HSF-325
Induction
Shrink Fit Machine
USER'S GUIDE

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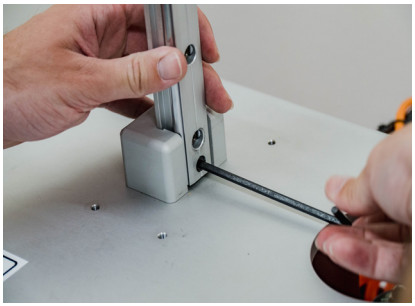
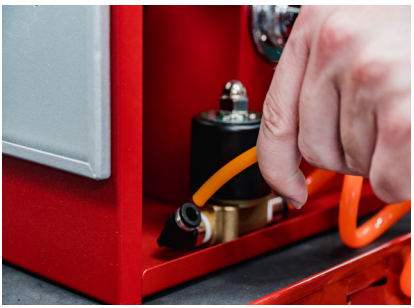
HSF-325 Setting Up

1. Install the up/down guide rail. Fasten the rail to the base with the provided screws.

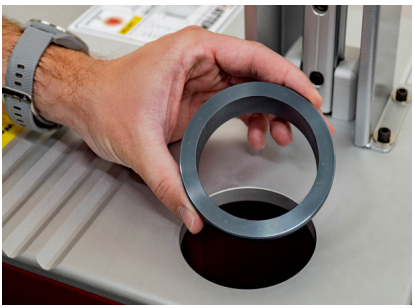



2. Attach the heating head to the holder on the guide rail, and connect the wires.


3. Connect the hose for the cooling air.



4. Install the toolholder sleeve.



5. Install the protective cover.

6. Connect the main power supply: 3-phase 220VAC
   (ensure there is a proper ground connection)

What comes in the package

1. Main unit ×1 (guide rail and heating head)
2. Tool sleeves (as ordered)
3. Main power supply cable ×1
4. Spare fuse
5. Pickup springs: 4 mm ×2; 6 mm ×2; 8 mm ×2; 10 mm ×2
6. User's Guide ×1

HSF-325 OPERATION NOTICES

1. To prevent damage to the machine, toolholders, and cutting tools, please read this User's Guide carefully. This machine uses induction heating, and the **temperature** of the toolholder being heated **will rise rapidly** according to the heating time! Please confirm the characteristics of your toolholders and cutting tools (material, external diameter, tolerances, etc.) to set accurate heating cycles, in order to prevent damage to your toolholders, and extend the life of the machine.

2. Stainless toolholders can easily damage the induction heating head. Stainless toolholders may still be used in this machine; however, due to their lower heating efficiency, they require more heat, which can cause the induction head to overheat during repeated operation. The heating process should be monitored closely. If the heating head gets overheated, please stop operation temporarily until the heating head has cooled. Continuing operation while the head is overheated **will damage the induction heating head**.

3. **DO NOT** use high-speed steel (HSS) cutting tools in induction heating operations. Due to the similar heating characteristics between the tool and the toolholder, it can be difficult or impossible to remove HSS cutting tools from steel toolholders.

4. It is very important to know the diametrical size of your toolholders and cutting tools. The machine is designed to heat toolholders to a sufficient temperature to allow the cutting tools to shrink in/out (around 300°C). If the temperature exceeds 350°C and the cutting tool still cannot be shrunk in/out of the toolholder, it is likely an issue with the toolholder geometry, or the grind tolerance of the cutting tool.

4.1. If the fit between the toolholder and cutting tool is too tight, it will be **difficult to shrink out** the cutting tool. If the fit between the toolholder and cutting tool is too loose, the tool is more likely **to pull out of the holder** during cutting operations. Please choose cutting tools with the appropriate precision.

4.2 Make sure to clean off any oil on the toolholder or cutting tool prior to use. The heating procedure will carbonize any residual oil and make it more difficult to remove the cutting tool. For cleaning off oil, we recommend using a clean rag/cloth or solvent tank.

5. **DO NOT turn on the induction heating head without a toolholder present!** To prevent damage to the machine, do not turn on and heat up the induction head when a toolholder is not present. Prior to removing the toolholder during the heating procedure, please press STOP to turn off the machine, to avoid heating without an object present.

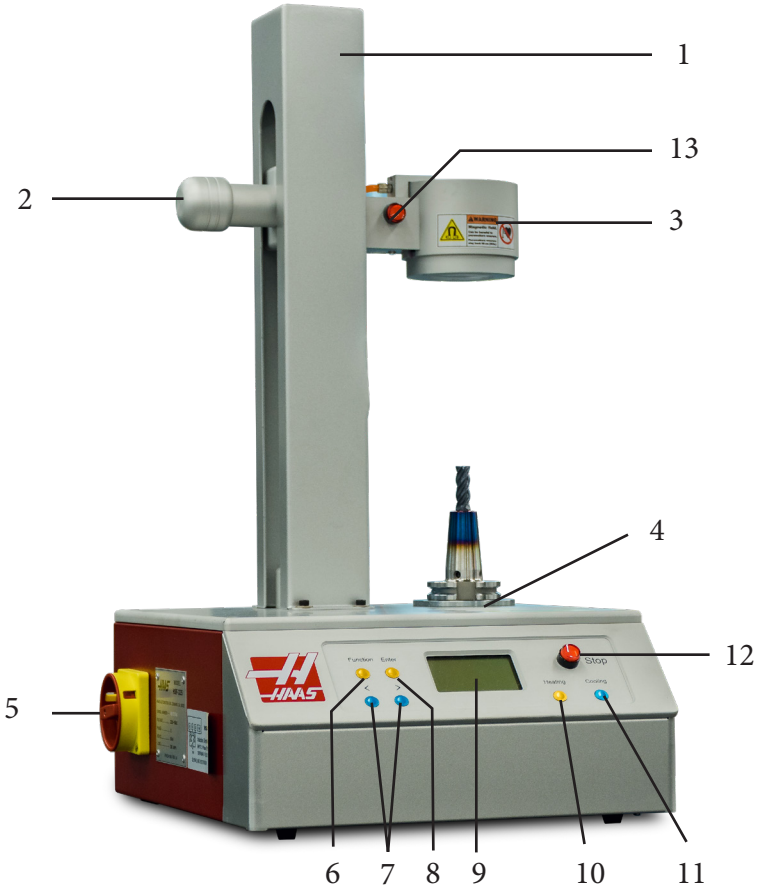
6. After a certain period of use, if you discover that the induction head is deformed or has turned a darker color (initially, it is white), this could be the result of the head producing too much heat (above 400°C). Reduce the heating cycle, and service the head, as needed.

7. This machine uses a **high-voltage power source**. Do not dismantle and service this machine unless properly trained. To ensure safe operation and reduce electromagnetic interference, make sure an appropriate **ground wire** is properly installed. If you are experiencing issues, contact your local HFO for service.

8. **DO NOT** approach or operate this machine if you are wearing a **pacemaker** or other device that can be affected by electromagnetism.

HSF-325 Induction Shrink Fit machine

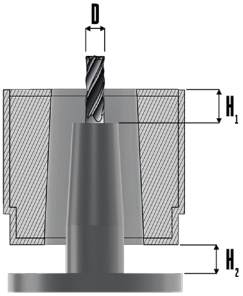
Name and illustration of all parts



1. Up/Down Guide Rail and Cover
2. Locking Knob
3. Induction Heating Head
4. Tool Sleeve
5. Main Power On/Off Switch
6. **Function** Key
7. **Left/Right** Arrow Keys
8. **Enter** Key
9. LCD Display
10. Heating Key (**Start**)
11. Cooling Key (**Cooling**)
12. Stop Button (**Stop**)
13. Manual Heating Button

Operation Instructions

1. Before operation
   - Ensure you have a proper connection to a 3-phase 220V AC power source with proper ground wire.
   - Install the correct tool sleeve and an appropriate toolholder.
   - If needed, use one of the provided tool springs to set the length of the tool. Adjust the cutting tool to the appropriate length, and ensure the toolholder bore and the cutting tool are clean and free of oil (use a rag/cloth to remove oil residue).
   - Lower the induction heating head over the clamping portion of the toolholder. The table below shows the recommended heights:



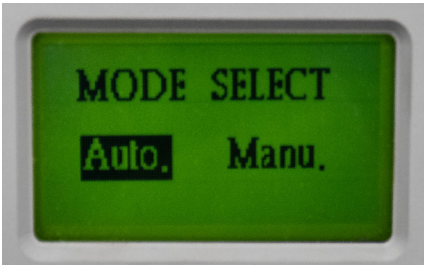
D	H1
> 1	1.000
5/8	0.250
1/2	0.375
3/8	0.625
Make sure H2 = .25" min.	

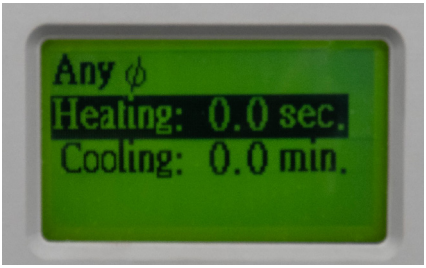
Recommended Heating Time			
EM IN		EM OUT	
D	Time (sec)	D	Time(sec)
1-1/4	5.0	1-1/4	6.0
1	8.0	1	8.5
3/4	7.5	3/4	9.0
5/8	6.5	5/8	7.0
1/2	6.0	1/2	9.0
3/8	6.0	3/8	7.0

Recommended Cooling Time			
EM IN		EM OUT	
D	Time (min)	D	Time(min)
1-1/4	4.0	1-1/4	4.5
1	6.0	1	6.0
3/4	4.0	3/4	5.0
5/8	3.0	5/8	3.5
1/2	2.5	1/2	3.0
3/8	2.5	3/8	3.0

2. Select the operating function

   At startup, the machine will remain in standby until a mode is selected. Use the [**< >**] keys to select the Manual or Auto function, and then push the **Enter** key to select the highlighted function.





3. Manual Function:

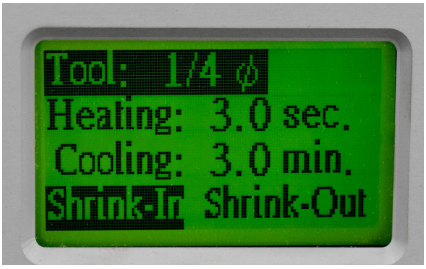
   In **Manu.** mode, push and hold the Manual Heating Button (13) to start heating. Heating will stop when the button is released. The red LED will turn on during heating, and the LCD display will count the heating time until the button is release, or after 10 seconds.

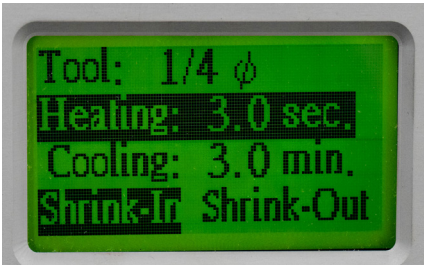
   Push the **Cooling** key to start the air blast cooling; push the **Stop** button to turn off the air blast.

! Notice: This machine has a fast heating capacity! The maximum recommended heating temperature is 400°C. Temperatures higher than 400°C may damage the toolholders.

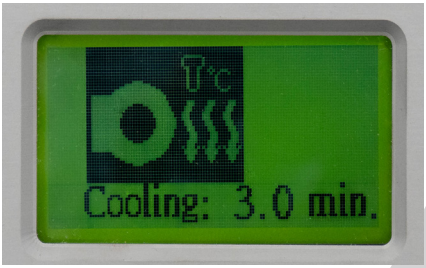
4. Auto. Function:

In **Auto.** mode, use the [**< >**] keys to create and select between settings for several different tools. Press the **Enter** key to switch between different settings (tool diameter, heating time, cooling time, shrink in and shrink out). Use the [**< >**] keys to adjust the values for each setting. The machine will record and save the tool settings each time they are changed.





Push the **Start** key to start heating; it will stop after the set time is reached. Once the heating cycle is complete, insert/remove the cutting tool. Push the **Cooling** key to start cooling; it will stop after the set time reached. Push the **Stop** switch to stop heating/cooling at any time.



- The red LED on the **Manual Heating Button** will turn on during the heating period. The machine will record data every time the **Manual Heating Button** is pushed.

- We recommend waiting 2 seconds after the heating period to insert the tool into the toolholder.

! **Notice:** In addition to the **Stop** button, the **Function** key will turn off the heating cycle.

! **Notice:** If you are not sure about the heating time, please refer to the recommended heating and cooling times in the tables provided.

! **Notice:** After the heating procedure, if you are not sure whether the toolholder and cutting tool are cooled, **please use the appropriate tools and safety equipment to remove the tools.**

! **Notice:** This machine has a fast heating capacity! The maximum recommended heating temperature is 400°C. Temperatures higher than 400°C may damage the toolholders. Please contact your toolholder supplier for detailed heating specifications.

Additional Information

1. The toolholder's bore and the cutting tool must be thoroughly cleaned (use a cleaning cloth/rag to clean) to prevent the cutting tool from getting stuck.

2. During the heating procedure, if alarms **E1, E2, E3, E4, or E5** appear on the LCD Display Window, the machine has experienced one of the following issues:

   E1: Machine heating error. Please check heating head connection.
   E2: Heating head over temperature.
   E3: 3-phase power supply in error.
   E4: No toolholder in heating head.
   E5: Machine's power module is over temperature.

3. This induction shrink fit machine generates heat during use, and must be operated in a well ventilated area. The machine should be placed in a clean, dry location, and protected from strong hits. DO NOT attempt to service your machine! If you are experiencing issues, contact your local HFO for service.

4. For safety purposes, keep flammable materials away from this machine while in use.

Machine Specifications

1. Power Supply: 220V AC 60 HZ, 3 phase + ground terminal
2. Max. consumption power: 10,000 Watts
3. Dimensions (W x D x H): 15" x 16" x 25.75" (380 x 405 x 655 mm)

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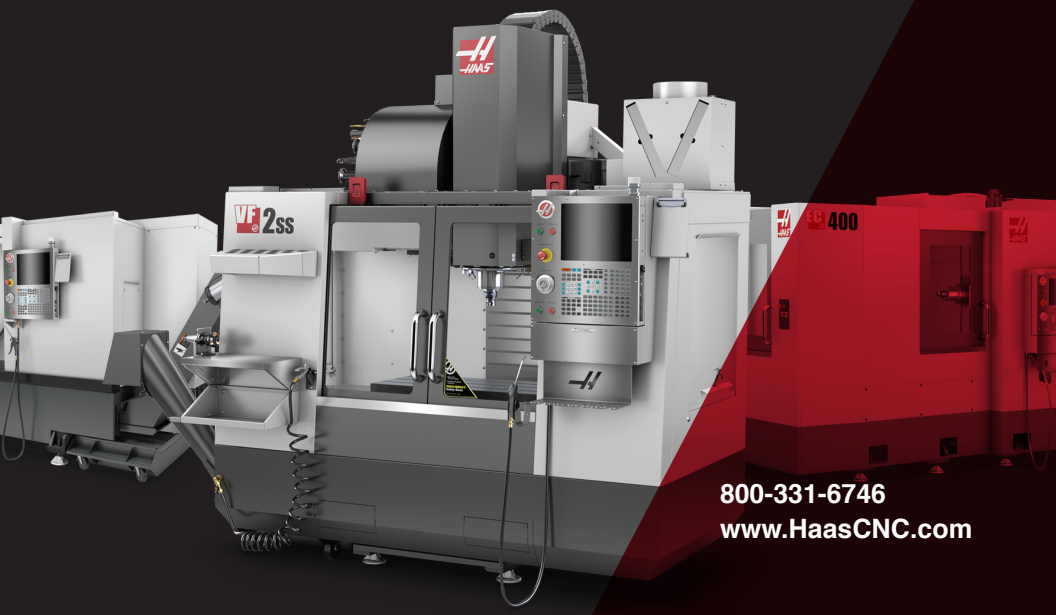

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