

# Arts & Crafts



## Kilns and Accessories

**Pottery**  
**Porcelain Painting**  
**Glass Painting**  
**Fusing**  
**Decorating**  
**Enamelling**  
**Raku**



### **Made in Germany**

Nabertherm with 450 employees worldwide have been developing and producing industrial furnaces for many different applications for over 60 years. As a manufacturer, Nabertherm offers the widest and deepest range of furnaces worldwide. 150,000 satisfied customers in more than 100 countries offer proof of our commitment to excellent design, quality and cost efficiency. Short delivery times are ensured due to our complete inhouse production and our wide variety of standard furnaces.

### **Setting Standards in Quality and Reliability**

Nabertherm does not only offer the widest range of standard furnaces. Professional engineering in combination with inhouse manufacturing provide for individual project planning and construction of tailor-made thermal process plants with material handling and charging systems. Complete thermal processes are realized by customized system solutions.

Innovative Nabertherm control technology provides for precise control as well as full documentation and remote monitoring of your processes. Our engineers apply state-of-the-art technology to improve the temperature uniformity, energy efficiency, reliability and durability of our systems with the goal of enhancing your competitive edge.

### **Global Sales and Service Network – Close to you**

Nabertherm's strength is one of the biggest R&D department in the furnace industry. In combination with central manufacturing in Germany and decentralized sales and service close to the customer we can provide for a competitive edge to live up to your needs. Long term sales and distribution partners in all important world markets ensure individual on-site customer service and consultation. There are various reference customers in your neighborhood who have similar furnaces or systems.



### **36 Months Warranty**

Another quality feature is the 3-year warranty for the Arts & Crafts kilns. Due to the processing of high quality materials and the handicrafts manufacturing this is a matter of course for us.

### **Customer Service and Spare Parts**

Our professional service engineers are available for you worldwide. Due to our complete inhouse production, we can despatch most spare parts from stock over night or produce with short delivery time.

### **Experience in Many Fields of Thermal Processing**

In addition to furnaces for Arts & Crafts, Nabertherm offers a wide range of standard furnaces and plants for many other thermal processing applications. The modular design of our products provides for customized solutions to your individual needs without expensive modifications.

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## Chamber Kilns with Drawer Bottom or as a Bogie



**NW 150 - NW 1000/H**

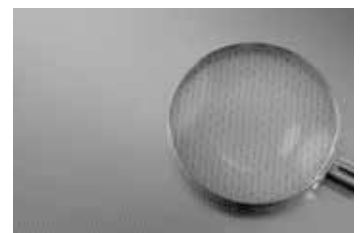
The chamber kiln of NW model series combines the attractive quality advantages of the proven models N 150 - N 1000/H with an outstanding product characteristic which substantially simplifies charging.

With a drawer mechanism (NW 150 - NW 300/H) the kiln table can be easily pulled out of the chamber kiln. The larger models NW 440 - NW 1000/H are designed as shuttle kiln with completely free traversing bogie. Free access in front of the chamber kiln allows for a simplified and clear charging the kiln.

- Dual shell housing, galvanized steel sheets
- Front made of textured stainless steel
- Environment-friendly, long-life powder-coating of housing
- Rugged, self-supporting, vaulted arch construction
- Controller mounted on kiln door and removable for comfortable operation
- Multi-layer insulation with light-weight refractory bricks and high-quality, energy-saving backing insulation
- Lightweight refractory bricks inside kiln chamber for clean firing results
- Dual shell door with long-live sealing
- Kiln table can be easily pulled-out (NW 150 - NW 300/H)
- From chamber kiln NW 440 bogie on four castors (two with brakes) which can be pulled out completely. Accession assistance and removable drawbar for bogie
- Door sealing grinded by hand (brick on brick); NW 150 - NW 300/H
- Door is adjustable
- Door safety switch shuts down power to the elements when the door is opened
- Heating from five sides with special arrangement of heating elements for optimum temperature uniformity
- Heating elements of support tubes provide for free radiation of the heat
- Solid state relays provide for low-noise operation
- Rapid switching cycles result in precise temperature control
- Type S thermocouple
- Air inlet flap with integrated residual drying function closes the air inlet at a temperature which can be set in the controller for NW 150 - NW 300/H
- Exhaust air outlet in the ceiling, motor driven exhaust air flap for chamber kilns NW 440 - NW 1000/H
- Delivery incl. pipe connection for connecting an air outlet with 80 mm diameter for NW 150 - NW 300/H
- SiC-floor plate protects floor elements and provides a level setting surface
- Fixed base
- Comfortable charging height with base of 800 mm (chamber kilns NW 440 - NW 1000/H = 500 mm)
- Defined application within the constraints of the operating instructions
- NTLog for Nabertherm Controller: Recording of process data with USB-flash drive
- Controls description see page 30



NW 440



Front made of textured stainless steel



Model	Tmax °C	Inner dimensions in mm			Volume in l	Outer dimensions in mm			Connected load kW	Electrical connection*	Weight in kg
		w	d	h		W	D	H			
NW 150	1300	430	530	620	150	790	1150	1600	11.0	3-phase	400
NW 200	1300	500	530	720	200	860	1150	1700	15.0	3-phase	460
NW 300	1300	550	700	780	300	910	1320	1760	20.0	3-phase	560
NW 440	1300	600	750	1000	450	1000	1400	1830	30.0	3-phase	970
NW 660	1300	600	1100	1000	660	1000	1750	1830	40.0	3-phase	1180
NW 1000	1300	800	1000	1250	1000	1390	1760	2000	57.0	3-phase	1800
NW 150/H	1340	430	530	620	150	790	1150	1600	15.0	3-phase	520
NW 200/H	1340	500	530	720	200	860	1150	1700	20.0	3-phase	600
NW 300/H	1340	550	700	780	300	910	1320	1760	27.0	3-phase	730
NW 440/H	1340	600	750	1000	450	1000	1400	1830	40.0	3-phase	1260
NW 660/H	1340	600	1100	1000	660	1000	1750	1830	57.0	3-phase	1530
NW 1000/H	1340	800	1000	1250	1000	1390	1760	2000	75.0	3-phase	2320

\*Please see page 30 for more information about supply voltage

## Chamber Kilns, Heated from Five Sides





Chamber kiln N 100



Chamber kiln N 200

## N 100 - N 2200/H

First-class craftsmanship, professional design, long service life and excellent temperature uniformity – these are a few of the reasons our chamber kilns N 100 to N 2200/H are our best sellers to everyone looking for a professional kiln. These chamber kilns have proven their worth through the years, firing porcelain, stoneware and annealing glass, also in case of tight setting and temperatures of up to 1340 °C. You will find these kilns in industry as well as in ceramic workshops, studios, clinics, schools and private homes – practically every place where a rugged, capable of frequent firings and excellent temperature uniformity is required. Most chamber kilns are available from stock. Also bigger models are available with short delivery times.

- Dual shell housing, galvanized steel sheets
- Front made of textured stainless steel
- Environment-friendly, long-life powder-coating of housing
- Rugged, self-supporting, vaulted arch construction
- Controller mounted on kiln door and removable for comfortable operation
- Multi-layer insulation with light-weight refractory bricks and high-quality, energy-saving backing insulation
- Lightweight refractory bricks inside kiln chamber for clean firing results
- Dual shell door with long-live sealing
- Door sealing grinded by hand (brick on brick); N 100.. - N 300..
- Door is adjustable
- Door safety switch shuts down power to the elements when the door is opened
- Heating from five sides with special arrangement of heating elements for optimum temperature uniformity
- Heating elements of support tubes provide for free radiation of the heat
- Solid state relays provide for low-noise operation
- Rapid switching cycles result in precise temperature control



## Chamber Kilns, Heated from Five Sides



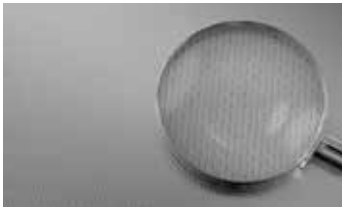
N 300



N 660/H



Motor driven exhaust air flap from chamber kiln N 440



Front made of textured stainless steel

- Type S thermocouple
- Residual drying function: Air inlet flap closes at a temperature which can be set in the controller for N 100.. - N 300..
- Exhaust air outlet in the ceiling, motor driven exhaust air flap for chamber kilns N 440.. - N 2200..
- Delivery incl. pipe connection for connecting an air outlet with 80 mm diameter for N 100.. - N 300..
- SiC-floor plate protects floor elements and provides a level setting surface
- Base included in delivery (chamber kilns N 100.. - N 300..). Fixed base for larger models
- Comfortable charging height with base of 800 mm (N 440../N 660.. = 500 mm)
- Defined application within the constraints of the operating instructions
- NTLog for Nabertherm Controller: Recording of process data with USB-flash drive
- Controls description see page 30

Model	Tmax °C	Inner dimensions in mm			Volume in l	Outer dimensions in mm			Connected load kW	Electrical connection*	Weight in kg
		w	d	h		W	D	H'			
N 100	1300	400	530	460	100	720	1130	1440	9.0	3-phase	275
N 150	1300	450	530	590	150	770	1130	1570	11.0	3-phase	320
N 200	1300	470	530	780	200	790	1130	1760	15.0	3-phase	375
N 300	1300	550	700	780	300	870	1300	1760	20.0	3-phase	450
N 440	1300	600	750	1000	450	1000	1400	1830	30.0	3-phase	780
N 660	1300	600	1100	1000	650	1000	1750	1830	40.0	3-phase	950
N 1000	1300	800	1000	1250	1000	1390	1760	2000	57.0	3-phase	1800
N 1500	1300	900	1200	1400	1500	1490	1960	2150	75.0	3-phase	2500
N 2200	1300	1000	1400	1600	2200	1590	2160	2350	110.0	3-phase	3100
N 100/H	1340	400	530	460	100	760	1150	1440	11.0	3-phase	325
N 150/H	1340	430	530	620	150	790	1150	1600	15.0	3-phase	380
N 200/H	1340	500	530	720	200	860	1150	1700	20.0	3-phase	430
N 300/H	1340	550	700	780	300	910	1320	1760	27.0	3-phase	550
N 440/H	1340	600	750	1000	450	1000	1400	1830	40.0	3-phase	880
N 660/H	1340	600	1100	1000	650	1000	1750	1830	52.0	3-phase	1080
N 1000/H	1340	800	1000	1250	1000	1390	1760	2000	75.0	3-phase	2320
N 1500/H	1340	900	1200	1400	1500	1490	1960	2150	110.0	3-phase	2700
N 2200/H	1340	1000	1400	1600	2200	1590	2160	2350	140.0	3-phase	3600

N 1500

\*Base included

\*Please see page 30 for more information about supply voltage



## Chamber Kilns, Heated from Two Sides



Chamber kiln N 40 E as tabletop device

### N 40 E - N 100 E

These models are designed as chamber kilns with widely opening swing door and can be charged easily and clearly. These kilns can be used for ceramics, glass or porcelain painting as well as for simple fusing jobs. Appealing design and attractive prices are unbeatable arguments for these chamber kilns. Most chamber kilns are available from stock.

- Tabletop model as standard with dual shell housing, galvanized steel sheets
- Controller mounted on kiln door and removable for comfortable operation
- Multi-layer insulation with light-weight refractory bricks and high-quality, energy-saving backing insulation
- Lightweight refractory bricks inside kiln chamber for clean firing results
- Dual shell door with long-live sealing
- Door sealing grinded by hand (brick on brick)
- Door safety switch shuts down power to the elements when the door is opened
- Heating from both sides, elements embedded in grooves for protection
- Solid state relays provide for low-noise operation
- Rapid switching cycles result in precise temperature control
- Type S thermocouple
- Infinitely adjustable air inlet in the kiln door for good ventilation and short cooling times
- Exhaust air outlet in the ceiling
- Delivery includes pipe connection for connecting an air outlet with 80 mm diameter
- Defined application within the constraints of the operating instructions
- NTLog for Nabertherm Controller: Recording of process data with USB-flash drive
- Controls description see page 30

### Additional equipment

- Base: comfortable charging height of 760 mm



Chamber kiln N 70 E with base as additional equipment



Model	Tmax °C	Inner dimensions in mm			Volume in l	Outer dimensions in mm			Connected load kW	Electrical connection*	Weight in kg
		w	d	h		W	D	H <sup>2</sup>			
N 40 E	1300	350	330	350	40	640	800	600	2.9	1-phase	90
N 40 E/R	1300	350	330	350	40	640	800	600	5.5	3-phase <sup>1</sup>	90
N 70 LE	1200	400	380	450	70	690	850	700	2.9	1-phase	120
N 70 E	1300	400	380	450	70	690	850	700	3.6	1-phase	120
N 70 E/R	1300	400	380	450	70	690	850	700	5.5	3-phase <sup>1</sup>	120
N 100 E	1300	460	440	500	100	750	910	750	7.0	3-phase	150

<sup>1</sup>Heating only between two phases

<sup>2</sup>Height, including base, + 700 mm

\*Please see page 30 for more information about supply voltage

## Chamber Kilns, Heated from Three Sides



N 140 E



N 280 E



Dual shell housing for cool outer surface



Motor driven exhaust air flap for chamber kiln N 500 E

### N 140 LE - N 500 E

Heated from the left and right walls and floor and positioned at an ergonomic height, these chamber kilns are an economical solution for schools, kindergartens and other institutions. These kilns are ideal for operating temperatures of approx. 900 °C - 1300 °C. A dual shell housing provides for low outer temperatures. Firing profiles can be set comfortably at the controller mounted on the kiln door. Most chamber kilns are available from stock.

- Dual shell housing, galvanized steel sheets
- Environment-friendly, long-life powder-coating of housing
- Rugged, self-supporting, vaulted arch construction
- Controller mounted on kiln door and removable for comfortable operation
- Multi-layer insulation with light-weight refractory bricks and high-quality, energy-saving backing insulation
- Lightweight refractory bricks inside kiln chamber for clean firing results
- Dual shell door with long-live sealing
- Door sealing grinded by hand (brick on brick); N 140 E - N 280 E
- Door is adjustable
- Door safety switch shuts down power to the elements when the door is opened
- Heated from two sides and the floor
- Heating elements embedded in grooves for protection (N 140 E - N 280 E)
- Freely radiating heating elements placed on supporting tubes (N 500 E)
- Solid state relays provide for low-noise operation
- Rapid switching cycles result in precise temperature control
- Type S thermocouple
- Residual drying function: Air inlet flap closes at a temperature which can be set in the controller for N 140 E - N 280 E



- Exhaust air outlet in the ceiling, motor driven exhaust air flap for chamber kiln N 500 E
- Delivery incl. pipe connection for connecting an air outlet with 80 mm diameter for N 140 E - N 280 E
- Delivery incl. 3 ceramic supports and lower shelf for safe stacking of the kiln furniture (models N 140 E - N 280 E)
- Delivery incl. SiC-bottom plate for even stacking of the kiln furniture (chamber kiln N 500 E)
- Delivery incl. base
- Comfortable charging height with base of 800 mm (chamber kiln N 500 E = 500 mm)
- Defined application within the constraints of the operating instructions
- NTLog for Nabertherm Controller: Recording of process data with USB-flash drive
- Controls description see page 30



Model	Tmax °C	Inner dimensions in mm			Volume in l	Outer dimensions in mm			Connected load kW	Electrical connection*	Weight in kg
		w	d	h		W	D	H <sup>1</sup>			
N 140 LE	1100	450 <sup>2</sup>	580	570 <sup>3</sup>	140	720	1130	1440	6.0	1-phase <sup>4</sup>	275
N 210 LE	1100	500 <sup>2</sup>	580	700 <sup>3</sup>	210	770	1130	1570	9.0	3-phase	320
N 280 LE	1100	520 <sup>2</sup>	580	890 <sup>3</sup>	280	790	1130	1760	9.0	3-phase	375
N 140 E	1300	450 <sup>2</sup>	580	570 <sup>3</sup>	140	720	1130	1440	9.0	3-phase	275
N 210 E	1300	500 <sup>2</sup>	580	700 <sup>3</sup>	210	770	1130	1570	11.0	3-phase	320
N 280 E	1300	520 <sup>2</sup>	580	890 <sup>3</sup>	280	790	1130	1760	15.0	3-phase	375
N 500 E	1300	600	820	1000	500	1000	1400	1830	30.0	3-phase	700

<sup>1</sup>Base included

<sup>2</sup>Collar width minus 50 mm

\*Please see page 30 for more information about supply voltage

<sup>3</sup>Collar height minus 110 mm

<sup>4</sup>Fusing of 32 A if connected to 230 V

## Standard Equipment Chamber Kilns



Dual shell door with long-live sealing. Front made of attractive stainless steel (N 100 - N 2200/H, NW 150 - NW 1000/H).



SiC-floor plate protects floor elements and provides a level setting surface.



Dual shell housing for low exterior temperatures. Side sheets made of galvanized steel. (N 100 - N 2200/H, NW 150 - NW 1000/H)



Controller mounted on kiln door and removable for comfortable operation.



Elements mounted on support tubes give free radiation of heat, longer element and wall life; optimized element positioning for excellent temperature uniformity (N 500 E, N 100 - N 2200/H, NW 150 - NW 1000/H).



Solid-state relays control the kiln heating. Operating silently and nearly wear-resistant, the solid-state relays switch with short pulses, giving excellent temperature uniformity and fast response times.



Residual drying function: Air inlet flap closes the air inlet at a temperature which can be set in the controller for NW 150 - NW 300, N 140 E - N 280 E, N 100 - N 300



Infinitely adjustable air-inlet damper for optimum air supply during firing and reduced cooling time. Motor driven control available as additional equipment (from model NW 440, from model N 440, N 500 E).



Motor driven exhaust air flap in the middle of kiln ceiling for perfect air exhaust out of the chamber (from model NW 440, from model N 440, from model N 500 E).



Flue in the center-rear section of the ceiling ensures uniform flow of exhaust gasses up to model N 300, NW 300, N280 E.

**We recommend:** To achieve a long service life of the brick lining and heating elements, the kiln should not be fired every cycle at its maximum rated temperature. Up to 1230 °C we recommend models N 100 - N 660, and for regular high firing temperatures above 1230 °C we recommend our models N 100/H - N 660/H.

## Additional Equipment Chamber Kilns

### Manual Zone Control (from model N 100)

In combination with the bottom heating, the optional P470 controller can manually control a second heating zone. As usual, you set the firing profile on the controller. If you determine that the temperature uniformity has to be changed from top to bottom, you can easily adjust this ratio manually for the next firing.

### Motor Driven Air-Inlet Damper

After the chemically bound water has been expelled from the ceramics during firing (max. 600 °C), the air-inlet damper on the kiln must be closed to prevent drafts and to ensure good temperature uniformity in the upper temperature range.

The three-side and five-side heated Nabertherm chamber kilns (NW 150 - NW 300, N 100.. - N 300., N 140 E - N 280 E) are supplied as standard with a drying function, in which the supply air damper automatically closes at a preset temperature. Alternatively, the kiln may be equipped with a motorized inlet flap. The flap is opened and closed depending on the program via the extra function of controller. This extra is particularly recommended if the inlet flap shall be opened automatically for forced cooling.

### Cooling Fan

To shorten cooling times, a cooling fan can be installed as an additional equipment. The cooling fan is turned on and off in segmentwise via the controller extra function.

### Exhaust Hood made of Stainless Steel (from models NW 440, N 440-N 660/H, N 500 E)

The stainless steel hood can be delivered for kilns with exhaust flap. The fumes and gases will be collected under the hood and discharged upwards. The hood is connected with 150 mm diameter to the customer's exhaust system.

### Door Hinged on the Left Side

### Base in special height

### Base on castors (N 100 - N 300, N 140 E - N 280 E)

The base frame on wheels is supplied with two swivel and two fixed castors. The frame height is reduced in order to keep the loading height of the kiln unchanged.

### Loading Rack for Chamber Kiln

The entire kiln load may be ergonomically inserted or extracted in one movement using a pallet lift truck. Suitable for pallet lift trucks with a fork width of maximum 520 mm. The maximum charging weight is 150 kg.

### Pallet Lift Truck for Loading Rack

Fork width is 520 mm, fork length is 1150 mm

**Batts, Plates and Posts.** Matching sets of kiln furniture are available for every type of kiln.

## Installation Service

Nabertherm and your dealer can help arrange professional installation and assembly of your kiln into your studio. Within a short time, educated personnel transports the kiln to the installation location.



Pallet lift truck with charging rack



Professional installers moving a chamber kiln into a basement studio.



## Top Loaders, Round/Oval



Top 60eco



Top 100

### Top 16/R - Top 220

The perfect kiln for hobby and work shop! Attractive design, low weight and good firing results are only a few of the advantages of our top loaders. The small top loader Top 16/R is perfectly suited for glaze or sample firings. The bigger models are a good choice for home applications as well as for small schools or kindergartens. Most top loaders are available from stock.

- Housing made of textured stainless steel
- Controller mounted on the right side of the kiln with removable holder for comfortable operation
- Multiple layers of insulation for low exterior temperatures
- High-quality, energy-saving back insulation for top loaders Top 45eco, Top 60eco, Top 80 - Top 220
- Lightweight refractory bricks inside kiln chamber for clean firing results
- Lid with adjustable quick-release lock and padlock hasp
- Adjustable lid mechanism
- Long-life lid seal (brick on brick)
- Lid interlock safety switch
- Heating from all sides, elements embedded in grooves for protection
- Bottom heating for top loader Top 220
- Solid state relays provide for low-noise operation
- Rapid switching cycles result in precise temperature control
- Type S thermocouple
- Powerful gas dampers support lid opening
- Infinitely adjustable air inlet in opening in the kiln bottom for good ventilation and short cooling times
- Exhaust air outlet on kiln side
- Delivery includes pipe connection for connecting an air outlet with 80 mm diameter
- Lockable castors for easy transport of kiln without the need for lifting
- Top loader Top 16/R as tabletop model without castors
- Models Top 60... for Tmax of 1200 °C and 230V please choose model Top 60, for Tmax of 1300 °C and 230V please choose model Top 60eco as energy-saving version. If 400V three-phase connection is available, we recommend model Top 60/R which fastly heats up to the working temperature.



Top 16/R

## Top Loaders, Round/Oval

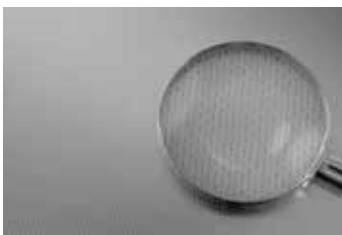


Top 140



Top 220

- Defined application within the constraints of the operating instructions
- NTLog for Nabertherm Controller: Recording of process data with USB-flash drive
- Controls description see page 30



Front made of textured stainless steel

### Additional equipment

- Bottom heating for very good temperature uniformity for Top 130 - Top 190 (standard for Top 220)
- Two-zone control of heating via P470 controller (from model Top 130)
- Raised base for Top 45 and Top 60
- Wall-bracket for controller with 2.5 m connecting cable

Model	Tmax °C	Inner dimensions in mm			Volume in l	Outer dimensions in mm			Conencted load kW	Electrical connection*	Weight in kg
		w	d	h		W	D	H			
Top 16/R	1300	Ø 290		230	16	440	650	530	2.6	1-phase	32
Top 45eco	1300	Ø 410		340	45	580	880	760	2.9	1-phase	62
Top 45	1300	Ø 410		340	45	580	880	760	3.6	1-phase	62
Top 45/R	1300	Ø 410		340	45	580	880	760	5.5	3-phase <sup>1</sup>	62
Top 60/Leco	1200	Ø 410		460	60	580	870	870	2.9	1-phase	72
Top 60	1200	Ø 410		460	60	580	870	870	3.6	1-phase	72
Top 60eco	1300	Ø 410		460	60	580	870	870	3.6	1-phase	72
Top 60/R	1300	Ø 410		460	60	580	870	870	5.5	3-phase <sup>1</sup>	72
Top 80	1300	Ø 480		460	80	660	950	890	5.5	3-phase <sup>1</sup>	100
Top 100 LE	1100	Ø 480		570	100	660	970	1000	6.0	1-phase <sup>2</sup>	102
Top 100	1300	Ø 480		570	100	660	970	1000	7.0	3-phase	102
Top 130	1300	Ø 590		460	130	770	1090	920	9.0	3-phase	110
Top 140 LE	1100	Ø 550		570	140	730	1040	1020	6.0	1-phase <sup>2</sup>	124
Top 140	1300	Ø 550		570	140	730	1040	1020	9.0	3-phase	124
Top 160	1300	Ø 590		570	160	770	1090	1030	9.0	3-phase	130
Top 190	1300	Ø 590		690	190	770	1090	1150	11.0	3-phase	146
Top 220	1300	930   590		460	220	1100	1030	930	15.0	3-phase	150

<sup>1</sup>Heating only between two phases  
<sup>2</sup>Fusing of 32 A if connected to 230 V

\*Please see page 30 for more information about supply voltage





## Standard Equipment Top Loaders

### Top 45 - Top 220



Heating elements are embedded in grooves for optimum protection against damage.



As standard all top loading kilns are equipped with solid-state relays for noiseless switching of the heating.



The integrated gas dampers facilitate opening and closing of the kiln lid. Even large models can be opened with no problems.



Multiple layers of insulation for low exterior temperatures, High-quality, energy-saving back insulation for models Top 45eco, Top 60eco, Top 80 - Top 220.



Infinitely adjustable air inlet in opening in the kiln bottom for good ventilation and short cooling times.



Exhaust air outlet with stub for pipe of diameter 80 mm at back of kiln for uniform venting of exhaust air.



Base mounted on castors.



Comfortable and easy-to-use controller for precise temperature control. The information menu shows important data on power consumption and operating time. Please also read the description starting on page 30.



Thermocouple protected in the insulation.

## Additional Equipment Top Loaders

### Top 130 - Top 220

#### Bottom Heating and Manual Zone Control

Do you need especially high temperature uniformity for your work? Then we recommend the optional bottom heating for our large top loaders.

In combination with the bottom heating, the optional P470 controller can manually control a second heating zone. As usual, you set the firing profile on the controller. If you determine that the temperature uniformity has to be changed from top to bottom, then you can easily make adjustments of this ratio.



Bottom heating as additional equipment

## Top Loaders Rectangular



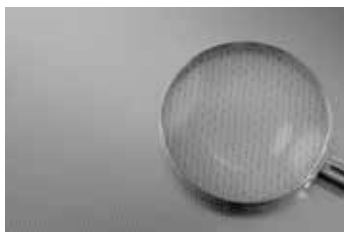
Top loader HO 70/R



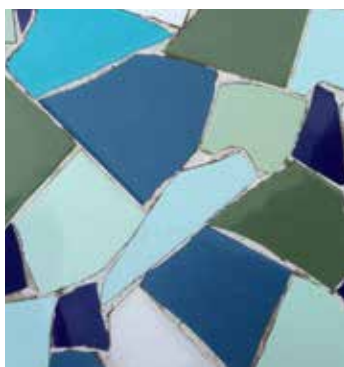
Top loader HO 100



Firing chamber of top loader with heating from 5 sides



Front made of textured stainless steel



### HO 70/L - HO 100

The square top loaders from Nabertherm are extremely rugged. Heated from four walls and the floor with the elements protected in grooves.

- Housing made of textured stainless steel
- Controller mounted on the right side of the kiln with removable holder for comfortable operation
- Multi-layer insulation with light-weight refractory bricks and high-quality, energy-saving backing insulation
- Lightweight refractory bricks inside kiln chamber for clean firing results
- Lid with adjustable quick-release lock and padlock hasp
- Adjustable lid mechanism
- Long-life lid seal (brick on brick)
- Lid interlock safety switch
- Heating from all sides and bottom, elements embedded in grooves for protection
- Solid state relays provide for low-noise operation
- Rapid switching cycles result in precise temperature control
- Type S thermocouple
- Powerful gas dampers support lid opening
- Infinitely adjustable air inlet in opening in the kiln bottom for good ventilation and short cooling times
- Exhaust air outlet on kiln side
- Delivery includes pipe connection for connecting an air outlet with 80 mm diameter
- Lockable castors for easy transport of kiln without the need for lifting
- Defined application within the constraints of the operating instructions
- NTLog for Nabertherm Controller: Recording of process data with USB-flash drive
- Controls description see page 30

Model	Tmax °C	Inner dimensions in mm			Volume in l	Outer dimensions in mm			Connected load kW	Electrical connection*	Weight in kg
		w	d	h		W	D	H			
HO 70/L	1200	440	380	420	70	640	770	780	3.6	1-phase	120
HO 70/R	1300	440	380	420	70	640	770	780	5.5	3-phase <sup>1</sup>	120
HO 100	1300	480	430	490	100	680	820	850	5.5	3-phase <sup>1</sup>	160

<sup>1</sup>Heating only between two phases

\*Please see page 30 for more information about supply voltage

**RAKU Kilns**



RAKU kiln 100 with lifting stand and gas burner



Hood including table



Lifting stand with crank drive

**RAKU kiln 100, 3-Piece-Kit**

The RAKU kiln 100 is a gas-fired kiln for outdoor operations with standard propane gas. This kiln combines two different kiln concepts: It can either be used as a top loader or as hood kiln. In the basic version, the hood is lifted by two bars. As an accessory, the kiln can be supplied with a lifting stand. This frame is provided with a crank drive which makes it very easy to lift the hood. With this version, you can operate the kiln by yourself, without problems. We can also provide the matching propane burner. However, you may decide to use your own model.

- Can be used as hood kiln or top loader
- Easy and simple construction, applies particularly to the hood
- High-quality insulation with low heat-storage capacity for short heat-up times
- Housing made of textured stainless steel
- Inspection holes for observing your fired ware
- Special flame manipulation for good temperature uniformity
- Defined application within the constraints of the operating instructions



Propane burner with bottle connection, high-performance with 18 kW



Temperature gauge for RAKU kiln 100, easy to operate, NiCr-Ni temperature sensor, display range 20 °C - 1200 °C, optional connection of second sensor with display changeover

Model	Tmax °C	Inner dimensions in mm			Volume in l	Outer dimensions in mm			Weight in kg	
		w	d	h		W	D	H	Hood	Lifting device
RAKU kiln 100 lifting stand burner	1150	500	500	620	103	750	660	1150	36	16
							750	1000		
Power 18 kW										

**Gas-Fired Chamber Kilns**





Chamber kiln NB 300 with base frame

## NB 300 - NB 600

Some firing processes or connecting conditions require a gas-fired chamber kiln. Fast heating times and unique firing results are strong reasons for using such equipment.

Equipped with powerful gas burners the chamber kilns NB 300 - NB 600 are suitable for creative applications. An automatic temperature regulation is included in the basic model. The controller starts controlling after the burner has been manually ignited by automatic switching the burner between high and low loads. The burners have been optimized to allow relatively precise control from 300 °C. Despite this, we still recommend drying the charge completely to avoid waste caused by rapid heating up in the lower temperature range. At the end of the program, the burners are automatically shut off.

- High-performance, atmospheric burners for operating with liquid petroleum gas (connected pressure 1.5 bar/20 or 50 mbar) or natural gas (connected pressure 20 or 50 mbar)
- Depending on the application, special positioning of the gas burners with flame guidance provides for optimal temperature uniformity
- Manual set-up of burner power and atmosphere (oxidizing or reducing)
- Gas fittings with flame control and safety valve in accordance with DVGW (German Technical and Scientific Association for Gas and Water)
- Multi-layer, reduction-proof insulation with light-weight refractory bricks and high-quality back-up insulation result in low gas consumption
- Rugged, self-supporting, vaulted arch construction
- Environment-friendly, long-life powder-coating of housing
- Dual shell housing
- Dual shell door with long-live sealing
- Door is adjustable
- Exhaust hood
- Delivery incl. base
- Comfortable charging height with base of 800 mm (NB 300) and 500 mm (NB 400, NB 600)
- Defined application within the constraints of the operating instructions
- Controls description see page 30



Gas lines and thermocouple at the chamber kiln



Powerful burner



Automated process control

Model	Tmax °C	Work space dimensions in mm			Volume in l	Outer dimensions in mm			Rating kW	Electrical connection*1	Weight in kg
		w	d	h		W	D	H <sup>2</sup>			
NB 300	1300	450	700	780	300	1250	1420	2150	40	1-phase	430
NB 400	1300	500	750	1000	440	1300	1485	2250	80	1-phase	700
NB 600	1300	500	1100	1000	650	1300	1800	2250	80	1-phase	850

\*1No voltage supply necessary if kiln is manually operated

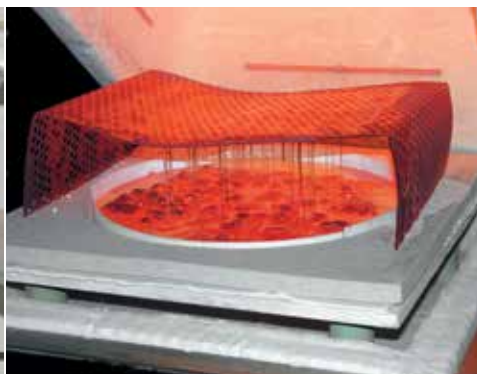
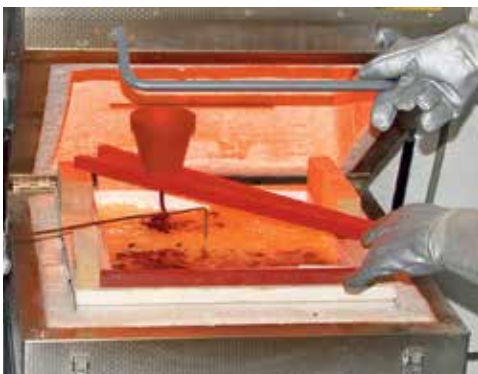
\*Please see page 30 for more information about supply voltage

<sup>2</sup>Exhaust hood of 440 mm included (dismountable)

## Fusing Furnaces with Movable Table



Fusing furnace GFM 920



**GFM 420 - GFM 1050**

The fusing furnaces of GFM product line were developed to meet the special requirements of production. For different applications different table models can be supplied. Standard is a table for fusing. Various tables and tubs with different heights are available as system add-ons. Especially economical is the alternating table system, in which one table is loaded while the other one is in the fusing furnace.

- Heating element, protected in quartz tubes
- High current connection capacities for short warm-up times and energy-saving way of working
- Arranged closely beside each other on the top, heating elements ensure direct and uniform radiation of the glass
- Infrared heated in hood which is attached to stand
- Dual shell hood made of stainless steel with slotted cover lid
- Delivered with table
- Table on wheels, freely movable
- Controller integrated to save space on the right side of the furnace
- Level table surface with insulation made of robust lightweight refractory bricks and marked charge surface
- Hood insulation made of non-classified ceramic fibers for rapid heating up and cooling down
- Adjustable, large quick-release fasteners - can be used while working in gloves
- Handles on the left and right side of the hood for opening and closing the furnace
- Hood safety switch
- Solid state relays provide for low-noise operation
- Type K thermocouple
- Hood easy to open and close, supported by compressed-gas springs
- Lockable air inlet opening for ventilation, fast cooling and observation of charge
- Comfortable charging height of 870 mm
- Defined application within the constraints of the operating instructions
- NTLog for Nabertherm Controller: Recording of process data with USB-flash drive
- Controls description see page 30

**Additional features for fusing furnaces GF and GFM**

- Motor-driven lid opening for faster cooling for models GF 380 and/or GFM 420 up
- Bottom heating for uniform through heating of large objects
- Cooling fan for accelerated cooling with closed lid
- Tables for expansion of the furnace system for models GFM; Interchangeable table system to use the residual heat of the furnace and to reduce cycle times by changing table in warm state.
- Motor-driven exhaust air flap for faster cooling of the furnace
- Air inlet flap with window for observing the glass



Bottom heating for uniform through heating of large objects as additional equipment



Tables for expansion of the furnace system as additional equipment; Interchangeable table system to use the residual heat of the furnace and to reduce cycle times by changing table in warm state.



Motor-driven lid as additional equipment



Inspection glass in air inlet opening for observation of the glass as additional equipment

Model	Tmax °C	Inner dimensions in mm			Floor space in m <sup>2</sup>	Outer dimensions in mm			Connected load kW	Electrical connection*	Weight in kg
		w	d	h		W	D	H			
GFM 420	950	1650	850	380	1.40	2400	1480	1400	18	3-phase	410
GFM 520	950	1200	1150	380	1.38	1950	1780	1400	15	3-phase	430
GFM 600	950	2000	1000	380	2.00	2750	1630	1400	22	3-phase	610
GFM 920	950	2100	1150	380	2.42	2850	1780	1400	26	3-phase	740
GFM 1050	950	2300	1200	380	2.76	3050	1830	1400	32	3-phase	860

\*Please see page 30 for more information about supply voltage

## Fusing Furnaces with Fixed Table



GF 600



Exhaust air flap as additional equipment

### GF 75 - GF 1425

The fusing furnaces in the GF 75 - GF 1425 product line were conceived for professional glass artists. The heating elements, closely arranged, protected in quartz tubes, ensure a very high degree of temperature uniformity during fusing or during bending across the whole table surface. The insulation, made of non-classified fibrous material in the furnace hood and robust lightweight refractory bricks in the furnace floor allow clean and safe operation. High current connection capacities assure that the fusing furnace can be rapidly heated up.

- Heating element, protected in quartz tubes
- High current connection capacities for short warm-up times and energy-saving way of working
- Arranged closely beside each other on the top, heating elements ensure direct and uniform radiation of the glass
- Dual shell hood made of stainless steel with slotted cover lid
- Controller integrated to save space on the right side of the furnace
- Level table surface with insulation made of robust lightweight refractory bricks and marked charge surface
- Hood insulation made of non-classified ceramic fibers for rapid heating up and cooling down





GF 240



GF 75

- Adjustable, large quick-release fasteners - can be used while working in gloves
- Handles on the left and right side of the hood for opening and closing the furnace
- Hood safety switch
- Solid state relays provide for low-noise operation
- Rapid switching cycles result in precise temperature control
- Type K thermocouple
- Hood easy to open and close, supported by compressed-gas springs
- Lockable air inlet opening for ventilation, fast cooling and observation of charge
- Robust base on rollers (two of them can be locked down) with tray for glass and tools
- Comfortable charging height of 870 mm
- Defined application within the constraints of the operating instructions
- NTLog for Nabertherm Controller: Recording of process data with USB-flash drive
- Controls description see page 30



"Combing" in a GF 240

Model	Tmax °C	Inner dimensions in mm			Floor space in m <sup>2</sup>	Outer dimensions in mm			Connected load kW	Electrical connection*	Weight in kg
		w	d	h		W	D	H <sup>3</sup>			
GF 75	950	620	620	310	0.38	1100	965	1310	3.6	1-phase	180
GF 75 R	950	620	620	310	0.38	1100	965	1310	5.5	3-phase <sup>1</sup>	180
GF 190 LE	950	1010	620	400	0.62	1480	965	1400	6.0	1-phase <sup>2</sup>	245
GF 190	950	1010	620	400	0.62	1480	965	1400	6.4	3-phase <sup>1</sup>	245
GF 240	950	1010	810	400	0.81	1480	1155	1400	11.0	3-phase	250
GF 380	950	1210	1100	400	1.33	1680	1465	1400	15.0	3-phase	450
GF 420	950	1660	950	400	1.57	2130	1315	1400	18.0	3-phase	500
GF 520	950	1210	1160	400	1.40	1680	1525	1400	15.0	3-phase	550
GF 600	950	2010	1010	400	2.03	2480	1375	1400	22.0	3-phase	600
GF 920	950	2110	1160	400	2.44	2580	1525	1400	26.0	3-phase	850
GF 1050	950	2310	1210	400	2.79	2780	1575	1400	32.0	3-phase	1050
GF 1425	950	2510	1510	400	3.79	2880	1875	1400	32.0	3-phase	1200



Finished parts out of a fusing furna

<sup>1</sup>Heating only between two phases

<sup>2</sup>Fusing of 32 A if connected to 230 V

<sup>3</sup>Base included

\*Please see page 30 for more information about supply voltage

## Product Advantages Fusing Furnaces GF and GFM



Arranged closely beside each other on the top, heating elements ensure direct and uniform radiation of the glass.



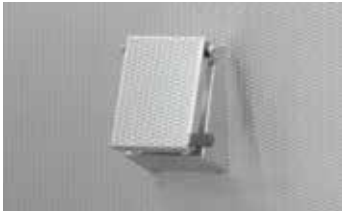
Level table surface with insulation made of robust lightweight refractory bricks and marked charge surface.



Hood insulation made of non-classified ceramic fibers for rapid heating up and cooling down.



Solid state relays provide for low-noise operation.



Lockable air inlet opening for ventilation, fast cooling and observation of charge.



Handles on the left and right side of the hood for opening and closing the furnace.



Hood easy to open and close, supported by compressed-gas springs



Base mounted on castors at models GF.

## Additional Equipment Fusing Furnaces GF and GFM



Inspection glass in air inlet opening for observation of the glass.



Motor-driven exhaust air flap for faster cooling after firing has been finished.



Bottom heating for uniform through heating of large objects.



Motor-driven lid



Tables for expansion of the furnace system for models GFM; Interchangeable table system to use the residual heat of the furnace and to reduce cycle times by changing table in warm state.

## Top Loader as Fusing Furnaces



Fusing furnace F 30



### F 30 - F 220

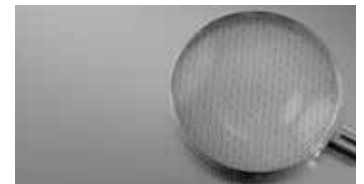
This kiln range is the ideal choice for many fusing applications. The insulation is made from lightweight refractory bricks with protected heating elements in the lid, fusing furnaces F 75 and F 220 have additional side heating.

- Housing made of textured stainless steel
- Controller mounted on the right side of the kiln with removable holder for comfortable operation
- Insulation made of lightweight refractory bricks for clean firing results
- Lid with adjustable quick-release lock and padlock hasp
- Adjustable lid mechanism
- Long-life lid seal (brick on brick)
- Lid interlock safety switch
- Heating elements in the lid, fusing furnaces F 75 and F 220 have additional side heating
- Solid state relays provide for low-noise operation
- Rapid switching cycles result in precise temperature control
- Type K thermocouple
- Powerful gas dampers support lid opening
- Lockable castors for easy transport of kiln without the need for lifting
- Top loader F 30 as tabletop model without castors
- Manual-Zone-Regulation for F 220 (lid and sides)
- Defined application within the constraints of the operating instructions
- NTLog for Nabertherm Controller: Recording of process data with USB-flash drive
- Controls description see page 30

Fusing furnace F 220 with two-zone regulation



Kiln interior with circular lower side heating



Front made of textured stainless steel

### Additional equipment

- Higher chassis

Model	Tmax °C	Inner dimensions in mm			Floor space in m <sup>2</sup>	Outer dimensions in mm			Connected load kW	Electrical connection*	Weight in kg
		w	d	h		W	D	H			
F 30	950	Ø 410			0.13	650	800	500	2.0	1-phase	50
F 75 L	950	750	520	230	0.33	950	880	680	3.6	1-phase	80
F 75	950	750	520	230	0.33	950	880	680	5.5	3-phase	80
F 110 LE	950	930	590	230	0.47	1120	950	680	6.0	1-phase <sup>1</sup>	95
F 110	950	930	590	230	0.47	1120	950	680	7.5	3-phase	95
F 220	950	930	590	460	0.47	1120	950	910	15.0	3-phase	115

<sup>1</sup>Fusing of 32 A if connected to 230 V

\*Please see page 30 for more information about supply voltage



Fusing Furnace F 110

## Glass Beads Cooling Furnace



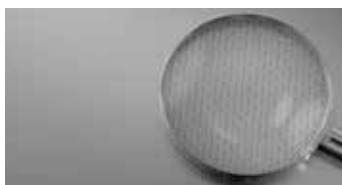
Glass beads cooling furnace MF 5



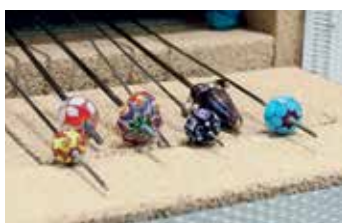
### MF 5

A high-quality furnace is indispensable for professional glass bead tempering. The MF 5 model is the ideal furnace for cooling large glass beads or glass jewelry. For charging the glass beads, the door is equipped with a window which can be closed with a filler piece when the furnace is used for other applications. The infrared heating prevents direct contact with the heating elements so the glass beads cooling furnace can be safely opened during operation without heating interruption.

With a maximum temperature of 950 °C, this furnace is multifunctional, and can be used for fusing and enameling applications, for decorating and for preheating frits and other materials.



Front made of textured stainless steel



- Table-top model
- Heating from furnace ceiling, elements protected in quartz glass tubes for safe open-door operation
- Multi-layer energy-efficient insulation
- Housing made of textured stainless steel
- Solid state relays provide for low-noise operation
- Window with rack for charging glass beads
- Defined application within the constraints of the operating instructions
- NTLog for Nabertherm Controller: Recording of process data with USB-flash drive
- Controls description see page 30

Model	Tmax °C	Inner dimensions in mm			Volume in l	Outer dimensions in mm			Connected load kW	Electrical connection*	Weight in kg
		w	d	h		W	D	H			
MF 5	950	220	240	100	5	485	370	320	1.6	1-phase	15

\*Please see page 30 for more information about supply voltage

## Enamelling Furnaces



Enamelling furnace LE 6/11

### LE 1/11 - LE 14/11

The muffle furnaces LE 1/11 - LE 14/11 are ideally suitable for enamelling. Their low power consumption and user-friendly design makes this enamelling furnace type the optimum solution for small work. The dual shell housing keeps the outside temperature cool to the touch. The vacuum-fiber insulation allows short heat-up times. Protected elements make this a durable solution.

- Tmax 1100 °C, 1050 °C as continuous temperature
- Heating from both sides
- Elements protected by quartz tubes which allows opening of furnace during operation
- Insulation made of non-classified fiber material
- Housing made of textured stainless steel
- Solid state relays provide for low-noise operation
- Controller mounted under the door to save space
- Defined application within the constraints of the operating instructions
- NTLog for Nabertherm Controller: Recording of process data with USB-flash drive
- Controls description see page 30



Enamelling furnace LE 1/11

Model	Tmax °C	Inner dimensions in mm			Volume in l	Outer dimensions in mm			Connected load kW	Electrical connection*	Weight in kg
		w	d	h		W	D	H			
LE 1/11	1100	90	115	110	1	290	280	410	1.5	1-phase	10
LE 2/11	1100	110	180	110	2	330	385	410	1.8	1-phase	10
LE 6/11	1100	170	200	170	6	390	435	470	1.8	1-phase	18
LE 14/11	1100	220	300	220	14	440	435	520	2.9	1-phase	25

\*Please see page 30 for more information about supply voltage



# Process Control and -Documentation

## Controller

The Nabertherm controllers convince with their intuitive operation and a contemporary design. They are operated via a central control dial (Jog Dial). Temperatures and program information are presented in a clear, high-contrast LC display.

In developing the controller, the ease of use was the focus. For convenient operation, the controller may be taken off from the holder at the kiln. The program is entered in plain text, so that all steps are easy to follow. Firing curves can be saved under their name for unique assignment (e.g. glaze firing).

When connected to a kiln for firing ceramics, five sample programs are stored in the controller (two bisque firings and three glaze firings). These programs can easily be used as a basis for an individual adaptation to the actually required firing curve. You can overwrite and save again with the required times and temperatures. Via an integrated real time clock, the kiln can be started delayed e.g. in the evening for a firing overnight.

Each controller of series B400 to P470 is equipped as standard with a USB interface. The firing will be documented on a USB stick, which has to be inserted during the operation. After the firing has been finished it can be easily read-out using the software NTGraph (freeware), which is based on Microsoft Excel as user interface. The visualization is presented in tabular form or as a clearly colored graphic.



B400

### Allocation of the Standard Controller to the Furnace Groups

	NW 150 - NW 1000/H	N 100 - N 2200/H	N 40E - N 100E	N 140E - N 500E	Top 16/R - Top 220	HO 70.. - HO 100	NB 300 - NB 600	GFM	GF 75 - GF 1425	F 30 - F 110	F 220	MF 5	LE 1/11 - LE 14/11
Catalog page	5	7-8	9	10-11	15-16	18	21	23	25	27	27	28	29
Controller													
B400	●	●	●	●	●	●	●					●	
C440	○	○	○	○	○	○	○	●	●	●		○	
P470	○	○	○	○	○	○	○	○	○	○	●	○	
R7													●



C440

### Functionality of the Standard Controllers

	R7	B400	C440	P470
Number of programs	1	5	10	50
Segments	2	4	20	40
Extra functions (e.g. fan or autom. flaps) maximum		2	2	2-6
Maximum number of control zones	1	1	1	3
Drive of manual zone regulation		●	●	●
Auto tune		●	●	●
Real time clock		●	●	●
Status messages in clear text		●	●	●
Data input via jog dial and buttons		●	●	●
Entering program names (i.e. "Sintering")		●	●	●
Keypad lock		●	●	●
Skip-button for segment jump		●	●	●
Program entry in steps of 1 °C or 1 min.	●	●	●	●
Start time configurable (e.g. to use night power rates)		●	●	●
Switch-over °C/°F	○	●	●	●
Malfunction memory		●	●	●
kWh meter		●	●	●
Operating hour counter		●	●	●
NTLog Basic for Nabertherm Controller: Recording of process data with USB-flash drive		●	●	●
Interface for VCD- software		○	○	○

- Standard
- Option



P470

### Supply Voltages for Nabertherm Furnaces

1-phase: All furnaces are available for 110 V - 240 V, 50 or 60 Hz.

3-phase: All furnaces are available for 200 V - 240 V and/or 380 V - 480 V, 50 or 60 Hz.

The connecting rates in the catalog refer to the standard furnace with 400 V (3/N/PE) respectively 230 V (1/N/PE).

## Controller Operation



1. Display
2. Main operating button (Jog Dial) (turn/push)
3. Button for "Start/Hold/Stop"
4. Button for "Menu" selection e.g. save, copy or delete program
5. Button for "Back" function
6. Button to activate the Info-Menu e.g. final consumption in kWh, operating hours
7. USB interface

## Displays and Functions



Entering a new program



Loading saved programs



Enter the start time (day and time)



Saving a program under the program name



Display of power consumption in kWh



Remaining time display of the current program



Controller removable for ease of use



Documentation of started programs on a USB stick

## Process Control and -Documentation



### Processdocumentation

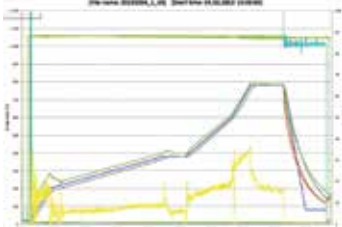
#### Data Storing of Nabertherm Controllers with NTLog Basic

The Controller B400, C440, P470 are equipped with a USB interface as standard, which allows data recording via the NTLog Basic. The process data is recorded with a client-side USB-stick which is inserted during the process.

The process documentation with NTLog Basic requires no additional thermocouples or sensors. Only data recorded which are available in the controller.

The data stored on the USB stick (up to 80,000 data records, format CSV) can afterwards be evaluated on the PC either via NTGraph or a spreadsheet software used by the customer (e.g. MS Excel).

For protection against data manipulation the generated data records contain checksums.



NTGraph, a freeware for the easy-to-read analysis of recorded data using MS Excel

#### Visualization with NTGraph

The process data from NTLog can be visualized either using the customer's own spreadsheet program (e.g. MS-Excel) or NTGraph (Freeware). With NTGraph Nabertherm provides for a user-friendly tool free of charge for the visualization of the data generated by NTLog. Prerequisite for its use is the installation of the program MS Excel for Windows (version 2003/2010/2013). After data import presentation as diagram, table or report can be chosen. The design (color, scaling, reference labels) can be adapted by using prepared sets.

NTGraph is available in seven languages (DE/EN/FR/SP/IT/CH/RU). In addition, selected texts can be generated in other languages.



VCD Software for Control, Visualisation and Documentation

### VCD-Software for Visualization, Control and Documentation

Documentation and reproducibility are more and more important for quality assurance. The powerful VCD software represents an optimal solution for single multi furnace systems as well as charge documentation on the basis of Nabertherm controllers.

The VCD software is used to record process data from the controllers B400/B410, C440/C450 and P470/P480. Up to 400 different heat treatment programs can be stored. The controllers are started and stopped via the software. The process is documented and archived accordingly. The data display can be carried-out in a diagram or as data table. Even a transfer of process data to MS Excel (.csv format \*) or the generation of reports in PDF format is possible.

#### Features

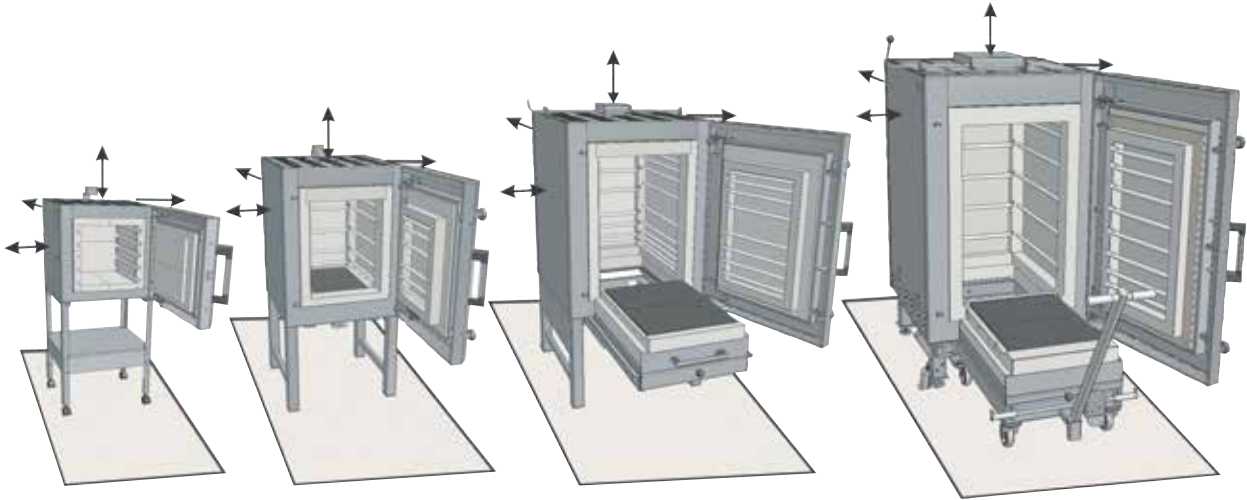
- Available for controllers B400/B410/C440/C450/P470/P480
- Suitable for operating systems Microsoft Windows 7 (32/64 Bit) or 8/8.1 (32/64 Bit)
- Simple installation
- Setting, Archiving and print of programs and graphics
- Operation of controllers via PC
- Archiving of process curves from up to 16 furnaces (also multi-zone controlled)
- Redundant saving of archives on a server drive
- Higher security level due to binary data storage
- Free input of charge data with comfortable search function
- Possibility to evaluate data, files can be converted to Excel
- Generation of a PDF-report
- Language selection: German, English, Italian, French, Spanish, Russian



## Installation Conditions and Exhaust Air Extraction

### General Installation Conditions

When the kiln is being installed, it is important that there is a safety gap of 0.5 m between the kiln and flammable materials on all sides and 1.0 m to the ceiling. If the ceiling is lower, heat-resistant insulation must be installed. If non-flammable materials are used for insulation the minimum distance between the kiln may be reduced to 0.25 m at the sides. The kiln must be placed on a non-flammable surface (fire safety class A DIN 4102 – Example: concrete, tiles, glass, aluminum or steel). The floor must be level so that the kiln can stand upright. Kiln and switchgear are not designed to be used outdoors.

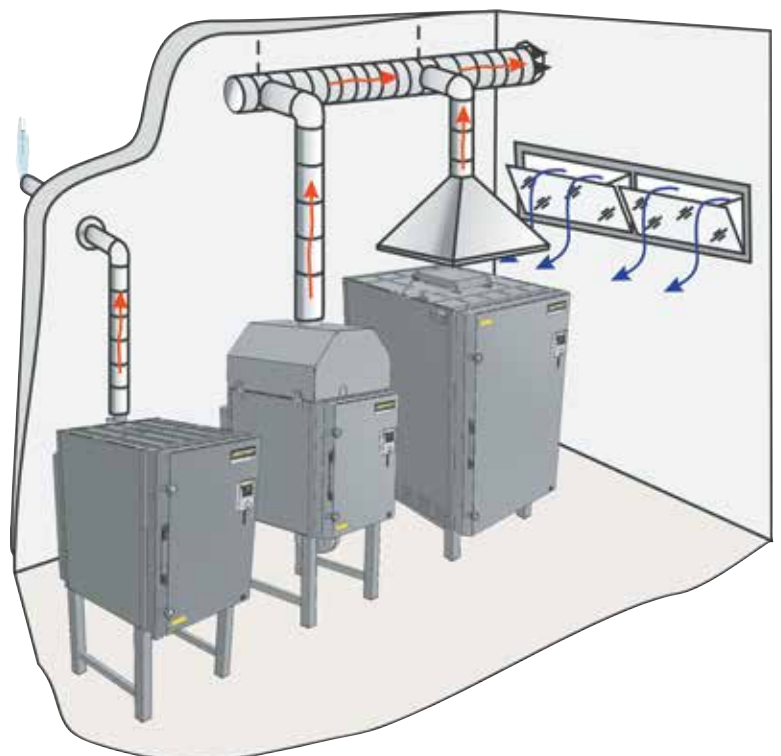
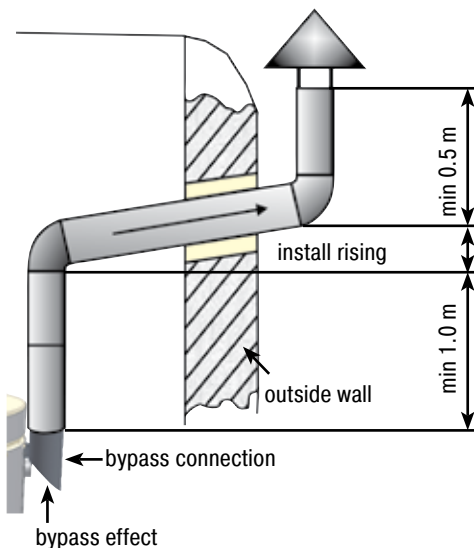


### Exhaust Air Extraction

When ceramics are fired, depending on the quality of the clay and/or glaze, they can emit gases and vapors that are harmful to health. Therefore, exhaust gases must be directed outdoors in a suitable manner. We recommend the connection of an extraction pipe to the kiln to remove the exhaust gases.

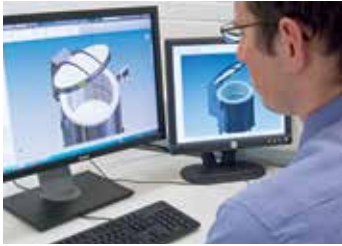
An 80 mm diameter zinc-plated steel pipe or stainless steel pipe is suitable for this purpose (up to model N 300/H). The pipe must be installed constantly rising. Sufficient room ventilation is necessary to ensure that fresh air is mixed with the exhaust gases.

A maximum exhaust gas temperature of approx. 200 °C can be assumed for the piping system. There is a risk of burning at the bypass connection and the piping. The wall duct must be made from heatproof material. We recommend that a local ventilation company dimensions the exhaust gas piping.



Example for exhaust air connection when bypass connector or exhaust hood are used

## From Design to Delivery



More than 40 development engineers ensure that our kilns and furnaces are always state-of-the-art. Each kiln/furnace is designed using ultramodern 3D CAD programs. Mechanical functions can already be tested on-screen.



In order to secure the future of Germany as a production location, we use state-of-the-art machines for manufacturing our kiln. For example, all sheet metal parts on the kiln are precisely cut using a laser cutting machine.



We make no compromises when it comes to insulation of our kiln. Each kiln is lined by hand. All insulation materials are hand-picked and inserted accurately into the kiln. Regular quality control of all materials ensures the longevity of the kiln.



Each kiln undergoes an extensive final inspection before it leaves the factory. This underlines our high quality and workmanship standards.



A good supply of replacement parts is important for a long kiln life. We deliver spare parts fast and at fair prices so that you will be sure to have many years of satisfaction with your kilns. Even today we are still providing spare parts for the first kilns we ever delivered.



Take a look at our company video at [www.nabertherm.com](http://www.nabertherm.com) to find out more about us.



**■ Made  
■ in  
■ Germany**

**The Nabertherm Product Range – [www.nabertherm.com](http://www.nabertherm.com)**



**Glass**

When you need a high-volume solution for heat treating glass, Nabertherm has your answer. We have industrial designs for annealing, fusing, slumping, decorating, tempering, and many other applications. In addition to our wide range of standard furnaces, we can design a specific solution for you. Please ask for our 64-page "Glass" catalog and see all our possibilities.



**Laboratory/Dental**

Apart from the furnaces shown for production Nabertherm offers a wide range of standard furnaces for laboratories. We keep standard units in stock for short delivery times. Please ask for our special laboratory brochure which provides more detailed information on the laboratory furnaces which could be of interest to you.

**Advanced Materials**

With our broad range of furnaces for advanced materials we offer interesting solutions for many applications in powder metallurgy and technical ceramics, for the manufacture of fuel cells and other innovative areas of application. Our electrically heated or gas fired furnaces can be operated in air, protective gas atmospheres or in a vacuum. From our laboratory furnaces to fully automated combi furnace systems with exhaust gas cleaning systems, we are sure to find a solution to meet your needs.

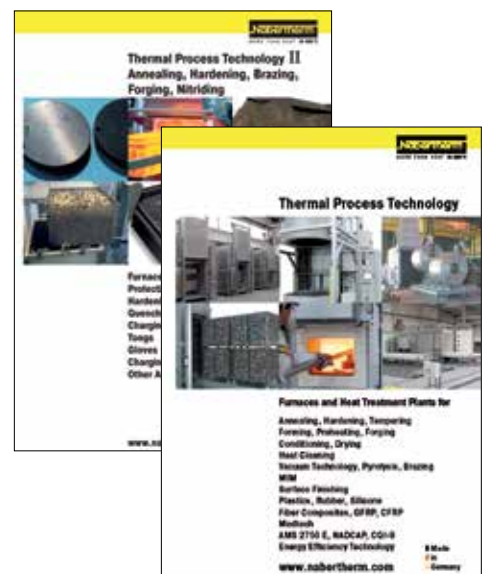


**Foundry**

From electrically or gas heated melting furnaces, dewaxing furnaces or core drying furnaces to fully automatic annealing plants for aluminum or steel, Nabertherm covers professionally all applications for the foundry industry.

**Thermal Process Technology**

Tempering, annealing, hardening and quenching, solution annealing, forging, curing, preheating, drying, ageing – these are only some of the applications which are possible with our extensive program of furnaces and plants. From the compact hardening furnace to fully-automatic plants with conveying technology and process documentation – we certainly will find a solution tailored to your application.



## The whole World of Nabertherm: [www.nabertherm.com](http://www.nabertherm.com)

Please visit our website

[www.nabertherm.com](http://www.nabertherm.com) and find out all you want to know about us - and especially about our products.

Besides news and our current calendar of trade fairs, there is also the opportunity to get in touch directly with your local sales office or nearest dealer worldwide.

### Professional Solutions for:

- Arts & Crafts
- Glass
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- Dental
- Thermal Process Technology for Metals, Plastics and Surface Finishing
- Foundry



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