AMP

Frame Joining Technology

MN-355 Double Mitre Saw

Installation and Operations Manual

Installation and Operations

- Preparing for Installation
- Positioning the Equipment
- Electrical Connections - Pneumatic Connections
- Installing the Blades - Testing the Installation
- Operation of Equipment

Company Contact Information

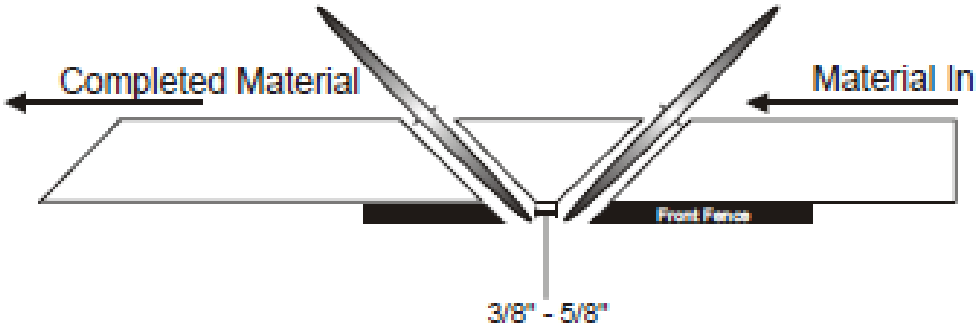
Fletcher Business Group | 91 Clark Drive | East Berlin, CT 06023

800.843.3826| www.fletcher-terry.com

Introduction

The MN Series Miter Cut saw cuts a single piece of non-ferrous material into two 45° miter cut pieces. As shown in the illustration below, the MN Series saw contains two 45° angled blades that lower in tandem to cut the material, leaving a 3/8" - 5/8" scrap piece between the two pieces.

Note: The in-feed side of the machine has a longer fence than the exit side. Unless indicated otherwise, material loads into the standard MN Series saw from either end of the machine. However, right or left side loading options are available.



MN Series Saw Overview

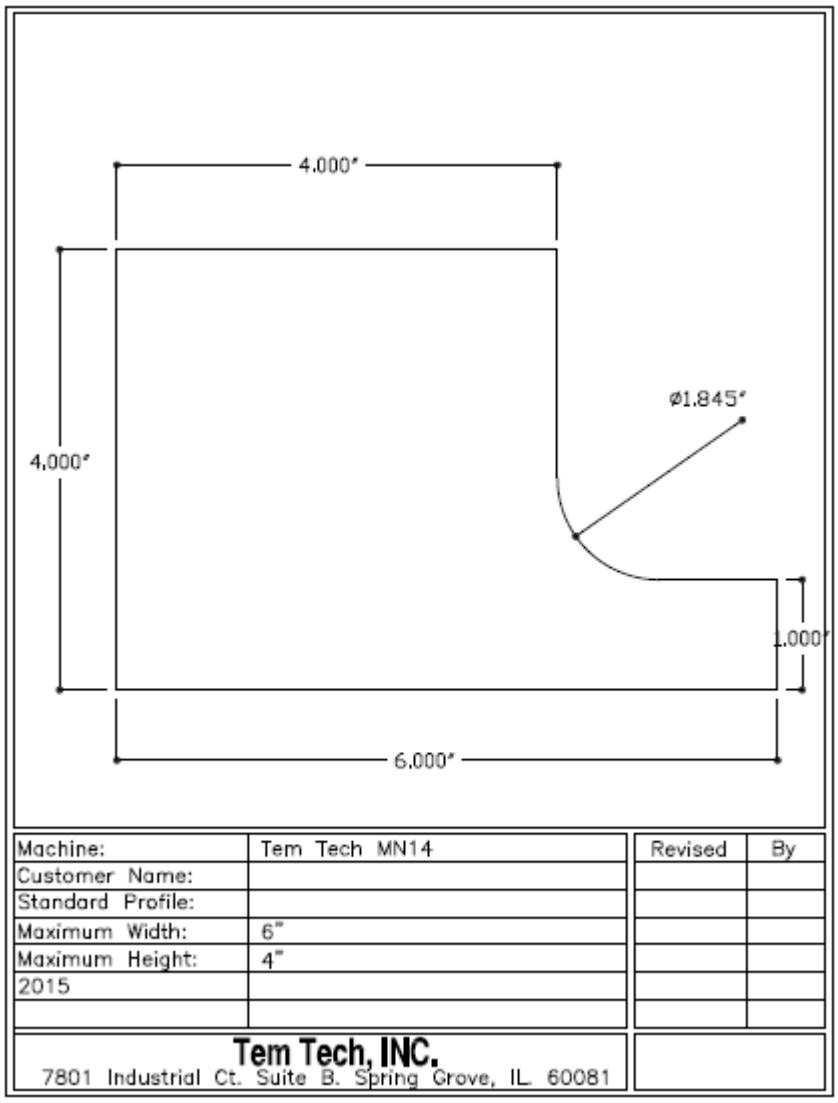
Standard Features:

- Precision ground steel table and steel fence
- Steel cabinet base
- Heavy duty cast components
- Adjustable saw feed rate control
- Foot pedal operation of the saw
- Totally enclosed fan-cooled motors (TEFC)
- Precision machined spindle shaft with double ball bearing design
- Precision double tapered roll bearing pivot assembly
- Tool kit

Optional features:

- Automatic material feed systems
- Pneumatic material clamps available in horizontal configuration
- Manual and digital linear gauging systems
- In-feed conveyors
- Right side or left side material loading
- Automatic spray mist coolant system
- Custom-fit fixture blocks and clamp pads
- Hydrocheck controls for down-stroke speed control
- Vacuum systems to collect the dust and chips that fall from the blades while cutting the material.
- Negative rake, positive rake, or high speed steel saw blade options

- If the automatic spray mist coolant system is installed, one additional air valve assembly is affixed to the inside of the saw hood (MN-10 and MN-12) or two additional air valve assemblies are affixed outside the door of the saw hood (MN-14).
- If a Hydrocheck is installed, the machine includes a hydraulic cylinder mounted on top of the saw cylinder.
- If an automatic feed system is installed, the machine includes a conveyor from which material is fed to the machine.
- If a gauge is installed, a table extends from the exit end of the machine. The table contains a sliding stop that enables you to set the length of material you want to cut.
- If a vacuum system is installed, a black tube extends from the back of the machine that connects to a collection system.
- The dimensions of the machine varies depending on the diameter of the blade. Refer to "Technical Specifications" on page 1-5 for specific dimensions the machines.
- The machine may also include additional custom modifications, such as fixtures or drills.



Machine:	Tem Tech MN14	Revised	By
Customer Name:			
Standard Profile:			
Maximum Width:	6"		
Maximum Height:	4"		
2015			

Tem Tech, INC.
7801 Industrial Ct. Suite B. Spring Grove, IL. 60081

TECHNICAL SPECIFICATIONS:

Blade Diameter	14" (355mm)
Blade Arbor	5/8" (0.625") (15.87mm)
Blade Motors	1.5HP each, 3 HP total
Blade Speed	3550 RPM / 12,000 SFM
Pneumatic Requirements	80-90 PSI / 3 CFM
Foot Pedal Operated	Control Valve for Cycle Speed
Cutting Capacity	4" high x 6" wide** seed chart below** (100 x 150mm)
Machine Dimensions	48"L x 26"W x 56" H (1220 x 660 x 1420mm)
Machine Weight Shipping weight	625 Lbs (284 kg) 700 Lbs (318 kg)
Electrical Requirements	208 V/230 V/ 460 V, 3 phase
Electrical Circuit Needed	15 AMP / 10 AMP
Dust Collection Requirements	1300 CFM Minimum @ 4" (100mm)

Safety Considerations

Pay extra attention to warnings and danger notices. Ignoring these notices could result in serious personal injury and/or equipment damage. Even if you have operated, installed or serviced similar equipment in the past, there may be changes in design, manufacture, or procedure which significantly affect the operation, installation or service process.

Warning

- *Pinch Points, and Sharp Edges are present! Keep all body parts safely clear of Pinch Points and Sharp Edges.*
- *Keep hands, fingers, loose clothing, and long hair away from moving parts at all times.*
- *Do NOT attempt to remove or disable ANY safety device. Operating this machine with any guard, cover or other safety device missing, broken, or not in place constitutes misuse, and can result in personal injury, death and equipment damage.*

Caution

All moveable parts and assemblies of this equipment must be operated with care and inspected routinely in accordance with the manufacturer's recommendations.

Warning

Serious injury or death can be caused by the following:

- *Sudden, unexpected startup of the machinery or equipment.*
- *Contact with live electrical circuits.*
- *Unexpected release of stored energy.*

Whenever you work on, service or perform maintenance on this equipment, always observe and practice OSHA standards for controlling hazardous energy sources. Use lock-out/tag-out procedures to prevent unexpected startup and release of stored energy. Use block-out procedures to prevent the physical movement of machinery or equipment.

Warning

Comply with the National Electrical Code, Federal, State, and Local Codes, and all applicable safety codes when installing and using this equipment. Always turn the power OFF, lock it OUT, and take other necessary precautions when installing or servicing this equipment to prevent personal injury or equipment damage.

The equipment MUST be grounded to an Earth ground by a separate conductor. The neutral side of the line is NOT an Earth ground.

Warning

Use extreme caution when working with electrical connections!

- *Only properly trained and qualified personnel should be permitted to access internal parts or work on electrical circuits.*
- *Turn off and lock out main electrical power circuit breakers before servicing or cleaning any part of the equipment, removing enclosure panels, or attaching accessories!*

Safety Labels

Your machines are shipped with labels that display important safety information. These vinyl self-stick labels are an important part of your machine's safety equipment.

Warning

NEVER operate your equipment unless ALL safety guards and devices, including the safety labels, are securely attached in the proper position, working correctly, and in good condition!

Maintaining the Safety Labels

Read each label, and always observe the safety precautions!

Keep the labels clean. Wipe away dirt with a soft cloth.

If a label is damaged, or fades, or can no longer be easily read, promptly contact Tem Tech to obtain a replacement label.

Applying Replacement Labels - Compare the new label to the old label, make sure the new label is the correct label. If you have any questions, contact Tem Tech.

Make sure the surface where the new label will be applied is smooth (no cracks, lumps, pits, or holes).

Make sure the surface is clean and dry.

Gently peel the backing from the new label.

Carefully place the label on the equipment, and press it into place.

Make sure there are no wrinkles or air bubbles trapped beneath the label.

Note: It is the purchaser's responsibility to make sure the safety labels remain readable and undamaged. In the event a label becomes damaged or illegible, it is the purchaser's responsibility to obtain and install a replacement label. Contact Tem Tech to obtain replacement labels. Tem Tech assumes no liability for any consequences resulting from improperly maintained, missing, damaged, faded, or illegible safety labels.

Installation

This chapter describes how to prepare your MN Series Miter Cut Saw for installation, connect the electrics and pneumatics, and install the circular blades.

Introduction

Inspect the equipment right away. If there is any damage, notify the carrier immediately.
Tem Tech thoroughly tests all equipment before shipping. The machine may be partially disassembled for safe shipment.
This equipment contains precision parts. Use care when off-loading and placing equipment. Mishandling can cause damage or misalignment. If you have any questions regarding installation or operation contact Tem Tech.

Please use new contact information on the front of manual

Tem Tech, Inc.
7801 Industrial Court
Suite B
Spring Grove, IL 60081
(815)675-9790

Be sure to carefully read and understand the “Important Notes”

Installation consists of six major steps:

- Preparing for Installation
- Positioning the Equipment
- Making the Electrical Connections
- Making the Pneumatic Connections
- Installing the Blades
- Testing the Installation

Important Notes

The equipment is pre-assembled and tested before shipping. Components may be loosened or dislodged during shipping.

	***Warning*** *Use care during off-loading and placement. Dropping or mishandling the equipment may result in damage.*

1. Make sure all connections are secure before the machine is powered up and put into operation.
2. The equipment must be level.
3. All equipment must be correctly positioned. Measurements are critical. They must be exact.
4. All wires that must be connected are pre-cut to the proper length, and the ends are pre-stripped.
5. The installation layout drawings are standard.
• Document any special information for your setup on the drawings.
• Retain them for future reference.

Note: It is the responsibility of the purchaser to secure and fasten objects to floors, walls, ceilings, and other structures. Tem Tech assumes no liability for the durability of any such connection, anchor, or fastener, nor for any damage that may result from the installation of any connection, anchor, or fastener.

Positioning the Equipment

1. Refer to the Weight Specifications
“Technical Specifications” to insure the floor will
support the load.
2. Before unpacking the equipment, move it to its intended location. Select an area close to the source of supply, allowing sufficient work space for the longest piece of material.
3. Once in place, remove all shipping and packaging materials and unbolt the machine from the shipping skid. Remove all strapping.
4. A rust preventative substance has been applied to the work surface of the machine. Remove this with an industrial grade degreaser.
5. Ensure the machine is properly anchored to prevent vibration during operation. If necessary, place shims under the machine legs.

Making Electrical Connections

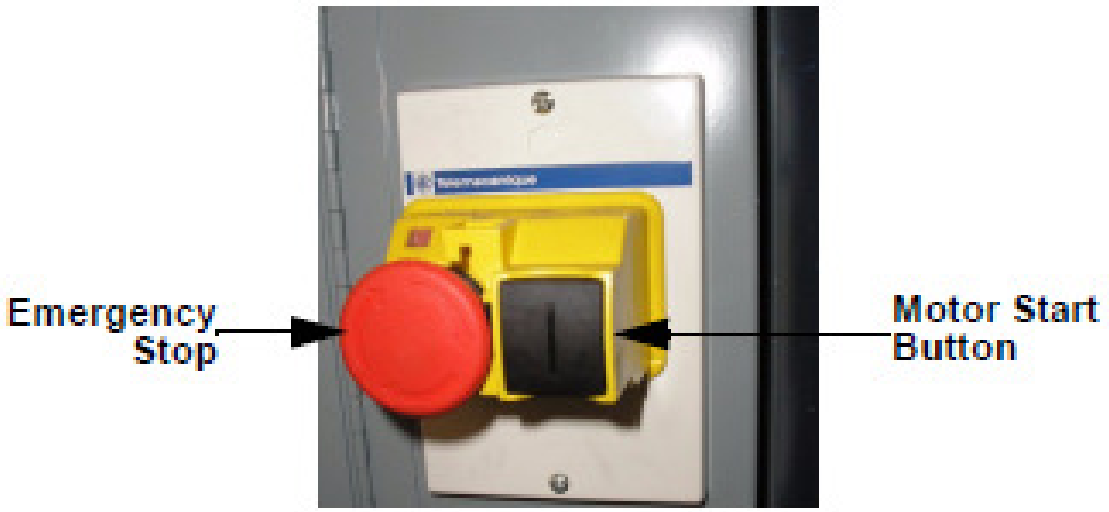
	***Danger*** *DO NOT make connections with electrical power applied. Hazardous voltages are present. Live electrical terminals are DEADLY! Failure to comply may result in serious injury to service personnel. Only qualified electricians should work on electrical circuits. Always use a lock-out/tag-out procedure to prevent accidental re-connection and injury.*

The electrical installation must conform to all National, State and Local Safety codes.
Confirm the code requirements in your area before performing the electrical installation steps.
If the safety codes in your area require a different set up, alert Tem Tech before installation and document this on the installation layout diagram. Keep this information for future reference.
Note: It is the purchaser's responsibility to insure that the installation satisfies all applicable safety codes. Tem Tech assumes no liability for any consequences resulting from an installation that fails to conform to all applicable safety codes.
1. Make sure the voltage level of your incoming line holds steady at +/- 10% of the required voltage for the machine. If it does not, an incoming line transformer must be installed.
2. Make the electrical connections according to the drawings. Electrical connections are identified by an on the drawings.
• ALL electrical systems MUST be properly grounded.
The electrical installation must conform to all National, State and Local Safety codes.
• Confirm the code requirements in your area before performing the electrical installation steps.
• If the safety codes in your area require a different set up, alert GED before installation and document this on the installation layout drawings. Keep this information for future reference.
3. Check the resistive and inductive loads, make sure they are balanced.
4. Check all wiring to ground, make sure there are no shorts.
5. Make sure the incoming power has a proper ground, and that it is secured to the ground connection of the equipment.

Note: If unbalanced loads or shorts to ground are detected, contact Tem Tech Customer Service immediately. Do not attempt to operate the equipment.

	Warning *Do not test the motor direction with the blades installed. The blade may detach if the flange rotates in the wrong direction.*

6. Jog the motors to ensure the bottoms of the both saw flanges rotate towards the front of the machine.
Note: Use the sticker provided on each motor housing to verify the correct direction of rotation:
• For the left side mount, the flange must rotate clockwise from the open hood door.
• For the right side mount, the flange must rotate counterclockwise from the open hood door.
To jog the motors, ensure the Emergency Stop on the electrical cabinet is pulled out, and then press the Motor Start button. Run the motors for just a second, then stop them again by pushing in the Emergency Stop. Refer to the photograph below.



Buttons on the Electrical Cabinet

Making Pneumatic Connections

1. Refer to the line layout drawing for the correct number and position of pneumatic hook-ups.
Note: Pneumatic hook-ups are identified by a on the drawings.
2. Connect the main air supply to the 1/4” fitting located on air intake side of the filter/regulator/lubricator (FRL). The air supply line should be large enough (3/8” minimum) to prevent any drop in pressure during operation. Refer to the compressed air requirements
3. Set the main filter-regulator to 80 PSI.
4. Fill the lubrication unit of the FRL assembly with a 10/wght air tool oil.
5. Ensure that the air connection from the FRL to the remaining opening on the foot pedal manifold is secured.

Installing the Blades

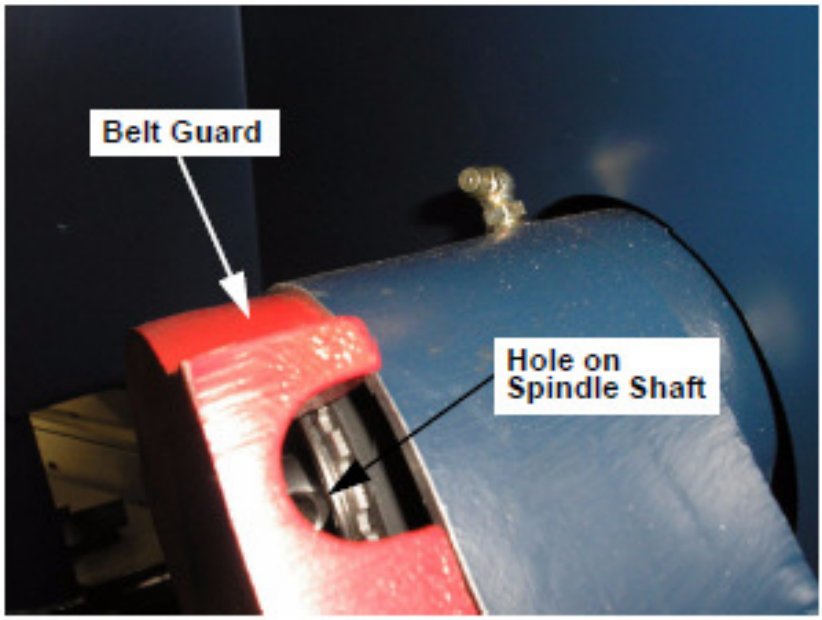
For safety purposes, the machine is shipped without the blades installed. Once the electrical and pneumatic connections have been properly made, you must install the blades.
Note: The following procedure requires the tapered pin and spanner wrench that were included with the machine.
1. Lock-out/tag-out the electrical power to the machine. Retain the air line connection so that the saw heads hold the home position.

Warning

Keep your hands clear of the cutting area of the machine. When the air line is connected, the saw heads and/or clamps can move with full force if activated.

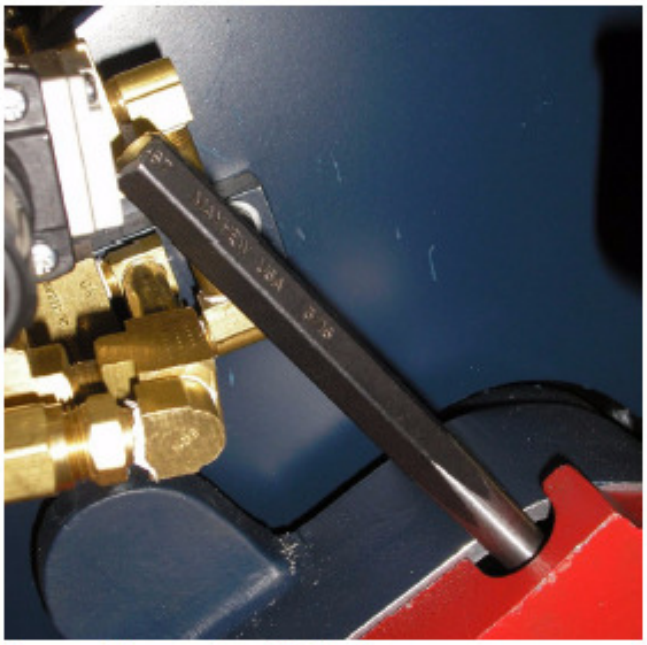
2. Release the latch and open the saw hood or remove the back guards.

3. On the side for which you want to install the blade, manually turn the flange until the hole at the end of the spindle shaft lines up with the hole on the belt guard. Refer to the photograph below.



Lining Up Spindle Shaft and Belt Guard Holes

4. Insert the tapered pin into the hole at the end of the spindle shaft, as shown in the photograph below. The belt guard and the pin will hold the spindle shaft in place while you loosen the flange nut.



Inserting Pin into Spindle Shaft

5. Remove the flange nut using the spanner wrench, as shown in the photograph below. To loosen the flange nut:
• Turn clockwise for the left side mount.
• Turn counter-clockwise for the right side mount.
Note: The left side mount is provided with a left-hand threaded shaft; the right side mount, a right-hand threaded shaft.

Removing the Flange Nut

6. Install the blade so that the teeth at the bottom point towards the front of the machine.
7. Replace the flange nut and lock it in place using the spanner wrench. To tighten the flange nut:
• Turn counter-clockwise for the left side mount.
• Turn clockwise for the right side mount.
8. Remove the tapered pin from the spindle shaft.
9. Repeat Steps 3 through 8 for the other blade. When you are finished installing the blades, latch the saw hood or replace all guards.

Testing the Installation

As a final check of the installation, Tem Tech recommends that you test the machine to ensure the following:

- The pneumatic and electrical connections have been correctly made.
- The blades have been properly positioned.

DANGER

Before performing this procedure, ensure that the flange is rotating in the correct direction, as described in Step 6 of "Making Electrical Connections"
If the flange rotates in the wrong direction with the blade installed, the blade may detach from the flange while it is spinning.

1. Ensure the pneumatic drop is connected to the FRL on the machine.
2. Lock-out/tag-out the electrical power to the machine.
3. Release the latch and open the saw hood.
4. Press the clamps test switch (located on the saw hood on the loading side of the machine) and hold it down.
Verify that the clamps extend towards the front fence.
5. Press the foot pedal.
Verify that the clamps extend before the blades lower.
As the blades lower, verify that they clear each other, the saw hood, and the front fence throughout the entire stroke.
6. Release the clamps test switch.
Verify that the clamps retract into the home position.
7. Close the saw hood and secure the latch.
8. Press the foot pedal to run a cycle.
Verify that both blades lower.
9. Release the foot pedal.
Verify that both blades rise and return to the home position.
10. Remove the lock-out/tag-out to the machine electrical power.
11. Ensure the Emergency Stop is pulled out, and then press the Motor Start button to start the motors.
Verify that both blades spin.
12. Push the Emergency Stop.
Verify that the motors turn off. The installation test is complete.

Operation

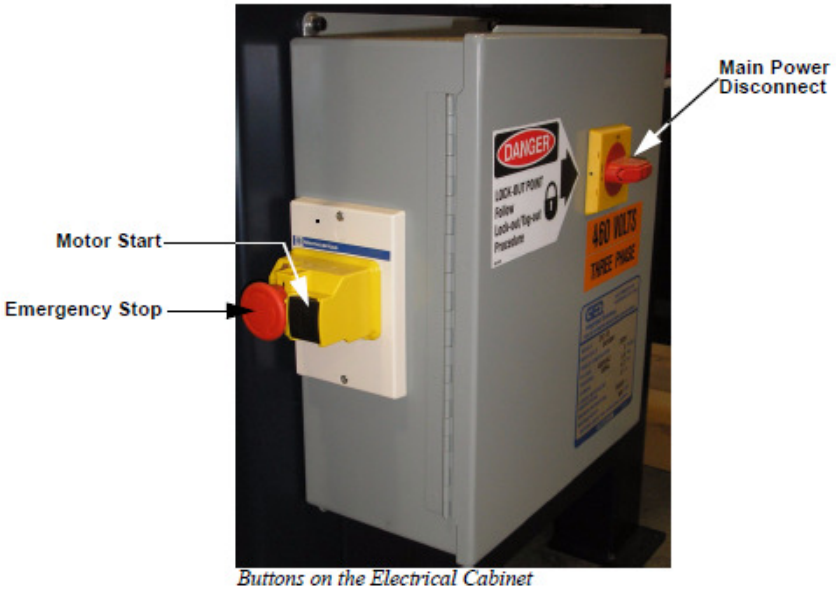
Switches and Controls

Emergency Stop - Push in to turn off the saw motors. To allow the motors to be re-activated, turn the Emergency Stop button a quarter to the right and then pull it out. The Emergency Stop button is located on the front side of the electrical cabinet.

	***Caution*** *When the Emergency Stop is pressed, the blades will continue to spin until they run down. Do not remove the safety guards until the blades have stopped spinning.*

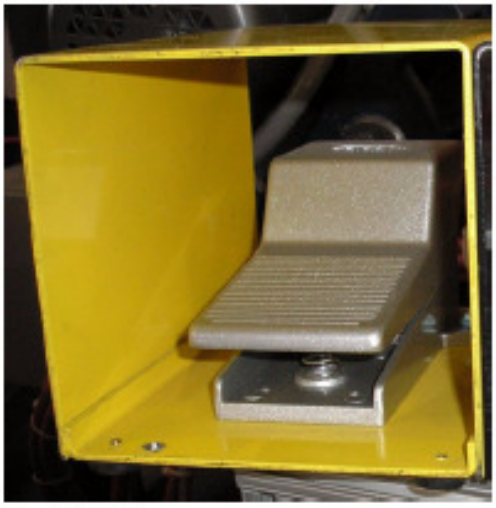
Motor Start - After pulling out the Emergency Stop, press the Motor Start button to activate the saw motors. The Motor Start button is located on the front side of the electrical cabinet next to the Emergency Stop.

Main Power Disconnect - The Main Power Disconnect switches the incoming voltage supply ON and OFF. It is located on the door of the electrical cabinet. Turning the switch to the OFF position allows you to unlatch and open the enclosure door on which the disconnect is mounted. This is the lock-out/tag-out point for the machine.



Buttons on the Electrical Cabinet

Foot Pedal - Press the foot pedal to lower the blades to the material and release the foot pedal to return the blades to the home position. If your machine has clamps installed, the clamps extend before the blades lower and retract after the blades return to the home position. The foot pedal has a yellow foot guard and should be located next to the machine on the operator side.



Foot Pedal

Clamps Test (Optional) - Press the Clamps Test button to extend the clamps for testing and adjustment purposes. The Clamps Test button is a pneumatic control mounted on the saw hood on the right side of the machine. For safety purposes, you should test the clamps at the beginning of each shift before operating the machine.

	***Caution*** *For instructional purposes, the MN is shown below with the back guard removed. ALWAYS lock-out/tag-out the electrical power to the machine before removing the back guard or any other guard on the machine.*

Operating the Saw

	***Warning*** *Do NOT attempt to operate the equipment unless ALL safety guards and devices are in place and working properly. ALWAYS wear appropriate safety gear. Keep your hands clear of the cutting area while the machine is operating.*

Before operating the saw, ensure the following:
• The main filter/regulator/lubricator (FRL) is set to 80 PSI.
• The clamps pressure gauge is set to 30-40 PSI.
• The correct fixture blocks and/or clamp pads are installed. Refer to “Installing Fixtures” on page 3-5.
• All safety guards are in place.
• You are wearing all appropriate safety gear, such as eye and hand protection.

To operate the saw:
1. Turn the Main Power Disconnect to ON.
2. Ensure that the Emergency Stop button is pulled out.
3. Press the Motor Start button.
4. Load the material into the in-feed end of the machine. If your machine is not equipped with clamps, hold the material against the front fence to minimize the amount of scrap removed from the material between the two miter cuts.

Note: Unless indicated otherwise, material loads into the standard MN Series saw from either end of the machine. However, your machine may be customized to load from the right or the left side. The in-feed side has a longer fence than the exit side.

5. Press and hold the saw foot pedal to begin a cycle.
The clamps extend to secure the material against the front fence. Then, the saws lower and cut the material.
6. Release the foot pedal.
The saws return to the home position, and then the clamps release.
7. Remove the material from the exit end of the machine.
8. If you are cutting additional material, load it into the in-feed end of the machine and repeat Steps 5 through 7. Otherwise, turn off the saw motors by pushing the Emergency Stop button.

Maintenance

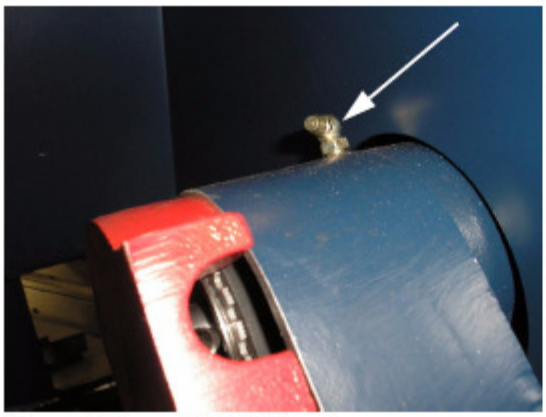
This chapter describes how to maintain, troubleshoot, setup and adjust your MN Series saw.

Periodic Maintenance Table

To keep your MN Series saw in optimal condition, it is necessary to perform the periodic maintenance described in this section.

	***Caution*** *Unless indicated otherwise, lock-out/tag-out the electrical power to the machine and disconnect the air line when performing any type of maintenance.* *Contact with moving machinery can cause severe injury or even death.*

Maintenance Item	Time Interval
Clean the machine and saw table. Remove all chips and scraps from the work surface and all moving parts.	Daily
Check for any loose bolts, nuts, or fittings. Tighten these appropriately.	Daily
On the FRL (filter/regulator/lubricator): • Drain water from incoming air filter. • Check oil level of lubricator. If necessary, fill. Drip rate should be set to one drop per every 3-6 cycles. Turn to set drip rate.  *FRL Maintenance*	Daily

Maintenance Item	Time Interval
Grease spindle bearings approximately every 200 hours of operation. There is a grease fitting on each spindle housing on both sides of machine.  *Grease Fitting on Spindle Housing*	Monthly
Check the belts for wear or damage. Replace, if necessary.	Monthly
Inspect and test the blades. Replace or sharpen, if necessary.	Monthly
Replace belts after approximately 12,000 hours of operation.	Every Five Years

Setup and Adjustment

Warning

Serious injury or death can be caused by the following:

- *Sudden, unexpected startup of the machinery or equipment.*
- *Contact with live electrical circuits.*
- *Unexpected release of stored energy.*

Whenever you work on, service or perform maintenance on this equipment, always observe and practice OSHA standards for controlling hazardous energy sources.

- *Use lock-out/tag-out procedures to prevent unexpected startup and release of stored energy.*
- *Use block-out procedures to prevent the physical movement of machinery or equipment.*

Adjusting the Cushion Control

The cushion control, shown in the photograph below, reduces the speed of the saw heads as they travel the last half inch to the home position. To adjust the cushion control, loosen the nut on the cushion control screw, and then turn the screw:

• Clockwise to increase the cushion.
• Counter-clockwise to decrease the cushion.

Note: Setting the speed of the upward stroke too slow will prevent the saw heads from returning to the home position.On a machine with clamps, the clamps will not retract because the actuating screw on the saw hood will not trigger the clamps switch.

Cushion Control on the Saw Cylinder

Adjusting Saw Lowering Speed

The flow control, shown in the photograph below, regulates the downward stroke speed of the saw heads. You can adjust the flow control by loosening the lock nut, and then turning the knurled knob:

• Clockwise to decrease the speed of the downward stroke.
• Counter-clockwise to increase the speed of the downward stroke.

Flow Control on the Saw Cylinder

Replacing the Spindle Bearings

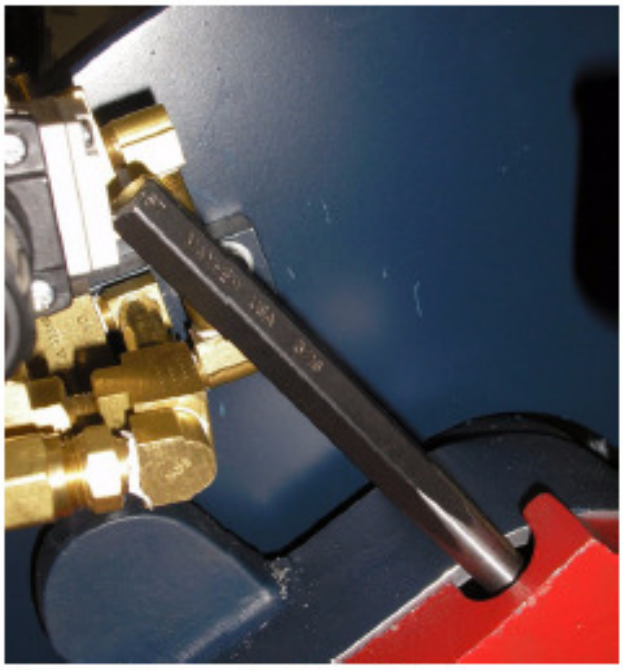
Proper maintenance, such as greasing approximately every 200 hours of operation, will greatly increase the longevity of the spindle bearings on your machine. With diligent maintenance practices, you should rarely need to replace the spindle bearings.

Note: When ordering new bearings, also purchase a new spacer. Removing the bearings from the spindle often crushes or misshapes the spacer.

1. Lock-out/tag-out the electrical power to the machine. Retain the air line connection so that the saw heads hold in the home position.

	***Warning*** *Keep your hands clear of the cutting area of the machine. When the air line is connected, the saw heads and/or clamps may lower with full force if activated.*

2. Remove the back guard. Release the latch and open the saw hood.
3. On the side for which you want to replace the spindle bearings, manually turn the flange until the hole at the end of the spindle shaft lines up with the hole on the belt guard.
4. Insert the tapered pin into the hole at the end of the spindle shaft, as shown in the photograph below. The belt guard and the pin will hold the spindle shaft in place while you loosen the flange nut.

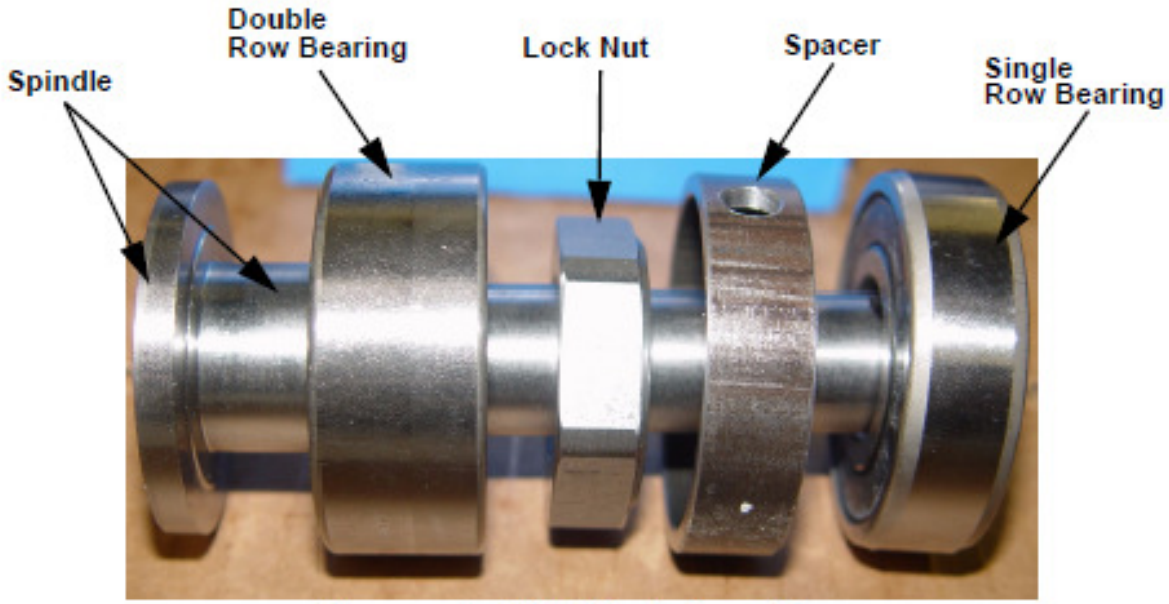


Inserting Pin into the Spindle Shaft

5. Remove the flange nut using the spanner wrench. To loosen the flange nut:
• Turn clockwise for the left side mount.
• Turn counter-clockwise for the right side mount.
Note: The left side mount is provided with a left-hand threaded shaft; the right side mount, a right-hand threaded shaft.
6. Remove the blade.
7. Remove the two socket head cap screws from the belt guard with a 5/16” allen wrench, and then remove the belt guard.
8. Remove the belt.
9. Unscrew the two set screws on the tapered lock. Then, screw one of the set screws into the middle hole to push the tapered lock out of the spindle housing. Refer to the photograph below.

Removing the Tapered Lock

10. Remove the key from the keyway in the shaft.
11. Using an allen wrench, loosen the brass tip set screw located at the front of the spindle housing.
12. Remove the retaining nut using the forked end of the spanner wrench.
13. Use a soft hammer to tap the spindle assembly out of the housing. As shown in the photograph below, the spindle assembly includes the following components:
• The spindle
• Double row bearing
• Lock nut
• Spacer
• Single row bearing



Components of the Spindle Assembly

14. Remove the single row bearing. The spacer slides off, revealing the lock nut.
15. Unscrew and remove the lock nut.
16. Press off the double row bearing.
17. Before installing the new bearings, remove the inner cover from each bearing and discard it. Reassemble the spindle assembly using the new bearings and any other new spindle components as required.

Note: Ensure the spacer is not too tight. It should move from side to side with little effort.

18. Insert the spindle assembly into the spindle housing.
19. The remaining re-assembly is the reverse of the disassembly. Refer to Steps 1 through 12 above.
20. Apply grease to the grease fittings.

Replacing the Belts

Once a month, check the belts for wear or damage. With diligent maintenance practices, you should only need to replace the belts once every five years or after 12,000 hours of operation.

1. Lock-out/tag-out the electrical power to the machine and disconnect the air line.
2. Remove the back guard.
3. On the side for which you want to replace the belts, remove the two socket head cap screws from the belt guard with a 5/16” allen wrench, and then remove the belt guard.
4. While turning the spindle manually, roll the belt forward off of both pulleys.

	***Caution*** *Do not loosen the motor on its mount. The cut angle of the blade may become misaligned.*

5. Before attempting to install the new belt, stretch the belt so that you are able to pull it over the front pulley. The belt should fit tightly with 1/2” of flexibility.
6. Turn the spindle manually, and roll the belt back over both pulleys.
7. Replace the belt cover and the back guard.

Troubleshooting Table

The following table lists symptoms along with their possible causes and solutions.

Symptom	Possible Cause	Solution
Blades not making a straight, clean cut.	The saw lowering speed is set too fast.	Decrease the speed of the saw, as described in "Adjusting Saw Lowering Speed" on page 4-5. **Note:** If the blade is forced into material too fast, it flexes when forced into the material. As the blade raises, the machine forces it into the normal (straight) path of travel and the same edge is cut a second time.
	The blade(s) is dull.	Sharpen or replace the blade(s).
Coolant build-up on the blades. *(Pertains only to cutting aluminum material.)*	The flowrate of the Auto Spray Mist is set too high.	Reduce the concentration of coolant sprayed on the blades, as described in "Using the Auto Spray Mist" on page 3-7.
Pieces of material coming off the saw too hot. *(Pertains only to cutting aluminum material.)*	The flowrate of the Auto Spray Mist is set to low.	Increase the concentration of coolant sprayed on the blades, as described in "Using the Auto Spray Mist" on page 3-7.
	The blade lowering speed is set too fast.	Decrease the speed of the saw, as described in "Adjusting Saw Lowering Speed" on page 4-5.
Jerky motion or inconsistent speed from saw cylinder.	The lubricator on the FRL is dry.	Fill with a 10/wght air tool oil.
	The air line has become too dry from running saw without oil in the lubricator on the FRL.	Disconnect the air line from the cylinder and inject oil directly into the cylinder. or Open the drip rate valve fully to over-lubricate the air line. If the condition clears, reset the drip rate to one drop per every three cycles.
	There is too much tension at the pivot point on one of the saw heads.	Adjust the tension at the pivot point of the saw head, as described in "Adjusting the Tension at the Saw Head Pivot Point" on page 4-12.

Symptom	Possible Cause	Solution
Constant air flow from exhaust port on foot pedal ("blow-by").	The lubricator on the FRL is dry.	Fill with a 10/wght air tool oil.
	The lubricator drip rate on the FRL is set too low.	Set to add one drop to the air lines per every three cycles of the saw.
	The air line has become too dry from running saw without oil in the lubricator on the FRL.	Open the drip rate valve fully to over-lubricate the air line. If this clears the condition and the machine is running smoothly, reset the drip rate to one drop per every three cycles.
	The seal is worn.	Replace or rebuild the saw cylinder.
Clamps will not retract.	The actuating screw on the saw hood is not triggering the clamps switch because the cushion control is set too slow.	Increase the speed of the cushion control, as described in "Adjusting the Cushion Control" on page 4-4.
Clamps firing late.	The clamps pressure is set too low.	Set the clamps pressure to 30-40 PSI.