



Operations Manual for TM-403 MOLINO MASTERS

For service on your MOLINO MASTERS

1. Visit our website at www.tortillamasters.com
2. Or call our Service Department at 281-994-7010 and request information for your local service company

IMPORTANT SAFETY NOTICE

This manual contains important safety instructions which must be strictly followed when using this equipment

Visit our website for information on additional products available at Tortilla Masters Equipment

www.tortillamasters.com

Tortilla Making Equipment for the Hospitality Industry

Rev 25

INDEX

ATTENTION OWNERS AND OPERATORS.....	3
KEY COMPONENTS OF THE GRINDER.....	4
INSTALLATION AND INITIAL SETUP.....	5
OPERATIONS INSTRUCTIONS.....	6
ASSEMBLY.....	8
DISASSEMBLY.....	9
WATER SYSTEM ASSEMBLY.....	10
CLEANING AND SANITIZING.....	11
MAINTENANCE.....	12
ELECTRIC DIAGRAM.....	13
TROUBLESHOOTING.....	14
LIMITED GRINDER WARRANTY.....	15
HOW TO COOK NIXTAMAL.....	16

ATTENTION OWNERS AND OPERATORS

This equipment is designed to provide safe and productive processing of food products, provided it is used following the instructions in this manual and is properly maintained. Importantly, unless the operator is adequately trained and supervised, serious injury is a possibility. Owners of this equipment bear the responsibility to make certain that this equipment is used properly and safely and to strictly follow all the instructions contained in this manual and the requirements of local, state, or federal law.

Owners should not permit anyone to operate this equipment unless they are at least 18 years old, adequately trained and supervised, and have read and understood this manual. Owners should also ensure that no customers, children, visitors, or other unauthorized personnel come in contact with this equipment. Please remember that we cannot anticipate every circumstance or environment in which our equipment will be operated. It is the responsibility of the owner and the operator to remain alert to any hazards posed by the function of this equipment and all moving parts. If you are ever uncertain about a particular task or the proper method of operating this equipment, ask your supervisor.

Properly cleaning and sanitizing the entire Molino Masters is important to prevent illness caused by the spread of foodborne pathogens, as any surface of the grinder can become contaminated. The Molino Masters owner/operator is responsible for following all guidelines, instructions, and laws established by local and state health departments and chemical sanitizer manufacturers.

When cleaning your Molino Masters, pay particular attention to cracks, broken seams, and any area that may collect food debris. If your Molino Masters or any of its parts are damaged or broken, it may become more difficult to clean and sanitize the unit properly. If your Molino Masters is damaged or needs repair, contact an experienced service individual immediately to ensure the Molino Masters can be properly sanitized. If you have any questions, please contact Tortilla Masters Equipment at 281-994-7010.

Throughout the manual, you will see warnings to help alert you to potential hazards and promote the safe use of this equipment.

Warnings affecting your personal safety are indicated by:



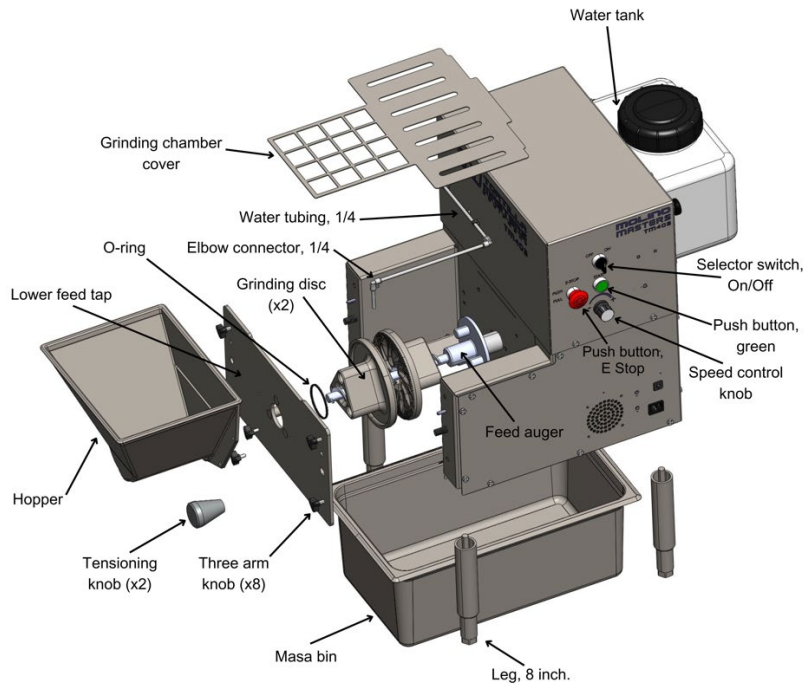
Warnings related to possible damage to the equipment are indicated by:



Ensure that the instruction manual is available for easy reference by any operator. An English language warning label has been placed on the Molino Masters. French warning labels are available upon request. If the warning label or this manual is misplaced, damaged, or illegible, or if you require additional copies, please contact your nearest representative or the factory directly for these items at no charge.

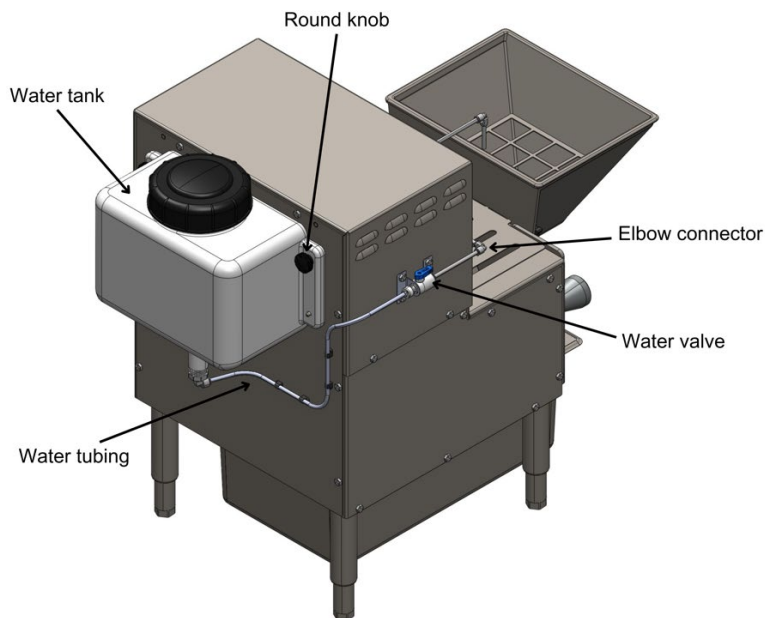
Please remember that neither this manual nor the warning labels replaces the need to be alert, properly trained, and supervise operators, and use common sense when using this equipment.

KEY COMPONENTS OF THE GRINDER



PARTS LIST

PART #	PART DESCRIPTION
TM403-101	Hopper
TMOT-269	1/4"-20 x 1/2" Three Arm Knob
TM403-104	Lower Feed Tap
TMOT-270	Tensioning knob
TM403-708	Grinding Chamber Cover
TM403-205	Feed Auger
TM403-206	Grinding Disc
TM403-209	Masa Bin
TM403-210	Rear Disc Cover
TMOT-257	Leg, 8 Inch.
TMOT-271	Water Tank, 2.5 Gal.
TMOT-272	Water valve, 1/4
TMOT-274	Water tubing, 1/4
TMOT-273	Elbow connector, 1/4
TMOT-279	Round knob, 1/4-20 x 1 3/8
TMEL-112	Push button, E Stop
TMEL-116	Selector switch, On/Off
TMEL-114	Push button, green
TMOT-278	Speed control knob



EQUIPMENT SPECIFICATION

PRODUCTION	140 LBS PER HOUR
MOTOR	1 HP
CAPACITY	1080 W
FREQUENCY	60 Hz
VOLTS	115 V
RPM	90
PHASE	SINGLE

INSTALLATION AND INITIAL SETUP

UNPACKING

Unpack the Molino Masters immediately after receipt. If the machine is found to be damaged, save the packaging material and contact the carrier within fifteen (15) days of delivery. Immediately contact your source of the equipment. You have no recourse for damage after fifteen (15) days.

While unpacking the machine, ensure all of the following components are accounted for.

1 Hopper with four knobs	1 Water tank with two knobs	1 Grinding chamber cover
1 Front plate with four knobs	1 Water valve	2 Grinding disc
4 Water tubing pieces	3 Elbow fittings	1 Auger

Contact the factory or your local supplier if you have not received all these materials.

The unit must be washed before using it for the first time; see the cleaning section for more details.

GROUNDING INSTRUCTIONS

This unit must be grounded to protect the operator from electrical shock. It is equipped with a 3-conductor cord and a 3-prong grounding-type plug to fit the proper grounding-type receptacle.

WARNING

TO AVOID SERIOUS PERSONAL INJURY

- PROPERLY INSTALL THE MACHINE IN A SUFFICIENT WORK AREA
- ALWAYS install equipment in a work area with sufficient light and space.
- ONLY operate on a solid, level, nonskid surface.
- NEVER bypass, alter, or modify this equipment in any way from its original condition. Doing so can create hazards and will void the warranty.
- NEVER operate the Molino Masters without the Grinding Chamber Cover securely installed.
- NEVER operate the Molino Masters without all warnings attached.

INSTALLATION

- Read this manual thoroughly before installing and operating it. DO NOT continue if you have questions or do not understand the manual. Contact your local representative or the factory first.
- Verify that the electrical installation meets the required equipment specifications.
- Place the equipment on a flat surface with sufficient space around the Molino Masters for safe cleaning and service.
- Begin by securely attaching the legs to the base.
- Plug only into grounded electrical outlets matching the nameplate-rated voltage. Do not use an extension cord with this equipment or plug it into a power strip or multi-outlet power cord.
- Select a location for the Grinder with a level, solid, non-skid surface and a well-lighted work area away from children and visitors.
- Use at least two people to move the Molino Masters to its operating location. Never attempt to lift the Molino Masters alone.
- Complete the warranty registration online <https://www.tortillamachine.com/resources/warranty/index.html>
- Clean Molino Masters before use.
- Wear proper apparel. Do not wear loose-fitting or hanging garments while operating this equipment.
- Do not spray controls or outside equipment with liquids or cleaning agents.
- Keep equipment and power cords away from open flames, electric burners, or excessive heat
- **DO NOT OPERATE WITHOUT INGREDIENTS IN THE HOPPER.**

OPERATING INSTRUCTIONS

DAILY CHECKUP BEFORE STARTING

- Make sure the E-Stop is in the pull position
- Make Sure the Masa Bin is in place
- Turn the speed dial to low speed
- Add water to the water tank
- Add Nixtamal to the hopper
- Do not overtighten the Grinding adjustment knobs.

WATER VALVE ADJUSTMENT

The water valve is located on the left side. Turn the water valve handle to the horizontal position to open the water flow. A steady, slow flow is recommended for the best results.

OPERATION

1. Loosen the tensioning knob until the grinding wheels lightly touch each other.
2. Add nixtamal to the hopper.
3. Add water to the water tank.
4. Turn the speed control knob to a low setting.
5. Turn the selector switch to the ON position.
6. Press the Green Button to start grinding.
7. Turn on the water valve to begin the water flow.
8. Wait until some masa has been ground, stop the machine, and close the water valve.
9. Adjust the tensioning knob to control the fineness of the masa required.
10. Remove the masa from the bin and check if it is the right consistency.
11. Repeat steps 5-9 until you achieve the desired masa consistency.
12. Once you have the masa at the desired consistency, slowly increase the speed to the desired setting.
13. Continue feeding nixtamal to the hopper as needed.
14. Collect masa from the masa bin.
15. ⚠ **Do not let the grinder run without nixtamal.**

KEY ELEMENTS IN GRINDING QUALITY PRODUCT

The Molino Masters can grind at 120 to 140 pounds per hour, provided the Grinding Discs are in good condition.

To prolong the unit's life and ensure a high-quality product, please follow these guidelines:

- Periodically verify that both grinding wheels have well-defined grooves.
- Ensure the unit is free of food debris.
- Keep the unit clean and sanitary when not in use.
- Keep the tension of the grinding disc firm but not too tight. Over-tightening can lead to motor wear.
- Follow lubrication instructions on page 12.

ADDITIONAL ACCESSORIES

(Not included)



NIXTAMAL WASHER



GREASE GUN

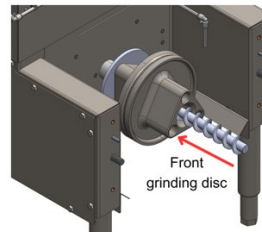
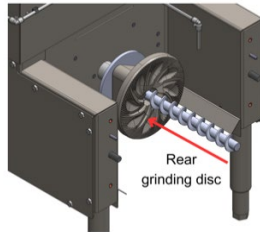
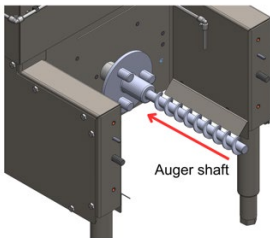


GRINDING DISC BRUSH

GRINDER ASSEMBLY

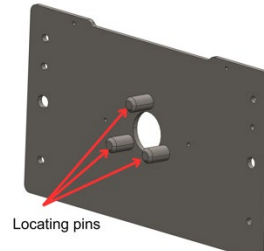
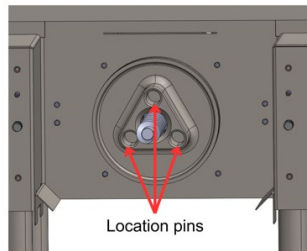
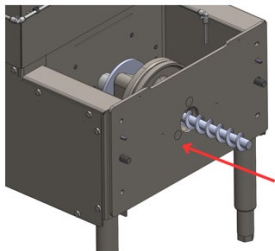
Insert Auger Shaft and Grinding Discs

- Insert auger shaft onto the motor shaft, ensuring it completely bottoms out.
- Place the rear grinding disc onto the auger shaft.
- Place the front grinding disc onto the auger shaft.



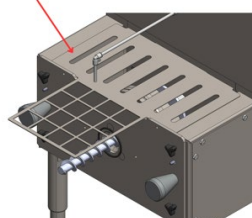
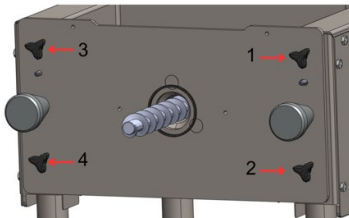
Install Front Plate

- Slide the front plate into position, making sure to have the pins locate the plate properly.
- The front grinding disc should fit onto the locating pins on the back of the plate.



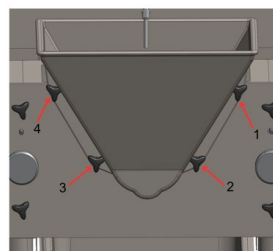
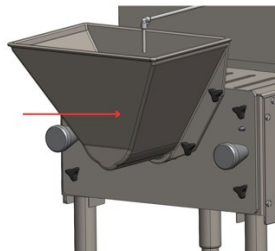
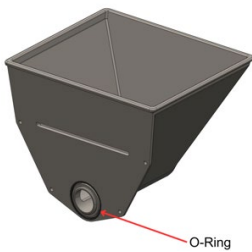
Secure Front Plate / Cover Plate

- Tighten the 4 knobs (1-4) as well as the 2 tensioning knobs (5-6).
- Place the top cover plate in position – there are no fasteners



Install Hopper to the Front Plate

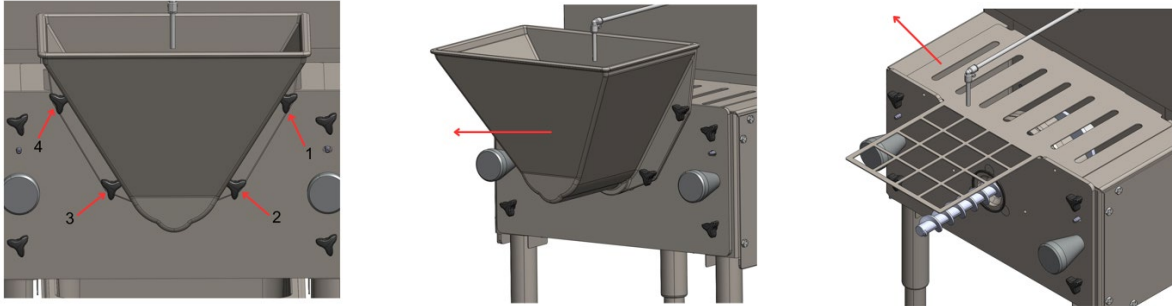
- Make sure the O-Ring is still in the channel on the back of the hopper
- Slide the hopper onto the unit
- Tighten the 4 knobs (1-4)



GRINDER DISASSEMBLY

Remove Hopper Fasteners / Hopper / Top Cover Plate

- Remove the 4 knobs (1-4) holding the hopper to the front plate.
- Remove the hopper by sliding it forwards.



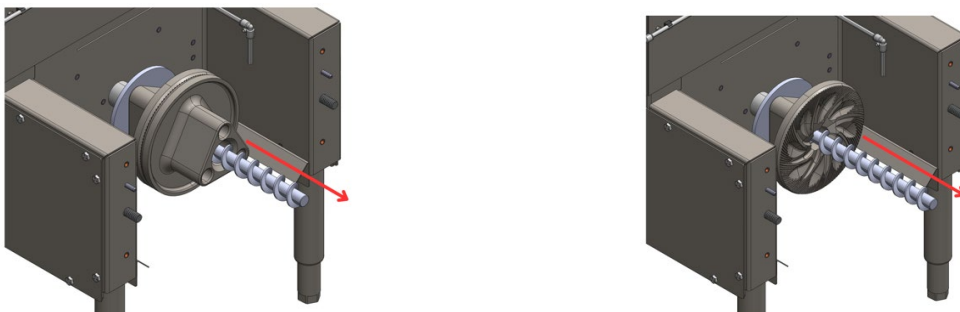
Remove Front Plate Fasteners / Front Plate

- Loosen and remove the 4 knobs (1-4) as well as the 2 tensioning knobs (5-6) on the front plate.
- Once all the fasteners are removed, slide the front plate off the unit



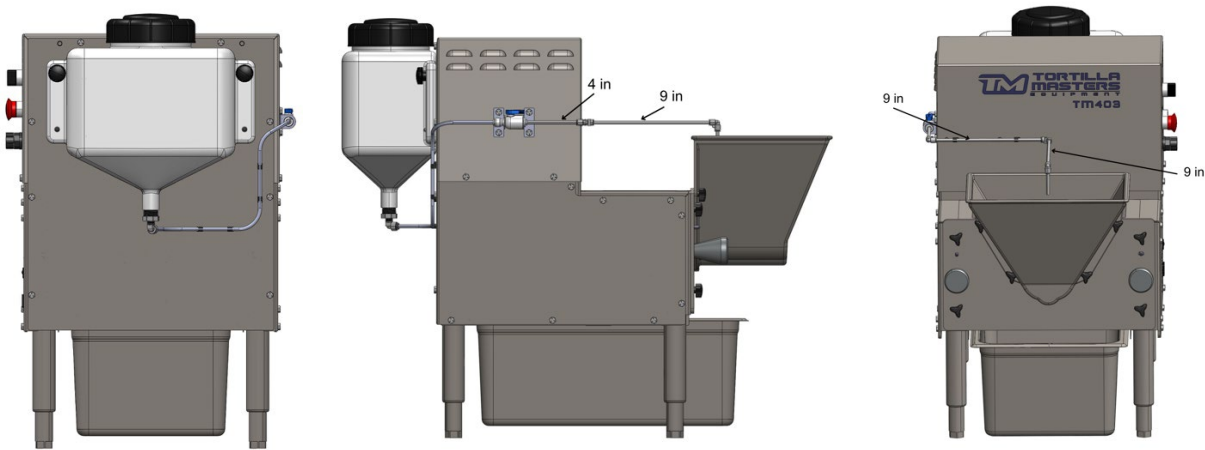
Remove Grinding Discs / Auger shaft

- Remove the front grinding disc by pulling it off the auger shaft
- Remove the auger shaft and rear grinding disc together by pulling them off the motor shaft.

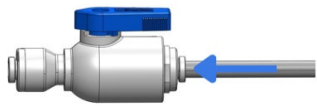


WATER SYSTEM ASSEMBLY

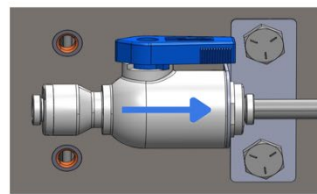
- Start the assembly by installing the water tank
- Follow the tubing size guide to see the assembly order



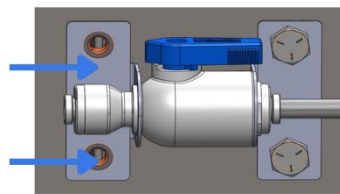
TUBING INSTALLATION



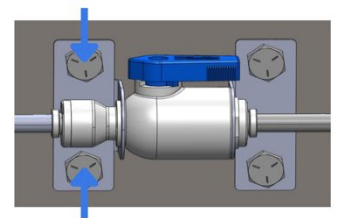
WATER VALVE INSTALLATION INSTRUCTIONS



1 Insert the valve into the bracket



2 Insert the bracket into the valve

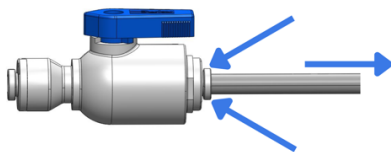


3 Secure the bracket with the two bolts

WATER SYSTEM DISASSEMBLY

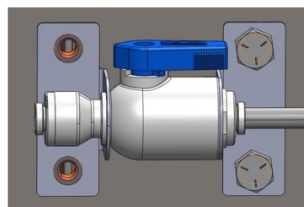
- Remove the tubing from the elbow and water valve; see Fig. A
- Remove the brackets from the water valve; see Fig. B
- Unscrew the two knobs to remove the water tank

TUBING DISASSEMBLY



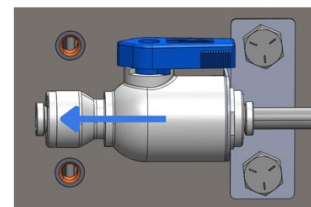
Push the socket against the fitting and pull the tube

WATER VALVE UNINSTALL INSTRUCTIONS



1 Remove the bolts from the bracket

Fig. A



2 Remove the valve by pulling it off

Fig. B

CLEANING AND SANITIZING



TO AVOID SERIOUS PERSONAL INJURY:

BEFORE CLEANING, SERVICING, OR REMOVING ANY PARTS, always turn the Molino Masters OFF and unplug the unit. NEVER attempt to clean the Molino Masters while it is in operation.

CAUTION

- DO NOT put components in the dishwasher or immerse the base in water.
- Dilute detergent per the supplier's instructions. Do not use products containing sodium hypochlorite on the grinder.
- DO NOT hose down, pressure wash, or pour water on Molino Masters.
- NEVER use a scrubber pad, steel wool, or abrasive material to clean the grinder.

WARNING

Properly cleaning and sanitizing the entire grinder is important to prevent illness or death caused by the spread of foodborne pathogens, as any surface of the Molino Masters can become contaminated. It is the responsibility of the Molino Masters owner/operator to follow all guidelines, instructions, and laws as established by your local and state health departments and the manufacturers of chemical sanitizers.



Once your Molino Masters comes into contact with food products, the entire Unit, including removable parts, must be thoroughly cleaned and sanitized. Use these procedures and information, and comply with additional laws from your state and local health departments.

As with all food-contact surfaces, it is essential to sanitize the entire Unit properly and follow the instructions on your quaternary sanitizer container to ensure proper sanitation and kill potentially harmful bacteria.

CAUTION

DO NOT hose down, pressure wash, or pour water on Molino Masters.

NEVER use a scrubber pad, steel wool, or abrasive material to clean the grinder.

Always turn the grinder off and unplug the power cord before cleaning.

It is essential to follow the instructions on the sanitizer container to ensure proper sanitation.

Allow the parts to air dry before placing them back on Molino Masters.

CLEANING AND SANITIZING

- Ensure the Molino Masters is turned off and unplugged.
- Disassemble the main components, as shown on page 9.
- Wash all parts that have come in contact with food in hot, soapy water. BE SURE TO CLEAN IMMEDIATELY AFTER USE. DO NOT IMMERS THE MOTOR IN WATER OR OTHER LIQUIDS.
- Rinse the Molino Masters parts with clean hot water, then dry them immediately.
- Note: Do not store Grinding Discs while they are wet.
- Thoroughly lubricate the Grinding discs with food-grade mineral oil after cleaning.
- Clean the Grinder Chamber with a damp towel and wipe dry.
- Clean the Motor Housing with a damp towel and wipe it dry. DO NOT IMMERS THE MOTOR IN WATER OR OTHER LIQUIDS.

STAINLESS STEEL CLEANING

- Fingerprints: Clean the surface with detergent. Apply the solution using a soft, non-abrasive cloth, and then wipe it away with a damp sponge.
- Grease marks: Combine clean water with white vinegar. Apply the mixture using a soft, non-abrasive cloth, then wipe it off with a damp sponge.
- Watermarks: Use tap water and apply with a soft sponge. Prevent drying marks by using an air blower or wiping with clean, disposable wipes.
- Dirt and Debris: Wash the surface with liquid soap. Apply the solution using a soft, non-abrasive cloth, and then use a damp sponge to remove it.
- Rust stains: For removable parts, clean the surface with a CLR (calcium, lime, and rust remover) type cleaner. Use acid-free and recommended solutions. Apply with a soft, non-abrasive sponge. Rinse the surface thoroughly with clean water.

MAINTENANCE

- This equipment is designed to have minimal maintenance, but it is essential to check the following:
- Verify that both grinding discs have well-defined grooves. They must be replaced after a certain period of use, or if you notice, the quality of the ground masa has deteriorated and is no longer as fine as before.
- Replace the Grinding Discs when the assembly becomes loose.
- If the power cord or the plug is damaged, it must be replaced by an authorized service technician or qualified personnel to avoid the risk of electrical shock.
- Lubricate the bearing at the Tension Bar Bearing Support at the end of the Motor shaft using a grease gun.
- Thoroughly lubricate the Grinding discs with mineral oil after each use.

LUBRICATION



- 1.- Remove the rear cover and lubricate the housing bearing on the motor-shaft end.
- 2.- Lubricate the metal grinding disc with mineral oil.

CIRCUIT BREAKERS INSTRUCTIONS

The Molino Masters is equipped with a circuit breaker as a safety precaution. If the unit stops running, follow these steps:

1. Turn the Unit to the OFF position
2. Check the Unit to see if there is a jam on the grinding Discs. If there is, the jam must be cleared by removing the Grinding Discs.
3. Press the Circuit Breaker Reset Button.
4. Turn the Unit back on and resume grinding.

If the Grinder still does not turn on, check that the electrical wall outlet works properly. Plug in another appliance to see if that appliance works from the wall outlet. Check that the household circuit breaker has not been tripped. If none of the above steps remedy the situation, or if the Circuit Breaker repeatedly shuts off the Grinder, contact customer service for further assistance.

WARNING! DO NOT continue to use the Grinder if the Circuit Breaker trips repeatedly. Continued use may cause permanent damage to the Grinder.

GRINDING TIPS

- DO NOT over-tighten the Grinding Discs. They should be firmly tight.
- Ensure the Front Grinding Disc is flat against the Front Plate.
- DO NOT operate the Unit without Corn in the Hopper.

COOKING AND PREPARING NIXTAMAL

Ingredients

Corn for tortillas: 20 pounds

Water: About five inches above the corn level.

Cal / Lime / Calcium hydroxide: 1%

Cooking the corn

- To start, gather a container and pour two quarts of water into it. Next, add the cal and stir thoroughly until it's fully dissolved.
- Transfer the corn and water into a stock pot, then incorporate the cal mixture.
- Set the heat to medium-high. For optimal cooking, remember to stir the corn every ten minutes.
- After about 40 minutes, take a kernel of corn and gently rub it between your fingers to see if the skin peels away easily. You can also take a small bite to evaluate the texture.
- Continue checking the corn every ten minutes until it reaches an al dente consistency, which usually takes an additional 5 minutes after boiling.
- Once the corn is ready, turn off the heat and let it sit in the hot water for 8-12 hours to complete the cooking process.

Washing the corn

Drain the nixtamal into a colander and rinse. Rub it until 70-80% of the skin is removed, ensuring that 20-30% of the skin is left for better masa bonding. Failing to wash the nixtamal can hinder the performance of the TM403 Molino Masters.

Grinding

See page 6 of this manual.

Masa Mixing

After grinding, mixing the masa is key for a consistent texture. Use an electric mixer for 2 to 3 minutes, aiming for a wet but not sticky consistency. Gradually drizzle water while mixing, but avoid adding too much to prevent tackiness. If your masa turns too tacky, let it dry or mix in some masa harina. This is also a good time to add optional spices or seasonings.

Some variables

Try to avoid using metal utensils besides the stock pot. For example, use a glass or plastic container to make the cal mixture, stir the mixture with a wooden spoon, and transfer the cooked corn into plastic containers. Additionally, you can pause the cooking process by adding ice, allowing the nixtamal to retain its perfect form, color, and aroma.

This approach will effectively preserve the natural flavor of the nixtamal.

Once you feel that you have **Masters** the nixtamalization process, you can cook the nixtamal at high heat.

Not all the corn is the same!

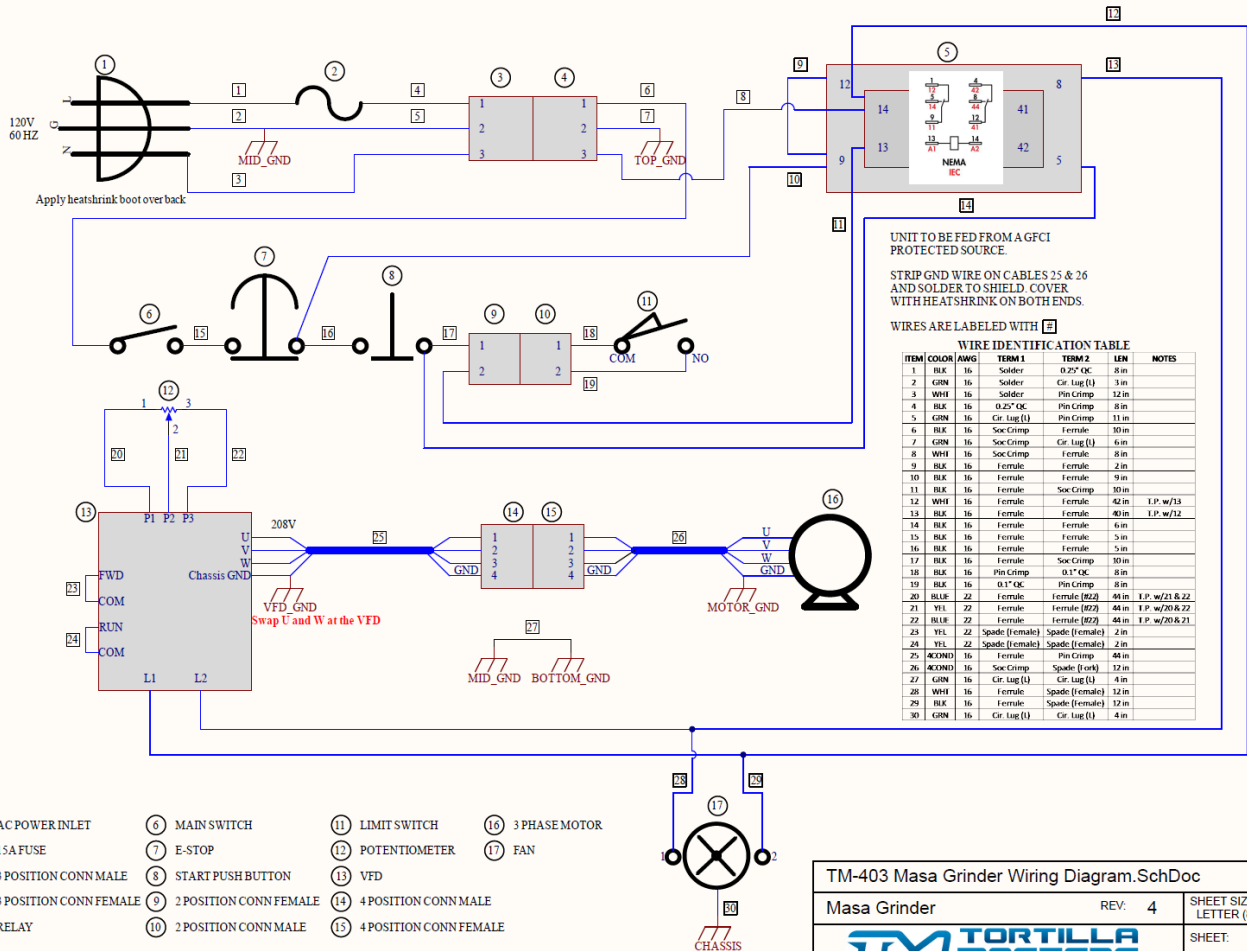
For instance, blue corn typically requires less cooking time compared to yellow or white varieties.

You might want to begin using a specific variety of corn, such as yellow or white. Mastering the nixtamalization process will take some time, but once you're comfortable with it, you can start experimenting with other types of corn.

Now we're getting down to business, *embrace your role as a Tortilla Masters* and elevate your culinary game!

ELECTRIC DIAGRAM

PERFECT MOLINO WIRING DIAGRAM



TROUBLESHOOTING

During grinding, the masa is not smooth or fine.	*The Grinding tensioning knob is not correctly adjusted	*Turn the Grinder Grinding tensioning knob clockwise to get more grinding pressure
	*Worn-out grooves on the Grinding wheels	*Replace with a new pair of grinding wheels
	*The nixtamal is undercooked	*Follow instructions on how to make nixtamal on page 13
	*The corn is not suited for nixtamalization or is not well nixtamalized	*Use a proper corn for tortillas and/or follow instructions on how to make nixtamal on page 13
Sticky masa is being discharged	*The Nixtamal is overcooked	*Follow instructions on how to make nixtamal on page 13
	*The Grinding tensioning knob are overtightened	*Follow instructions for Grinding Disc Adjustment on page 6
During Grinding, the Molino Masters make a metal grinding noise	*The Auger is bent	*Replace with a new Auger
	*The Hopper is out of shape	*Replace with a new Hopper
	*The Hopper is not correctly installed	*Make sure the four knobs are installed on the Hopper, and it is flush against the front plate
	*The Bearing at the end of the Motor Shaft is not lubricated	*Lubricate the bearing as recommended on page 12
	*The unit is working without ingredients	*Add ingredients to the Hopper
The Circuit Breaker continuously trips	*Insufficient current due to the use of an extension cord	*Plug the unit directly into an outlet. Do not use an extension cord
	*Insufficient current due to overloaded line	*Designate a single line for Molino Masters. Do not use a multi-outlet box
	*The Grinding tensioning knob are overtightened	*Follow instructions for Grinding tensioning knob on page 6
Molino Masters will not start	*The E-Stop is in Pull Position	*Pull the E-Stop and resume operations
	*The motor overload protector is activated	*Push the reset button and follow the Circuit Breaker instructions on page 12
	*No Power	*Check the voltage at the power cord with a voltmeter. The voltage must be 120 volts across the black and white wires
	The Selector Switch, On-Off Switch, or E-Stop is not in working condition	An authorized service technician must replace it
	The Relay is not working.	Turn off and unplug the unit. Replace with a new relay.
	The Variable Frequency Drive (VFD) is not working	An authorized service technician must replace it

LIMITED WARRANTY

Tortilla Masters Equipment LLC warrants to the original purchaser that new equipment, when installed following our instructions within North America and subjected to normal use, is free from defects in material or workmanship for one year on parts (excludes wear/expendable parts). One Year Warranty for Parts and One Year Warranty for Labor, effective from the date of purchase by the original owner.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. TORTILLA MASTERS EQUIPMENT EXPRESSLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR EXPRESSED OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Tortilla Masters Equipment OBLIGATION AND LIABILITY UNDER THIS WARRANTY IS EXPRESSLY LIMITED TO REPAIRING AND REPLACING EQUIPMENT THAT PROVES TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP WITHIN THE APPLICABLE WARRANTY PERIOD. All repairs under this Warranty will be performed by an Authorized Designated Tortilla Masters Equipment Service Location during regular working hours. This warranty does not cover services performed at overtime or premium labor rates. Should service be required at times that typically involve overtime or premium labor rates, the owner shall be charged for the difference between average service rates and such premium rates. IN NO EVENT SHALL TORTILLA MASTERS EQUIPMENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES TO THE BUYER OR ANY THIRD PARTY, INCLUDING, WITHOUT LIMITATION, LOSS OF PROPERTY, PERSONAL INJURY, LOSS OF BUSINESS OR PROFITS OR OTHER ECONOMIC LOSSES, OR STATUTORY OR EXEMPLARY DAMAGES, WHETHER IN NEGLIGENCE, WARRANTY, STRICT LIABILITY, OR OTHERWISE.

This warranty is given only to the first purchaser from a retail dealer. No warranty is given to subsequent transferees.

This warranty does not cover product failures caused by failure to maintain, neglect, abuse, or damage due to excess water, fire, normal wear, improper setup, or use. Periodic maintenance is not covered.

THE FOREGOING WARRANTY PROVISIONS ARE A COMPLETE AND EXCLUSIVE STATEMENT BETWEEN THE BUYER AND SELLER. TORTILLA MASTERS EQUIPMENT NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME ANY OTHER OBLIGATION OR LIABILITY IN CONNECTION WITH SAID EQUIPMENT.

Examples of items not covered under warranty, but not limited to just these items:

1. Acts of God, fire, water damage, vandalism, accident, theft
2. Freight damage
3. Improper installation or alteration of equipment
4. Use of generic or after-market parts
5. Repairs made by anyone other than a Tortilla Masters Equipment designated servicer
6. Lubrication
7. Expendable wear parts. (This includes the tortilla cutter, metal straps, conveyor belt, rollers, wire tensioner)
8. Cleaning of equipment
9. Misuse or abuse

This equipment is intended for commercial use only. Warranty is void if the equipment is installed in other than commercial application. This warranty is applicable only in the 48 contiguous U.S. States.

For Warranty Service Contact: 281-994-7010.