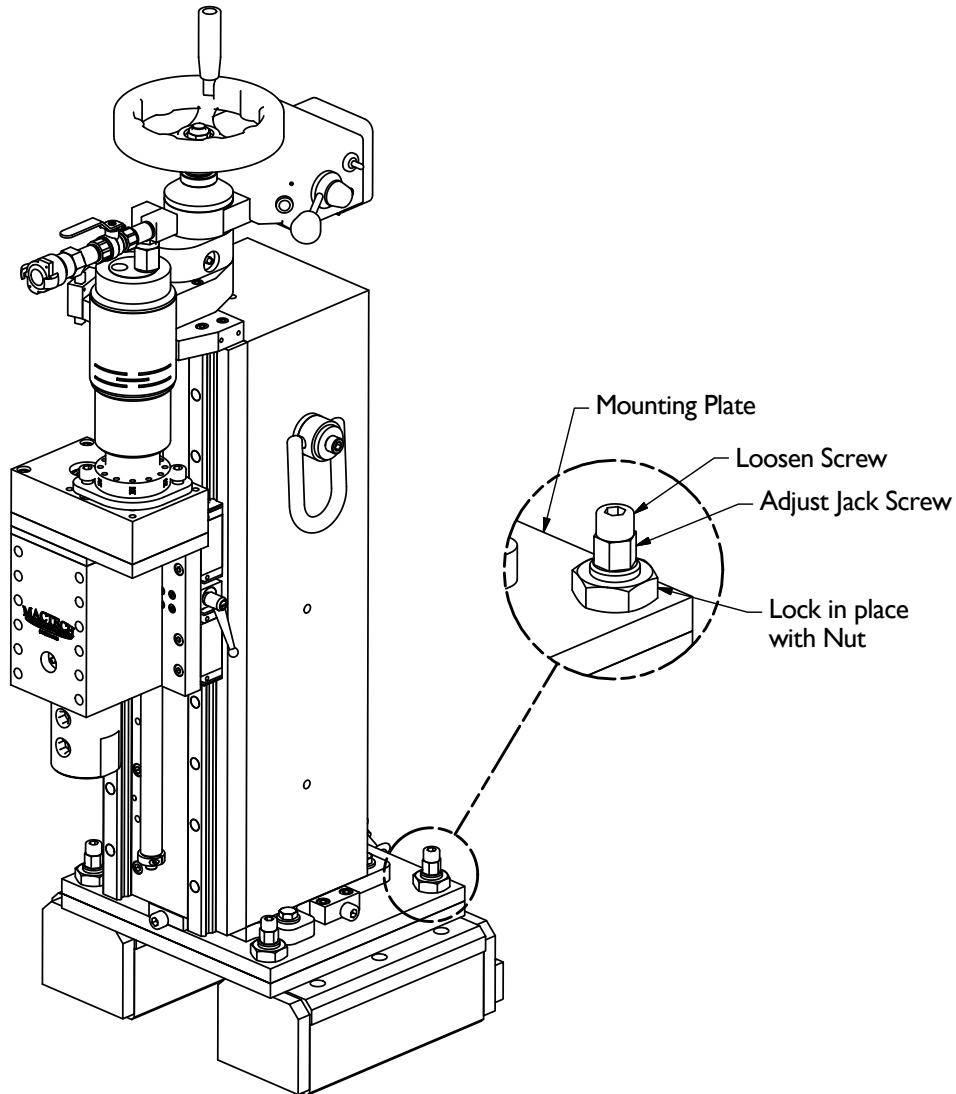


Figure 5 - Jack Screws

3. With the boring mill secured, positioned and leveled to the workpiece, install tooling. The mill is now ready for operation.

SECTION 3 - OPERATION

Section 3 - Operation

- I. Connect the air or hydraulic power supply lines to the spindle motor. Connect the servo motor to a 110v electrical power supply. Move the servo direction control lever to the center 'stop' position. Make sure the magnetic attachment base levers are in the locked position. See Figure 6.

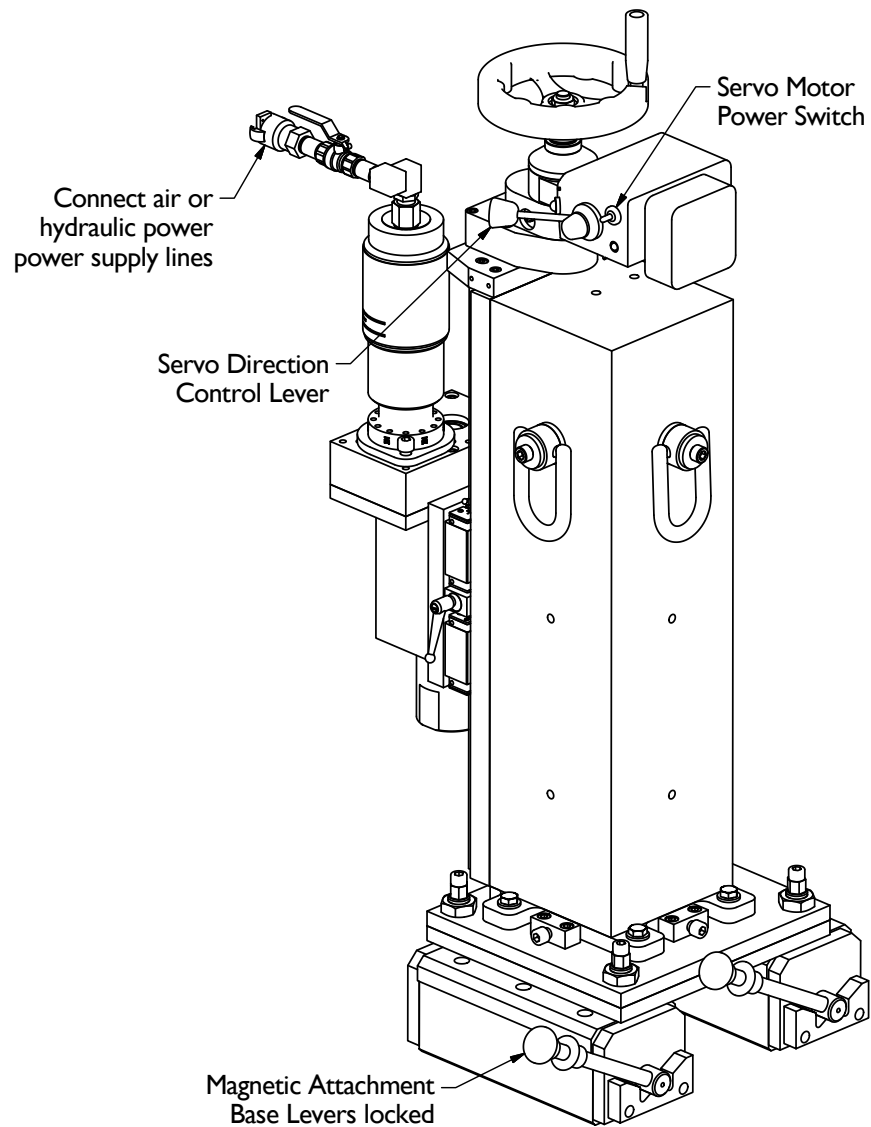


Figure 6 - Connect Power Supplies

SECTION 3 - OPERATION

2. Start the air or hydraulic power. Switch on the servo motor power. Open the hydraulic or air control valve to the spindle motor. Use the servo feed to slowly lower the cutter into the workpiece. Use the servo speed control dial to adjust the mill head travel speed. The manual feed handwheel may be used in place of the servo feed. Place the control lever in the 'stop' position when using the handwheel. See Figure 7.

NOTE: Allow the mill head travel to come to a full stop before changing the servo feed direction. Move the direction control lever to the center 'stop' position, allow the mill head to stop, then change direction. Failure to do so may damage the servo motor.

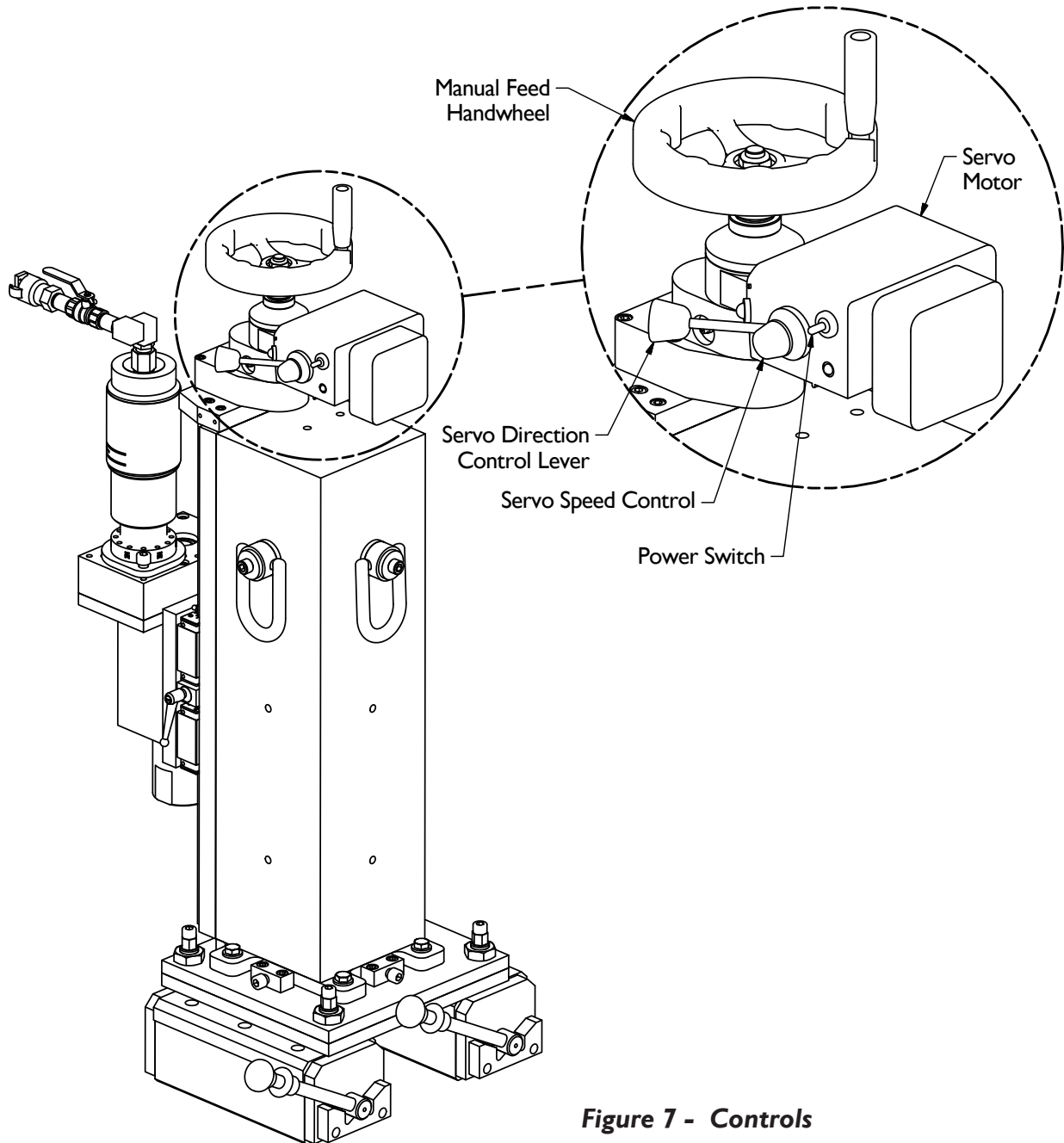


Figure 7 - Controls

SECTION 3 - OPERATION

3. When the milling operation is completed, move the control lever to the 'stop' position. Reverse the control lever direction to retract the mill head away from the workpiece.
4. Stop the air or hydraulic power supply. Bleed off any remaining hydraulic pressure. Disconnect air or hydraulic lines. Disconnect power to the servo motor.

SECTION 4 - MAINTENANCE

Section 4 - Cleaning, Inspection and Maintenance

NOTE: *Cleaning and maintenance of the boring mill is critical to maintain the life and performance of the machine. If the machine is immersed or exposed to water, all sub-assemblies must immediately be disassembled, flushed with freshwater, and thoroughly dried. All bearings must be inspected and packed with grease to prevent corrosion. The feed screw and slides must be cleaned, dried and lubricated with grease.*

NOTE: *Always check for hydraulic fluid leaks before and after each use of the machine. If any leaks are detected, immediately remove the machine from service and replace worn or damaged seals; or repair or replace the component where the leak is found. Do not use the machine if hydraulic leaks are present.*

General Maintenance

General maintenance must be performed after each use to ensure the life and performance of the machine.

1. Inspect the entire machine for hydraulic leaks and worn or damaged seals, including hose whips and hydraulic fittings. Replace worn or damaged seals.
2. Inspect the mill head and spindle. Remove all metal shavings, dirt and debris. The spindle must turn freely and smoothly. Inspect all components for excessive wear or damage. If necessary, disassemble and clean the mill head bores. Apply a light coat of grease to all housing bore surfaces. Apply anti-seize lubricant to screw threads. Pump fresh grease into the mill head grease zerk.
3. Inspect the mill slide assembly. Make sure that metal shavings, dirt and debris are removed. Make sure there is no damage to components and all parts are functional. Lubricate the feed screw with machine oil.

NOTE: *Do not remove the mill head carrier from the linear rails. The carrier holds loose ball bearings, which will fall out of the carrier if removed. If the carrier or linear rails require replacement, return the machine to Mactech for service.*

4. Check the machine for damage, loose or missing parts and excessive wear to components.
5. Make sure all lifting rings are present and undamaged. If the lifting rings have been subjected to an impact load, replace the lifting rings.

Storage

NOTE: *Follow this procedure when storing the machine in offshore or other harsh environments, or for long-term storage. This storage procedure will help prevent corrosion and other damage to the machine.*

1. Remove the drive and servo motor and store separately. When storing the machine for long periods, or when storing in offshore environments, apply a light coat of SP400 protectant over the entire outside surfaces of the machine. Do not apply protectant to seals or any non-metallic components.

NOTE: *Do not over-apply SP400 protectant. SP400 is used as a protectant only, and may damage the machine if used on internal or moving components. Limit the application to the outside surfaces of the machine.*