Instructions for use

Laboratory drying ovens and incubators
line Comfort

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

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 Instructions for use carefully so that you could use all advantages of this unit and obtain complete knowledge for its optimal use.

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APPENDICES:

EC - DECLARATION OF CONFORMITY

1 GENERAL

The ovens with electric heating are designed for laboratories, generally for a warming of various materials by means of hot air at adjustable temperature and optional time. The air flap enables drying of wet material.

A modern microprocessor (Fuzzy - logic) with a digital display and PT 100 controls the temperature. Thus exact temperature accuracy and process safety are guaranteed. The ovens are designed according to EN standards. They are manufactured of high grade materials with the latest technology. Each oven is subjected to a strict final test leaving the plant.

1.1 PURPOSE AND USE

ECOCELL (EC) serves for warming by hot air with natural circulation. The ovens are designed for temperatures up to 250 °C. They work quietly with lower power consumption compared with VC units.

DUROCELL (DC) serves for warming by hot air with natural circulation (usefull at procedures as acid hydrolysis, extraction by nonflammable solvents, thermolysis). The ovens are designed for temperatures up to 125 °C. Inner surfaces of the chamber are covered with an EPOLON layer which protects the chamber from corrosion caused by liquid or gaseous acids in case they leak accidentally from closed vessels. For other important information see the chapter Before Putting into Operation.

VENTICELL (VC) serves for warming of materials by means of hot air with forced-air circulation by a fan. The ovens are designed for temperatures up to 250 °C, another variant (+) up to 300 °C.

INCUCELL (IC, ICV) serves as an incubator or for cell cultivation in a microbiological laboratory (see chapter **11 - Optional equipment**, article Adaptation against drying-up of cultivating mediums and tissue cultures). The ovens are designed for temperatures up to 70 °C. A quiet operation is characteristic for the variant IC (without a ventilator), more accurate temperature regulation with small deviations is characteristic for the variant ICV (with ventilator).

2 IMPORTANT INSTRUCTIONS

2.1 UNPACKING, CHECKING AND TRANSPORT

Please check after unpacking the oven and its accessories are complete and not damaged. A possible damage is to be reported to the forwarding agent. During the manipulation – in case of lifting the cabinet etc. – the cabinet cannot be hold by the rail or door. The cabinets of volumes 404 and 707 should be lifted by means of delivered hooks, the rolls are designed for local moving, not for longer transport. A standard delivery includes the heating cabinet, 2 sieves, 3 chip cards for programme saving, and 1 special operations (SO) card.

2.2 PRE - INSTALLATION

- **Please read carefully the Instructions for use before working with the oven!**

- Ovens are designed to be operated indoor within ambient temperatures from 5 °C to 40 °C and at maximum relative humidity 80 %.

- Install the unit by plugging the power cord to the mains. However, make sure at first that the mains and the electric connection parameters correspond to the values specified on the unit type label and to the data shown in chapter **5 - Unit Parameters.**

- In case of temperatures above 100 °C a yellowed stain of the inner chamber walls can occur. This stain is neither the material nor the unit's defect.

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

⚠ The air exhaust in **VC and EC types** is protected by a cover rear of the unit. This cover is placed inside the oven 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 oven should be installed with a 100 mm distance to the walls at the side and in back. The temperature of the air coming out of the exhaust may be up to 250 °C (resp. 300 °C), so the walls near the oven must be inflammable ♨. No inflammable or explodable materials may be put into ovens !

⚠ Carrying capacity of the floor during installation of the device must 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 pad that could cause a danger of fire or smothering in case of falling some hot object out of the cabinet.

⚠ No inflammable, explosive or toxic materials may be put into ovens! The same applies to materials that could give off such a stuff!

⚠ Goods are only to be put on trays into ovens, never directly on the bottom of the oven!

⚠ No dangerous goods are permitted. Ovens may not be used for heating of liquids.

⚠ Aparatus may not be used in the atmosphere with a possible danger of flammable or explosive anesthetics.

⚠ **Any assembly and disassembly of the unit parts may only be done after the unit disconnection from the mains (unplugging the power cord or switching the main switch off – see chapter 5)! If the unit is switched off (button 6, Fig. 4), the unit will be ready-to-start only but it is not disconnected from the mains!**

• If the oven is not used for a longer time, disconnect it from mains by pulling the service cord from the socket.

⚠ Power cord can not get to the contact with hot parts of the aparatus – protection cover of exhaust hole.

• The temperature cabinet, its surroundings and the treated material are protected against an inadmissible temperature overrun by means of a safety thermostat.

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

⚠ The maximum permitted loads: see section **5 - Parameters of the unit.**

⚠ ♨ When operating the cabinets at high chamber temperature there can be the maximum allowed temperature of 70 °C at their outer 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 take a high precaution.

⚠ 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

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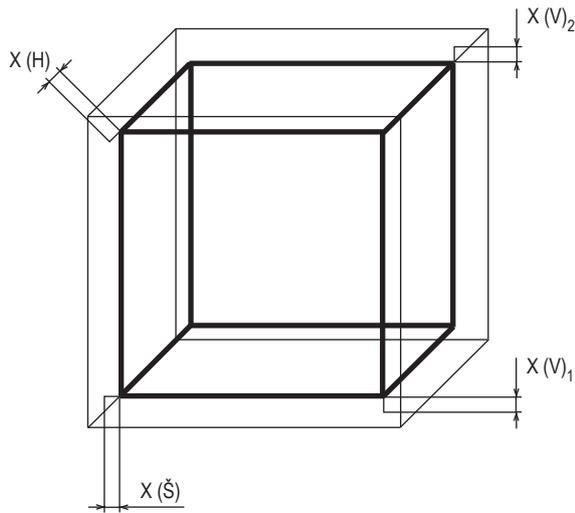
Fig. 1

3 DESCRIPTION OF THE OVEN

3.1 GENERAL VIEW
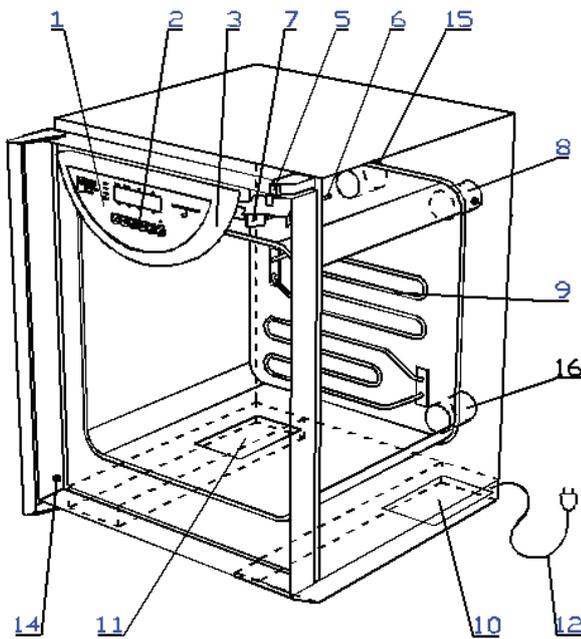
Fig. 2

1 - controller panel
2 - control keys
3 - plastic cover of the controller panel
4 - control ring and safety thermostat key
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 (see chapter Optional Accessories)
15 - suction hole (only for VC, ICV, with air flap)
16 - suction hole (with types EC, DC, IC).

ECOCELL 22

VENTICELL 22

VENTICELL 22

3.2 POWER CONNETION AND CONNECTORS

Fig. 5 Foot of the unit with power supply - rear view
(with the power part I)
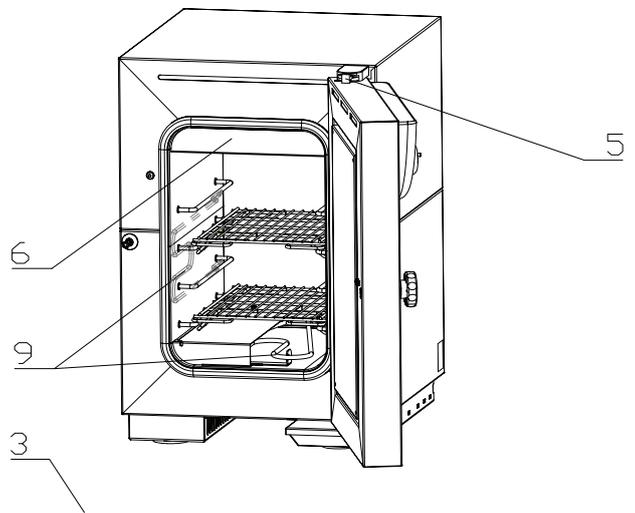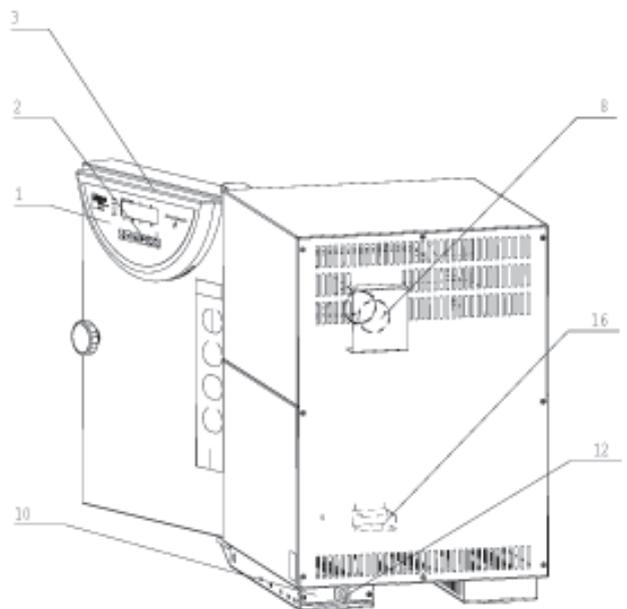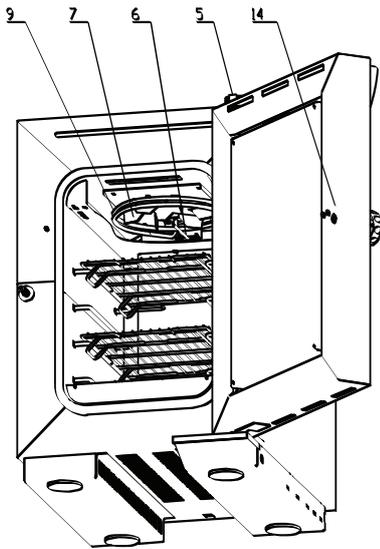
1 Connector RS-232C (Canon) for printer
2 Supply lead
3 Screws attaching the power part
4 The power part panel (placed in foot)

9 pin Canon connector on the case

Pin	Signal
2	RXD
3	TXD
5	GND
6	DSR
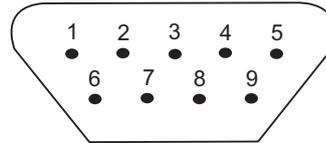
Fig. 6: 9 pin Canon - Interface for protocol printer

25 pin Canon connector on 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.

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

3.3 CONTROL PANEL
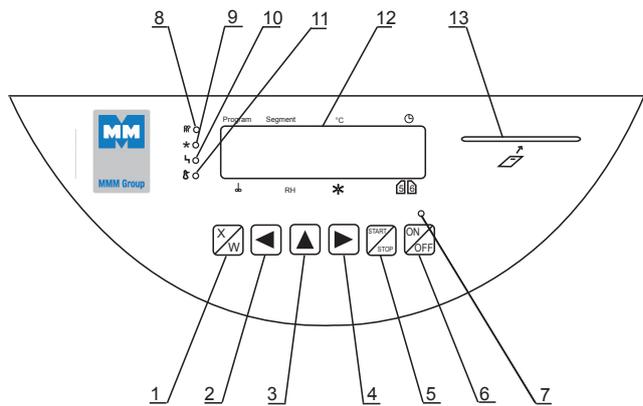
Fig. 5

1. key of activation of setting-up mode
2/4. cursor steering turning to the left/right
3. setting-up value in parameter
5. key starting the program
6. switch (ON - on, OFF - stand by)

7. indicator light - shines after switching on the switch
8. indicator light heating - shines: state of temperature regulator - heating active
9. indicator light cooling - shines: state of temperature regulator - cooling active
10. indicator light – failure
11. indicator light of safety thermostat - shines: temperature surpassed the limit set on the safety thermostat - heating is off / see paragraph **4.1.8 - Set safety thermostat**
12. display
13. port for inserting the chip card.

Position on the display:

Program: displaying the program

Segment: partial or full graphic representation of the program coarse

°C: temperature display

🕒: process time

∞ : fan speed display in % (steps of 10 %)

RH: % relative humidity

☼: setting-up intensity of exposition light in the door

56 : positions are used for specific purposes - see descriptions in text.

4 FUNCTION AND OPERATING

Function of the control lights is described in section **3 - Description of the unit, in paragraph 3.3 - Control panel.**

Connecting to mains:
Compare the nominal voltage input values indicated on the index plate with the supply voltage. If the supply parameters correspond with the unit parameters, connect the unit's plug with the supply socket.

Switching the device on:
Press the **ON/OFF** button. An indicator above it lights up. The device is ready for operation, follow the below given instructions.
The display displays all parameters together for your information. The cursor moves below all 32 places along the so called cursor line and it is located always below only one of the 32 characters.
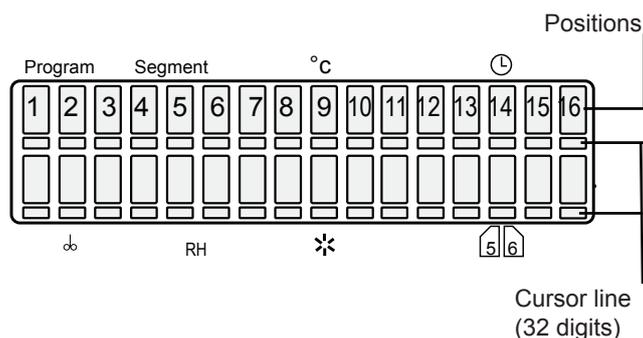
Parameter change:
Move the cursor horizontally by pressing ◄►. Parameter below which there is the cursor can be changed by means of button ▲.

4.1 BASIC SETTING OF THE UNITS

Thermal technology units with the Comfort regulator offer a wide range of utilisation for the customer. In order to make them active, there are fundamental inputs required. To achieve this the following service mode.

4.1.1 ACTIVATING THE SERVICE MODE

Press simultaneously buttons ▲► for 2 seconds. The display displays the information Service 01. You can change between individulal services by means of button ▲.

4.1.2 SERVICE 01 – STORING P1- P6

With help of this service you can store programs P1 – P6 on the chip card. Before storing the parameters to the chip card it necessary to insert the right card to the unit panel. These cards can be ordered optionally.

Make sure that the chip card is in the card reader!

Press **START/STOP** to open the programme saving service.
The display shows: „P1 ÷ 6 → MMM CCard", Press **X/W** to do storing. The transmission is confirmed by the read out „Done" on LCD. Press **START/STOP** again to enter another service.If the read out on the LCD is „Bad MMM CCard", check the chip card and repeat the procedure.

4.1.3 SERVICE 02 - RESTORE/UPLOAD THE PROGRAMS FROM THE CHIP CARD

Using this service you can record programs P1 - P6 previously stored on the chip card into the memory of the unit again. The programs entered into the memory before will be deleted.

The programs in the memory will be recorded over (erased). Make sure the chip card is in the card reader. Press **START/STOP** to open the programme download service. The display shows: „MMM CCard → P1 ÷ 6",
Press **X/W** to record. The transmission is confirmed by the read out „Done" on LCD. Press **START/STOP** again to enter another service. If the read out on the LCD is „Bad MMM CCard", check the chip card and repeat the procedure.

⚠️ **ATTENTION!**

The original chip card delivered by the manufacturer should be used only. Cards whose type ends with the figure 1024 (AT24C1024) may only be used. Older cards ending with the figure 16 may not be used.

4.1.4 SERVICE 03 - SET THE REAL TIME AND DATE

Pressing **START/STOP** you enter the service. Set the real time and date by pressing buttons ◄► and ▲. Enter the date format setting by shifting the cursor behind the display edge, using the buttons ◄►. The date format is selected by pressing ▲ while the cursor is on the position 7. The possible formats are (in Czech): RRRR-MM-DD, RRRR-DD-MM, MM-DD-RRRR, and DD-MM-RRRR. The default format is RRRR-MM-DD. (In other languages: YYYY-MM-DD, JJJJ-MM-TT, or AAAA-MM-JJ). The data delimiter is selected by pressing ▲ while the cursor is on the position 6. The key ◄ takes you back to the time setting.

To quit the service press **START/STOP** again.

4.1.5 SERVICE 04 - SET INTERVAL ON PRINTER/COMMUNICATION INTERFACE

To print the protocols the units of thermal technology may be provided (optional) with a printer, which is connected by a cable to the printer interface – see chapter **4.8 - Printing the protocol** by **START/STOP** and set the interval:

Pressing ▲ select one of the following choices:
- printer OFF
- switched over to PC (application of SW WarmComm – data are sent to PC)
- interval 10 s
- interval 01 min
- interval 01 hr.

By pressing ◄ move the cursor to the position 10/01 seconds, minutes or hours. By pressing ▲ you can change the printer interval within the following range:

-10 to 50 s (step 10 s)
- 01 to 59 min (step 1 min)
- 01 to 12 h (step 1 h).

One unit only is active, either seconds, or minutes, or hours.

By further move of the cursor to the display edge, you enter printer selection. Select the printer type by means of ▲
Printer=1 ... Citizen
Printer=2 ... Thermal printer DPT 6333-V.24

To quit the service press **START/STOP** again.

4.1.6 SERVICE 05 - SELECT LANGUAGE

Pressing **START/STOP** you enter the service. To select the language use button ▲ To quit the service press **START/STOP** again.

4.1.7 SERVICE 06 – SETTING THE SWITCHING TIMES OF INNER SOCKET (OPTIONAL) AND THE FAN RUN AFTER THE PROGRAMME TERMINATION

A) Switching times setting

⚠️ **ATTENTION!**

Using this service you can set the time of periodical switching on and off of the inner socket.

Open the service by pressing **START/STOP**. The bottom line of LCD states:
"on: XXPP off: YYQQ",
where XXPP is the time for which the socket is switched on for one part of the period (00 – 99), YYQQ is the time when it is switched off (00 – 99).
PP is the abbreviation of time unit (minutes or hours) for switching on, QQ for switching off.
The following applies: XXPP + YYQQ = whole period.
Use ◄ and ► to move the cursor, use ▲ to change the numbers of time units or units.
If XX = 00, then the socket never switches on, if XX ≠ 00 and YY = 00, then the socket is permanently switched on after the start up to termination.

B) Setting the fan run after the programme termination
Leave the "inner socket" setting by means of ◄► and by pressing ▲, set:
a) "Prog" – the fan runs only during the P1-P6 run;
b) „T50C"-„T250" – the fan runs even after program termination, up to temperature decrease below pre-set value (it is possible

to set the value from 50 °C to 250 °C in 10 °C increments),

c) "Door" - the fan keeps running after the programme termination and switches off after the door opening (applied only for units with a closed door sensor);

d) "alws" – the fan keeps running till the cabinet is switched off by the **ON/OFF** button.

Other options are available to VH only:

e) "Off" – fan switched off,

f) „End" – the fan starts after program termination and switches off only when the device is switched of. In the course of program operation the fan stops, which positively affects the thermo homogeneity.

4.1.8 SERVICE 07 - SAFETY THERMOSTAT SETTING

Safety thermostat serves to protect the thermal technology cabinet, its surrounding and treated material against inadmissible rise of set temperature (e.g. prevents damage or destruction of material samples in case of damage to the temperature regulator or in case of unintentional setting of a temperature in the chamber of the unit higher than the sample is able to withstand).The service is opened by the depression of the **START/STOP** button.

Set the upper limiting temperature selected by you on the bottom line of the display – on the position 12, 13, and 4 (symbols XXX on the display). The minimum difference from the preset regulated temperature is +5°C. Set the safety thermostat type on the position 16 (symbol Y on the display):

Type 2 – It is used for the types VC, EC, and DC. If the preset temperature in the chamber is exceeded, the display shows the error 04 – "Therm.protect.activated". The thermostat switches off the heating elements; the indicator "safety thermostat" and the acoustic alarm are switched on. The unit does not heat although the indicator "heating" shines.

To restart the activity, the safety thermostat must be reset – the error message and the acoustic alarm are cancelled by pressing the button **START/STOP.** The safety thermostat is also reset after each pressing the button **X/W** in the service 07.

Type 3 – It is used for the IC and ICV types. If the preset temperature in the chamber is exceeded, the thermostat switches off the heating elements; the indicator "safety thermostat" and the acoustic alarm are switched on and the display shows the alternating messages "Therm.protect.activated" and the previous information. The unit does not

heat although the indicator "heating" shines. After the temperature in the chamber drops below the preset limit of the safety thermostat, the unit continues its work (e.g. the heating is switched on again) – the indicator "safety thermostat" turns off. The acoustic alarm is still active and the display shows the alternating messages "Ochr.term.aktiv" and the previous information. Cancel these two non-standard status signals by pressing the button **START/ STOP.**

To confirm set temperature and type of the thermostat, insert the chip card „SO" in the card reader and press **X/W**.

Terminate the service and close by the depression of **START/STOP** button again.

Check of the safety thermostat function:
According to the procedure described in Service 07 – setting the safety thermostat - set the temperature limit to 85 °C and confirm with the chip card SO. In P1 set the temperature 60 °C and start the program. After reaching the set temperature wait for about 10 minutes, stop the program and select the Service 07; in Service 07 - set the temperature limit to 50 °C and confirm with the chip card SO. The unit operates according to the description in Service 07 – Setting the safety thermostat: report "Safety Thermost." on the display etc.

4.1.9 SERVICE 41 - TEMPERATURE TOLERANCE

The bottom line of the display shows the message "+XX.X °C -YY.Y °C", where "+XX.X" means the upper deviation of the temperature (adjustable range 0 to +20) and "-YY.Y" means the lower deviation of the temperature (adjustable range 0 to -20). If a situation occurs during the programme run that the temperature in the chamber is lower than the preset temperature minus the lower deviation, error 2 is shown. If a situation occurs during the programme run that the temperature in the chamber is higher than the preset temperature plus the upper deviation, error 3 is shown. If a 00.0 deviation is set, the deviation is not controlled.

The type of the errors no. 2 and 3 when the temperature goes out of the preset range is selected on the last character. There are the possibilities "H" (the errors are "critical") – the programme run is stopped; or "S" (the errors are "soft") – the programme keeps running. The default value (after RAM initialization) is "H" (critical error).

4.1.10 SERVICE 58 - DOOR BLOCKING

This service is available only in models equipped with the door blocking function.

One-door model:

Press **START/STOP** and open the service. Select one of the following possibilities by means of ▲:

1. Inactive – the door is unblocked permanently
2. Manual – the door can be blocked and unblocked by means of ▲ and ►
3. Automatic – the door is blocked automatically after a pre-set period of time elapses after the door closing.

The time can be set within the range from 2 to 9 seconds. Unblock the door by pressing ▲ and ► buttons for 2 seconds.

You can select "C" on the last display position. In such case, the door can be unblocked only after inserting the SO card.

S	e	r	v	i	c	e		5	8				
A	u	t	o	m	.	a	f	t	e	r		2	s		C

Two-door VENTICELL models:

After the service is started, the cursor is placed on the first left position; four statuses can be pre-set on the bottom line by means of ▲:

S	t	r	:	A	=	O	p	n		B	=	L	c	k	

This status defines the door blocking after the programme start by means of **START/STOP**.

S	t	p	:	A	=	O	p	n		B	=	L	c	k	

This status defines the door blocking after the programme interruption by means of **START/STOP**.

E	n	d	:	A	=	L	c	k		B	=	O	p	n	

This status defines the door blocking after the programme termination (the panels show "Konec Px" and "End".

U	n	l	o	c	k		a	l	l	(	X	/	W	)	

Press **X/W** to unblock both doors.

Use ◄ and ► to move the cursor between "A" = loading door, and "B" = unloading door.

Three values are defined for these options (the tables show the initial setting):
- „Opn" – unblocked
- „Lck" – blocked

- „Txyz" – the door will be unblocked after the temperature in the chamber drops below "xyz". "xyz" can be pre-set by means of ▲ in the range from 50 to 200 °C.

It is recommended to pre-set the same "xyz" value as in Service 06 (duration of the ventilator run after the programme termination). "A=Lck" cannot be pre-set if the device is in "Stp" status. "A=Lck" only can be pre-set if the device is in "End" status.

The device will be in "Stp" status only if the programme run is interrupted by means of **START/STOP**; however, this shall not be applied if an error status is cancelled by means of the said button. The door blocking will remain unchanged after the error status cancellation.

See more in the Chapter Optional Accessories.

4.1.11 SERVICE 62 – SOUNDS SETTING

This service allows individual switch-on and -off of the following events:
- Device switch-on;
- Device errors;
- Operator's errors;
- Buttons pressing;
- Programme start;
- Programme end;
- Door opening during the programme run.

4.1.12 SERVICE 64 – PROGRAMME P6 SHIFTING

This service shifts the programme start to a new time. See more in chapter Programme P6.

4.1.13 SERVICE 09 - CANCEL THE SERVICE MODE

By pressing **START/STOP**, the service mode is cancelled. You can then modify programmes and start them freely.

4.2 PROGRAM P1

Constant temperature is required.

P 1 = ╱‾

The cabinet operates continuously at set temperature until switching the unit off.

4.2.1 SET P1

Put cursor to the position Program with help of ◄► and switch to P1 with help of ▲. Set the temperature at the position of °C within the range

of the type of the unit - see item Purpose and use – with VC, EC, DC cabinets it is possible to set in 1 °C steps, with IC and ICV in 0.1 °C steps. Set the fan speed (type VC ICV) at the position ∞ from 10, 20....up to 100 % (these are the percentages of maximum speed).

⚠️ **ATTENTION!**
Do not reduce the fan speed if it is not necessarily needed. Reduced fan speed may cause reduced accuracy!

4.2.2 LCD - READ OUT SHOWN
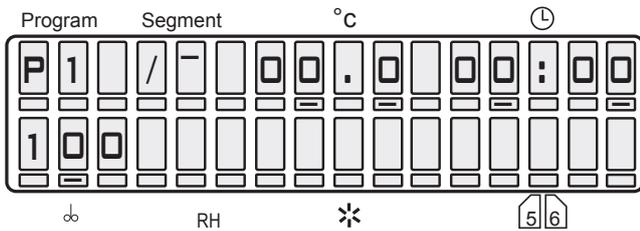
4.2.3 START P1

Press **START/STOP**, a sound will appear and the "windmill" in the first digit of LCD starts running clockwise.

See the following LCD read out:
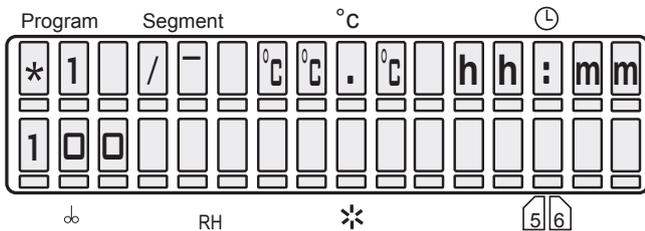
Digit 1 (windmill running) = program running
Digit 7 to 10 = actual temperature in °C.
Digit 12 to 16 = time from the start in hr:min.
As soon as the set values are reached, then run down time is shown.

4.2.4 INFORMATION ON THE SET PARAMETERS DURING RUNNING

Press **X/W** and all information on the set parameters are shown at once. All possible parameters in all possible programs can be set including the one which is presently active, as long as the change is effective.

4.2.5 STOP P1

Press **START/STOP** again.

4.3 PROGRAM P2

SETUP-temperature is reached first, defined time will run down and when finished the heating is turned off.

P 2 = ╱▔╲
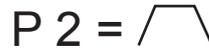
The unit operates at set temperature until the lapse of set time (max. 99 hr 59 min).

4.3.1 SET P2

With help of buttons ◄► put the cursor to the position Program and switch to the program P2. Set the temperature at the position of °C.

Move the cursor to the position 🕐 and set the run down time between 00hr:00min to 9999 hr, at the position ∞ (type VC, ICV) change the fan speed between 10, 20...100 %.

⚠️ **ATTENTION!**
Do not reduce the fan speed if it is not necessarily needed. Reduced fan speed may cause reduced accuracy!

4.3.2 LCD - READ OUT SHOWN
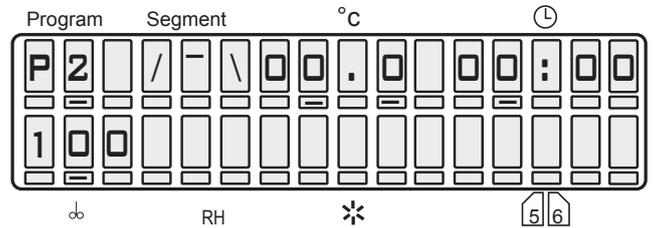
4.3.3 START P2

Press **START/STOP**, a sound will appear and the "windmill" in the first digit of LCD starts running clockwise.
See the following LCD read out:
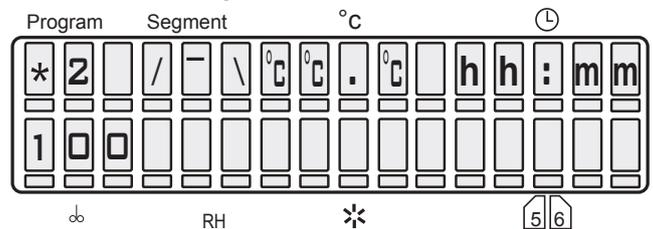
°C°C°C = actual temperature
hh:mm = time to reach the set temperature, if the set-up is reached, the rest of the run down time is indicated.

After the programme ends, temperature in the chamber and the text "End" are displayed.

Programme end indication and temperature in the chamber disappear after pressing any panel key.

4.3.4 INFORMATION ON THE SET PARAMETERS DURING OPERATION OF THE UNIT

See item 4.2.4.

4.3.5 STOP P2

Press **START/STOP**.

4.4 PROGRAM P3

Delayed start begins after given time. [The function starts for example at the weekend. Thus your goods are ready on the first day of return to work.]

P 3 = ⌐

Starts running after the delayed time has run down (max. 9999 hr) and the unit operates at the set temperature. The duration of the set temperature can be limited or unlimited in time.

4.4.1 SET P3

By pressing ◄► put the cursor to the Program position and switch to P3. By pressing ◄► put the cursor to the graph and make sure that the segment 1 in the graph is activated (otherwise change by buttons ▲.

Set the time of delay between 00hr:00min to 9999 hr position ⊕. By pressing ◄► move to the graph and with help of ▲ change to the segment 2 in the graph _⌐. Set the temperature in fields °C.
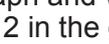
Move the cursor to position ⊕ and set the time of process duration between 00 hr:00 min. up to 9999 hr. or unlimited ∞∞:∞∞ (set the infinity in the following way: set 9999 hr, put the cursor to the nine in units and depress ▲. Set the cursor

(with types VC, ICV to position ⚲ and set the fan speed between 10 up to 100 %.

⚠ **ATTENTION!**
Do not reduce the fan speed if it is not necessarily needed. Reduced fan speed may cause reduced accuracy!

4.4.2 LCD - READ OUT SHOWN
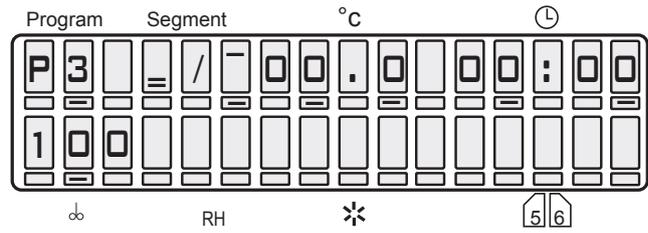
4.4.3 START P3

Press **START/STOP**, a sound will appear and the "windmill" in the first digit of LCD starts running clockwise. See the following LCD read out:

4.4.3.1 P3 AND SEGMENT 1 IN THE GRAPH ARE ACTIVE
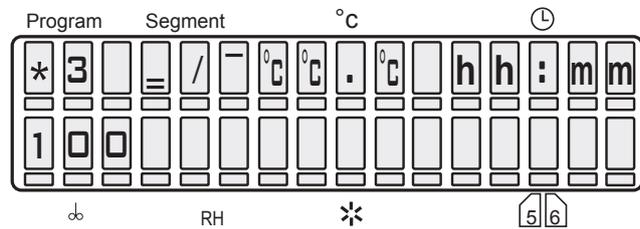
_⌐ = segment 1

°C°C°C = actual temperature
hh:mm = the programmed time, counting ⟹ down towards zero.

4.4.3.2 P3 AND SEGMENT 2 IN THE ARE ACTIVE, THE SEGMENT 1 IS OVER
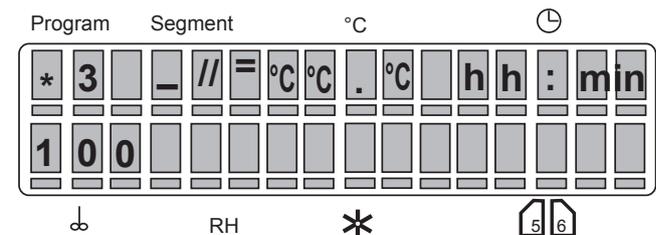
_//= = segment 2

°C°C°C = actual temperature
hh:mm = time running from the start till the set temperature has been reached.

After the set temperature has been reached, the run down time is shown if the time of the procedure is unlimited. If the time is limited, the rest of the run down time is shown.

4.4.3.3 P3 AND THIRD SEGMENT IN THE GRAPH ARE ACTIVE
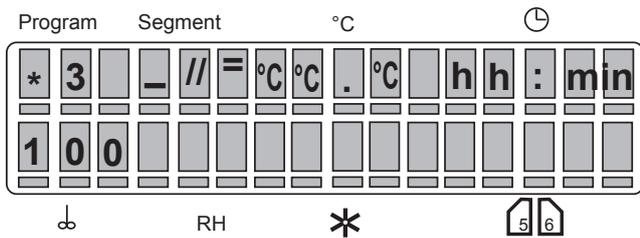
__ / = = segment 3

The preset temperature has been reached. If the procedure duration is unlimited, time passed is displayed. If the procedure duration is limited, time remaining till the end is displayed. After the programme ends, temperature in the chamber and the text "End" are displayed. Programme end indication and temperature in the chamber disappear after pressing any panel key.

4.4.4 INFORMATION ON THE SET PARAMETERS DURING OPERATION OF THE UNIT

See item 4.2.4.

4.4.5 STOP P3

Press **START/STOP**.

4.5 PROGRAM P4

With 2 temperature levels T1 and T2, with a controlled speed of the temperature change (ramps) and with cycling.

P4 =
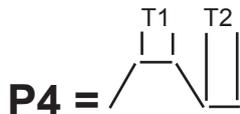
Operates at 2 temperature levels T1 and T2, the dwell time on the level T1 is limited, on the level T2 can be limited or unlimited.

4.5.1 SET P4

Index: T0 = initial chamber temperature
T1 = temperature level 1
T2 = temperature level 2

Digit 11 on LCD = (placed between temperature and dwell time values), shows the following information:

r = ramp value, can be set on digits 12 – 16 and corresponds with temperature change speed in °C/min max. value is +3.2 °C/min, when T0 < T1, or T1 > T2 If r = 00.0, no ramp active! (The numerical value of the ramp has an orientation character, the real speed can be affected by the amount of goods in the chamber and maximum speed of temperature change may not be met, taking the limited heating power into account)

t = time available in position ⏰ (00hr:00min – 9999 hr), at T2 the dwell time can be unlimited

c = cycles shown in position ⏱, digits 12 – 13 on LCD (available only at T2, if the dwell time is unlimited) Possible number of cycles is 2 to 9999 (eventually ∞- which is the next position after 99).

The value of cycle number is a global value that does not relate to individual segments, it relates to the complete programmed sequence. It can be displayed while displaying any segment on the display, however it does not concern only the displayed segment, but the whole sequence! Minimum number of cycles is 1. If only one cycle is chosen, the programme runs as if it has been switched on without cycles.

The program can be started by depressing **START**; no matter which segment is shown on the display, the program always runs from the segment 0 or 1, if the time of the zero segment is zero. For successful inserting of the cycling process into an already started process it is essential that at the moment of the start "cXX" is shown on the display, where XX is the number of intended runs of the whole sequence. E.g. number two means, that the sequence is carried out and then repeated completely, i.e. it runs twice around. If "cXX" is not shown on the display at the moment of the **START** and there is shown data on time or on the ramp of the actually displayed program instead, the whole sequence runs once and is not repeated, i.e. there are no cycles.

4.5.2 SET THE SEGMENT FOR T1

4.5.2.1 SET TEMPERATURE T1

Put cursor to the position Program and switch to P4. By pressing ◄► place the cursor on the graph and make sure that T1 (/ ̄_) is activated. If not, activate it with buttons ▲.
Change to the position of °C - temperature setting - and set the temperature.

4.5.2.2 SET THE DWELL TIME OF T1

Move cursor to the digit 11 on LCD and ask for parameters by pressing simultaneously ▲ Either „r" or „t" will appear (see above). Select „t". Move to the position 🕐 and set the dwell time between 00 hr:00 min and 9999 hr.

4.5.2.3 READ OUT OF T1 AND THE DWELL TIME
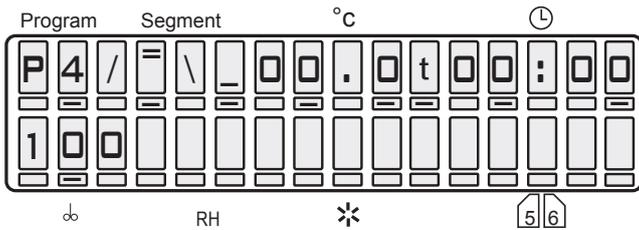
4.5.2.4 SET THE RAMP AT T1

Return the cursor to the digit 11 on LCD and by pressing ▲ select „r".

Switch to the position 🕐 and set the required ramp (max. value +3.20 °C/min for T0 < T1). If the ramp is not needed, leave „r" on 0.00. In this case the temperature will be changed at maximum speed. The symbol ± appears automatically in accordance to T0 and T1 relation (the ramp with negative value of temperature change speed may be set in case that the speed of spontaneous cooling of the cabinet is higher).

4.5.2.5 READ OUT OF T1 AND THE RAMP
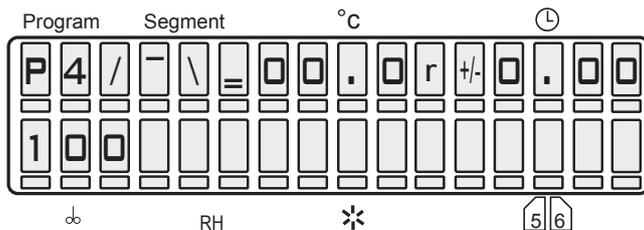
4.5.2.6 SET THE FAN SPEED AT THE TEMPERATURE T1

Put the cursor to the position ✂ and change the fan speed between 10, 20...100 %.

⚠ **ATTENTION!**
Do not reduce the fan speed if it is not necessarily needed. Reduced fan speed may cause reduced accuracy!

4.5.3 SET THE SEGMENT FOR T2

4.5.3.1 SET THE TEMPERATURE T2

Place the cursor on the graph and make sure that T2 (/‾_) is activated. If not, activate with help of ▲. Switch over to position °C - temperature setting - and set the temperature.

4.5.3.2 SET THE DWELL TIME OF T2

Put the cursor on the digit 11 on LCD and ask for parameters by pressing ▲. Either „t" or „r" or „c" will appear. Select „t". Enter the position 🕐 and set the dwell time between 00hr:00min and 9999 hr, unlimited ∞∞:∞∞ (set the infinity in the following way: set 9999 hr, put the cursor to the nine in units and depress▲.

4.5.3.3 READ OUT OF T2 AND THE DWELL TIME
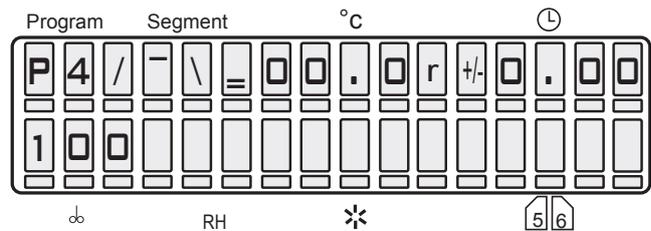
4.5.3.4 SET THE RAMP AT T2

Return the cursor to the digit 11 on LCD and by pressing buttons ▲ select „r". Switch to position 🕐 and set the required ramp (max. value +3.2 °C/min for T1 < T2). If the ramp is not needed, leave „r" on 0.00. In this case the temperature will be changed at maximum speed. The symbol ± appears automatically in accordance to T1 and T2 relation (see item 4.5.2.4.).

4.5.3.5 READ OUT OF T2 AND THE RAMP
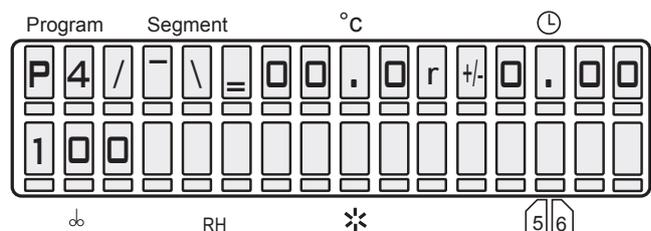
4.5.3.6 SET CYCLES FOR P4

Return the cursor to the digit 11 on LCD and with

▲ select „c". Switch to the position 🕒, set the number of cycles between 02 and 99 (eventually ∞). The number of cycles means, how many times will the cycle run, i.e. value 03 means, that at the end of the first cycle will be the whole process still twice repeated. Cycles are not applied in case when the display does not display „c" in the moment of program start and after the exposure termination at T2 drop of temperature in the cabinet below the level of T1 must take place.

4.5.3.7 READ OUT OF CYCLES FOR P4
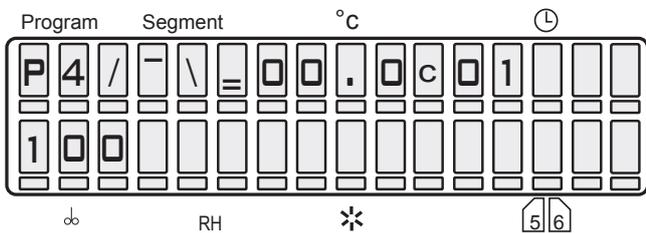
4.5.3.8 SET THE FAN SPEED AT T2

Put the cursor to the position ↻ and change the fan speed between 10 to 100 %.

⚠️ **ATTENTION!**
Do not reduce the fan speed if it is not necessarily needed. Reduced fan speed may cause reduced accuracy!

4.5.4 START P4

⚠️ **ATTENTION!**
If cycling is required, „c" must be on LCD when starting the program.
Press **START/STOP**, a sound will appear and the "windmill" in the first digit of LCD starts running clockwise. See the following LCD read out:

The graph shows the actual state of the program.
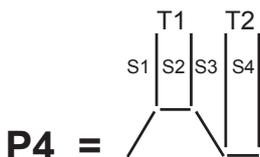
4.5.4.1 S1 IS ACTIVE, TEMPERATURE IS HEADING TOWARDS T1

∕‾∖_ = S1
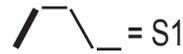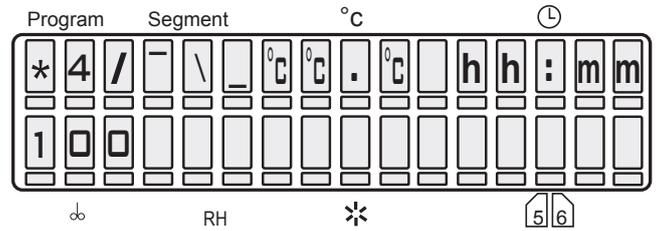
°C°C°C = actual temperature
hh:mm = time since start to reaching T1.

4.5.4.2 S2 IS ACTIVE, T1 HAS BEEN REACHED, DWELL TIME IS RUNNING

∕=∖_ = S2/T2
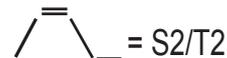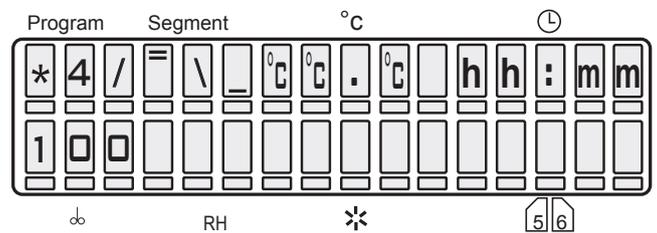
°C°C°C = actual temperature
hr:mm = dwell time at T1 running down towards zero.

4.5.4.3 S3 IS ACTIVE, TEMPERATURE IS HEADING TOWARDS T2

∕=∖_ = S3
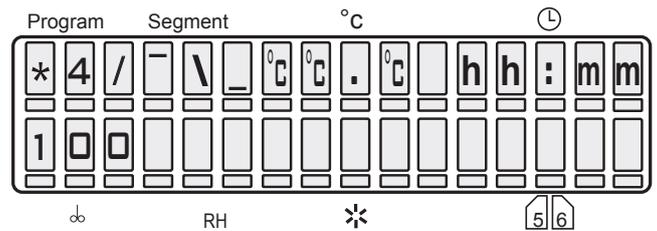
°C°C°C = actual temperature
hr:min = time running since the end of T1 till it reaches T2.

4.5.4.4 S4 IS ACTIVE, T2 IS REACHED, DWELL TIME AT T2 IS RUNNING

Program   Segment   °c   🕐

✳	4	/	⎺	\	=	°C	°C	.	°C	h	h	:	m	m
1	□	□												

⚲   RH   ✳   5|6
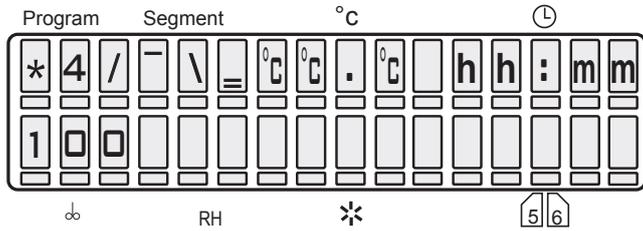
/⎺\= = S4/T2

°C°C°C = actual temperature
hr:mm   = in case the time of the procedure is unlimited the time of running is shown, in case of the limited time the rest of this time is shown.

4.5.5 INFORMATION ON SET PARAMETERS DURING OPERATION OF THE UNIT

See item 4.2.4.

4.5.6 STOP P4

Press **START/STOP**.

4.6 PROGRAM P5

4.6.1 DESCRIPTION OF P5 AND ITS CONTROL
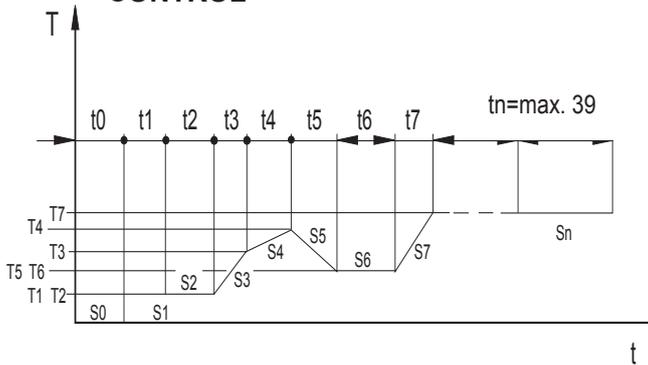
The program consists of 40 segments. Segment 0 is for the delayed start, it is defined only by the time t0. If t0 is 0, there is no delayed start. Segments 1 to 39 are of the same qualities, each of them is defined only by the <u>end</u> temperature, time or speed (ramp), fan rotation speed and depending on the type of the unit also by relative humidity and chamber light.
Each of the segments 1 to 39 can be set as the last and infinite, that is the program at this segment must be finished by **START/STOP** button.

If the cycle selection is active on LCD at the moment of the start, see fig. Display - state of the program selection - E: cXX, the program comes again to the start after the last segment is over and the whole program is repeated. The definite number of program cycles corresponds with the number behind the letter "c". The segment 0 can be counted into the cycle as well even when it is zero.

Range of parameters:

time	t0	0 hr, 0 min to 9999 hr
time	t1 to t39	0 hr, 0 min. to 9999 hr, or infinite ramp
Rampe	r1 to r39	to 3.2 °C/min for heating (negative sign for an eventual cooling down)
temperature	T1 toT39	range according to the device parameters
fan speed	V1 to V39	10 to 100 % with 10 % steps
number of cycles	C	2 to 99 eventually ∞- which is the next position after 99

DISPLAY - STATE OF THE PROGRAM SELECTION

A: P5	name of the program
B: XX	number of the set segment
C: X	type of the set segment: x time of the zero segment is set to zero, segment will be skipped over > not the last, the end length - see E >I the last, the end length - see E ∞ the last, infinite length
D: XX . X	required temperature of the set segment (! the end temp.)
E: TXX : XX	Hour and minute of the end of the set segment; or
R ± X .XX	The ramp = the required speed of the set segment;deciding is the time; or
t ± X . XX	The calculated hour and minute of the end of the set segment; ramp is default; or
r ± X .XX	The calculated speed of the set segment; time is default; or
cXX	the number of cycles of the whole program
F: XXX	the fan speed of the set segment
G: XX	the relative humidity of the set segment

H: XXX	the light of the set segment
I: XX . XX	the month and day at the moment (at P5 impossible to be set)

DISPLAY - RUNNING OF THE PROGRAM

A: * 5	the rotating symbol and the program number
B: X	the number of the relevant segment
C: X	the type of the set segment: > not the last, the end length - see E >I I the last, the end length - see E ∞ the last, infinite length
D: XX . X	the temperature in the chamber at the moment
E: XX : XX	the segment time at the moment - hours, minutes all segments - counting down from the set value towards zero, in case of an infinite length of the last segment counting up from zero in case the time is higher than 9999 hr. >>:>> is indicated
F: XXX	the fan speed at the moment
G: XX	not used
H: XXX	not used

Programme P5 continuation after preset parameters change or programme interruption:

1) The programme is running e.g. in segment 5. You want to change the setting in a passed already segment (e.g. segment 4) or in a future segment (e.g. segment 6). Press **X/W** and change the setting according to your needs. Meanwhile, the programme will continue running in segment 5. Wait for several second. The programme returns from the setting mode to the working segment 5 and continues working.

2) The programme is running e.g. in segment 5. You want to change the setting of the running programme 5. Press **X/W** and change the programme 5 setting according to your needs. Wait for several seconds. The programme returns from the setting mode to the beginning of segment 5 and starts running.

3) The programme is running. Power supply is interrupted either by switching the main device switch off or due to power supply system failure. After the power supply is renewed, the device continues automatically from the point before interruption.

4) If the device is switched off by the button **START/STOP** or **ON/OFF**, the programme starts running from the beginning after reswitching-on.

Ventilator operation after a programme end: The operation can be set in Service 06. Immediate ventilator switch-off after programme termination is pre-set in all ventilator types.

4.7 PROGRAM P6

4.7.1 DESCRIPTION OF P6
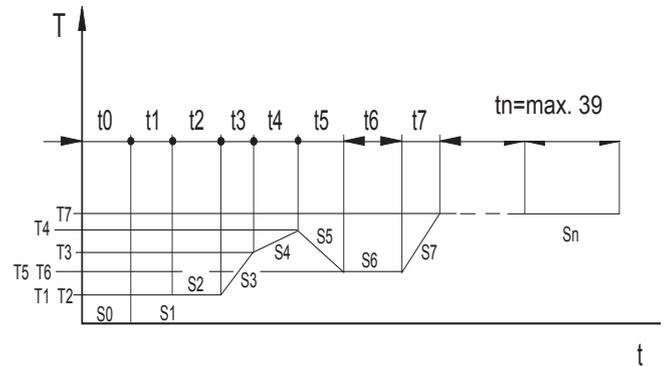
Programme P6 works with segments whose duration is determined by real time and calendar date.

1. Programme P6 consists of 40 segments and is determined strictly by real time, i.e. it follows the preset programme independently of the switch-on time, power failures, restarts after an error, etc.

2. Segment 0 (so called "delayed start") is compulsory; time and date must be set in it. It may even be set to the past and means the "beginning of the programme". Segments 1 to 39 have the same properties. Each of them is determined by the end temperature, time or speed of temperature rise, and ventilator speed.

3. If cycling is switched on, segment end times are shifted after each cycle end (forward by the programme duration). Updated parameters are thus displayed when you check the parameters during the device operation (after **X/W** pressing).

4. The whole P6 programme (all segments at once) can be shifted by service 64 by any time interval to both the future and past and there is no need to rewrite all segments before a new programme start.

4.7.2 PROGRAMME SETTING

Segment 0 is compulsory, i.e. it cannot be switched off. This condition must be met to allow definition of the beginning, thus the whole programme duration, which is necessary for cycling.

When setting the delayed start, year is set on the bottom line. Programme start can thus be preset even to the past. Year will always be displayed at the same place (7th position on the bottom line); the sequence month-day (DD-MM or MM-DD) is determined by setting in service 3.

P	6		0	0	>	2	2	.	5		0	9	:	0	0
1	0	0				2	0	0	9		1	8	-	0	2

or

P	6		0	0	>	2	2	.	5		0	9	:	0	0
1	0	0				2	0	0	9		0	2	-	1	8

In other segments, year is not displayed on the bottom line; years are calculated at the programme start.

Each of segments S 1 to S 39 may be set as the last one, i.e. the programme either ends after the final temperature Ti reaching and concurrent time ti elapsing, or another cycle may follow.
Each of segments 1 to 39 may be set as the last one and infinite, i.e. the programme must be ended by means of **START/STOP** in this segment.
If there is an active cycle selection displayed in the moment of programme start (see the figure Display – programme selection status – E: cXX), then the programme passes to the beginning again after the last segment ending and the whole programme is repeated. The overall number of the whole cycle runs equals to the figure following the letter "c". Segment 0 is not included in the cycle.
The number of cycles is related to the whole programmed sequence. It can be displayed in presence of any segment on the display but it does not refer to the displayed segment only but to the whole sequence!
The minimum number of cycles is 1. If only one cycle is selected, the programme runs as if it was started without cycles. The programme can be switched by the **START** button. Regardless of the segment displayed actually, the procedure starts from that segment which corresponds to the moment of switching-on. However, to ensure successful cycling inclusion in an already started process, the display must show "c XX" in the moment of the programmed sequence start; XX is the number of the wanted whole sequence

runs. For example, number "two" means that the sequence runs through and then it is repeated once more. If no "c XX" but time or temperature increase data of the actually displayed segment are displayed in the moment of start up by means of the **START** button, the whole sequence will run through once only.
Time is indicated as a segment duration but is defined by an hour, minute, day and month of its end, i.e. real time. If the preset segment time and date precede the preceding segment time and date, the segment will end no sooner than in the next year.
The actual time and date must be preset in the system (regulator) in the service mode.

Range of parameters:

time	t0 to t39	each of segments up to a year
ramp	r1 to r39	0 to 3.2 °C/min for heating, −1.0 to 0 °C/min for cooling
temperature	T1 to T39	0,0 - 99,9 °C
fan speed	V1 to V39	10 to 100 % with 10 % steps
number of cycles	C	2 to 99 (eventually ∞- which is the next position after 99]

DISPLAY - STATE OF THE PROGRAM SELECTION

A: P6	name of the program
B: XX	number of the set segment
C: X	Type of the set segment: > not the last, the end length - see E, I >I the last, the end length - see E, I **o** the last, infinite length
D: XX . X	the required temperature of the set segment (! the end temp.)
E: TXX : XX	the hour and minute of the set segment end, deciding is the ramp or
R ± X .XX	the hour and minute of the set segment end, deciding is the time or
tX ± XX	The calculated hour and minute of the end of the set segment; ramp is default; or
r ± X .XX	The calculated speed of the set segment; time is default; or
cXX	the number of cycles of the whole program
F: XXX	the number of cycles of the whole program

G: XX	not used
H: XXX	not used
I: XX . XX	month and day of the set segment end

DISPLAY - LAUF DES PROGRAMMS

A: * 6	the rotating symbol and the program number
B: X	the number of the relevant segment
C: X	the type of the set segment > not the last, the end length - see E >| the last, the end length - see E **o** the last, infinite length
D: XX . X	the temperature in the chamber at the moment (°C)
E: XX : XX	the segment time at the moment - hours, minutes all segments - counting down from the maximum value towards zero, in case of an infinite length of the last segment counting up from zero in case the time is higher than 9999 hr. >>:>> is indicated
F: XXX	the fan speed at the moment (%)
G: XX	not used
H: XXX	not used

⚠️ **ATTENTION!**

When setting the time and temperature parameters in the program 6 it is suitable to follow the following principles:

If you need to change temperature in an already preset chain of segments, notice whether the nature (either rising or decreasing) or potential subsequent or preceding temperature change (indicated "R" or "t") is in accord with the expected change. If not, cancel the preset temperature change and set it again only after temperature setting.

At first the temperature is set then the ramp. If the ramp is deciding for the segment ("R" or "t"), it is suitable, if we want to change the temperature, to switch over to time at first ("T" or "r").

When setting a chain of segments it is suitable to go in the direction from the lower to the higher segment.

4.7.3 PROGRAMME START

After the programme is started (by means of the **START/STOP** button or instruction from WC3), years of the remaining segments are calculated and the last segment time test is performed.

Three situations may appear:
1. The actual time is lower than the zero segment time – waiting phase is started; the whole programme will run through;
2. The actual time is higher than the zero segment time but lower than the last segment time – all segments that should have been ended in the given time are skipped and that segment whose time corresponds to the actual one is started. Duration of such segment is adapted so that it ended in the preset time (shortened). LCD displays the time remaining till the segment end.
3. The actual time is higher than the last segment time – you can hear a warning audio signal ("Operator's error") and the programme is not switched on.

4.7.4 POWER SUPPLY FAILURE

The following situations may occur after a power supply failure:
1. Programme without cycles, the actual time is lower than the last segment time - segments that should have been ended are skipped. Duration of the "actual" segment is adapted (shortened).
2. Programme without cycles, the actual time is higher than the last segment time program – the programme is ended (all segments are "skipped" because the programme "ended" during the power supply failure). LCD displays "End".
3. Programme with cycles, the actual time is lower than the last segment time – see point 1 of this Article: Shortened "actual" segment continues; the next cycle runs normally.
4. Programme with cycles, the actual time is higher than the last segment time – the programme definition is shifted by the appropriate number of programme P6 durations so that the programme could continue. Subsequent activity corresponds to point 3 above.

4.7.5 AUTOMATIC SHIFTING OF P6 PROGRAMME DURING CYCLING

After each cycle is ended, the programme definition is recalculated (all segments are shifted forwards by the programme duration). When checking parameters during the programme

run (by means of **X/W** button pressing), the actual P6 setting can be viewed. After the last cycle or programme without cycling are ended, the parameters are not shifted, i.e. the last parameters according to which the programme ran can always be seen after the programme ending or interruption (with or without cycles).

4.7.6 MANUAL SHIFTING OF P6 PROGRAMME BEGINNING – USER SERVICE 64

Duration of all segments remains unchanged.

	S	e	r	v	ι	c	e		6	4				
S	h	i	f	t		p	r	o	g	r	.		P	6

After starting (**START/STOP** – see), zero segment time and date is displayed.

	S	e	r	v	ι	c	e		6	4				
0	9	:	0	0		2	0	0	9	-	0	2	-	1	8

or

	S	e	r	v	ι	c	e		6	4				
0	9	:	0	0		2	0	0	9	-	1	8	-	0	2

or

	S	e	r	v	ι	c	e		6	4				
0	9	:	0	0		0	2	-	1	8	-	2	0	0	9

or

	S	e	r	v	ι	c	e		6	4				
0	9	:	0	0		1	8	-	0	2	-	2	0	0	9

Any parameter can be changed (year can be changed by one year forward or backward only as compared to the actual year). By pressing **X/W**, the programme is shifted by a difference between the new and old segment time ("Performed" is displayed).

	S	e	r	v	ι	c	e		6	4				x
P	e	r	f	o	r	m	e	d						

The programme can be shifted both forward and backward. Time (hh:mm) is always at the beginning of the line. Date is displayed in a format selected in the user service 3 (i.e. 4 possibilities of the sequence year-month-day). This differs from segment 0 setting, where year is always in the first place.

4.7.7 EXAMPLES OF P6 PROGRAMME SETTING

Example 1: Day and night phase with different temperatures
Required : 9.00 am – 5.00 pm – temperature 220 °C,
6.00 pm – 8.00 am on the next day – temperature 150°C, indefinite number of cycles

P	6		0	0	>	-	-	.	-	-	0	8	:	0	0
1	0	0				2	0	0	9		0	2	.	1	8

P	6		0	1	>	2	2	0			0	9	:	0	0
1	0	0									0	2	.	1	8

P	6		0	2	>	2	2	0			1	7	:	0	0
1	0	0									0	2	.	1	8

P	6		0	3	>	1	5	0			1	8	:	0	0
1	0	0									0	2	-	1	8

P	6		0	4	>|	1	5	0			0	8	:	0	0
									c	o	o				
1	0	0									0	2	.	1	9

Program start: 18 February, 2009 at 8.00 am. The setting showing "c oo" (cycling activation) must be on the display at the programme start.
- The programme can be started at any time between 8:00 am on 18 February, 2009 and 8:00 am on 19 February, 2009 without any programme definition adjustment.
- If the programme is to be started after 8:00 am on 19 February, 2009, date only is shifted in Service 64 (duration of the programme is 24 hours so that all times remain unchanged); the actual time should be taken into account. If the programme is switched on earlier than at 8:00 am, the programme start should be set to yesterday's date; otherwise, waiting segment (delayed start) begins and the device begins to temper at 8:00 am only. When starting after 8:00 am, the date in Service 64 is simply set to the actual date.
- if a power supply failure occurs, the programme will always start in the moment where it would have been if the run had not been interrupted. i.e. the date and night phase with breaks at 9:00 am and 6:00 pm will be ensured.

Example 2: Week cycle
Requirement: 5 working days in a week – operation at 120 °C,
2 weekend days at temperature 80 °C; this operation should be repeated 99 times cyclically.

Setting in program P6

Start Monday 30.10. 2009 at 08:00

P	6		0	0	>	-	-	.	-		0	8	:	0	0
1	0	0				2	0	0	9		1	0	:	3	0

Monday morning at 08:25

P	6		0	1	>	1	2	0		T	0	8	:	2	5
1	0	0		5	0			O	N		1	0	.	3	0

Saturday morning at 08:00

P	6		0	2	>	1	2	0		T	0	8	:	0	0
1	0	0									1	1	.	0	4

Saturday morning at 08:25

P	6		0	3	>	8	0	.		T	0	8	:	2	5
1	0	0									1	1	.	0	4

Monday morning at 08:00

P	6		0	4	>|	8	0	.		T	0	8	:	0	0
1	0	0								c	9	9			
											1	1	.	0	6

Note: The 25-minute delay between 8:00 am and 8:25 am was selected on condition that it is long enough for pass from one temperature to another; otherwise, experimentally found time delay must be set.

4.7.8 SUMMER/WINTER TIME

The regulator does not take account of time changes; when transferring to summer/winter time, the user must adjust the time manually in service 3, or remote time setting can be done. The recording SW WarmComm 3-F synchronizes the regulator time with the time of eventually connected PC with installed recording SW (which sets the regulator equally as PC). However, any change of time during the programme run does not influence the run because segment durations are calculated at programme start only (and in the above given examples, the night and day phases will be changed at 6:00 pm and 10:00 am). To make the times fully equal, the programme must be restarted either by stopping and immediate starting, or by means of power supply failure simulation (switching the power supply switch off and on).

4.8 MEASURED VARIABLES DISPLAY DURING THE PROGRAMME RUN

In devices with a larger number of measured variables, all variables cannot be displayed at once. Their values can be displayed during the programme run one after another by pressing the button ◄ or ►. The given variable is displayed for several second. By repeated ▲ pressing, the duration of a variable display can be extended.

Example: VENTICELL with one flexible temperature sensor:

1. Cycle: xx/yy   where xx is the number of actually running cycle, yy is the overall number of selected cycles
2. Temp_1 Regulatory sensor temperature in Celsius grades
3. Temp_2 Flexible sensor temperature in Celsius grades.

4.9 KEYBOARD BLOCKING

The keyboard can be blocked (to prevent any accidental activation of any function) by concurrent pressing and holding the buttons **X/W**, ◄ and ► for 2 seconds. Unblocking is performed in the same way.

4.10 ERROR MESSAGES

Error messages are displayed on the screen and have the following meanings:

Error 00	PT 1 (regulatory sensor) Call the service.
Error 01	PT 2 (flexible sensor a) Call the service.
Error 02	Temperature is below the preset lower limit. See service 41 in the Instructions for use.
Error 03	Temperature above the preset upper limit See service 41 in the Instructions for use.
Error 04	Protective thermostat is activated; heating is disconnected. See service 07 in the Instructions for use.
Error 05	Protective thermostat setting. See service 07 in the Instructions for use. This error may be caused by starting a programme whose preset temperature is out of the preset protective thermostat range, or by a HW breakdown.
Error 10	Controlling programme. Call the service.
Error 11	Communication. Call the service.
Error 12	PT 3 (flexible sensor b) Call the service.
Error 19	PT 4 (flexible sensor c) Call the service.
Error 20 *)	Door cannot be blocked. See service 58 and chapter 10.12 in the Instructions for use.

Error 21 *)	Door cannot be unblocked See service 58 and chapter 10.12 in the Instructions for use.
Error 27	PT 5 (flexible sensor d) Call the service.
Error 28	Great temperature difference between the regulatory sensor and protective thermostat. Call the service.

*)......... This is a soft error
**)........ Error type may be set by the user.

4.11 PRINTING THE PROTOCOL

DPT 6333 printer is recommended for the record printing on the printer. Other printers may also be used, e.g. CITIZEN, model iDP 3110-24 RF-A. Printing to a PC application (Printer Archiv) is allowed as well.

By setting the interval of the printer you determine the time intervals in which the actual value of the temperature in the chamber will be printed. Magnitude of this interval is stated in the heading of the excerpt. Interval of the printer can be set on the display within the limits according to Service 04. Start from the condition, when the display shows real temperature value. Connect the printer to the thermal cabinet by means of the cable with serial connector (RS-232C) into the socket for the printer (see **3.3 - Mains connection and connectors**), the other end of the cable connect to the connector in the rear part of the printer.

Connect the printer to the mains by means of the adapter. Switch on the switch on the right side of the printer. Indicator POWER and SEL lights up. The printer is in the ON-LINE mode. Shifting the paper is achieved by depressing the key LF (this may be performed only in the OFF-LINE mode, i.e. after depressing the key SEL, the indicator SEL switches off. Re-press the SEL key to restore the ON-LINE mode indicator SEL lights up). The printer prints only in the ON-LINE mode!

1. Set required interval downwards or upwards according to Service 04.

2 A heading will be printed containing device type, set temperature, eventually ramp, fan speed, lighting, number of cycles and the selected time interval. Under the heading the values of following data will be printed in one line:
   – time passed since starting the program
   – real chamber temperature (eventually the temperature on the flexible sensor below it).

3. Switch off the printing by setting the printing interval to **Printer off.**

4. When changing the conditions of the cabinet operation or changing the printing interval a new heading will be printed {this is not effective if the printing interval is set to Printer off }.

5. In case of fall-out loss of electrical energy in device supply and after restoring the el. supply the printer will print → **mains fall-out**. The time intervals start to be counted since the moment of restoring the supply. After the fall-out and repeated switching on the device by pressing **START/STOP** a new head will be printed.

6. In case of fall-out loss of electrical energy in printer supply no report will be displayed after repeated switching on or restoring of supply.

Setting the DIP microswitches of the printers CITIZEN iDP 3110: All four pins are in the lower position OFF.
CITIZEN CBM 910: OFF / ON / OFF / ON / OFF / ON / ON / OFF
CBM910 II: OFF/ON/OFF/OFF/OFF/OFF/ON/OFF.
A different type of the printer must be adjusted with the help of the printer´s manual and the data on the interface RS232C shown on the case.

4.12 ADJUSTING AND FUNCTION OF THE AIR FLAP

Function description:
The air flap serves for ventilating the chamber space of the oven, for example when drying wet material.

Adjusting the air flap:
Adjust the air flap when installing the unit. Put the operating lever of the air flap to the close position and put the air flap in the exhaust rear of the oven so that it closes the entire ventilating hole. Hold the shaft of the flap with pliers to prevent turning over.

Note:
In VENTICELL and INCUCELL with VENTILATOR it is necessary to adjust the sucking air flap besides the exhaust air flap.

The air flap control:
If you put wet goods into an oven to dry it before warming (sterilization), put the air flap in the position open so that the steam could freely leave the chamber. After drying put the air flap in the position closed.

Note:
Operating the unit with an open air flap when no goods are being dried increases power

consumption and moreover the maximum temperatures may not be reached.
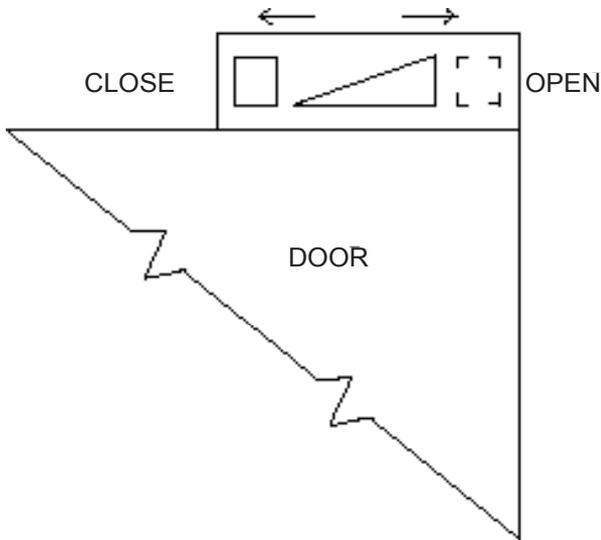
4.13 EXCHANGING THE DOOR SEALING AND ADJUSTING THE DOOR

Take off 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.
To check up the tightness place a sheet of paper between the door and the chamber when closing the door. Pull it out slowly, you should feel a relatively strong resistance.

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 screw with internal hexagon - 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.

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.
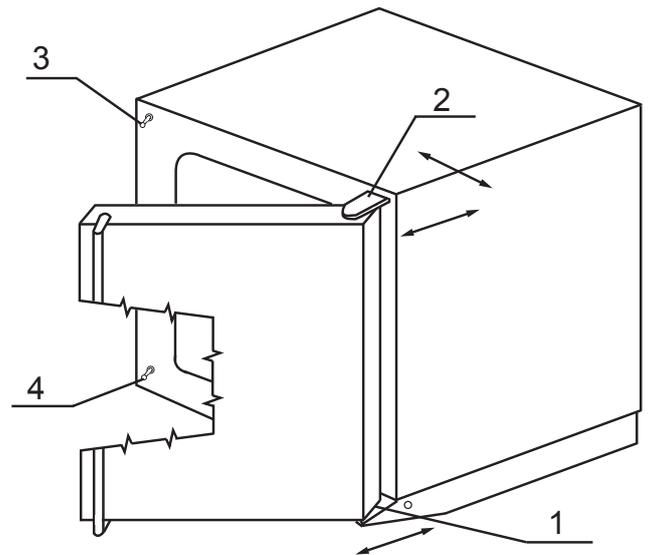
VENTICELL 22
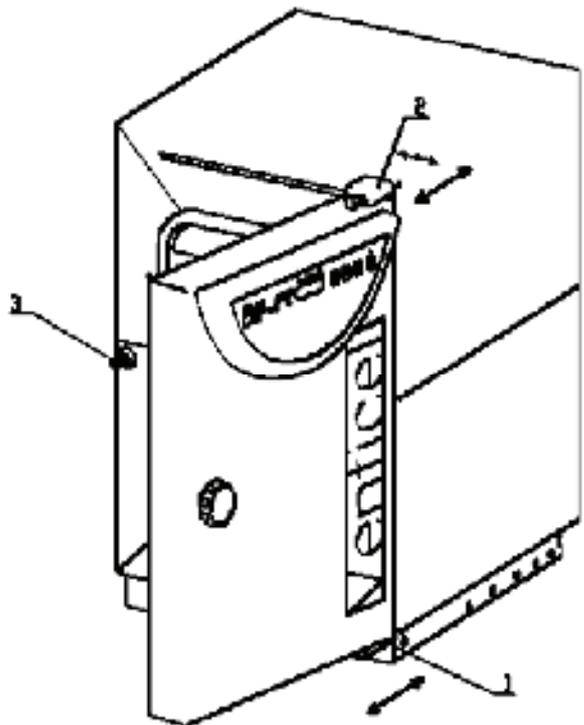
5 PARAMETERS OF THE UNIT

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
		Ø 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 - mains 50/60 Hz		power W input [stand by]		5	5	5	5
		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 Working temperature (beginning of the regulation)		od 10 °C above ambient temp. to °C	VC **)	250 /300	250 / 300	250 / 300	250 / 300
		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

+) Two-door pass-through model; applies to Venticell only

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

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.

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.

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.

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.

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.)

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 Instructions for use, 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 Instructions for use.

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 (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 picture on the following side.

⚠️ **ATTENTION!**
During the operation of the cabinet do not touch the glass surface. This surface cannot be heat-insulated like the metal sheet door. That is why 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 placed on the door. For types IC, ICV the door with window is not available.

The surface of the door with windows causes larger thermal losses, which increases spatial temperature deviations in the chamber (compared with common door without windows).

Door with glass window
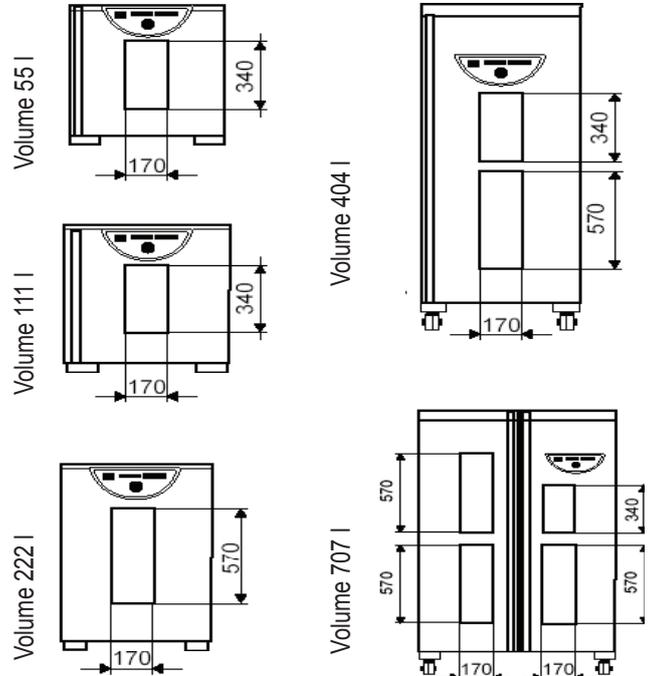
11.2 BUSHINGS OF DIAMETER 25, 50, 100 MM

The bushings are normally placed cca in the middle of the side (right or left) wall of the chamber. The bushes 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 a bushing with corresponding dimensions, if user wishes to measure temperature or RH inside the chamber by means of sensors, that are connected with an independent measuring device by means of wires; the user pulls the wires through the bushing.

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

11.3 LOCKABLE DOOR

The lock is located on the upper part of door's surface near the closing mechanism.In cases of the volume 22 the lock is located on the front panel area near the control of the door locking device.

11.4 LEFT DOOR

The lock is placed on the upper part of door's surface near the closing mechanism.

11.5 INDEPENDENT SENSOR PT100

The independent flexible sensor is used for the material temperature measurement in the chamber. Up to four sensors can be connected. The information about the given sensors temperature is displayed on the position of time information. Temperature and time are displayed in turns and the individual sensors are differentiated from each other by means of letters.

When printing on the printer, each record contains more lines. The first line, starting with figure 1, displays the temperature on the regulatory sensor. Subsequent lines, starting with letters, display the flexible sensors temperature.

11.6 SUPPORTIVE SW FOR PC

11.6.1 RECORDING SW - WARMCOMM - FOR PC UNDER WINDOWS

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 instructions for the programme use are supplied with the installation programme. Hardware requirements: Common PC with an operational software Windows 2000, XP and higher. One free port RS 232 (COM) is required for each connected device. The maximum length of the connecting cable is 15 m.

11.6.2 RECORDING PRINTING SW - PRINTER ARCHIVE - FOR PC UNDER WINDOWS

The Printer Archive programme serves for text recording from the device print outlet. It serves as a direct substitution of a physical printer. The data are recorded to a file on a PC disc and the programme offers more possibilities of the recorded data handling including archiving or printing on a table PC printer. Hardware

requirements: Common PC with an operational software Windows 95 and higher. One free port RS 232 (COM) is required for each connected device. The maximum length of the connecting cable is 15 m. For more detailed information about HW, ask the seller.

11.7 HEPA FILTER

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 PLACING THE HEPA FILTER, FILTER DIMENSIONS, FUNCTION AND FILTRATION CHARACTERISTIC OF THE AIR FILTER
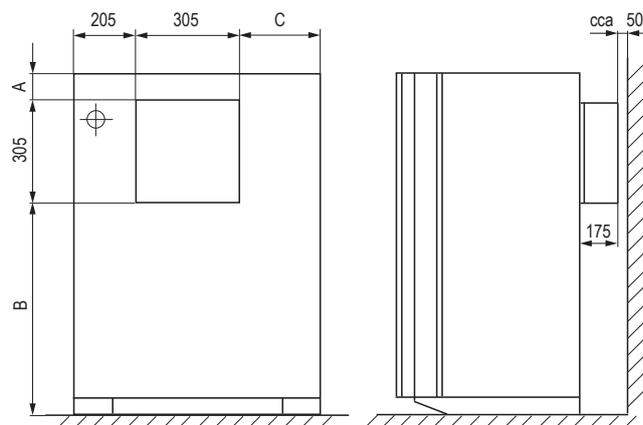
Fig. 3 (dimensions are in mm)

Type → Dimens.↓		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
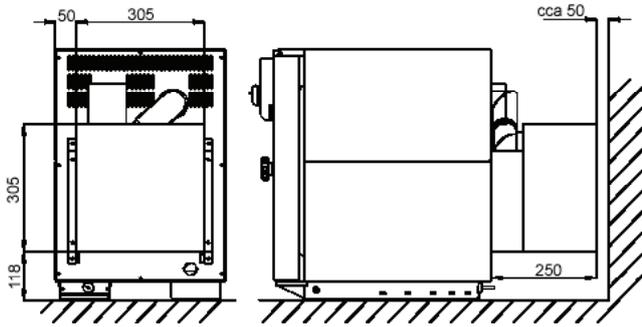
The air filter is a part of the optional accessories, it is installed when cooling by forced air circulation. Class of the HEPA filter according to DIN 24 184 is S, according to EUROVENT it is EU 13.

Insert the nuts for fixing of the HEPA filter into four rectangular holes in the rear cover. Put two rubber rings on the edge of the suction chimney. Put the pipe of HEPA filter on the chimney. During the putting on, please, take care of the fact so the rings would not be shifted by the pipe of HEPA filter away, but the rings must be forced into the gap between the pipes. Please, fix the put on HEPA filter with four screws.

If the HEPA filter is equipped with a fan, insert its socket plug into the socket for its energy supply.

HEPA filter assembly to the apparatus of size 22:
- insert the supplied nuts into the holes in the rear wall (1/13)
- put 2 pcs of O-rings on the edge of the suction chimney
- 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).
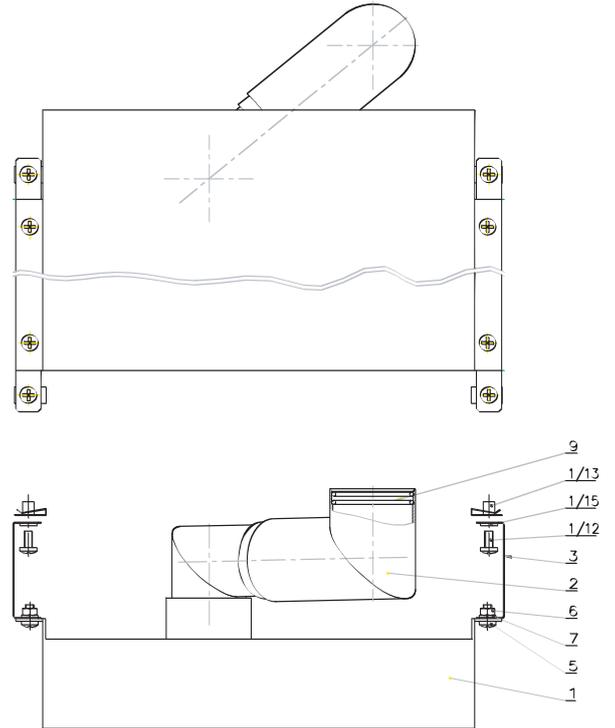
11.8 POTENTIAL - FREE CONTACT FOR ALARM REPORTS

Is lead to the connector in the rear foot, the voltage up to 24 V/ 1A can be connected to it Serves for remote alarm (in Anglo-Saxon countries marked as BMS relay Building Management System relay) – i.e. the information on the failure is transmitted by a long-distance line, interrupted by the built-in relay of a potential-free contact, into a room that is distant from the place the temperature cabinet is installed in. The relay switches on in all failure conditions reported on the display.

11.9 INNER SWITCHED SOCKET

The socket is placed (only for INCUCELL V) in the chamber on the side wall. Details of the switching control see par. Basic setting of the units – Service 06, connection and other details are shown in the following diagram and text.

Connection wiring beetween plug and built-in equipment
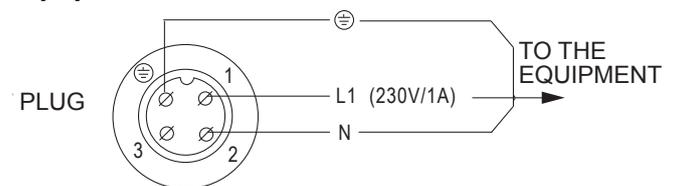
Warning:

The plug must be connected only by a person with a sufficient qualification.

When the plug is plugged in and out of the socket, or when manipulated with the inner equipment, must INCUCELL V be switched off (the mains switch in the position-„0").

The socket-plug contact must be tightened in order to prevent disfunctioning of the protective system.

After disconnecting the socket-plug contact fit carefully the protection covers on the socket and the plug so that impurities and humidity would not get inside.

11.10 DEVICES WITH THE DOOR BLOCKING FUNCTION

In this model, electrically controlled mechanism is used to prevent unwanted door opening. The mechanism remains in its position even after the device is switched off.

⚠ ATTENTION!

Blocked door may not be opened forcibly. It may damage the blocking system mechanically. If you need to open the door in case of emergency (e.g. power supply failure), follow the chapter Emergency Door Opening.

11.10.1 ONE-DOOR MODELS

Two ways of blocking can be selected in SERVICE 58:

1. Manual - The door is blocked/unblocked by pressing ◄ and ► buttons for 2 seconds.

   If you try to block an open door, you are warned of an error by a prolonged beep.

2. Automatic - Close the door. It is blocked automatically after preset time elapsing. Unblock the door by pressing ◄ and ► buttons for 2 seconds. The door is blocked only when the programme is switched on. When you unblock the door, you have a preset period of time to open it. If you do not open it, the door will be reblocked after the preset time elapsing (2 to 9 s).

The blocked door is indicated on the display by the flashing character "#".

The door unblocking can be conditioned by the SO card insertion.

11.10.2 TWO-DOOR VENTICELL

The blocking function is pre-set in Service 58. The setting is then applied to all programmes. If "B=Lck" is set for "End", "End" will be changed automatically to "Stp" after reaching the given state.

You can use the button on the unloading side panel for switching from "Stp" to "End" (out of function when any door is open) and from "End" to "Stp" (out of function when the unloading door is open).

In the sterilization programmes (see chapter Venticell with the sterilization function), you can change from "End" to "Stp" by the said button only if the unloading door was opened before (material unloading).

11.11 PROTECTION OF PROGRAMME SETTING BY MEANS OF A CHIP CARD

Selected programme parameters may only be changed after SO card insertion. If the card is not inserted, the programmes are displayed in small letters (p1 to p6). After the card is inserted, they are displayed in capital letters (P1 to P6).

11.12 DOOR OPENING SIGNALLING

Door opening during the programme run is signalled both on the display and by a sound signal. Sound signalling can be temporarily switched off by any arrow pressing.

11.13 TWO-DOOR PASS-THROUGH MODEL

Available in VC 222, 404 and 707 only. Allows material loading in one area and its unloading in another area after heat treatment.

11.13.1 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.

11.13.2 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**
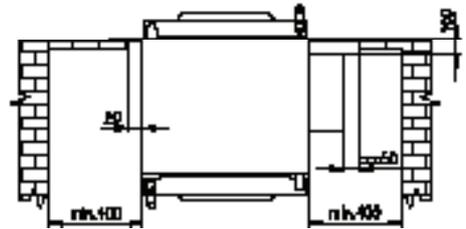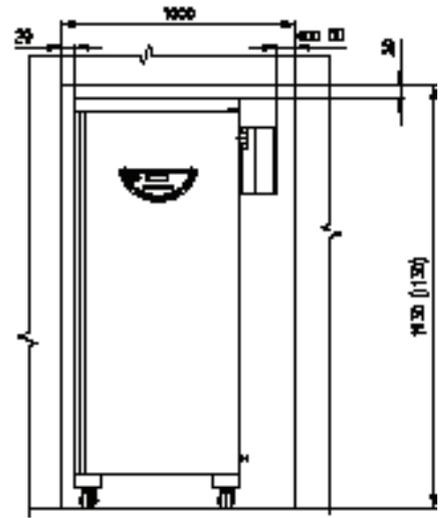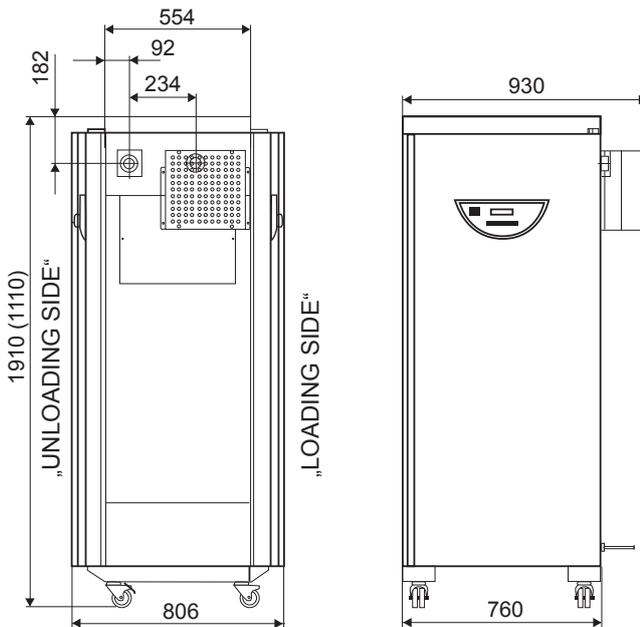
COVER SHEETS
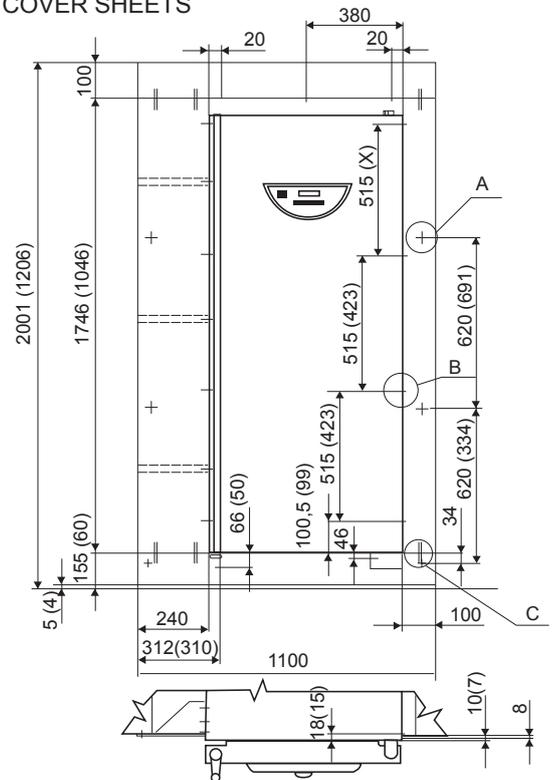
11.13.3 VENTICELL 707/2 - INSTALLATION DATA

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 mm² Cu, protection by circuit breaker 16 A – place near the unit
   – cable length 3 m

MAIN DIMENSIONS OF VENTICELL 707 - PASSING THROUGH
(dimensions are in mm)
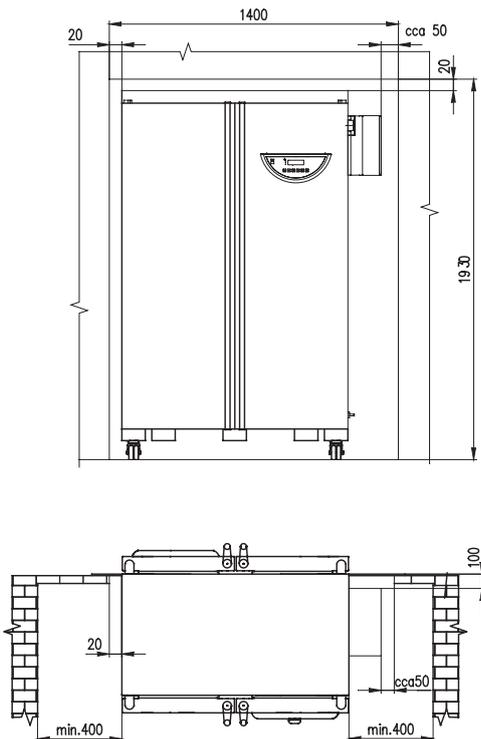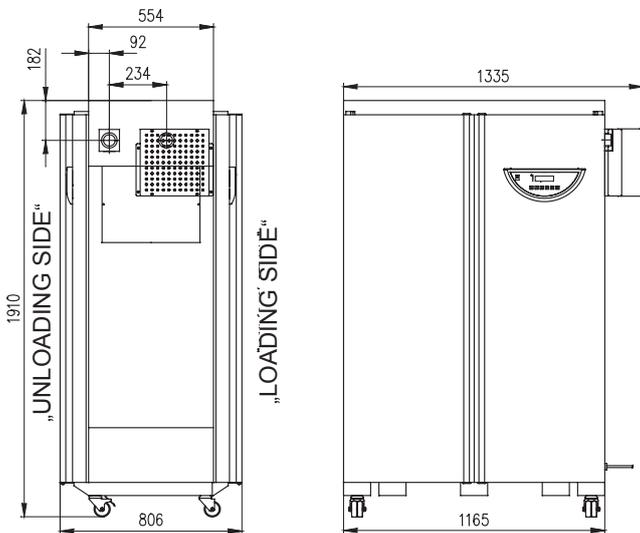
COVER SHEETS
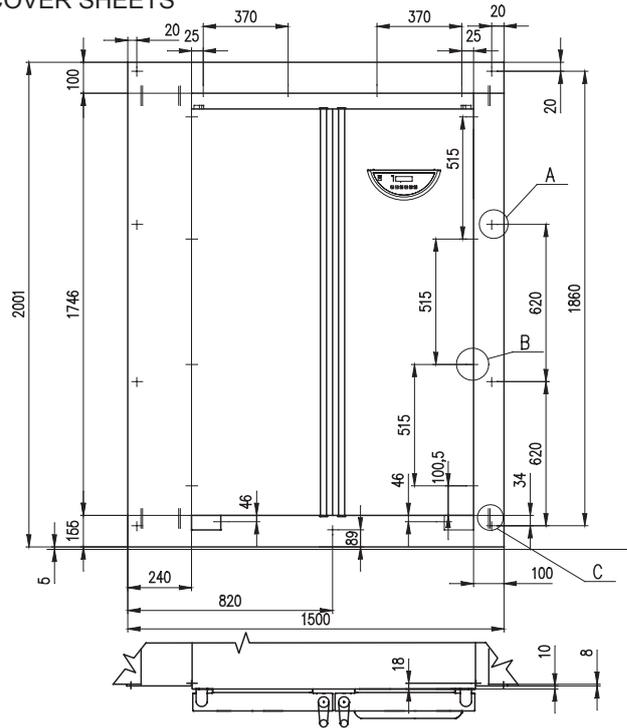
Detail A
8x (6x) (5x) screw ⌀ 4x40 with countersink head with cross groove for fixing to a wall insert dowels with a size of 8 to the wall.

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.
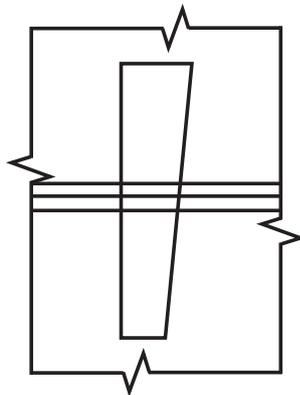
11.14 ADJUSTMENT TO PREVENT CULTIVATING MEDIA AND TISSUE CULTURES DRYING

This mechanical and programme adjustment reduces markedly the cultivating media and tissue cultures drying during the use of Incucell with ventilator. In principle, chamber tightness is increased. Air inlet flaps cannot be opened. The chamber contains a moistening plate. Ventilator is switched off at the door opening.

11.15 IC AND ICV WITH DECONTAMINATING FUNCTION

Applies to volumes 55, 111, and 222 litres. The model is designed to be used if there is a danger of potential chamber contamination by microorganmisms.

Follow these operation instructions:
a) Switch off the device working in common mode by means of OFF button.
   Insert the SO card in the chip card reader, switch the device on by means of ON button (the device passes to the decontamination mode – "Decontamination!" is flashing on the display). Enter the Service 07 (protective thermostat setting) in a standard way. Set the limit temperature (optional value) and confirm the setting.
b) Remove the chip card, leave the service mode, set the decontamination temperature/ time combination optionally in programme P1 – P6, and start the decontamination. You can leave the decontamination mode at any time by means of OFF button; you enter the common IC/ICV mode.

If the decontamination temperature drops for any reason below the lower limit set in Service 41, the subsequent exposure duration at the preset temperature is extended by the time spent under lower temperature.

The decontamination can be documented either through a printer or SW WarmComm.

11.16 VENTICELL WITH STERILIZATION FUNCTION

Programmes P1, P2, P5 and P6 remain unchanged. P3 and P4 are replaced by sterilization programmes SS and SP.

11.16.1 BASIC STERILIZATION PROGRAMME SS

SS programme is the basic sterilization programme. After you select this programme in VENTICELL with a sterilization function, letters "SS" are displayed on the first and second position.

SS = ⎽⎽⎽╱‾

The device starts after the delayed start ends (max. 9,999 hours) and works under a preset temperature. Duration of the preset temperature exposure can either be limited or unlimited.

11.16.1.1 SS PROGRAMME SETTING

Set the cursor to the Programme position by means of ◄► buttons and switch to SS programme.
Using ◄► buttons, place the cursor to the graph and check whether the segment 1 in the graph is activated (if necessary, change it by means of ▲).
Set the delay time between 00 h 00 min and 9,999 hours in the 🕒 fields.
Using ◄► buttons, go to the graph and switch to the second graph segment ⎽╱ by means of ▲ button. Set the temperature in °C fields. Move the cursor to 🕒 position and set the procedure duration between 00 h 00 min and 9,999 hours, or ∞:∞ (set the infinity by setting 9,999 hours, moving the cursor to the figure 9 in units and pressing ▲).

11.16.1.2 LCD - READ OUT SHOWN

Program	Segment		°C		🕒
S S	= / ‾	0 0	. 0	0 0	: 0 0
1 0 0					

⌁ RH ✳ 🖻₅🖻₆
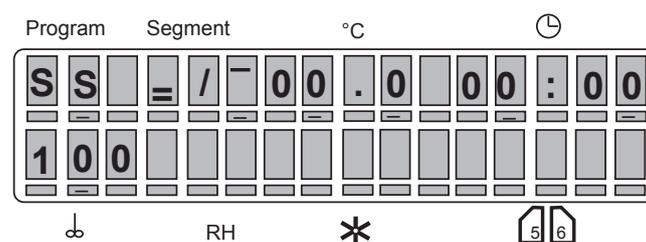
11.16.1.3 SS PROGRAMME START

Press **START/STOP**. You will hear a sound signal and the propeller symbol in the first character starts rotating clockwise. See the display below.

The first segment in the graph is active

Program Segment °C ⏱

*	S		=	/	⁻	°C	°C	.	°C		h	h	:	min
1	0	0												

⌀ RH ✳ [5][6]
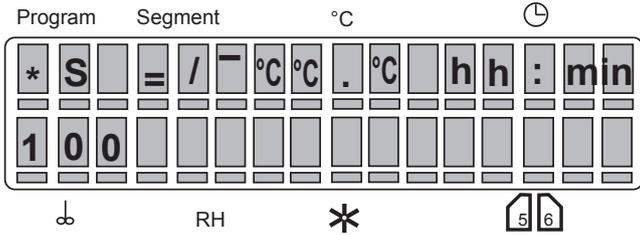
$=/^{-}$ = segment 1

°C°C°C = actual temperature
hh:mm = programmed time of delay, time countdown to zero.

The second segment in the graph is active; the first segment has elapsed

Program Segment °C ⏱

*	S		_	//	⁻	°C	°C	.	°C		h	h	:	min
1	0	0												

⌀ RH ✳ [5][6]
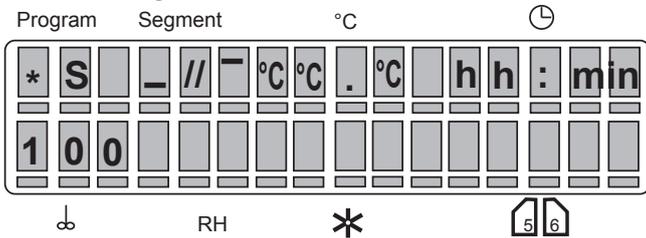
$\_//^{-}$ = segment 2

°C°C°C = actual temperature
hh:mm = time from the start till the preset temperature reaching.

The third segment in the graph is active

Program Segment °C ⏱

*	S		_	/	＝	°C	°C	.	°C		h	h	:	min
1	0	0												

⌀ RH ✳ [5][6]
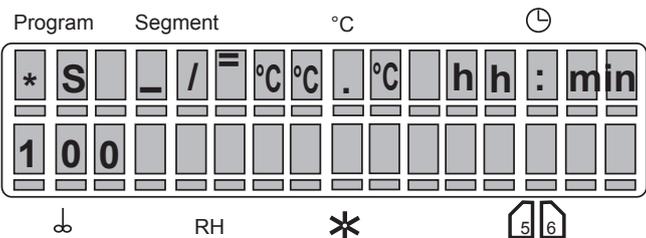
$\_/^{=}$ = segment 3

The preset temperature has been reached. If the procedure duration is unlimited, elapsed time is displayed. If the procedure duration is limited, time remaining till its end is displayed. After the programme ends, chamber temperature and the text "End" are displayed. Both the indication of the programme and the chamber temperature disappear after pressing any key on the panel.

11.16.1.4 INFORMATION ON SET PARAMETERS DURING OPERATION OF THE UNIT

See item 4.2.4.

11.16.1.5 STOP SS

Press **START/STOP**.

11.16.1.6 STERILIZATION PROGRAMME SETTING AND COURSE

If the ventilation flap or door are opened during the delayed start phase and rise to the sterilization temperature, message "Open" is displayed on the right bottom side. The device continues working without interruption. Exposure time countdown starts several seconds after the sterilization temperature was reached. If the door or the ventilation flap are opened in this phase, the display shows "Open". If you do not close the flap or the door, the device is switched off after the exposure time ends. The display shows "Open".
If you close the door or the flap during the exposure, the exposure (or temperature rise according to the actual temperature in the chamber) starts again from the beginning.

If the temperature drops below the preset one in this phase:
a) If caused by a power supply failure, a new cycle is started from the beginning of the temperature rise after the power supply recovery;
b) If caused by any other reason, the display shows Error 02.

Dry-heat sterilization parameters:

Temperature [°C]	Sterilization exposure [min]
160	60
170	30
180	20

Note:
a) In sterilization programmes, the temperature deviation in the sterilization space within the range of sterilization temperatures (definition see in Chapter Working Space) is, in accordance with the national regulations, from -1 °C to +5 °C as compared to the preset value. If Service 48 is activated, the display shows Error 02 and Error 03 if the temperature drops below the given limit and exceeds the given limit, respectively.
b) In special cases, the sterilization cycle can be started after the required temperature is reached on the independent flexible sensor PT2 placed by the user so that it could read the temperature of the sterilized material. The required device resetting may be carried out by the service technician.

c) Ventilator speed cannot be set in SS programme; it is always maximum (100 %).

d) In the two-door model, if no printer is connected or if a printer is connected but the operator does not want to print, the value "Printer switched off" must be set in the Print Mode of Service 04, otherwise the display on the unloading (clean) side of the device does not work.

11.16.2 STERILIZATION PROGRAMME SP WITH PREHEATING PHASE

This device setting is used if we want the whole load to be heated evenly already at the beginning of the sterilization as such. The required temperature, and especially the preheating duration must be determined experimentally, or the operator's experience must be used for different materials and their quantity in the load. The programme works with two segments on 2 temperature levels: T1(preheating time) and T2 (sterilization/exposure time). The duration of T1 level is limited while the duration of T2 level can be either limited or unlimited. T1 may be higher or lower than T2 (depends on the operator's requirements or experience).
Ventilator speed cannot be set in SP programme; it is always maximum (100 %).

11.16.2.1 SP PROGRAMME SETTING

11.16.2.2 SEGMENT SETTING FOR T1

T1 temperature setting:
Move the cursor to the Programme position and switch to SP programme. Place the cursor into the graph by means of ◄► and check whether T1 (/‾_) is activated (the cursor is on T1 segment). If it is not activated, activate it by means of ▲.
Go to position °C – temperature setting – and set the temperature.

Temperature T1 delay setting:
Move the cursor below the eleventh character of the display and recall the information about parameters by means of ▲ pressing. The display shows "t" (see the notes above). Enter the position 🕒 and set the delay time between 00 h 00 min and 99 h 59 min.

Temperature T1 and delay displaying
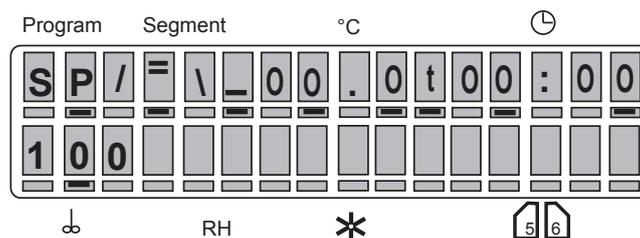
11.16.2.3 SEGMENT SETTING FOR T2

T2 temperature setting:
Place the cursor into the graph and check whether T2 (/‾_) is activated. If the segment is not active, switch the cursor position by means of ▲. Move the cursor to °C position and set the temperature.

Temperature T2 delay setting:
Move the cursor below the eleventh character of the display and call the information about parameters by means of ▲ pressing. The display shows "t". Enter the position 🕒 and set the delay time between 00 h 00 min and 99 h 59 min, or unlimited ∞:∞ (set the infinity by setting 99 hours, moving the cursor to the figure 9 in units and pressing ▲).

Temperature T2 and delay displaying:
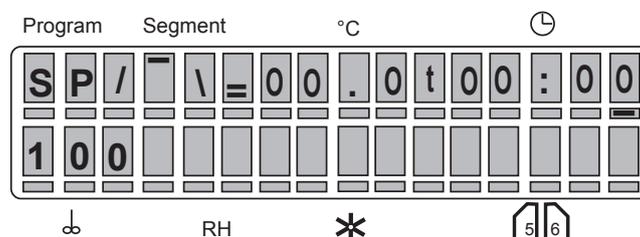
11.16.2.4 SP PROGRAMME START

Press **START/STOP**. You will hear a sound signal and the propeller symbol in the first character starts rotating clockwise. See the display below:

The graph shows the actual programme status.

S1 is active, temperature rises to T1

Program	Segment	°C	🕐

```
* P // ⎺ \ _ °C °C . °C  hh : min
1 0 0
```
⊥   RH   ✳   5 6

$\diagup\diagdown$ = **S1**
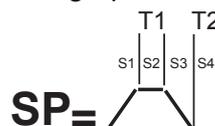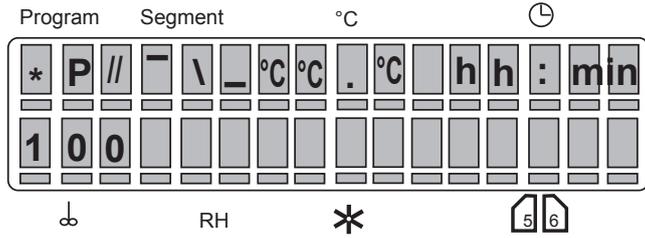
°C°C°C = actual temperature
hh:mm = time passing from the start till T1 reaching.

S2 is active, temperature T1 has been reached, T1 delay period has been running:

Program	Segment	°C	🕐

```
* P / ⎓ \ _ °C °C . °C  hh : min
1 0 0
```
⊥   RH   ✳   5 6

$\diagup\diagdown$ = **S2/T2**
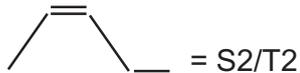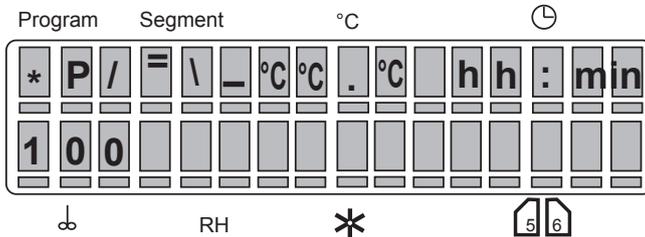
°C°C°C = actual temperature
hh:mm = T1 delay countdown from the preset value to zero.

S3 is active, temperature rises to T2:

Program	Segment	°C	🕐

```
* P / ⎺ \\ _ °C °C . °C  hh : min
1 0 0
```
⊥   RH   ✳   5 6

$\diagup\diagdown$ = **S3**
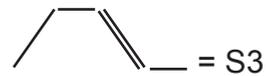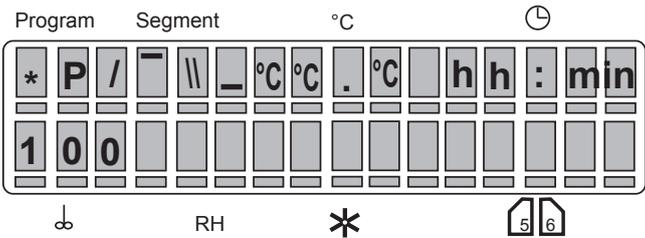
°C°C°C = actual temperature
hh:mm = time from the end of T1 till T2 reaching

S4 is active, temperature T2 has been reached, T2 delay period has been running:

Program	Segment	°C	🕐

```
* P / ⎺ \ = °C °C . °C  hh : min
1 0 0
```
⊥   RH   ✳   5 6

$\diagup\diagdown$ = **S4/T2**
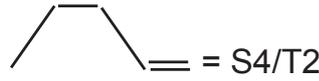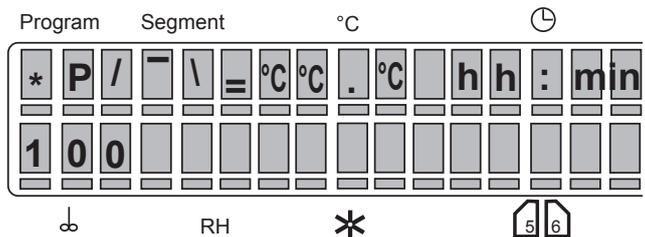
°C°C°C = actual temperature
hh:mm = if the procedure duration is unlimited, the time elapsed is displayed. If the procedure duration is limited, time remaining till its end is displayed.

After the programme ends, chamber temperature and text "End" are displayed. Both the indication of the programme and the chamber temperature disappear after pressing any key on the panel.

11.16.2.5 INFORMATION ON SET PARAMETERS DURING OPERATION OF THE UNIT

See item 4.2.4.

11.16.2.6 STOP SP

Press **START/STOP**.

11.16.3 SS AND SP PROGRAMMES – TWO-DOOR MODEL WITH BLOCKING

If a programme ended with an opened flap or door and the display shows "Open", the programme must be restarted by means of **START/STOP.**

If the flap is opened in the "End" situation:

1. If the device is equipped with a HEPA filter and at least one of the ventilators is running, the loading side panel will display "Flap opened" and the acoustic signalling will be switched on. "Open" and the chamber temperature will be displayed alternately on the unloading side panel.
2. In other cases, the printer will print "Flap opened! Repeat the sterilization!" and the door blocking will be switched to "Stp". The unloading side panel will show the running text "Flap opened-repeat steril." while the loading side panel will display "Non-sterile". The programme can neither be changed nor started in this situation. By pressing the button on the loading side panel, the text "Non-sterile" will disappear and a new programme can be started.

12 EMERGENCY DOOR OPENING

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.
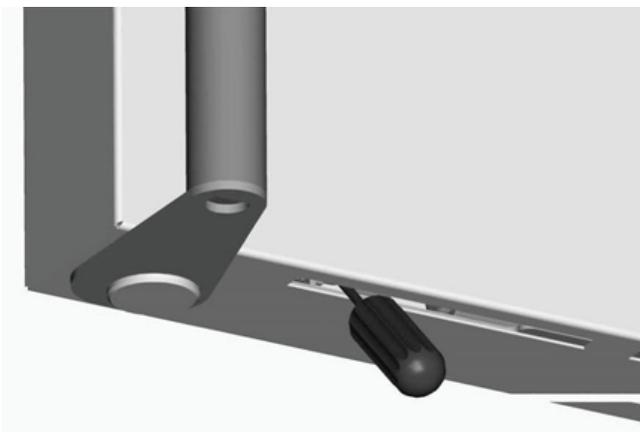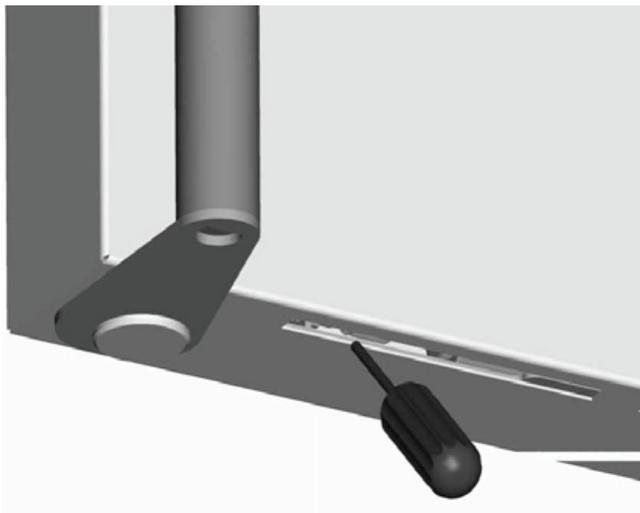
2. To push in the arrow direction and thus to push away the blocking rod (10 -15 mm is enough). In case of standard model – of the right door in the arrow direction, in case of the non-standard model – of the left door – it would be reversely (always in the direction from handle to the door hinges).
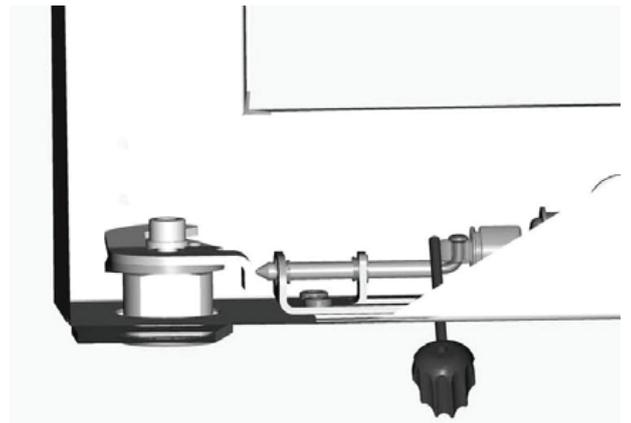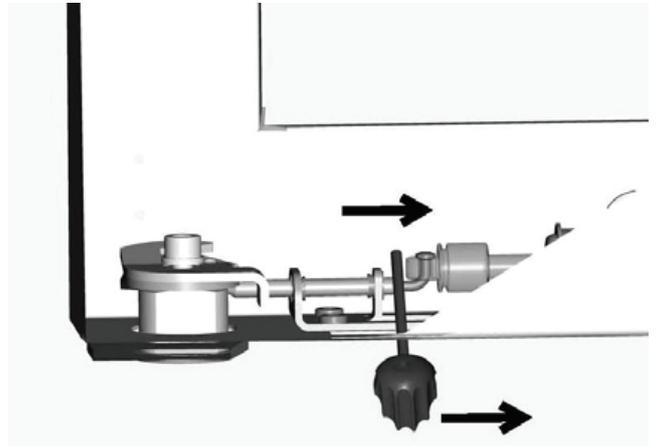
3. To open the door by means of the door handle If it would be not possible to move away the blocking rod of the door – see above, then it would be necessary to unscrew the whole blocking mechanism underneath (4x M4 screws) and to push it away as a whole. After such intervention, the service work is necessary (backward blocking mechanism assembly).

EC-DECLARATION OF CONFORMITY

We: **MMM Medcenter Einrichtungen GmbH, Semmelweisstrasse 6**
            D-82152 Planegg / München

declare on our own responsibility that product

heating oven

trade name:

VENTICELL
ECOCELL
DUROCELL
INCUCELL
INCUCELL V

type   **LSIS-B2V, LSIK-B2V**
model: **VC** kkk, **VC** kkk**/2**, **EC** kkk, **EC** kkk**/2**, **DC** kkk, **DC** kkk**/2**, **IC** kkk, **IC** kkk**/2**, **ICV** kkk, **ICV** kkk**/2**
            kkk: **22, 55, 111, 222, 404, 707**
description of the equipment
electrically heated drying oven intended for heating of laboratory materials in the temperature range up to 300 °C

meets all the provisions of the Directives no. 2006/95/EC, 2004/108/EC, which apply to him.

Standards applied:
    EN 61010-1, EN 61010-2-010,
    EN 61326-1

Year in which the CE marking was affixed

Brno 2009-10-01

Ing. Milan **Krajcar**
Executive

... 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