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Operating Manual

APT.line™ FED (E2)

Drying and heating ovens with forced convection and enhanced timer functions

with microprocessor temperature controller

Model	Art. No.
FED 53 (E2)	9010-0210, 9110-0210
FED 53-UL (E2)	9010-0211, 9110-0211
FED 115 (E2)	9010-0212, 9110-0212
FED 115-UL (E2)	9010-0213, 9110-0213
FED 240 (E2)	9010-0214, 9110-0214
FED 240-UL (E2)	9010-0215, 9110-0215
FED 400 (E2)	9010-0216, 9110-0216
FED 400-UL (E2)	9010-0217, 9110-0217
FED 720 (E2)	9010-0218, 9110-0218
FED 720-UL (E2)	9010-0219, 9110-0219

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EC – declaration of conformity

CE

EG – KONFORMITÄTSERKLÄRUNG
EC - DECLARATION OF CONFORMITY
CE - DECLARATION DE CONFORMITE

Anbieter / Supplier / Fournisseur:	BINDER GmbH
Anschrift / Address / Adresse:	Im Mittleren Ösch 5, D-78532 Tuttlingen
Produkt / Product / Produit:	Trocken- und Wärmeschränke mit Umluft und erweiterten Zeitfunktionen Drying and heating ovens with forced convection and enhanced timer functions Étuves de chauffage et de séchage à convection forcée avec des fonctions de minuterie avancées
Typenbezeichnung / Type / Type:	FED 53, FED 115, FED 240, FED 400, FED 720

Die oben beschriebenen Produkte sind konform mit folgenden EG-Richtlinien:
The products described above are in conformity with the following EC guidelines:
Les produits décrits ci-dessus sont conformes aux directives CE suivantes:

Niederspannungsrichtlinie 2006/95/EG Low voltage directive 2006/95/EC Directive basse tension 2006/95/CE	Richtlinie 2006/95/EG des Europäischen Parlaments und des Rates vom 12. Dezember 2006 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten betreffend elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen Council Directive 2006/95/EC of 12 December 2006 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits Directive 2006/95/CE du Parlement Européen et du Conseil du 12 décembre 2006 concernant le rapprochement des législations des États membres relatives au matériel électrique destiné à être employé dans certaines limites de tension
EMV-Richtlinie 2004/108/EG EMC Directive 2004/108/EC Directive CEM 2004/108/CE	Richtlinie 2004/108/EG des Europäischen Parlaments und des Rates vom 15. Dezember 2004 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit und zur Aufhebung der Richtlinie 89/336/EWG. Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 98/336/EEC. Directive 2004/108/CE du Parlement Européen et du Conseil du 15 décembre 2004 relative au rapprochement des législations des États membres concernant la compatibilité électromagnétique et abrogeant le directive 98/336/CEE.

Die oben beschriebenen Produkte tragen entsprechend die Kennzeichnung CE.
The products described above, corresponding to this, bear the CE-mark.
Les produits décrits ci-dessus, en correspondance, portent l'indication CE.

Die oben beschriebenen Produkte sind konform mit folgenden harmonisierten Normen:
The products described above are in conformity with the following harmonized standards:
Les produits décrits ci-dessus sont conformes aux normes harmonisées suivantes:

Sicherheit / safety / sécurité:	
EN 61010-1:2010	Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte – Teil 1: Allgemeine Anforderungen (DIN EN 61010-1:2011, VDE 411-1:2011) Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements (IEC 61010-1:2010, BS EN 61010-1:2010) Règles de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire – Partie 1: Prescriptions générales (CEI 61010-1:2010, NF EN 61010:2011)
EN 61010-2-010:2003	Sicherheitsbestimmungen für elektrische Meß-, Steuer-, Regel- und Laborgeräte – Teil 2-010: Besondere Anforderungen an Laborgeräte für das Erhitzen von Stoffen (DIN EN 61010-2-010:2004) Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-010: Particular requirements for laboratory equipment for the heating of materials (IEC 61010-2-10:2005, BS EN 61010-2-10:2003) Règles de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire – Partie 2-010 : Prescriptions particulières pour appareils de laboratoire utilisés pour l'échauffement des matières (CEI 61010-2-10:2003, NF EN 61010-2-10:2005)
EMV / EMC / CEM:	
EN 61326-1:2013	Elektrische Mess-, Steuer-, Regel- und Laborgeräte - EMV-Anforderungen - Teil 1: Allgemeine Anforderungen (DIN EN 61326-1:2013, VDE 0813-20-1:2013) Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements (IEC 61326-1:2012, BS EN 61326-1:2013) Matériel électrique de mesure, de commande et de laboratoire - Exigences relatives à la CEM - Partie 1: Exigences générales (CEI 61326-1:2012, NF EN 61326-1:2013.)

D-78532 Tuttlingen, 02.06.2014

BINDER GmbH

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Content

Dear customer,

For the correct operation of the drying and heating ovens with forced convection FED, it is important that you read this operating manual completely and carefully and observe all instructions as indicated. Failure to read, understand and follow the instructions may result in personal injury. It can also lead to damage to the unit and/or poor equipment performance.

1. Safety

This operating manual is part of the components of delivery. Always keep it handy for reference. The device should only be operated by laboratory personnel especially trained for this purpose and familiar with all precautionary measures required for working in a laboratory. Observe the national regulations on minimum age of laboratory personnel. To avoid injuries and damage observe the safety instructions of the operating manual.

WARNING

Failure to observe the safety instructions.

Serious injuries and unit damage.

- Observe the safety instructions in this operating manual.
- Carefully read the complete operating instructions of the drying and heating ovens FED.

1.1 Legal considerations

This operating manual is for informational purposes only. It contains information for installing, start-up, operation and maintenance of the product. Note: the contents and the product described are subject to change without notice.

Understanding and observing the instructions in this operating manual are prerequisites for hazard-free use and safety during operation and maintenance. In no event shall BINDER be held liable for any damages, direct or incidental arising out of or related to the use of this manual.

This operating manual cannot cover all conceivable applications. If you would like additional information, or if special problems arise that are not sufficiently addressed in this manual, please ask your dealer or contact us directly by phone at the number located on page one of this manual

Furthermore, we emphasize that the contents of this operating manual are not part of an earlier or existing agreement, description, or legal relationship, nor do they modify such a relationship. All obligations on the part of BINDER derive from the respective purchase contract, which also contains the entire and exclusively valid statement of warranty administration. The statements in this manual neither augment nor restrict the contractual warranty provisions.

1.2 Structure of the safety instructions

In this operating manual, the following safety definitions and symbols indicate dangerous situations following the harmonization of ISO 3864-2 and ANSI Z535.6.

1.2.1 Signal word panel

Depending on the probability of serious consequences, potential dangers are identified with a signal word, the corresponding safety color, and if appropriate, the safety alert symbol.

DANGER

Indicates an imminently hazardous situation that, if not avoided, will result in death or serious (irreversible) injury.

WARNING
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious (irreversible) injury

CAUTION
Indicates a potentially hazardous situation which, if not avoided, may result in moderate or minor (reversible) injury

CAUTION
Indicates a potentially hazardous situation which, if not avoided, may result in damage to the product and/or its functions or of a property in its proximity.

1.2.2 Safety alert symbol

Use of the safety alert symbol indicates a **risk of injury**.

Observe all measures that are marked with the safety alert symbol in order to avoid death or injury.

1.2.3 Pictograms

Warning signs			
 Electrical hazard	 Hot surface	 Explosive atmosphere	 Stability hazard
 Lifting hazard	 Suffocation hazard	 Harmful substances	 Risk of corrosion and / or chemical burns
 Biohazard	 Pollution Hazard		
Mandatory action signs			
 Mandatory regulation	 Read operating instructions	 Disconnect the power plug	 Lift with several persons
 Lift with mechanical assistance	 Environment protection	 Wear protective gloves	 Wear safety goggles

Prohibition signs			
 Do NOT touch	 Do NOT spray with water		

	**Information** to be observed in order to ensure optimum function of the product.

1.2.4 Word message panel structure

Type / cause of hazard.

Possible consequences.

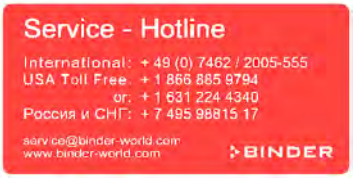
∅ Instruction how to avoid the hazard: prohibition

➢ Instruction how to avoid the hazard: mandatory action

Observe all other notes and information not necessarily emphasized in the same way, in order to avoid disruptions that could result in direct or indirect injury or property damage.

1.3 Localization / position of safety labels on the unit

The following labels are located on the unit:

Pictograms (Warning signs)	Service label
 Hot surface • Outer unit door • On unit rear next to the exhaust duct	
 Read operating manual • UL units: on outer unit door	

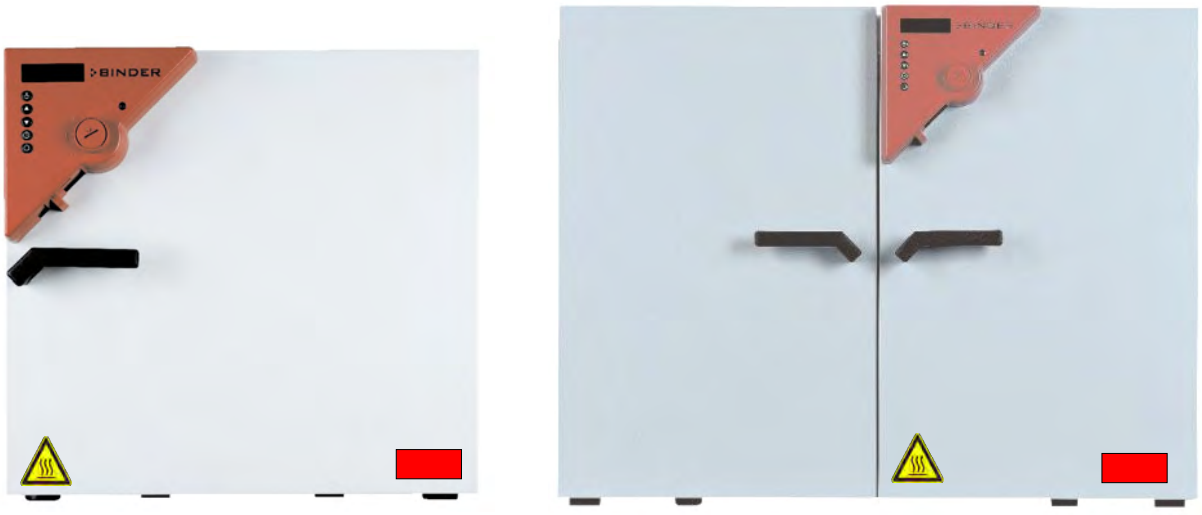


Figure 1: Position of labels on the unit front

	Keep safety labels complete and legible.

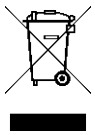
Replace safety labels that are no longer legible. Contact BINDER Service for these replacements.

1.4 Type plate

Figure 2: Position of type plate

Figure 3: Type plate (example: FED 115 regular unit)

Indications of the type plate (example)		Information
BINDER		Manufacturer: BINDER GmbH
FED 115		Model designation
Drying and heating oven		Device name
Serial No.	00-00000	Serial no. of the unit
Built	2014	Year of construction
Nominal temperature	300 °C 572°F	Nominal temperature
Enclosure protection	IP 20	IP type of protection acc. to EN 60529
Temp. safety device	DIN 12880	Temperature safety device acc. to standard DIN 12880
Class	2.0	Class of temperature safety device
Art. No.	9010-0212	Art. no. of the unit
Project No.	---	Optional: Special application acc. to project no.
1,60 kW		Nominal power
230 V 1 N ~		Nominal voltage ± 10%, phase indication
7,0 A		Nominal current
50/60 Hz		Power frequency

Symbol on the type plate	Information
CE	CE conformity marking
	Electrical and electronic equipment manufactured / placed on the market in the EC after 13 August 2005 and to be disposed of in a separate collection according to directive 2002/96/EC on waste electrical and electronic equipment (WEEE).
	VDE-GS certification mark
 or 	The equipment is certified in the GOST R certification system of GOSTSTANDARD Russia. The equipment is certified according to Customs Union Technical Regulation (CU TR) for Russia, Belarus and Kazakhstan.
 (FED-UL only)	The equipment is certified by Underwriters Laboratories Inc.® according to standards UL 61010A-1, UL 61010A-2-10, CSA C22.2 No. 1010.1-92, and CSA C22.2 No. 1010.2.010-94.

1.5 General safety instructions on installing and operating the drying and heating ovens FED

With regard to operating the drying and heating ovens FED and to the installation location, please observe the guideline BGI/GUV-I 850-0 on safe working in laboratories (formerly BGR/GUV-R 120 or ZH 1/119 laboratory guidelines issued by the employers' liability insurance association) (for Germany).

BINDER GmbH is only responsible for the safety features of the unit provided skilled electricians or qualified personnel authorized by BINDER perform all maintenance and repair, and if components relating to chamber safety are replaced in the event of failure with original spare parts.

To operate the unit, use only original BINDER accessories or accessories from third-party suppliers authorized by BINDER. The user is responsible for any risk caused by using unauthorized accessories.

CAUTION

Danger of overheating.

Damage to the unit.

∅ Do NOT install the unit in unventilated recesses.

➢ Ensure sufficient ventilation for dispersal of the heat.

Do not operate the drying and heating ovens FED in hazardous locations.

DANGER

Explosion hazard.

Danger of death.

∅ Do NOT operate the unit in potentially explosive areas.

➢ KEEP explosive dust or air-solvent mixtures AWAY from the unit.

The drying and heating ovens FED do not dispose of any measures of explosion protection.

DANGER

Explosion hazard.

Danger of death.

∅ Do NOT introduce any substance into the heating oven which is combustible or explosive at working temperature.

∅ NO explosive dust or air-solvent mixture in the inner chamber.

Any solvent contained in the charging material must not be explosive or inflammable. I.e., irrespective of the solvent concentration in the steam room, NO explosive mixture with air must form. The temperature inside the chamber must lie below the flash point or below the sublimation point of the charging material. Familiarize yourself with the physical and chemical properties of the charging material, as well as the contained moisture constituent and its behavior with the addition of heat energy.

Familiarize yourself with any potential health risks caused by the charging material, the contained moisture constituent or by reaction products that may arise during the temperature process. Take adequate measures to exclude such risks prior to putting the drying and heating ovens into operation.

DANGER

Electrical hazard.

Danger of death.

∅ The unit must NOT become wet during operation or maintenance.

The drying and heating ovens were produced in accordance with the VDE regulations and were routinely tested in accordance to VDE 0411-1 (IEC 61010-1).

During and shortly after operation, the temperature of the inner surfaces almost equals the set-point.

CAUTION

The inner chamber, the exhaust duct, the door window (option), the door gaskets, and the access ports will become hot during operation.

Danger of burning.

∅ Do NOT touch the inner surfaces, the exhaust duct, the door window, the access ports, the door gaskets, or the charging material during operation.

1.6 Intended use

The drying and heating ovens FED are suitable for drying and heat treatment of solid or pulverized charging material, as well as bulk material, using the supply of heat. The solvent content must not be explosive or flammable. A mixture of any component of the charging material with air must NOT be explosive. The operating temperature must lie below the flash point or below the sublimation point of the charging material. The drying and heating ovens FED can be used to dry e.g. glassware.

Other applications are not approved.

The drying and heating ovens FED are not classified as medical devices as defined by the Medical Device Directive 93/42/EEC.

Do NOT use the unit for drying processes when large quantities of vapor would form and result in condensation.

	Due to the special demands of the Medical Device Directive (MDD), these ovens are not qualified for sterilization of medical devices as defined by the directive 93/42/EWG.

	Following the instructions in this operating manual and conducting regular maintenance work (chap. 9) are part of the intended use.

	The charging material shall not contain any corrosive ingredients that may damage the machine components. Such ingredients include in particular acids and halides. Any corrosive damage caused by such ingredients is excluded from liability by BINDER GmbH.

2. Unit description

BINDER drying and heating ovens FED are equipped with an electronic PID-controller with digital display. The temperature is indicated with an accuracy of one degree.

BINDER drying and heating ovens with forced convection FED are heated electrically and are ventilated by fan-assisted, forced-air circulation. They FED are equipped with a temperature safety device according to DIN12880 (chap. 7).

The APT.line™ preheating chamber system guarantees high level of spatial and time-based temperature precision, thanks to the direct and distributed air circulation into the interior. The fan supports exact attainment and maintenance of the desired temperature accuracy.

The inner chamber, the pre-heating chamber and the inside of the doors are all made of stainless steel V2A (German material no. 1.4301, US equivalent AISI 304). When operating the unit at temperatures above 150 °C, the impact of the oxygen in the air may cause discoloration of the metallic surfaces (yellowish-brown or blue) by natural oxidation processes. These colorations are harmless and will in no way impair the function or quality of the unit. The housing is RAL 7035 powder-coated. All corners and edges are also completely coated.

All unit functions are easy and comfortable to use thanks to their clear arrangement. Major features are easy cleaning of all unit parts and avoidance of undesired contamination.

BINDER drying and heating ovens FED are equipped with a serial interface RS 422 for computer communication, e.g. via the communication software APT-COM™ 3 DataControlSystem (option, chap. 8.1). For further options, see chap. 12.5.

The model FED 720 is equipped with four castors. Both front castors can be locked by brakes.

The unit can be operated in a temperature range of 5 °C / *9 °F* above room temperature up to 300 °C / *572 °F*.

2.1 Equipment overview FED

(1) Display
(2) Set-point value key
(3) Selector keys
(4) Time management key
(5) Switch ON/OFF
(6) Lever for ventilation slide
(7) Safety device
(8) Door handle
(9) Switch for interior lighting (with option interior lighting) **or** Buzzer switch (with option audible over-temperature alarm)
(10) Main power switch for sizes 400 and 720

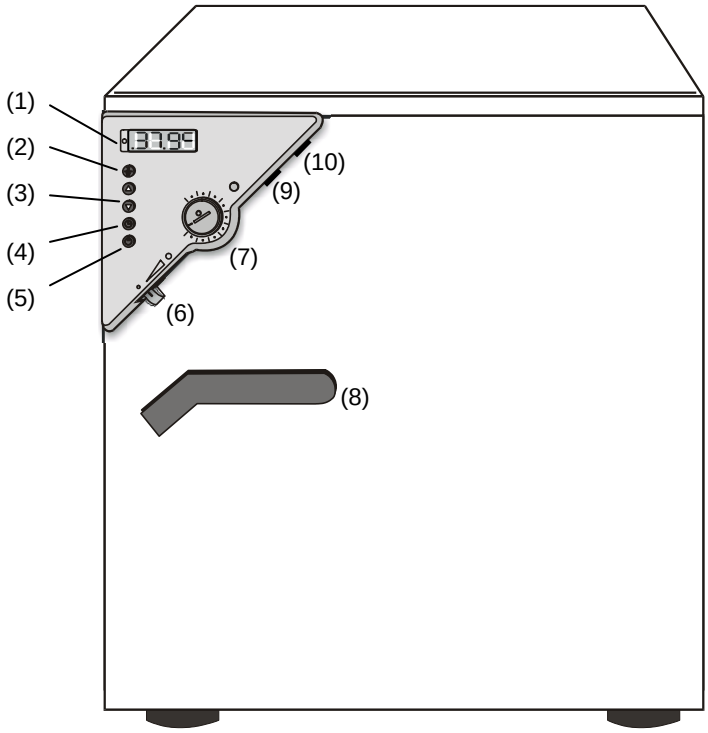


Figure 4: FED drying and heating oven

3. Completeness of delivery, transportation, storage, and installation

3.1 Unpacking, and checking equipment and completeness of delivery

After unpacking, please check the unit and its optional accessories, if any, based on the delivery receipt for completeness and for transportation damage. Inform the carrier immediately if transportation damage has occurred.

The final tests of the manufacturer may have caused traces of the racks on the inner surfaces. This has no impact on the function and performance of the unit.

Please remove any transportation protection devices and adhesives in/on the unit and on the doors and take out the operating manuals and accessory equipment.

CAUTION

Sliding or tilting the unit.

Damage to the unit.

Risk of injury by lifting heavy loads.

∅ Do NOT lift or transport the unit using the door handle or the door.

∅ Do NOT lift units size 400 and 720 by hand

➢ Lift the unit size 53 and 115 from the pallet at its four lower corners with the aid of 2 people, unit size 240 with the aid of 4 people.

➢ Lift units size 400 and 720 from the pallet using technical devices (fork lifter). Set the fork lifter only from the rear in the middle of the unit. Make sure to place all the lateral supports of the unit on the forks.

If you need to return the unit, please use the original packing and observe the guidelines for safe lifting and transportation (chap. 3.2).

For disposal of the transport packing, see chap. 10.1.

Note on second-hand units (Ex-Demo-Units):

Second-hand units are units that have been used for a short time for tests or exhibitions. They are thoroughly tested before resale. BINDER ensures that the chamber is technically sound and will work flawlessly.

Second-hand units are marked with a sticker on the unit door. Please remove the sticker before commissioning the unit.

3.2 Guidelines for safe lifting and transportation

The front castors of units size 720 can be blocked by brakes. Please move the units with castors only when empty and on an even surface, otherwise the castors may be damaged. After operation please observe the guidelines for temporarily decommissioning the unit (chap. 10.2).




CAUTION

Sliding or tilting the unit.

Damage to the unit.

Risk of injury by lifting heavy loads.

- ➢ Transport the unit only in its original packaging.
- ➢ Secure the unit with transport straps for transport.
- ∅ Do NOT lift or transport the unit using the door handle or the door.
- ∅ Do NOT lift units size 400 and 720 by hand.
- ➢ Lift unit size 53 and 115 at its four lower corners with the aid of 2 people, unit size 240 with the aid of 4 people, and place it on a transport pallet with wheels. Push the pallet to the desired site and then lift the unit from the pallet at its four lower corners.
- ➢ Place units size 400 and 720 using technical devices (fork lifter) on the transport pallet. Set the fork lifter only from the rear in the middle of the unit. Make sure to place all the lateral supports of the unit on the forks.
- ➢ Transport units size 400 and 720 ONLY with the original transport pallet. Set the fork lifter only to the pallet. Without the pallet the unit is in imminent danger of overturning!!

- Permissible ambient temperature range during transport: -10 °C to +60 °C.

You can order transport packing and pallets for transportation purposes from BINDER Service.

3.3 Storage

Intermediate storage of the unit is possible in a closed and dry room. Observe the guidelines for temporary decommissioning (chap. 10.2).

- Permissible ambient temperature range during storage: -10 °C to +60 °C.
- Permissible ambient humidity: max. 70 % r.H., non-condensing

When after storage in a cold location you transfer the unit to its warmer installation site, condensation may form. Before start-up, wait at least one hour until the oven has attained ambient temperature and is completely dry.

3.4 Location of installation and ambient conditions

Set up the drying and heating oven FED on an even and non-flammable surface, free from vibration and in a well-ventilated, dry location and align it using a spirit level. The site of installation must be capable of supporting the unit's weight (see technical data, chap. 12.4). The chambers are designed for setting up inside a building (indoor use).

CAUTION

Danger of overheating.

Damage to the unit.

∅ Do NOT set up units in non-ventilated recesses.

➢ Ensure sufficient ventilation for dispersal of the heat.

- Permissible ambient temperature range during operation: +18 °C up to +40 °C. At elevated ambient temperature values, fluctuations in temperature can occur.

The ambient temperature should not be substantially higher than the indicated ambient temperature of +25 °C to which the specified technical data relate. For other ambient conditions, deviations from the indicated data are possible.

- Permissible ambient humidity: 70 % r.H. max., non-condensing.
- Installation height: max. 2000 m / *6562 ft.* above sea level.

When placing several units of the same size side by side, maintain a minimum distance of 250 mm between each unit. Wall distances: rear 100 mm, sides 160 mm. Spacing above the unit of at least 100 mm must also be accounted for.

Two devices up to size 115l can be piled on top of each other. For this purpose, place rubber pads under all four feet of the upper unit to prevent the device from slipping.

CAUTION

Sliding or tilting of the upper unit.

Damage to the units.

➢ When stacking, place rubber pads under all four feet of the upper unit.

To completely separate the unit from the power supply, you must disconnect the power plug. Install the unit in a way that the power plug is easily accessible and can be easily pulled in case of danger.

Do not install or operate the drying and heating oven FED in potentially explosive areas.

DANGER

Explosion hazard.

Danger of death.

∅ Do NOT operate the unit in potentially explosive areas.

➢ KEEP explosive dust or air-solvent mixtures AWAY from the vicinity of the unit..

4. Installation

4.1 Electrical connection

The drying and heating ovens FED are supplied ready for connection. The socket must also provide a protective conductor.

- **FED 53, FED 115, FED 240:**

  Shockproof plug, power supply voltage 230 V (1N~) +/- 10 %, 50/60 Hz

  Fixed power connection cable of 1800 mm in length

- **FED 400, FED 720:**

  CEE plug 5 poles, power supply voltage 400 V (3N~) +/- 10 %, 50/60 Hz

  Fixed power connection cable of 2700 mm in length

- **FED 53-UL, FED 115-UL:**

  NEMA plug 5-20P, power supply voltage 115 V (1N~) +/- 10 %, 60 Hz

  Fixed power connection cable of 1800 mm in length

- **FED 240-UL, FED 400-UL, FED 720-UL:**

  NEMA plug L21-20P, power supply voltage 208 V (3N~) +/- 10 %, 60 Hz

  Fixed power connection cable of 2700 mm in length

- Prior to connection and start-up, check the power supply voltage. Compare the values to the specified data located on the unit's type plate (unit front behind the door, bottom left-hand, chap. 1.4).
- When connecting, please observe the regulations specified by the local electricity supply company and as well as the VDE directives (for Germany). We recommend the use of a residual current circuit breaker.
- Pollution degree (acc. to IEC 61010-1): 2
- Over-voltage category (acc. to IEC 61010-1): II

	**CAUTION**
	Danger of incorrect power supply voltage. **Damage to the equipment.** ➢ Check the power supply voltage before connection and start-up. ➢ Compare the power supply voltage with the data indicated on the type plate.

See also electrical data (chap.12.4).

	To completely separate the unit from the power supply, you must disconnect the power plug. Install the unit in a way that the power plug is easily accessible and can be easily pulled in case of danger.

4.2 Connection to a suction plant (optional)

When directly connecting a suction plant the spatial temperature exactitude, the heating-up and the recovering times and the maximum temperature will be negatively influenced. So no suction plant should be directly connected to the exhaust duct.

	Active suction from the oven must only be performed together with extraneous air. Perforate the connecting piece to the suction device or place an exhaust funnel at some distance to the exhaust duct.

CAUTION

The exhaust duct will become hot during operation.

Danger of burning.

∅ Do NOT touch the exhaust duct during operation.

5. Start up

5.1 Turning on the unit

Warming chambers may release odors in the first few days after commissioning. This is not a quality defect. To reduce odors quickly we recommend heating up the chamber to its nominal temperature for one day and in a well-ventilated location.

1. Insert the power plug into a suitable socket (chap. 4.1).

2. Turn on units of sizes 400 and 720 at the main power switch (10)

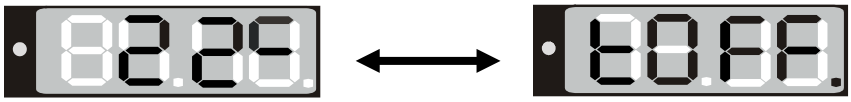
The green “Standby“ LED illuminates.

3. Press  until the display lights up.

The controller is now in normal display (actual value display).

If the oven is operating (time functions “Continuous operation”, or “Timer operation” with the set time just running down chap. 6.3), the **actual temperature value** (example: 22 °C) is displayed

If the oven is in time function “Timer operation” with no time programmed or the set time run-off (chap. 6.3), the unit is inactive (no heating). The display alternately shows the **actual temperature value** (example: 22 °C) and “**tOff**”:



Adjust the temperature safety device following any changes of the set-point (chap. 7).

5.2 Heating operation display

The heating is active as soon as the red heating control light in the bottom right corner of the display slowly begins to flash depending on the heat requirement (example: 70 °C):

5.3 Air change

Opening the air flap in the exhaust duct serves to adjust the air change.

Without connecting a suction plant:

- If the air flap is open and the fan is operating, fresh air comes in via aeration gaps.
- If the air flap is completely open, the spatial temperature accuracy can be negatively influenced.

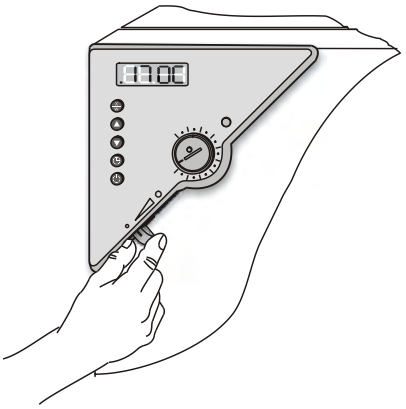


Figure 5: Adjusting the air flap

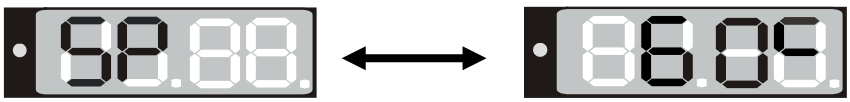
6. Controller setting

6.1 Display / entry of temperature and ventilation set-points (without ramp function)

The unit is operating, the controller is in normal display (actual value display). The actual temperature value (example: 22 °C) is displayed:

1. Press  button

The display shows alternately "**SP**" and the previous **temperature set-point** (example: 60 °C):



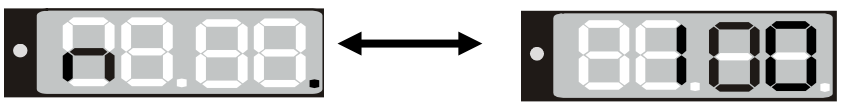
2. With the  buttons enter a set-point value between 0 and 300.

	The desired temperature set-point can be selected in a temperature range from 5 °C above room temperature up to 300 °C.

Wait 2 seconds until the entered temperature value is taken over (display flashing once).

3. Press  button to proceed to the fan speed entry.

The display shows alternately "**n**" and the previous **fan speed set-point** (example: 100%):



4. Set the desired fan speed with the  buttons.

	The fan speed can be set to a value between 0% and 100%.

Wait 2 seconds until the entered value is taken over (display flashing once).

5. Press X/W button to return to normal display (actual value display) (automatically after approx. 30 seconds).

	Adjust the temperature safety device following any changes of the set-point (chap. 7).

6.2 Display / entry of temperature and ventilation set-points (with selected temperature ramp)

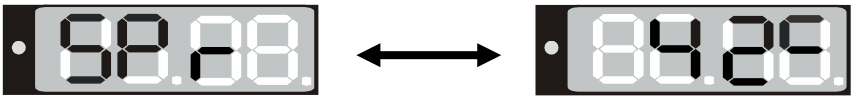
If previously a temperature ramp value has been selected (chap. 6.4.2):

Press button X/W in normal display / actual value display during ramp operation to have displayed the actual temperature ramp mset-point changing according to the selected gradient in addition to the entered final set-points for temperature and fan speed.

The oven is operating, the controller is in normal display (actual value display). The **actual temperature value** (example: 22 °C) is displayed:

1. Press X/W button

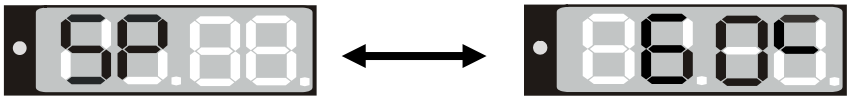
The display shows alternately "**SPr**" and the **actual temperature ramp set-point** changing according to the selected gradient (example: 42 °C):



This ramp set-point is only displayed, not adjustable.

2. Press X/W button

The display shows alternately "**SP**" and the previous **temperature set-point** (example: 60 °C):



3. With the ▼ ▲ buttons enter a set-point value between 0 and 300.

	The desired temperature set-point can be selected in a temperature range from 5 °C above room temperature up to 300 °C.

Wait 2 seconds until the entered temperature value is taken over (display flashing once).

4. Press X/W button to proceed to the fan speed entry.

The display shows alternately "**n**" and the previous **fan speed set-point** (example: 100%):