

HIGH FREQUENCY INDUCTION HEATER



This manual should be made available to all users of this equipment. For best results, and for maximum durability of the equipment, carefully read and follow all instructions. Failure to do so can lead to serious injury or catastrophic damage to the user, machine, supplies, or surrounding areas. All safety suggestions must be followed closely, and extreme precaution must be taken to assure proper use of the equipment by only qualified personnel who have read this guide.

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For questions please contact the US Distributor for this item

US Distributor: 1-800-209-4177

I. Getting Started

Hello new induction heater user!

Thank you for choosing our induction heater. For smooth and safe operations, please read and understand this manual. The operation and maintenance information listed within has been updated as of its printing.

In light of the ever-changing nature of technology, the company reserves the right to modify specifications or procedures for this wire stripper without notice. The company will not assume any responsibility for equipment damage or malfunction that is due to improper operation, incorrect repairs, or use of parts from another company.

The induction heater has passed through rigorous testing. Like all of our products, it is made with quality materials at an affordable price. This induction heater is suitable for heating a variety of metals, at a variety of sizes.

The company provides a 12 month warranty from the date of the sale. During this first year, the company is responsible for any replacement parts needed because of manufacturing or material issues. After this 12 month period, the company will only replace parts at their current retail cost.

The warranty will only be in effect if all instructions in the manual are followed fully. The warranty does not cover unforeseeable forces of nature, or 'acts of god,' (fire, earthquakes, floods, etc.).

When warranty service is required, inform the company and describe the problem. When doing so, please include the following information: Purchase Date, Order Number, Consignee Name, and Delivery Address.

This manual includes basic safety precautions and instructions regarding installation, operation, and maintenance. Therefore, before operating the equipment, please read carefully and fully comply with all instructions, and fully understand the listed product requirements.

This manual does not include instructions for all possible uses or functions of this machine.

II. Safety Notes

- Always make sure the machine is grounded.
- Check that the coil is properly fitted with a cover to limit sparks and the risk of fire.
- Do not have any metal on your person when operating this machine. This metal can heat up if exposed to the coil, and could lead to serious injury in the user.
- Turn off and unplug the machine when making any physical adjustments or repairs.
- Turn off and unplug the machine when not in use.
- Keep the area around the machine clear and free of any debris.
- This machine should only be operated by adults who have read and fully understood this manual.
- Never allow operation of this equipment by children..
- Keep fingers and other objects away from the induction coil, as this can lead to serious injury.
- Be sure that heated materials are placed in a safe place after heating to avoid fire or injury.
- Only use parts from the original manufacturer to ensure safety and highest performance of the machine.
- Do not touch any of the electrical connections while the machine is on, as there is risk of electrocution.
- Wear proper safety equipment at all times. This includes gloves and a mask if melting metals or soldering.

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III. Setting Up the Machine

When first opening the induction heating machine, be very careful removing the machine from the box. It is a heavy piece of equipment. The machine comes with one assembled coil, and one piece of copper tubing for making your own coil.

Start by connecting the assembled coil to the machine. It is important that it is screwed on tightly, as water will be running through the coil. Be sure to use a wrench to tighten bolts.

Once the coil is connected, water inputs and outputs can begin being routed. Depending on the model you have, the number of water inputs and water outputs may vary. One hose is provided for you, but it is possible more hosing will be needed. This can be found at any hardware store. The Induction Heating Machine does not need a water circulator or water chiller. In fact, it is recommended to be used simply with clean tap water. It is important that the water hookup is both pressurized and contains clean and clear tap water. Excessively dirty water will lead to breakdown of the machine.

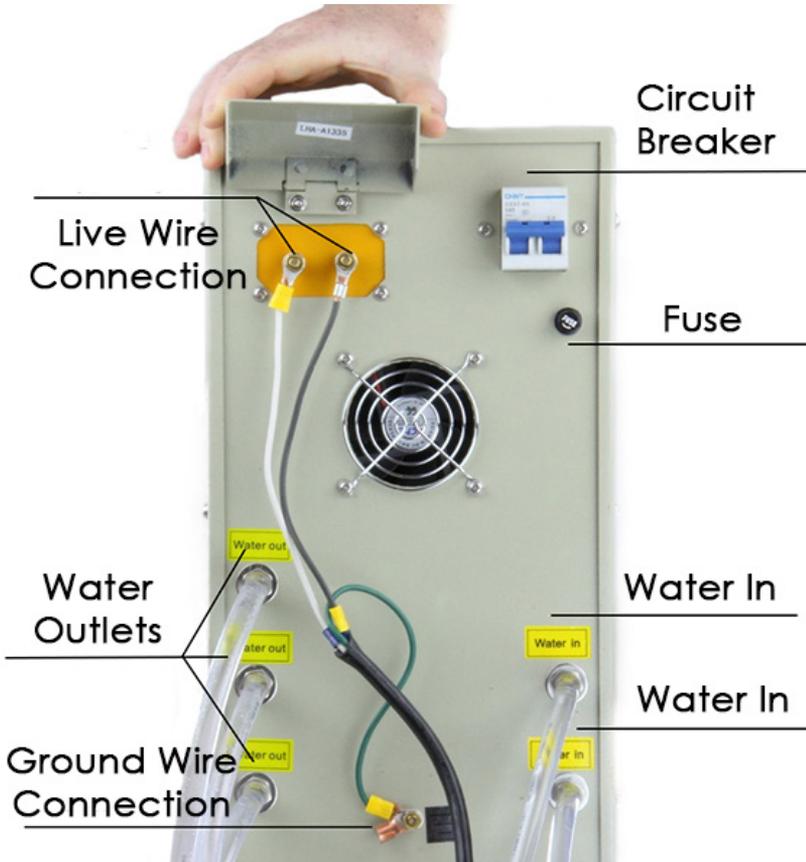
For the water inputs, a splitter may be used so a single water source can provide water for the whole machine. For the outputs, it is important that each water output is run separately, with no connectors. Problems can occur if output hoses are connected to one another.

Once the hoses are setup, the wiring needs to be setup. For the 110 V model, make sure the wire you use is at least 14 gauge. For the 220V model, make sure the wire is at least 6 gauge. Connect the ground wire to the designated place on the back of the machine. Similarly for the two live wires. Make sure there is no wire exposed from the connections, as this could present a potential fire or electrical hazard.

The foot pedal should be hooked up next. The place for the foot pedal is on the front of the machine, and the foot pedal should be setup on the floor.

It is important that the machine is setup in a place free of debris and clutter. The floors should also be kept clear. Make sure hoses and wires for the machine are all secured to avoid tripping hazards.

IV. Back of the Machine Diagram

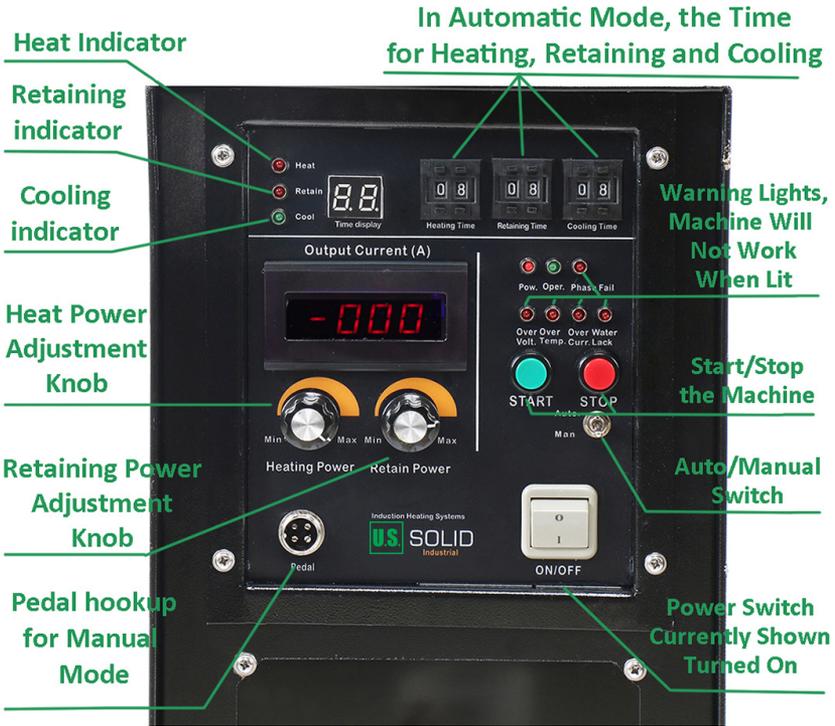


Here is a view of the back of the machine. Notice where the water inlet and water outlet spots are. These may be slightly different based on the model of your machine. Also note the ground wire screw, which is towards the bottom of your machine. In the image, the housing is flipped up to show where you can connect the two current carrying wires.

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V. Front Panel Diagram



Here is a view of the display panel for the machine. Take special notice of the Warning Lights. These lights indicate a problem, and the machine will not work if they are lit up. They correspond to issues with power, current, temperature, and water pressure.

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VI. Operating the Machine

General Operation

The induction heater can be run using either Manual mode or Automatic mode. When in automatic mode, simply press the start button to begin the preset programming. When in manual mode, the machine will run when the pedal is pressed.

Display Buttons

1. Heat- Current is running through the coil as set by the Heat Power Adjustment K knob and heating can take place when this light is on.
2. Retain- When lit up, heat is retained using the current set by the Retain Power Adjustment Knob.
3. Cool- When lit, indicates that current is no longer running through the coil, allowing for the workpiece to cool down.
4. Power- When lit, indicates that the machine is on.
5. Operation- Will blink green and beep when machine is running and power is being brought to the coil.
6. Warning lights (Over Volt, Over Temp, Over Current, Water Lack, Phase Fail)- When one of these lights turns on, the machine will cease operation, indicating an issue, depending on the light. Either too much voltage or current is running, the machine is overheating, the water pressure to the machine is not high enough, or the phase power is failing.
7. Heat Power Adjustment Knob- This knob controls the current sent through the coil during manual mode, and during the heating portion of automatic mode. It is recommended to start at a low current when first turning on the machine, and slowly increase the current on the knob as the machine warms up. The more this knob is turned clockwise, the higher the temperature of the workpiece will get.
8. Retain Power Adjustment Knob- This knob controls the current when in heat retention mode. This is only applicable when the machine is in automatic mode.
9. Heating Time- When in automatic mode, this gives the time in seconds for heating the workpiece according to the level on the Heat Power Adjustment Knob.
10. Retaining Time- When in automatic mode, this gives the time in seconds for heat retention on the workpiece, according to the level on the Retain Power Adjustment Knob.
11. Cool Time- When in automatic mode, this give the time in seconds for cooling of the workpiece.
12. Time Display- Displays the time of the current phase when in automatic mode
13. Output Current- Displays the output current in Amps

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VII. Manual Mode

When in manual mode, the foot pedal controls the current to the coil. Adjust the Heat Power Adjustment Knob to the desired level, and press the pedal to energize the coil. Simply insert your workpiece into the coil to begin heating. The more the Heat Power Adjustment Knob is turned clockwise, the hotter your workpiece will get. The timing functions and the Heat Retain Adjustment Knob do not affect the machine when in manual mode.

VIII. Automatic Mode

When in automatic mode, heating of the workpiece will be controlled by the times set in the Heating Time, Retaining Time, and Cooling Time. These numbers indicate seconds, and can be between 0 and 99 seconds. Once your desired times are set, simply press the Start button and insert the workpiece. The coil will be energized at a level set by the Heat Power Adjustment Knob, and will stay at this level for the duration of the Heating Time you selected. The Heat light will be on during this period. After that time has elapsed, the program enters Retaining Mode. The coil will still be energized, but this time at a level specified by the Heat Retaining Adjustment Knob for the duration of the Retaining Time you selected. During this period, the Retain light will be lit on the machine. Finally, the machine enters Cooling Mode. The coil will not be energized at all during the duration of the Cooling Time you selected. Once the program is complete, to run it again, simply press the Start button again. Automatic mode can be very useful for repeating the same action on several parts. Similarly, when soldering, brazing, or otherwise needing two different working temperatures. Automatic mode gives that ability.

IX. Other Factors

There are many factors that will determine the speed and temperature of the heating process. While the adjustment knobs do control current, the heating is also dependent on the material of the workpiece, the thickness of the workpiece, the shape of the coil, the number of turns in the coil, and the area of the turns within the coil. If using your own coil, it is recommended to try different heat settings to make sure the machine is calibrated to your exact purpose.

X. Potential Applications

| Application Type | Notes |
|------------------|---|
| Welding | If induction welding non-metallic workpieces, will need to embed in metal or use metal coating for proper heating. |
| Brazing | Be sure to use flux to protect the surfaces being brazed. Using Automatic mode is particularly helpful for brazing, as it allows for two different currents: the heating current, and then the retention current. |
| Sealing | This can be used to seal and cap different machines. Be aware of the type of metal being used in the seal. |
| Hardening | Many metals can be heat treated to induce hardening. Most often this process requires quenching right after heating, so have a quenching station available. |
| Annealing | Some heat treated metals actually end up softer. This is true of brass. Be aware of the type of metal you are heat treating as they can have different end results. |
| Soldering | Much like brazing, clean the surfaces to be used. Be aware solder can melt very quickly. |

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XI. Troubleshooting

Problem: The machine will not power on.

Causes:

- The circuit breaker is tripped.
- The fuse is blown.
- The connections between the power supply and the machine are loose.
- The outlet does not have power.

Solutions:

- Reset the circuit breaker.
- Replace the fuse.
- Unplug machine and tighten connections.
- Make sure there is power coming into the machine.

Problem: Water lack light comes on.

Causes:

- Lack of water pressure.
- Leak in hose.

Solutions:

- Make sure water is coming in pressurised from the source.
- Fix any leaks in the water hoses.

Problem: Over voltage light comes on.

Cause:

- The machine is not hooked up to the proper voltage.

Solutions:

- Make sure the machine is hooked up to the appropriate voltage, based on the model.

Problem: Over current light comes on.

Cause:

- Internal machine issue.
- Coil design issue.

Solution:

- Contact the manufacturer.
- Make sure coil does not have too many turns, too much area, or other design issues.

Problem: Phase fail light comes on.

Cause:

- Lack of 3 phases supply in 3 phase models (00005 and 00008)

Solution:

- Make sure 3 phase voltage is hooked up to the machine.

Problem: Over temperature light comes on.

Cause:

- Machine has overheated.
- Water is too hot.

Solutions:

- Give the machine time to cool off and then restart.
- Make sure water is cool enough when entering the machine. Remember to always use cool, clean water in the machine.

Problem: Clicking and beeping when attempting to start the machine.

Cause:

- Coil not properly connected.
- Improper coil design.

Solution:

- Check the connections between the coil and the machine.
- Make sure the coil does not have too many turns or too much area enclosed within it.

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XII. Specifications

| Model USS- | HFIH00001 | HFIH00005 | HFIH00008 |
|------------------------------------|----------------|----------------|----------------|
| Maximum Output Power | 15kW | 30kW | 40kW |
| Input Voltage | 110/220V | 480V (3 Phase) | 480V (3 Phase) |
| Fluctuating Frequency | 30-80kHz | 30-80kHz | 30-80kHz |
| Output Current | 200-600A | 400-1500A | 400-1800A |
| Water Temperature Protection Point | 40° C | 40° C | 40° C |
| Flow Rate of Cooling Water | 7.5 L/Min | 7.5 L/Min | 7.5 L/Min |
| Minimum Wire Gauge | 14 gauge | 6 gauge | 6 gauge |
| Weight | 25 kg | 35 kg | 36 kg |
| Extension Weight | Not Applicable | 30 kg | 35 kg |
| Main Dimensions (in) | 22 x 9 x 19 | 24 x 10 x 21 | 24 x 10 x 21 |
| Extension Dimensions | Not Applicable | 18 x 10 x 15 | 20 x 10 x 17 |
| Flow Rate of Cooling Water | 7.5 L/Min | 7.5 L/Min | 7.5 L/Min |
| Timer Settings | 0-99 Seconds | 0-99 Seconds | 0-99 Seconds |

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XIII. Parts List

Upon receipt of this machine, please take out and verify the presence of all of the following parts:

| Basic Parts | Quantity |
|--|------------------------|
| Induction Heating Machine | 1 |
| Copper Coil | 1 |
| Instruction Manual | 1 |
| Copper Tubing to construct your own Coil | 1 (~5 ft in length) |
| Hose | 1 (~32 feet in length) |
| Foot Pedal | 1 |

| Additional Parts |
|--|
| Customized Coil if requested and ordered online |
| Machine extension for Models USS-HFIH00005 and USS-HFIH00008 |

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