

MACHINE OPERATING INSTRUCTIONS:



1) Before Heating:

The below process must be followed once everyday before using the machine at cold condition.

- a) Clean the below parts with WET cloth and allow it to dry for 5 mins

RETORT / CRUCIBLE	POUR TUBE
MELT TEMP. SENSOR	FUNNEL
STIRRER ROD & BLADE	MOLD (once in 10 days)

- b) Apply very thin layer of high temperature non-stick coating paste to the above parts using a paint brush.
- c) Bring down the stirrer such that the stirrer blade is inside the retort and the retort lid is closed.
- d) Put the melt temperature sensor inside the retort to know the actual temperature inside the retort.

2) Heating-up the Furnace:

- a) Switch ON the MAINS (Key) switch in the control panel and switch ON the mains in the HMI Software.
- b) Set the temperature of the furnace ($> 700\text{ C}$) and melt (Furnace temp. $- 50\text{ C}$) in the HMI software and start the furnace heating process. When the furnace is heated, the high temperature non-stick coating applied will get dry and the color will change to light grey.
- c) Once the set temperature ($> 700\text{ C}$) is reached in the Furnace, remove the melt temp. sensor and lift the stirrer up completely.
- d) Remove all the dirt / slag from the retort using the metal scoop provided.

- e) OPEN the POUR VALVE from the HMI software. Once the pour valve is fully opened, you can observe a hole inside the retort. Clean the WALL of this POUR HOLE using the PINCH ROD provided. Do not hammer the hole of the bottom pouring valve, clean it gently.
- f) CLOSE the POUR VALVE from the HMI software.
- g) Clean the pouring tube using the T type tool provided.
- h) Now, the machine is ready for your casting process

3) The Casting Process:

- a) Add the base metal (Aluminium / Magnesium) duly weighed in the retort. (**Note:** Calculate the volume of cast required for that particular mold used for this casting and add exact amount of Aluminium duly weighed!)
- b) Bring down the stirrer to so as to close the lid. (**Note:** DO NOT ALLOW THE STIRRER ROD / blade TO HIT METAL INGOTS FILLED IN THE RETORT AS THIS WILL DAMAGE THE STIRRER)
- c) Insert the melt temperature sensor into the retort.
- d) Put the duly weighed reinforcements (in powder form) into the reinforcement preheater, close its lid and switch ON its heater in the HMI Software. Put the powder chipping rod into the preheater. This will allow you to easily push the powder below.
- e) Place the die heater inside the die along with its temp. sensor (Mold thermocouple), set the required value of temperature and start its heating from the HMI software.
- f) **For Mg. Casting:** Switch ON the gas flow to maintain Inert Atmosphere inside the retort
- g) Once the set temperature is reached, the furnaces maintain at the set temperature.
- h) Remove the melt temp. sensor, lift the stirrer and remove the slag from the melt (**Note:** For Al Casting Only) using the scoops provided.

- i) Bring down the stirrer such that the stirrer blade is completely immersed inside the melt and start the stirrer from the HMI software.
- j) Once the set RPM is achieved, slowly open the gate valve (until 40%) in the reinforcement preheater and push the reinforcements into the melt using the POWDER PUSHING ROD. (**Note:** DO NOT OPEN THE VALVE FULLY AS ALL POWDERS WILL FALL AT ONCE AND IT WILL NOT MIX IN THE MELT)
- k) Once, all powders are pushed into the melt open the gate valve fully and ensure all powders are pushed inside.
- l) Switch OFF the reinforcement preheater in the HMI Software.
- m) Switch OFF the mold preheater in the HMI Software and place the mold below the pouring tube such that the feeder hole of the mold is inline with the pouring tube of the furnace.
- n) OPEN the pour valve from HMI AND wait till all the melt is poured into the mold. (Note: do not disturb the mold until the cast is solidified.
- o) CLOSE the pour valve from HMI.
- p) REPEAT Step 2-d to 2-g, the machine is ready for next casting.

4) Shutting down the Machine:

- a) Switch off all the furnace / heaters in the HMI Software
- b) Remove the Melt thermocouple and place it in its holder
- c) Switch OFF the inert gas if supplied and close the gas valve in the cylinder.
- d) Repeat the steps 2-d to 2-g
- e) Bring down the stirrer so as to close the lid.
- f) Switch OFF the mains button in the HMI software and close the application using the EXIT button.
- g) Switch OFF the mains switch in the machine.

h) Switch OFF the MCB.

Key Instructions:

Before HEATING (@COLD Conditions)

- ✓ Clean the RETORT, BLADE, MELT TEMP. SENSOR & MOLD with WET cloth and allow it to dry for 5 mins.
- ✓ Apply THIN layer of HIGH TEMPERATURE NON STICK COATING to the above parts
- ✓ Bring down the stirrer blade inside the retort to allow the non-stick coating to dry when the furnace is HEATED.

After HEATING (@HOT Conditions > 700 °C)

- ✓ Lift the STIRRER UP.
- ✓ OPEN the pouring valve
- ✓ CLEAN the retort with the scoop provided
- ✓ CLEAN the WALL of the POUR HOLE with the pinch rod provided
- ✓ CLOSE the pouring valve
- ✓ CLEAN the pouring tube with the T- type tool
- ✓ LOAD the materials in the RETORT