

OWNER'S MANUAL

SHOT/GRAIN MAKING
MACHINE

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Note of Thanks

We take this opportunity to thank you for vesting your interest in our product. We strongly recommend that you should carefully read the operating instructions before attempting to operate the unit.

Machine Specifications

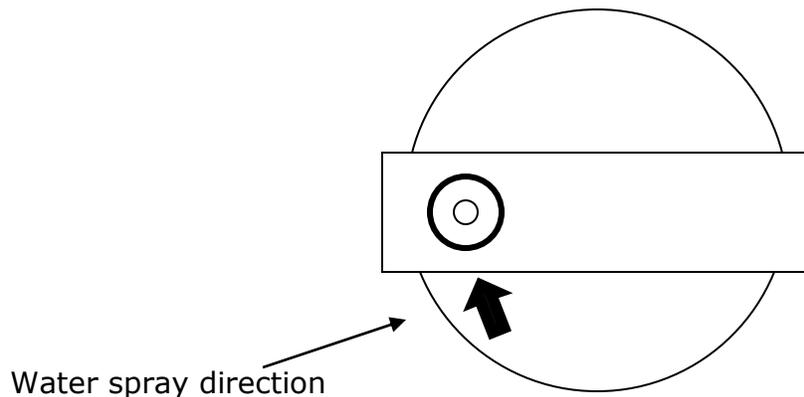
- 1.) Electrical Power Required : 1 KW / 230 V / 1 Phase
- 2.) Tank Construction : SS 304
- 3.) Tank Size : 20" Dia X 30" Height
- 3.) Tank Water Capacity : 120 Ltr. Approx
- 4.) Recommended Water Temp. : 20 Deg C
- 5.) Crucible Size : ID 50 mm
- 6.) Butterfly Valve Size : 4"

Machine Setting

- 1.) Place the Graining Tank in airy convenient space.
- 2.) Also place an auxiliary tank (Plastic or metal) as indicated in water connection diagram.
- 3.) Make the water connections as mentioned in water connection diagram.
- 4.) Make sure that the butterfly valve is tightly closed. Now fill the graining tank with clean water so that the spray nozzle is completely covered with that water.
- 5.) Now first we have to prime the water pump for first start up. Please open the priming screw on the water pump and fill it with water.
- 6.) Move the Water Pump's Water In valve to right side so that the arrow indicates to the pipe connected to water filter.
- 7.) Move the pump's water out valve to right side so that arrow points to the pipe going to spray nozzle.
- 8.) Please turn on the water pump.
- 9.) Water should start flowing in the tank within 2 – 4 minutes. Otherwise please try to prime the pump again.
- 10.) If the water level in tank is lowered due to water consumption in the pipe and filter etc. then replenish the water so that nozzle is immersed.
- 11.) The direction of spray should be adjusted to aim at the liquid metal's expected direction.

Machine Operation

- 1.) Please set the machine as discussed in machine setting section.
- 2.) Start the water pump so that water starts flowing in tank.
- 3.) Make sure that water should cover the nozzle and should not splash with tank walls.
- 4.) Place the TOP plate. Now pre heat the perforated crucibles to red hot. You must use the blow torch supplied with accessories. (This is very important as the metal should remain in liquid phase during the pouring phase)



- 5.) This can be done in two ways. We can heat the perforated crucible in a separate furnace or it can be heated by blow torch.
- 6.) Now the metal should be melted and temperature should be at least 100 to 200 deg C above the melting temperature.
- 7.) Molten metal should be poured in the heated perforated crucible.

8.) Molten metal will pass through the small holes and will drop in the tank just over the flowing cold water.

9.) When whole metal is passed through the perforated crucible we can stop the Water Pump.

10.) Now change the water out valve position to left side and start the pump. This will transfer the water from tank to the auxiliary tank.

11.) When the water is transferred to auxiliary tank stop the water pump.

12.) Place a collecting bucket or tub below the graining tank under the valve.

15.) Open the valve slowly so that water is passed to the collecting bucket or tray. Then open fully so that the metal balls are dropped in the bucket. Please make use of water spray for dropping any stuck metal.

16.) After removing the metal, close the graining tank butterfly valve. Then change the water pump's water out valve to right (arrow to Tank Pipe) and water in valve to left (arrow to Auxiliary Tank pipe) this will transfer the water from Auxiliary tank to Graining tank. The Graining tank will need to be replenished for the lost water.

We can start again from step 1 for next batch.



Note : The Auxiliary tank should be having a capacity more than the tank capacity. We can also use the Water pump's valves to fill the Graining Tank from Auxiliary Tank. We can move the Water OUT Valve to right so that arrow indicates towards graining tank pipe and Water IN valve to the left so that arrow indicates towards Auxiliary Tank pipe.

Trouble Shooting

1.) Water Pump Priming Issues : The water pump needs to be primed for the first time to start the water flow. Please note if the water is present in the pipes and pump it is ready to start. If there is no water in pump head or pipe it will require priming. For initial priming we may need to open the priming screw and fill the pump head with water.

2.) Metal passing issues : Metal does not pass through the relative cold perforated crucible. It should have 500 to 600 deg C for complete passing of liquid metal. Please use a gas torch for continuously keeping the crucible Hot at about 500 deg C.

3.) If some metal is left on the bottom of perforated crucible it should be removed immediately when it is hot. Take out the perforated crucible and try to remove the metal by pouring metal in some mould. If the metal is solidified in small holes we can use the torch for heating and melting the metal.

4.) Metal Shape issues : the metal shape depends on some parameters like liquid metal's temperature, perforation hole, water flow and water temperature. Please try to raise the liquid metal's temperature and use smaller hole crucible if you want small size metal.

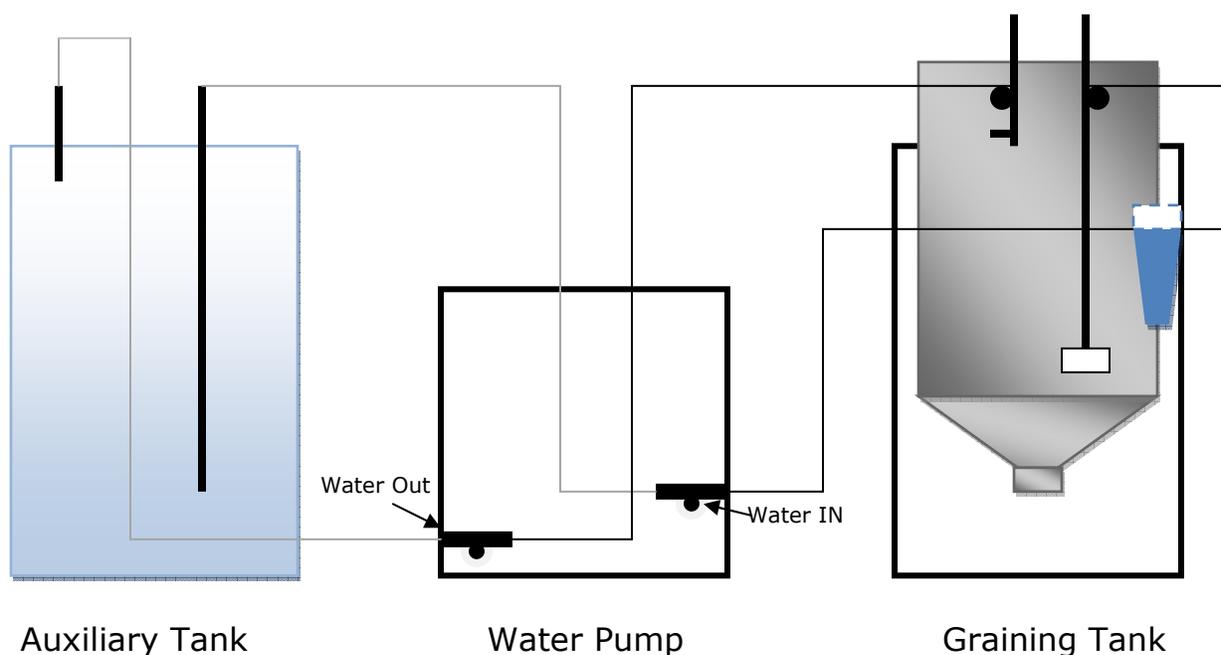
5.) For pre refining grains making you can use a single big hole (3 to 5mm) crucible with a cold water spray direct to the liquid dropping.

Electrical Connections

The Water Chiller is to be connected to 15 A / 230 Volts / Single Phase three pin socket.

Water Connections

Please use $\frac{3}{4}$ inches water pipe to make connections as follows.



1.) Please connect pipe (Not Included with this unit) from Auxiliary Tank (Not Included) to Water In of water pump (Right Side). Please keep it deep in Aux. Tank for suction of water.

2.) Please connect pipe (Not included with this unit) from Auxiliary Tank (Not Included) to Water Out of Water Pump (right Side). Please keep it shallow in Aux. Tank for outlet of water.

Our contact Details

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