

# Heating tools



A portable solution for bearing heating

## Portable induction heater TWIM 15

The SKF portable induction heater TWIM 15 is designed to heat up roller bearings that are mounted with an interference fit onto a shaft. Heating the bearing causes it to expand, which eliminates the need to use force during installation. Generally, using the TWIM 15 to generate a 90 °C (162 °F) temperature difference between the bearing and shaft is sufficient to enable installation. In addition, the TWIM 15 can be used to heat other ring-shaped, metallic components, providing flexibility of use.



Utilizing electrical power, the TWIM 15 features glass-fiber, high-temperature-resistant plastic construction that allows a low temperature difference between the inner and outer rings of the bearing. This helps to reduce internal tensions that are generated due to excessive thermal expansion of the inner ring compared to the outer ring.

The unit has a user-friendly LED control panel that requires no special training and is simple to understand. The panel is used to regulate temperature and also indicates that the TWIM 15 is operational.

### TWIM 15 advantages:

- Innovative heating of bearings
- Portable, compact and lightweight
- No support yokes required
- Automatic temperature monitoring
- Detects bearing size and heats appropriately
- Two power levels and three power configurations
- User-friendly LED control panel
- Quiet operation



The TWIM 15 portable induction heater package includes:

- Portable induction heater TWIM 15
- Magnetic K-type 400 mm temperature probe TWIM 15-3
- Temperature-resistant gloves TMBA G11
- Instructions for use

### Versatile

Because of the induction plate's flat shape, a support yoke is not needed. This increases the type of components that can be heated on the plate and also reduces the number of required accessories.

### Portable

Due to the medium-frequency technology used and choice of materials, the heater is lightweight. Also, the built-in handle makes it convenient to transport, and it can be stored easily.

### Innovative heating

Utilizing smart construction and operating software, the heater produces a low temperature difference between the inner and outer ring of the bearing. This reduces the internal tensions generated due to excessive thermal expansion of the inner ring compared to the outer ring.



### Power regulation

Featuring two power settings, the TWIM 15 can heat sensitive components at a slower pace. Also, a non-bearing power configuration is possible where most of the power is focused on the bore of the component.

### Quiet

Using medium-frequency technology to heat components does not generate noise. An LED indicates when the TWIM 15 is heating, even if you cannot hear it!

### Technical data

Designation	TWIM 15		
Max. bearing weight <sup>1)</sup>	20 kg (44 lb)	Max. current consumption	TWIM 15/230 V: 10 A TWIM 15/110 V: 16 A
Min. bearing bore diameter	20 mm (0.79 in.)	Temperature control	20-200 °C (68-392 °F)
Max. bearing outer diameter	320 mm (12.6 in.)	Demagnetisation according to SKF norms	Automatic
Max. bearing width	85 mm (3.35 in.)	Dimensions (w x d x h)	450 x 500 x 100 mm (17.7 x 19.7 x 3.9 in.)
Performance examples (bearing, weight, temperature, time)	6320: 7,1 kg (15.7 lb), 110 °C (230 °F), 5 min 20 s 22320 CC/W33: 12,8 kg (28.2 lb), 110 °C (230 °F), 12 min 35 s	Total weight	6,6 kg (14.6 lb)
Maximum power	TWIM 15/230 V: 2,3 kVA 1,8 kVA for the TWIM 15/110 V TWIM 15/110 V: 1,8 kVA		
Voltage	TWIM 15/230 V: 230 V, 50 Hz TWIM 15/110 V: 110 V, 60 Hz		

<sup>1)</sup> Depending on the geometry of the bearing, maximum heating temperature and power availability.

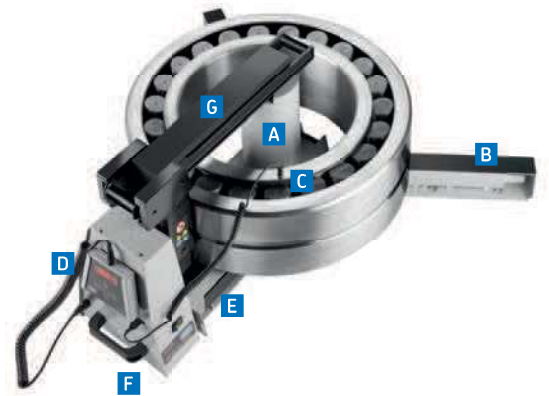
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## Features and benefits

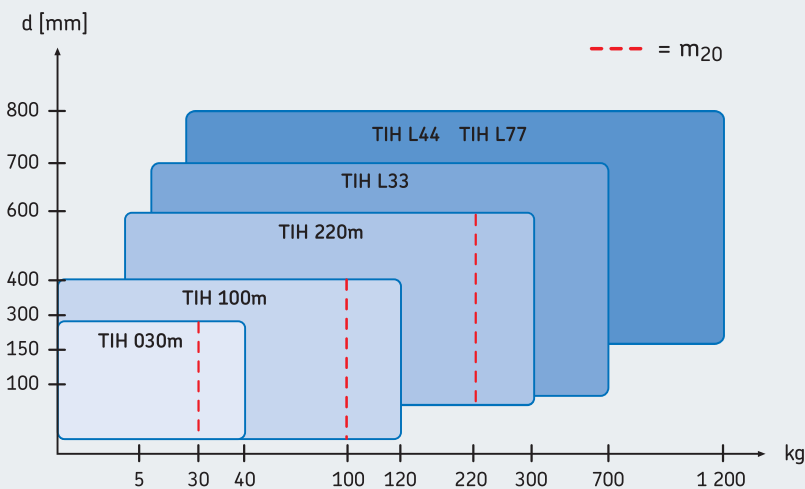
The comprehensive SKF induction heater range can be used for efficiently heating bearings and workpieces, both large and small. Their innovative design offers significant advantages to both owners and operators:

- 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)

## 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.



Small induction heater with a 40 kg bearing heating capacity

### TIH 030m

- 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

Medium induction heater with a 120 kg bearing heating capacity

### TIH 100m

- 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

Large induction heater with a 300 kg bearing heating capacity

### TIH 220m

- 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

Technical data	TIH 030m	TIH 100m	TIH 220m
Designation	TIH 030m	TIH 100m	TIH 220m
Max. bearing weight	40 kg (88 lb)	120 kg (264 lb)	300 kg (662 lb)
Bore diameter range	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)	100 × 135 mm (3.9 × 5.3 in.)	155 × 205 mm (6.1 × 8 in.)	250 × 255 mm (9.8 × 10 in.)
Coil diameter	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	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.)
Performance example (bearing, weight, temperature, time)	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	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>			
100–120 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>	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	<2 A/cm	<2 A/cm	<2 A/cm
Dimensions (w × d × h)	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)	20,9 kg (46 lb)	42 kg (92 lb)	86 kg (189 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.

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## TIH L series

The SKF TIH L series heaters are characterized by a high heating power and large size. They are the continuation of the TIH series for heating large size bearings. All heaters are equipped with sliding yokes, dual coil design and advanced power electronics. The frame of the heater allows easy transportation by fork lift. The key differences between heaters in the TIH L range are heating power and operating area.



Large induction heater with a 700 kg bearing heating capacity

### TIH L33

- Using just 15 kVA of electrical power, the TIH L33 can heat large bearings up to 700 kg (1 543 lb)
- Two optional yokes available for smaller bearing diameters.
- Available in 230 and 400V executions.

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

### TIH L44

- Using 20 kVA of electrical power, the TIH L44 can heat large bearings up to 1 200 kg (2 600 lb)
- One optional yoke available for smaller bearing diameters.
- Available in 230 and 400V executions.

Extra-large induction heater with expanded operating area

### TIH L77

- Extra-large induction heater with expanded operating area
- Using 20 kVA of electrical power, the TIH L77 can heat large bearings up to 1 200 kg (2 600 lb)
- Extra-large operating area for special bearing and component sizes

The sliding yoke is a robust mechanism to easily and safely move the yoke. The sliding rails are very durable and prevent the yoke from accidentally falling. The sliding yoke can easily be replaced by a smaller optional yoke.

The dual coil design offers high performance for heating bearings in either the horizontal or vertical orientation and gives you the flexibility to heat the bearing in the same orientation as the shaft for fast and convenient mounting. By utilizing two coils, the heaters allow more homogeneous heating and offer additional safety for the hot mounting of large sized bearings.



### 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.)	–
Performance 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 400–460 V/50–60 Hz	TIH L33/LV TIH L33/MV	TIH L44/LV TIH L44/MV	TIH L77/LV 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.

The TIH L series of SKF Induction Heaters is designed for fast and safe mounting of large bearings in the workshop or in the field. The heaters offer great versatility and are suitable for a large variety of bearing types and sizes. TIH L series heaters can be found in almost all industries with large sized bearings.



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## 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.



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.

## 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





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 × 492mm (18.3 × 19.4 in.)	765 × 792mm (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	-
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.

A unique and flexible heating solution for very large bearings and workpieces

## Multi-core induction heaters, TIH MC series

The SKF multi-core induction heaters are energy efficient, custom-made heating solutions. Compared to other heating methods, they often can significantly save heating time. The TIH MC series are similar to the standard TIH range, with a few key differences and additional features:

- Flexible design, consisting of a number of induction heating cores and coils controlled by a single control and power cabinet
- Suitable for heating large thin section workpieces, such as slewing rings and railway wheel tyres
- Heating capacities of several tonnes are possible, depending on application
- Enables a more even temperature gradient across the whole circumference. This is especially important for components sensitive to uneven induction heating
- Unique design allows for custom-made solutions to be quickly and economically produced



SKF can configure the type of TIH MC series heater required, depending on the application. For additional information, contact your SKF authorised distributor