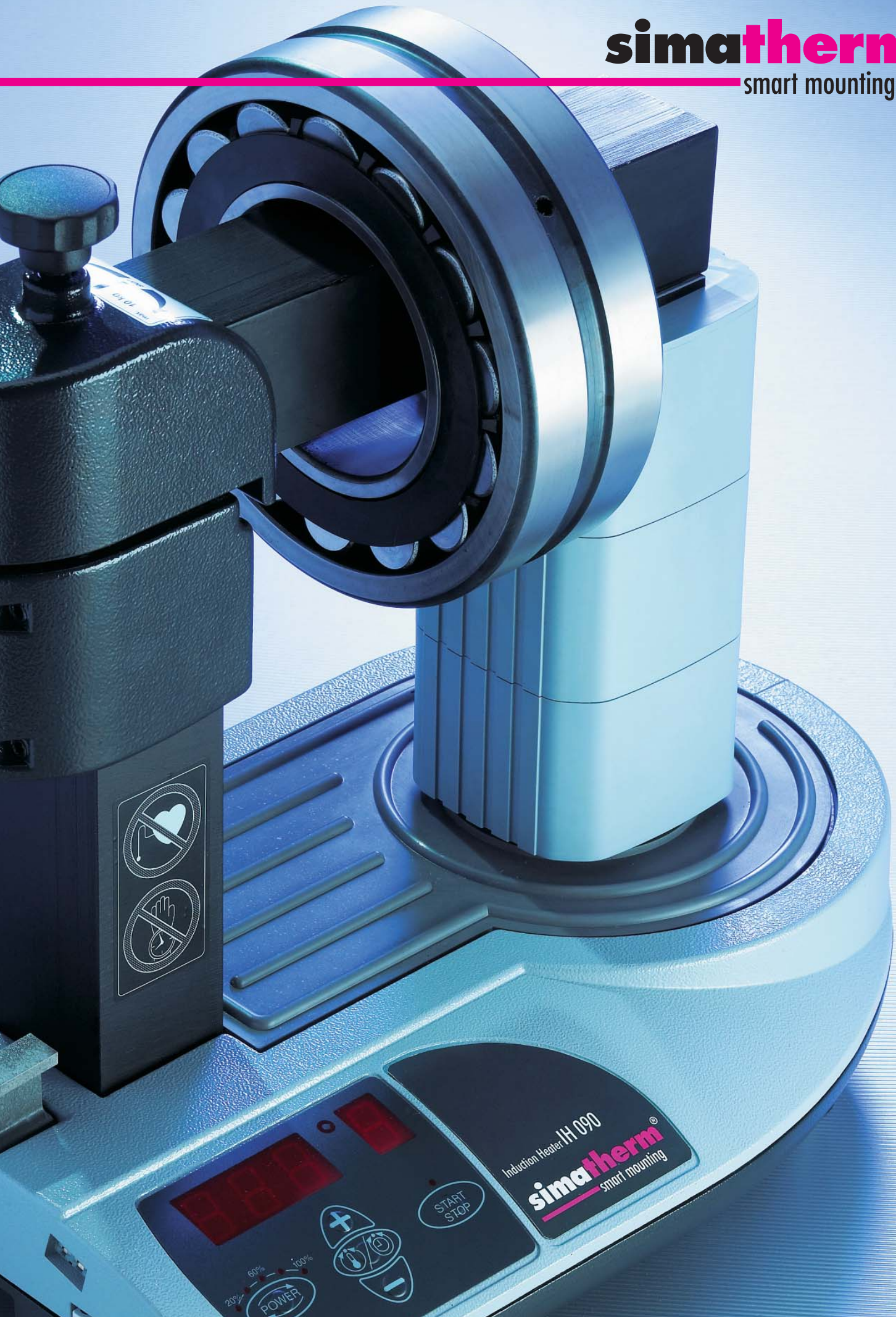


simatherm[®]
smart mounting



Mounting bearings using heat

The force needed to mount a bearing increases considerably with the size of the bearing. By using the heat expansion of metals, bearings or other ring-shaped parts can easily be mounted onto a shaft or into a housing. For the fast heating of bearings, preferably a induction heater is used instead of a hot oil bath.

Induction Heater

Its function equals that of an electric transformer. With an induction coil, a very high amperage with a low voltage is induced into a ring-shaped workpiece. Thereby, it is heated consistently within minutes. Heat is only induced to the workpiece whereas the heater itself remains at ambient temperature and can be touched without risk at any time. The inductive heating is very efficient, as the workpiece is being heated directly with the inductive flow. Non-metallic parts such as sealings, lubricant and cages are not heated. The advantage is that the cold bearings can be lubricated before mounting. Since inductively heated bearings become magnetised, the simatherm induction heaters are always equipped with a demagnetisation unit. It prevents the bearings from attracting metal particles which could cause long-term damage to the bearing.

Mounting of the heated workpiece

In order to mount a bearing to its seat, a heating temperature of 110 °C (230 °F) is recommended. Higher temperatures are not necessary and must be prohibited. Temperatures higher than 125 °C (257 °F) can cause structural changes of the bearing material. The bearing temperature must therefore be observed with a temperature probe. Shrink collars or other ring-shaped parts, however, can be heated up to a temperature of about 400 °C (752 °F) with an induction heater.

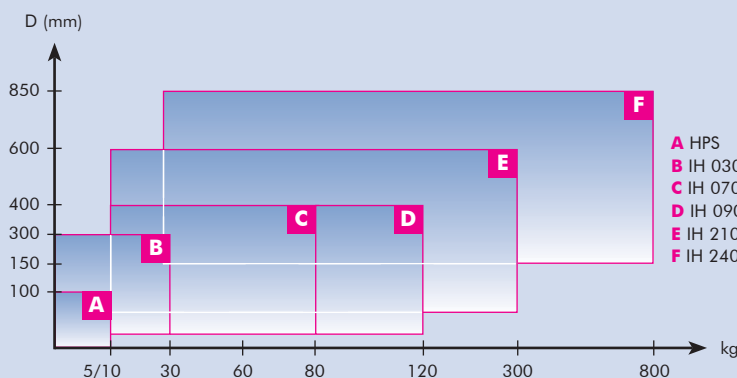
During mounting hot bearings, clean protective gloves must be worn. The mounted bearing must be pushed along the shaft up to the abutment and held in this position until a tight fit is obtained. For heating of bearings and other ring-shaped workpieces, simatec supplies a wide range of simatherm induction heaters for almost all mounting requirements.

- 1 principle of an induction heater
- 2 bearing before mounting
- 3 bearing after mounting
- 4 never heat a bearing using an open flame



The suitable heater for your application

The choice of a simatherm induction heater depends largely on the geometrical dimensions and the weight of the workpiece you want to heat. The graphic serves as a selection guide.



The latest generation of simatherm induction heaters

IH 070 / IH 090 / IH 210

Heating bearings can cost a lot of time and energy, however, with the latest simatherm induction heaters from simatec you can save both. A workpiece of 210 kg (460 lb) can be heated up to a temperature of 110 °C (230 °F) in less than 20 minutes. The new generation of induction heaters includes three different sizes. To obtain maximum heating efficiency, the induction coil was transferred to the outside of the heaters housing allowing the bearing to be placed around it. This improvement results in a reduction of the heating time and the power consumption by up to 80%, ultimately saving up to 70% on heating cost. All heaters are provided with the following technical characteristics:

Characteristics:

- Four-step power reduction in the range of 20 - 80%. In combination with smaller yokes, smaller bearings can be heated securely at lower power consumption.
- Thermal overheating protection of the induction coil and electronics
- Automatic time and temperature control for the heating of bearings and other ring-shaped metal parts
- Automatic demagnetisation
- Compact construction, modern design
- Light weight
- A range of standard yoke sizes is included with every induction heater

Induction Heater IH 070



simatherm IH 070

For heating small and medium size bearings with a weight up to 80 kg (176 lb), the IH 070 is the perfect choice.

- Available in two power versions: 230 V/50 Hz and 110 V/60 Hz
- Three yokes are included
- Very compact design, 35 kg (77 lb) overall weight including three yokes
- Swivel arm is available as an option
- Other power versions are available on request

Induction Heater IH 090



simatherm IH 090

For heating small and medium sized bearings with a weight up to 120 kg (260 lb) and for permanent operation, the IH 090 is the best solution.

- Available in the power versions 400 V/50 Hz and 460 V/60 Hz
- Three yokes are included
- Very compact design, 35 kg (77 lb) overall weight including three yokes
- Swivel arm is included
- Fan radiator for permanent operation is included
- Other power versions are available on request

Induction Heater IH 210



simatherm IH 210

The IH 210 is a large and exceptionally powerful high end induction heater

Suitable for workpieces up to 300 kg (660 lb) of weight.

- Available in the power versions 400 V/50 Hz or 460 V/60 Hz
- A sliding arm permits easy placement and removal of the bearing
- Two yokes are included
- Compact design, 75 kg (165 lb) overall weight including two yokes
- A fan version IH 210F for permanent operation is available
- Other power versions are available on request

Induction Heater IH 240



simatherm IH 240

Fast and safe heating of large workpieces

The simatherm induction heater IH 240 is designed for the heating of large size bearings up to 800 kg (1777 lb) or other large metal components with a weight up to 300 kg (660 lb) (depending on bearing and workpiece geometry and material). The control system is equipped with all operational functions of the smaller heaters.

- Fast heating of extremely large size components, e. g. a bearing of 445 kg (980 lb) weight can be heated up to 110 °C (230 °F) in only 10 minutes (temperature at the inner ring).
- Designed for easy transport using a fork lift truck
- Automatic demagnetisation of the workpiece

Special heaters for large components

simatec can also offer custom-made special heaters for large size components. In order to provide a quotation we would need the following information from you:

- Dimensions of the component to be heated (d x D x H)
- Sketch or drawing of the workpiece to be heated
- Weight and material of the workpiece
- Desired heating time
- Available mains voltage
- Stationary or mobile use

Induction Heater **IH 030**



Induction Heater **IH 030**

Compact and electronically controlled

Most powerful induction heater in the category for small workpieces up to 30 kg (66 lb). Thousands of this reliable heater are in use around the globe today.

- Available in the power versions 230 V/50 Hz and 110 V/60 Hz
- Fast reacting temperature probe for temperature control between 0 - 250 °C (32 - 482 °F)
- Electronic timer (0 - 60 minutes)
- Digital display
- Three yokes are included

Hot Plate **HPS and HPL**



Hot Plate **HPS (small) and HPL (large)**

Electric hot plate with thermostat-controlled bearing heating

The electric hot plates HPS and HPL are especially suitable for heating small bearings or small machine parts. The temperature is infinitely variable from 50 °C to 200 °C (122 °F to 392 °F)

- Available in the power versions 230 V/50 Hz and 110 V/60 Hz
- Temperature adjustable from 50 °C to 200 °C (122 °F to 392 °F)
- Protective cover prevents from contamination of the workpieces during the heating process. Additionally, the parts are heated faster if the cover is closed
- Contact surfaces:
 - 380 x 180 mm HPS
 - 380 x 380 mm HPL

Technical Data of the Induction Heaters



Designation	Hot Plate HPS and HPL	IH 030	IH 070	IH 090
Designation	Heater for small sized workpieces	Heater for small and medium sized workpieces	Heater for small and medium sized workpieces	Heater with fan cooling for permanent operation and small and medium sized workpieces
Voltage V/Hz *	230 V/50 Hz or 110 V/60 Hz	230 V/50 Hz or 110 V/60 Hz	230 V/50 Hz or 110 V/60 Hz	400 V/50 Hz – 460 V/60 Hz 500 V/50 Hz – 575 V/60 Hz
Workpiece - maximum weight - bore diameter	HPS 5 kg / HPL 10 kg –	30 kg 20 – 400 mm	80 kg 20 – 400 mm	120 kg 20 – 400 mm
Temperature control - range - magnetic probe - accuracy (electronics)	50 - 200 °C – ±5 °C	0 – 250 °C yes, type J ±3 °C	0 – 250 °C yes, type K ±3 °C	0 – 250 °C yes, type K ±3 °C
Time control - range - accuracy	– –	0 - 60 minutes ± 0.01 seconds	0 - 60 minutes ± 0.01 seconds	0 - 60 minutes ± 0.01 seconds
Maximum temperature (approx.)	200 °C	400 °C	400 °C	400 °C
Thermometer mode	no	yes	yes	yes
Bearing temperature mode	no	yes	yes	yes
Power reduction	no	no	4-step / 20-40-60-80%	4-step / 20-40-60-80%
Automatic demagnetisation residual magnetism	no –	yes <2A/cm	yes <2A/cm	yes <2A/cm
Can heat sealed bearings	yes	yes	yes	yes
Can heat pre-greased bearings	yes	yes	yes	yes
Error guiding codes	no	yes	yes	yes
Thermal overload protection	no	yes	yes	yes
Maximum magnetic flux	–	1,5 T	1,5 T	1,5 T
Control panel	main switch, temperature control	Keyboard with LED-display	Keyboard with LED-display	Keyboard with LED-display
Size of the operating area (WxH)	HPS 380 x 180 mm (LxW) HPL 380 x 380 mm (LxW)	130 x 95 mm	145 x 205 mm	145 x 205 mm
Coil diameter	–	–	115 mm	115 mm
Dimensions (WxDxH)	HPS 380 x 180 x 145 mm HPL 380 x 380 x 165 mm	290 x 255 x 255 mm	420 x 280 x 345 mm	420 x 280 x 420 mm
Overall weight including yokes	HPS 5 kg HPL 10 kg	27 kg	35 kg	38 kg
Maximum power consumption	HPS 1.0 kVA / HPL 2.0 kVA	3,7 / 2,2 kVA	3,7 / 2,2 kVA	6,4 / 7,4 kVA
Number of standard yokes	–	3	3	3
Standard yokes	–	55 x 55 x 240 mm for bearings with bore diameters of 78 mm 28 x 28 x 240 mm for bearings with bore diameters of 40 mm 14 x 14 x 240 mm for bearings with bore diameters of 20 mm	55 x 55 x 275 mm for bearings with bore diameters of 78 mm 28 x 28 x 275 mm for bearings with bore diameters of 40 mm 14 x 14 x 275 mm for bearings with bore diameters of 20 mm	55 x 55 x 275 mm for bearings with bore diameters of 78 mm 28 x 28 x 275 mm for bearings with bore diameters of 40 mm 14 x 14 x 275 mm for bearings with bore diameters of 20 mm
Core cross section	–	55 x 55 mm	55 x 55 mm	55 x 55 mm
Yoke storage	–	yes	yes, internal	yes, internal
Sliding arm	–	–	no	–
Swivel arm	–	–	optional	yes
Cooling fan	–	–	–	standard

*Other power versions are available on request



IH 210	IH 240
Heater for big workpieces	Heater for big and very big workpieces
400 V/50Hz – 460 V/60Hz 500 V/50Hz – 575 V/60Hz	400 V/50 Hz – 460 V/60 Hz 500 V/50 Hz – 575 V/60 Hz
300 kg 60 – 600 mm	up to 800 kg 142 – 850 mm
0 – 250 °C yes, type K ±3 °C	0 – 250 °C yes, type J ±3 °C
0 - 60 minutes ± 0.01 seconds	0 - 60 minutes ± 0.01 seconds
400 °C	400 °C
yes	yes
yes	yes
4-step / 20-40-60-80%	yes / 50%
yes <2A/cm	yes <2A/cm
yes	yes
yes	yes
yes	yes
yes	yes
1,5 T	1,5 T
Keyboard with LED-display	Keyboard with LED-display
250 x 250 mm	330 x 355 mm
135 mm	186 mm
600 x 350 x 420 mm	750 x 400 x 935 mm
75 kg	300 kg
10 / 11,5 kVA	24 / 27,6 kVA
2	1
70 x 70 x 420 mm for bearings with bore diameters of 100 mm 40 x 40 x 420 mm for bearings with bore diameters of 60 mm	100 x 100 x 570 mm for bearings with bore diameters of 142 mm
70 x 70 mm	100 x 100 mm
yes, internal	–
yes	yes
–	–
optional	optional

Subject to change without notice



simatec ag, Wangen a. Aare, Switzerland

simatec maintenance products

World class lubrication, mounting and dismounting

With 3 products lines, simatec takes care of your critical machinery and plant operation to ensure maximum uptime.

The automatic single point lubricator simalube can be adjusted from 1 to 12 months using the unique gas-producing drycell that is patented world-wide. The drycell generates pressure that pushes the grease or oil into the lubrication point.



The simatherm induction heaters provide fast warm-up of circular metal parts, for example bearings, for hot-mounting parts with an interference fit. Inductive heating of metal workpieces is cost-effective, time-saving and protects the environment. simatec is a global leader in thermal mounting technologies.



The simatool product range is designed for a quick, precise and safe mounting and dismounting of bearings and seals. simatools are used around the globe in machinery repair and maintenance shops.

