# Model FD 23 | Drying and heating chambers with forced convection

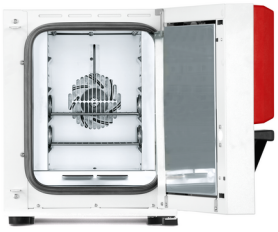
**A BINDER FD series heating oven is always used when fast drying and sterilization is required. Thanks to its fully homogeneous temperature distribution, quick dynamics and powerful fan, this heating oven saves valuable time.**

## BENEFITS

- Uniform drying conditions thanks to APT.line™ technology
- Identical test conditions throughout the chamber interior independent of sample size and quantity
- Outstanding thermal insulation saves operation costs



Model 23



Model 23

## IMPORTANT FEATURES

- Temperature range: room temperature plus 5 °C to 300 °C
- APT.line™ preheating chamber technology
- Forced convection
- Adjustable exhaust air flap
- Controller with timer functions
- 2 chrome-plated racks
- Class 2 independent adjustable temperature safety device (DIN 12880) with visual alarm

## ORDERING INFORMATION

| Interior volume | | Power supply - unit fuse | Plug* | Version | Model version | Art.-No. |
|---|---|---|---|---|---|---|
| [cu.ft.] | [L] | | | | | |
| **Model FD 23** | | | | | | |
| 1 | 20 | 230 V 1~ 50/60 Hz -10,0 A | CEE 7/7 | Standard | FD023-230V | 9010-0194 |
| | | 120 V 1~ 60 Hz -12,5 A | NEMA 5-15 | Standard | FD023UL-120V | 9010-0196 |

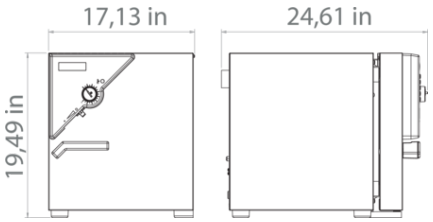
## TECHNICAL DATA

| | | |
|---|---|---|
| **Data** | | |
| Article Number | 9010-0194 | 9010-0196 |
| Designation | FD023-230V | FD023UL-120V |
| Option model | Standard | Standard |
| **Performance Data Temperature** | | |
| Temperature range | +5 °C above ambient temperature to 300 °C | +5 °C above ambient temperature to 300 °C |
| Temperature uniformity at 150°C | 2.5 ± K | 2.5 ± K |
| Temperature fluctuation at 150°C | 0.3 ± K | 0.3 ± K |
| Heating up time to 150°C | 25 min | 25 min |
| Recovery time after door was opened for 30 s at 150°C | 6 min | 6 min |
| **Air change data** | | |
| Air change rate at 150°C | 64 x/h | 64 x/h |
| **Electrical data** | | |
| Rated Voltage | 230 V | 120 V |
| Power frequency | 50/60 Hz | 60 Hz |
| Nominal power | 0,8 kW | 0,8 kW |
| Unit fuse | 10,0 A | 12,5 A |
| Phase (Nominal voltage) | 1~ | 1~ |
| **Dimensions and weights** | | |
| Interior volume | 1 cu.ft. | 1 cu.ft. |
| Net weight of the unit (empty) | 60 lbs | 60 lbs |
| Load per rack | 26 lbs | 26 lbs |
| Permitted load | 55 lbs | 55 lbs |
| Wall clearance back | 3,94 in | 3,94 in |
| Wall clearance sidewise | 1,97 in | 1,97 in |
| **Housing dimensions not incl. fittings and connections** | | |
| Width net | 17.13 in | 17.13 in |
| Height net | 19.49 in | 19.49 in |
| Depth net | 20.47 in | 20.47 in |
| **Internal Dimensions** | | |

| | | |
|---|---|---|
| Interior width | 8.74 in | 8.74 in |
| Interior height | 12.99 in | 12.99 in |
| Interior depth | 11.81 in | 11.81 in |
| Unit doors | 1 | 1 |
| **Environment-specific data** | | |
| Energy consumption at 150°C | 300 Wh/h | 300 Wh/h |
| **Fixtures** | | |
| Number of shelves (std./max.) | 2/4 | 2/4 |

All technical data is specified for unloaded units with standard equipment at an ambient temperature of +22 °C ±3 °C and a power supply voltage fluctuation of ±10 %. The temperature data is determined in accordance to BINDER factory standard following DIN 12880, observing the recommended wall clearances of 10 % of the height, width, and depth of the inner chamber. Technical data refers to 100 % fan speed. All indications are average values, typical for units produced in series. We reserve the right to change technical specifications at any time.

## DIMENSIONS Incl. fittings and connections [mm]




## OPTIONS

| Designation | Description | FD 23 | * | Art.-No. |
|---|---|---|---|---|
| Access port with silicone plug | back | | | |
| | 10 mm | • | 01 | 8012-1283 |
| | left | | | |
| | 10 mm | • | 01 | 8012-1276 |
| | 30 mm | • | 01 | 8012-1359 |
| | 50 mm | • | 01 | 8012-1376 |
| | right | | | |
| | 10 mm | • | 01 | 8012-1269 |
| | 30 mm | • | 01 | 8012-1354 |
| | 50 mm | • | 01 | 8012-1372 |
| | top | | | |
| | 10 mm | • | 01 | 8012-1263 |

| Designation | Description | FD 23 | * | Art.-No. |
|---|---|---|---|---|
| | 30 mm | • | 01 | 8012-1364 |
| | 50 mm | • | 01 | 8012-1380 |
| Alarm function for overheating | Switchable acoustic alarm, with adjustable limit value on the independent temperature safety device | | | |
| | 120 V option model | • | - | 8012-1304 |
| | 230 V option model | • | - | 8012-1300 |
| Analog output 4-20 mA | for temperature values (output not adjustable) | • | 02 | 8012-0431 |
| Calibration certificate, expanded | for temperature; for extending the measurement in center of chamber to include another test temperature | • | - | 8012-1116 |
| Calibration certificate, temperature | for temperature, measurement in center of chamber at specified temperature | • | - | 8012-1135 |
| | temperature measurement incl. certificate, 9 measuring points at specified temperature | • | - | 8012-1552 |
| | temperature measurement incl. certificate, 15- 18 measuring points at specified temperature | • | - | 8012-1573 |
| | temperature measurement incl. certificate and 27 measuring points at specified temperature | • | - | 8012-1594 |
| Class 3.1 independent temperature safety device | with visual alarm (DIN 12880) | • | - | 8012-1147 |
| Door gasket | made of FKM, silicone-free | • | - | 8012-1306 |
| Door lock | lockable door handle | • | - | 8012-1247 |
| Measurement of air exchange rate | in accordance with ASTM D5374, definition and protocol according to ambient temperature | • | - | 8012-1195 |
| Pt 100 temperature sensor | additional flexible Pt 100, interior, with external connection incl. LEMO connector (3-pin) | • | - | 8012-1174 |
| Viewing window and interior lighting | viewing window in door, 180 x 180 mm, and 15 W interior lighting | | | |
| | 230 V option model | • | - | 8012-1259 |

## ACCESSORIES

| Designation | Description | FD 23 | * | Art.-No. |
|---|---|---|---|---|
| pH-neutral detergent | concentrated, for gentle remove of residual contaminants; 1 kg | • | - | 8012-2250 |
| Qualification documents IQ/OQ | IQ/OQ documents digital in PDF format – supporting documents for validation consisting of: IQ/OQ checklists, comprehensive unit documentation covering: temperature. Excluded: Document execution is separate | | | |
| | temperature. Excluded: Document execution is separate | • | - | 7057-0010 |
| Qualification documents IQ/OQ/PQ | IQ/OQ/PQ documents digital in PDF format – supporting documents for validation customizied to customer requirements, PQ section added to the qualification folder IQ/OQ; supporting documents for validation consisting of: IQ/OQ checklists, comprehensive unit documentation covering: temperature values. Excluded: Document execution is separate | | | |

| Designation | Description | FD 23 | * | Art.-No. |
|---|---|---|---|---|
| | temperature values. Excluded: Document execution is separate | • | - | 7057-0016 |
| Rack | chrome plated | • | - | 8012-2031 |
| | stainless steel | • | - | 8012-2046 |
| Rack accessories | fasteners (1 set of 4) for additional security of racks | • | - | 8012-0531 |
| Shelf, perforated | Stainless steel | • | - | 8012-2164 |

## SERVICES

| Designation | Description | * | Art.-No. |
|---|---|---|---|
| **Calibration services** | | | |
| Temperature calibration | Calibration of one (1) test temperature specified by the user in center of chamber, including certificate Travel to be quoted separate. | 05 | DL30-0120 |
| | Extension of calibration of one (1) additional test temperature specified by the user in the center of the usable space, including certificate Travel to be quoted separate. | 05 | DL30-0102 |
| Temperature measurement, 9 measuring points | Temperature measurement with 9 measuring points with a set value specified by the user, including certificate. Travel to be quoted separate. A total of 3 shelves are required. | 05 | DL30-0109 |
| Temperature measurement, 18 measuring points | Temperature measurement with 18 measuring points with a set value specified by the user, including certificate. Travel to be quoted separate. A total of 2 shelves are required. | 05 | DL30-0118 |
| Temperature measurement, 27 measuring points | Temperature measurement with 27 measuring points with a set value specified by the user, including certificate. Travel to be quoted separate. A total of 3 shelves are required. | 05 | DL30-0127 |
| **Installation services** | | | |
| Unit installation | Connect the unit to the customer-side connections (electricity, water, wastewater, gas), basic functions check, brief operating instructions. (excl.: unpacking, setup, controller instructions, programming, installation work) Travel to be quoted as separate. | 05 | DL10-0160 |
| Unit instructions | Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming. Travel to be quoted as separate Limited to 3 hours. | 05 | DL10-0540 |
| **Maintenance services** | | | |
| BRONZE 3-year maintenance contract | Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate. 10% Discount on Spare Parts and Labor for any additional Services needed Wear + tear parts to be purchased or billed to customer. Travel to be quoted as separate. | 05 | DL20-0720 |
| GOLD 3-year maintenance contract | Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate of Temperature. 25% Discount on Spare Parts and Labor for any additional Services needed. One additional courtesy visit per year can be used for service visit or operator. Wear + tear parts to be purchased or billed to customer. Travel to be quoted separate. | 05 | DL20-0910 |
| Preventive maintenance | One-off maintenance service in accordance with maintenance schedule. Visual inspection of mechanical and electrical components, testing of all key | 05 | DL20-0602 |

| Designation | Description | * | Art.-No. |
|---|---|---|---|
| | functions. Checking a test temperature specified by the user in center of usable space without certificate. Wear + tear parts need to be purchased or billed to customer. Travel to be quoted as separate. | | |
| SILVER 3-year maintenance contract | Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate 15% Discount on Spare Parts and Labor for any additional Services needed One additional courtesy visit per year can be used for service visit or operator training. Wear + tear parts to be purchased or billed to customer. Travel to be quoted separate. | 05 | DL20-0810 |
| **Validation services** | | | |
| Execution of IQ/OQ | Execution of IQ/OQ in accordance with qualification folder. Travel to be quoted separate. | 05 | DL40-0100 |
| Execution of IQ/OQ/PQ | Execution of IQ/OQ/PQ in accordance with qualification folder. Travel to be quoted separate. | 05 | DL44-0500 |
| **Warranty service** | | | |
| 1-year warranty extension | The warranty is extended by 1 year from the delivery date, wear parts are excluded | 05 | DL50-0010 |

## NOTES

01 Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.

02 UL mark is not granted when this option is used.

05 Quoted prices do not include travel costs. Please refer to the chapter on BINDER Service for travel costs for your region. Quoted prices for services performed in Switzerland do not include a country-specific added fee (available on request).

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