MMM Group

Operating instructions

Laboratory drying ovens and incubators
line Standard

ECOCELL	**22, 55, 111, 222, 404, 707**
DUROCELL	**22, 55, 111, 222**
VENTICELL	**22, 55, 111, 222, 222/2, 404, 404/2, 707, 707/2**
INCUCELL	**22, 55, 111, 222, 404, 707**
INCUCELL V	**22, 55, 111, 222, 404, 707**

CE

LSI-S_np_en 0911_mmm_V2.05_B2V

Congratulations on obtaining a new temperature cabinet, designed for uniform tempering of various materials by hot air at a selectable temperature and a selectable time mode in laboratories. There is an air flap installed that enables wet material drying. The temperature course is controlled by an advanced microprocessor (Fuzzy logic) with a digital display and a temperature sensor PT 100. This system ensures high accuracy of temperature regulation and tempering process reliability.

The units meet technical and legislative requirements and they are designed according to respective EN standards. The units are made of high quality materials by using the latest technology. Each piece undergoes a careful output control.
Provided you will follow the instructions mentioned here the unit becomes your reliable and powerful partner.

Now these advantages will be available just for you. This unit will help to solve your everyday problems and it will become powerful assistant for you. This unit is very easy to use, nevertheless, we recommend you to read the Operating instructions carefully so that you could use all advantages of this unit and obtain complete knowledge for its optimal use.

CONTENTS:

30. 11. 2009

1 GENERAL

The electrically heated ovens/incubators are designed for laboratories, especially for tempering of various materials by hot air at adjustable temperature and optional time mode. An air flap enables to dry wet materials.
An advanced modern microprocessor (Fuzzy - logic) with a digital display and a PT 100 controls the temperature course. This system provides high accuracy of temperature control and reliability of the tempering process. The second independent digital safety system ensures, together with the second independent temperature sensor, the control and safety of the tempering process. These devices meet all legislative requirements and are designed according to respective EN standards – see Conformity Declaration. They are made of high-grade materials by using the latest technology. Each unit undergoes a careful output control.

1.1 PURPOSE AND USE

ECOCELL (EC) is intended for tempering of materials by hot air with natural circulation. The units are designed for temperatures up to 250 °C. Compared with **VC** units they are characterized by quiet operation and lower consumption of electrical energy.

DUROCELL (DC) serves for hot-air tempering with natural circulation (use for the following procedures: Acid hydrolysis, extraction of non-flammable substances, thermal decomposition in closed vessels). The devices are intended for temperatures up to 125 °C. The inner surfaces of the chamber are covered with an EPOLON layer which protects the chamber against corrosive action of acids in form of liquids or vapours in case of their accidental leakage from closed vessels. For other important information see the chapter Before Putting into Operation.

VENTICELL (VC) is intended for tempering of materials by hot air with forced air circulation by means of a fan. The ovens are designed for temperatures up to 250 °C, optionally up to 300 °C.

INCUCELL (IC, ICV) serves as an incubator or for cell cultivation in microbiological laboratories (see chapter Optional equipment; Anti-dry modification of cultivating mediums and tissue cultures). The units are designed for temperatures up to 70 °C optionally up to 99.9 °C. A quiet operation is characteristic for the version **IC** (without a fan), more accurate temperature regulation with small deviations is characteristic for the version **ICV** (with ventilator).

2 IMPORTANT INSTRUCTIONS

2.1 UNPACKING, CHECKING AND TRANSPORT

Please check after unpacking whether the unit and its accessories are complete and not damaged. An eventual damage has to be reported to the transporting company immediately. During the manipulation – in case of lifting the cabinet etc. – the unit must not be held by the rail or door. The units of volumes 404 and 707 shall be lifted by means of supplied hooks; the casters are designed for local moving only, not for longer transport. The standard delivery consists of the oven/incubator and two trays.

2.2 BEFORE INSTALLATION

- **Please read carefully the Operating Instructions before starting the work with the unit!**
- Install the instrument by plugging the power cord to a line voltage socket. The specified parameters of the connection are described in chapter **5.1 - Electrical Connection**.
- At temperatures of above 100 °C the inner chamber surface becomes yellowish. This coloration is neither the material nor the device defect.

After the first starting of the unit the heating elements and insulation start to be baked with a typical smell; after a few operation cycles this smell disappears, nevertheless, it is suitable, during the insulation baking at a temperature above 100 °C, to provide a sufficient air exchange (e.g. by ventilation or exhaustion).

With **VC** and **EC** types the air exhaust is protected by a cover at the rear wall of the unit. This cover is placed inside the unit while shipping. When installing the unit, insert the cover into the horizontal openings bellow and above the exhaust to attach it behind the exhaust.

DC-type – regarding the fact that it is the inner chamber only which is resistant to corrosive effects, the following must be ensured during the application:
a) Processes specified in the previous chapter must be performed in the chamber in closed vessels (corrosive substances release into the chamber must be prevented);

b) Exhalations from the exhaust outlet must be exhausted actively to prevent vapour condensation on the outlet and its dripping down to the electric part of the device;
c) The whole device must be placed in a no-corrosive atmosphere (damage of the source and regulation electronics must be prevented).

The units are designed for indoor operation within the ambient temperatures ranges from 5 °C to 40 °C and at maximum relative humidity 80 %.

The oven shall be installed in a distance of min. 100 mm from the rear and sidewalls. The temperature of the outlet air on the exhaust may be up to 250 °C (or 300 °C); this area is labeled by  .The walls near the oven shall be incombustible.

The load-bearing capacity of the floor during installation of the device shall correspond to the weight of the unit itself taking the weight of the maximum charge into consideration (see **chapter 5 - Parameters of the Unit**).

The unit must not be placed on a support that could cause a danger of fire or smothering in case of falling some hot object out of the unit.

No inflammable, explosive or toxic materials may be put into oven! The same applies to materials that could release such substances.

Material is only to be put on trays, never directly on the bottom of the unit!

No articles may be put on he external surface of the unit.

The unit is not intended for warming up the liquids.

The units are not intended for use in the atmosphere with a possible danger of flammable or explosive anesthetics.

Any assembly or disassembly may be done only when disconnected from the mains! After switching the unit off with the key (key 11, fig. 4) the unit comes only to a stand-by mode, however, it is not disconnected from the mains!

- If the unit is not used for a longer time, disconnect it from mains by pulling the power cord out of the socket.

The units are supplied with the maximum permitted temperature set to the maximum and the minimum permitted temperature set to 10 °C.

The power cord must not come in contact with hot parts of the units – with the exhaust hole cover.

- Protection of the temperature box, its surroundings and processed material against inadmissible temperature excess is secured by a safety system.

Pull out and subsequently push in the upper metal plate piece of internal chamber carefully, there is a danger of cutting through the rubber gasket of the chamber through careless manipulation.

The maximum permitted loads: see chapter **5 - Parameters of the Unit**.

 When operating the cabinets at high chamber temperatures there can be the maximum allowed temperature of 70 °C at their external surface (exhaust ports and their surroundings and the surroundings of the chamber sealing, window and door surface in case of the optional type with window in door) surpassed and there is a danger of burns. Please be very careful.

- During the operation of the devices of 404 and 707 at high temperatures a deformation of the inner door surface occurs as a consequence of thermal tension, which makes their closing more difficult. If you open the door in this state, do not close them until the chamber is cooled down. Otherwise the door mechanism could be damaged.

Regularly – in daily intervals – check by listening if after the start the fan of the case is running.

2.3 USEFUL SPACE

The useful space is illustrated on Fig. No.1, where X(D) = 10 % of the inner chamber depth, X(W) = 10 % of the inner chamber width, $X(H)_1$ is the distance from the lowest tray to the bottom of the inner chamber, $X(H)_2$ is the distance from the upper most tray to the ceiling of the inner chamber. The required temperature accuracy - see chapter **5 - Parameters of the Unit** - is achieved only within the space defined above (in connection with DIN 12 880 - marked with thick lines, thinner lines mark the inner chamber walls). (It means, that over the last upper tray the limits from chapter **5 - Parameters of the unit** – are not obligatory).

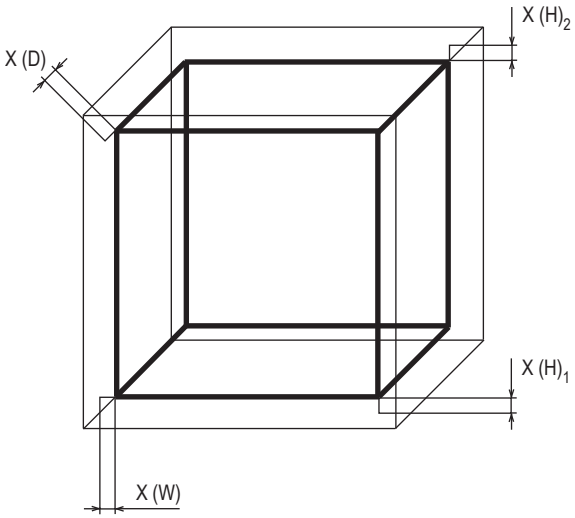


Fig. 1

3 DESCRIPTION OF THE UNIT

3.1 GENERAL VIEW

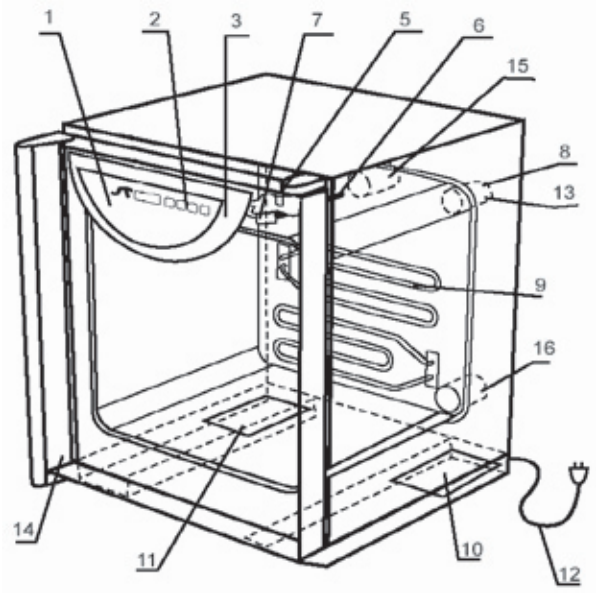
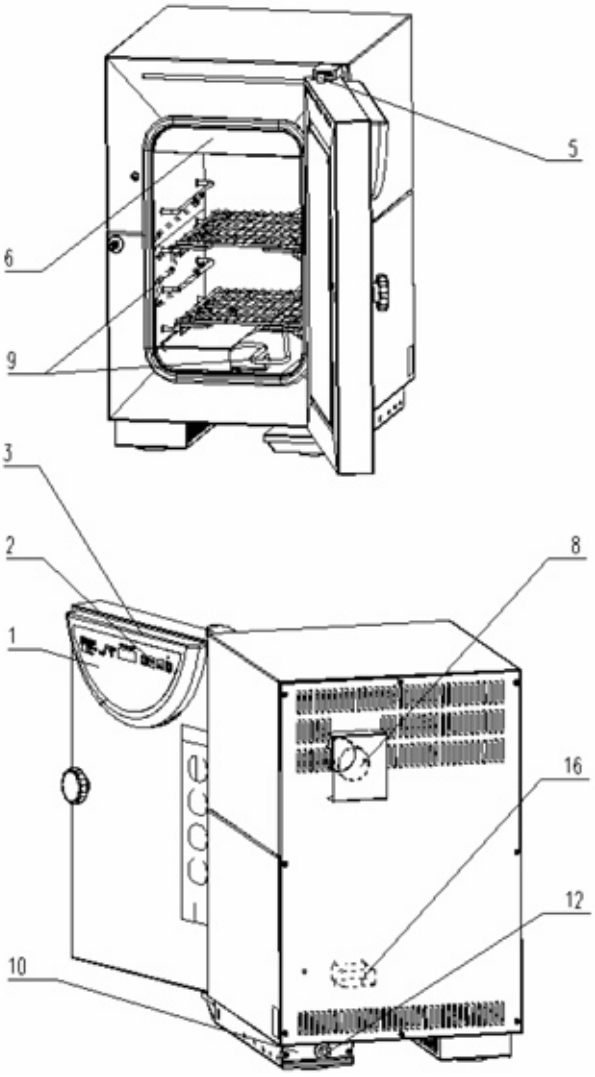


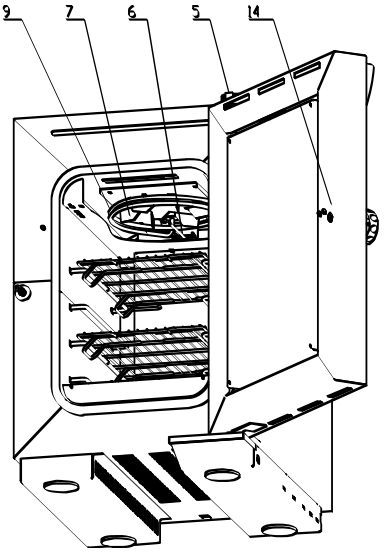
Fig. 2

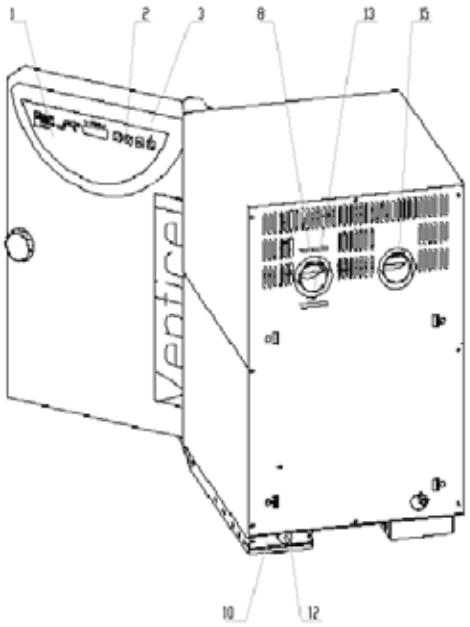
1 - controller panel
2 - control keys
3 - plastic cover of the controller panel
5 - lever for air flap positioning
6 - case of PT 100 sensor
7 - fan (only for VC, ICV)
8 - exhaust with air flap (with all types)
9 - heating elements
10 - power board I
11 - power board II (only three-phase type)
12 - mains cord
14 - door sensor
15 - suction hole (only for VC, ICV, with air flap)
16 - suction hole (with types EC, DC, IC)

ECOCELL 22



VENTICELL 22





3.2 POWER CONNECTION AND CONNECTORS

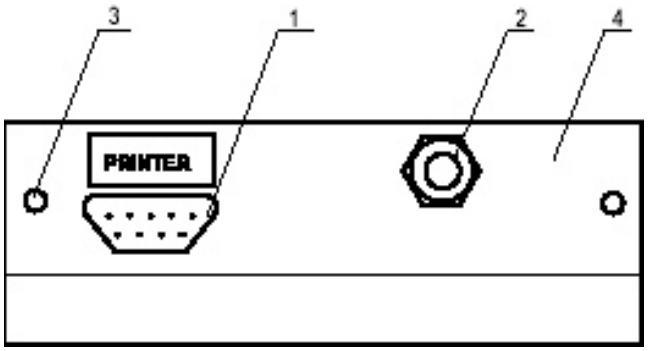


Fig. 5: Foot of the unit with mains cord - rear view (with the power board I)

1 - Interface for printer
2 - Mains supply
3 - Screws attaching the power board
4 - Power board panel (located in the foot)

9 Canon connector on the case

Pin	Signal
2	RX
3	TX
5	GND
6	DSR

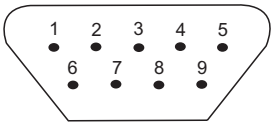


Fig. 6: 9 Canon - Interface for protocol printer

25 Canon connector in the printer

Pin	Signal
2	TXD
3	RXD
7	GND
20	DTR

The appliances, which are connected with the connector RS-232C, must comply with valid regulations in terms of electric safety and electromagnetic compatibility.
We recommend the printer CITIZEN, model iDP 3110-24 RF-A, which is possible to make an additional order of to the apparatus.

Interface parameters: Baud 9600
Stopbit: 1
Parity: none
Databit: 8

3.3 CONTROL PANEL

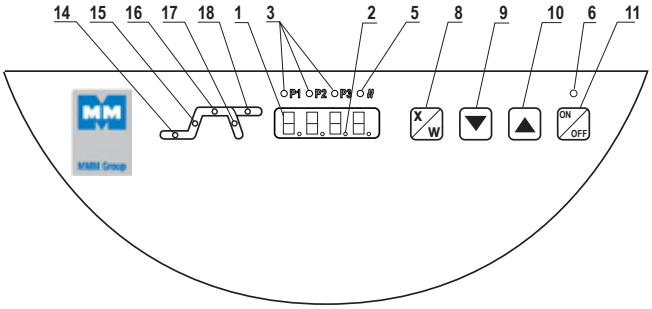


Fig. 4

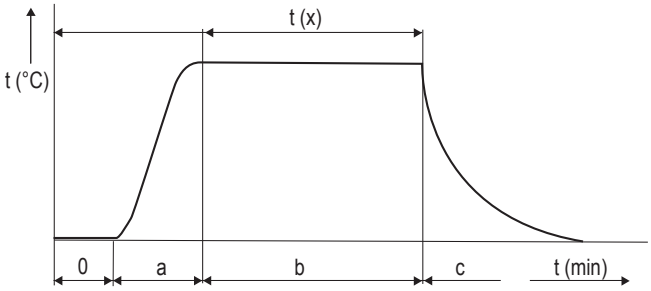
1 - display
2 - decimal point - burns (the unit is connected to the mains - stand-by mode)
3 - the indicators of pre-selected programs:
- burn: program is active
- blink: program will be active in 5 sec.
5 - heating indicator light - burns:condition of temperature regulator - heating active
6 - power indicator light - burns after switching the unit on by ON/OFF swich
7 - Safety system indicator is flashing: The temperature exceeded the chosen limit set by the protective thermostat – the heating is switched off (see more in Chapter 4.6 Safety System Functions and Setting)
8 - setting mode activation key
9 - setting the value downwards
10 - setting the value upwards
11 - switch (ON - switched on, OFF - stand by mode)
14 - Indicator light: blinks - set-up mode, burns - the active part of the program is time-delayed switching-on

15 - indicator light: blinks - set-up mode, burns - the active part of the program is heating-up to present temperature
16 - indicator light: blinks - set-up mode, burns - the active part of the program is time-delayed switching-off
17 - Indicator light: blinks - set-up mode, burns - decrease of temperature after switching-off
18 - Indicator light: blinks - set-up mode, burns - the active part of the program is infinite stay on the present temperature

Indicator lights 14-18 blink - number of cycles setting mode.

4 FUNCTION AND OPERATING

The unit can be set to various modes according to the required function, i.e. the unit's cycle can be modified, as described below. In the figure a complete course of one cycle with its stages is shown.



Segment	Funktion
0	time-delayed switching-on,
a	rise to the temperature,
b	time-delayed switching-off
c	temperature drop after switching off

The functions of the respective indicator lights are described in chapter 3 - Description of the Unit, and 3.3 - Control Panel.

4.1 STARTING

1. In case, that the unit was in the stand-by mode before switching-off, a green dot in the right lower part of the display will lit up, otherwise the program, interrupted by switching off, will continue.
2. Press the key **ON/OFF**. The indicator light above the key, the indicator light of the pre-selected program and the indicator light of the initial active program stage will lit up.
   If the temperature in the chamber will be lower than the preset value, the heating indicator light will burn as well - either permanently or blinking (depending on heating controller status - on or off).
3. The display shows actual data relating to the active program stage.

4.2 SWITCHING-OFF

Press the key **ON/OFF**. The display turns off, only the green indicator light in the lower right part is on (stand by). The total disconnection from mains (in case of a long-term putting out of operation or a maintenance) is achieved by pulling the mains cord from a socket – see also chapter **2.2 – Before installation.**

4.3 USER MENU

Enter the function by simultaneous pressing **X/W** + ▼.

By means of ▼▲ set on the display.

a) U1 - setting the period of print of the printer from 0 up to 255 min by means of ▼▲, confirm the setting by pressing the key **X/W**.

b) U2 - ON or OFF - set enabling or disabling the cycles by pressing the keys ▼▲ (for all pre-selections at the same time), confirm the setting by pressing the key **X/W**; a cycle means multiple repetition of the program with a preset time-delayed switching-off and starting the program. Quit the setting by pressing the key **X/W** and quit the function by pressing the key **ON/OFF**.

c) U3 - Prn or PC – data transfer via interface RS 232 either onto the printer (Prn) or, in case of using the program WarmComm, onto the computer (PC); set the sign Prn or PC by means of ▼▲.

d) U4 – setting of the fan speed. The speed could be changed in steps: 50, 60, 70, 80, 90 and 100 %. The initial setting is 100 %. The speed is regulated with the accuracy of ± 5 %.

e) U5 - enabling (Y) or disabling (N) of the acoustic signalizing at the exposure end (after the end of the last cycle in case of cycling). Within the original adjustment the acoustic signalling is permitted.

f) U6 - Safety system in the function of a protective thermostat – maximum permitted exposure temperature setting. After pressing **X/W**, the actual maximum temperature set is displayed. It can be then changed by means of arrows and confirmed by pressing **ON/OFF**. When setting such maximum value, the actual temperature course with possible overshoot during the rise of temperature must be respected.
When setting this maximum value, real temperature course with a potential overshoot during the onset must be respected.

g) U7 – Safety system in the function of a protective thermostat – minimum permitted exposure temperature setting. After pressing **X/W**, the actual minimum temperature set is displayed. It can be then changed by means of arrows and confirmed by pressing **ON/OFF**. When setting such minimum value, the actual temperature course with possible undershoot during the rise of temperature must be respected.

h) U8 – Safety system – setting of the maximum onset phase duration. After **X/W** pressing, the actual maximum onset phase duration is displayed. It can then be changed by 1-hour steps within the range from 1 to 24 hours, or the time watching can be switched off, which is then displayed in form of "----". Confirm by **ON/OFF** pressing. Default setting: Time watching is switched off.

ch) U9 – Selection of flexible sensor displaying. (Yes/No).

i) U12 – User test of the safety relay. After **X/W** pressing, time remaining till the safety relay test is displayed.
You can enter the test submenu by means of ▼ or ▲. By pressing **ON/OFF** button, you can switch on (or off) the safety relay test. The sign TEST starts (or stops) flashing.

4.4 SETTING-UP THE REQUIRED VALUES OF TEMPERATURE, TIME-DELAYED SWITCHING-OFF, NUMBER OF CYCLES, TIME-DELAYED PROGRAM START

1. Set the pre-selection of the program 1or 2 or 3 by pressing the key ▼ or ▲, after pressing the key ▼ or ▲the indicator light of the next program will start to blink. This program will be activated in ca. 5 sec, if no other key is pressed during this time. Setting by means off ▼ or ▲, will cause the stop of the actually running cycle and starting a new cycle with the pre-selected parameters. The setting-up cycle begins with setting the required temperature.
2. Press the key **X/W**, indicator lights 15, 16 (Fig.4) start to blink, by pressing the keys ▼▲ set the required temperature in °C on the display. The lowest temperature interval, which can be set and displayed with EC, DC, VC is 1 °C; with IC, ICV it is 0,1 °C.
The indicator lights of the segments blink permanently.
3. By pressing the key **X/W** change over to the setting of time-delayed switching-off, by pressing the keys ▼▲set the required value in hours and minutes from 0 to 99 hrs and 59 min on the display, thereby the indicator lights 16, 17 (Fig.4) blink. The symbol --- corresponds to the timely unlimited exposure.
4. By pressing the key **X/W** change over to the setting of number of cycles and by pressing the keys▼▲ set the number of cycles from 1 up to 255 (more information on the cycles see 4.3) - all indicator lights blink during the setting up.
This function can be used only with the time-delayed switching-off ≠ 0.
Select the option of cycles setting by using the user menu.
5. By pressing the key **X/W** change over to the stage of setting the time-delayed starting and by pressing the keys ▼▲ set the required value in minutes from 0 up to 99 hrs 59 min, the indicator light 14 (Fig.4) blinks.
6. Start the program by double pressing the key **ON/OFF** (the program start is announced by an acoustic signal). Actual temperature with time countdown will blink on the display during the time-delayed program starting.
The heating is switched on after reaching the time of zero and the display shows the actual temperature in the chamber.

After reaching the required temperature:
a) in case of setting the time-delayed shut down, the chamber temperature with the preset time countdown starts to change on the display or
b) in case of time unlimited switching-off, the chamber temperature with the count up time starts to change on the display. After 99 hours:59 min pass, time is displayed in hours up to 999 hours. It is then displayed by ∞ symbol (infinity). When printing the record on the printer, time is shown up to 999:59; the text "infini" is then printed.

Continuously lighting indicators inform about the actual active phase of the programme. The permanently lighting indicator lights provide information on the actually active program stage.

7. Individual values can be checked during the program run - by pressing the key **X/W** the required value is shown on the display, the indicator lights blink, by the next pressing of the key **X/W** within 5 seconds you will change over to the next stage, in this way all settings can be checked step by step.
   The original program will continue, if no control element within 5 seconds will be used.

8. In the similar way, you can change the already set values during the programme operation, if
   a) you will wait ca 5 second after setting of new values, the programme continues with changed values from the break point.
   b) after setting the value you can start the program by double pressing the key **ON/OFF**, the program will start with new values from the beginning.

Fan run and program end:
With all types containing fan the fan runs for 5 minutes after the program end and then it is switched off.

4.5 PROTOCOL PRINTING

Protocol printing with the CITIZEN printer, type iDP 3110-24 RF-A. Through setting the interval on the printer you determine the time interval of printing the chamber temperature actual value. The time interval will be printed on the head of the record.
The interval of the printer can be set within: t_{min} = 1 minute, t_{max} = 255 minutes (4 hr. 15 min.), in 1-minute-steps.

1. Start from the state when the display indicates the actual temperature. Connect the printer to the oven/incubator with the RS-232C serial interface to the printer's socket (see fig. 4), connect the other end of the cable to the interface at the rear of the printer. Connect the printer to the mains by means of an adapter. Turn on the switch on the right side of the printer. The indicator light **POWER** and **SEL** will lit up. The printer is in the **on-line** mode. You can shift paper by pressing the key LF (only in the **off-line** mode, i.e. after pressing the key **SEL**, the indicator light **SEL** will go off. To restore the **on-line** mode press the key **SEL**, the indicator light **SEL** will lit up). The printer can print only in the **on-line** mode!

2. Set, according tot he chapter User supporting functions the requested printing interval. 3. The heading is printed on the printer; the heading contains the device type, the set temperature and selected time interval.
   Values of the following data are printed in one line under this heading:
   - time from the program start and
   - actual temperature in the chamber.

   There is also printed
   - starting of the "beginning" and "exposition with the requested exposition temperature" phases
   - reached temperature and time at phase finishing
   - at the output from the user setting, the user settings.

3. Switching the print off is performed by setting the print interval to 0 (symbol ---).

4. In case of a change of the preset operation conditions of the oven/incubator or in case of change of print interval a new heading will be printed (this is not valid when set interval is 0 (symbol---).

5. In case of power failure of the unit the printer prints the message → **Power recovery**! and the actual temperature value after the power recovery again. Time intervals start to be counted from the moment of the power recovery. After the unit has been turned off and turned on by pressing the key **ON/OFF** again, a new heading is printed.

6. In case of power failure of the printer only or if the printer is turned off, no message is printed after turning the printer on again or after the power recovery.

Setting the DIP microswitches of the printer CITIZEN iDP 3110:
all four pins are in the lower position OFF.

Setting the DIP microswitches of the printer CITIZEN CBM 910:
OFF / ON / OFF / ON / OFF / ON / ON / OFF (from the left to the right).

CBM 910II: OFF / ON / OFF / OFF / OFF / OFF / ON / OFF.
After the setting is changed, the printer must be switched off and on either by the switch or by disconnection from the power supply.
(A different type of the printer must be adjusted with the help of the printer´s manual and the data on the interface RS232 shown on the case.)

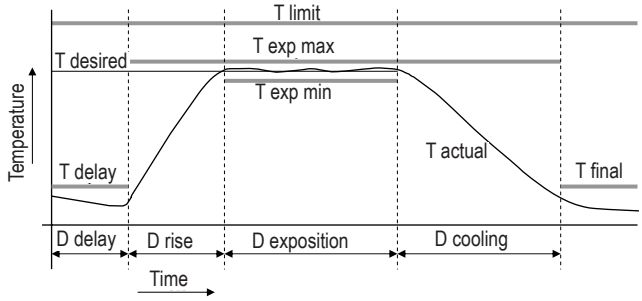
4.6 SAFETY SYSTEM FUNCTION AND SETTING

The safety system watches the exposure process controlled by the control circuit. It also performs the function of a safety thermostat and serves to protect the temperature box, its surroundings and the processed material against an inadmissible excess of the set temperature (it will e.g. prevent the damaging or destruction of material samples in case of the temperature regulator damage, or unintended setting of a higher temperature than that tolerated by the sample in the unit chamber). The safety system measures the temperature independently at the same place like the regulatory sensor and counts the time independently. If the set maximum temperature and period of time are exceeded, the safety relay switches off the heating, indicates the error state by its indicator flashing (red) and passes the information about the error to the controlling unit which then passes to the error regimen and indicates the error.
To cancel the error by the user, hold **X/W**. The controlling unit cancels the error state in the safety system circuit. The device passes to a break state in which parameters can be reset, or you can let the chamber cool. The device is put into operation by pressing **ON/OFF**.

4.6.1 CHANGE OF MAXIMUM AND MINIMUM VALUES

It is performed in the user settings U6, U7, U8 – see the safety system function diagram and description of the user settings. Minimum difference from the set regulated temperature should be ± 5 °C.

4.6.2 SUPERVISORY CIRCUIT DIAGRAM FUNCTION



T limiting – Maximum temperature in all phases, allowed by the manufacturer. Its value depends on the unit type.

T exp max – Maximum permissible temperatureaccording to the setting in the user mode U6.

T exp min – Minimum permitted temperature of the exposure phase according to the setting in the user mode U7.

T delay – maximum allowable temperature of the delayed switching phase. It is set itself at the cycle beginning to the sum of the actual temperature plus 30 °C.

T final - maximum permitted temperature after termination of cooling. It reaches the T exp max temperature or 55 °C, whichever is lower.

D delay - time of the delayed switching may vary from the set time for +/- 2 min.

D rise - max. rise time according to the setting in the user mode U8.

D exposition - exposition time may vary from the set time for +3 min / - 0 min.

D cooling - max. cooling time is set to 24 hours.

4.6.3 TEMPERATURE LIMITS OF THE UNITS

ECOCELL		280 °C
DUROCELL		150 °C
VENTICELL		280 °C
VENTICELL	300 °C	330 °C
INCUCELL		100 °C
INCUCELL	100 °C	130 °C

4.6.4 CHECKING THE FUNCTIONALITY OF THE SAFETY RELAY

Safe behaviour of a device with a safety system includes also the safety relay functionality checking within a given time interval.
The test is carried out in the onset phase, after its starting by the user in the user mode U12. The period between the tests should not exceed 3,000 hours and this time is counted in the exposure phase. Time passing is displayed by the device in form of a “do SAFETY TEST“ message. The user should start the safety test in the user mode U12 as soon as possible and he should start a short cycle with the recommended temperature of 60°C or higher by means of **ON/OFF**. The user can also cancel the given message by **X/W** button pressing and continue his common work. The message will then be displayed again after 100 hours to remind the safety test. If the test is in progress, the display shows, in addition to the real temperature of the regulatory and/or flexible sensor, the message “SAFETY TEST“. If the test passed through successfully, exposure phase follows according to the set parameters. If the test did not pass successfully, an error Err 24 is displayed.
If a message “SAFETY TEST – SET

TEMPERATURE UP“ is displayed at the beginning of the test, the temperature in the cabinet has not dropped to the required one. It must be let cooled (if the required temperatures exceed approx. 60 °C), or a higher required temperature would rather be set. Starting or cancelling the safety relay test and finding the number of hours left till the next compulsory testing can be displayed in the user mode U12. Enter the Test submenu by means of buttons ◄►and press the ON/OFF button. The test is either started or cancelled. The “Test“ message shows the actual setting – if the message is lighting, the test has been cancelled; if the message is flashing, the test is running
After the last successful test, the period till the following “do SAFETY TEST“ message is set to 3,000 hours.

4.6.5 CHECKING THE PROPER FUNCTION OF THE SAFETY SYSTEM

The checking shall be done after the required temperature is stabilized (10 minutes at least) in the exposure phase. In case of changes of permitted temperatures in U6 and U7, don’t forget to register each temperature change in the safety system by pressing **ON/OFF** before leaving the given user mode.

Control of the temperature excess:
- Activate the user service mode U6.
- Set the maximum permitted temperature to the value exceeding the required temperature by 5 °C. The safety circuit must not react.
- Set the maximum permitted temperature to a value lower by 5 °C than the required one. The protective circuit must react. The safety system indicator switches on and error Er13 is indicated. In INCUCELL devices, the safety system indicator will light up only.

Low temperature control:
- Activate the user service mode U7.
- Set the minimum permitted temperature to a value 5 °C below the required temperature. The safety circuit must not react.
- Set the minimum permitted temperature to a value higher by 5 °C than the required one. The protective circuit must react. The safety system indicator switches on and error Er12 is indicated. In INCUCELL devices, the safety system indicator will light up only.

CAUTION:
The safety system function differs according to the device type.

VENTICELL, ECOCELL and DUROCELL devices
If the maximum set permitted temperature in the chamber is exceeded, the safety system will switch off the heating elements and the safety system indicator lights up (the device does not heat although the heating indicator is lighting). Even if the temperature in the chamber drops below the set limit, the heating remains disconnected. To restart it, the button **X/W** must be held pressed. The device passes to the break state in which the parameters can be set or you can let the chamber cool. The device will be switched on by pressing **ON/OFF**.

Devices INCUCELL and INCUCELL with a ventilator
If the maximum set permitted temperature in the chamber is exceeded, the safety system will switch off the heating elements and the safety system indicator lights up (the device does not heat although the heating indicator is lighting). After the temperature in the chamber drops below the set limit, the heating is automatically switched on again. The safety system indicator will turn **OFF**.

4.7 LIST OF ERROR MESSAGES

Cancel the error message (by holding the button **X/W** pressed for the period of approximately 2 s) and then proceed according to the description. If you do not succeed in the error removal, contact the service centre.

Er 11 – Wrong temperature sensor of the safety system
Contact the service centre.

Er12 – The temperature did not reach the minimum lower temperature limit
Check the limit setting in the user mode U7. It should not exceed the planned required exposure temperature plus the reserve of small temperature fluctuations.
After the value was changed, check by means of a repeated entry in the mode U7 whether the set value was saved. If not, check whether your setting procedure is correct and corresponds to the instructions for use.

Er13 – The maximum temperature was exceeded
Check the limit setting in the user mode U6. It should not be lower than the planned required temperature plus the reserve of its overshoot or fluctuation.
After the value was changed, check by means of a repeated entry in mode U6 whether the set value was preserved. If not, check whether your

setting procedure is correct and corresponds to the instructions for use.

Er15 – The upper temperature limit was exceeded
Watch whether the device was not overheated e.g. due to the sterilized material inflammation.

Er17 – The maximum phase time was exceeded
If there is any error during the temperature rise, compare the rise duration with the setting in the user mode 8 and/or assess the reasons for the long rise duration, or increase the maximum controlled period in mode U8.

Er23 – The measured temperature of the control system differs from the safety system temperature
Check whether the error was not caused by strong temperature changes, e.g. by the door opening and air blowing.

Er24 - The safety relay did not pass the test
Check whether the device is closed properly and the air flap is closed. Then cancel the error message and carry out the test again.

Er 30 to Er 49 – Door blocking errors
See more in the chapter Two-Door Pass-through Model with Automatic Door Blocking

Er 50 and Er 51 – Wrong regulatory sensor
Contact the service centre.

Er 52 and Er 53 – Errors of flexible sensors
Check the integrity of the flexible sensor.

SAFETY TEST – SET TEMPERATURE UP
Described in the chapter Safety Relay Test

Other error messages
Disconnect the device from the power supply and then reconnect it.
If the error repeats, contact the service centre.

4.7.1 NOT DISPLAYED ERRORS

Red indicator with the safety thermostat symbol is lighting and the sound alarm is activated (intermittent tone). The safety system found that the set temperature had been exceeded. The error is not indicated; information on the display is normal. Applies only to INCUCELL devices.

1. Check the setting between U6 and U7.
2. Record the cycle. Find the moment of the temperature overshoot (undershoot) in the record. Remove the cause (opened flap, power supply failure).

Red indicator with the safety thermostat symbol is lighting; the control unit does not react. The safety system switched off the safety.
Disconnect the device from the power supply and reconnect relay; the heating elements have no current supply. Disconnect the device from the power supply and reconnect it.

The device does not show any information (the display is not lighting).
Check whether the device is connected to the electric power mains. If yes, try to disconnect and reconnect it.

The device does not react to any button.
Disconnect the device from the power supply and reconnect it.

The printer does not print, or prints some nonsense.
Check whether the device is switched to data sending to the printer (U3); check the print period (U1). Check whether the printer is connected to power supply and switched to the data transfer rate 9600 Bd.

The required temperature is overshot a lot repeatedly during the exposure cycle and is reached only after some time.
Check whether the door and the device flap are closed properly.

The required temperature is exceeded a lot during the exposure cycle; the device stays overheated.
Switch the device off.

The required temperature is reached during the exposure cycle only after a too long time.
Check whether the door and the device flap are closed properly. Check whether the mains voltage reaches the values required by the Instructions for Use, chapter Mains Connection.

The temperature never reaches the required value during the exposure cycle.
Check whether the mains voltage reaches the values required by the Instructions for Use, chapter Mains Connection.

4.8 ADJUSTING AND FUNCTION OF THE AIR FLAP

Function description:
The air flap is intended for ventilating the chamber space of the unit, for example when drying wet materials.

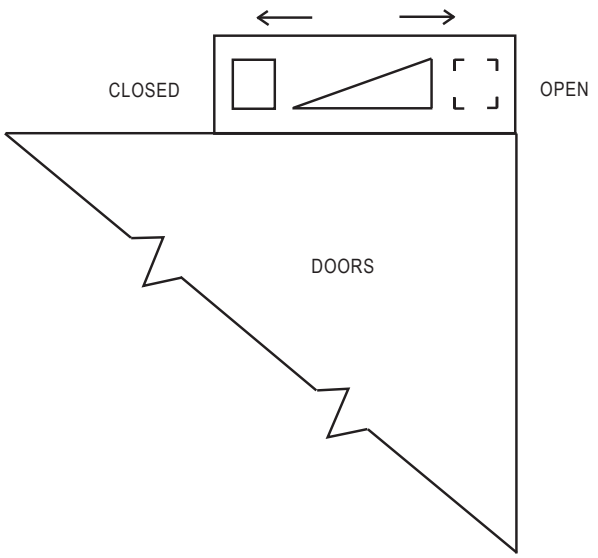
Air flap adjustment:
Adjust the air flap when installing the unit. Put the control lever of the air flap to the closed position and adjust the air flap in the exhaust hole at the rear wall of the unit so that it closes

the entire ventilating hole. Hold the shaft of the flap with pliers to prevent turning over.

Note:
With VENTICELL and INCUCELL WITH FAN it is necessary, in addition to the exhaust flap, to adjust the sucking air flap as well.

The air flap control:
If you put wet materials into the unit to dry it before tempering, put the air flap in the position open so that the humidity could freely leave the chamber. After finishing the drying put the air flap in the position closed.

Note:
Operating the unit with an open air-flap increases the power consumption and the maximum temperatures may not be reached.



4.9 EXCHANGING THE DOOR SEALING AND ADJUSTING THE DOOR

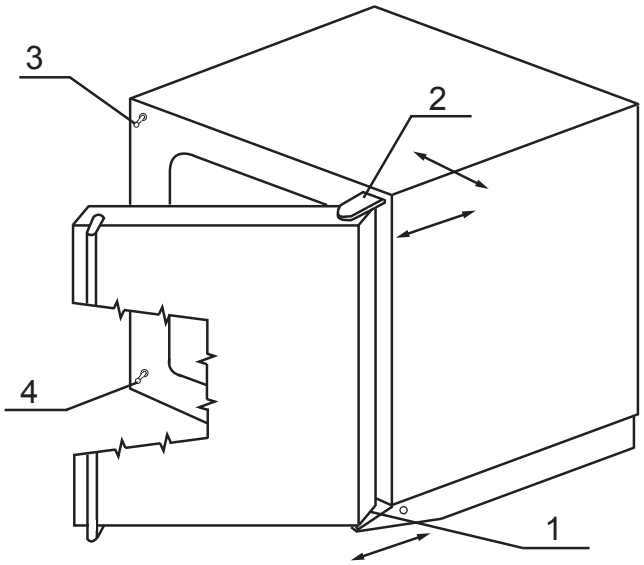
Remove the sealing completely, start in the middle lower part.
Fix the new sealing on the edge of the chamber, start in the middle lower part. Squeeze the sealing between the chamber and the outer cover.

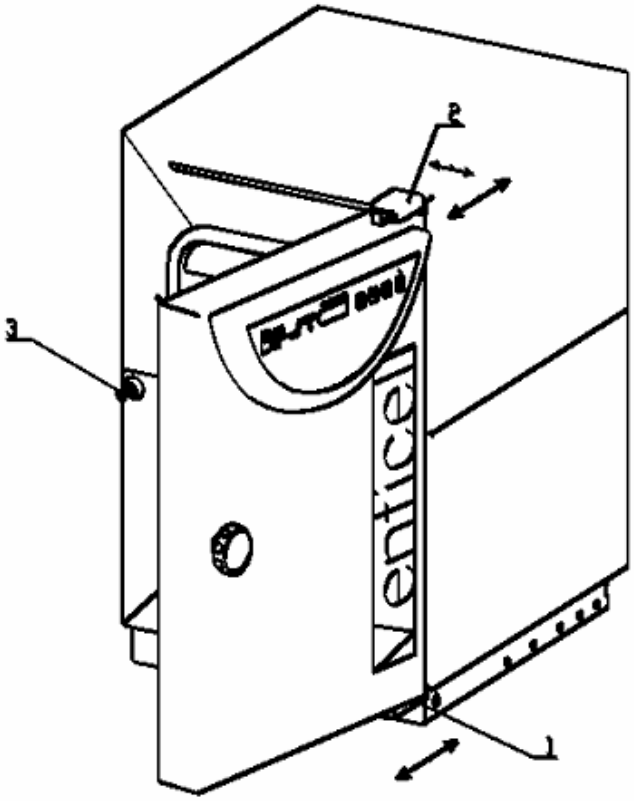
The door is adjustable at four points:
– in the left upper part by means of bolts and nuts – sketch position 3
– in the left lower part by means of bolts and nuts – sketch position 4
– in the right upper part by means of internal hexagon screw – sketch position 2
– in the right lower part after loosening the screw with internal hexagon adjusting in front-back direction of the door hinge is possible – sketch position 1.

In the apparatus of the volume of 22 there is only one adjustable screw in the side of the door locking device.

Adjust the door so that when closed the rubber sealing of the chamber would fit to the sheet of the floating door along the whole perimeter. To check it up place a sheet of paper between the sealing and the metal sheet of the floating door before it is closed, it is possible to take the paper out against a small resistance.

VENTICELL 22





5 PARAMETERS OF THE UNIT

ECOCELL**(EC)**, DUROCELL**(DC)**, VENTICELL(VC)*,*INCUCELL/INCUCELL V **(IC/ICV)**								
Technical data Interior of stainless steel material DIN No 1.4301	volume **EC, VC, IC / ICV**		cca liters	22	55	111	222	
	DC			22	55	111	222	
	width		mm	240	400	540	540	
	depth **EC, DC, VC**		mm	320	390	390	540	
	IC / ICV				370	370	520	
	height		mm	295	350	530	760	
Tray	bearing plate, width x depth		mm	185x265	380x335	520x335	520x485	
	racks		No	4	4	7	10	
	distance of the wiring		mm	60	70	70	70	
	standard equipment		pcs. included	2	2	2	2	
Maximal permissible load to the trays *)	per tray		kg/tray	10	20	20	30	
	total load		kg/unit	25	50	50	70	
Door			psc.	1	1	1	1	
External dimensions (including door and handle)	width		mm	406	620	760	760	
	depth		mm	580	640	640	790	
	height (incl.Feet F and Rolls R)		mm	604F	680F	860F	1090F	
	∅ of the air branch outer / inner		mm	52/49	52/49	52/49	52/49	
Package dimensions (three layers carton)	width		mm	465	700	830	830	
	depth		mm	665	730	730	860	
	height (incl. palette)		mm	655	880	1050	1280	
Weight	nett		kg	31	55	75	100	
	brutt		kg	36	66	87	116	
Elektricity	power W input *[stand by]*			5	5	5	5	
- mains 50/60 Hz	max. power input kW		**VC**	0,96	1,3	1,9	1,9	
			DC	0,92	1,2	1,8	1,8	
			IC / ICV	0,24/0,96	0,3 / 0,7	0,3 / 0,7	0,5 / 0,7	
			EC	0,92	1,2	1,8	1,8	
	voltage V ******)**		**EC, DC, VC**	230	230	230	230	
			IC / ICV	230	230	230	230	
	current A		**VC**	4,2	5,6	8,3	8,3	
			DC	4,0	5,2	8,3	7,8	
			IC/ICV	1,1 / 4,2	1,3 / 3	1,3 / 3	2 / 3	
			EC	4,0	5,2	7,8	7,8	
	voltage V ******)**		**EC, DC, VC**	115	115	115	115	
			IC / ICV	115	115	115	115	
Temperature data	od 10 °C above ambient temp. to °C		**VC **)**	250 /300	250 / 300	250 / 300	250 / 300	
Working temperature (beginning of the regulation)	od 5/10 °C above ambient temp. to °C		**IC / ICV ***)**	70 / 99,9	70 / 99,9	70 / 99,9	70 / 99,9	
	od 5 °C above ambient temp. to °C		**EC**	250	250	250	250	
			DC	125	125	125	125	
The **temperature deviations*****)** according to DIN 12 880, Section 2, from the average value of the working temperature in the space of the chamber, when the ventilation flap and doors are closed	**VC** (>50 °C)	space deviation	cca (±) % Average value	1,1	1	1	1	
		time deviation	In the space of the chamber cca (±) °C	0,3	0,4	0,4	0,4	
	IC/ICV at 37 °C	space deviation	cca (±) °C	1,1/0,4	<0,5/≤0,3	<0,5/≤0,3	<1/≤0,3	
		time deviation	do (±) °C	0,4/0,1	≤0,2	≤0,2	≤0,2	
	EC	space deviation	cca (±) % Average value	2,7	2	2	2	
		time deviation	In the space of the chamber cca (±) °C	1,0	≤0,3	≤0,8	≤0,8	
	DC at 100°C	space deviation	cca (±) % Average value	3,1	2	2	2	
		time deviation	In the space of the chamber cca (±) °C	0,4	≤0,3	≤0,8	≤0,8	
Temperature rise time with closed air flap and at the voltage of 230 V ± OV	250 °C	**VC**	cca min.	28	49	53	70	
		EC		54	59	60	99	
	100 °C	**DC**		34	41	48	50	
	37 °C	**IC/ICV**		70/8	49 / 41	57 / 51	79 / 66	
Heat emision at	250 °C	**EC, VC**	cca W	300 / 420	590	760	990	
	100 °C	**DC**		140	380	490	630	
	37°C	**IC/ICV**		20/70	30	45	45	
Air exchange rate at	150 °C	**VC**	cca/h	45	45	49	24	
		EC		6	8	12	5	
	100 °C	**DC**		6	8	12	5	
	37 °C	**IC/ICV**		4 / 45	5 / 45	5 / 49	5 / 24	

Note: All technical data are related to 22 °C ambient temperature and ± 10 % voltage swing (if not specified otherwise).
For other parameters see section **5.1 – Electric connections**

*) Approx. 50 % of the tray area can be filled in a way a uniform air circulation is enabled inside the chamber.
**) Standard type is up to 250 °C, optional type is up to 300 °C
***) Standard type is up to 70 °C, optional type is up to 99,9 °C
******)** Supply voltage is indicated on the type lable of the unit
*****) Temperature deviations were measured in accordance with DIN 12 880

	222/2	404 -	404/2	707 -	707/2 -
	540	540	540	940	940
	540	540 520	540	540 520	540 -
	760	1410	1410	1410	1410
	520x485 10 70 2	520x485 19 70 2	520x485 19 70 2	920x485 19 70 2	920x485 19 70 2
	30 70	30 100	30 100	50 130	50 130
	2	1	2	2	4
	760 790 1110F 52/49	760 790 1910R 52/49	760 790 1910R 52/49	1160 790 1910R 52/49	1160 790 1910R 52/49
	830 860 1280	830 860 2070	830 860 2070	1230 860 2080	1230 860 2080
	105 121	150 175	150 185	215 240	230 255
	5	5	5	5	5
	3,7	3,7 - 0,9 / 1,3 3,6	5,5	4,9 - 0,9 / 1,3 4,5	7,2
	400/3NPE	400/3NPE 230	400/3NPE	400/3NPE 230	400/3NPE -
	5,2	5,2 - 3,9 / 5,6 7,8	7,9	7,8 - 3,9 / 5,6 7,8	10,4
	115/3PE	115/3PE 115	115/3PE	115/3PE 230	115/3PE -
	250 / 300	250 / 300 70 / 99,9 250 -	250 / 300	250 / 300 70 / 99,9 50 -	250 / 300 - - -
	1 0,4	1,8 0,9	1,5 0,4	2,5 0,4	2,5 0,74
		<1/≤0,8 ≤0,2		<1,5/≤1,5 ≤0,2	- -
		2,5 ≤1		3,5 ≤1	- -
		- -		- -	- -
	33	58 85	43	64 95	50 -
		-		-	-
		41 / 38		59 / 51	-
	990	1940	1940	2550	2550
		-		-	-
		65		85	-
	24	18 4	18	12 3	12 -
		-		-	-
		5 / 18		5 / 12	-

5.1 ELECTRIC CONNECTIONS

Basic data for connection:		
Mains connection:	**230V/50(60)Hz** **400V/50(60)Hz, 3NPE;** 115V/50(60)Hz; 115V/50(60)Hz, 3PE	
(standard types are marked with bold face)		
Mains voltage fluctuation	±10 %	
Protection against dangerous contact - class:		I
External circuits insulation		
double insulation		
The mains supply for the three-phase units must be ensured by a switch or circuit breaker which serves for disconnection. Such a switch or circuit breaker must be: – A component part of the building installation; – Placed in an immediate vicinity of the unit and accessible easily by the operator; – Labelled as the device disconnecting element; – Rated correctly and must comply with the requirements of the standards IEC 60947-1 and IEC 60947-3.		
Protection according to EN 60529	IP 20	
Overvoltage category according to (IEC 664 – EN 61010)		
II in case of pollution degree 2		
Used fuses:	according to corresponding diagrams in the Service instructions	
Ambient conditions:		
– ambient temperature: +5 °C to +40 °C – max.relative humidity: 80% at the temperature up to 31 °C – maximal altitude: 3000 m		

6 CLEANING AND DECONTAMINATION OF THE UNIT

Clean the unit while cold and when the power supply cord is disconnected from the mains. Clean the interior walls of the chamber as well as the exterior of the unit with water and detergent, or possibly with suitable chemicals. Abrasive cleaning agents may scratch the metal sheets.
If you want to clean the outer jacket of the chamber, take the inner walls of the chamber out as follows:
Shift the upper wall of the chamber out of the unit, take out the sidewalls, the bottom and the rear wall. Put the unit together in a reverse sequence after it has been cleaned, be careful and slide in the bottom and the sidewalls as far as behind the four projections in the front part of

the chamber.
In case some contaminated material has escaped into the chamber the user is responsible for proper decontamination of all contaminated surfaces with suitable and approved disinfecting agent.

Cases of volume 22 – EC, DC, IC:
Unbolt the screws in the back part of the ceiling and of the bottom of the chamber. By pulling out the walls in the direction to the door you release the walls and remove them from the apparatus. When you perform the assembly, you insert the front bend of the bottom under the holder of the heating radiator and lock the bottom with a screw. When you perform the assembly of the ceiling you put the back part on the sensor holder, put the front bend of the ceiling on the ceiling holder and lock with a screw.
(When you perform the assembly/disassembly of VC, ICV, use the identical procedure, after releasing the screw of the bottom, you tilt out the back wall.)

Before using some other cleaning or decontamination method different from our recommendation, it is suitable for the user to be informed by with the producer whether the intended method cannot cause damage to the device.

7 MAINTENANCE

No special maintenance is necessary. In case of any troubles, please, call the service.

Inspection of electric components:
The cases of thermal technique are destined for a basic/normal environment, the manufacturer recommends the inspection period of 1 year, if not determined by local regulations otherwise.

Inspection operations:
Inspection of the electrical installation, particularly of the electric power supply, of connecting terminals and a protective terminal. Check the integrity of the conductor insulation (for example, due to wearing through, burning etc.) and the firm connection in the terminals. The resistance of the protective connection is < 0.1 Ohm, the resistance of the supply is not included.

If the case is placed in a different environment, the inspection must be performed in accordance with the local standards.
The service inspection is the matter of agreement between the client and the service organization.

8 WARRANTY AND SERVICE

Warranty is provided by MMM for satisfactory delivery and functioning of the oven/incubator within the contractual regulations and during the warranty period. Specified sales and delivery conditions shall apply.
MMM does not reimburse any deficiencies or damages due to normal wear and tear, chemical or physical attack, natural disaster, excessive overload, incorrect handling or improper use, particularly in case of non-observance of the enclosed Operating Instructions, incorrect installation, as well as in the case of damage to the system caused by foreign objects or inadequate maintenance and repairs. By sending the unit back to the producer (to repair or exchange at claim), the original package shall be used. Otherwise you take over the responsibility in the case of damage during the transport and the producer will reclaim compensation for possible additional repairs.

For a correct connection to the mains observe the technical data and Operating Instructions.

Important:
MMM (the producer) warrants the safety and technical qualities of the oven/incubator only in case the repairs and adjustments are done by the producer or by an organization authorized by the producer and the components are replaced with parts approved by the producer and of the MMM standard.
After a repair has been done, the company recommends the user to demand a certificate from the repairer describing the kind and extent of the repairs, describing the eventual change of nominal data or extent of the work, containing the date of the repair, name of the company and a signature.

9 TRANSPORT AND STORAGE

A competent person will prepare the unit for transport. The unit shall be transported and stored in its original package. If you send the device back (for repair or change in case of claim), use the original package. Otherwise you take over the responsibility for possible damage during the transport and the producer will reclaim compensation for possible additional repairs. Device can be stored in the ambient temperatures from 0 °C to 40 °C.

10 THE WAY OF LIQUIDATION OF PACKAGE AND DISCARDED UNIT

Palette – Disposal at an incineration plant
Cardboard – Recyclable waste
Unit which was put out of operation:

For the European Union member states:
A product which the user stops to use and which becomes useless for the user and which is labelled with a label

cannot be disposed of within the municipal waste. It is subject to a scheme corresponding to the national regulations relating liquidation of electric and electronic devices, complying with WEEE (Waste Electric and Electronic Equipment Directive) as amended.
To liquidate the electric and electronic devices correctly, ask your seller or supplier for detailed information.

For other than European Union countries:
The above given symbol applies only to the European Union member countries.
To liquidate the electric and electronic devices correctly, ask your authorities or the device seller for detailed information.

11 OPTIONAL EQUIPMENT

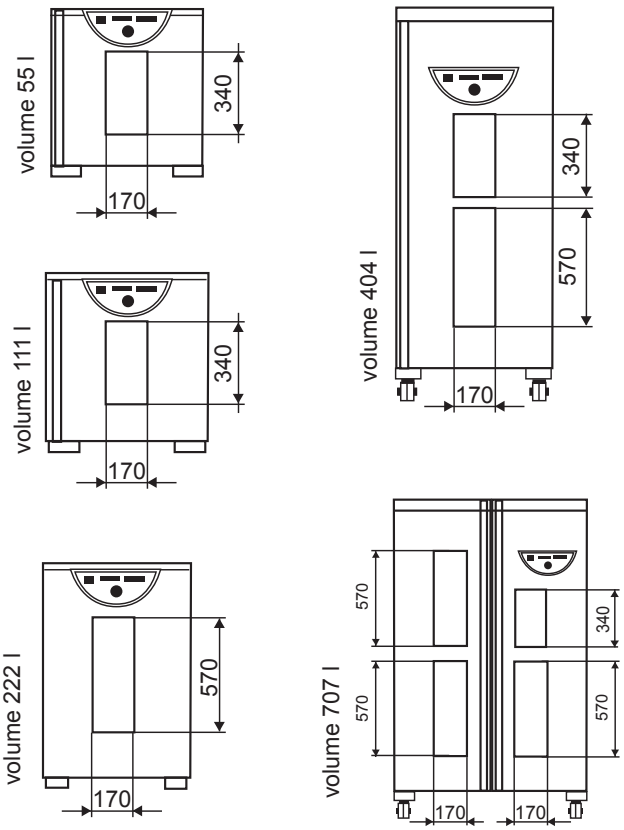
11.1 DOOR WITH WINDOW AND INNER LIGHTING (EXCEPT IC, ICV FOR ALL THE TYPES OF THE VOLUME OF 22)

The door is provided with three-layer thermally resistant windows; layout and dimensions are shown in the panorama picture at the next page.

Caution!
During operation of the cabinet do not touch the glass surface. This surface cannot be heat-insulated like the metal sheet door. Therefore the temperature of the glass surface is higher than that of other surfaces and there is a danger of burns. The inner space is illuminated with heat resistant bulbs – their switch is located on the door.

For types IC, ICV the door with window is not available.
The surface of the door with windows causes higher thermal losses, which increases spatial temperature deviations in the chamber (compared with common door without windows).

Door with glass windows (dimensions in mm)



11.2 ACCESS PORTS OF DIAMETER 25, 50, 100 MM

The access ports are normally located approx. in the middle of the side (right or left) wall of the chamber. The exact position depends on the position of the heating elements. The access ports are metallic, closed with a special plastic plug from the outer side, which enables passing through of wires etc. from the outer space to the chamber.

Recommendation: The used unit should be provided with an access port with corresponding dimensions, if user wishes to measure temperature inside the chamber by means of sensors, connected with an independent measuring device by means of wires; the user shall run the wires through the access port.

Cases of the volume of 22 are equipped only with bushings 25 and 50.

11.3 LOCKABLE DOOR

The lock is located on the front door surface.

11.4 LEFT DOOR VERSION

This is a symmetric mirror version, the door can be opened to the other side. Except for 22 L volume.

11.5 FLEXIBLE PT 100 SENSOR

The other additional sensor, which is free movable inside the chamber, it is possible, with its help, to measure the temperature inside the chamber or inside the material. The temperature is displayed (according to the setting in the user mode) in the regular intervals on the display to the exclusion of displaying the regulation sensor temperature and it is distinguished from the regulation sensor by a vertical line on the left side of the display. Also the start of exposition is enabled (according to the setting in the service mode) from this sensor by reaching the same temperature as the requested temperature – 0,25 °C. (Together with the original prerequisite – reaching the temperature by the regulating sensor with the requested temperature – 0,05 °C).

11.6 COMMUNICATION SW WARMCOMM FOR WINDOWS PC

The program WarmComm is designed to record the temperature course in the ovens/incubators. Data obtained during the regulation are displayed in a diagram (with time on the horizontal axis and measured data on the vertical axis).

The program enables to follow the regulation on-line, to store the regulation course to a file on a disc and to view the already stored files, to send e-mails in case of not receiving data from the cabinet and to send reports of excessive values being reached within the specified time interval.

The Operating Instructions for this program is delivered together with the installation program,

minimal requirements on PC hardware for the program WarmComm are:

- Operation system Windows 95 and higher, Windows NT 4 and higher
- CPU min. 200 MHz
- RAM min. 32 MB (for shorter measurement of one unit)
- one-hour-record of data requires free space of about 150 KB on the hard disc
- maximal length of the connecting cable is 15 m (specified by RS 232 standard)
- free serial port.

11.7 HEPA FILTER

Available only in VENTICELL and INCUCELL with a ventilator.
HEPA filter is either in a normal version or in the overpressure version. The overpressure HEPA filter is equipped with the external fan, which forces the surrounding air through the HEPA filter into the chamber and thus it ensures the overpressure in the chamber as opposed to the surrounding environment by ca. 20 Pa. In case of operation of the overpressure HEPA filter there may happen to deterioration of parameters of the thermal homogeneity.

11.7.1 INSTALLATION OF HEPA FILTER, FILTER DIMENSIONS, FUNCTION AND FILTRATION CHARACTERISTIC OF THE AIR FILTER

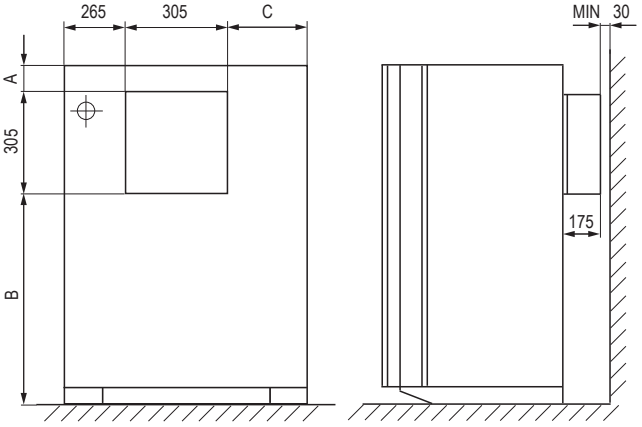
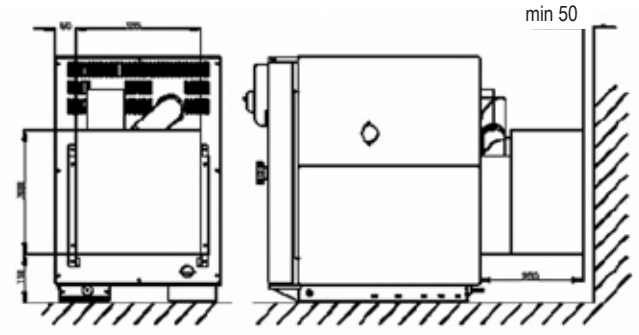


Fig. 3 (dimensions are in mm)

Type → Dimensions↓	55	111	222	404	707
A (mm)	85	85	85	135	135
B (mm)	290	470	710	1470	1470
C (mm)	50	190	190	190	590
Height A+B+305(mm)	680	860	1100	1910	1910

Note: The minimum distance from the filter to the wall is 50 mm.

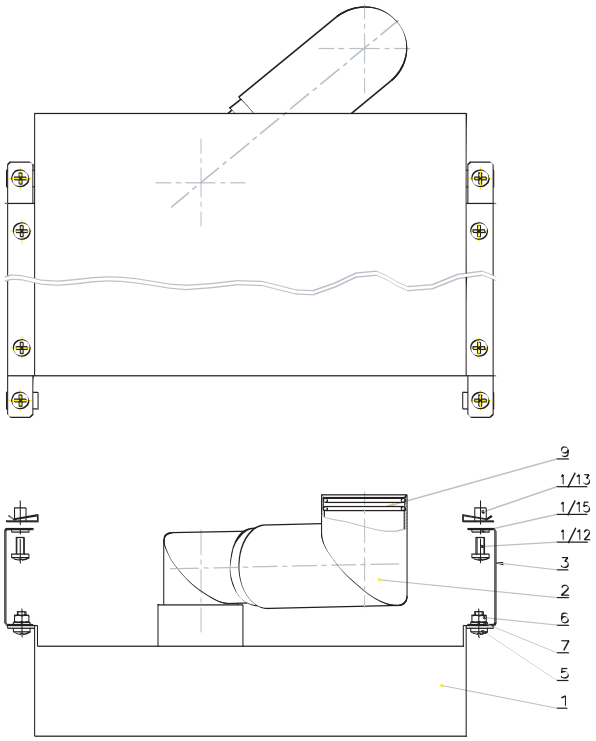
VENTICELL 22



Filter class is S (according to DIN 24 184), EU 12 (according to EUROVENT), or H13 (according to EN 1822).

HEPA filter installation
Insert nuts for HEPA filter attachment in four rectangular holes in the back cover of the device. Put the metal ring and two rubber rings on the suction flue. Slip the HEPA filter pipe on the flue. Fix the slipped HEPA filter by four screws. If the HEPA filter is provided by a ventilator, insert its plug in the power supply socket.

HEPA filter assembly to the apparatus of size 22:
- insert the supplied nuts into the holes in the rear wall (1/13)
- one metal ring and two rubber rings are put on the suction flue.
- put the air conduit on the suction chimney (2)
- put 2 pcs of O-rings on the air conduct, put the unit of HEPA filter on the air conduct and position it into a proper position
- fix it with a screw (1/12) and washer (1/15) to the rear wall
- connect the fan connector into the socket in the rear wall (only in case of the overpressure HEPA filter).



11.8 TWO-DOOR PASSING THROUGH VERSION

It makes possible to load the material in one space and its unload after thermal treatment in another space.

Through version of VENTICELL is equipped with super standard elements as follows:
- as an option - mechanical lock of the locking device of both doors,
- as a standard - micro switches of the locking devices of both doors – a display on the panels of both doors reports about the opening of whichever doors during the exposure with the message “open”.
- as a standard - LED chart on the panels of both doors informs about the active phase of the program.

This equipment helps to ensure a safe course of the sterilization.

The following non-standard states could occur in case of omission of safety of operation rules:

a) if you (unlock and) open the door on the unloading side during the exposure, the message “open” is displayed on the display – it means that you have caused the risk of contamination of the “clean” working place; after closing the door, the exposition is repeated,

b) if you (unlock and) open the door on the on the “loading” side during the exposition, the message “open” is displayed on the display – you have caused the risk of material contamination; after closing the door, the exposition is repeated.

11.8.1 VENTICELL 222/2 - INSTALLATION DATA

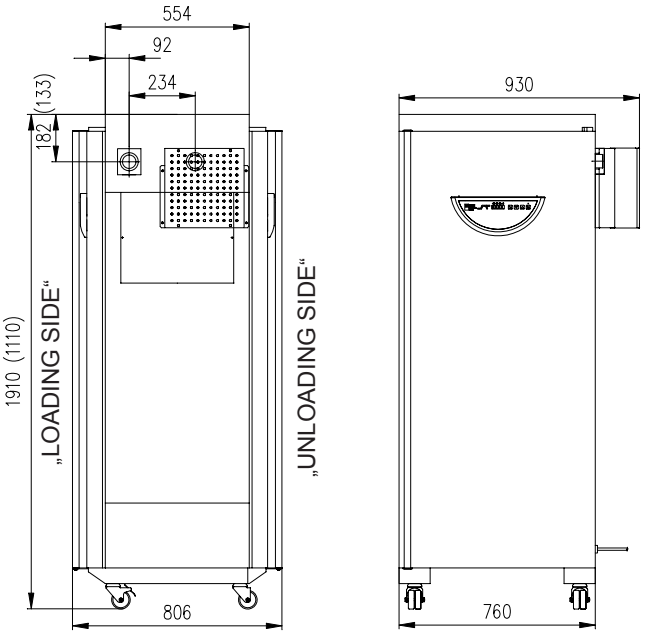
1) Input power 3700 W
2) Electrical installation – connection of the unit:
   – plug VDE 0623, DIN 4962/63in, CEE 17, IEC 309, 3P + N + PE, 16A/380-415 VAC
   – supply to the socket from the switchboard 5x2.5 mm^2 Cu, protection by circuit breaker 16 A – place near the unit
   – cable length 3 m
3) Heat emission at 200 °C: 950 W
4) Weight: 105 kg

Basic dimensional data are the same as In case of the following VC 404 / 2D – with the exception of the height – see the table of parameters. The case can be placed on the floor or on an individual customer´s support.

11.8.2 VENTICELL 404/2 - INSTALLATION DATA

1) Input power 5500 W
2) Electrical installation – connection of the unit:
   – plug VDE 0623, DIN 4962/63in, CEE 17, IEC 309, 3P + N + PE, 16A/380-415 VAC
   – supply to the socket from the switchboard 5x2.5 mm^2 Cu, protection by circuit breaker 16 A – place near the unit
   – cable length 3 m
3) Heat emission at 200 °C: 1900 W
4) Weight: 160 kg

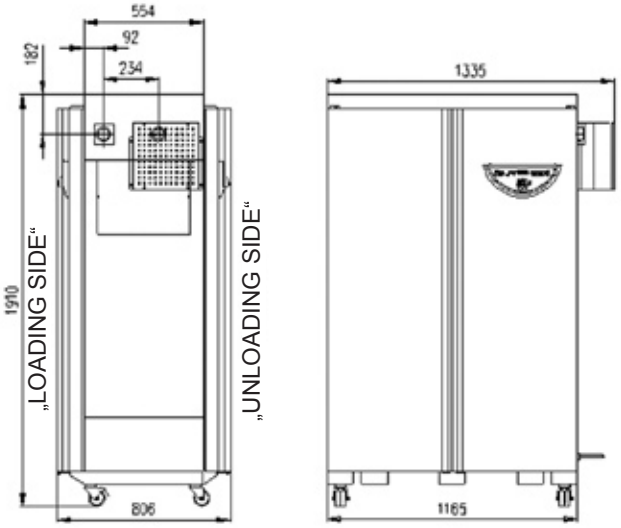
THE MAIN DIMENSIONS ARE FOR THE TWO-DOOR VENTICELL 404; THE DIFFERENT DATA IN BRACKETS APPLY TO THE TWO-DOOR VENTICELL 222

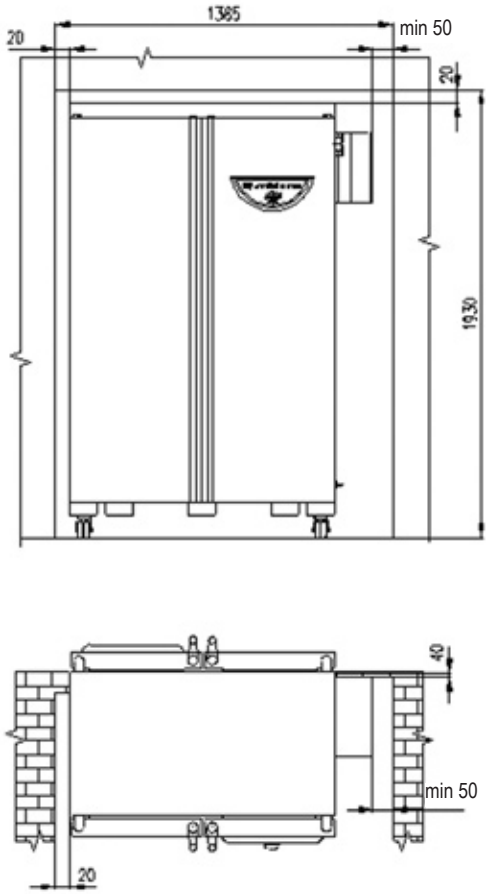


11.8.3 VENTICELL 707/2 - INSTALLATION DATA

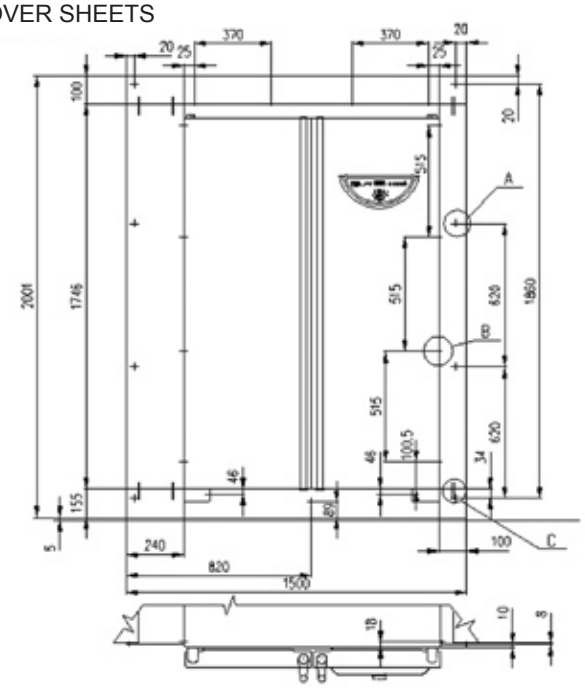
1) Input power 7200 W
2) Electrical installation – connection of the unit:
   – plug VDE 0623, DIN 4962/63in, CEE 17, IEC 309, 3P + N + PE, 16A/380-415 VAC
   – supply to the socket from the switchboard 5x2.5 mm^2 Cu, protection by circuit breaker 16 A – place near the unit
   – cable length 3 m
3) Heat emission at 200 °C: 2550 W
4) Weight: 230 kg

DIMENSIONS OF VENTICELL 707 - PASSING THROUGH
(proportions in mm)

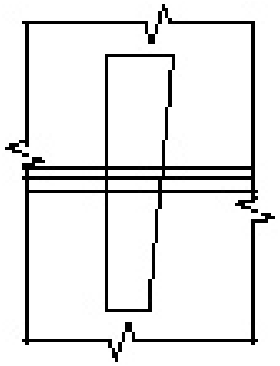




COVER SHEETS



Detail A
8x (6x) (5x) screw ∅ 4x40 with countersink head with cross groove for fixing to a wall insert dowels with a size of 8 to the wall.
Detail B
15x (19x) (15x) screw for a metal sheet ∅ 3,9x9 with a half-round head and a cross groove necessary to screw with cover sheets with holes of ∅ 3.2
Detail C
By beating the pins to the rectangular holes of the sheet borders secure them together.



11.8.4 DOUBLE-DOOR THROUGH VERSION WITH AUTOMATIC DOOR BLOCKING

An electrically controlled mechanism is used in this version, which prevents the simultaneous opening of both doors. The mechanism stays in its position also when the device is switched off. The initial state, when is blocked the door on the input side, could be initiated at the moment of the end of exposition phase by the output door switch, or by the same switch in the break phase – after the failure. This state is determined for the charge inserting and it lasts for the whole exposition time. At the end of the exposure phase, the device passes to the state of unblocked door on the unloading side on condition that the exposure passed through successfully (the “end” sign is displayed).
But, this is not valid, if the sterilisation has run with the opened valve or door and the inscription “open” is displayed on the display. In this case, it is necessary to start the exposition again by the **ON/OFF** button.
In the “exposition end” phase, the door could be opened only on the output side. If the valve is opened during this phase, the operating personal is warned by an acoustic alarm and the inscription “open” is displayed. After the material is taken out and the door is closed, the operator at the unloading side presses the button on the control panel. At this moment, the door is blocke

on the output side and unblocked on the input side. Simultaneously with this change, the VENTICELL converts from the End phase into the StandBy phase. (The re-blocking could be also made after switching out the device by the **ON/OFF** button in the StandBy phase.)

Subsequent cycle can be then started by means of **ON/OFF** button.
Positions of blocking servomechanisms are tested continuously and error is displayed if the position is not correct.

WARNING!
It is not allowed the force opening of the blocked door. The blocking system could be mechanically damaged.

In case of emergency door opening necessity (e.g. mains breakdown), follow the instructions in the Emergency door-opening annex.

11.8.5 DOOR BLOCKING ERRORS

Er30 to Er37 Blocking or unblocking failed (odd numbers are for the unloading door, even numbers for the loading door)
Prepare the device to passage to the initial state by both door closing (remove mechanical obstacles, if any). After you close the door, press the button “Block the unloading side”. Start a new cycle by pressing the **ON/OFF** button.

Er39 The loading door is opened at the end of exposure
Prepare the device to transfer to the initial state. Check whether the loading door is not really opened. Close all the doors (remove mechanical obstacles, if any). After you close the door, press the button “Block the unloading side”. Start a new cycle by pressing the **ON/OFF** button.

Er40 to Er47 Incorrect position of the blocking mechanism (odd numbers are for the unloading door, even numbers for the loading door)
See Er30 to Er37.

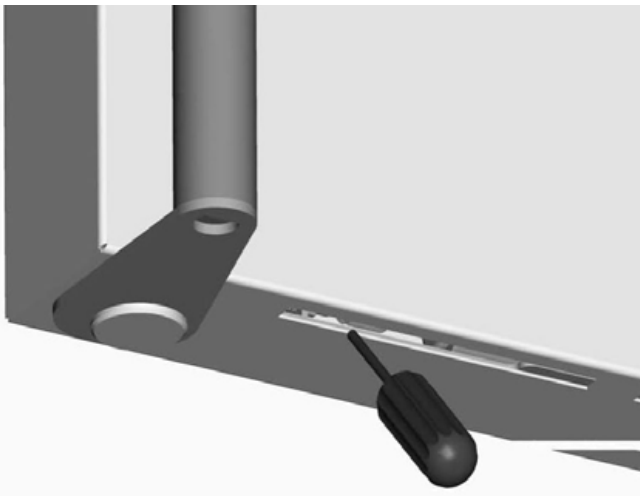
11.9 ANTI-DRY MODIFICATION FOR CULTIVATING MEDIUMS AND TISSUE CULTURES

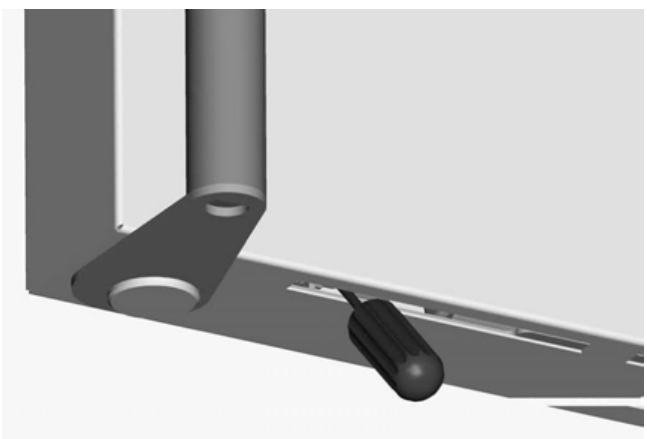
This mechanical and program adaptation reduces considerably the drying-up of cultivating mediums and tissue cultures when using INCUCELL with a fan. Basically there is increased the chamber tightness, it is not possible to open the valves of air holes, thereis a humidity tray added, the ventilator turns off when the door is opened.

12 EMERGENCY DOOR OPENING

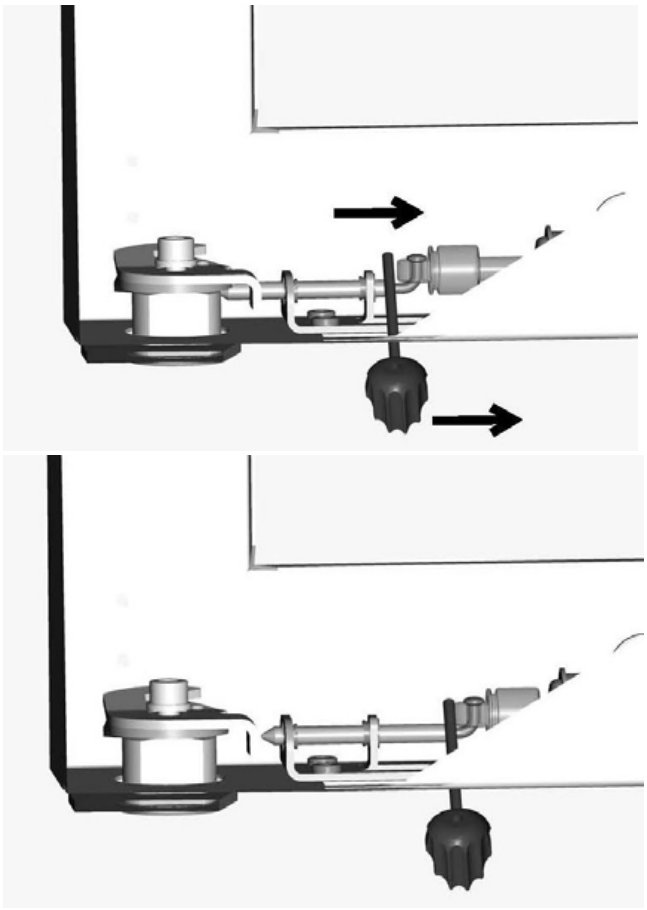
(use it only in case of failure or power failure)

1. To insert a thin object (screwdriver, rod etc.) through the air hole of the door (in the bottom door surface) under the angle of ca 45 ° in the distance of ca 90 mm from the door edge.





2. To push in the arrow direction and thus to push away the blocking rod (10 -15 mm is enough). In case of standard model – of the right door in the arrow direction, in case of the non-standard model – of the left door – it would be reversely (always in the direction from handle to the door hinges).



3. To open the door by means of the door handle If it would be not possible to move away the blocking rod of the door – see above, then it would be necessary to unscrew the whole blocking mechanism underneath (4x M4 screws) and to push it away as a whole. After such intervention, the service work is necessary (backward blocking mechanism assembly).

... excellence in medical and laboratory engineering

Manufactured in the EU

MMM Medcenter Einrichtungen GmbH
Semmelweisstrasse 6
D-82152 Planegg
Germany

T. +49 89 89 92 26 20
F. +49 89 89 92 26 30
e-mail: medcenter@mmmgroup.com