

Burrows Enterprises LLC

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Roto Grind Start Up Instructions Pg #1 of 4

Here are some instructions on how to set up and run your new Roto Grind tub grinder for the first time.

- 1- First be sure any one who will run the grinder **reads the operators manual.**
- 2- Next, bolt the spout swivel & discharge spout onto the machine so the discharge will go directly away from the machine (to the side not the rear). Use the bolt holes on the front and rear sides of the mill. Do not bolt the shield to the spout flange, use the flip pin for this hole.
- 3- Hook the tub grinder up to your tractor making sure that the PTO shaft is secure on the PTO of the tractor (be sure the slide lock is locked onto the shaft on the tractor).
- 4- Plug the hydraulic lines into one set of hydraulic outlets on the tractor.
- 5- Attach the governor wires (red clip to positive and black clip to negative) to a **12-volt** source on the tractor, either the battery or the starter. Flip the toggle switch on the governor to “on”. After attaching these wires, check the governor control box. The power light on the governor should be on. If it is not on, then check your 12-volt connections.

Governor adjustments: Set the Engine adjustment knob (the top left knob) to 1000 rpm. Set the “fine” adjustment to #5. Set the “Engine drop to #3. Note: Our machines are test run at our factory, and have been pre-set to these settings.

- 6- Set the hydraulic flow control on the side of the grinder to #3.
- 7- There is a hand crank located on the left rear of the grinder. This crank handle adjusts the amount of bite the hammers are taking as material is fed into the side of the hammer mill (adjustable riser). If you have low horse power and tough grinding materials, you should adjust the crank up (by turning it clockwise). If you have high horse power, or have easy grinding materials, you can adjust the handle counter clockwise. This lowers the riser, and lets the hammers take a larger bite for faster grinding. To start out, adjust the crank handle so that the center plate of the riser is even with the tops of the permanent side plates of the riser. Have someone look inside the tub as you adjust the crank handle up or down.
- 8- Before you start the PTO, be sure the tractor is lined up so the PTO is not at an angle. You want the PTO as straight as possible to avoid a vibration and premature wear of the PTO’s U-joints & bearings.

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Note: Do not load materials into the tub before you start the PTO and hammer mill. Never load material into the tub when the hammer mill is not running at PTO speed.

9- Start up tractor. "Make sure everyone is away from the machine"

10- With the tractor's engine running, find the hydraulic control that will turn the tub. Operate the hydraulic lever and watch the tub. Find out which way the tub turns backward and engage the hydraulic control in the opposite position. Note: The tub will not turn the correct way at this time. It should not be turning in any direction.

11- Next engage the PTO in your tractor at the lowest rpm (idle speed). Slowly engage the PTO. When the PTO is fully engaged increase the rpm with the throttle until the PTO is running at 1000 rpm (this should be around 2200 rpm engine speed and be at or near full throttle). When the PTO reaches 1000 rpm the tub should start to turn the correct way. (See the arrows on the tub for correct rotation). **The tub will always turn backward but will only turn forward when the PTO is running at the correct speed. If the tub is turning backwards, reverse the hydraulic control in the tractor.**

12- With the tractor running at 1000 rpm "PTO speed", go to the governor. If the OUTPUT light is on, turn the "fine" adjustment knob slowly clockwise until the output light goes off. Then turn the "fine" adjustment knob counter clockwise (slowly) until the output comes on again and leave it in that position. This electronic governor reads the rpm's of the PTO & hammer mill. It is designed to only let the tub turn the correct way at our desired rpm. As the rpm's drop to approximately 970 rpm (PTO rpm), the tub should stop turning. As the rpm increases to 1000 rpm or higher, the tub should start turning again. This governor protects both the grinder & tractor from overloads. You can fine tune where the tub will start and stop turning with the adjustment knobs. You can safely operate at from 970 to 1,100 rpm's, PTO speed.

13- When the governor is set and working correctly you are ready to grind. Remember to have the hammers turning and the PTO up to speed before loading the tub. **Never load the tub when the hammers are not turning.**

14- When grinding you can change tub speed, faster or slower, using the flow control valve (located on the front corner of the grinder between the hydraulic lines). Take note of how hard the tractor is working and if the governor is stopping the tub often. You want to turn the tub so that it doesn't stop

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14-(cont.)-and start excessively. You can fine-tune the grinding operation by adjusting the tub speed, adjustable riser, and governor for maximum capacities for the material you are grinding. The steadier the tub runs the more productive the machine and more consistent the grind.

15- After grinding some hay look at it to see if you want it ground longer or shorter. A 2½ to 4 inch grind is recommended for use in mixers. Instructions for adjusting shear plates can also be found in the **Operators Manual**. There are 5 adjustable grinding plates (shear plates) located under the tub floor on the opposite side of the mill housing from the discharge. The factory setting is: The bottom shear plate is moved in next to the hammers, and the 2nd shear plate from the bottom is moved ½ way in. The other 3 shear plates are moved all the way back, or away from the hammers. To achieve a finer grind, you move the shear plates closer to the hammers. To achieve a coarser grind, adjust the shear plates away from the hammers. Please see the operating instructions for adjusting these plates.

Please do not be afraid of the machine. Observe all safety and maintenance guidelines. The worst thing that can happen is:

#1. Shear the bolt in the PTO (spare shear bolts are located inside a plastic tube, along the Operators Manual & Parts book, located inside the hitch area of the grinder),

Or....

#2. Plug the discharge spout. **If you do plug up the discharge spout, shut off the tractor and be sure the PTO & hammer mill has stopped turning before removing the obstruction.**

Other grinding tips.

When it comes time to stop grinding, or shutting down, please follow these instructions:

#1. The tractor operator stops the tub from turning by moving the hydraulic control to the center position (no flow position).

#2. Using the engine throttle control, “slowly” reduce the rpm’s until the tractor’s engine is running at the idle speed (lowest rpm).

#3. This is the time where you disengage the PTO. Never disengage the PTO at high rpm’s or you can damage the tractor’s internal PTO brake.

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When the machine is new, or when the tub is completely empty and you are planning to grind round bales please try the following tip. With the PTO & hammer mill turning at 1000 rpm, but the tub not turning, load a broken bale or undersized bale in first. Then load a round bale on top of the broken, or undersized bale and start the tub rotation. (The tub has 3 fins welded to the inside wall. When material is against the inside tub wall, these fins catch the material and turn the material inside the tub. If materials or bales are not in contact with the tub wall, it will not turn with the tub, and since it is not turning into the hammers, there is no grinding action.) Round bales tend to grind easier & faster if they are loaded into the tub with the round side (twine side) down. They also grind faster and easier if you remove the twine or wrap before loading into the grinder. Note: Plastic twine is not recommended as feed for your livestock.

For best capacities, load another bale into the machine as soon as you safely can. The extra weight helps capacity, and you will have less empty spots as material is fed into the hammers.

When you are finished grinding, there will always be some material left inside the tub (No Tub Grinders clean out completely). The left over material helps start your grinding process for the next time you start grinding. You should not have to load a broken or undersized bale with this left over material inside the tub. When grinding large square bales it works much better to load them in the tub at 1/2 to 2/3^{rds} at a time. If your bales are 8 feet long (or longer), and you load it into the tub lengthwise, you can cause a bridging effect. Bridging means that the material is wedged across the diameter of the tub and will not fall down to the tub floor, or hammer area.

Please call if you have any questions

Best Regards,
Royal Burrows