SKF TIH 15

Instructions for use

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Original instructions

READ THIS FIRST
Safety precautions

Read this instruction for use fully. Follow all safety precautions to avoid personal injury or property damage during equipment operation. SKF cannot be responsible for damage or injury resulting from unsafe product use, lack of maintenance or incorrect equipment operation. In case of any uncertainties in regards to the use of the equipment contact SKF.

- Because the TIH 15 generates a magnetic field, people wearing a pacemaker must not be within 5 m *(16 ft)* of the TIH 15 during operation. Electronic equipment such as wrist watches may also be affected.
- During the heating process observe a safety distance of 50 cm *(1.6 ft)* with the workpiece, the heater coil or the core.
- Follow the operating instructions at all times.
- Be certain that the voltage supply is correct.
- Electrical arcing may occur when a potential difference exists between the TIH 15 and the workpiece.
  This is not dangerous to human beings and will not cause damage to the TIH 15 or the workpiece. However, the TIH 15 must never be used in areas where there is a risk of explosion.
- Do not expose the TIH 15 to high humidity.
- Never operate the TIH 15 without a yoke in position.
- Do not modify the TIH 15.
- Use proper handling equipment when lifting heavy workpieces.
- Avoid contact with hot workpieces.
  Wear the supplied heat resistant gloves to handle hot workpieces.

EU Declaration of conformity SKF TIH 15

We, SKF MPT, Meidoornkade 14,
3992 AE Houten, The Netherlands herewith declare under our sole responsibility that the products described in these instructions for use, are in accordance with the conditions of the following legislations:
EUROPEAN LOW VOLTAGE DIRECTIVE 2014/35/EU
EMC DIRECTIVE 2014/30/EU
RoHS DIRECTIVE (EU) 2011/65/EU as amended by 2015/863/EU
Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances and are in conformity with the following standards:
EN 62368-1: 2014/AC:2015
EN61000-6-1:2007
EN61000-6-3:2007 /A1:2011 /AC:2012
EN61000-3-2:2014
EN61000-3-3:2013
EN61000-4-2
EN61000-4-3
EN61000-4-4
EN61000-4-5
EN61000-4-6
EN61000-4-8
EN61000-4-11

Houten, The Netherlands, September 2025

Jerome Verrier
Manager Quality and Compliance

UK Declaration of conformity SKF TIH 15

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Electrical Equipment (Safety) Regulations 2016 (2016 No. 1101)
Electromagnetic Compatibility Regulations 2016 (2016 No. 1091)
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (2012 No. 3032)
Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances and are in conformity with the following standards:
EN 62368-1: 2014/AC:2015
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EN61000-6-3:2007 /A1:2011 /AC:2012
EN61000-3-2:2014
EN61000-3-3:2013
EN61000-4-2
EN61000-4-3
EN61000-4-4
EN61000-4-5
EN61000-4-6
EN61000-4-8
EN61000-4-11

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Houten, The Netherlands, September 2025

Jerome Verrier
Manager Quality and Compliance

1. Introduction

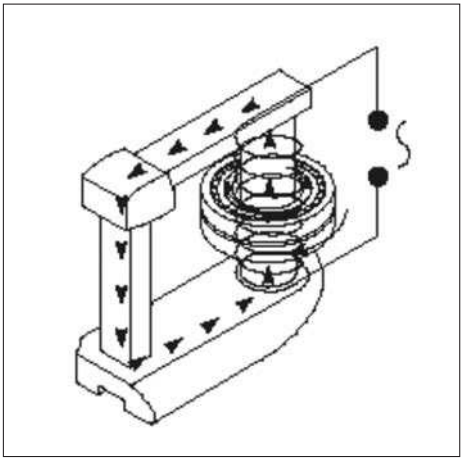
The SKF TIH 15 induction heater is designed to heat bearings that are mounted with an interference fit onto a shaft. The heat causes the bearing to expand, which eliminates the need to use force during installation.
A 90 °C *(162 °F)* temperature difference between the bearing and shaft is generally sufficient to enable installation. At an ambient temperature of 20 °C *(68 °F)*, the bearing must therefore be heated to 110 °C *(230 °F)*.

1.1 Intended use

The TIH 15 has been designed to heat rolling bearings. However, other metal workpieces that form a closed circuit can also be heated. Examples of acceptable workpieces include bushings, shrink rings, pulleys, and gears.
All bearings that fit between the vertical supports with the top yoke in place can be heated using the TIH 15. In addition, smaller bearings can be placed over any of the standard yokes. (See → the illustrations at the beginning of this manual).

1.2 Principle of operation

The TIH 15 generates heat by means of a large electrical current that is magnetically induced in the workpiece by a coil within the heater.
The high voltage, low current electricity flowing through the large number of windings in the inductive coil induces low voltage, high current electricity in the workpiece.
Because the workpiece has the electrical characteristics of a coil with a single, short-circuited winding, the high current generates heat within the workpiece.
Because the heat is generated within the workpiece, all of the heater components remain cool.



1.3 Distinguishing features

- Control keyboard panel
- Top storage

All three standard yokes can be stored inside the top storage case.
(See → the illustrations at the beginning of this manual).

2. Description

The operation of the heater is controlled by the internal electronics in either of two modes. The operator can either select the desired temperature of the bearing in TEMP MODE or set the length of time that the bearing will be heated in TIME MODE.
The power level can be adjusted to 100% or 50% for slower heating of sensitive workpieces (for example, bearings with C1 or C2 clearance).

2.1 Components

The TIH 15 induction heater contains a U-shaped iron core with inductive coils beneath. A keyboard control panel is on the front side of the heater.
The keyboard panel electronics and the internal electronics control the operation of the heater. A removable yoke on the top of the vertical supports allows the workpiece to be placed onto the heater. To accommodate smaller workpieces, two smaller yokes are also provided. A temperature probe is also included with the heater. Heat-resistant gloves are also included.

2.2 Technical data

TIH 15	
Voltage and frequency	TIH 15/230V: 200-240 V, 50/60 Hz TIH 15/120V: 100-120 V, 50/60 Hz
Recommended line protection	6 A fuse rating for 230 V 10 A fuse rating for 120 V
Maximum power consumption	1.2 kVA
Temperature control	20 - 250 °C *(68 - 482 °F)*; in steps of 1°
Probe type	Thermocouple, K type
Probe maximum temperature	250 °C *(482 °F)*
Time mode	0 - 60 minutes; in steps of 0.1 minute
Power range	100% / 50%
Demagnetization	automatic; residual magnetism <2A/cm
Overall dimensions (w x d x h)	350 x 206 x 240 mm *(13.8 x 8.11 x 9.4 in)*
Area between supports (w x h)	90 x 85 mm *(3.54 x 3.35 in)*
Core cross section	35 x 35 mm *(1.38 x 1.38 in)* For minimum bearing bore diameter of 50 mm *(1.97 in)*
Max bore diameter	200 mm *(7.9 in)*
Weight (with yokes)	13 kg *(28.66 lbs)*
Workpiece maximum weight	bearing: 15 kg *(33.07 lbs)*; solid component: 7.5 kg *(16.53 lbs)*
Maximum heating temperature	approx. 250 °C *(482 °F)* Depending on bearing or workpiece weight.
Standard yoke dimensions: 35 x 35 x 160 mm *(1.38 x 1.38 x 6.3 in)* 28 x 28 x 160 mm *(1.1 x 1.1 x 6.3 in)* 14 x 14 x 160 mm *(0.55 x 0.55 x 6.3 in)*	For minimum bearing bore diameter of: 50 mm *(1.97 in)* 40 mm *(1.57 in)* 20 mm *(0.79 in)*

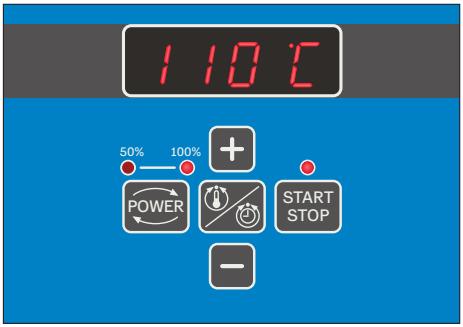
3. Preparation for use

- Place the TIH 15 in the horizontal position on a stable surface.
- Connect the power cable to the terminal at the back side of heater and mains plug to a suitable mains supply.
- For workpieces with an internal diameter large enough to fit in the working area, follow these steps:
  - Place the workpiece inside the working area over the core pillar.
  - For best performance, adjust the position of the workpiece so that it is as much as possible inside the working area.
  - Position the largest yoke so that it completely covers the top of both vertical supports.
- For workpieces that do not fit horizontally, follow these steps:
  - Choose the largest of the three yokes that fit through the internal diameter of the workpiece.
  - If necessary, remove the top yoke from the TIH 15.
  - Slide the workpiece onto the yoke that you have selected.
  - Position the yoke on the TIH 15 with the bright underside resting evenly on the two vertical supports.
- If you will use TEMP MODE, plug the temperature probe into the connector on the front side of the heater. Place the magnetic end of the probe on the inner ring of the bearing or on the innermost surface of the workpiece.
- Switch on the TIH 15.
- Observe the self-test of the display and signal tone.

4. Operation

4.1 Function of displays

- The control display shows the selected time or temperature for heating.
- The power LED's show the selected power setting.



Display	Indication
t	time in minutes
°C	temperature in degrees Celcius
°F	temperature in degrees Fahrenheit

4.2 Function of buttons

Button	Function
POWER	Press to adjust the power The selected power is indicated with an LED
MODE	Press to switch between TIME MODE and TEMP MODE
UP (+)	Press to increase the value shown on the remote control display
DOWN (-)	Press to decrease the value shown on the remote control display
START / STOP	Press to start or stop the heater. The LED on the START / STOP button is lit when the heater is heating and flashes during temperature measurement

4.3 Temp mode

- If the control panel display shows ‘t’, press MODE to select TEMP MODE. The display shows °C or °F in TEMP MODE.
- The selected temperature is shown on the remote control display. The default temperature for bearings is 110 °C *(230 °F)*. If a different temperature is desired, press UP or DOWN to adjust the temperature in steps of 1°.
- It may be desirable to heat bearings to temperatures above 110 °C *(230 °F)* for increased mounting time. Consult the SKF bearing specifications to determine the maximum permitted temperature. Always ensure the bearing does not lock due to an excessive expansion of the inner ring compared to outer ring. See → **section 4.8**.
- If needed press POWER to select the power level. Use the guidelines in → **section 4.8** to determine the correct power setting.
- Make sure the temperature probe is mounted on the bearing inner ring.
- Press START / STOP to start the heater. The control display shows the current temperature of the workpiece.
- During heating the selected temperature can be displayed for 1 second by pressing MODE.
- When the selected temperature has been reached, the heater demagnetizes the workpiece, switches off, and generates an acoustic signal for 10 seconds or until START / STOP is pressed.
- Press START / STOP to stop the heater.
- Remove the workpiece with proper handling equipment.
- If the workpiece remains on the heater, the heater will start again when the temperature of the workpiece drops 10 °C *(18 °F)*. Press START / STOP to stop the heater and demagnetize the workpiece.
- The TIH 15 is now ready to heat another workpiece with the same settings.

4.4 Time mode

- If the control panel display shows °C or °F, press MODE to select TIME MODE. The display shows ‘t’ in TIME MODE.
- Press UP or DOWN to adjust the time in steps of 0.1 minute.
- Press POWER to select the power level. Use the guidelines in → **section 4.8** to determine the correct power setting.
- Press START / STOP to start the heater. The remote control display shows the time that remains.
- During heating the temperature measured by the probe can be displayed for a couple of seconds by pressing MODE.
- When the time has elapsed, the heater demagnetizes the workpiece, switches off, and generates an acoustic signal for 10 seconds.
- Press START / STOP to cancel the acoustic signal and stop the heater.
- Remove the workpiece with proper handling equipment.
- The TIH 15 is now ready to heat another workpiece with the same settings.

4.5 Temperature measurement

When the heater is not operating, the temperature of the workpiece can be measured by pressing MODE and START / STOP at the same time.
The LED on the START / STOP button flashes during temperature measurement.
Press START / STOP to cancel temperature measurement.

4.6 Change of temperature unit

Press MODE and UP at the same time to switch between °C and °F.
The temperature unit setting remains the same even after disconnection from mains power.

4.7 Demagnetization

The workpiece is automatically demagnetized when heating is complete.
Demagnetization will not occur if the power is interrupted or the main switch is switched off. To use the TIH 15 for demagnetization only, select TIME MODE and set the time to 0.1 minute (6 seconds).

4.8 Power level selection

When heating bearings with an induction heater, most of the heat will be generated in the inner bearing race. The heat will then be transferred through the bearing. It is therefore important that bearings with small internal clearance or slight preload are heated slowly. Slow heating ensures that the bearing expands evenly, thereby preventing damage to the bearing.
The shape, weight, size, and internal clearances all affect the amount of time required to heat a bearing. The large variety of bearing types precludes the possibility of providing a specific power level setting for each type. Instead, the following guidelines are provided:

- For sensitive bearings (including bearings with C1 or C2 internal clearance) or bearings with brass cages, do not exceed 50% power.
- When using the smallest yoke 14x14 never exceed 50% power.

5. Safety features

The TIH 15 is equipped with the following safety features:

- Automatic overheating protection
- Automatic current control
- Over-current circuit breaker.
- In the TEMP MODE the heater will switch off if the temperature probe does not register a temperature increase of 1°C *(1.8°F)* every 45 seconds (0.75 minute).

To increase the interval to 90 seconds (1.5 minutes), press MODE and DOWN at the same time.

6. Troubleshooting

When the heater is plugged in and not functioning, please change the fuse:
TIH 15/230V: 6.3 A SLOW-BLOW Ø 5 × 20 mm
TIH 15/120V: 10 A SLOW-BLOW Ø 5 × 20 mm

A system fault will be indicated by an acoustic signal and one of the following fault codes on the remote control display:

Display	Fault	Action
E03 E	Overheated coil	Wait until the inductive coils cool down. Switch the heater OFF and then back ON
E05 E	Temperature increase of less than 1°C *(1.8°F)* every 45 seconds (or 1° every 90 seconds)	Check the temperature probe connection. If the connection is OK, select the 90 second interval as described in → **section 5** or operate the heater in TIME MODE
E06 E	Temperature probe not connected (or defective) or excessive temperature drop	Check the temperature probe
E10E	Electronics communication problem	Switch the heater OFF and then back ON. If problem remains return the TIH to SKF for repair
E11E	Electronics communication problem	Switch the heater OFF and then back ON. If problem remains return the TIH to SKF for repair
E12E	Electronics communication problem	Switch the heater OFF and then back ON. If problem remains return the TIH to SKF for repair

7. Spare parts

Designation	Description
TIH 15-TS	Top storage for yokes and accessories
TIH 15-Y5	Yoke for min. 50 mm workpiece diameter, 35 x 35 x 160 mm *(1.38 x 1.38 x 6.3 in)*
TIH 15-Y4	Yoke for min. 40 mm workpiece diameter, 28 x 28 x 160 mm *(1.1 x 1.1 x 6.3 in)*
TIH 15-Y2	Yoke for min. 20 mm workpiece diameter, 14 x 14 x 160 mm (0.55 x 0.55 x 6.3 in)
TIH P20	Temperature probe K type incl. cable and plug
TMBA G11	Heat resistant gloves, one pair
LGAF 3E/0.035	Tube of anti-fretting paste for heater maintenance

8. Maintenance

The correct maintenance of the heater is important to achieve the full service life of the product, ensure the best performance and avoid related risks.

The following advises should be taken into consideration before using the product:

- Check that there are no damages in the housing.
- Check that there are no damages in the insulation of the cable and in the plug. If so, replace them.
- Check that the lamination of the yoke is not broken. If the delamination gets too much, then replace the yoke with a new one to avoid extreme noise and efficiency losses.
- Check that the yoke is in good contact with the U-shaped core. The contact area should be clean and rust-free. There should not be air gaps between the surfaces. Non-parallel surfaces might generate vibrations and loud noises and cause efficiency losses.
- Check that the temperature probe, cable and plug are clean and not broken. Otherwise the temperature reading and control might not work properly.

When required and at regular intervals:

- Clean the heater using only a clean dry cloth.
- Clean the contact surfaces in between the yoke and the U-shape core. Add a layer of LGAF 3E anti-fretting paste to protect the surface area. This will help to keep the surfaces rust-free, reduce the heater noise and maintain heater efficiency.

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