

USER'S GUIDE



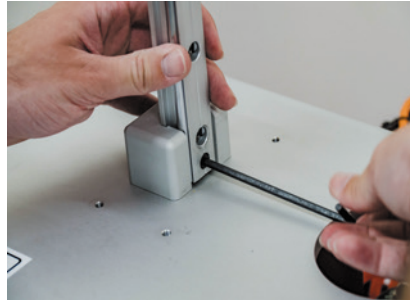
HF-325

INDUCTION SHRINK FIT MACHINE

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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 power supply.
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

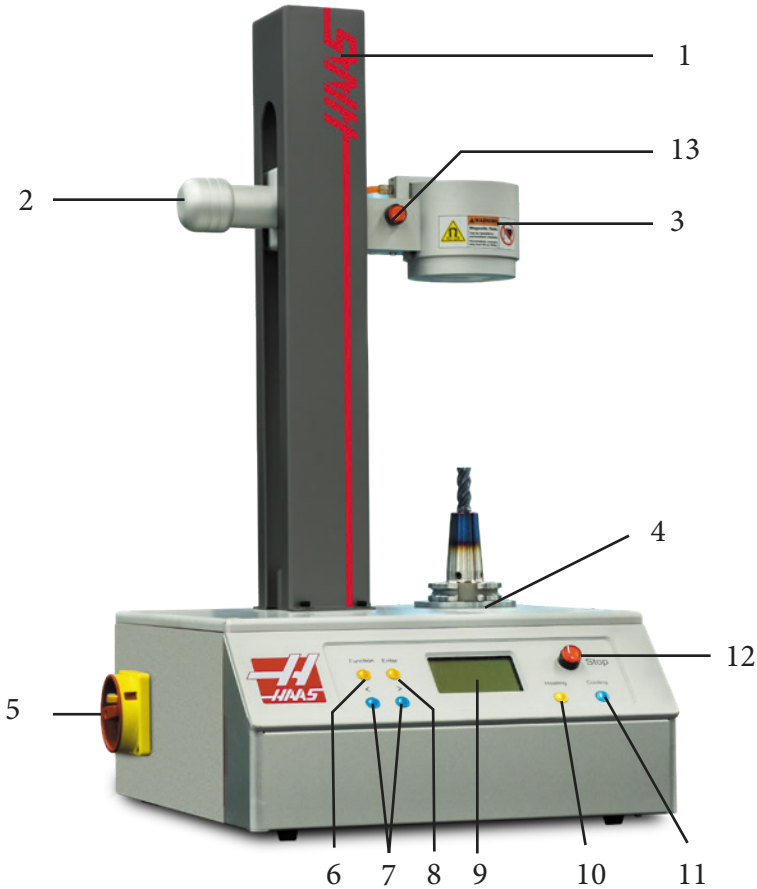
HSF-325 OPERATION NOTICES

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!** Please confirm the characteristics of your toolholders and cutting tools (material, external diameter, tolerances, etc.) to set accurate heating cycles, to prevent damage to your toolholders, and extend the life of the machine.
2. Stainless toolholders can damage the induction heating head. Stainless toolholders may 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 overheats, please stop operation temporarily until the heating head has cooled. **Continuing operation 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 allowing 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 remove** 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. To remove oil, we recommend using a clean cloth or solvent tank.
5. **DO NOT turn on the induction heating head without a toolholder present!** Prior to removing the toolholder during the heating procedure, press STOP to turn off the machine, to avoid heating without an object present.
6. If 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.

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HSF-325 Induction Shrink Fit machine

Name and illustration of all parts

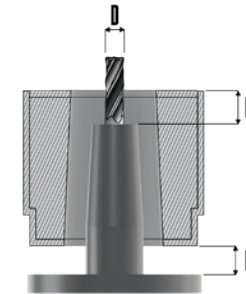
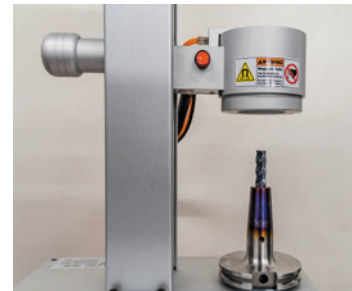


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|---------------------------------|---------------------------|
| 1. Up/Down Guide Rail and Cover | 8. Enter Key |
| 2. Locking Knob | 9. LCD Display |
| 3. Induction Heating Head | 10. Heating Key (Start) |
| 4. Tool Sleeve | 11. Cooling Key (Cooling)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

Operation Instructions

1. Before operation

- Ensure you have a proper connection to the power source with proper ground wire.
- Install the correct tool sleeve and 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 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" (25 mm)	1.000" (25 mm)
5/8" (16 mm)	0.250" (6 mm)
1/2" (13 mm)	0.375" (10 mm)
3/8" (10 mm)	0.625" (16 mm)
Make sure H2 = .25" (6 mm) min.	

RECOMMENDED HEATING TIME			
EM IN		EM OUT	
D	Time (sec)	D	Time (sec)
1-1/4" (32 mm)	5.0	1-1/4" (32 mm)	6.0
1" (25 mm)	8.0	1" (25 mm)	8.5
3/4" (19 mm)	7.5	3/4" (19 mm)	9.0
5/8" (16 mm)	6.5	5/8" (16 mm)	7.0
1/2" (13 mm)	6.0	1/2" (13 mm)	9.0
3/8" (10 mm)	6.0	3/8" (10 mm)	7.0

RECOMMENDED COOLING TIME			
EM IN		EM OUT	
D	Time (sec)	D	Time (sec)
1-1/4" (32 mm)	4.0	1-1/4" (32 mm)	4.5
1" (25 mm)	6.0	1" (25 mm)	6.0
3/4" (19 mm)	4.0	3/4" (19 mm)	5.0
5/8" (16 mm)	3.0	5/8" (16 mm)	3.5
1/2" (13 mm)	2.5	1/2" (13 mm)	3.0
3/8" (10 mm)	2.5	3/8" (10 mm)	3.0

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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 heats fast! 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 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.



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- 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.
- Wait 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 heats fast! 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 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 heated.

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. Max. consumption power: 10,000 Watts
2. Dimensions (W x D x H): 15" x 16" x 25.75" (380 x 405 x 655 mm)



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