Model:	RMS 6x6 Single Pair Brew Mill
Gear and Sprocket:	Martin S8-47
Bearings:	(3) 1 ¼” Ball Bearing
Cracking Capacity:	1200# per hour (Approximate)

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Lubrication:

All bearings should be greased to purge as often as recommended. Before greasing, grease zerks should be cleaned to prevent contaminants from entering the bearing.

The environment around roller grinder bearings is typically dirtier than standard bearing conditions. As such, using a larger amount of grease to frequently purge the bearings helps to flush out contaminants from the inside of the bearing. While bearings with more grease will run warmer, bearings with contaminants run even hotter and experience much more wear. It is better to replace a depleted grease tube than a bad bearing or the resulting broken roll shaft.

With this in mind - **All bearings on all RMS machines cannot be over greased**. Any excess grease will purge through the seals on the front and rear of the bearing. It is also best to grease the bearing when the machine is running, to ensure the grease is evenly surrounding the circumference of the bearing. According to the manufacturer, a bearing completely full of grease will consequently have slight leakage through the seal of the bearing; and this again is the best protection against contaminate entry.

In dirty environments such as those generated by particle size reduction processes, the manufacturer recommends greasing the bearings to purge daily to weekly. Purge means your bearings are full and all surfaces are touching grease. Your bearing is full when you can see the seal is receiving pressure from the grease. Moderate your greasing-to-purge schedule based upon how extensively you use your machine. For very extensive machine use, say 5 to 8 hours per day, consider greasing to purge daily. Machine use that is limited to a few times per week will warrant a less frequent greasing schedule. As a rule of thumb, if you use your machine weekly, grease the bearings to purge weekly.

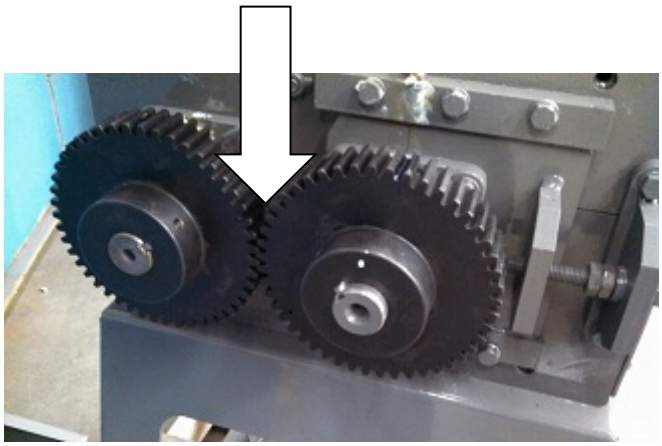
Note: Bearings from RMS come greased and ready for operation.
Bearings directly from the manufacturer should be greased to purge.

Inspect grease lines prior to greasing to make sure none have “blown out”. If you notice a blown out grease line, install a grease zerk directly on the bearing and apply (2) pumps of grease. The bearing may or may not take grease in this case, which is why the grease tube blew out. It is important to monitor the temperature of this bearing until it can be changed, possibly making it to the next roll change. If the bearing takes grease, measure the blown out tube and order a replacement. Replacement parts can be ordered from RMS.

Because of the maximum pressure (PSI) constraints of the RMS grease dispersion system, using a hand-operated grease gun is recommended. If the use of an automatic or pneumatic grease gun is preferred, then it is necessary to insert a pressure reducing valve in-line in between the grease gun and the supply air. We recommend using an adjustable pressure (PSI) type not to exceed 100 lbs. RMS can supply this at the customer's request and expense. Whether manual or automatic greasing is employed, this action should never replace visual inspection of the greased elements as the primary method of determining its effectiveness. We recommend the creation of an inspection procedure to be carried out once a month at a minimum. This procedure will help aid your maintenance team in the identification and resolution of any problems related to greasing, such as a blown out grease line.

Note: RMS suggests any lithium-based NLGI #2 grease such as "Feedmillube" which can be purchased through RMS or online at Feedmillube.com

For every ten hours the machine is in use one squirt of SAE 30 Non-detergent motor oil lubrication is needed. Apply oil at meeting point of the two gears.



Gap Settings at Startup & Roll Re-Alignment:

This mill is equipped with two roll adjustment points. These are located on the front of the machine - see image below. Setting and keeping the roll gaps is essential to target your desired crack. Keeping rolls in parallel is essential for proper wear on the rolls and consistent output.

- **SECTION I**: Starting up the mill for desired crack
- **SECTION II:** To compensate for normal roll wear
- **SECTION III:** In the event foreign material knocks the rolls out of adjustment (out of parallel, see image on next page)

SECTION I: Starting up the mill for desired crack:

Your feed gate should be completely closed with no grain entering the rolls. The guide arms or T.A.S. below the hopper should be set just slightly from touching the rolls. The T.A.S. adjustment bolts can be found on the side of the hopper.

RMS suggests beginning with a roll gap of 1/8", or approximately 2 revolutions of the adjustment bolt.

You can now start up the mill. Once started, slowly open the feed gate by turning the hand wheel adjustment until the max amps or capacity desired is reached.

Note: DO NOT over amp your motors or motor failure will occur. If over amp occurs, close the gate down a half turn until you are back under the max amperage.

SECTION II: To compensate for normal roll wear:

Re-align rolls approximately every week, or whenever the desired micron size cannot be obtained, or full motor amperage cannot be maintained.

1. With the machine running, stop the flow of grain going into the machine.

Important: The machine must be empty before adjusting rolls.

2. Locate the roll adjustment points. (Shown in the picture above)

3. There are (2) adjusting hex nuts per set of rolls. Turning either nut clockwise closes the rolls on the side turned. Counter-clockwise rotation opens the rolls on the side turned.

4. Start by turning the left nut clockwise until you hear the rolls just start to nick each other. Make note of the position of the pointer when the rolls start to nick.

5. Turn the nut back counter-clockwise until the nicking stops.

6. Once again, turn the nut clockwise but stop turning just short of where the rolls start to nick. The idea is to leave the nut set in the direction of closing the rolls, but just shy of where the rolls nicked.

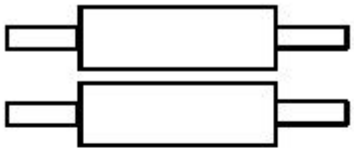
7. Repeat the process with the nut on the right side.

8. Continue doing this adjustment on both sides at least three (3) times. This ensures the rolls are precisely parallel.

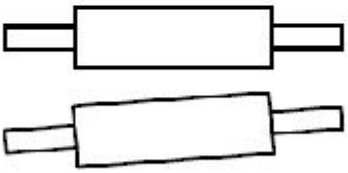
9. All pointers should now be reset at zero.

To view this process in video form visit:

rmsroller-grinder.com, under Links, then Industry Links



Rolls in Parallel



Rolls out of Parallel

Section III: Rolls have been knocked out of alignment (out of parallel).

Follow the same procedures listed in Section II if the following events are observed:

- A foreign object is known to have been run through the mill.
- During normal re-alignment, you find that you must turn one hex nut further than the other in order to nick the rolls, indicating that the rolls are out of parallel.

Roll Maintenance:

Factors to consider which affect roll sharpness:

- Rolls must be fed uniformly.
- Rolls being out of parallel with increase roll wear. Your facility should have a program in place to regularly adjust your rolls, to ensure they are in parallel.

Roll Corrugations:

You will eventually need to get your rolls re-cut or re-corrugated. Roll sharpening can lessen your roll life, but RMS uses specialized techniques to maintain your roll diameter, therefore allowing your rolls to be re-sharpened multiple times.

When is it time to have your rolls sharpened?

Indications of rolls being dull:

- Measure the time between mill shut down to no load amps. For sharp rolls, the amps on the motor should drop immediately within 5 seconds after shutting down. When the rolls are dull the material “floods” the rolls and does not pass through.
- Can’t pull amps; meaning the rolls are not sharp enough to grab the material and pull it through, they lack traction.
- Less capacity (lost traction)
- Typically the interval between roll sharpening/exchanges is constant; meaning that if you ran (x) amount of bushels through the mill two years ago and you needed a roll sharpening, then you can assume at the same amount of bushels you will need to sharpen the rolls again in two years.

How do I know if I have the right corrugations?

RMS has the ability to test your ground/cracked product to ensure you are reaching your target micron size and standard deviation. Based off this information we will be able to recommend roll corrugations to meet your application’s needs.

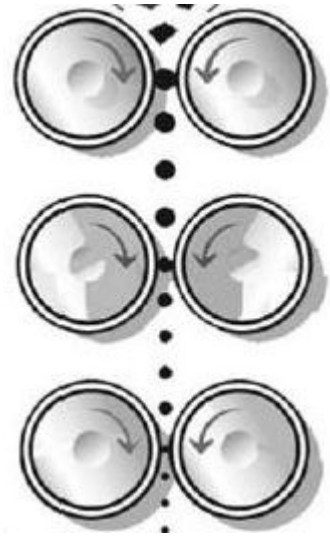
Electrical Instructions:

RMS strongly suggests you hire a licensed electrician for the initial install of the electrical components.

Main motor start up sequence
When wiring the starters to the motor, it is best to have the motor start from the bottom up.

For additional wiring information, consult the wiring legend on the motor as in the photo below.

Motor Rotation
When looking at the left side of the machine, motor should be spinning in a counter-clock wise rotation. This is also true of the right side of the machine (please see image below).



Important:
Check and clean motors at least monthly to ensure they are free from contaminates. This ensures the motors are able to adequately cool themselves and avoid overheating.

To avoid serious injury:
Always complete this task when <u>all power</u> sources to each motor have been disabled and motors have cooled down!!!!

Interlocking:

Interlocking the electrical components on a roller grinder is one of the most important steps when installing a machine. You must interlock the main grinding motors to the downstream take away equipment, an auger or chain disk conveyance system for example, to prevent them from starting if those downstream components are not energized. This is critical to ensure that the roller grinder shuts off if the one of the components downstream stops running for any reason.

Ammeter Box:

We highly suggest you install an ammeter box on your mill to prevent over amperage of motors, loading to motor failure, or overload. RMS would be happy to suggest an ammeter box suitable for your mill, or we can order and provide one at your expense.

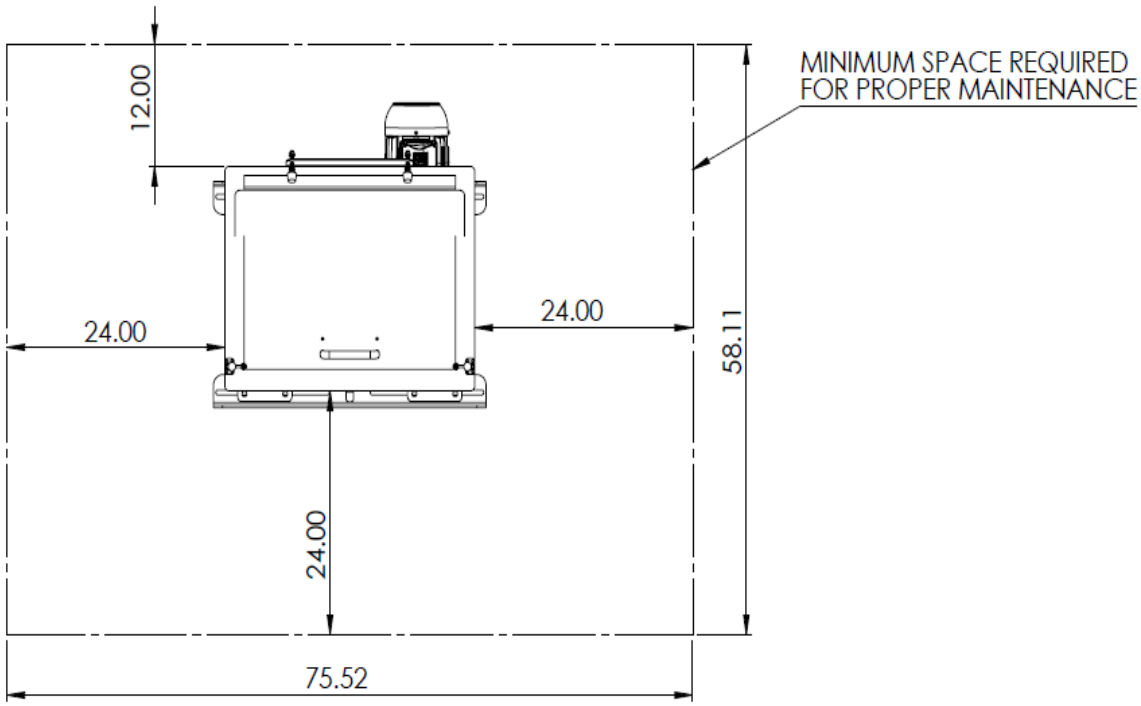
Installation:

Installing a machine on a stand:
If the machine is installed on a stand it is critical that this stand is built to handle the overall weight of the machine and product that will be in the machine. As a general rule of thumb the stand should be built will a 1.5 to 1 safety factor. The estimated weight of a 6x6 single pair mill is 400 pounds.

Bolting machine to the ground:
Concrete anchor bolts must be used when the machine is being installed on concrete. If the machine is being installed on a steel platform grade 5 bolts or better should be used. **Machines should be checked for level, no matter where they are installed, before being secured**.

To prevent dust leaks:
After the machine is in place and bolted, the seams between each flange should be sealed with silicone caulk, to ensure it stays dust tight.

Clearances around the machine:
It is important to take into consideration the room you will require for roll changes and routine maintenance work when deciding where to place your machine. Below is a schematic showing the minimum recommended clearance area for your 6x6 mill.

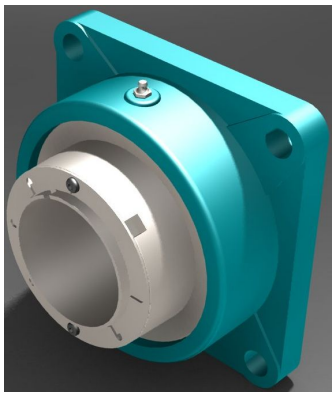


Parts and Service:

Recommended Optional Parts:

Bearings

RMS Roller Grinder encourages customers to keep an extra set of bearings on hand. If a foreign object enters your rolls it can cause a bearing to fail and the excess vibration on the roll may cause the other bearing to fail as well. It is to your advantage to keep an extra set of bearings on hand.



(3) - 1 ¼" Ball Bearings

Motor

1HP 1800 RPM 3-Phase TEFC or XP motor

RMS uses WEG motors and can help to determine if there is a warranty issue if the motor should fail.

Grease Lines

Can be ordered from RMS

RMS carries all replacement parts and can bill and ship to you directly.
Call our service department at 605-368-9007 to order parts or inquire on warranties.

Additional Services:

Roll Exchange Program:

- We can provide appropriately sized rolls for you as long as you own your mill.
- We can provide roll sharpening and replacement when needed.
- We can come to your facility and change out the rolls if needed, or if you prefer to change out your own rolls we also have the ability to deliver sharp rolls to your facility.
- Our service technicians will work around your production schedule.
- We can group you in with other customers in the area, to help reduce your costs.

Machining Services:

- We can supply Replacement rolls that are ISO 9007:2000 certified and dynamically balanced.
- RMS can recommend roll corrugation to meet the needs of your operation.
- We also offer a fully equipped test lab, with the ability to test your product to ensure you are maintaining your target particle size.
- We can provide roll balancing.
- RMS can assist with shaft repair and replacement.

RMS Also Offers On-Site Training and Consulting on the Following:

- Safety
- How to operate your machine at maximum efficiency
- Machine maintenance
- Custom training also offered. Let us know what you need to learn and we will be more than happy to assist you with your operational needs.

Emergency Contact Information		
Name:	**Cell phone:**	**Email:**
Alex Pearson	605.941.1901	Alex@rmsroller-grinder.com
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Blake Sandnes	605.940.5087	BlakeS@rmsroller-grinder.com
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