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RAVI ENGINEERING WORKS

innovative engineering solutions

Pottery Kiln

User Operation Manual

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01. Introduction

This manual provides detailed step-by-step instructions for the safe and efficient operation of the Pottery Kiln. It explains how to set firing programs, run firing cycles, and monitor the process to achieve consistent results in pottery production.

Important

The settings and temperature parameters described in this manual are for reference purposes only. Actual firing temperatures, heating rates, and soaking times must be adjusted depending on the type of clay, composition, glaze, thickness, and desired finish of the pottery item. Vitrification of your Clay and Maturity of your Glaze Temp. Should be in the similar range.

THIS MANUAL IS APPLICABLE TO THE FOLLOWING RAVI TOP LOADING ELECTRIC KILNS ONLY:

DELIVERY NOTES:

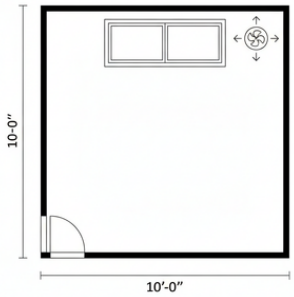
MINIMUM WIDTH OF DOOR OPENING REQUIRED:

- FOR 13” OPENING KILNS - 21”
- FOR 18” OPENING KILNS- 25”
- FOR 23” OPENINGKILNS - 30”
- FOR 27” OPENINGKILNS - 34”

WARNING: NEVER INSTALL THE ELECTRIC KILN ON UNEVEN FLOOR.

SPACE REQUIREMENT & SELECTION:

Room Area Should Be Minimumof 10 x 10 sq. ft. with Proper Ventilation and Exhaust Fans.



18” SHOULD BE CLEAR FROM THE ALL SIDES OF THE KILN & WALLS.

- **DO NOT OPRATE KILN WITHOUT OPERATOR IN ANY CASE.**

UNPACKING:

Step 1:

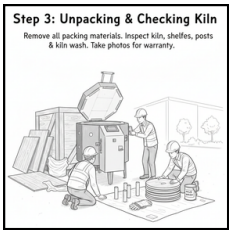
Once Transporter Comes at your Gate or Building, Please Take Images when Kiln is in Vehicle and Inspect the kiln. If you noticedthat Wooden Crateor Pallet of the kiln damaged immediately report to the RAVI ENGINEERING WORKS. (Please do not Sign/Stamp on docket of Transporter)

Step 2:

AdviseTo Unload the kiln from Vehicle throughForklift or Hand Pallet. If lifting services are not available in your area then arrange for Manpower to unload the kiln. (Min. 5 Person who can handle it easily to avoid any damage during unloading & take all images while its in tempo. (Inside & Outside). LIFTING HANDLES ON ALL SIDES GIVEN ON KILN BODY EXCEPT PANEL BOARD SIDE.

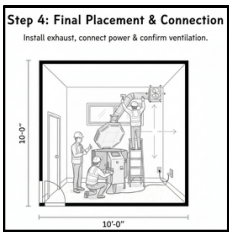
Step 3:

Remove the all the PackingMaterials and Checkingthe Kiln (Inside & Outside), Shelves, Posts,Gloves and Kiln Wash & Take Images for Referenceand Records & For Warranty Inclusion. (If any of the steps missed out by buyer then Warranty not considered.



Step 4:

Now Place the kiln in the Studio Kiln Room.
(Min. Room Size 10’x 10’) with Natural Air Ventilation along with Exhaust Fan Min.300 CFM Fan.
Suggested Brand : hi-cool) suggested model : 225A230HBAC-M or 22A230HBAC or any other reputed brand along with similar technical specification.



⚠ Be Aware:

With a good understanding of your kiln and a little commonsense, you can avoid any accidents. Please observe the following safetyrecommendations:

- The Stainless-Steel Body and some of the other fixtures surrounding the kiln will get hot enough to burn your skin when the kiln is heated. Therefore, it is important to be extremelycareful when workingclose to the kiln. We recommend postingwarning signs of this potentialhazard in the kiln room.
- Keep anyone who cannot understand warning signs such as small childrenand pets away from the kiln when it is firing.

Be careful when opening the kiln door while the kiln is heated. We recommend you use fire rated gloves to protectyour skin and makesure clothing is kept well away from any kiln opening or hot kiln surface.

- The elements inside the kiln chamberwill cause an electrical shock if touched.Never insert metal instruments or place any part of your body into the kiln while it is firing.

●Always be sure to unplug the kiln beforeworking on the electrical components. If the kiln is hard wired, turn off the circuit breaker (MCB).
● Remove all potentially combustible materials from the kiln area.
● Do not place combustibles in your kiln, such as: paper (except specific shelf liner fiber-paper used for glassapplications), cardboard, wood, plastic, etc.
● Long term viewing inside the kiln chamber can cause damage to your eyes. Therefore, it is recommended that you use UV protective glasseswhen looking into the kiln for extendedperiods of time.or welders green or gray glasses will protect your eyes.
● Be cautious of intenseheat around the peep holes when peep plugs are removed.
● In the event of a severe storm, unplug your kiln. Exposure to static shock or electricalsurges can damagethe circuit board in the controller.
●The kiln lids on many models are heavy.Make sure the lid brace is secure before releasing the lid. Make sure the hardware that secures the lidbrace is secure and not corroded.
● Do not place anything in the kiln you are unsure of. Certain items may potentially melt, explode, or releasetoxic fumes. Items thatmay be damp (i.e. greenware, kiln shelves) have the potentialto crack or explode insidethe kiln when the moisture trapped inside them turns to vapor when heated.
● Never allow your kiln to exceedthe temperature ratinglisted on the serial plate.
● For your safety, the protection of your kiln, and the protection of your ware inside the kiln, we recommend that you avoid unloading the kiln when it is above 50°C.
● The controller is a temperature control device. It is not a safety device.
● As with all electrical products there is danger of electrical shock. Use only properlysized and ratedcopper wire when installing the power supply for your kiln. We recommend this work is done by electrician.
● Kilns should always be locatedin a dry place to prevent electrical shock and corrosion.
● Ravi Engineering Works will not assume liability for injury or damages causedby variations from the instructions put forth in this manual.
● Kilns get hot. Observe all instructions to ensure proper clearances from flammable or temperature sensitive objects and living things.
● Ventil room temperature. With Proper Ventilation all clear potentially harmful fumes from the room will be removed & To ensure proper room temperature is maintained.
●The power cord is sizedcorrectly to handle the power for your particularkiln. Never use an extension cord.
● Make sure the power cord is routed in such a way as to not touch any portion of the kiln that gets hot.
● Always unplug the kiln before performing any repairs or general maintenance. If your kiln is wired direct, turn off the MCB.
● Never modify your kiln without first consulting RAVI ENGINEERING WORKS. Improper modifications may pose a hazard to you and your kiln and void your warranty. Items such as alternative thermocouples, controllers, elements may ruin your kiln if improperly installed or applied.
● Replace any electrical components that are discolored, brittle or corroded.

Tips for Wiring for Kiln:

- Please consult & check the Local Electricity board & your Studio Electrician regarding the Power for your kiln.
- Please check Voltage with Electrical Professional to run smoothly. E.g.230 Volts
- Earthing should be required at your place.

Wirings Suggestions from Your Electrical Meter/ Board/ to Wall MCB:

For 1 Phase Kilns

Kiln Power	Wire (Any ReputedISI Brand)	Wall MCB
Upto 3.5 KW	3 Core Copper PVC Insulated Wire, 4 Sq mm	2 Pole , 32 AMP
From 4 to 6 KW	3 Core Copper PVC Insulated Wire, 6 Sq mm	2 Pole, 40 AMP

For 3 Phase Kilns

Kiln Power	Wire (Any ReputedISI Brand)	Wall MCB
Upto 6 KW Kilns	5 Core Copper PVC Insulated Wire, 2.5 Sq mm	4 Pole , 16 AMP
Upto 8 KW	5 Core Copper PVC InsulatedWire, 4 Sq. mm	4 Pole, 20 AMP
Upto 15 KW	5 Core Copper PVC Insulated Wire, 6 Sq. mm	4 Pole, 32 AMP
Upto 25 KW	5 Core Copper PVC Insulated Wire, 10Sq. mm	4 Pole, 40 AMP

Supply Cable comes with the kiln is 4 Mtr.

02. Safety Precautions

- Ensure the kiln is installed in a well-ventilated area and placed on a heat-resistant surface.
- Keep flammable materials and liquids away from the kiln.
- Always check power supply and MCB before starting.
- Wear protective gloves and safety goggles while operating or unloading.
- Never open the kiln door during the firing or soaking Period.
- Allow the kiln to cool down completely before removing items. Open the Kiln door at Room Temperature Only.
- Do not off the MCB once Cycle Over, till Room temperature.

03. Control Panel Overview

(Control Panel Overview)

The main control features include:

- MCB (Main Circuit Breaker): Main power switch for the kiln.
- HMI Screen 4.2” - Shows all parameters like Temperature, timing, and other settings.
- Program Button: Used to select, edit, or create firing programs.
- Cycle Start Button: Begins the firing operation.
- Display Indicators: Current SP (Current Ramp Set Point), PR (Program), and process stage.

04. Starting the Kiln

(Example: “206°C” indicates the kiln’s present temperature)

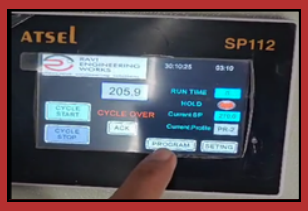
(Initial Temperature Display)

⇨ **Step 1: Power ON the Kiln**

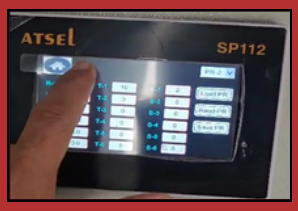
1.Switch ON the MCB to power up the kiln.
2.The display will show the current internal temperature.

05. Setting or Selecting a Firing Program

⇨ **Step 2:** Access the Program Menu



1.Press the PROGRAM button.



2.A hidden or locked section may appear; unlock it if required.

3.Select the program number you wish to use:
- Example: PR1 = Bisque firing, PR2 = Glaze Firing.

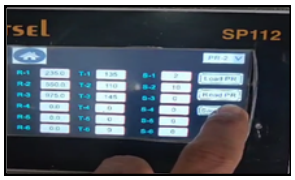
⇨ **Step 3:** Enter or Adjust Parameters

Each firing program allows you to define:

- Temperature stages (°C) (R)
- Time (minutes) (T)
- Soaking Time (S)

Example – Bisque Firing Program

Stage		Temperature in Min.		Soaking in Min.	
R1	235°C	T- 1	135	S- 1	0
R2	550°C	T- 2	110	S- 2	10
R3	975°C	T- 3	135	S- 3	0



(Example of Entering Soaking and Temperature Parameters)

Note:

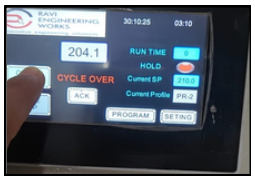
The above temperature settings and soak times are illustrative examples only.
The actual parameters will vary based on:

- Clay type and composition (earthenware, stoneware, porcelain, etc.)
- Moisture content in the item
- Wall thickness and size of pottery
- Glaze or finish applied
- Desired mechanical strength and porosity
- Before final firing, always perform test firings with small samples to determine optimal parameters for your material.

Step 4: Save and Load the Program

1. After setting all parameters, press **SAVE.**
2. Then press **LOAD** to confirm the active program.
3. Return to the Home Screen using the **HOME** button.

6. Running the Firing Cycle



Step 5: Start the Cycle

1. On the Home Screen, press CYCLE START.
2. The display will show:
   - Current SP (Set Point)
   - Active Program (PR)

Example display: Current SP: 235°C,Current Profile: PR2
Run Time : Given time to reach Temp. for specific ramp target. (i.e.235 degree cel. From ambient temp within 135 min. & 2 Min Socking time.)If power fails for some time then for that ramp time will not consider for that ramp only. Automatically from Drop temp. it will start at its own.

3. After Given Command to CYCLE START, You can Press on (ACK) Acknowledge the CYCLE OVER -ACK Only after CYCLE START.

⇨ **Step 6:** Monitor the Cycle

- Once the firing has started, do not press any additional buttons.
- The kiln will automatically progress through the programmed stages.
- Monitor the temperature progress as it increases step by step.

Note:
Do not interrupt the firing process unless there is a clear safety reason to stop.

7. Completion of the Cycle

⇨ **Step 7:** End of Firing

- Once the firing cycle is completed, the controller will display:

"Cycle Over"

- The kiln will then automatically begin its cool-down phase.

(Display Showing 'Cycle Over' Message)
Do not off the MCB , It will take Power only for FAN & Display.

8. Cooling and Unloading

⇨ **Step 8:** Cool Down

1.Let the kiln cool naturally until the internal temperature drops below 100°C.
2.Avoid forced cooling or opening the lid early, as this can cause thermal shock and cracking.

⇨ **Step 9:** Power OFF

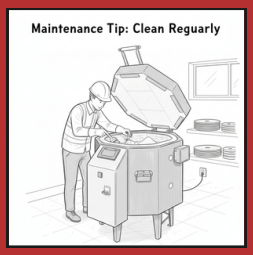
1.Turn OFF the MCB once cooling is complete.
2.Carefully open the kiln door.
3.Use heat-resistant gloves to unload the pottery.
4. Inspect the pieces visually for proper firing results.

9. Troubleshooting

Issue	Possible Cause	Solution
No display on controller	MCB not turned ON	Switch ON the MCB

Program not saving	Incorrect sequence	Press “SAVE” → “LOAD”
Cycle not starting	Cycle not starting	Load the desired PR before pressing “Start”
Firing Problem	Voltage Drops , Heating Elements Resistance Increase, Any Wire Cut	With Electrician help make sure for Voltage & Elements replacement if needed in life.
Uneven firing	Overloaded kiln or improper placement	Arrange items evenly and maintain air space

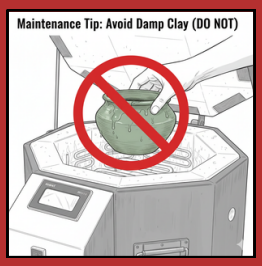
10. Maintenance Tips



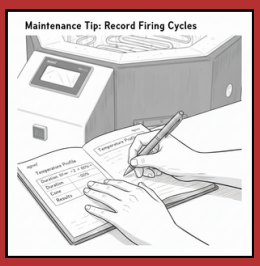
1.Regularly clean the kiln chamber after each use.

2.Inspect the thermocouple and heating elements periodically.

3.Keep the control panel dry and free from dust.



4.Avoid placing damp or unseasoned clay items inside the kiln.



5.Record each firing cycle’s parameters and outcomes for optimization.

11. Example Firing Profiles (for Reference Only)

Program No.	Type of Firing	Max Temp (°C)	Soak Time (min)	Remarks
PR1	BisqueFiring	975	10	For low-fired clay, thin items
PR2	Glaze Firing	1050	15	For glaze-coated items
PR3	Custom	User Defined	As required	For specific clay or glazes

NOTE:

These profiles are for demonstration purposes only. Always determine the exact temperature and soak duration according to the physical properties of your clay body and glaze.

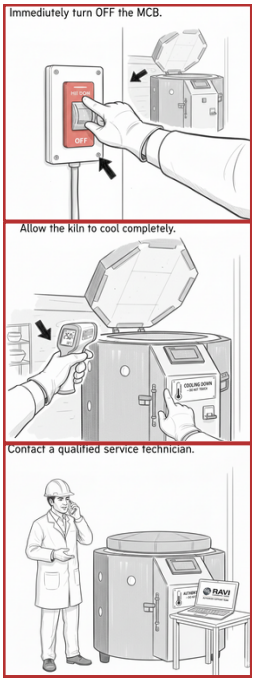
12. Safety Shutdown Procedure

If abnormal behavior or emergency arises:

1.Immediately turn OFF the MCB.

2.Allow the kiln to cool completely.

3.Contact a qualified service technician or the authorized support team before resuming operation.



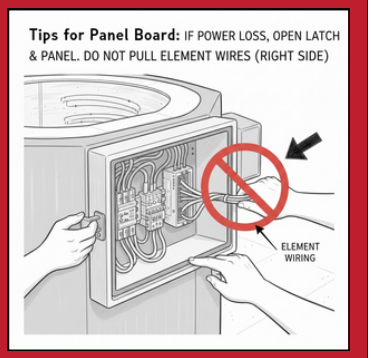
13. Important Stages of Firing:

Temperature	Stage of Firing
100˚C	Water boils causing wet greenware to explode
220˚C	During cooling if cristobalite crystals are present in clay they rapidly shrink 3% potentially crackingware.
350˚C–500˚C	Permanent dehydration of clay occurs. Clay is chemically changed.
573˚C	Quartz inversion happens causing quartz in clay and glazes to expand when heating and contract during cooling.

Temperature	Stage of Firing
600˚C–900˚C	Organic and inorganic matter is being burned off out of the clay.
1100˚C	Mullite crystals begin forming in porcelain clays.

Tips for Panel Board:

- If light went off then immediately open the latch and panel. (from right side) .
- Do not pullany wire of elements which connected with panel wiring.

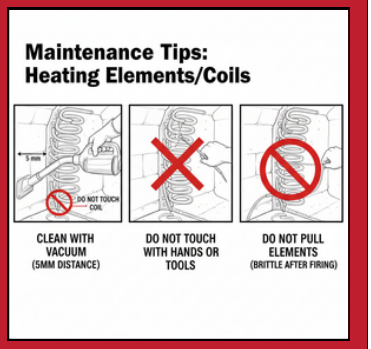


Tips for Elements/Coils/Heater:

- After Unloading every time clean your Elements& Kiln with Handheldor Car Vacuum Systemfrom 5 mm distance betweenboth .

(Do not touch the Vaccum pump Nozzle to the Coil/ Heater/Elements, Thermocouple or Floor.)

- Do not touch elements with hands or any of the Pointed things.
- Don’t try to pull out the Elements. After Firing its always brittle so don’t try to pull them otherwise its broken immediately.

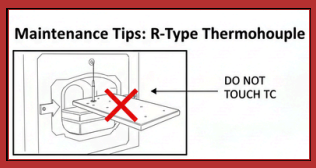


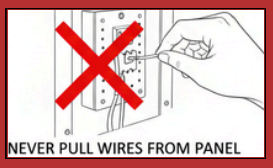
Tips for Shelves:

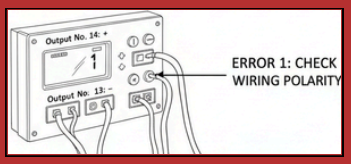
- Always keep at Wall. Never put on each other’s.
- Always keep clean with Brush after Firings.
- Don’t Wash with Water.
- If you want to remove the layer of kiln wash from Shelvesthen with he help of hand grinderyou can remove it.
- If Glaze melted and stick to the shelve then with the helpof Hand Grinder only try to remove it. (Please wear the Safety Gears during Grindingor take professional service).

Tips for Thermocouple: R TYPE (PT-PT-RH)

- Shelves would not be touch while loading/ Unloading to the TC.
- Never touch the TC
- Never Pull the any of the Wire of TC From Panel Board
- Check the TC Wirings + - are place properly in Thermocouple Panel Side and also check in Controller also if error comes like 0 or 1 on main display.





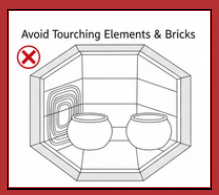


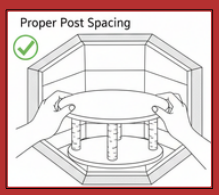
NOTE:

Please allow a minimum distance of (1.5 inch) between the ware/furniture and thermocouple as there is a risk of over-firing any item close to the element.

Tips for Loading of Kiln:

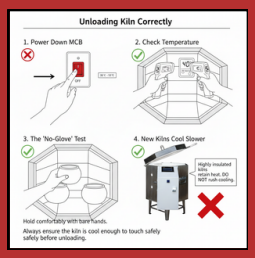
- Shelves would not be touch while loading/ Unloading to the Thermocouple.
- While Loading of kiln if TC is coming on shelve height then either Increase or decreasethe height using of Posts or Triangle Supplied Pieces.
- Your Ware or shelves Never touch the Thermocouple.
- Thick to Thin Loading would be advisable from bottom to top.
- Ware should not touch to the elements or Bricks.





Tips of Unloading of Kiln:

- Before you begin the bisque firing you must make sure that the ware is bone dry dry to avoid cracking and shattering. Make sure as well, that enclosed forms have a pinhole for heatedair and steam to escape.
- While loading the ware, place it at least 1 inch away from the coils. Ware in the bisque firingmay touch or even be stacked on top of each other.
- If stacking; place similar clay bodies together and heavier pieces directly on the bottom working up to lighter pieces to avoid breakage.



Tips for Glaze Firing:

- Before you begin the final firingmake sure the glazes are dry.
- Wet or moist glazes will often flake or crawl if heated too quickly.
- While loadingthe ware, place it at least 1 inch away from the heating coils. Glazed ware may not touch and cannot be stacked.

Kiln Wash Application:

- Kiln Wash should be mixed to the consistency of heavy cream.
- Apply on shelves an even thickness.
- If you are coating the whole shelf, use a 3” or 4” painting brush.

13. Summary

Proper programming and careful monitoring are essential for achieving consistent and high-quality ceramic results.

Remember that firing behavior depends on multiple factors, including clay composition, density, glaze chemistry, and kiln loading , Voltage & Sanctioned Load .

Always treat the sample parameters in this manual as guidelines for understanding operation, not as universal firing settings.

The RAVI ENGINEERING WORKS warrants that the equipment supplied shall be free from defects in materials & workmanship for a period of eighteen (18) months from the date of dispatch.

Scope of Warranty

During the warranty period, if any defect is proven to have arisen solely due to faulty design, manufacturing, or workmanship under normal and intended use, the manufacturer shall, at its sole discretion:

- Repair or replace the defective component(s) free of cost (ex-works)
- Provide technical guidance for rectification
- This warranty is strictly limited to the repair or replacement of defective parts and does not extend to any other claims.

Exclusions from Warranty

This warranty does not cover the following items and conditions:

- Consumables & Wear Parts , Heating elements , Thermocouples
- Refractory materials including bricks, insulation, castables, ceramic fiber and kiln furniture
- Operational & External Factors
- Damage due to improper installation, operation, or maintenance Overfiring, thermal shock, or exceeding rated temperature limits
- Voltage fluctuations, power surges, phase failure, or improper electrical supply Mechanical damage, mishandling, or accidents
- Use of non-recommended materials or improper loading practices
- Unauthorized Interference, Any modification, repair, or alteration carried out without prior written approval from the manufacturer

Limitation of Liability

The RAVI ENGINEERING WORKS'S liability under this warranty shall be strictly limited to the value of the defective component(s) supplied.
The manufacturer shall not be liable for:
Any indirect, incidental, or consequential damages
Loss of production, profit, business, or downtime
Any damage to goods, materials, or products processed in the kiln .

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RAVI ENGINEERING WORKS

innovative engineering solutions

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