

simatherm[®]
smart mounting



Mounting bearings using heat

The force needed to mount a bearing increases considerably with the size of the bearing. If the heat expansion of metals is made use of, bearings or other ring-shaped parts can easily be mounted onto a shaft or into a housing. For the fast warm-up of bearings, you can use an induction heater where a hot oil bath was often used in the past.

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 work-piece. 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.

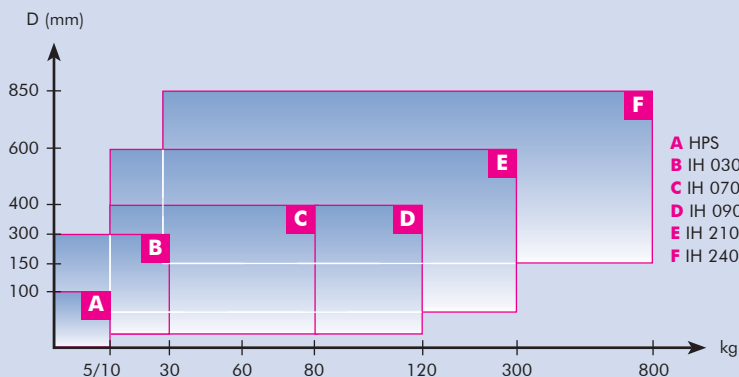
During mounting hot bearings, clean protective gloves must be worn. The mounted bearing must be pushed along the shaft up to the abutment and held in this position until a tight fit is obtained. For heating of bearings and other ring-shaped workpieces, simatec supplies a wide range of simatherm induction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



Induction Heater IH 090



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 *	230V/50Hz or 110V/60Hz	230V/50Hz or 110V/60Hz	230V/50Hz or 110V/60Hz	400V/50Hz – 460V/60Hz 500V/50Hz – 575V/60Hz
Workpiece - maximum weight - bore diameter	HPS 5kg / HPL 10kg –	30kg 20 – 400mm	80kg 20 – 400mm	120kg 20 – 400mm
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 180mm (LxW) HPL 380 x 380mm (LxW)	130 x 95mm	145 x 205mm	145 x 205mm
Coil diameter	–	–	115mm	115mm
Dimensions (WxDxH)	HPS 380 x 180 x 145mm HPL 380 x 380 x 165mm	290 x 255 x 255mm	420 x 280 x 345mm	420 x 280 x 420mm
Overall weight including yokes	HPS 5kg HPL 10kg	27kg	35kg	38kg
Maximum power consumption	HPS 1.0kVA/HPL 2.0kVA	3.7/2.2kVA	3.7/2.2kVA	6.4/7.4kVA
Number of standard yokes	–	3	3	3
Standard yokes	–	55 x 55 x 240mm for bearings with bore diameters of 78mm 28 x 28 x 240mm for bearings with bore diameters of 40mm 14 x 14 x 240mm for bearings with bore diameters of 20mm	55 x 55 x 275mm for bearings with bore diameters of 78mm 28 x 28 x 275mm for bearings with bore diameters of 40mm 14 x 14 x 275mm for bearings with bore diameters of 20mm	55 x 55 x 275mm for bearings with bore diameters of 78mm 28 x 28 x 275mm for bearings with bore diameters of 40mm 14 x 14 x 275mm for bearings with bore diameters of 20mm
Core cross section	–	55 x 55mm	55 x 55mm	55 x 55mm
Yoke storage	–	yes	yes, internal	yes, internal
Sliding arm	–	–	no	–
Swivel arm	–	–	optional	yes
Cooling fan	–	–	–	standard
Housing material	–	Glass-fibre reinforced polyester	Aluminium	Aluminium

*Other power versions are available on request



	IH 210	IH 240
	Heater for big workpieces	Heater for big and very big workpieces
	400V/50Hz – 460V/60Hz 500V/50Hz – 575V/60Hz	400V/50Hz – 460V/60Hz 500V/50Hz – 575V/60Hz
	300kg 60 – 600mm	up to 800kg 142 – 850mm
	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 250mm	330 x 355mm
	135mm	186mm
	600 x 350 x 420mm	750 x 400 x 935mm
	75kg	300kg
	10/11.5kVA	24/27.6kVA
	2	1
	70 x 70 x 420mm for bearings with bore diameters of 100mm 40 x 40 x 420mm for bearings with bore diameters of 60mm	100 x 100 x 570mm for bearings with bore diameters of 142mm
	70 x 70mm	100 x 100mm
	yes, internal	–
	yes	yes
	–	–
	optional	optional
	Aluminium	Steel

Subject to change without notice



simatec inc., Charlotte, NC (USA)



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.

