Arts & Crafts

Kilns and Accessories

Pottery
Porcelain Painting
Glass Painting
Fusing
Decorating
Raku

www.nabertherm.com

Made
in
Germany
Made in Germany
Nabertherm with 500 employees worldwide have been developing and producing industrial furnaces for many different applications for 70 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 in house 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 departments 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
Product Advantages Chamber Kilns

- Multi-layer insulation with light-weight refractory bricks and energy-saving backing insulation adapted to the maximum kiln temperature
- Durable light-weight refractory brick insulation inside the kiln ensures clean firing results
- Rugged, self-supporting, vaulted arch construction
- Ergonomic charging height with 800 mm base (chamber kiln N 50 E = 500 mm)
- Protected door contact switch
- Controller mounted on kiln door and removable for comfortable operation
- Exhaust air opening in the center back of the kiln roof ensures even extraction of the exhaust air in chamber kilns up to 300 liters
- Only insulation materials that are not classified as carcinogenic according to TRGS 905, Class 1 or 2 are used
- Dual-shell housing provides for low temperatures and optimal corrosion protection. Galvanized steel sheets on the sides
- Door seal „brick on brick“, precisely ingrained by hand to ensure tight sealing
- Solid state relays ensure low-noise heater operation
- Infinitely adjustable air inlet damper for optimal air supply during firing and reduced cooling times included in the scope of delivery for chamber kilns from 440 liters
- Semi-automatic air inlet flap for residual drying in chamber kilns up to 300 liters. The flap closes automatically at a set temperature and does not have to be closed manually after the drying phase.
- Motor-driven exhaust air flap in the middle of the kiln roof provides for optimal ventilation of the kiln for chamber kilns from 440 liters
Chamber Kilns, Heated from Five Sides

First-class craftsmanship, professional design, long service life and excellent temperature uniformity – chamber kilns from 100 liters up to 2200 liters round off the range of kilns for professionals. These kilns have proven their worth for many years, firing porcelain and stoneware and annealing glass, even when tightly stacked and at high working temperatures. You will find these chamber kilns in ceramic workshops, studios, clinics, schools and in private homes. They are recommended for frequent firing, when the kilns are tightly stacked and when excellent temperature uniformity is needed.

A kiln should not be operated continuously to its performance limits. The models with Tmax 1300 °C are designed for regular firings up to 1250 °C. If the kiln is often fired above this temperature, we recommend our chamber kilns to 1340 °C. Most chamber kilns are available from stock.
<table>
<thead>
<tr>
<th>Model</th>
<th>Tmax (°C)</th>
<th>Inner dimensions in mm</th>
<th>Volume in l</th>
<th>Outer dimensions in mm</th>
<th>Connected load kW</th>
<th>Electrical connection*</th>
<th>Weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>N 100</td>
<td>1300</td>
<td>400 530 460</td>
<td>100</td>
<td>720 1130 1440</td>
<td>9.0</td>
<td>3-phase</td>
<td>275</td>
</tr>
<tr>
<td>N 150</td>
<td>1300</td>
<td>450 550 590</td>
<td>150</td>
<td>770 1130 1570</td>
<td>11.0</td>
<td>3-phase</td>
<td>320</td>
</tr>
<tr>
<td>N 200</td>
<td>1300</td>
<td>470 530 780</td>
<td>200</td>
<td>790 1130 1780</td>
<td>15.0</td>
<td>3-phase</td>
<td>375</td>
</tr>
<tr>
<td>N 300</td>
<td>1300</td>
<td>550 700 780</td>
<td>300</td>
<td>870 1300 1760</td>
<td>20.0</td>
<td>3-phase</td>
<td>450</td>
</tr>
<tr>
<td>N 440</td>
<td>1300</td>
<td>600 750 1000</td>
<td>450</td>
<td>1000 1400 1830</td>
<td>30.0</td>
<td>3-phase</td>
<td>780</td>
</tr>
<tr>
<td>N 660</td>
<td>1300</td>
<td>600 1100 1000</td>
<td>650</td>
<td>1000 1750 1830</td>
<td>40.0</td>
<td>3-phase</td>
<td>950</td>
</tr>
<tr>
<td>N 1000</td>
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<td>800 1000 1250</td>
<td>1000</td>
<td>1390 1760 2000</td>
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<td>3-phase</td>
<td>1800</td>
</tr>
<tr>
<td>N 1500</td>
<td>1300</td>
<td>900 1200 1400</td>
<td>1500</td>
<td>1490 1960 2150</td>
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<td>3-phase</td>
<td>2500</td>
</tr>
<tr>
<td>N 2200</td>
<td>1300</td>
<td>1000 1400 1600</td>
<td>2200</td>
<td>1590 2160 2350</td>
<td>110.0</td>
<td>3-phase</td>
<td>3100</td>
</tr>
<tr>
<td>N 100/H</td>
<td>1340</td>
<td>400 530 460</td>
<td>100</td>
<td>760 1150 1440</td>
<td>11.0</td>
<td>3-phase</td>
<td>325</td>
</tr>
<tr>
<td>N 150/H</td>
<td>1340</td>
<td>430 530 620</td>
<td>150</td>
<td>790 1150 1600</td>
<td>15.0</td>
<td>3-phase</td>
<td>380</td>
</tr>
<tr>
<td>N 200/H</td>
<td>1340</td>
<td>500 530 720</td>
<td>200</td>
<td>860 1150 1700</td>
<td>20.0</td>
<td>3-phase</td>
<td>430</td>
</tr>
<tr>
<td>N 300/H</td>
<td>1340</td>
<td>550 700 780</td>
<td>300</td>
<td>910 1320 1760</td>
<td>27.0</td>
<td>3-phase</td>
<td>550</td>
</tr>
<tr>
<td>N 440/H</td>
<td>1340</td>
<td>600 750 1000</td>
<td>450</td>
<td>1000 1400 1830</td>
<td>40.0</td>
<td>3-phase</td>
<td>880</td>
</tr>
<tr>
<td>N 660/H</td>
<td>1340</td>
<td>600 1100 1000</td>
<td>650</td>
<td>1000 1750 1830</td>
<td>52.0</td>
<td>3-phase</td>
<td>1080</td>
</tr>
<tr>
<td>N 1000/H</td>
<td>1340</td>
<td>800 1000 1250</td>
<td>1000</td>
<td>1390 1760 2000</td>
<td>75.0</td>
<td>3-phase</td>
<td>2320</td>
</tr>
<tr>
<td>N 1500/H</td>
<td>1340</td>
<td>900 1200 1400</td>
<td>1500</td>
<td>1490 1960 2150</td>
<td>110.0</td>
<td>3-phase</td>
<td>2700</td>
</tr>
<tr>
<td>N 2200/H</td>
<td>1340</td>
<td>1000 1400 1600</td>
<td>2200</td>
<td>1590 2160 2350</td>
<td>140.0</td>
<td>3-phase</td>
<td>3600</td>
</tr>
</tbody>
</table>

1Base included
2External dimensions vary when furnace is equipped with additional equipment. Dimensions on request

- Heating elements on support tubes ensure free heat radiation
- Heating from five sides and a special arrangement of the heating elements ensure optimum temperature uniformity
- Scope of delivery includes SiC floor plates to protect the floor heating and provide for safe stacking of the kiln furniture
- Base included in scope of delivery
- Door cover made from structured stainless steel
- Semi-automatic air inlet flap that closes automatically after the drying phase in the firing program for chamber kilns up to 300 liters
- Motor-driven exhaust air flap in the middle of the kiln roof for optimum ventilation of the kiln with chamber kilns from 440 liters
- Defined application within the constraints of the operating instructions

**Ceramic studio of Anette Breu**

Heating from five sides and a special arrangement of the heating elements ensure optimal temperature uniformity.

Semi-automatic air inlet flap for residual drying in chamber kilns up to 300 liters. The flap closes automatically at a set temperature and does not have to be closed manually after the drying phase.
The chamber kilns in the NW series combine the convincing quality benefits of the proven chamber kilns that are heated from five sides with a special feature. Charging these chamber kilns is much simpler, more ergonomic and also time-saving. With a drawer mechanism in the models up to 300 liters the floor can be easily pulled out. The larger models from 440 liters are designed as shuttle kilns with freely moving bogies. The optimal access in front of the kiln allows for simple and easy charging.

These models are especially suitable for ceramic workshops, studios, clinics and schools. Most kilns are available from stock, even larger models can be delivered within a short time.

The chamber kilns are delivered with maximum temperatures of 1300 °C or 1340 °C. This corresponds to regular firing temperatures of maximum 1250 °C or 1320 °C respectively.
Standard design

- Ergonomic loading from three sides
- Heating elements on support tubes ensure free heat radiation
- Heating from five sides and a special arrangement of the heating elements provide for optimal temperature uniformity
- Scope of delivery includes SiC floor plates to protect the floor heating and provide for safe stacking of the kiln furniture
- Door cover made from structured stainless steel
- Semi-automatic air inlet flap that closes automatically after the drying phase in the firing program for chamber kilns up to 300 liters
- Motor-driven exhaust air flap in the middle of the kiln roof for optimal ventilation of the kiln with chamber kilns from 440 liters
- Defined application within the constraints of the operating instructions

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### Model Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Tmax °C</th>
<th>Inner dimensions in mm</th>
<th>Volume in mm</th>
<th>Outer dimensions 1 in mm</th>
<th>Connected load kW</th>
<th>Electrical connection</th>
<th>Weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW 150</td>
<td>1300</td>
<td>430 530 620</td>
<td>150</td>
<td>790 1150 1600</td>
<td>11.0</td>
<td>3-phase</td>
<td>400</td>
</tr>
<tr>
<td>NW 200</td>
<td>1300</td>
<td>500 530 720</td>
<td>200</td>
<td>860 1150 1700</td>
<td>15.0</td>
<td>3-phase</td>
<td>460</td>
</tr>
<tr>
<td>NW 300</td>
<td>1300</td>
<td>550 700 780</td>
<td>300</td>
<td>910 1320 1760</td>
<td>20.0</td>
<td>3-phase</td>
<td>560</td>
</tr>
<tr>
<td>NW 440</td>
<td>1300</td>
<td>600 750 1000</td>
<td>450</td>
<td>1000 1400 1830</td>
<td>30.0</td>
<td>3-phase</td>
<td>970</td>
</tr>
<tr>
<td>NW 660</td>
<td>1300</td>
<td>600 1100 1000</td>
<td>660</td>
<td>1000 1750 1830</td>
<td>40.0</td>
<td>3-phase</td>
<td>1180</td>
</tr>
<tr>
<td>NW 1000</td>
<td>1300</td>
<td>800 1000 1250</td>
<td>1000</td>
<td>1390 1760 2000</td>
<td>57.0</td>
<td>3-phase</td>
<td>1800</td>
</tr>
</tbody>
</table>

*External dimensions vary when furnace is equipped with additional equipment. Dimensions on request.

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*Please see page 38 for more information about supply voltage.
Due to their good price-performance ratio, the Nabertherm chamber kilns heated from three sides are suitable for use in schools, kindergartens or occupational therapy. The heating elements are protected in grooves. These kilns are ideal for working temperatures between 900 °C and 1250 °C. For an intensive, professional use, we recommend our five-side heated chamber kilns.

The dual-shell, back-ventilated housing keeps the housing temperature low. A semi-automatic air inlet flap is included with standard scope of delivery. After the drying phase in the heating program, the flap closes automatically at a chosen temperature. No base flap has to be closed manually. The controller can be removed from the door bracket for convenient operation.
Chamber kiln N 500 E

Standard design N 140 E - N 280 E

- Heating elements protected in grooves
- Heating from three sides (both sides and floor)
- Scope of delivery includes 3 ceramic supports and lower shelf to protect the bottom insulation and for safe stacking of the kiln furniture
- Base included in scope of delivery
- Defined application within the constraints of the operating instructions

Standard design N 500 E

- Freely radiating heating elements on support tubes
- Heating from three sides (both sides and floor)
- Scope of delivery includes SiC floor plate for even stacking of the kiln furniture
- Motor-driven exhaust air flap in the middle of the kiln roof for optimal ventilation of the kiln
- Defined application within the constraints of the operating instructions

<table>
<thead>
<tr>
<th>Model</th>
<th>Tmax °C</th>
<th>Inner dimensions in mm</th>
<th>Volume in l</th>
<th>Outer dimensions* in mm</th>
<th>Connected load kW</th>
<th>Electrical connection*</th>
<th>Weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>N 140 LE</td>
<td>1100</td>
<td>450° 580 570</td>
<td>140</td>
<td>720 1130 1440</td>
<td>6.0 1-phase</td>
<td>275</td>
<td></td>
</tr>
<tr>
<td>N 210 LE</td>
<td>1100</td>
<td>500° 580 700</td>
<td>210</td>
<td>770 1130 1570</td>
<td>9.0 3-phase</td>
<td>320</td>
<td></td>
</tr>
<tr>
<td>N 280 LE</td>
<td>1100</td>
<td>520° 580 890</td>
<td>280</td>
<td>790 1130 1760</td>
<td>9.0 3-phase</td>
<td>375</td>
<td></td>
</tr>
<tr>
<td>N 140 E</td>
<td>1300</td>
<td>450° 580 570</td>
<td>140</td>
<td>720 1130 1440</td>
<td>9.0 3-phase</td>
<td>275</td>
<td></td>
</tr>
<tr>
<td>N 210 E</td>
<td>1300</td>
<td>500° 580 700</td>
<td>210</td>
<td>770 1130 1570</td>
<td>11.0 3-phase</td>
<td>320</td>
<td></td>
</tr>
<tr>
<td>N 280 E</td>
<td>1300</td>
<td>520° 580 890</td>
<td>280</td>
<td>790 1130 1760</td>
<td>15.0 3-phase</td>
<td>375</td>
<td></td>
</tr>
<tr>
<td>N 500 E</td>
<td>1300</td>
<td>600° 820 1000</td>
<td>500</td>
<td>1000 1400 1850</td>
<td>30.0 3-phase</td>
<td>700</td>
<td></td>
</tr>
</tbody>
</table>

1Base included
2Collar height minus 110 mm
3Collar width minus 50 mm
4External dimensions vary when furnace is equipped with additional equipment. Dimensions on request

1Please see page 38 for more information about supply voltage

Three-sided heating with heating elements on support tubes (N 500 E)

Three-sided heating with heating elements protected in grooves (N 140 E - N 280 E)
Chamber Kilns, Heated from Two Sides

Designed as chamber kilns with wide-opening door these models can be easily and clearly loaded. The appealing design and attractive price are unbeatable arguments for this kiln series. The heating elements are protected in grooves.

The kilns can be used for ceramics and glass or porcelain painting or also for simple fusing works. Most chamber kilns are available from stock. These kilns are ideal for working temperatures between 900 °C and 1230 °C. The infinitely adjustable air inlet opening in the door and the exhaust air opening in the roof ensure good ventilation inside the kiln and reduce cooling times.

### Standard design
- Heating elements protected in grooves
- Heating from both sides
- Designed as a tabletop model, base available as an accessory
- Infinitely adjustable fresh air inlet
- Scope of delivery includes an option for connecting an exhaust air pipe (80 mm diameter)
- Dual shell housing for low outer temperatures
- Defined application within the constraints of the operating instructions

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Tmax °C</th>
<th>Inner dimensions in mm</th>
<th>Volume in l</th>
<th>Outer dimensions in mm</th>
<th>Connected load kW</th>
<th>Electrical connection</th>
<th>Weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>N 40 E</td>
<td>1300</td>
<td>350 330 350</td>
<td>40</td>
<td>640 800 600</td>
<td>2.9</td>
<td>1phasig</td>
<td>90</td>
</tr>
<tr>
<td>N 40 E/R</td>
<td>1300</td>
<td>350 330 350</td>
<td>40</td>
<td>640 800 600</td>
<td>5.5</td>
<td>3-phase</td>
<td>90</td>
</tr>
<tr>
<td>N 70 LE</td>
<td>1200</td>
<td>400 380 450</td>
<td>70</td>
<td>690 850 700</td>
<td>2.9</td>
<td>1phasig</td>
<td>120</td>
</tr>
<tr>
<td>N 70 E</td>
<td>1300</td>
<td>400 380 450</td>
<td>70</td>
<td>690 850 700</td>
<td>3.6</td>
<td>1phasig</td>
<td>120</td>
</tr>
<tr>
<td>N 70 E/R</td>
<td>1300</td>
<td>400 380 450</td>
<td>70</td>
<td>690 850 700</td>
<td>5.5</td>
<td>3-phase</td>
<td>120</td>
</tr>
<tr>
<td>N 100 E</td>
<td>1300</td>
<td>460 440 500</td>
<td>100</td>
<td>750 910 750</td>
<td>7.0</td>
<td>3-phase</td>
<td>150</td>
</tr>
</tbody>
</table>

1 Heating only between two phases
2 Height with base + 700 mm
3 External dimensions vary when furnace is equipped with additional equipment. Dimensions on request

*Please see page 38 for more information about supply voltage
## Standard Equipment Chamber Kilns

### Function

<table>
<thead>
<tr>
<th>Feature</th>
<th>N 40 E - N 100 E</th>
<th>N 140 E - N 280 E</th>
<th>N 500 E</th>
<th>N 100 - NW 300/H</th>
<th>N 440 - NW 1500/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-layer insulation with light-weight refractory bricks</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>No use of insulation materials that are classified as carcinogenic</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>according to TRGS 905, Class 1 or 2</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Rugged, self-supporting, vaulted arch construction</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Door with durable seal, precisely ground by hand</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Dual-shell housing, galvanized steel side panels</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Protected door contact switch</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Solid state relays ensure low-noise heater operation</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Removable controller for comfortable operation</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Air inlet flap closes automatically after residual drying</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Infinitely adjustable fresh air flap</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Scope of delivery includes an option for connecting an exhaust air pipe (80 mm diameter)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Motor-driven exhaust air flap</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Five-sided heating on support tubes</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Three-sided heating, protected in grooves</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Three-sided heating on support tubes</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Two-sided heating, protected in grooves</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Scope of delivery includes 3 ceramic supports and shelf</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Scope of delivery includes SiC floor plate</td>
<td>●</td>
<td>●</td>
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</tr>
<tr>
<td>Scope of delivery includes base</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Door cover made from structured stainless steel</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>● Standard</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>○ Option</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>* Already motor-driven in the standard version</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>
Additional Equipment Chamber Kilns

- Manual zone control to optimize temperature uniformity
- Motor-driven air inlet flap that can be opened and closed in relation to the program
- Cooling fan for kilns up to 300 liters to reduce process times
- Stainless steel exhaust hood
- Motor-driven exhaust air flap
- Door hinges on the left side
- Base in special height
- Base mounted on castors
- Charging frame provides for ergonomic loading and unloading in front of the kiln
- Kiln furniture
- Observation hole in the kiln door (diameter 20 mm)
- Second bogie for NW kilns from 440 liters
Top Loaders
Product Advantages Top Loaders

Multi-layer insulation with durable light-weight refractory bricks and energy-saving backing insulation adapted to the maximum kiln temperature

Only insulation materials that are not classified as carcinogenic according to TRGS 905, Class 1 or 2 are used

Housing shell made from structured stainless steel

Adjustable lid with quick-release lock and padlock

Durable lid seal (brick on brick)

Lid safety switch

Solid state relays ensure low noise heater operation

Integrated gas-pressured springs for easy opening and closing of the lid

Easy to use controller for precise temperature control, removable for comfortable operation

Important data about power consumption and operating hours available via the information menu of the controller

Thermocouple protected in the insulation

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

Connection for an exhaust air pipe (80 mm diameter)
The attractive design, low weight, and unbeatable price-performance ratio are just a few of the advantages of our top loaders. These models always deliver perfect firing results and are the right choice for hobby potters and workshops.

The particularly energy-saving refractory insulation and energy efficient backing insulation ensure that a maximum temperature of 1320 °C is reached with low electrical connected loads. The tabletop model Top 16/R is also suitable for testing glazes and firing samples.

These top loaders are ideal for working temperatures between 900 °C and 1230 °C. For intensive professional use, we recommend our rectangular top loaders or chamber kilns with heating from five sides.

**Standard design**

- Heating elements protected in grooves, heating from all around
- Two-layer refractory insulation and energy saving backing insulation
- Thermocouple protected in the kiln wall
- Sturdy, locking castors for easy movement of the kiln
- Top 16/R available as a tabletop model without castors
- Defined application within the constraints of the operating instructions

---

<table>
<thead>
<tr>
<th>Model</th>
<th>Tmax °C</th>
<th>Inner dimensions in mm</th>
<th>Volume in l</th>
<th>Outer dimensions* in mm</th>
<th>Connected load kW</th>
<th>Electrical connection*</th>
<th>Weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 16/R</td>
<td>1320</td>
<td>Ø 290 230</td>
<td>16</td>
<td>440 650 530</td>
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<td>32</td>
</tr>
<tr>
<td>Top 45eco</td>
<td>1320</td>
<td>Ø 410 340</td>
<td>45</td>
<td>580 880 760</td>
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<td>1-phase</td>
<td>62</td>
</tr>
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<td>Top 45</td>
<td>1320</td>
<td>Ø 410 340</td>
<td>45</td>
<td>580 880 760</td>
<td>3.6</td>
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<td>62</td>
</tr>
<tr>
<td>Top 45/R</td>
<td>1320</td>
<td>Ø 410 340</td>
<td>45</td>
<td>580 880 760</td>
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<td>Ø 410 460</td>
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<tr>
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<td>Ø 590 570</td>
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<td>Top 140</td>
<td>1320</td>
<td>Ø 550 570</td>
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<td>730 1040 1020</td>
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<td>Top 160</td>
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<td>Ø 590 570</td>
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<td>770 1090 1030</td>
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<td>Top 190</td>
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<td>190</td>
<td>770 1090 1150</td>
<td>11.0</td>
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</tr>
<tr>
<td>Top 220</td>
<td>1320</td>
<td>Ø 590 590 690 190</td>
<td>460 220</td>
<td>1030 930 15.0</td>
<td>3-phase</td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>

*Heating only between two phases

*Please see page 38 for more information about supply voltage

*External dimensions vary when furnace is equipped with additional equipment. Dimensions on request
**Additional Equipment Top Loaders**

**Bottom heating and manual zone control from 100 liters:**
Does your work need a very precise temperature uniformity? In this case we recommend the optional bottom heating for our top loaders from 100 liters. With our controllers, you can control the bottom heating as a second zone. Set your firing curve on the controller as usual. If you find that the temperature uniformity has to be changed from top to bottom, you simply adjust the ratio.

![Raised base for Top 45 and Top 60](image1)

![Wall bracket for the controller with 2.5 m connection cable](image2)
The rectangular top loaders from Nabertherm combine the benefits of a top loader with the sturdy design of a chamber kiln and are perfectly suited for professional use. The freely radiating heating elements always ensure perfect firing results. These models are ideal for working temperatures between 900 °C and 1230 °C. The infinitely adjustable fresh air opening in the bottom and the exhaust air opening on the side ensure good ventilation inside the kiln and allow the kiln to cool faster. Castors ensure easy movement of the kiln.

Standard design
- Heating elements on support tubes ensure free heat radiation
- Heating from both sides
- Castors
- Sturdy design
- Two-layer refractory insulation and energy saving backing insulation
- Defined application within the constraints of the operating instructions

<table>
<thead>
<tr>
<th>Model</th>
<th>Tmax °C</th>
<th>Inner dimensions in mm</th>
<th>Volume in l</th>
<th>Outer dimensions in mm</th>
<th>Connected load kW</th>
<th>Electrical connection</th>
<th>Weight in kg</th>
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<tbody>
<tr>
<td>HO 70/L</td>
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<td>440 380 420</td>
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<td>1035 830 835</td>
<td>3.6</td>
<td>1-phase</td>
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<tr>
<td>HO 70/R</td>
<td>1300</td>
<td>440 380 420</td>
<td>70</td>
<td>1035 830 835</td>
<td>5.5</td>
<td>3-phase</td>
<td>135</td>
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<tr>
<td>HO 100</td>
<td>1300</td>
<td>480 430 490</td>
<td>100</td>
<td>1075 880 905</td>
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<td>3-phase</td>
<td>160</td>
</tr>
</tbody>
</table>

1 Heating only between two phases
2 Please see page 38 for more information about supply voltage
3 External dimensions vary when furnace is equipped with additional equipment. Dimensions on request
Gas-Fired Kilns
RAKU Kilns

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 a top hat kiln. In the basic version, the top hat 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 top hat. 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 top hat kiln or top loader
- Easy and simple construction, applies particularly to the top hat
- 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

<table>
<thead>
<tr>
<th>Model</th>
<th>Tmax in °C</th>
<th>Inner dimensions in mm</th>
<th>Volume in l</th>
<th>Outer dimensions in mm</th>
<th>Weight in kg</th>
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<tbody>
<tr>
<td>RAKU kiln 100</td>
<td></td>
<td>w 500  d 500  h 620</td>
<td>103</td>
<td>W 750  D 660  H 1150</td>
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<td>lifting stand burner</td>
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</tr>
<tr>
<td>RAKU kiln 100</td>
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<td></td>
<td></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Power 18 kW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*External dimensions vary when furnace is equipped with additional equipment. Dimensions on request.

Architect Mr. Luz
Gas-Fired Chamber Kilns

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 150 - 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 mbar or 50 mbar) or natural gas (connected pressure 20 mbar 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
- Base included in scope of delivery
- Comfortable charging height with base of 760 mm (NB 150, NB 300) and 600 mm (NB 400, NB 600)
- Defined application within the constraints of the operating instructions

<table>
<thead>
<tr>
<th>Model</th>
<th>Tmax °C</th>
<th>Work space dimensions in mm</th>
<th>Volume in l</th>
<th>Outer dimensions in mm</th>
<th>Rating kW</th>
<th>Electrical connection</th>
<th>Weight in kg</th>
</tr>
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<tbody>
<tr>
<td>NB 150</td>
<td>1300</td>
<td>350 530 590</td>
<td>150</td>
<td>1200 1400 2050</td>
<td>30</td>
<td>1-phase</td>
<td>450</td>
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<tr>
<td>NB 300</td>
<td>1300</td>
<td>450 700 780</td>
<td>300</td>
<td>1315 1570 2200</td>
<td>40</td>
<td>1-phase</td>
<td>740</td>
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<tr>
<td>NB 400</td>
<td>1300</td>
<td>500 750 1000</td>
<td>440</td>
<td>1410 1600 2350</td>
<td>80</td>
<td>1-phase</td>
<td>980</td>
</tr>
<tr>
<td>NB 600</td>
<td>1300</td>
<td>1100 1000 1000</td>
<td>650</td>
<td>1410 1950 2350</td>
<td>80</td>
<td>1-phase</td>
<td>1150</td>
</tr>
</tbody>
</table>

*No voltage supply necessary if kiln is manually operated
*Please see page 38 for more information about supply voltage
*Exhaust hood of 470 mm (NB 150, NB 300) or 500 mm (NB 400, NB 600) included (dismountable)
*External dimensions vary when furnace is equipped with additional equipment. Dimensions on request
Fusing Furnaces
**Product Advantages Fusing Furnaces**

Closely arranged roof heating elements protected in quartz glass tubes for direct, even heating of the glass

Level table surface with rugged refractory insulation and marked charge surface

Only insulation materials that are not classified as carcinogenic according to TRGS 905, Class 1 or 2 are used

Appealing, dual-shell stainless steel housing

Large handles on the right and left sides of the lid (GF 600 in the middle)

Gas pressure springs for easy opening and closing of the lid

Adjustable, large quick-release fasteners – also suitable when working with gloves

Closable opening for ventilation, for faster cooling and to observe the charge

Rugged base on castors with surface for glass and tools

Ergonomic charging height of 860 mm

Solid state relays ensure low-noise heater operation

Heating switches off when the lid is opened
Fusing Furnaces with Movable Table

Fusing furnaces in the “GFM” series were developed for special production requirements. The GFM series combines the impressive quality benefits of the GF series with the option of charging the table outside the furnace. The table runs on swivel castors and can thus be moved freely.

The scope of delivery includes a flat table for fusing work; additional tables can be added. An interchangeable table system on rails is especially economical, as one table can be charged while the other is in the furnace. Instead of flat tables, different tables with different heights can be used if the furnace is to be used for higher components, for example.

Standard design
- Heated lid with fixed frame
- Base incuded in scope of delivery
- Defined application within the constraints of the operating instructions

<table>
<thead>
<tr>
<th>Model</th>
<th>Tmax °C</th>
<th>Inner dimensions in mm w</th>
<th>d</th>
<th>h</th>
<th>Floor space in m²</th>
<th>Outer dimensions¹ in mm W</th>
<th>D</th>
<th>H</th>
<th>Connected load kW</th>
<th>Electrical connection*</th>
<th>Weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFM 420</td>
<td>950</td>
<td>1660</td>
<td>950</td>
<td>400</td>
<td>1.57</td>
<td>2170</td>
<td>1340</td>
<td>1400</td>
<td>18</td>
<td>3-phase</td>
<td>630</td>
</tr>
<tr>
<td>GFM 520</td>
<td>950</td>
<td>1210</td>
<td>1160</td>
<td>400</td>
<td>2.03</td>
<td>1720</td>
<td>1550</td>
<td>1400</td>
<td>15</td>
<td>3-phase</td>
<td>660</td>
</tr>
<tr>
<td>GFM 600</td>
<td>950</td>
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<td>1010</td>
<td>400</td>
<td>3.79</td>
<td>2530</td>
<td>1400</td>
<td>1400</td>
<td>22</td>
<td>3-phase</td>
<td>730</td>
</tr>
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<td>GFM 920</td>
<td>950</td>
<td>2110</td>
<td>1160</td>
<td>400</td>
<td>3.79</td>
<td>2630</td>
<td>1550</td>
<td>1400</td>
<td>26</td>
<td>3-phase</td>
<td>980</td>
</tr>
<tr>
<td>GFM 1050</td>
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<td>2310</td>
<td>1210</td>
<td>400</td>
<td>3.79</td>
<td>2830</td>
<td>1600</td>
<td>1400</td>
<td>32</td>
<td>3-phase</td>
<td>1190</td>
</tr>
<tr>
<td>GFM 1425</td>
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<td>1510</td>
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<td>3030</td>
<td>1900</td>
<td>1400</td>
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<td>1390</td>
</tr>
</tbody>
</table>

*Please see page 38 for more information about supply voltage

¹External dimensions vary when furnace is equipped with additional equipment. Dimensions on request
The fusing furnaces in the GF 75 - GF 1425 series are designed for professionals. Closely arranged heating elements protected in quartz glass tubes ensure very good temperature accuracy during fusing or bending on the complete area of the table. All models have an appealing, dual-shell stainless steel housing. The level table surface made from rugged, durable refractory material and the lid opening with gas pressure springs as support simplify charging of the furnace. The optimized electrical connected load ensures that the glass heats up quickly.
### Standard design
- Heating elements protected in quartz glass tubes
- Controller integrated on the right side of the furnace to save space
- C440 controller included in scope of delivery
- Defined application within the constraints of the operating instructions

### Model Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Tmax °C</th>
<th>Inner dimensions in mm</th>
<th>Floor space in m²</th>
<th>Outer dimensions¹ in mm</th>
<th>Connected load kW</th>
<th>Electrical connection</th>
<th>Weight in kg</th>
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<td>620 620 310</td>
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<tr>
<td>GF 75 R</td>
<td>950</td>
<td>620 620 310</td>
<td>0.38</td>
<td>1100 965 1310</td>
<td>5.5</td>
<td>3-phase¹</td>
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<td>GF 190 LE</td>
<td>950</td>
<td>1010 400</td>
<td>0.62</td>
<td>1480 965 1400</td>
<td>6.0</td>
<td>1-phase</td>
<td>210</td>
</tr>
<tr>
<td>GF 190</td>
<td>950</td>
<td>1010 620 400</td>
<td>0.62</td>
<td>1480 965 1400</td>
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<td>210</td>
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<td>GF 240</td>
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<td>1.33</td>
<td>1680 1465 1400</td>
<td>15.0</td>
<td>3-phase</td>
<td>450</td>
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<tr>
<td>GF 420</td>
<td>950</td>
<td>1660 950 400</td>
<td>1.57</td>
<td>2130 1315 1400</td>
<td>18.0</td>
<td>3-phase</td>
<td>550</td>
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<tr>
<td>GF 520</td>
<td>950</td>
<td>1210 1160 400</td>
<td>1.40</td>
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<tr>
<td>GF 600</td>
<td>950</td>
<td>2010 1010 400</td>
<td>2.03</td>
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<td>950</td>
<td>2110 1160 400</td>
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<td>2580 1525 1400</td>
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<td>950</td>
<td>2510 1510 400</td>
<td>3.79</td>
<td>2880 1875 1400</td>
<td>32.0</td>
<td>3-phase</td>
<td>1250</td>
</tr>
</tbody>
</table>

¹Heating only between two phases
²Fusing of 32 A if connected to 230 V
³External dimensions vary when furnace is equipped with additional equipment. Dimensions on request

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Heating only between two phases

Please see page 38 for more information about supply voltage

Including base
Additional Equipment Fusing Furnaces

- Inspection glass in air inlets to observe the glass.
- Motor-driven lid opening.
- Additional tables to extend the furnace system for GFM models; interchangeable table system to utilize residual heat and reduce cycle times by changing tables while the furnace is still warm.
- Floor heating provides for even heating of larger objects.
- Motor-driven exhaust air flap for fast cooling after firing.
- Cooling fan for faster cooling with the lid closed.
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
- Powerful gas springs 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

Additional equipment
- Higher chassis

### Top Loader as Fusing Furnaces

<table>
<thead>
<tr>
<th>Model</th>
<th>Tmax °C</th>
<th>Inner dimensions in mm</th>
<th>Floor space in m²</th>
<th>Outer dimensions L in mm</th>
<th>Connected load kW</th>
<th>Electrical connection</th>
<th>Weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>F 30</td>
<td>950</td>
<td>Ø 410 230</td>
<td>0.13</td>
<td>650 800 500</td>
<td>2.0</td>
<td>1-phase</td>
<td>50</td>
</tr>
<tr>
<td>F 75 L</td>
<td>950</td>
<td>750 520 230</td>
<td>0.33</td>
<td>950 880 680</td>
<td>3.6</td>
<td>1-phase</td>
<td>80</td>
</tr>
<tr>
<td>F 75</td>
<td>950</td>
<td>750 520 230</td>
<td>0.33</td>
<td>950 880 680</td>
<td>5.5</td>
<td>3-phase</td>
<td>80</td>
</tr>
<tr>
<td>F 110 LE</td>
<td>950</td>
<td>930 590 230</td>
<td>0.47</td>
<td>1120 950 680</td>
<td>6.0</td>
<td>1-phase</td>
<td>95</td>
</tr>
<tr>
<td>F 110</td>
<td>950</td>
<td>930 590 230</td>
<td>0.47</td>
<td>1120 950 680</td>
<td>7.5</td>
<td>3-phase</td>
<td>115</td>
</tr>
<tr>
<td>F 220</td>
<td>950</td>
<td>930 590 460</td>
<td>0.47</td>
<td>1120 950 910</td>
<td>15.0</td>
<td>3-phase</td>
<td>175</td>
</tr>
</tbody>
</table>

1 Fusing of 32 A if connected to 230 V
2 External dimensions vary when furnace is equipped with additional equipment. Dimensions on request

*Please see page 38 for more information about supply voltage
### Process Control and Documentation

<table>
<thead>
<tr>
<th>Segment</th>
<th>Start temp</th>
<th>End temp</th>
<th>Time</th>
<th>Rate</th>
<th>Exit 1</th>
<th>Exit 2</th>
<th>Exit 3</th>
<th>Exit 4</th>
<th>Exit 5</th>
<th>Exit 6</th>
<th>Exit 7</th>
<th>Exit 8</th>
<th>Cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>1.300</td>
<td></td>
<td>100</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>2</td>
<td>1.300</td>
<td>900</td>
<td>00:10</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>900</td>
<td>900</td>
<td>INFINITE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4</td>
<td>END</td>
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<tr>
<td>5</td>
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<tr>
<td>6</td>
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<tr>
<td>7</td>
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<tr>
<td>8</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
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. Optimum temperature uniformity over the entire temperature range through multi-stage PID parameterization.

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). The user can choose between 17 languages.

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.

<table>
<thead>
<tr>
<th>Allocation of the Standard Controller to the Furnace Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Controller</strong></td>
</tr>
<tr>
<td>B400</td>
</tr>
<tr>
<td>C440</td>
</tr>
<tr>
<td>P470</td>
</tr>
</tbody>
</table>

## Functionality of the Standard Controllers

<table>
<thead>
<tr>
<th>Functionality</th>
<th>B400</th>
<th>C440</th>
<th>P470</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of programs</td>
<td>5</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Segments</td>
<td>4</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Extra functions (e.g. fan or autom. flaps) maximum</td>
<td>2</td>
<td>2</td>
<td>2-6</td>
</tr>
<tr>
<td>Maximum number of control zones</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Drive of manual zone regulation</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Auto tune</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Real time clock</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Status messages in clear text</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Data input via jog dial and buttons</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Entering program names (i.e. “Sintering”)</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Keypad lock</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Skip-button for segment jump</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Program entry in steps of 1 °C or 1 min.</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Start time configurable (e.g. to use night power rates)</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Switch-over °C/°F</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Malfunction memory</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>kWh meter</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Operating hour counter</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>NTLog Basic for Nabertherm controller: recording of process data with USB-flash drive</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Interface for VCD-software</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Number of selectable languages</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td><strong>Standard</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Option</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 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

Data Storing of Nabertherm Controllers with NTLog Basic

The controller B400/B410, C440/C450, P470/P480 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.

Software NTEdit for Entering Programs on the PC

Entering programs is simplified considerably by using the software NTEdit (Freeware). The program can be entered on the PC and then be imported into the controller with a USB stick. The display is tabular or graphical. The program import in NTEdit is also possible. With NTEdit Nabertherm provides a user-friendly free tool. A prerequisite for the use is the client installation of MS-Excel for Windows (2007/2010/2013). NTEdit is available in eight languages (DE/EN/FR/SP/IT/CH/RU/PT).

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 an additional 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.

NTGraph, a freeware for the easy-to-read analysis of recorded data using MS-Excel
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 a 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 or 8/8.1 or 10 (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
- 17 languages selectable
Installation and Exhaust Air Extraction

Installation
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 0.20 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.
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 extensive “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 steal, 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

Please visit our website 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:
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- Glass
- Advanced Materials
- Laboratory
- Dental
- Thermal Process Technology for Metals, Plastics and Surface Finishing
- Foundry

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