# K-IC Shock Freezers

## Quick and deep freezing

### Pre-baked bakery products are quickly deep frozen in shock freezers for long-term preservation.

The freezers are equipped with high-performance refrigeration units and evaporators in order to achieve a uniform shock-freeze of all semi-products.

### What is a shock freeze?

The objective of shock freezing is to stop all enzymatic and fermentation processes in dough and to preserve the dough and filling structure intact. Also, to reduce and stop the starch retrogradation and prevent ageing of pre-baked products.

Applicable to all bakery products, it is crucial to as quickly as possible pass over the temperature, i.e. –6 °C or –7 °C, at which the state of water is changed in the dough core and thereby prevent the formation of large ice crystals. The standard target temperature in the freezer is set to –42 °C.

Freezers are equipped with contact temperature sensors on both the entry and exit ends of the box. These sensors continuously monitor the temperature in the dough core and provide information for the correct freezing time.

### Usage of waste heat energy from cooling

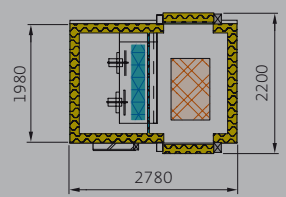
The waste heat energy obtained from cooling high-performance compressor sets is further utilized for various purposes, e.g., to heat proofer boxes, TUV, etc.

### Dimensions

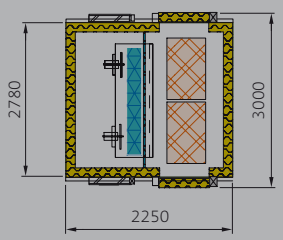
KORNFEIL shock freezers come in various modifications: Single-trolley, two-trolley and four-trolley models with a single or pass-through entrance.

| Considered constants | 1-trolley shock freezer K-IC/P1, K-IC/1 | 2-trolley shock freezer K-IC/P2, K-IC/2 | 4-trolley shock freezer K-IC/P4, K-IC/4 |
|---|---|---|---|
| **Trolley dimensions** [mm] | 580 × 980 / 20 levels | 580 × 980 / 20 levels | 580 × 980 / 20 levels |
| **Product weight** [g] | 50 | 50 | 50 |
| **Number of products per 1 baking tray** [pcs] | 30 | 30 | 30 |
| **Number of levels per 1 trolley** [pcs] | 20 | 20 | 20 |
| **Total product weight per 1 trolley** [kg] | 30 | 30 | 30 |
| **Trolley weight** [kg] | 32 | 32 | 32 |
| **Target temperature of the product core** [°C] | –7 | –7 | –7 |
| **Time required to reach the target temp.** [min.] | 18 | 20 | 24 |
| **Trolley frequency** [min.] | 18 | 10 | 10 |
| **Hourly output** [trolleys/hour] | 3,3 | 6 | 10 |
| **Hourly output in kg** [kg/hour] | 100 | 180 | 300 |
| **Average electricity consumption** [kW/h] | 10 | 18 | 30 |

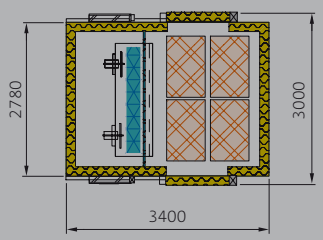
K-IC/P1



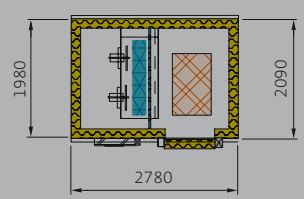

K-IC/P2



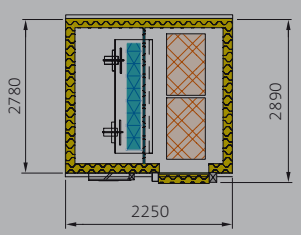

K-IC/P4



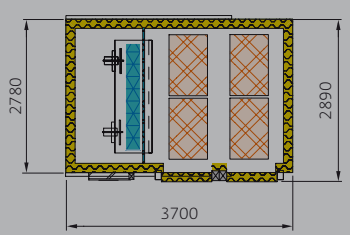

K-IC/1




K-IC/2




K-IC/4



## Technical and performance parameters

| Type | Dimension (l × w × h) [mm] | Number of trolleys [pcs] | Installed kilowatts [kW] | Refrigeration temperature [°C] | Average consumption [kW] |
|---|---|---|---|---|---|
| K-IC/P1 | 2200 × 2780 × 2730 | 1 | 25 | –38 | 10 |
| K-IC/1 | 2090 × 2780 × 2730 | 1 | 25 | –38 | 10 |
| K-IC/P2 | 3000 × 2250 × 2730 | 2 | 41 | –38 | 18 |
| K-IC/2 | 2890 × 2250 × 2730 | 2 | 41 | –38 | 18 |
| K-IC/P4 | 3000 × 3400 × 2730 | 4 | 75 | –38 | 30 |
| K-IC/4 | 2890 × 3700 × 2730 | 4 | 75 | –38 | 30 |

# K-ICS-18 Freezing Storages

## Freezing storages are used to store frozen dough pieces or pre-baked semi-products for longer time periods.

The regular storing temperature is set to –18 °C. Products are stored in special plastic boxes and foils.

### Dimensions

Freezing storages are custom designed for each client based on the desired storing capacity and are built into complete interior systems.

# K-ICS-0 Freezing Storages

## Freezing storages are intended for storing a variety of baking materials, enhancers and fillings.

### Dimensions

The storages come in various sizes and can be divided into separate sections based on the type of material stored. Kornfeil can provide the optimal set for every operation.

KORNFEIL

**KORNFEIL spol. s r. o.**
696 14 Čejč 66
Czech Republic
Phone: +420 518 309 611
Fax: +420 518 309 610
E-mail: kornfeil@kornfeil.cz
**www.kornfeil.cz**

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KORNFEIL

# Equipment for cooling and freezing of bakery products

## Proofers

## Shock Freezers

## Freezing Storages

## Baked goods that stay fresh for 7 days

# Bakery refrigerators and freezers

## An effective way of baking production

Kornfeil introduces you new equipment for refrigerating and freezing baked goods, ensuring that your products will remain fresh for 7 days, eliminating the daily need to prepare fresh dough.

An integral part of the technological equipment of a modern bakery is refrigeration and freezing technology bringing solutions to demanding market requirements, such as more efficient baking production which takes into account the production costs, the wide range of bakery products, as well as the daily delivery of baked goods (also during the day).

### Use

storing of raw materials, cooling process water, dough refrigeration, refrigeration and freezing of leavened and unleavened semi-products, refrigeration and freezing of finished products, air-conditioning of production and administration areas.

# K-STOP Proofers

## An effective way of baking production

**A stop-proofer operates in a system of moulding – refrigeration / freezing – proofing – baking.**

In this way the moulding never stops and the moulded dough is cooled and prepared for repeated proofing at another preset time based on production requirements.

Ideal LCD controlling software provides both a quick refrigeration/freezing mode as well as gradual perfect proofing of semi-finished products, minimizing operating personnel requirements.

# What are the effects of installing new refrigeration and freezing equipment?

### Saving of material and decreasing production costs
Starting costs, as a consequence of frequent adjustments of production lines, are eliminated and the material and filling surplus is considerably reduced.

### Efficient utilization of production lines and human resources
The switch from a fragmented production composed of two and more work shifts to a standard day shift increases production efficiency itself and decreases the number of management workers and operating personnel.

### Increased labour productivity
Individual bakery products are moulded, filled and decorated one, two and more days in advance, thereby eliminating frequent adjustments of moulding lines and transitions from one type of product to another.

### Decreased wage costs
The man-hour output is increased as a result of reducing production transitions between individual lines of products when compared to standard operation.

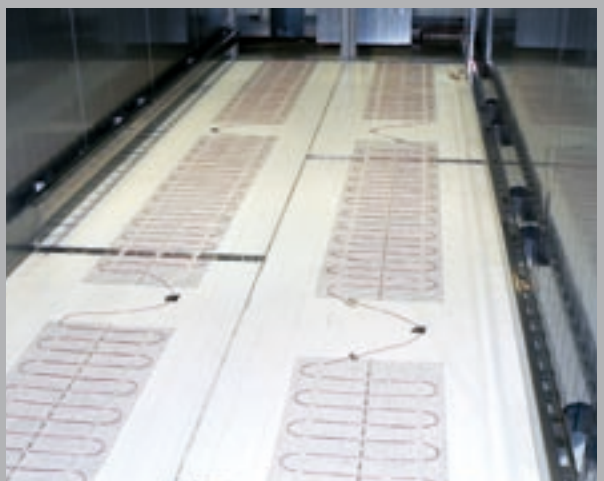
### Constant quality of bakery products

### Flexible reactions to unexpected orders
Maintaining a large stock of refrigerated or frozen products provides for a quick reaction to unexpected market requirements.

## Stop-proofer programme modes
Standard practice makes it possible for the KORNFEIL stop-proofer to be used as a regular proofer in the moulding – proofing – baking mode with a required temperature between 23–42 °C and relative humidity between 80–95 %. After the standard daily production has been finished, it switches to the refrigeration and freezing mode.

## Dimensions
The size of proofers depends on the baking capacity. We manufacture 2–12 trolley or atypical, pass-through proofers or one-side stop-proofers, including systems built in the existing space. In pass-through proofers, the panels are equipped with timers for individual trolleys with a sound and light signalling device alerting to the end condition of the dough.

## Functions
1. Moulding – Proofing Mode enables baking as with a regular proofer with a required temperature between 23–42 °C and relative humidity between 80–95%.
2. Refrigeration Mode (+4 °C) is used in order to interrupt the proofing process for up to 24 hours.
3. Freezing Mode (–12 °C) is used for storing semi-finished products over the weekend or up to 14 days. The maximum storage life varies with different types of products.
4. Evenly controlled dough thawing and proofing



## Technical data

| Type | Dimension (d×š×v) [mm] | Trolley [ks] | El. input | Tempe-rature range [°C] | Average consump. [kW] | Average consump. [kW] | Max. consumption [kW] | | Electricity consumption in the waste heat mode [kW] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Proofing | Refrige-ration/ 12 hr. cycle | Proofing | Refrige-ration | Max. consump. | Average consump. |
| | | | | | | | | | Proofing | Proofing |
| **Pass through model** | | | | | | | | | | |
| K-STOP/P4 2× 2-wing doors | 2610 × 2200 × 2500 | 4 | –10 °C/11 kW/25 A | –12 to 40 | 5,0 | 1,2 | 11,0 | 2,0 | 7,0 | 3,0 |
| K-STOP/P6 2× 2-wing doors | 3800 × 2200 × 2500 | 6 | –10 °C/15 kW/30 A | –12 to 40 | 7,5 | 1,7 | 15,0 | 3,0 | 7,0 | 4,5 |
| K-STOP/P10 2× 2-wing doors | 4850 × 2200 × 2500 | 10 | –10 °C/20 kW/40 A | –12 to 40 | 12,5 | 2,3 | 21,0 | 4,0 | 13,0 | 7,5 |
| K-STOP/P12 2× 2-wing doors | 7000 × 2200 × 2500 | 12 | –10 °C/25 kW/50 A | –12 to 40 | 15,0 | 2,6 | 25,0 | 4,0 | 13,0 | 9,0 |
| **Non pass-through model** | | | | | | | | | | |
| K-STOP/10 2× 2-wing doors | 4850 × 2200 × 2500 | 10 | –10 °C/20 kW/40 A | –12 to 40 | 12,5 | 2,3 | 21,0 | 4,0 | 13,0 | 7,5 |
| K-STOP/4 1× 2-wing doors | 2500 × 2200 × 2500 | 4 | –10 °C/11 kW/25 A | –12 to 40 | 5,0 | 1,2 | 11,0 | 2,0 | 7,0 | 3,0 |
| K-STOP/6 2× 1-wing doors | 3100 × 2200 × 2500 | 6 | –10 °C/15 kW/30 A | –12 to 40 | 7,5 | 1,7 | 15,0 | 3,0 | 7,0 | 4,5 |
| K-STOP/10 2× 1-wing doors | 4850 × 2200 × 2500 | 10 | –10 °C/20 kW/40 A | –12 to 40 | 12,5 | 2,3 | 21,0 | 4,0 | 13,0 | 7,5 |
| K-STOP/12 2× 1-wing doors | 5500 × 2200 × 2500 | 12 | –10 °C/25 kW/50 A | –12 to 40 | 15,0 | 2,6 | 25,0 | 4,0 | 13,0 | 9,0 |
| K-STOP/12 2× 2-wing doors | 5500 × 2200 × 2500 | 12 | –10 °C/25 kW/50 A | –12 to 40 | 15,0 | 2,6 | 25,0 | 4,0 | 13,0 | 9,0 |

## Stop-proofers design options