

**BARTON
TOOLS**

HA-3 Induction Heater

Operation Instruction

BARTON TOOLS HYDRAULIC

bearing on it into the fixed, open position (at 45°). Slide the bearing from the yoke. Mount the bearing immediately to avoid heat loss.

Malfunctioning

- If the temperature of the work piece fails to increase by 1° (either C or F) within a set time-span, the heater switches off automatically. Four blinking dashes will appear (----) in the display, and a loud intermittent beep is emitted. Press the 'STOP' key to stop the beeping and check whether:
 - the probe is still attached to the work piece, and is connected correctly into its socket.
 - the probe wiring has been damaged.
 - the probe surface is clean.
 - the heater capacity is too small for the work piece.

If the probe is defective, the Time Mode can still be used. The temperature should be checked using an external thermometer.

- If a loud vibrating noise is heard, first check to see that the contact surfaces of the yokes are greased sufficiently. Then check to see that the yoke is making optimal contact with poles. (To adjust yokes: Place yoke on heater, unscrew the bolts in the yoke ¼ turn. Switch on heater and the yoke will set itself. Re-tighten the bolts. You can also use a nylon hammer as an aid to reposition the laminates).

WARNING!

- **If in any doubt, isolate the machine and contact your local distributor.**

8. Technische Daten

Power Rating	5.5KVA
Voltage/Current	380V/15A
Frequency	50/60 Hz
Bore Diameter	Φ60-200 mm
Max OD Vertical	440 mm
Max. Work Piece Width	140 mm

1. Safety Instructions

WARNING! = potential risk of serious personal injury

CAUTION! = danger of damaging the heater or work piece

WARNING!

- Induction heaters generate a magnetic induction field, which may affect or impair medical devices such as pacemakers or hearing aids, resulting in a high risk of serious bodily harm. Do not operate, or be within a suggested minimum distance of 5m (16ft) of the machine while wearing such devices.
- Hot work pieces may burn. Use supplied protective gloves when handling such work pieces (suitable up to 150°C (302°F)).
- Do not operate an Induction heater in areas where there is a risk of an explosion.
- Proper maintenance and handling practices are critical. Failure to follow user manual can result in equipment failure, creating a risk of serious bodily harm.

CAUTION!

- Sensitive electronic equipment (e.g. portable telephones, computers, watches, etc.) may be affected by the magnetic field and should not be used within the vicinity of the heater.

Safety precautions

The user should have an appreciation of the contents of this manual, and be familiar with safe workshop practices.

- Follow the User Manual at all times.
- Ensure that the machine operates at the correct supply voltage. If the heater has been supplied without a plug connection to the power supply should only be made by a suitably qualified person.
- Do not use or store the heater in humid environments. Induction heaters are designed for indoor use only.
- On mobile models, always apply brake when in a stationary position.
- If the heater is equipped with sliding horizontal supports, always secure these with the designated safety pin, either in the "in" or "out" position.
- Use proper handling equipment, appropriate for the weight of the work piece or yoke.
- Never support parts with a metal cable or have anything metallic hanging

in the proximity of the magnetic field. Extremely high currents can flow through the cable, causing the cable to heat up.

- Do not hold metal objects near the yokes and poles.
- While heating keep at least 1 metre (3.3 ft) distance from the heater.
- Never remove the yokes during the heating cycle.
- Do not modify the heater and do not use self-fabricated yokes.
- Always check that the yoke is correctly adjusted to the poles otherwise excessive vibration may occur.

- Only switch the machine on when the yoke is positioned correctly – on models equipped with a swing arm (or swivelling yoke), the arm should always be closed.

Note: Since our products are subject to continuous improvement, we reserve the right to make changes.

2. Introduction

Application

Induction Heaters are designed to heat bearings, bushings, gear wheels, couplings or other metallic work pieces which form a closed electrical loop. This will facilitate mounting where an interference fit is required.

The heaters are designed to heat the work piece up to a maximum temperature of 240°C (464°F), with the exception of the other series models where the temperature is limited to a maximum of 150°C (302°F) and special custom-designed heaters where the maximum temperature can be as high as 480°C (896°F).

Induction heaters can be used on continuous bases. There is however a limitation; do not operate heater at a temperature of 240°C (464°F) or more for more than half an hour. By heating with the time function this has to be checked with an external temperature meter.

Caution:

- Bearings generally should only be heated up to a maximum temperature of 120°C (248°F).
- Precision bearings should only be heated up to a maximum temperature of 70°C (158°F). Heating to higher temperatures may affect the metallurgical structure and dimensional stability resulting in premature bearing failure or loss of bearing performance.
- Do not use induction heaters for bearings or work pieces, which are

& 6.

- Switch the machine on. The display will show 100c (or 100F). Enter the desired temperature to which the work piece will be heated up to using the '▲' or '▼' key (by pressing the temperature mode key () you can choose between steps of 1° or 10° - this is the same whether working in C or F).

- Press the 'START' key. Heating starts and a soft buzzing sound will be heard.

• The current temperature of the work piece appears on the display. When the desired temperature has been reached, the display starts to blink and a loud beeping is emitted. Unless you press the 'STOP' key, the

heatretention function will keep the bearing at that temperature for 5 minutes. The machine resumes heating after a temperature drop of 3° (C or F). When the set temperature is reached once more the induction heater emits a loud beep. Press the 'STOP' key to switch off the machine.

- The heating process or the heat-retention function can be interrupted at any time by pressing the 'STOP' key.

Using the Time Mode

- Set up the work piece and temperature probe according to the instructions in sections 5 & 6 (the temperature probe is only necessary if you want to check the temperature).

- Switch the machine on and press the time mode key '▲'. Press the '▲' or '▼' key to set the desired time (by pressing the time mode key '▲', you can choose between steps of one minute or one second).

- Press the 'START' key. Heating starts and a soft buzzing sound will be heard.

• If the temperature key () is pressed while heating, the current temperature is displayed for 3 seconds. After that the countdown is resumed.

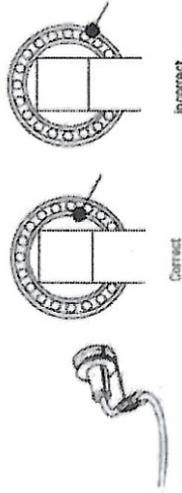
- During the heating process the set time runs to 00:00. When 00:00 is reached the induction heater switches off. The work piece is then automatically demagnetised and a loud continuous beeping is emitted. Press the 'STOP' key to switch off the machine.

Work piece removal

- After pressing the 'STOP' key, place the probe on the side of the vertical pole. Pressing the 'STOP' key always causes the work piece to be automatically demagnetised.
- Using heat-resistant gloves, grip the yoke with the bearing on it and place it on a clean, heat-resistant surface. Mount the bearing immediately to prevent cooling. If using a model with a swing arm, swivel the yoke with the

6. Positioning the Magnetic Temperature Probe

- Always use magnetic temperature probe (hereafter referred to as the 'probe') for heating in the Temperature Mode.
- The probe can be used as a temperature-control aid for heating in the Time Mode.
- The probe is suitable for operation up to a maximum temperature of 240°C (464°F) – special probes are supplied with custom machines designed to operate above this temperature.
- As a safety feature, the connection between magnet and probe will break above the maximum temperature. If this occurs when operating in the Temperature Mode, the machine will turn itself off since the probe will fail to register any increase in the temperature over a set period of time.
- A probe fixed to a clamp is also available when heating non-magnetic work pieces.
- Ensure that the area where the probe is located is completely clean.
- Always place the probe as close as possible to the bore of the work piece (see opposite).
- Connect the probe by inserting the plug into the socket at the back of the heater (the terminals have a different orientation, so that the plug will only fit in one way - the VHIN10 series models have the probe permanently connected).



CAUTION!

- Treat the probe with care. It is a valuable part of the heater and can easily be broken through careless handling. After use, we suggest that it is placed on the side of the vertical pole.

7. Operation

- Using the Temperature Mode (Default mode whenever the machine is switched on)
- Set up the work piece and probe according to the instructions in sections 5

outside the minimum, or maximum dimensions as specified in the technical data (Appendix 1).

- Do not switch off the heater with the main switch while heating cycle is running

Operating conditions

Designed to be used in an industrial environment with an ambient temperature of 0°C to 50°C (32°F to 122°F), and an atmospheric humidity of between 5% to 90%. The induction heater is meant for indoor use only.

Principle of operation

The heater works in the same way as a transformer. The primary coil is the heater and the secondary coil is the work piece. When the heater is switched on, a high voltage, low alternating current passes through the numerous windings of the primary coil. This induces a low voltage, high current in the work piece acting as the secondary coil. This high current results in the heating up of the work piece. The current is only flowing in the work piece, hence it is only this which starts to heat up. The work piece is automatically demagnetised at the end of each heating cycle.

3. Installation

- Remove packing material and place the induction heater on a non-ferrous, stable, flat surface. The box will normally contain the heater, a yoke or a set of yokes, the temperature probe.
- Check the supply voltage and current meet the specifications on the type plate to be found on the back of the machine.
- As there are a large number of plug types, not every induction heater is provided with a plug. When the heater is not provided with a plug, a suitable plug has to be affixed by a qualified electrician.
- Make sure that the supply cable cannot come into contact with the bearing that is to be heated. Insert the plug into a shockproof wall socket.
- Use the main switch to switch on the current. The machine will emit a short beep and the display will show a "pre-set goal temperature" set by the manufacturer.
- Connect the temperature probe by inserting the plug in the socket. Make sure that – and + correspond on both plug and socket
- The induction heater is now ready to be used in the temperature function mode.

4. Symbols and Display

Symbols shown on the heater	
	Prohibited for people with a pacemaker. Magnetic field may have influence.
	No watches or other metal objects allowed. Magnetic field may have influence.
	Use heat-resistant gloves
	Read the instructions

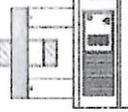
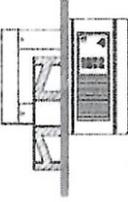
Display:	
	- Display time or temperature
Increase time/temperature -	- Reduce time/temperature
Operate using Time Mode -	- Operate using Temperature Mode
Start operation -	- Stop operation/automatic demagnetisation

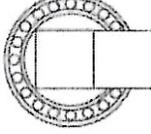
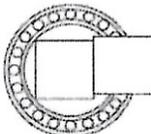
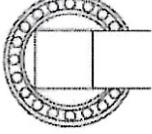
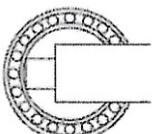
5. Setting up the Work Piece

WARNING!

- Use appropriate hoisting equipment for heavy components and yokes. The manual lifting of heavy objects is a common cause of injury.
- The weight of the work-piece should not exceed the maximum weight shown in section 5.2 below, and in the technical data (Appendix 1) at the back of the manual. Exceeding these limits may result in catastrophic equipment failure leading to personal injury.
- If heater is equipped with sliding horizontal supports, always secure these with the designated safety pin, in either the 'in' or the 'out' position. Unexpected movement of the work piece may lead to personal injury.
- Ensure that the mains cable cannot come into contact with the work piece. Damage to the cable may result in electrocution.
- Never support components with a metal cable or have any hanging in the proximity of the magnetic field. Extremely high currents can flow through the cable causing it to heat up quickly, resulting in a risk of burning.

The work piece can be set up in two different ways:

	Yoke passing through the work piece
	Yoke in the horizontal position (The bore is large enough for the pole to pass through it. The work piece in this example is shown resting on the horizontal supports).

<ul style="list-style-type: none"> • Make sure that the bright sides are greased sufficiently (improve contact, avoid excessive vibration) and are aligned on the top of poles. 	 	Correct	Incorrect
<ul style="list-style-type: none"> • Always choose a yoke, which fills the bore of the bearings as fully as possible. You can even combine 2 yokes - this helps to heat more quickly & evenly. 	 	Correct	Incorrect

- For Swing Arm Yokes: Swing out yoke towards the front of the heater until it falls in the positioning lock of the hinge construction. Slide the workpiece over the yoke till it lies in the middle of the yoke and swing the yoke incl. Work piece back on top of the poles.
- Always make sure that the workpiece has no direct contact with the plastic housing of the heater.
- When heating cycle is ready, follow the above instructions in opposite order to take of the heated work piece. Wear protective clothing like heat resistant gloves because the workpiece is hot now. (Supplied gloves are suitable for 150°C (302°F)).
- Always treat yokes carefully falling, jolting, etc, can damage them. Always put the yoke away immediately after use