

# SKF Induction Heaters

A comprehensive range for bearings and other workpieces



# Heating tools

Remote control makes the heater easy and safe to use



Magnetic temperature probe, on the inner ring, helps prevent bearing overheating



Foldable bearing support arms allow larger diameter bearings to be heated

## It's a fact.

### Incorrect mounting methods account for up to 16% of premature bearing failures

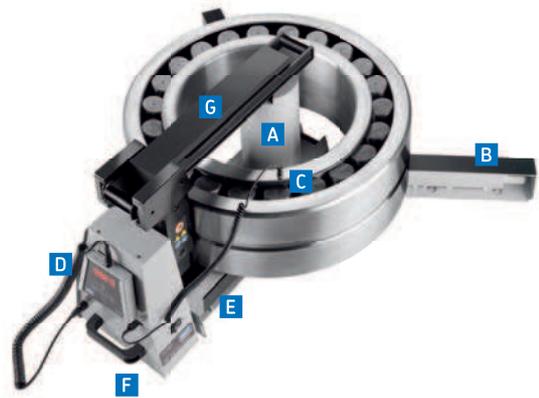
To reduce the risk of incorrect mounting, SKF helped pioneer the use of portable induction heaters for bearing mounting applications in the 1970's. Since that time, there have been many advances in technology and SKF has been at the forefront in developing safer, more efficient and user-friendly bearing induction heaters.

SKF Induction Heaters utilise advanced power electronics with application specific designs for high performance.

As a result, by using an SKF induction heater, the total cost of ownership is often significantly lower. Ergonomics and safety are also an important consideration for operators. SKF induction heaters are equipped with design features that make them easy to use and safe. Bearing support arms reduce the risk of the bearing toppling during heating, and ergonomically designed yokes help reduce operator fatigue. In addition, the unique remote control enables the operator to control the heater at a safe distance from the hot bearing, enhancing operator safety.

## Features and benefits

The comprehensive SKF induction heater range can be used for efficiently heating bearings and workpieces, both large and small. Their innovative design offers significant advantages to both owners and operators:



- Advanced power electronics, with accurate electric current control, help control the temperature rate increase
  - Two step power setting option (50% / 100%), enables small bearings to be heated safely and at a lower power consumption
  - For heating components other than bearings, all heaters are equipped with a heating time mode and for large components, optimized TIH MB heaters for solid workpieces are available
  - Thermal overheating protection reduces the risk of damage to the induction coil and electronics, enhancing reliability and safety
  - Automatic demagnetisation reduces the risk of ferrous debris contamination after heating
  - Available in different voltage variants, to suit most operating voltages worldwide
  - Supplied with heat-resistant gloves for improved operator safety
- A** Induction coil located outside the heater's housing enables a shorter heating time and lower energy consumption
  - B** Foldable bearing support arms allow larger diameter bearings to be heated, and reduce the risk of the bearing toppling during heating
  - C** Magnetic temperature probe, combined with a temperature mode pre-set at 110 °C (230 °F), helps prevent bearing overheating
  - D** Unique SKF remote control, with operating display and control panel, makes the heater easy and safe to use
  - E** Internal yoke storage, for smaller yoke(s), reduces the risk of yoke damage or loss
  - F** Integrated carrying handles allow for easy movement of the heater in the workshop
  - G** Sliding or swivel arm allows for easy and quick bearing replacement, reducing operator fatigue (not for TIH 030m)

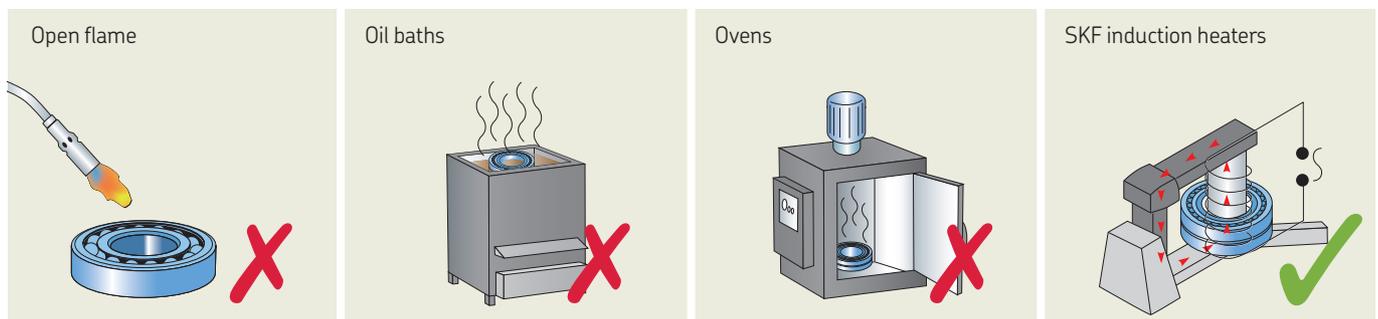
### Induction heating has many advantages over other bearing heating methods

The use of an open flame to heat a bearing is not only inefficient and uncontrolled, but often leads to bearing damage. This method should not be used.

Oil baths are sometimes used to heat bearings. Oil baths often take a long time to reach the required temperature and can be difficult to control the actual bearing temperature. The energy consumption of an oil bath is also significantly greater than using an induction heater. The risk of contaminating the bearing due to dirty oil is significant and can lead to premature bearing failure. Handling hot, oily and slippery bearings present significant hazards to the operator and great care must be taken to avoid potential injuries.

Ovens and hot plates are often used for batch heating of small bearings and this is an acceptable technique. However, for larger bearings, the use of ovens and hotplates is generally quite inefficient and time consuming and can present the operator with significant handling hazards.

Induction heaters are the modern, efficient and safe way to heat bearings. In operation, they are generally faster, cleaner, more controllable, and easier to use than other heating methods.



# Induction heaters



## TMBH 1

Portable induction heater weighing only 4,5 kg

- Portable, lightweight, high efficiency heater for bearings with an inner diameter ranging from 20 to 100 mm (0.8 to 4 in.), and a maximum weight of 5 kg (11 lb)
- Equipped with temperature and time control and automatic demagnetisation
- Supplied in a carrying case



## TIH 030m

Small induction heater with a 40 kg bearing heating capacity

- Compact lightweight design; just 21 kg (46 lb), facilitating portability
- Capable of heating a 28 kg (62 lb) bearing in just 20 minutes
- Supplied standard with three yokes, allowing bearings with a bore diameter from 20 mm (0.8 in.) up to a maximum weight of 40 kg (90 lb) to be heated

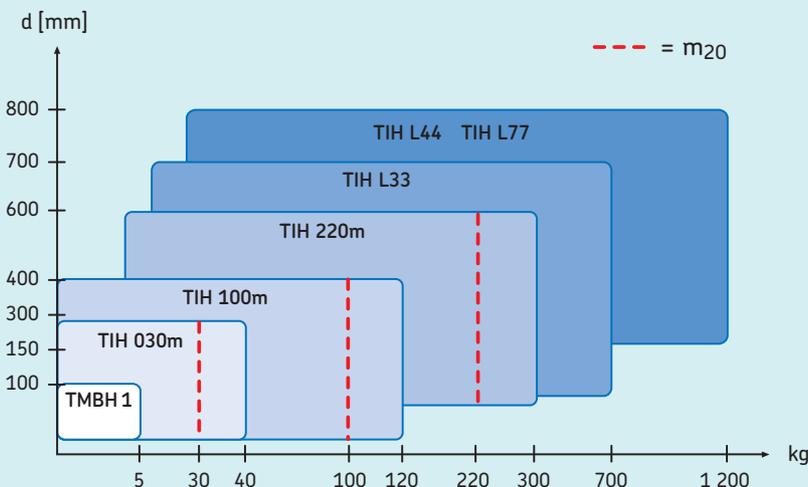


## TIH 100m

Medium induction heater with a 120 kg bearing heating capacity

- Capable of heating a 97 kg (213 lb) bearing in less than 20 minutes
- Supplied standard with three yokes, allowing bearings with a bore diameter from 20 mm (0.8 in.) up to a maximum weight of 120 kg (264 lb) to be heated
- Swivel arm for large size yoke

## SKF induction heater range



The comprehensive range of SKF induction heaters is suitable for most bearing heating applications. The chart gives general information on choosing an induction heater for bearing heating applications<sup>1)</sup>.

The SKF  $m_{20}$  concept represents the weight (kg) of the heaviest SKF spherical roller bearing of series 231 which can be heated from 20 to 110 °C (68 to 230 °F) in 20 minutes. This defines the heater's power output instead of its power consumption. Unlike other bearing heaters, there is a clear indication of how long it takes to heat a bearing, rather than just the maximum bearing weight possible.

<sup>1)</sup> For heating components other than bearings, SKF recommends consideration of TIH L MB series heater. Contact SKF to help you select a suitable induction heater for your application.



## TIH 220m

Large induction heater with a 300 kg bearing heating capacity

- Capable of heating a 220 kg (480 lb) bearing in just 20 minutes
- Supplied standard with two yokes, allowing bearings with a bore diameter from 60 mm (2.3 in.) up to a maximum weight of 300 kg (660 lb) to be heated
- Sliding arm for large size yoke



## TIH L series

Extra large induction heater with a 1 200 kg bearing heating capacity

- Using just 20 kVA of electrical power, the TIH L series can heat large bearings up to 1 200 kg (2 600 lb)
- Bearings and work pieces can be heated vertically or horizontally
- Compact design allows the TIH L series heaters to be easily transported by forklift
- Available with two different operating areas

## TIH L33

Large induction heater with a 700 kg bearing heating capacity

- Using just 15 kVA of electrical power, the TIH L33 can heat large bearings up to 700 kg (1 543 lb)
- Bearings and work pieces can be heated vertically or horizontally
- Compact design allows the TIH L series heaters to be easily transported by forklift



Technical data				
Designation	TMBH 1	TIH 030m	TIH 100m	TIH 220m
Max. bearing weight	5 kg (11 lb)	40 kg (88 lb)	120 kg (264 lb)	300 kg (662 lb)
Bore diameter range	20–100 mm (0.8–4 in.)	20–300 mm (0.8–11.8 in.)	20–400 mm (0.8–15.7 in.)	60–600 mm (2.3–23.6 in.)
Operating area (w × h)	52 × 52 mm (2 × 2 in.)	100 × 135 mm (3.9 × 5.3 in.)	155 × 205 mm (6.1 × 8 in.)	250 × 255 mm (9.8 × 10 in.)
Coil diameter	N/A	95 mm (3.7 in.)	110 mm (4.3 in.)	140 mm (5.5 in.)
Standard yokes (included) to suit bearing/workpiece minimum bore diameter	20 mm (0.8 in.)	65 mm (2.6 in.) 40 mm (1.6 in.) 20 mm (0.8 in.)	80 mm (3.1 in.) 40 mm (1.6 in.) 20 mm (0.8 in.)	100 mm (3.9 in.) 60 mm (2.3 in.)
Application example (bearing, weight, temperature, time)	6310, 1,07 kg, 110 °C, 1m 45s	23136 CC/W33, 28 kg, 110 °C, 20m	23156 CC/W33, 97 kg, 110 °C, 20m	23172 CC/W33, 220 kg, 110 °C, 20m
Max. power consumption	0,35 kVA	2,0 kVA	3,6 kVA (230 V) 4,0–4,6 kVA (400–460 V)	10,0–11,5 kVA (400–460 V)
Voltage <sup>1)</sup>				
100–240 V/50–60 Hz	TMBH 1	–	–	–
100–120 V/50–60 Hz	–	TIH 030m/110 V	–	–
200–240 V/50–60 Hz	–	TIH 030m/230 V	TIH 100m/230 V	TIH 220m/LV
400–460 V/50–60 Hz	–	–	TIH 100m/MV	TIH 220m/MV
Temperature control <sup>2)</sup>	0 to 200 °C (32 to 392 °F)	20 to 250 °C (68 to 482 °F)	20 to 250 °C (68 to 482 °F)	20 to 250 °C (68 to 482 °F)
Demagnetisation according to SKF norms	N/A	<2 A/cm	<2 A/cm	<2 A/cm
Dimensions (w × d × h)	330 × 150 × 150 mm (13 × 5.9 × 5.9 in.) Clamp: 115 × 115 × 31 mm (4.5 × 4.5 × 1.2 in.)	460 × 200 × 260 mm (18.1 × 7.9 × 10.2 in.)	570 × 230 × 350 mm (22.4 × 9 × 13.7 in.)	750 × 290 × 440 mm (29.5 × 11.4 × 17.3 in.)
Total weight (incl. yokes)	4,5 kg (10 lb)	20,9 kg (46 lb)	42 kg (92 lb)	86 kg (189 lb)

Technical data - TIH L series			
Designation	TIH L33	TIH L44	TIH L77
Max. bearing weight	700 kg (1 543 lb)	1 200 kg (2 600 lb)	1 200 kg (2 600 lb)
Bore diameter range	115–700 mm (4.5–27.6 in.)	150–800 mm (5.9–31.5 in.)	150–800 mm (5.9–31.5 in.)
Operating area (w × h)	300 × 320 mm (11.8 × 12.6 in.)	425 × 492 mm (16.7 × 19.4 in.)	725 × 792 mm (28.5 × 31.2 in.)
Coil diameter	150 mm (5.9 in.)	175 mm (6.9 in.)	175 mm (6.9 in.)
Standard yokes (included) to suit bearing minimum bore diameter	115 mm (4.5 in.)	150 mm (5.9 in.)	150 mm (5.9 in.)
Optional yokes to suit bearing minimum bore diameter	80 mm (3.1 in.) 60 mm (2.4 in.)	100 mm (3.9 in.)	–
Application example (bearing, weight, temperature, time)	24188ECA/W33, 455 kg, 110 °C, 28m	24188ECA/W33, 455 kg, 110 °C, 13m	–
Max. power consumption	TIH L33/LV: 15 kVA TIH L33/MV: 15 kVA	TIH L44/MV: 20–23 kVA TIH L44/LV: 20–24 kVA	TIH L77/MV: 20–23 kVA TIH L77/LV: 20–24 kVA
Voltage <sup>1)</sup>			
200–240 V/50–60 Hz	TIH L33/LV	TIH L44/LV	TIH L77/LV
400–460 V/50–60 Hz	TIH L33/MV	TIH L44/MV	TIH L77/MV
Temperature control <sup>2)</sup>	0 to 250 °C (32 to 482 °F)	20 to 250 °C (68 to 482 °F)	20 to 250 °C (68 to 482 °F)
Demagnetisation according to SKF norms	<2 A/cm	<2 A/cm	<2 A/cm
Dimensions (w × d × h)	400 × 743 × 550 mm (15.8 × 29.3 × 21.7 in.)	1 200 × 600 × 850 mm (47.3 × 23.6 × 33.5 in.)	1 320 × 600 × 1 150 mm (52 × 23.6 × 45.3 in.)
Total weight (incl. yokes)	140 kg (309 lb)	324 kg (714 lb)	415 kg (915 lb)

<sup>1)</sup> Some special voltage versions (e.g. 575V, 60 Hz CSA ready) are available for specific countries. For additional information, please contact your local SKF authorised distributor.

<sup>2)</sup> Maximum heating temperature capacity depends on the weight and geometry of the bearing or workpiece. The heaters can achieve higher temperatures, please contact SKF for advice.

# Solid workpiece heaters

The SKF TIH L MB series is specially designed to heat solid workpieces, such as rings, sleeves, gears, couplings, bushings and pulleys, as well as train wheels, tires or similar components. Featuring one magnetic coil in the center, these powerful and durable heaters localize the heating in the workpiece bore for superior performance on solid components.



The TIH L MB heats non-bearing workpieces up to 600 kg (1 323 lb), depending on the model.

## Induction heaters for non-bearing applications

### TIH L MB series

The TIH L MB series provides the following advantages for quick and effective heating of solid workpieces:

- Simple and safe operation with remote-control and power level selection
- Superior heating performance for solid workpieces with low energy consumption
- Quick and easy placement of solid components with sliding yoke
- Automatic demagnetization reduces risk of ferrous debris contamination
- Easy to transport using standard forklift
- Available in three voltage variants to suit most operating voltages worldwide
- Available with three different operating areas

The TIH L MB induction heater is equipped with a remote control panel for operator safety.

Advice: The SKF TIH L MB series heaters are designed for induction heating of solid, non-bearing components. For bearing-heating applications, we recommend the use of equivalent SKF TIH L series heaters.



## Technical data

Designation	TIH L33MB	TIH L44MB	TIH L77MB
Maximum workpiece weight	350 kg (772 lb)	600 kg (1 323 lb)	600 kg (1 323 lb)
Bore diameter range	115–700 mm (4.5–27.6 in.)	150–800 mm (5.9–31.5 in.)	150–800 mm (5.9–31.5 in.)
Operating area (w × h)	330 × 320 mm (13.0 × 12.6 in.)	465 × 492 mm (18.3 × 19.4 in.)	765 × 792 mm (30.1 × 31.2 in.)
Coil diameter	150 mm (5.9 in.)	175 mm (6.9 in.)	175 mm (6.9 in.)
Standard yokes (included) to suit workpiece minimum bore diameter	115 mm (4.5 in.)	150 mm (5.9 in.)	150 mm (5.9 in.)
Max. power consumption	TIH L33MB/MV: 15 kVA TIH L33MB/LV: 15 kVA	TIH L44MB/LV: 20–24 kVA TIH L44MB/MV: 20–23 kVA	TIH L77MB/LV: 20–24 kVA TIH L77MB/MV: 20–23 kVA
Voltage <sup>1)</sup>			
200–240 V/50–60 Hz	TIH L33MB/LV	TIH L44MB/LV	TIH L77MB/LV
400–460 V/50–60 Hz	TIH L33MB/MV	TIH L44MB/MV	TIH L77MB/MV
Temperature control	0–250 °C (32–482 °F); in steps of 1°	0–250 °C (32–482 °F); in steps of 1°	0–250 °C (32–482 °F); in steps of 1°
Time control	0–120 minutes; in steps of 0,1 minute	0–120 minutes; in steps of 0,1 minute	0–120 minutes; in steps of 0,1 minute
Demagnetisation according to SKF norms	<2A/cm	<2A/cm	<2A/cm
Maximum heating temperature <sup>2)</sup>	250 °C (482 °F)	250 °C (482 °F)	250 °C (482 °F)
Dimensions (w × d × h)	400 × 743 × 550 mm (15.8 × 29.3 × 21.7 in.)	1 200 × 600 × 850 mm (47.3 × 23.6 × 33.5 in.)	1 320 × 600 × 1 150 mm (52 × 23.6 × 45.3 in.)
Weight	140 kg (309 lb)	324 kg (714 lb)	415 kg (915 lb)

<sup>1)</sup> Some special voltage versions (e.g. 575V, 60Hz CSA ready) are available for specific countries. For additional information, please contact your local SKF authorised distributor.

<sup>2)</sup> Depending on bearing or workpiece weight. For higher temperatures, please contact SKF.

www.mapro.skf.com/heatersselect

## Heater selection tool

The online heater selection tool helps to select the most appropriate SKF heater for a given hot mounting or dismounting application of bearings or annular workpieces.

In just three easy steps, you can define your heating application and receive a list of all suitable heaters for that application, including a recommendation of the heater that offers the best price-performance ratio.

The online heater selection tool is available free of charge, just scan the QR code or visit us on [www.mapro.skf.com/heatersselect](http://www.mapro.skf.com/heatersselect)

The heater selection tool supports all mounting and fixed size EAZ dismounting heaters and offers additional information such as the product data sheet, technical data and product websites for each heater. If you cannot find the right heater for your application or you need more information, please don't hesitate to contact SKF.