

# NTN®



## INDUCTION HEATERS

**Read these operation  
instructions attentively**

## INSTRUCTION MANUAL



**Fast Therm 20  
Fast Therm 35  
Fast Therm 150  
Fast Therm 300**

**NTN-SNR ROULEMENTS  
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74000 Annecy Cedex - France  
[www.ntn-snr.com](http://www.ntn-snr.com)**

**Control all parts without delay for possible transport  
damages. If such damages are determined inform the  
carriers immediately**

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## 1. SAFETY PRECAUTIONS:

The operation instruction should always be followed:

- NTN-SNR ROULEMENTS shall not be held liable for damages caused by improper handling or by use which does not comply with the designation purpose.
- Prerequisites of the operator:
  - He must be authorised to use this equipment
  - He must be familiar with the safety precautions
  -



- **DANGER : High risk injury**
- **WARNING : Potential risk injury**
- **CAUTION : Danger of damaging the device or the work piece**

### WARNING! :

Since a magnetic field (4+5) is generated by the induction heater, people wearing a pacemaker (1) should not work or be in the immediate vicinity of the apparatus. Other sensitive equipment such as wrist watches, magnetic carriers, electronic circuits (3), etc. might also be affected. The safety distance is 1.5 meters (57").

The equipment should not be used in areas where there is a risk for explosion.

Use protective gloves (danger of burning your hands). Delivered gloved (7) are suitable up to 150°C (302°F). Type Oil Tuff, 52-647, made by Ansell.

Hot surface avoid contact (6)

Do not operate an Induction heater in areas where there is a risk of an explosion.

Wear Safety Shoes (8)



### CAUTION:

- All repair work should be taken care of by an official NTN-SNR ROULEMENTS distributor.
- Use original spare parts only.
- Protect heater from water or very high humidity.
- Protect the yoke support and yokes against corrosion, damage and deformation.
- Only preheat ball bearings to max 110°C (230°F).



### 1.1 SAFETY INSTRUCTIONS :

- The user should have an appreciation of the contents of this manual, and be familiar with safe workshop practice
- Follow the User Manual at all times.
- Ensure that the machine operates at the correct supply voltage. The heater is supplied with a plug, change the plug should only be made by a suitably qualified person.
- Do not use or store the heater in humid environments. NTN-SNR ROULEMENTS induction heaters are designed for indoor use only.
- Use proper handling equipment, appropriate for the weight of the work piece or yoke. Never support the pieces to be heated with a metal cable or have anything metallic hanging in the proximity of the magnetic field. Extremely high currents can flow through the cable, causing the cable to heat up.
- Do not hold metal objects near the yokes and poles

### 1.2. SAFETY PRECAUTIONS:

- Place heater only on a horizontal surface.
- Keep distance to surrounding object by minimum of 1 meter (38")
- Use only in well ventilated location.
- Prevent to heat up object containing Oil, grease or similar due to possible generator of fumes and smoke.
- Do not inhale/breath fumes or smoke
- Do not move or lift heater after heating process when warm
- Do not rout supply cable through the core.
- While heating keep at least 1 meter (38") distance from the heater.
- Never remove the yokes during the heating cycle.
- Do not modify the heater and do not use self-fabricated yokes.
- Always check that the yoke is correctly adjusted to the poles otherwise excessive vibration may occur.
- Only switch the machine on when the yoke is positioned correctly- on models equipped with a pivoting yoke, the yoke should always be closed.

**NOTE:** Since our products are subject to continuous improvement, we reserve the right to change the content of this document.

### 1.3. SAFETY FEATURES:

When using temperature mode, the heater will switch off automatically if the rate of temperature rise is too low (E 02/E 03).

An induction heater works due a magnetic field. In figures below there are some measured values of the flux density in MilliTesla (mT). These measurements can be used as a guide in conforming to local regulations regarding the maximum time exposure of people to magnetic fields. The values below are only valid for a combination of bearing type and yoke bar. Different configurations may give different values due to the large variety of bearing types in combination with the different yoke bars.

Fast Therm 20:

Distance cm	0	10	20	30	40	50
X (mT)	2.95	0.76	0.21	0.11	0.09	0.07
Y (mT)	3.74	0.84	0.32	0.16	0.11	0.09

Fast Therm 35:

Distance cm	0	10	20	30	40	50
X (mT)	4.26	1.12	0.35	0.16	0.11	0.08
Y (mT)	3.58	1.66	0.56	0.27	0.16	0.09

Fast Therm 150:

Distance cm	0	10	20	30	40	50	60	70
X (mT)	13.5	3.4	1.5	0.6	0.3	0.19	0.09	0.08
Y (mT)	3.58	1.66	0.56	0.27	0.16	0.09	0.1	0.09

Fast Therm 300:

Distance cm	0	10	20	30	40	50	60	70	80	90
X (mT)	2.4	1.9	0.69	0.4	0.3	0.23	0.16	0.15	0.09	0.08
Y (mT)	1.77	1.13	0.69	0.4	0.3	0.23	0.16	0.15	0.13	0.09

**WARNING!**

We advise a safety distance of at least 1 meter (38") for people.

**CAUTION!**

The machine works through an induction field. This can influence electronic equipment, e.g. watches, magnetic charts etc.

## 2. Introduction:

The NTN-SNR ROULEMENTS induction heaters are intended for heating rolling bearings. Other metal components forming a closed circuit such as bushings, shrink rings, pulleys and gears can also be heated. This will facilitate mounting where an interference fit is required.

The heaters are designed to heat the work piece up to a maximum temperature of 240°C (464°F).

NTN-SNR ROULEMENTS heaters can be used on continuous bases.

By heating with the time function this has to be checked with an external temperature meter. Always place the temperature sensor to check while the first heating.

### **CAUTION:**

**Bearings should be heated up on most of the cases to a maximum temperature of 120°C (248°F). Do not use induction heaters for bearings or work pieces, which are outside the minimum or maximum dimensions specified in this manual. Do not switch off the heater with the main switch while heating cycle is running.**

### Operation condition:

The heater is designed to be used in an industrial environment with an ambient temperature of 0°C to 40°C (32°F to 104°F) and an atmospheric humidity of 5% to 90%. The induction heater is meant for indoor use only.

## 3. Installation:



- Remove packing material and place the induction heater on a non-ferrous, stable, flat surface. The box will normally contain the heater, a yoke or a set of yokes, the temperature probe and a pair of heat-resistant gloves.
- Check that the supply voltage and current meet the specifications on the plate that is located on the back of the machine.
- As there are a large number of plug types, change the NTN-SNR ROULEMENTS induction heaters' plug provided with a plug that fits to your power supply.
- The wires should be connected as follows:
  - Fast Therm 20 ET 35: Braun (Black us) = Phase | blue (White us) = neutral | Green / yellow = ground.
  - Fast Therm 150 et 300: Phase = blue (black us) | Phase = Brown (black us) | Ground = Green / yellow:
- Make sure that the supply cable cannot come into contact with the bearing that is to be heated. Insert the plug into a shockproof wall socket.
- Connect heater to electric mains,
- Keep distance to surrounding object by 0.5meter ( 19")
- Turn main switch from 0 to 1
- The heater will emit a short beep and in the display 110°C (230F) will appear.
- The induction heater is now ready to be used.

## 4. Setting up the work piece:

### WARNING!

Use appropriate hoisting equipment for heavy components and yokes. The manual lifting of heavy pieces is a common cause of injury.

Wear Safety Shoes as inductor yokes can slip out of your hands.

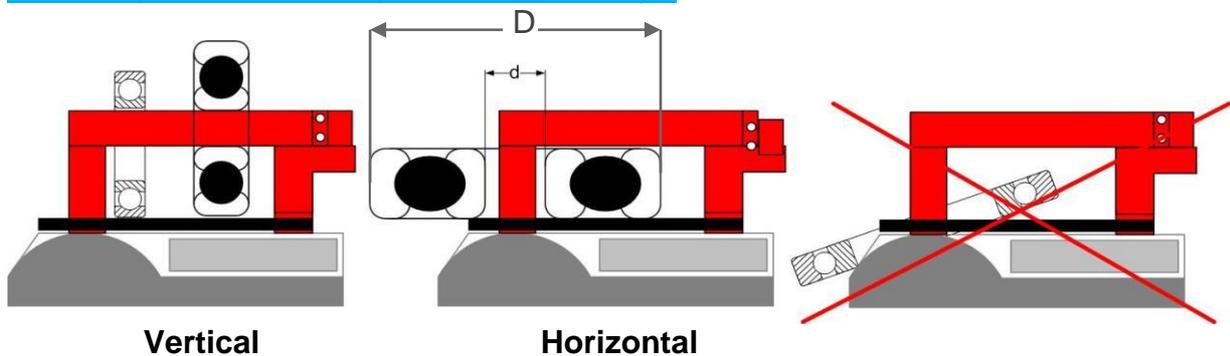
The weight of the work-piece should not exceed the maximum weight shown in drawing below.

Exceeding these limits may result in equipment failure leading to personal injuries.

Ensure that the mains cable cannot come into contact with the work piece. Damage to the cable may result in electrocution.

Never support components with a metal cable or have any hanging in the proximity of the magnetic field. Extremely high currents can flow through the cable causing a quick raise of temperature, resulting in a risk of burning

The work piece can be set up in two different ways:



- **Vertically and Horizontally:** The part should never touch the housing.
- **Small objects to be heated in vertically position**

### Fast Therm 20:

Max. dimensions part
Max inner diameter (d): 160 mm (6.3")
Min inner diameter (d): 10* mm (0.4")
Max outer diameter (D): 280 mm (11")
Min outer diameter (D): NA
Max height (C): 120 mm (4.72")
Min weight part : no
Max weight part (bearing): 40 kg (88lbs)
Max weight part (solid): 20 kg (44lbs)

### Fast Therm 35:

Max dimensions part
Max inner diameter: 190 mm (7.48")
Min inner diameter: 15 mm (0.6")
Max outer diameter: 410 mm (16.14")
Min outer diameter : NA
Max height: 180 mm (7.09")
Min weight part : no
Max weight part (Bearing): 70 kg (154 lbs)
Max weight part (solid) : 40 kg ( 88 lbs)

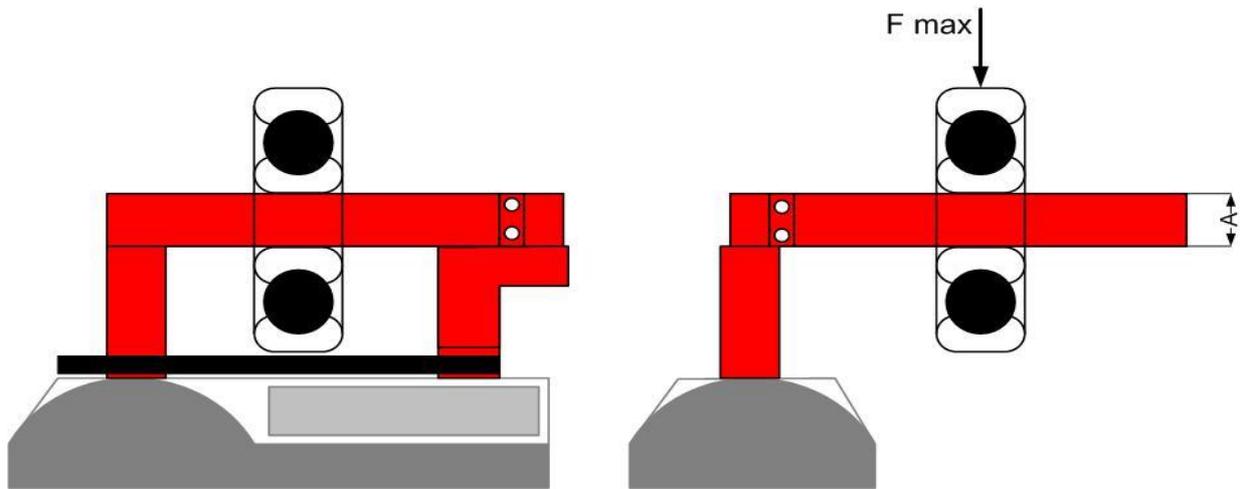
### Fast Therm 150:

Max dimensions part:
Max inner diameter: 190 mm (7.48")
Min inner diameter: 30 mm (1.18")
Max outer diameter: 490 mm (19.29")
Min outer diameter : NA
Max height: 210 mm (8.57")
Min weight part: 5 kg (11 lbs)
Max weight part (Bearing): 150 kg (330.7 lbs)
Max Weight part (solid) : 150 kg (330.7 lbs)

### Fast Therm 300:

Max dimensions part:
Max inner diameter: 600 mm (23.62")
Min inner diameter: 30 mm (1.18")
Max outer diameter: 740 mm (29.13")
Min outer diameter: NA
Max height: 330mm (13")
Min weight part: 5 kg (11 lbs)
Max weight part (Bearing): 300KG (661.4 lbs)
Max Weight part (solid) : 300KG (661.4 lbs)

\* : With special yoke 7x7x200



- Parts heavier have to be heated horizontally
- Maximum weight part for the pivoting yoke:

Fast therm 35	Fast Therm 150	Fast Therm 300
Max weight (F)	Max weight (F)	Max weight (F)
8KG (17 lbs)	12KG (26 lbs)	20KG (44 lbs)

## 5. Fast Therm 20 operating instructions:



**Do not start the heating process without using a bar!**

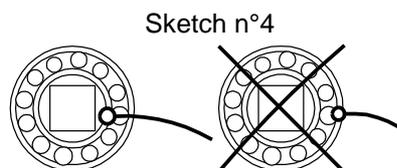
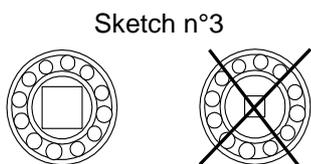
- Connect the machine (according to the type in 110 or 230V-16A) and attach the magnetic sensor. Set the contactor to position « I ».

The display reads 110°C (230°F).

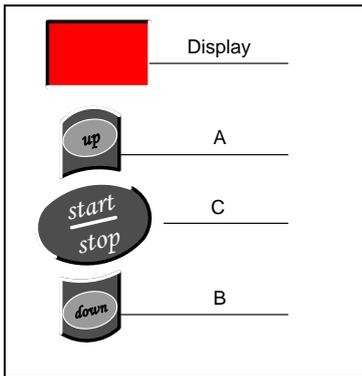
- Choose the most suitable yoke for the bearing to be heated. The yoke should fill the bearing bore as completely as possible (sketch N°3). Slide the bearing over the bar.

Heating can take place in temperature mode.

Place the magnetic sensor on the inner ring. (sketch n°4)



**USEFUL TIP:** apply some grease or Vaseline to the bar cross-section, this will help avoid vibrations.



When the equipment is running, the default display on the screen is 110°C (230°F).

By pressing keys A and B, you can raise or drop the temperature. Press the key C « START/STOP » to begin heating. The screen begins to show the temperature from 50°C (122°F). Once the required temperature is reached, an audible signal is heard and the screen flashes.

Press « START/STOP » to stop the signal. Remove the part.

**Note:** heating restarts as soon as the temperature drops by 5°C (41°F). It will do this 5 times in a row, then which an audible signal is heard. Press the « start/stop » key to stop it and remove the sensor. Remove the part.

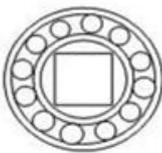
**HEATING CAN BE STOPPED AT ANY TIME BY PRESSING THE « STOP » KEY.**

## 6. Fast Therm 35, 150 and 300 operating instructions

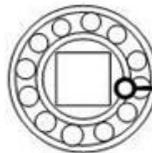
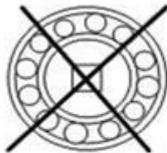


**Do not start the heating process without using a yoke**

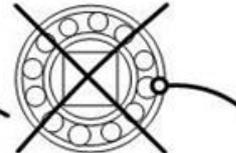
- 1- Connect the equipment (according to the type in 110-15A or 230V-16A for THERM 20 and 35 and according to the type in 400 or 460V-63A for THERM 150 and 300) and attach the magnetic sensor. Set the contactor to Position « I ». The display reads 110°C (230°F).
- 2- Choose the most suitable pivoting arm for the bearing to be heated. The yoke must fill the bearing bore as much as possible (sketch #3). Slide the bearing over the yoke.
- 3- Put magnetic probe on work piece close to the bore. Make sure that the place reserved for the probe is free of any grease or oil (sketch #4).



Sketch N° 3



Sketch N° 4



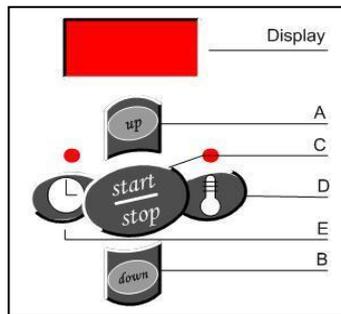
**USEFUL TIP:** apply some grease or Vaseline to the bar cross-section, this will help avoid vibrations.

**Heating can then take place in either time or temperature mode**

### 6.1. Temperature mode:

- Place the magnetic sensor on the inner ring (sketch n°4).
- Select temperature mode by pressing key D.
- Once the machine is running the screen will display 110°C (230°F) by default.
- You can press keys A and B to raise or drop the temperature. Press the « START/STOP » key to begin heating. The screen will show the temperature as from 50°C (122°F). Once the desired temperature is reached, a signal is heard and the screen flashes. Press « START/STOP » to stop the signal. Remove the part.

## 6.2. Time mode:



- Switch on the equipment. Press key E.
- The machine displays « 00.00 ».
- Set the heating time in seconds by pressing keys A and B. After setting the seconds, adjust the time in minutes by pressing key E and then use keys A and B.
- Select the desired time (max 99.59 min) and press the « START/STOP » key to begin heating. The count-down will then begin on the time display.
- During heating, the temperature can be displayed by pressing key F. **The magnetic sensor must then be in place.** (Sketch n°4)
- Once heating is over, the signal is heard. Press the « START/STOP » key to stop it. Remove the part

**NOTE:** Heating restarts as soon as the temperature drops by 5°C (41°F). It will do this 5 times in a row, and then an audible signal is heard. Press the « START/STOP » key to stop it and remove the sensor. Remove the part.

### HEATING CAN BE STOPPED AT ANY TIME BY PRESSING THE « STOP » KEY.

- Always use magnetic temperature probe (hereafter referred to as the “probe”) for heating in the temperature mode.
- The probe is suitable for operation up to a maximum temperature of 240°C (464°F)
- As a safety feature, the connection between magnet and probe will break above the maximum temperature. If this occurs when operating in the temperature mode, the machine will turn itself off since the probe will fail to register any increase in the temperature over a set of period of time.
- A probe fixed to a clamp is also available when heating non-magnetic work pieces:
  - Ensure that the area where the probe is located is completely clean.
  - Connect the probe by inserting the plug into the socket at the side of the heater, **watch out for + - !**

### CAUTION:

Treat the probe with care. It is a valuable part of the heater and can easily be broken through careless handling. After use, we suggest that it is placed on the side of the vertical pole.

### WARNING!

If in any doubt, isolate the machine and contact your local distributor.  
At all times process can be interrupted by pressing "stop"

## 7. Malfunctioning / Error Signals:

**E01:** The probe is not plugged in or the cable of the probe is broken

**E02** (Fast Therm 20) / **E03** (Fast Therm 35/150/300):

The increase of temperature is lower than 1°C (33.8°F) in 1 minute, Please check:

- The probe, no damage and placed properly
- The part can be too big for the machine (heating time to long).
- Inform your distributor

**E10/E12:** No zero crossing Triac

- Inform your distributor

Press “start/stop” and check which of above possibilities is causing the Error signal.

### Malfunction:

If a loud vibrating noise heard, first check:

- Are the contact surfaces clean and greased sufficiently?
- Are the yokes 100% in contact with the surface?

### Adjustment yokes:

- 1- Check if the grinded side is smooth.
- 2- Place yoke or pivoting yoke on the heater.
- 3- Unscrew the screws in yoke and pivoting point an 1/4 turn.
- 4- Turn on the heater and the yoke will set itself or use a nylon hammer.
- 5- Fasten screws and turn off heater.

## 8. Cleaning and maintenance:

- Store in a dry, not freezing area, free from humidity.
- Keep clean with a soft, dry cloth.
- Keep the contact parts of the poles clean. Grease regularly with an acid free grease for optimal contact with the yokes and to avoid corrosion (on swing-arm models, also grease the vertical pin regularly).
- Contact your supplier if there is any suspicion of malfunctioning.

### **WARNING!**

**Proper maintenance and handling practices are critical. Failure to follow installation instructions and to maintain proper lubrication can result in injuries.**

## 9. Technical data:

### Fast Therm 20 :

Type	Fast Therm 20
Voltage	115V-15A-60Hz / 230V-16A-50Hz
Power	1.7 KVA (115V) / 3.6 KVA (230V)
Temperatures control	Max.240°C (464°F)
Heating speed control	Microprocessor controlled
Overall dimensions	345x200x240mm (13,5" x 7,9" x 9,5")
Max. weight work piece	Solid components: 20 kg (44 lbs)
Max. weight Bearing	40 kg (88 lbs)
Mass. Heater without yokes	17 kg (37lbs)
TYPE:	Size
Induction yoke	
TOOL FT20-YOKE 10	7x7x200
TOOL FT20-YOKE 15	10x10x200
TOOL FT20-YOKE 20	14x14x200
TOOL FT20-YOKE 35	25x25x200
TOOL FT20-YOKE 60	40x40x200
Magnetic probe	
Control unit (high- and low voltage)	
Main switch	

### Fast Therm 35 :

Type	Fast therm 35
Voltage	115V 15A – 60Hz / 230 V 16 A – 50 Hz
Power	1.7KVA (115V) / 3.6 KVA (230V)
Temperatures control	Max. 240°C (464°F)
Heating speed control	Microprocessor controlled
Overall dimensions	420x260x360mm (16,8" x 10,2" x 14,7")
Max. weight work piece	Solid components: 40 Kg (88 lbs)
Max. weight Bearing	70 Kg (154.32 lbs)
Mass. Heater without yokes	35 kg (77.16 lbs)
Type:	Size
Induction yoke	
TOOL FT35-YOKE 20	14x14x280
TOOL FT35-YOKE 35	25x25x280
TOOL FT35-YOKE 60	40x40x280
TOOL FT35-YOKE 70	50x50x280
Magnetic probe	
Control unit (high- and low voltage)	
Main switch	

**Fast Therm 150 :**

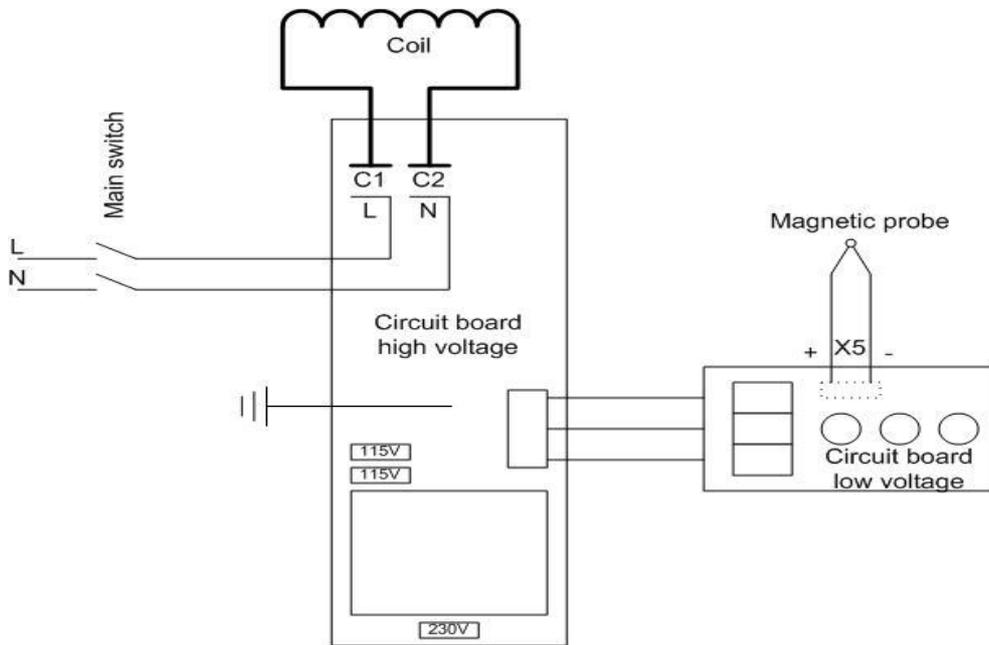
Type	Fast Therm 150
Voltage	460V-32A-60Hz / 400V-32A-50Hz
Power	14.7 KVA (460 V) / 12.8 KVA (400 V)
Temperatures control	Max. 240°C (464°F)
Heating speed control	Microprocessor controlled
Overall dimensions	505x260x440mm (19,8" x 10,2" x 17,3")
Max. weight work piece	Solid components: 150 kg (330.7 lbs)
Max. weight Bearing	150 kg (330.7 lbs)
Mass. Heater without yokes	54 kg (119lbs)
Type:	Size
Induction yoke	
TOOL FT150-YOKE 30	20x20x350
TOOL FT150-YOKE 45	30x30x350
TOOL FT150-YOKE 60	40x40x350
TOOL FT150-YOKE 70	50x50x350
TOOL FT150-YOKE 85	60x60x350
TOOL FT150-YOKE 100	70x70x350
Magnetic probe	
Control unit (high- and low voltage)	
Main switch	

**Fast Therm 300 :**

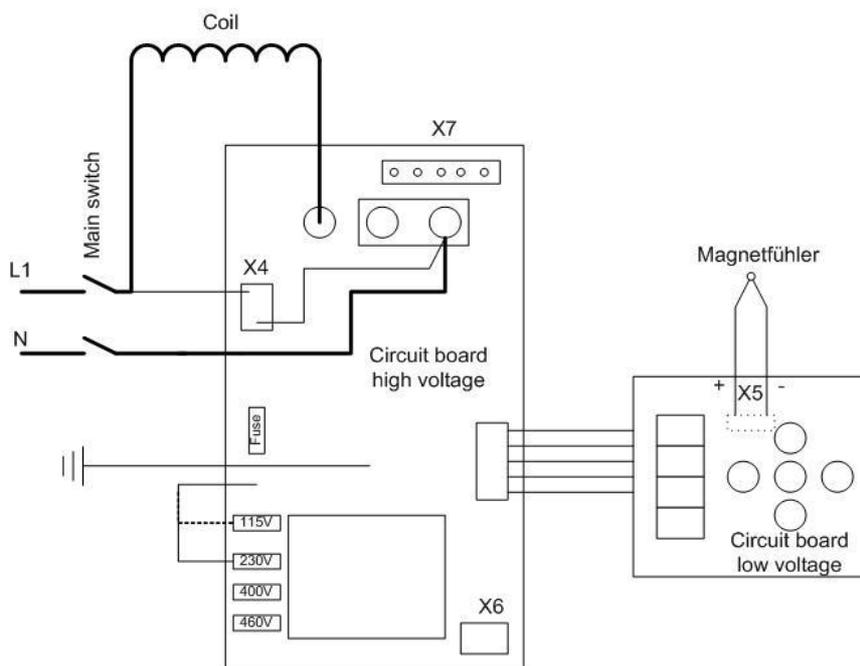
Type	Fast therm 300
Voltage	460V-32A-60Hz / 400V-32A-50Hz
Power	14.7KVA (460 V) / 12.8KVA (400V)
Temperatures control	Max. 240°C (464°F)
Heating speed control	Microprocessor controlled
Overall dimensions (with trolley)	1060x500x1090mm (41,9"x19,7"x42,9")
Max. weight work piece	Solid components: 300 kg (661 lbs)
Max. weight Bearing	300kg (661.4 lbs)
Mass. Heater without yokes	75 kg (165 lbs)
TYPE:	Size
Induction yoke	
TOOL FT300-YOKE 30	20x20x490
TOOL FT300-YOKE 45	30x30x490
TOOL FT300-YOKE 60	40x40x490
TOOL FT300-YOKE 70	50x50x490
TOOL FT300-YOKE 85	60x60x490
TOOL FT300-YOKE 100	70x70x490
TOOL FT300-YOKE 115	80x80x490
Magnetic probe	
Control unit (high- and low voltage)	
Main switch	

## 10. Electrical Drawing:

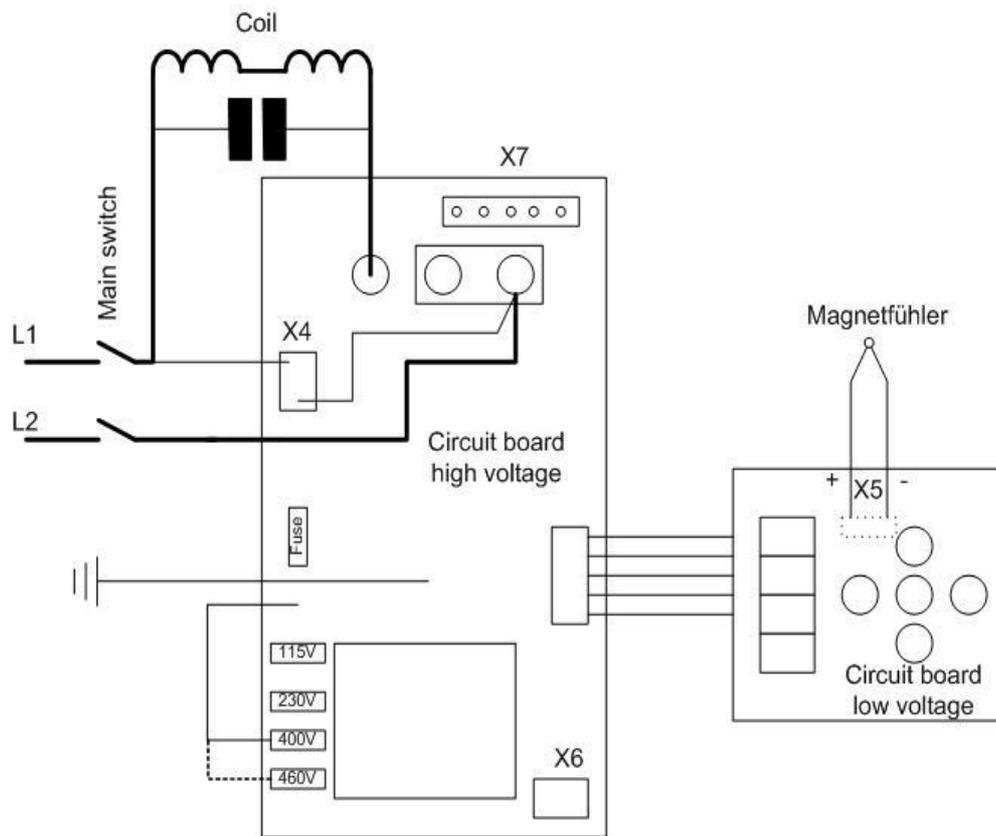
Electrical drawing Fast therm 20:



Electrical drawing Fast Therm 35:



Electrical drawing Fast Therm 150 and 300:



## 11. Declaration of conformity:

Manufacturer: NTN-SNR Bearing  
Address: 1 rue des Usines - 74000 Annecy France

**In accordance with low voltage Directive 2006/95/EC and EMC Directive 2004/108/EC and Machinery Directive 2006/42/EC**

We hereby declare that the product described below is in conformity with the applicable health and safety requirements of the EC Directive in terms of its design and type and in the execution we have brought into circulation. This declaration shall cease to be valid if any modification is made to the product without our agreement.

Product description: Induction heater device  
Product name: Fast Therm and Safe Therm  
Type: Fast therm 20 / 35 / 150 / 300 and Safe Therm 700/ 1200

Applicable harmonised standards:

EN-IEC 60204-1:2006/C11:201  
EN-IEC 61000-4-6:2007/A1:201  
IEC 60695-11-10  
NEN 3140+A1 :2015

### Induction Heating Systems: Warranty Terms and Conditions

**NTN-SNR ROULEMENTS guarantees this product to be free from defects in material and workmanship for a period of 3 years from date of purchase. It remains the customer's responsibility to provide proof of this date of purchase. During the warranty period NTN-SNR ROULEMENTS will either repair or replace any product that proves to be defective.**

#### Limitations:

This warranty does not apply to defects resulting from product modification or misuse of any product or part without NTN-SNR ROULEMENTS' written consent. Furthermore, this warranty does not apply to fuses or problems arising from normal wear or failure to follow instruction.

Neither NTN -SNR ROULEMENTS nor its employees shall be liable for any direct or indirect damages arising either out of any defects in the products or the use of the products, even if NTN-SNR ROULEMENTS has been informed in advance of the possibility of such damage. Such excluded damages shall include, but are not limited to: costs of removal and installation, losses sustained as the result of injury to any person, or damage to property.