Instruction Manual – Kilns up to 1320°C

PY 12 H – PY 290 HS
ST 35 H – ST 250 HD

Konformitätserklärung
Declaration of CE Conformity

Hiermit erklären wir, dass die nachfolgend bezeichneten Geräte mit der Niederspannungsrichtlinie 73/23/EWG übereinstimmen:
The manufacturer herewith declares that the following products comply with the Low Voltage Directive 73/23/EWG:

Alle elektrisch beheizten Brennöfen:
All electrical heated kilns:

PY12 H - PY290 HS
ST35 H - ST 250 HD
Mit Seriennummern >20000
With serial numbers >2000

Angewandte nationale Normen:
The following norms were consulted to assess conformity:

VDE 0100
VDE 0700 Teile 1 und 244
VDE 0700 Teil 500 (EN 50106)

Hersteller:
Manufacturer

PYROTEC Brennofenbau GmbH
D-49074 Osnabrück, Ziegelstraße 32b
www.pyrotec-gmbh.de

Osnabrück, 04.07.2019

P. Lichtenberg

Peer Lichtenberg, Geschäftsführer

Instruction Manual

For all models of the series STUDIO 1260°C and PROFITHERM 1320°C

Table of Contents page:

Please follow the instructions for the installation and observe the safety information for the operation of the kiln!

Technical details are subject to change.

General Information

This instruction manual introduces you to your PYROTEC-kiln. Please take the time to read the instructions carefully before commissioning the device. Please also pay attention to the separate controller instructions.

Safety Information

When operating an electrically heated kiln for temperatures up to 1320°C (2408°F), it is absolutely necessary to observe the following safety instructions:

- Install and operate the kiln only in appropriate rooms (see the section for the installation of the kiln below).
- The electrical connection (power outlet, fuse) must be installed or checked by a qualified electrician before commissioning (see page 11: electrical connection).
- Do not place inflammable materials in or on the kiln!
- Never heat up higher than the manufacturer's recommendations for glazes and clay to prevent damage to the kiln and ware.
- CAUTION: Do not touch the kiln shell and lid during the firing (risk of burns!).
- Open the lid only after the ware has cooled down.
- Pull the power plug before cleaning and servicing the kiln.
- The electronic controller simplifies the operation of the kiln and improves the reproducibility of the firing process. **To prevent overheating, it is recommended to monitor the end phase of the firing in case the kiln or the controller is defective.**
- **Do not use extension cables!**

Installation of the Kiln

Make sure that in public buildings only authorized persons have access to the kiln and the controller. Manipulating the controller can cause damage to the ware and kiln.

Garages and furnace rooms are inadmissible locations because of fire risk.

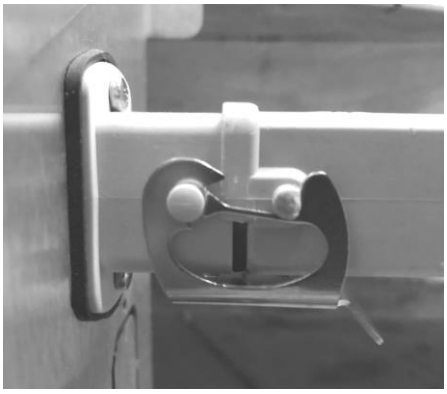
The installation site must be well ventilated, dry and sufficiently large.

For improved ventilation, the exhaust air can be removed from the kiln via BYPASS system. The required BYPASS-connector can be ordered as an optional accessory. The exhaust air is dissipated through a flexible aluminum tube. The tube is connected to the BYPASS and installed at a rising gradient. If the tube passes through a wall, the surrounding area must consist of heat-resistant material.

The ground must be even (for stability), have a temperature stability up to 75°C and be able to support the kiln's weight (including the ware).

The surrounding walls and the ceiling must consist of non-flammable material. Surrounding surfaces not meeting these requirements must be covered with fire-retardant insolation. In this case, the kiln must have a minimum distance of 50 cm to the walls and 90 cm to the ceiling. The minimum distance to non-flammable walls must be at least 30 cm to avoid heat accumulation.
Do not place inflammable or temperature sensitive objects on the kiln.

Controller



Attach the controller to the wall next to the kiln at a minimum distance of 30 cm. (In some models, it is mounted directly on the kiln with the appropriate holder.) Install the wall mounting according to the instruction manual for the controller. The controller is connected to the kiln's control box with a multipolar plug. Be aware that the plug can be inserted with ease only in one position!
The connection is secured with the retaining clip.
Do not let the power cable or the controller cable come into contact with the kiln shell or the lid during the firing!

Electrical Connection

According to the VDE (German electrotechnology association), PYROTEC-kilns belong to the protection class I. Electrical safety is provided primarily by the protective earth connection. Therefore, the mains supply must be checked or installed by a qualified electrician before commissioning the kiln. Be sure that the wire cross section is sufficiently dimensioned, and the corresponding fuse has the proper size. The necessary technical data is found on the type plate on the kiln's control box.
The wall outlet must be easily accessible in order to be able to disconnect the kiln at any time from the power grid. **Do not connect an additional electrical load to this outlet!**
Make sure that this power outlet is equipped with its own fuse with sufficient breaking capacity.

It is imperative that the kiln is connected to the power supply **without an extension cable**. Power cables of any length are available at low additional costs when ordering the kiln.

First Firing

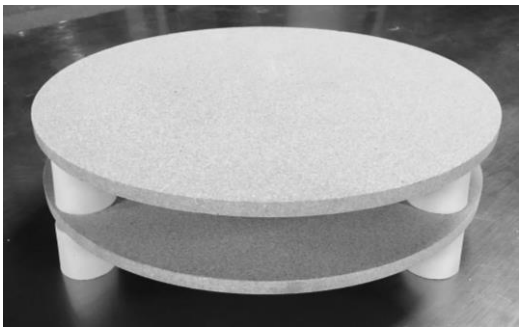
During commissioning, the kiln must be operated with kiln shelves but without ware, using a firing program with a long heating time or slow rise in temperature. We recommend a curve of 180°C per hour to 1000°C and a heating time of 3 hours. During this firing, residual moisture evaporates from the insulation and the shelves. Additionally, the heating elements build up a protective oxide layer, which results in a longer service life.
During the program, the contactor can be heard switching on and off. Unpleasant odors can develop during the first two to three firings due to organic binder burnout in the insulation material.
As a result of the very high temperature differences, fine cracks appear in the fire bricks. They can appear already during the first firing. They have no influence on the firing process.

Operation of the Kiln

PYROTEC-kilns have a maximal application temperature between 1100°C and 1320°C, depending on the model. In most cases, the maximal firing temperature will depend on the characteristics of the ware and be limited to lower values. When in doubt, always use the lower limit temperature.

Fire only approved raw materials and glazes in your kiln. When in doubt, consult your dealer.

Distribute the pieces you want to fire evenly in the kiln. Use kiln shelves and props for optimal use of space. Make sure that the props are positioned directly on top of each other on every level for even weight distribution to prevent cracks or deformation of the shelves (see picture).



Biscuit Firing

During **biscuit firing**, raw ceramic pieces may touch each other. They can be placed directly on the shelves. Large, flat bowls or tiles are fired in horizontal position on the shelves to avoid distortions. Leave enough space between the shelves (bigger shelves need a greater distance!). Sufficient space for air circulation is required for even temperature distribution.

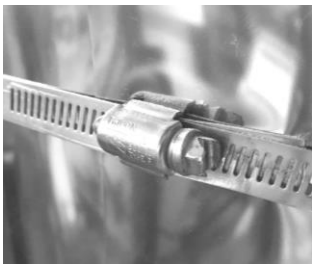
Glaze Firing

During **glaze firing**, glazed ceramic pieces must not come into contact with each other or the inside of the kiln or the glaze layers will fuse. For a glaze firing, place metal or ceramic spacers underneath the glazed pieces to prevent glaze from sticking to the shelves. It is also recommended to coat the shelves with kiln wash, which makes it easier to remove glaze residues from the shelves. Kilns lids equipped with a latch should be buckled down during the firing to avoid deformation of the lid.

Maintenance

It is recommended to have the electrical system checked by a specialist at regular intervals (every 4 years).
The power plug must be disconnected before cleaning or servicing the kiln.
Check the interior wall for glaze residues before every firing. Remove glaze residues immediately from the fire bricks. High thermal stress can lead to different expansion of the heating elements. After the burn-in, the heating elements show the greatest shrinkage and they can be retightened carefully (first, pull out the power plug, let the heating elements cool down and then retighten the heating elements, if necessary).
Always make sure that the heating elements are resting in their designated grooves. If a part of a heating element protrudes from the groove or is about to fall out, which indicates the approaching end of its service life, it can be pushed back into the groove (risk of breakage!). The shrinkage is dependent on several factors, among others on the firing frequency and the final temperature as well as firings with glaze.

The insulation material of this kiln shows a significant shrinkage after several firings. It is recommended to tighten the kiln shell with a screwdriver or a spanner from time to time (see picture).



Repairs

CAUTION: Repairs shall only be performed by authorized specialists (electrician/electrical engineer)!

1) Checking the heating elements (kiln temperature must be below 50°C)

- Start cold kiln with 100% power (see instructions for controller).
- Power off after 20 seconds.
- **Unplug the kiln from the power source.**
- Open the kiln and test the temperature of each element by touching it with a moist sponge.
- Cold heating elements are defective and must be replaced.

2) Replacing heating elements

- Remove the screws on the control box cover on the kiln.
- Loosen the connecting screws at the ends of the heating element with two 8 mm spanners and remove them.
- Cut off the looped ends of the heating element.
- Remove the element pins from the grooves in the kiln chamber.
- Remove the defective element carefully from the groove and pull out the ends towards the kiln chamber.
- Clean the grooves carefully (use a vacuum cleaner).
- Insert the new element into the grooves and push the ends outward through the bore hole into the control box of the kiln.
- Shorten the ends of the element to the appropriate length, bend them into a loop and connect them with the set screws to the electrical supply.
- The screws must be tightened firmly in order to get maximal contact pressure and low transfer resistance.
- Remount cover.

ATTENTION: Evaporating oil can cause unpleasant odors during the first firing with the new heating elements.

3) Replacing the thermocouple

- Remove control box cover on the kiln.
- Remove locking wire.
- Loosen connection screws and remove thermocouple.
- When connecting the new thermocouple make sure that the **polarity is correct**:

PtRh-Pt element Type-S	NiCr-Ni element Type-K
red wire to (+) port	red wire to (+) port
white wire to (-) port	green wire to (-) port

- Secure the new thermocouple with locking wire.

Warranty conditions

We provide a guarantee of 3 years from date of purchase on flawless manufacture and function of every PYROTEC-kiln. Heating elements and thermocouple are parts subject to wear and therefore not included in the guarantee. Additionally, the manufacturer is not liable for damages resulting from improper handling of the kiln and ware.
ATTENTION: the fire bricks of the lining are exposed to strong temperature fluctuations which can cause hairline cracks. This process is normal and does not compromise the function of the kiln. Therefore, it is not a reason for complaint. For the register of warranty claims please send us the information on the type plate and a copy of the bill from the dealer.

Faults and their likely causes:

Fault	Likely causes
Kiln does not heat up	kiln lid is not closed correctly lid safety switch is out of adjustment Contactor is defective Thermocouple is defective (replace, see page 14)
Kiln does not or too slowly reach final temperature	A heating element is defective (test, see page 13) In kilns with three-phase power connection, a fuse has blown in the meter box Heating elements are failing due to old age (replace, see page 13)
Kiln shuts down before reaching final temperature	Short-term power failure Controller is defective (contact your dealer)
Kiln shuts down immediately	Thermocouple is defective compensating cable to the thermocouple is defective

When troubleshooting, please also consult the controller instructions.

Technical details are subject to change.

PRÜFPROTOKOLL / TESTREPORT

Serien-Nr /Serial-No: _____

Ofenmodell/Kiln Model : _____

Stromaufnahme/Current Intensity : L_1 = _____ A

L_2 = _____ A

L_3 = _____ A

Schutzleiterwiderstand /PE-resistance R_{SL} = _____ mΩ

Isolationswiderstand /Insulation Resistance R_{ISO} > _____ MΩ

Ersatzableitstrom /PE - Current I_{EA} = _____ mA

Thermoelement korrekter Sitz /Thermocouple OK : ☐

Deckelschalterfunktion /Function of Safetyswitch : ☐

Osnabrück, ...
Datum /Date Unterschrift/Signature