

Heraeus BB 6220

## Gas Jacketed CO2 Incubator



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# *Gassed Incubator Series 6000*

*BB 6060, 6220 operation manual*

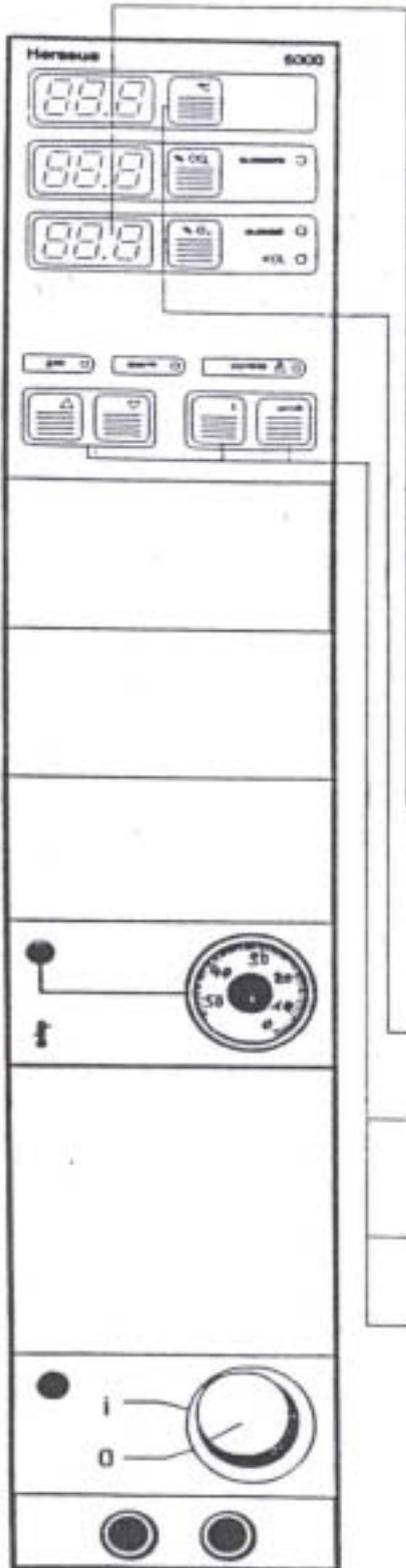


**Heraeus**

 **Kendro**  
Laboratory Products

# 1. Control panel

## Display and Keys



### Display:

display , setpoint  
 setpoint key 가  
 Temp.-related error codes [i] key display .  
 Special functions [ ] key .  
 Cf. Function Selection (p.21)

### % CO<sub>2</sub> Display:

display , setpoint  
 setpoint key 가  
 CO<sub>2</sub>-related error codes [i] key display . Special  
 functions [ ] key . Cf. Function Selection

### % O<sub>2</sub> Display:

display , setpoint  
 setpoint key 가  
 O<sub>2</sub>-related error codes [i] key display .

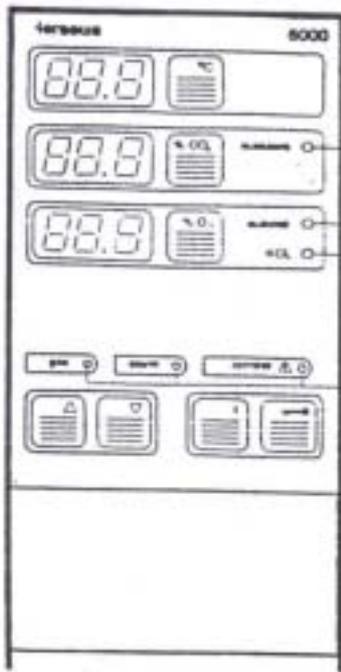
### Setpoint Keys: Temperature, CO<sub>2</sub> (O<sub>2</sub>)\*

[UP] [DOWN] Keys: 가

[i] key: Error code가 display .

[ ]key :  
 Special function function selection

\*=Optional



LED AUTO-ZERO:  
CO<sub>2</sub> measuring system

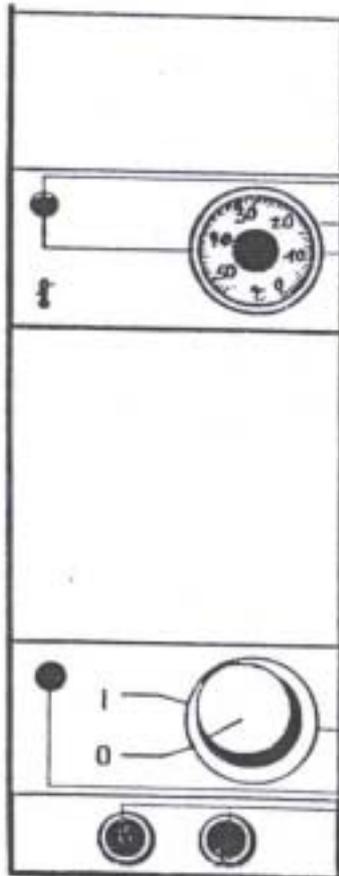
LED AUTO-CAL\*:  
O<sub>2</sub> measuring system

LED KCL\*:

LED Gas: Gas

LED Alarm: Alarm

LED Control:  
Special function



Temperature limit controller

Cut-off point dial

on/off Master switch

가

Fuses

\*=Optional

## 2. Introduction

gassed incubator

manual



No.50031065

Incubator

Heraeus

Customer Service

technical expert

가

spare parts

nameplate

data

\* DIN 58 945

\* DIN 12 880 Part 1

\* DIN VDE 0700 Part 1; IEC 335-1



가

VDE Inspection Office

GS-label



acc.w.DIN VDE 0871, class B

, VDE Inspection

Office

## 3. Application

Gassed Incubator

가

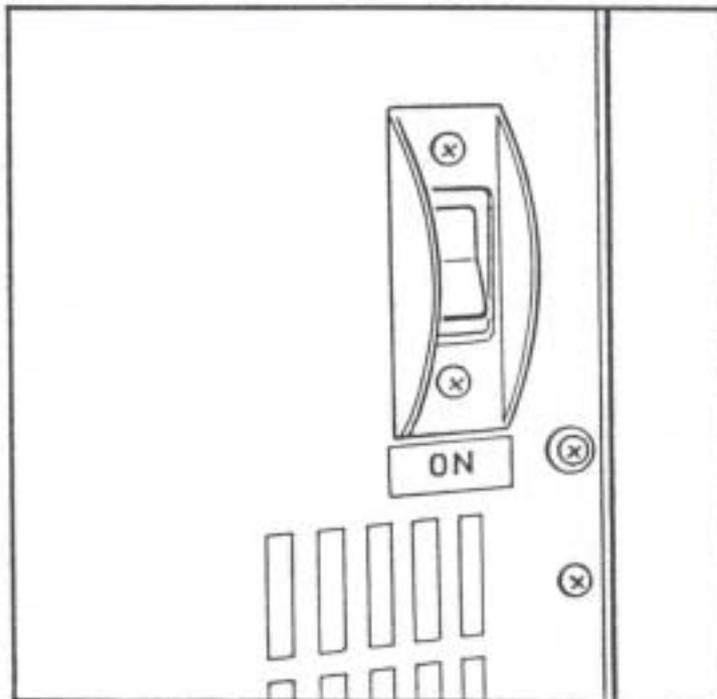
incubator

가

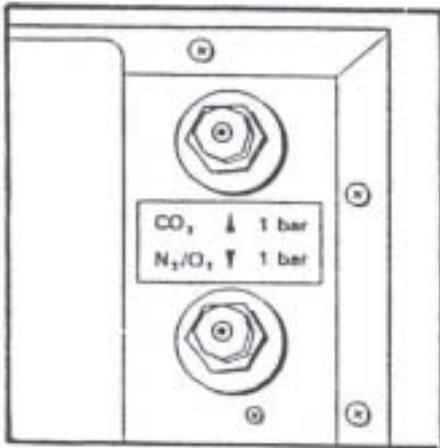
Heraeus Service Agent

#### 4. DESCRIPTION OF THE UNIT

Heating System Air-jacket heating system water reservoir  
condensation  
system 가 condensation  
condensation  
, switch "ON" , heater



Gas supply



Gas (CO<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>)

Gas inlet pressure 1 bar



Gas

가  
μm

가 , gas )

filters(0.3  
Filter 99.998%

Gas analyzer

fan gas incubator

가

Pressure compensation



가

pressure compensation vent gases

가

vent

check valve

Valve



가

check valve

gas가

valve

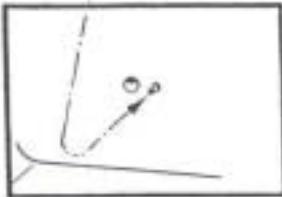
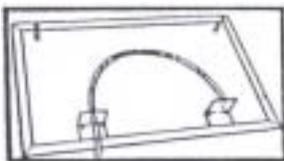
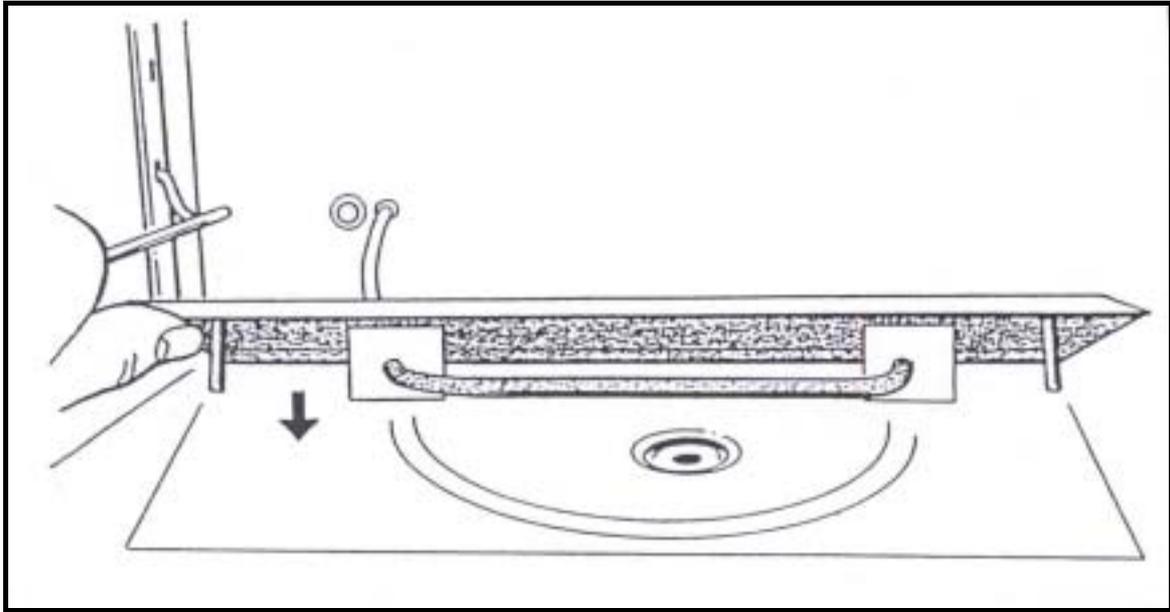
Option

Microperlator  
(O<sub>2</sub> Version)

Water reservoir  
transfer

microperlator(  
가 gas

hose) O<sub>2</sub> N<sub>2</sub>  
가



## DESCRIPTION OF THE UNIT

Microprocessor-based control system

: system

### a) Physiol. Parameter Control

Setting ranges:

- \* Temperature: 7.0... 50.0
- \* CO<sub>2</sub> content : 0.0... 20.0 %
- \* O<sub>2</sub> content : 3.0... 80.0 % (Optional)

### b) Automatic Calibration of the Meas. Systems

- \* AUTO-START routine
- CO<sub>2</sub> AUTO-ZERO system
- O<sub>2</sub> AUTO-CAL system (Optional)

### c) Monitoring Functions

- \* Door Control
- \* Error Messages
- \* Error Storage
- \* External Alarm System (Optional)
- \* Error Code Table

### d) Special Functions

- \* Buzzer : ON/OFF
- \* Gas Supplies : ON/OFF
- \* Setpoint Key : Lock-in
- \* Operat. Modes : with or w/o water

a) Physiol. Parameter Control

Temperature : microprocessor-based control . Pt 100  
sensor . sensor가 heating system  
, alarm .

CO<sub>2</sub> : pH setting CO<sub>2</sub> CO<sub>2</sub>  
CO<sub>2</sub> pH sodium bicarbonate buffer  
graph Appendix .

CO<sub>2</sub>

CO<sub>2</sub>

CO<sub>2</sub>

O<sub>2</sub> : *in vitro*

Optional (3.0%... 21.0%) (21.0%... 80.0%)

CLARK

cathode

anode

. 0.3mol KCl

O<sub>2</sub> control

Socket

. (cf. Maintenance Instructions, p.25)

Gas Mixtures : Microprocessor gas CO<sub>2</sub> O<sub>2</sub> setting 95%  
. (O<sub>2</sub> - concentration max. 80 %)

**b) Automatic Calibration of the Mesa. Systems**

AUTO-START Routine	start-up Incubator	setpoint AUTO-START routine	system
	가 system	가 가	microprocessor process gas가
	15	AUTO-START	
	(p. 19)		
CO <sub>2</sub> AUTO-ZERO System	detectors process	7	3.5 LED AUTO-ZERO AUTO-ZERO gas
O <sub>2</sub> AUTO-CAL System (Optional)	AUTO-ZERO routine	pump	sensor
	가 microprocessor	AUTO-CAL AUTO-CAL routine	21% LED

c) Monitoring Functions

Error Messages: Microprocessor error code numbers .  
 code number error .  
 Affected control circuit display displays( ) LED  
 "Alarm" system error buzzer가  
 . [i]key error  
 . error code affected control circuit displays  
 , displays  
 .  
 [i]key 가 displays [--.] .

Reminder 가 , [i] key , error  
 code가 displays .  
 Error message :  
 \* Setpoint changes  
 \* Turning the unit off/on

Error Storage: Service work , 9 errors  
 error memory . memory  
 , Service Technician .

External Alarm system monitoring system .(telephone system  
 (Optional) building alarm system )

Error Code Table : (SP=Setpoint)

Error Code	Possible Cause	Remedy
99		
100 가 (SP)	Temp.limit controler가 ;	Temp. limit controller (p.20)
101 가 (SP)	가	switch
104 broken sensor	Temperature sensor	Service Technician
200 CO <sub>2</sub> 가 (SP)	CO <sub>2</sub> 가 CO <sub>2</sub> cylinder가 CO <sub>2</sub> inlet	Gas supply cf. Installation CO <sub>2</sub> cylinder inlet ; 1bar
201 CO <sub>2</sub> 가 (SP)	CO <sub>2</sub> inlet	inlet ; 1bar
202 Gas analyzer calibr. Error	Hose  Gas analyzer fan	Hose , identification rings Fan Service Technician
203 Gas analyzer	Gas analyzer가	Gas analyzer plug
300 N <sub>2</sub> 가 (SP)	N <sub>2</sub> 가 N <sub>2</sub> cylinder가 N <sub>2</sub> inlet	Gas supply cf. Installation N <sub>2</sub> cylinder Inlet ; 1 bar
301 N <sub>2</sub> 가 (SP)	N <sub>2</sub> inlet	inlet ; 1 bar
302 O <sub>2</sub> 가 (SP)	O <sub>2</sub> 가 O <sub>2</sub> cylinder가 O <sub>2</sub> inlet	Gas supply cf. Installation O <sub>2</sub> cylinder Inlet ; 1 bar
303 O <sub>2</sub> 가 (SP)	O <sub>2</sub> inlet	Inlet ; 1 bar
304 Electrolyte error	Electrolyte KCl level foil membrane	Electrolyte cf. Appendix Electrode cf. Appendix
305 O <sub>2</sub> electrode	Electrolyte level foil membrane Electrode가 Install	Electrolyte cf. Appendix Electrode cf. Appendix Assy. Instruct., cf. Appendix

d) Special Functions p.21



Function Key

Buzzer ON/OFF

Function 1:

buzzer가 , error message

Buzzer OFF: "Silent" alarm

Factory Setting : Buzzer ON

Gas ON/OFF

Function 2:

"Gas OFF" , gas supplies ; LED "Gas"  
가 .

Factory Setting : Gas ON; LED "Gas" .

Setpoint Lock-in

Function 4:

가 , CO2 O2 setpoint

Factory Setting : Setpoints

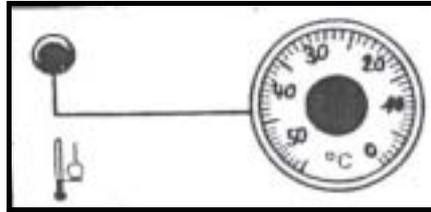
Operating Modes

Functions 7:

가 reservoir , AUTO-  
START routine mode .

Factory Setting: reservoir

## 5. OVERTEMPERATURE PROTECTION



### Temperature Limit Controller - (responds to temperature)

incubator, sample electronic temperature limit controller가 . ( acc.w.DIN 12 880 Thermal Safety Class 3.1 .) Temperature control circuit , ( 가 ,) temperature limit controller control . setting 가 .(coin screwdriver); cf. Start-up(p.19)

### Protection of the Unit

가 55 (limit stop) control knob , temperature limit controller incubator .

### Load Protection

가 microprocessor 1~2 , Temperature limit controller sample . Temperature limit controller . Temperature limit controller가 control , Error Code Table .

### Operational Test

temperature limit controller display 2 dial . .

External Alarm System

## 6. Placement and Installation

### Location :

Incubator

accessories

30

가

setting

가

( 가 feet)

Incubator

CO<sub>2</sub>, O<sub>2</sub>

N<sub>2</sub>가

bench

install

가

가

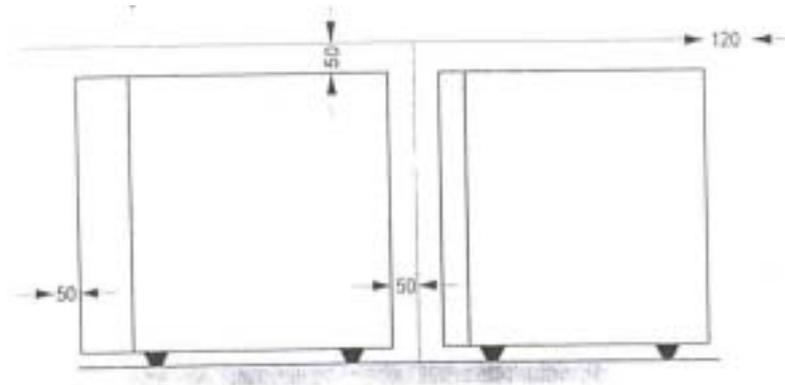
gases

Appendix

### Clearances

Incubator

/



check valve

valve hose

(condensation

.)

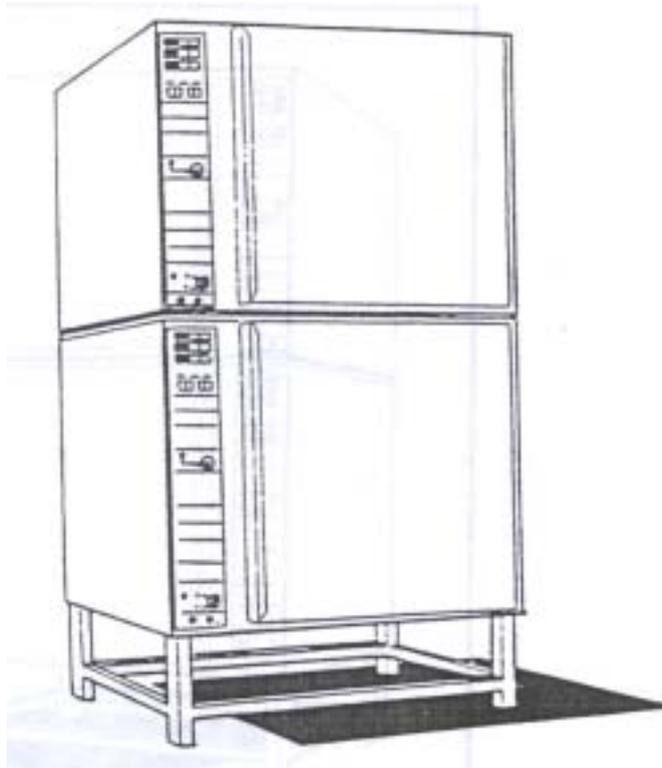
Installation under  
Lab.Benches

Installation

- \* gas supplies
- \* supply
- \* supply cable gas supplies lines

bench

Stacking of gassed  
Incubator



Installation, Connection  
to the Gas Supply

gas hose  
1 bar pressure relief valve  
(가 )  
1 bar setting

CO<sub>2</sub> Gas cylinder gas nozzle

O<sub>2</sub> (Optional) 21%  
cylinder

N<sub>2</sub> (Optional) 21%  
cylinder

Reminder: Gas 99.5% 가 CO<sub>2</sub> cylinder Riser  
gas가 nozzle 가 hose

Connection to the Mains

mains , nameplate  
plug 가 cable  
16 A delay-action type fuse fusing

Gas Analyzer hose board plug-in  
(illustration ; color-coded nozzles !)

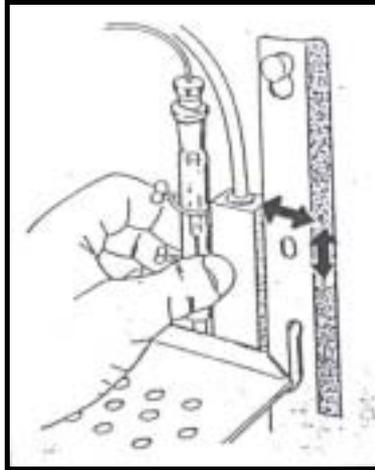
Mikro-porous Hose  
Connection(O<sub>2</sub> Version)  
(option)

Water reservoir  
p.7)

microperlator  
hose gas inlet nozzle

(illustration

Oxygen electrode

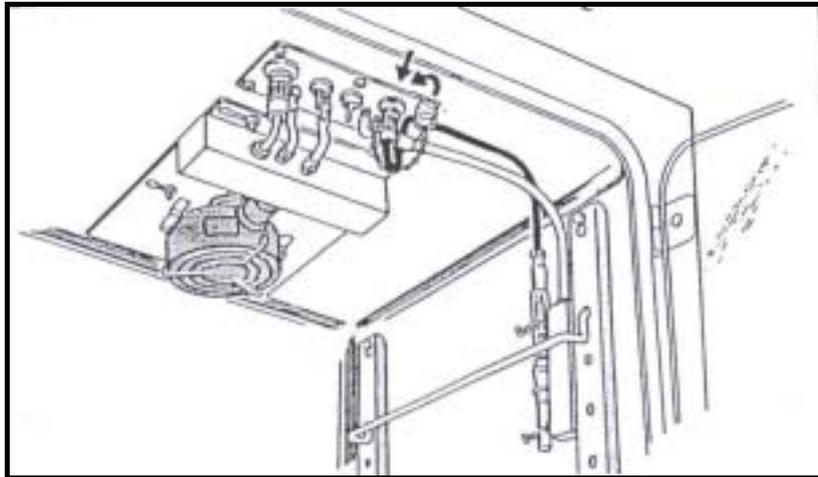


support  
Appendix p.30)

hose

board

jack



## 7. START-UP

가 controller

8

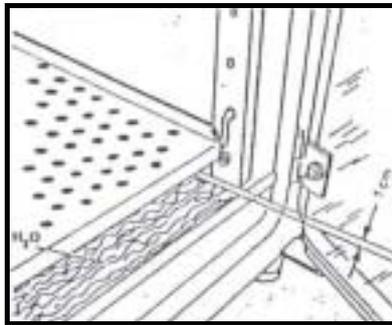
\* ( Model BB6220 glass-screen .)

\* water reservoir

: BB 6060 - 4I

BB 6220 - 6I

Operation with  
Distilled Water



Operation w/o  
Distilled Water

\* Special Function Table

Function Code 7

"Operat.Mode w/o water" [U.O]

가 .

가

culture dishes

\* manual gas supply shut-off valves

\* master switch

-

- Digital displays [8.8.8]

40

- Auto-test routine

- 가 auto-test routine

displays



- [21/0%] O<sub>2</sub> , O<sub>2</sub>  
 setting  
 - sample

Special Functions

[] Key [UP]/[DOWN] keys

[] Key [UP]/[DOWN] key

[ ] display [ .1] function code [] key  
 CO<sub>2</sub> display

Function Code []	Temperature Display [ ]	Display [CO <sub>2</sub> ]	Function	Factory Setting
1 Buzzer	[ .1]	[A.1] [A.0]	Buzzer ON Buzzer OFF	Buzzer ON
2 Gas	[ .2]	[G.1] [G.0]	Gases ON Gases OFF	Gases ON
4 Setpoint Release	[ .4]	[S.0] [s.1]	Not released Released	Released
7 Operat. Mode	[ .7]	[U.1] [U.0]	w. water w/o water	w. water

p.13

Notes:

Temperature: setpoint 1 , gas detector  
start-up chapter

CO<sub>2</sub> Comparison CO<sub>2</sub> 가  
CO<sub>2</sub> system 가

Reference example: CO<sub>2</sub> display: 7.0 % CO<sub>2</sub>  
CO<sub>2</sub> measured : 6.2 % CO<sub>2</sub>  
\* function code 3 [ ] [UP] keys  
\* [ ] key  
\* [ ] key  
- temperature display [ .0]  
- CO<sub>2</sub> display [ .1]  
\* temperature display [UP] key  
: [6.2]  
\* [ ] key  
\* [i]key (microprocessor computation )  
CO<sub>2</sub> display computation 가  
display setpoint , gas 15

Admittance of O<sub>2</sub>:

O<sub>2</sub> electrode

display가

\* jack

\* 가

가

. 1.5

system AUTO-CAL routine

setpoint

General Remarks:

\*

reservoir

\* O<sub>2</sub>

(Appendix )

\*

\*

가

[i] key

가

display가

buzzer가

[i] key

display

code

number

(cf. Error Code Table p.12)

가

[I]key

display가 [--.]

Malfunctions which are not displayed:

Malfunction	Remedy, Checkout
* 가 가 .	- setpoint
* gas가	- LED gas ● gas가 -setpoint
* 가 Buzzer가 .	-buzzer가 cf. Special Functions p.21
* Setpoints가 .	- setpoints가 cf. Special Functions p.21
* glass pane condensation	- switch p.5

Shutdown of the Unit

- \* master switch
- \* manual gas valve

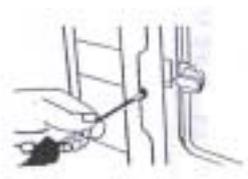
## 8. Disinfection, Cleaning, Checks

### Weekly checks to be performed by the User:

- \* reservoir
- \* gas 1 bar
- \* O<sub>2</sub> : vent hole 15mm .(cf.

### Appendix)

### Disinfection and cleaning of the chamber by the user:



- \*
- \* screwdriver glass screen

(Model 6220)

- \*
- \* O<sub>2</sub> , gas analyzer,

O<sub>2</sub> electrode  
Removal (Optional)

- \* plug
- \* O<sub>2</sub> socket
- \* hose nozzle
- \*
- \* O<sub>2</sub> ,

Removal of the  
shelf Supports

### Unit with full-width shelves

- \*
- \*
- \* carrier rack
- \* carrier rack



unit with divided shelves:

- \* carrier rack
- \* carrier rack
- \* carrier rack (spring)



Removal of the Gas Analyzer

- \* socket plug
- \* hose
- \* thumb screw
- \* gas analyzer

Reminder

- Gas analyzer Heraeus
- Removal of the Glass Screen, Model BB 6220 Only,
- \* glass screen screwdriver
- \* door hinge guard ring
- \* glass screen hinge

Recommended Disinfectant

“Barrycidal 36”, available form:  
Interchem AG  
Graben 5  
CH-6300 Zug, Switzerland  
Phone 042 22 16 24  
Telefax 042 22 19 75  
Telex 042 868 988 icag ch  
Alcohol\*

Service

Maintenance

Heraeus-authorized personnel

Heraeus

Spare parts lists

Service department 가

Heraeus agent

## 9. ADDITIONAL EQUIPMENT(OPTIONS)

### UV Radiator (Optional)

UV radiator \_  
radiator



radiator가

, radiator가

UV radiator가

\* mains

\* radiator

### Start-Up

\* master switch

\*

\*

\* manual timer "UV"

Timer가

switching interval

\* UV radiator

key switch

key

\* "UV" radiator가

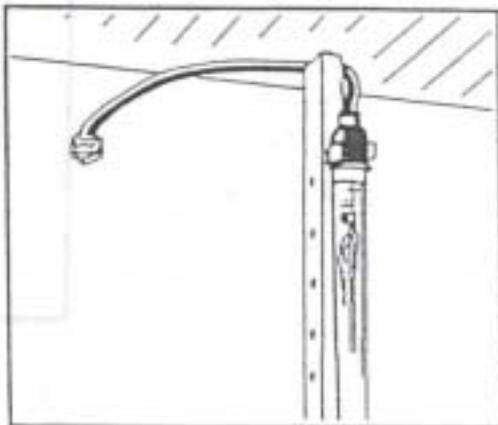
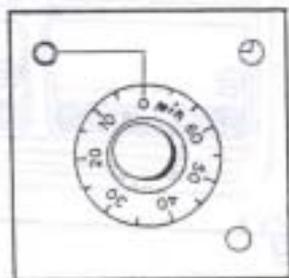
- radiator

- "UV"

, UV radiator

UV radiator가

service가

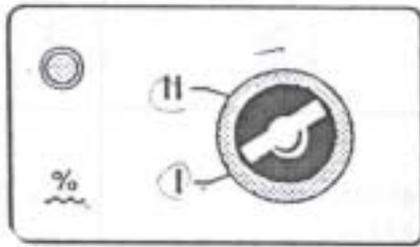


### Technical Data

Resonance line

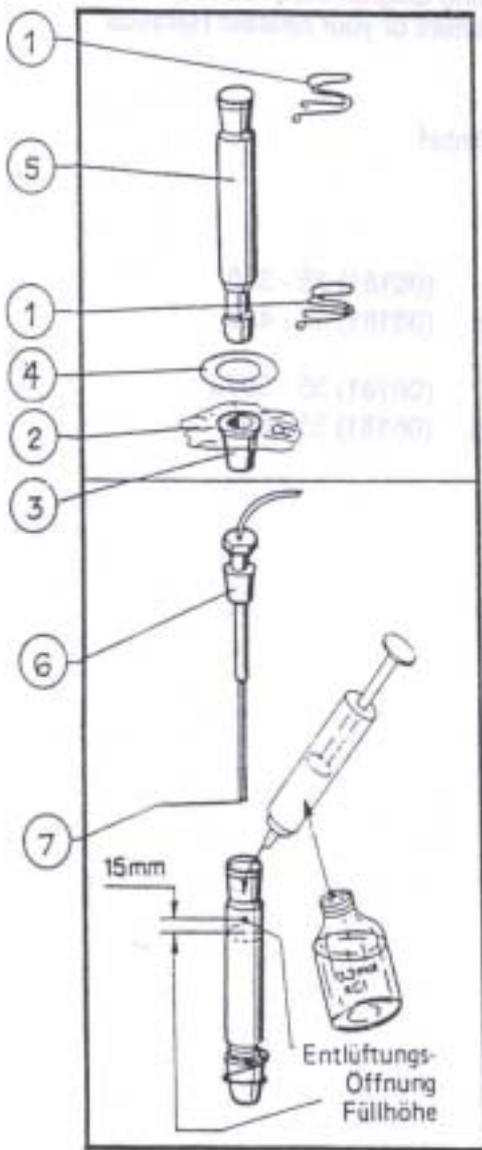
254 mm

	Radiator efficiency	15 W
high/Low	Model BB 6220	
Humidity System		
	Position system	92%
	position 95%	
	culture dishes	
	system position dishes	condensation
	position dishes	
	condensation dishes	
	Position	lamp



# APPENDIX

## Instructions for the Installation of the O<sub>2</sub> Electrode



O<sub>2</sub> Electrode Ass'y. No. 26.136-184

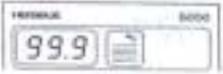
Comprises:

1 O <sub>2</sub> electrode compl.	26 136 180
1 spare adapter sleeve	26 136 329
1 spare wire clip	03 579 098
1 mounting ring	03 669 999
10 sets of foil membrane	26 136 339
1 bottle KCL solution 0.3 Mol	26 136 157

1. premounted electrode wire clip(1)
2. foil membrane(2) plastic bag adapter sleeve(3) 가 "R"
3. mounting ring(3) foil electrode sheath(5) adapter sleeve foil
4. wire clip
5. KCL solution 8.5ml
6. filtering clean rag platinum cathode(7) Cathode
7. electrode(6) Vent hole 1-3 mm KCL solution Electrode sheath 가 Platinum cathode foil membrane 가
8. wire clip
9. electrode support bracket

O<sub>2</sub>

## Operation Instruction

Reservoir	<ul style="list-style-type: none"> <li>● BB 6060:ca. 4l</li> <li>● BB 6220:ca. 6l</li> </ul>	Page 19
		Page 19
Setpoint f.ex. 	<ul style="list-style-type: none"> <li>● setpoint key</li> <li>● UP/DOWN key</li> </ul>	Page 20
temperature limit controller		Page 14
Auto-Start 	* CO2 display 	Page 20
	<ul style="list-style-type: none"> <li>● 15</li> <li>● Illum. LED Auto-Start</li> <li>● Displays</li> </ul>	
	f.ex. 	
Error Report: display  f.ex. 	Control circuit 가  key  alarm , key .	Error Code Table Page 12

		Page 14
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